NORTH EXTENSION STABILIZATION STEP 1 PROJECT

PORT OF ALASKA, ANCHORAGE, AK

U.S. DEPARTMENT OF TRANSPORTATION / MARITIME ADMINISTRATION
FY 2022 PORT INFRASTRUCTURE DEVELOPMENT PROGRAM (PIDP)
GRANT APPLICATION

PROJECT NARRATIVE



Submitted by:

Municipality of Anchorage/Port of Alaska

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SUPPORTING DOCUMENTATION / ATTACHMENTS

Supporting documentation for this application, including the Benefit-Cost Analysis (BCA) Report, the Benefit-Cost Analysis Excel model, the Letter of Funding Commitment, Letters of Support, the project schedule, and the footnoted technical reports (Peer Review of Global Stability Analyses, Wharf Evaluation Report, and Ship Simulation Study) have been submitted on www.grants.gov as attachments.

INTRODUCTORY INFORMATION

Name of applicant	Municipality of Anchorage / Port of Alaska
Is the applicant applying as a lead applicant with any private entity partners or joint applicants?	No
What is the project name?	North Extension Stabilization Step 1 Project
Project Description	The Project will stabilize the land to the north of the Port's general cargo terminals to address structural stability, seismic resilience, and navigational concerns, and in doing so will create a safe and cost effective path for replacing the deteriorating cargo terminals, as part of the Port of Alaska Modernization Program.
Is this a planning project?	No
Is this a project at a coastal, Great Lakes, or inland river port?	Coastal Port
Is this application for a small project at a small port?	*No*
Is this project located in a noncontiguous State or U.S. territory?	*Yes - Alaska*
GIS Coordinates (in Latitude and Longitude format)	61.245461° N., Longitude 149.882944° W.
Is this project in an urban or rural area?	Urban
Project Zip Code	99501-1024
Is the project located in a Historically Disadvantaged Community or a Community Development Zone? (A CDZ is a Choice Neighborhood, Empowerment Zone, Opportunity Zone, or Promise Zone.)	No
Has the same project been previously submitted for PIDP funding?	Yes, PIDP FY 2021
Is the applicant applying for other discretionary grant programs in 2022 for the same work or related scopes of work?	Yes – MPDG/INFRA/MEGA
Has the applicant previously received TIGER, BUILD, RAISE, FASTLANE, INFRA or PIDP funding?	Yes – PIDP FY 2020; PCT Terminal ($20 million)
PIDP Grant Amount Requested	$68.7 million
Total Future Eligible Project costs	$114.5 million
Total Project Cost	$114.5 million
Total Federal Funding	$68.7 million
Total Non-Federal Funding	$45.8 million
Will RRIF or TIFIA funds be used as part of the project financing?	No

I. PROJECT DESCRIPTION

The Municipality of Anchorage's Port of Alaska (the Port) is requesting $68.7 million in FY 22 Port Infrastructure Development Program (PIDP) grant funding for the North Extension Stabilization Step 1 Project (the Project or NES1). The Project will stabilize land north of the Port's general cargo terminals to address structural stability, seismic resilience, and navigational concerns. Project will also create a safe and cost-effective path for replacing deteriorating cargo terminals as part of the Port of Alaska Modernization Program.

The Project will allow the Port to continue serving three critical functions: 1) as Alaska's key cargo gateway, which benefits virtually every segment of Alaska's economy; 2) as critical national defense infrastructure that plays an essential role in Department of Defense missions in Alaska and around the world; 3) as a resilient transportation lifeline that supports the routine movement of consumer goods, industrial development, and disaster recovery.

Stabilization of the waterfront soils and slopes to the north of the Port's existing marine terminals is a critical Project in terms of safety and efficient cargo movement and is an essential element of the overall Port's Modernization Program. The Project will be supported by more than $45 million in matching funding. **The Project has a Benefit-Cost Ratio of 1.55, is ready for procurement and will create 100-plus construction jobs for two years.** The Project meets the PIDP's goals of improving the safety, efficiency, or reliability of the movement of goods into, out of, around, or within a port and is a critical factor in supporting the Port's operational resiliency, as well as supply chain resiliency for the people of Alaska.

A. APPLICANT ELIGIBILITY

Port of Alaska is a Municipality of Anchorage-owned facility that handles containers, liquid bulk, dry bulk, and breakbulk, as well as cruise ships. The Municipality/Port owns the land where the Project is located and has the authority to construct the Project.

B. PROJECT BACKGROUND

The project site (the North Extension) was originally built in 2008-2009 to serve as an intermodal expansion to the Port, but was deemed a failure in 2012, when the Port and its independent advisors concluded that the North Extension area did not meet safety factors for global stability under seismic loading and could severely impair Port operations if a failure occurs, especially considering the site's inability to withstand earthquakes. The project site extends into the water, limiting the maneuverability of larger vessels coming into and departing from the Port, and could close the Port's navigation channel potentially closing off Alaska's primary route to deliver goods to the state.

The purpose of the Project is to create a safe and stable area that will support Port operations, make the North Extension land available for future use, and create safe vessel maneuvering conditions for docking at the cargo terminals. Recent ship maneuvering simulations and pilot evaluations recommended that the Project be completed as soon as possible and before reconstruction of the deteriorating general cargo terminals, to provide space for vessels to safely maneuver during construction.

C. Statement of Work / Project Components

The Project will reconfigure and realign the shoreline within the Port's North Extension, the area north of the existing general cargo terminals, as shown in Figure 1.

The Project consists of demolition of the sheet pile wall in concert with removal of approximately 1.3 million cubic yards of material and construction of shoreline revetment of armor rock. Ground improvements work to stabilize the backlands area that supports the perimeter road with the NES1 project area will occur during the 2023 summer construction season and will be included under a separate project.



Figure 1: NES1 Project Area

D. Project Need

i. Risk of North Extension Bulkhead Failure

The North Extension Stabilization Step 1 Project will stabilize a portion of the Port's northern uplands and bulkheads that were constructed as part of an unsuccessful 2008 uplands expansion and dock replacement effort that ended in 2012. **The Project will remove the existing bulkhead, excavate deficient soils, and layback and stabilize the resulting slopes with armor stone.** Improperly constructed North Extension uplands were found in 2012 to be unstable and has been cordoned off, with safety hazards and logistical impediments to ongoing Port operations.

If a structural failure were to occur at the North Extension, the Port's cargo terminals' navigational channel could become blocked inhibiting transfer of goods to Alaska. The North Extension is currently deteriorating due to corrosion and ongoing earthquake activity. According to the *Investigation of Open Cell Sheet Pile Structure – Export Report; Port of Anchorage Intermodal Expansion Project*, Anchorage, AK, January 21, 2019, page eight, *"The Potential for corrosion was not adequately considered in the design of the sheet piling, particularly at the interlocks. If an impressed current cathodic protection system is not used, the sheet piling will be grossly inadequate after less than 25-years of use, even assuming defect-free galvanizing. However, an impressed current cathodic protection system is not likely to fully protect the interlocks of the sheet piling, resulting in a reduction of service life".* The Port does not currently use cathodic protection at this structure.

Alaska is one of the planet's most seismically active regions and has more earthquakes than anywhere else in North America. Southcentral Alaska had the second largest earthquake ever recorded, M9.2 on March 27, 1964, and North America's largest on-land earthquake, M7.9 on November 3, 2002. Upper Cook Inlet was stuck by an M7.1 earthquake, about eight horizontal miles from Port of Alaska as recently as November 30, 2018. **The overall conditions of the North Extension do not meet generally accepted factors of safety for stability under seismic loadings[1].**

Port of Alaska seismic risk is real, and it is significant. The cracks in the gravel fill behind the sheet pile retaining wall resulting from the 2018 earthquake suggest existing failure of the sheet pile support system making the structure even more vulnerable to seismic activity. Routine earthquakes will cause additional damage to the sheet pile system resulting in continued and accelerated deterioration of the structure. As the sheet pile system loses its ability of hold the gravel fill, more of the fill material and possibly the sheet pile system itself will spill into the cargo terminal's navigation lane.



Figure 2: Sheet pile Damage and North Extension Gravel Fill Loss Documented After November 2018 Earthquake

[1] *Peer Review of Global Stability Analyses of Open Cell Sheet Pile Structures, Port of Anchorage Intermodal Expansion Project, Anchorage, AK; Simpson Gumpertz & Heger, Inc.; August 2013*

A minor failure of the existing bulkhead is as the result of an earthquake is expected to cause enough fill material loss to require dredging of the area. The level of earthquake shaking for a minor failure is associated with a Modified Mercalli Intensity (MMI) range of VI. The MMI is a USGS intensity scale commonly used in the insurance industry to associate earthquake intensity with predicted failure. The probability of annual occurrence of an event of this intensity is calculated to be about 7 percent.

A more intense earthquake will cause more extensive failure resulting in both fill material and sheet piles to spill into the cargo terminals navigation lane. The seismic intensity estimated to cause this level of failure is a Modified Mercalli Intensity range of VII. The probability of annual occurrence of an event of this intensity is calculated to be nearly 2 percent. In this scenario we estimate that the Ro-Ro terminal will be inoperable for a period of three years. Essentially, the NES Project would have to be undertaken after a major failure. However, construction costs are assumed to be 20 percent higher in this case to account for accelerated work under emergency conditions.[2]

ii. Safe and Cost-Effective Construction of General Cargo Terminals

Failure of the North Extension structure will occur directly in the navigation lanes of the cargo terminals directly affecting cargo operator's ability to dock.

In 2018, a study was completed by Safeguard Marine LLC for the Municipality of Anchorage, Port of Alaska, and CH2M, entitled *Ship Simulation Modeling and Mariner Study of the Maritime Implications of Maneuvering TOTE and Matson Vessels during Re-Phasing of the Port of Alaska Modernization Program*[3].

The purpose of the study was to better understand the maritime implications associated with constructing new general cargo terminals without first completing the North Extension Stabilization Step 1 Project. This study explored safety concerns of marine pilots who will maneuver TOTE and Matson vessels during construction of new general cargo terminals and tested if their safety concerns could be effectively mitigated by utilizing tugboats with various levels of horsepower.

The study included pilots performing 64 vessel maneuvers using 121 simulations. It was determined that under operational conditions expected during cargo terminal construction, the safe maneuvering of Matson and TOTE vessels alongside of the berths would introduce a high amount of risk without removal of portions of the North Extension. **The study recommended that the North Extension Stabilization Step 1 Project be completed as early as possible and prior to construction of the cargo terminals to provide space for vessels to safely maneuver at the Port.**

[2] USGS Modified Mercalli Intensity Scale

[3] *Ship Simulation Modeling and Mariner Study of the Maritime Implications of Maneuvering TOTE and Matson Vessels during Re-Phasing of the Port of Alaska Modernization Program;* prepared for the Municipality of Anchorage, Port of Alaska and CH2M by Captain Jeff Pierce and Jonathan Pierce, Ph.D., Safeguard Marine LLC; June 1, 2018. (attached)

Construction of the general cargo terminals is necessary as they are at the end of their useful life, have significant seismic exposure and risk, are losing load rating capacity, and will start derating in 2025, as detailed in an October 2021 inspection report[4].

iii. Supply Chain Resiliency

Redundancy is the first line of defense for most ports, but Alaska's population is too small to economically support enough redundant inbound marine cargo capacity to maintain the flow of goods into Alaska if the Port is forced to shut down. Alaska warehouses very little food, and the state only has about a one-week food supply[5] if the Port is not operational.



Figure 3: The Port's Cargo Terminals

The Project will allow the Port to continue operating efficiently and at full capacity as Alaska's primary inbound cargo terminal and cargo transportation hub by drastically reducing the risk of slope failure directly impacting the cargo terminals. Annually, the Port serves 90 percent of the states' population, including some 75 percent of all inbound, non-fuel cargo (i.e., food, consumer goods, building materials, cars, cement, and other goods Alaskans need and use every day to live, work, and thrive.

The Port also supports major troop deployments from Alaska bases via rail, road, and air connections, and most of the provisions consumed at Alaska's large military bases pass through the Port, supporting approximately 19,000 active-duty personnel and 26,000 dependents in Alaska. The Port provides high economic value to the military by supporting routine base operations and maintaining capability to support urgent, short-notice, troop and equipment deployments during times of crisis, saving the Department of Defense millions of dollars in avoided construction and maintenance for its own port facilities.

[4] *Wharf Evaluation: Risk Identification and Assessment;* prepared for the Municipality of Anchorage, Port of Alaska, by Michael Baker International; October 2021. (attached)

[5] *The Logistical and Economic Advantages of Alaska's Primary Inbound Port,* McDowell Group, October 2020

The Port plays an essential role in the movement of goods and materials from suppliers to customers and is an integral link in more than $14 billion worth of commercial activity in Alaska from containerized freight, petroleum products, and cement (as shown in Figure 4). This is in addition to the value associated with the Port's role in supporting national security and providing disaster recovery infrastructure. $7.1 billion in consumer goods cross the dock annually, supporting an estimated $9.2 billion in total retail sales activity across Alaska.[6]



Figure 4: Economic Impacts of Port of Alaska

E. Port of Alaska Overview

Port of Alaska is a Municipality of Anchorage owned and operated facility that serves Anchorage, the State of Alaska, and the nation. It handles half of all Alaska inbound fuel and freight (shipped via marine, road, and air) – half of which is delivered to final destinations outside of Anchorage, statewide. The Port is an intermodal transport hub that efficiently connects Alaska's primary marine, road, rail, pipeline, and air cargo systems.

The Port supplies more than 60 percent of the jet fuel used at Ted Stevens Anchorage International Airport, the fourth busiest cargo airport in the world by tonnage in 2021, and virtually all the fuel used at Joint Base Elmendorf Richardson (JBER), the adjacent military base.

The Port is also one of the nation's 18 "Commercial Strategic Seaports." It is directly connected by secure haul road and fuel pipeline to Joint Base Elmendorf Richardson (JBER), and supports military operations in Alaska, the Arctic, and the Pacific Rim. The Port provides capacity to handle sudden, large movements of military assets during a national emergency or surge deployment, and jet fuel used by JBER is transferred by a pipeline running from fuel storage tanks at the Port to the military base.

[6] Port of Alaska Economic Impact Study prepared by McDowell group for Port of Alaska, October 2020

There are three major functional areas at the Port: 1) the dock structure and terminals, 2) the storage and transit areas, and 3) the landside transportation network including roads, rail, and pipeline systems. These areas include three container ship/cruise ship terminals; one combination dry bulk (cement)/petroleum terminal; one stand-alone petroleum terminal; surface facilities for Port offices, a maintenance shop, equipment storage; three 38-gauge lift-on/lift-off container cranes; 3.1 million barrels of bulk petroleum storage; 60,000 tons of dry cement storage, dry barge berth and other facilities for loading and unloading dry-bulk and liquid-bulk cargo.

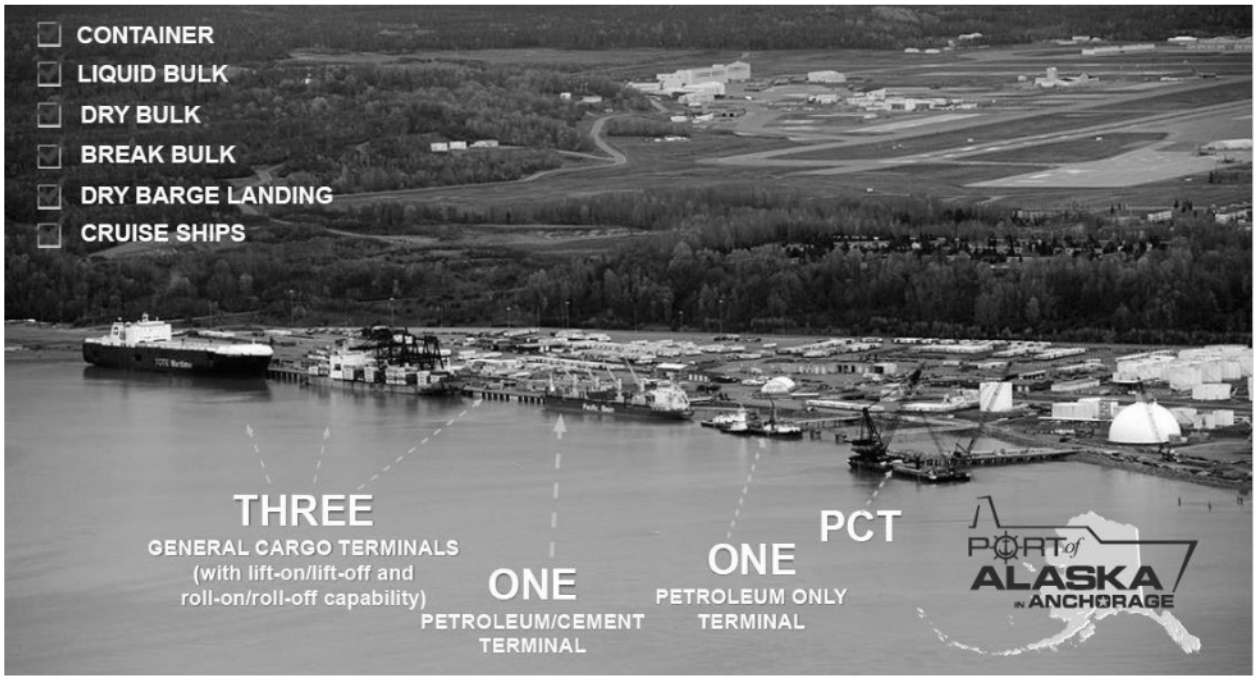


Figure 5: Port Berth Utilization

F. Port of Alaska Modernization Program

The Port of Alaska Modernization Program is a suite of construction projects intended to address the deteriorating conditions of the Port's marine facilities to enable safe, reliable, and cost-effective cargo-handling operations and fulfill the Port's primary missions of commerce, DoD support and Alaska disaster response and recovery. The Port's aging docks have far exceeded their economic and design life. Port modernization and reconstruction will improve the Port's operational safety and efficiency; accommodate modern shipping operations; and improve its resiliency to enable facilities to survive extreme seismic events and Cook Inlet's harsh marine environment with minimal operation disruption for at least 75 years.
The modernization program consists of five long-term phases. Phase 1: Petroleum and Cement Terminal Construction, is nearly complete.

This funding request is to construct the Northern Extension Stabilization Step 1 Project, one of three projects within Phase 2 of the program, as shown in Figure 6.

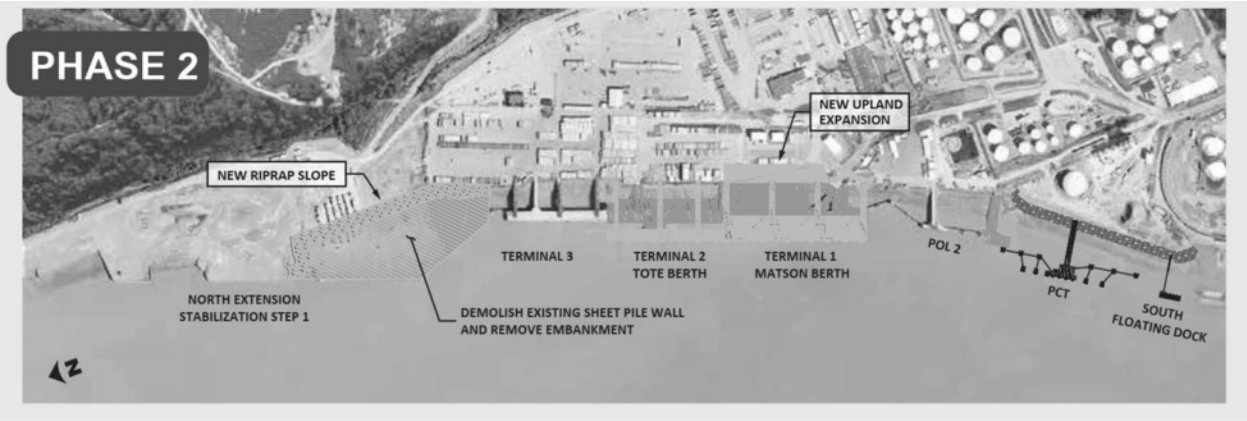


Figure 6: PAMP Phase 2 Overview

The Municipality of Anchorage and the Port have identified the Project as a priority for advancing the safe and cost-effective construction of the replacement of the general cargo terminals. Due to the impact of the existing structure's geometry upon the USACE Anchorage Harbor project, mariners' have expressed concerns about risks to safe ship-berthing operations, and engineering concerns regarding structural and geotechnical stability of the existing structure. These concerns were validated in the *2018 Safeguard/CH2M Vessel Maneuvering Study*[7].

II. PROJECT LOCATION

A. PORT LOCATION

Port of Alaska is located north of the downtown Anchorage area and is immediately adjacent to Joint Base Elmendorf Richardson. The Port consists of approximately 125 acres of uplands (cargo yards, tank farms and a cement storage facility), fronted by approximately 2,833 linear feet of continuous wharf, including three cargo terminals, one petroleum/cement terminal, and one stand-alone petroleum terminal.

The Port is located on tsunami-protected Upper Cook Inlet, adjacent to Alaska's population center and primary road, marine, air, rail, and pipeline cargo distribution systems. Upper Cook Inlet is subject to one of the world's most extreme tide swings, with more than a 30-foot difference between high and low tide on any given day. The Port is also located in one of the most seismically active areas in the world, and in winter, while Cook Inlet does not "freeze solid," ice floes continually move past and under the dock from November through April. These conditions require any new construction to be designed to the highest standards.

[7] *Ship Simulation Modeling and Mariner Study of the Maritime Implications of Maneuvering TOTE and Matson Vessels during Re-Phasing of the Port of Alaska Modernization Program;* prepared for the Municipality of Anchorage, Port of Alaska and CH2M by Captain Jeff Pierce and Jonathan Pierce, Ph.D., Safeguard Marine LLC; June 1, 2018. (attached)

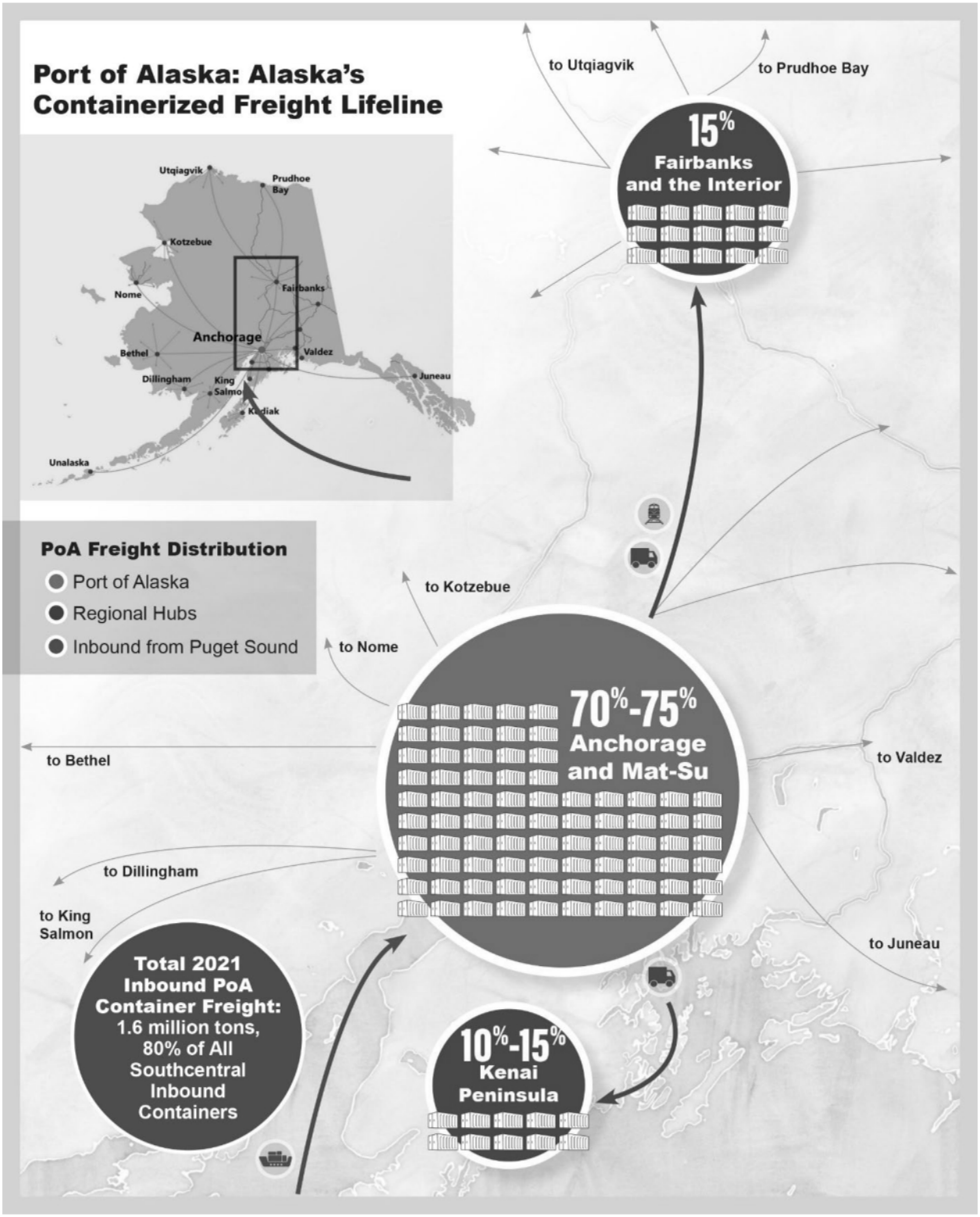


Figure 7: Port of Alaska Location and Freight Movement

B. Project Site

The Project site is located at Port of Alaska, within the Municipality of Anchorage, Alaska within Section 7, T. 13 N., R. 3 W., Seward Meridian; USGS Quad Map Anchorage A-8; Latitude 61.245461° N., Longitude 149.882944° W.; in Anchorage, Alaska, as shown in Figure 8.

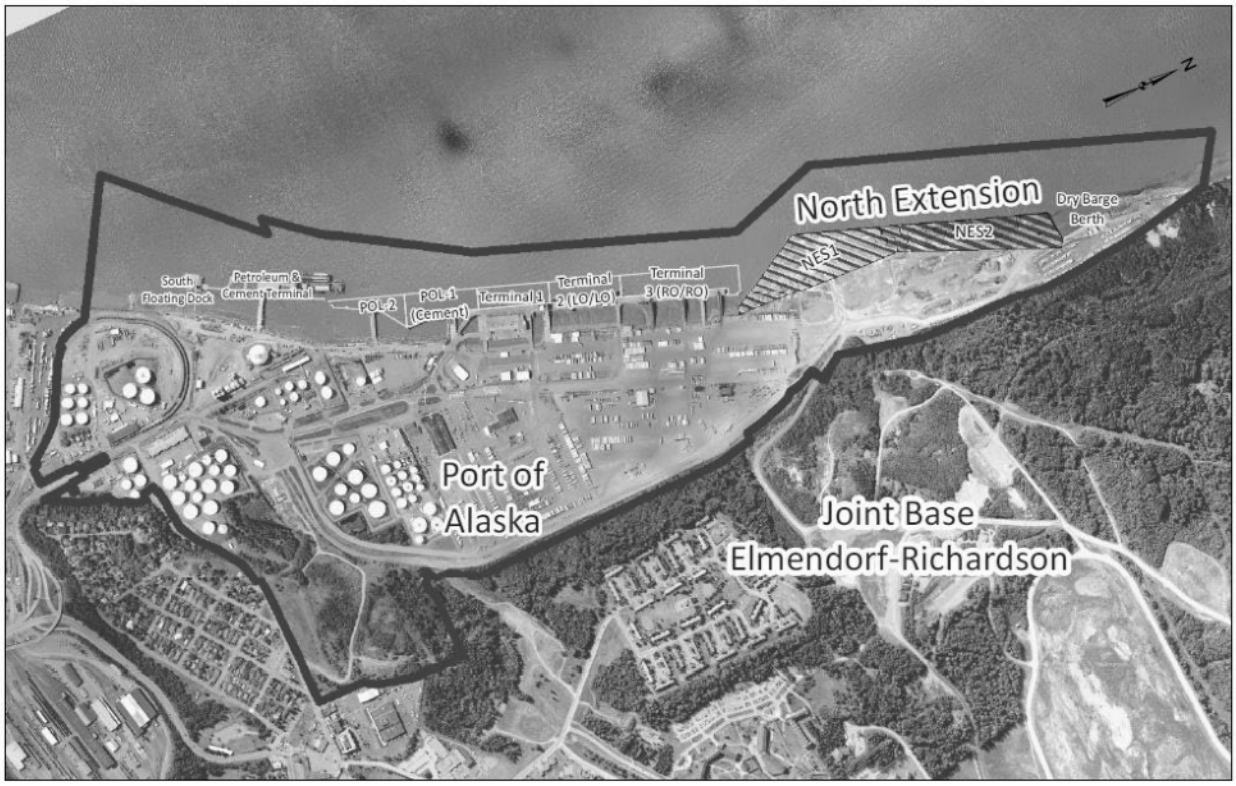


Figure 8: North Extension Project Site

i. Census-Designations

Port of Alaska is in the Urbanized Area of Anchorage, Alaska, as defined by the 2010 Census Urban Area designation (UA Code 02305). According to the 2010 U.S. Census, the Anchorage Urbanized Area had a population of 251,243. Anchorage is Alaska's population center, with 54 percent of all state residents living within a one-hour drive of the Port and 75 percent of all Alaskans living on the Anchorage-connected-road system. Alaska's economy relies on efficient, reliable, and cost-competitive port operations.

The Port is regionally, nationally, and internationally significant as the center of a hub-and-spoke distribution system that serves 90 percent of the state population, including many remote, rural communities statewide. It also supports Department of Defense missions across Alaska and the world and handles most of the fuel used at Ted Stevens Anchorage International Airport, the fourth busiest cargo airport in the world.

ii. Community Development Zones

The Port is itself not in a federal Opportunity Zone, but it is adjacent to several, as shown in Figure 9, and is an intermodal transport hub that efficiently connects marine, highway, rail, pipeline, and air cargo systems to move goods and fuel to more than 150 communities, military bases, worker camps, mines and other destinations across Alaska. **Goods that move through the Port are dispersed to these communities located north, south, east, and west of Anchorage; including 99 economically distressed areas, where the cost of goods, including heating fuel, are directly impacted by transportation costs.**



Figure 9: Anchorage Opportunity Zones

C. Transportation Connections

Port of Alaska is located at Alaska's population center within a one-hour drive of 54 percent of Alaska residents. It is an intermodal transport hub that connects state's primary marine, road, rail, air, and pipeline cargo distribution systems. It connects to Alaska Route 1 on the National Highway Freight Network and the Railbelt road system that connects 75 percent of all state residents. It is immediately adjacent to two barge terminals that routinely service Western Alaska and Aleutians. The Port has multiple rail connections in its security perimeter and is immediately adjacent to Alaska Railroads main yards.

Ted Stevens Anchorage International Airport and JBER's air base are within sight of the dock. And the Port's pipeline system connects the Port and its storage tanks to JBER, Ted Stevens Anchorage International Airport and oil and gas refinery, storage and dock infrastructure in Nikiski, AK. This inter-connected infrastructure gives Port of Alaska more -- and more efficient -- inbound cargo handling capacity than every other Southcentral Alaska port combined. The Port is identified on the NHFN by Facility ID AK1P and is connected to the network by Primary Highway Freight System Intermodal Road and Rail Connectors.

Port of Alaska is a Department of Defense designated U.S. Commercial Strategic Seaport" that supports national defense missions across Alaska and the world. It is the best existing port in the United States to support and defend Arctic resource developments and shipping routes. About 20 percent of Port business is Department of Defense related.



Figure 10: US DOD Strategic Ports

D. Transportation Challenges

The geographical separation of Alaska, with Port of Alaska's de-facto role as the containerized logistic hub and distribution center for much of the state, creates a life-line logistics dependency upon the Matson and TOTE containerized cargo trade.

Matson and TOTE deliver some 80 percent of all containerized cargo shipped into Southcentral Alaska in two ships each per week that generally arrive in Anchorage on Sundays and Tuesdays. TOTE services Alaska with two ships that sail directly between Tacoma and Anchorage. Matson uses three ships that also provide twice-weekly service to Kodiak and once-weekly service to Dutch Harbor.

Alaska has little commercial agriculture or manufacturing and ships in 95 percent of food sold in the state – overwhelmingly in containers that move across Port of Alaska docks. Barged containers typically take between five and ten days – depending upon season and weather – to travel from Puget Sound to Southcentral Alaska. TOTE's and Matson's deep-water vessels typically take about 66 hours to travel between Tacoma and Anchorage.



Figure 11: Port of Alaska Transportation Connections

Air and truck carriers each handle just-under five percent of freight shipped into Alaska. Air transport is cost prohibitive for most goods. Alaska only has one, 2,300-mile-long road connection (Figure 12) that takes a truck with tandem drivers 45 -to-70 hours to get from Tacoma to Anchorage, depending upon weather and road conditions. Truck deliveries are as fast or faster than marine deliveries, but they are more expensive, require cross-border travel and are generally less reliable than marine transport.

III. GRANT FUNDS, SOURCES, AND USES OF PROJECT FUNDS

A. PIDP Funding Request

The total cost of the North Extension Stabilization Step 1 Project is estimated at $114.5 million (Table 1). The Port will match approximately 40 percent of the total Project cost ($45.8 million). **An additional $68.7 million is still needed for Project construction and is requested through the PIDP Grant Program.**

A. Project Costs and Funding Sources

Table 1: Project Costs & Funding Sources

Project Component		Cost	Funding Allocation	
			PIDP	Port of Alaska
1.	**Program Management**	$7,000,000	$0	$7,000,000
2.	**Permitting and NEPA**	$450,000	$0	$450,000
3.	**Design and Construction**	$107,050,000	$68,700,000	$38,350,000
	TOTAL	**$114,500,000**	$68,700,000	$45,800,000

B. Documentation of Funding Commitment

Attached to this grant application is a letter of funding commitment from the Port's Executive Director. Local matching funds to support the estimated eligible future costs to complete the North Extension Stabilization Step 1 Project have been identified and committed by the Municipality of Anchorages' Port of Alaska. Currently, the Port's portion of the local match is $45.8 million. The request of $68.7 million from the PIDP grant completes the project's total projected future costs of $114.5 million and represents 100 percent of the total projected future project cost.

IV. MERIT CRITERIA

A. Achieving Safety, Efficiency, or Reliability Improvements

i. Loading and Unloading of Goods

The North Extension Stabilization Step 1 Project will enable efficient and reliable loading and unloading of cargo at Port of Alaska. Removal of the North Extension embankment drastically reduces the risk of slope failure into the cargo terminal navigation lanes and will improve vessel access to cargo docks. **Currently, the North Extension protrudes from the coast into the water, limiting maneuverability for ships within the Port's navigational channel.** Stabilization of the North Extension will involve the demolition of the existing sheet pile wall and removal of the embankment, which is vital for safe access to cargo docks and cost-efficient replacement of the Port's cargo docks in the near future.

ii. Movement of Goods Into, out of, Around, or Within a Port

The Port's existing container terminals are at the end of their service lives, are seismically vulnerable, and will need to undergo reconstruction to continue handling Port of Alaska's cargo volume. If the North Extension Stabilization Step 1 Project is not completed, reconstruction of deteriorating and seismically vulnerable cargo terminals would be made more difficult and expensive because the current North Extension layout does not provide enough space for efficient construction barge operations.

iii. Operational Improvements / Port Resilience

Alaska does not have a timely or cost-effective cargo-handling backup if the North Extension fails into the Port of Alaska's cargo terminals' navigation lanes inhibiting operations. The state's market, only three-quarters of a million people, is too small and dispersed to economically support more than one major inbound cargo port with the capacity to handle and distribute enough food, fuel, and freight to support Alaska needs. Port of Alaska typically handles five times more in-bound marine cargo than all other Southcentral Alaska ports combined. And the region's combination of geography, climate and seismic risk make every alternative so infeasible that nobody has seriously tried to develop an alternative port since the 1964 Good Friday earthquake and tsunamis seriously damaged or destroyed every other deep-water port in Southcentral Alaska.

Completing the North Extension Stabilization Step 1 Project will eliminate the ongoing geotechnical and seismic stability concerns of the area north of the cargo docks. A minor failure of the North Extension could result in added maintenance dredging costs. While a major failure would result in the closure of the Ro-Ro terminal (and possibly additional terminals if the event triggers a progressive pile failure), diversion of cargo, and the accelerated construction of the North Extension Stabilization Project Step 1 would be needed. Therefore, by completing the Project, the Port adds resilience to its operations by reducing the potential impacts of an earthquake. With NES1 completed, the Port can then efficiently replace the cargo docks which are also at risk.

iv. Environmental or Emissions Mitigation Measures

The Project will produce Environmental Sustainability benefits, as described in the Environmental or Emissions Mitigation Measures section, which were derived from the emissions that would be avoided if the Project is constructed. The avoided emissions would be the result of cargo being diverted from Port of Alaska in the Without Project scenario during temporary shutdowns. A major failure of the North Extension during an earthquake would result in the Ro-Ro terminal being shut down for three years. In addition, severe weather conditions during construction of the cargo docks would also cause the Ro-Ro terminal to shut down if the North Extension Stabilization is not completed. In both scenarios, a percentage of all Port container cargo would be diverted to alternative Ports during these years. The added truck miles needed for transporting this cargo to final destinations will increase carbon, and other greenhouse gas, emissions. All of which could be avoided by completing the North Extension Stabilization Project Step 1.

The emissions from CO_2, NO_x, $PM_{2.5}$, and SO_x were calculated for the Benefit Cost Analysis. The cost of the emissions was calculated by using the gram of greenhouse gas released per mile of travel. Using these figures, the total metric tons of CO_2, NO_x, $PM_{2.5}$, and SO_x that would be released in the Without Project scenario were calculated using standard Department of Transportation inputs.

Over the 30-year analysis period, there would be approximately 31.24 million added truck miles needed to move cargo between Anchorage and alternative ports during temporary shutdowns. These additional miles will cause a measurable number of emissions and pollutants to be released into the environment.

Table 2: Summary of Project Emission Benefits

Emission Source	Added Truck Miles	Emission Type	Total Emissions	Notes
Cargo Diversion during Major Extension	12,327,149	CO_2	19,306	Based on an annual chance of major failure of 2.0 percent
		NO_x	9.86	
		$PM_{2.5}$	0.27	
		SO_x	0.14	
Cargo Diversion during Cargo Dock Construction	18,912,476	CO_2	29,620	
		NO_x	15.53	
		$PM_{2.5}$	0.42	
		SO_x	0.23	

B. Supporting Economic Vitality at the National and Regional Level

The Project's economic vitality benefits were calculated from the increased truck operating costs, maintenance dredging costs, and other Port operating and capital costs that would occur in the Without Project scenario. These increased costs would be the result of a minor or major failure of the North Extension bulkhead. Additionally, increased truck operating cost, and Port operating costs during construction of the cargo docks in the Without Project scenario are considered.

i. Benefit-Cost Analysis Summary

A summary of the Benefit-Cost Analysis that was performed for the Project is described below, and the full Benefit-Cost Analysis Report and model are provided separately from this narrative.

For this Benefit-Cost Analysis (BCA), the following With and Without-Project Scenario assumptions were considered:

With-Project Scenario: Port of Alaska receives federal funding for NES and completes stabilization of the land north of the Port's general cargo terminals. In doing so, eliminates risks of failure of the North Extension bulkhead which is possible as the result of normal conditions and / or a range of seismic activity. With NES1 complete, the Port can proceed with new upland expansions and construction of its upgraded cargo terminals 1 and 2.

Without-Project Scenario: Port of Alaska does not receive federal funding for NES1 and must complete new upland expansions and construction of its upgraded cargo terminals without it. As a result, there will be added costs associated with construction of the new terminals. Additionally, there will be increased maintenance dredging costs because of the North Extension eddy. Most importantly, the potential risk failure of the North Extension bulkhead would not be eliminated.

The BCA reflects USDOT's standard guidance regarding forecast periods and discount rates. As such, all estimates were calculated over a 30-year period, beginning in 2026 following the Project's completion in 2025 in the With-Project scenario. Additionally, a discount rate of 7 percent was used throughout the analysis (a discount rate of 3 percent was used for CO_2 emission benefits) as suggested in USDOT BCA guidelines for 2022. **The Project has a Benefit-to-Cost Ratio of 1.55. The results of the BCA are summarized in Table 3.**

Table 3: Summary of Project Benefits (2020 US$, Millions)

Category	Present Value
Resiliency Benefits	$52.36
Economic Competitiveness & Opportunity Benefits	$48.69
Safety Benefits	$3.22
Environmental Sustainability Benefits	$1.73
Maintenance & Operating Costs	$22.52
Residual Value	$0.00
Total Benefits	**$128.52**
Project Costs	$82.99
Net Present Value	$45.53
Benefit-Cost Ratio	**1.55**

The primary benefit of completing the North Extension stabilization Project is the elimination of ongoing geotechnical and seismic stability concerns. A minor failure of the North Extension could result in added maintenance dredging costs. A major failure would result in the closure of the Ro-Ro terminal, diversion of cargo, and the accelerated construction of the North Extension Stabilization project would be needed. Therefore, the primary set of benefits associated with the

Project are related to the likelihood of a seismic event causing either a minor or major failure of the North Extension and all these benefits are categorized under "Resiliency Benefits".

As recommended by USDOT, "the frequency of the event should also be calculated as the expected probability of the disruptive event(s) occurring within a given year within the analysis period, producing a projected benefit stream of the improvement." Therefore, Project benefits are based on a 7 percent annual probability of a minor failure and 2 percent annual probability of a major failure, and the costs associated with either event.[8]

The North Extension Stabilization Project involves demolishing the existing sheet pile wall and removing a significant amount of embarkment area. As a result, this will address some navigational concerns, specifically those associated with the construction plans for the cargo docks. Without the completion of the North Extension Stabilization, the costs of completing cargo dock reconstruction will be increased. Additionally, operating costs of the cargo docks during construction will also be more costly. A summary of these added cargo dock costs during construction are as follows:

- Increased tug costs during normal cargo dock operations
- Closure of Ro-Ro Terminal during unfavorable conditions (Diversion of cargo costs)
- Increased maintenance dredging costs
- Additional construction delay time due to maintenance dredging access

The new cargo dock location will be approximately 140 feet further offshore than the existing cargo dock. This location was selected in part due to the higher current velocities which will help to minimize sedimentation at the cargo dock. However, the current North Extension profile adds significant sediment loads due to the NES eddy. These sediment loads will continue unless the North Extension Stabilization Project is also completed. Therefore, if the North Extension Stabilization Project is not completed, there will be added annual maintenance dredging costs at the Port, even if the cargo docks are relocated and reconstructed.

C. Addressing Climate Change and Environmental Justice Impacts

The Port is committed to planning and designing construction projects to mitigate climate change impacts and is guided by Municipality-led Climate Action Plan and Strategy.

The Anchorage Climate Action Plan[9] was adopted by the Anchorage Assembly on May 21, 2019. The Anchorage Climate Action Plan considers community-wide greenhouse gas emissions, projected climate impacts, and the priorities and concerns of Anchorage residents. The plan prioritizes actions that result in substantial economic, environmental, and community benefits.

The Municipality of Anchorage Climate Action Strategy[10] is derived from the Anchorage Climate Action Plan and outlines Municipal-led, high priority, and high impact actions that the Municipality will take in the near term. The Municipality has engaged in an extensive public

[8] USGS Modified Mercalli Intensity Scale
[9] Anchorage Climate Action Plan
[10] The Municipality of Anchorage Climate Action Strategy

outreach program to engage community members in the implementation of the Climate Action Plan., engage business owners about energy savings opportunities and ways to prepare for a changing climate, and encourage education about climate change, energy, and outdoor/natural science.

Port of Alaska is supporting Anchorage's Climate Action plan by constructing new docks and related infrastructure four feet higher to accommodate sea level rise and to improve cargo-handling efficiency, which will reduce operations-related greenhouse gas emission. New Port of Alaska construction also aligns with power plan electrical system upgrades, including a connected microgrid, power storage, power management capabilities and renewable power generation that will reduce Port-related greenhouse gas emissions.

D. Advancing Equity and Opportunity For All

This North Extension Stabilization Project Step 1 is critical to economically maintaining Alaska's statewide freight and fuel distribution network that benefits more than 150 cities, towns, remote villages, military bases, worker camps and other communities statewide. It will revitalize aging public infrastructure that supports economic, reduced-carbon cargo transport to communities that have been historically underserved, marginalized and adversely affected by persistent poverty and inequality. It will support U.S. national defense interests and statewide Alaska disaster recovery capability. And it is poised to create hundreds of Alaska jobs almost as soon as work starts.

President Biden issued an executive order on January 20, 2021, that requires federal agencies to advance racial equity and support for underserved communities. The order says agencies "should pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality." Several federal laws specifically define Alaska Native Corporations (ANC) as organizations that represent the interests of underserved communities, and the Port's project planning includes negotiating with an ANC to provide armor rock for the North Extension Stabilization Step 1 Project. Although the Port has not advanced the Project to the point of negotiating with ANCs about providing either materials or services to the Project, several ANCs have been identified that are positioned to provide materials (armor rock) and possibly construction services that could economically support the Project.

The Municipality of Anchorage/Port of Alaska is very conscious of its responsibility and accountability in the expenditure of public funds. Anchorage's Municipal Purchasing Department maintains a competitive bidding process in accordance with Federal and State laws, regulations, and Municipal ordinances. It is the Municipality's policy to encourage the participation of qualified vendors in the bidding process, emphasizing opportunities for small businesses and disadvantaged and women owned businesses. Preference may be given to local bidders when not prohibited by the funding source.

E. Leveraging Federal Funding to Attract Non-Federal Sources of Investment

At least 40 percent of Project funding is from non-federal sources, with at least $57 million committed from the Port. Federal PIDP grant funding is essential to provide the remaining 60 percent of the Project budget to allow the construction phase to proceed on schedule. The Project provides an opportunity to further leverage this substantial local funding with federal dollars and is a much-needed investment to allow this critical infrastructure project to continue and for the Port to continue efficiently providing cargo movement services for most Alaskans.

Private investment will occur because of the Project, as Matson has committed to building new ships to comply with the Port's PAMP dock construction, which first requires completion of the Project. The new ships will replace Matson's 35-year-old vessels and will be officially announced once the dock's design specifications are final. These vessels will be built by union labor under Jones Act regulations and benefits. In addition, Matson will buy LO/LO cranes and related infrastructure, and TOTE will purchase proprietary RO/RO-related infrastructure.

Port modernization will ensure that PoA continues to provide the most efficient, reliable, and timely service possible to distributors and consumers. Relying on other ports would, over the long-term, cost Alaskans billions of dollars in increased freight costs.



V. PROJECT READINESS

A. Technical Capacity

Port of Alaska will administer the Project through the Port of Alaska Modernization Program. Financial and accounting processes will be coordinated with the Port's Finance and Administration Manager and Municipality of Anchorage purchasing and finance offices. At present, the Program is funded through a combination of Federal and State grants and Port equity funds.

i. Experience and Understanding of Federal Requirements

Port of Alaska has extensive experience successfully planning and implementing complex infrastructure projects and has the technical capacity, experience and understanding of Federal requirements needed to successfully implement the NES1 project. The Municipality of Anchorage and Port of Alaska have the controls in place to ensure that requested grant funding is used in accordance with all guidelines and requirements. Port of Alaska has worked closely with MARAD and USACE throughout the Port Intermodal Expansion Project and the Port of Alaska Modernization Program, most recently with the 2020 PIDP award for the Petroleum and Cement Terminal Project (PCT). Port of Alaska expects to commission and initiate PCT operation this summer.

ii. Experience Working with Federal Agencies

The Port has worked closely with MARAD and USACE throughout the Port Intermodal Expansion Project and the Port of Alaska Modernization Program, most recently with the 2020 PIDP award for the Petroleum and Cement Terminal Project (PCT). The Port is currently in the final phase of project construction and expects to complete construction and initiate operations of the new PCT in summer 2022. The Project is on schedule and on budget, which is especially notable given COVID-19-related challenges during the 2020 and 2021 construction seasons.

iii. Experience with BUILD, INFRA and PIDP Awards

The Port was awarded a $20 million PIDP grant in 2020 for the PCT Project. The PCT is the first phase of the Port of Alaska Modernization Program and will ensure that the Port maintains capacity to economically meet Alaska fuel and cement needs. Together, the construction contracts for the PCT totaled $110 million. Project construction created approximately 80 full-time jobs in 2020, including some 25 Pacific Pile & Marine positions and a host of specialty subcontractors that included marine mammal observers, electricians, ironworkers, drillers, concrete finishers, truck drivers, etc. The project also employs year-round project office staff including project managers, engineers, permit specialists, etc. Nearly all these summer construction positions were local hires.

iv. Technical Experience and Resources

The Municipality has demonstrated its ability to manage large projects since its incorporation. Examples include construction of large municipal facilities. Port of Alaska has successfully executed several federal grants and associated projects, including a new equipment storage building, installation, and upgrade of a security network of cameras and lighting across the entire 125 acres of Port property, wharf pile enhancements, and fender pile strengthening. The Port has unique experience with a unique combination of extreme tides, ice conditions, glacial silt, seismic activity, short construction seasons, endangered marine mammals, etc. that do not exist at any other North American port.

v. Feasibility/Constructability

Due to the unique construction and design considerations presented by the Project, work will be conducted through a design-build process.

The location of the new embankment will align approximately with the shoreline that existed in 2008. The Project will remove approximately half of the structure extending approximately 900 feet north from the southernmost extent of the North Extension and stabilize this portion of the North Extension. Project construction is anticipated to be performed during the summer construction season of 2024, as described below.

Prior Stabilization work – Ground improvements work will be completed in he Project area to stabilize the backlands area that supports the perimeter road. This work will be completed in the summer 2023 construction season under a separate project. This perimeter road will continue to serve as a multi-use extension of the Port in the future.

Construction will form the end-state embankment with a top elevation of 38.0 feet MLLW, sloping to a toe elevation of approximately -40.0 feet MLLW. This result will be accomplished through the removal of the sheet pile bulkhead through incrementally shearing and removing the sheet pile material and the impounded soils. Approximately 1,333,000 cubic yards are planned to be removed during NES1.

The soils will be removed as required to form the foreshore slope through excavation and stockpile of suitable materials above the waterline. Dredging and sea disposal is planned for those materials below the waterline. The lower portion of the embankment slope from -40.0 feet MLLW to approximately -7.0 feet MLLW on the northern portion of the Project and approximately -14.0 feet on the southern portion will be at 6H:1V and unarmored. A grade-break will occur above these elevations as the slope will transition to a 2H:1V slope armored with approximately 69,000-tons of primary armor stone (median sized at 4,600-pounds), filter rock and granular fill.

Upon completion, the Project will create a new shoreline that is structurally/seismically stable and balances the preservation of uplands while addressing the formation of unwanted sedimentation within the USACE Anchorage Harbor project and improving vessel maneuver safety at the northern berths. It is possible that the type and design of the new embankment may change based on USACE modeling results and further engineering, but the bulkhead alignment and general project configuration not expected to change.

vi. 30-Percent Concept Design

A 30-Percent Concept Design has been completed for the Project. The design stabilizes the failing structure by removal of open cell sheet piles within the project area and development of a transitioning slope embankment, as shown in Figure 12 and Figure 13.



Figure 12: North Extension Stabilization Project Step 1 Limits

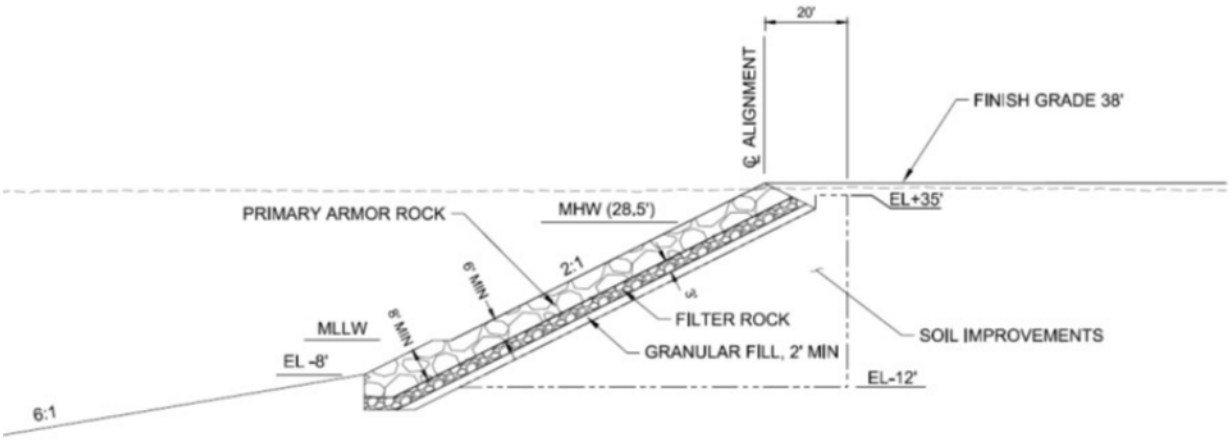


Figure 13: North Extension Typical Cross Section

The Southern end of the North Extension, north of Terminal 3, is conceptualized as a 4H:1V slope with protection in the form of a 10-foot-12-foot-tall wall to maintain the existing paved uplands. The vertical wall continues along the same alignment until daylighting with a slope grade of 2H:1V at the main or center area of the works.

The center area is conceptualized as a compound sloped embankment consisting of an unarmored 6H:1V slope is graded from the embankment toe at El -40 MLLW to the slope transition point set at -7 MLLW. The embankment slope above the transition point is on a 2H:1V slope with armored protection, topping out at 38 feet MLLW. The armoring of the 2H:1V slope provides protection from slope failure and is conceptualized as primary armor rock, filter rock, and granular fill is planned for the slope.

The northern area will be protected with a similar transitioning protection regime on a 2 or 2.5H:1V slope grading. Geotechnical conditions require stabilization of the soil mass making up the NES1 project site toward preventing Global Failure and or slope displacements occur during the design Maximum Considered Earthquake (MCE) event. Combinations of foreshore slopes and engineered cross sections with varying cementitious material soil replacement ratios (as a ground improvement technique using deep-soil mixing) were evaluated toward developing a cost-efficient stabilized embankment that met the PAMP criteria for global stability and deformation. Analyzed through two-dimensional Fast Lagrangian Analysis of Continua (FLAC) analyses, the Concept Design solution the Center Area of the Works includes the combination of the slopes described and deep-soil mixing of cementitious materials in a 2,500-cf zone with a replacement ratio of 33percent cement, achieving a DSFoS of 1.49.

vii. Project Schedule

The Municipality of Anchorage intends to accomplish this work through a Design Build contract with a contractor that is qualified to perform both the in-water and landside removal and stabilization work. **The Project is ready for procurement** and construction is expected to begin no later than March 2024 and scheduled for completion in December 2024, within the grant program's five-year performance period. Design and permitting will be completed before the

PIDP obligation date of September 30, 2025. A detailed schedule is shown in Figure 14 and is attached to this grant application.

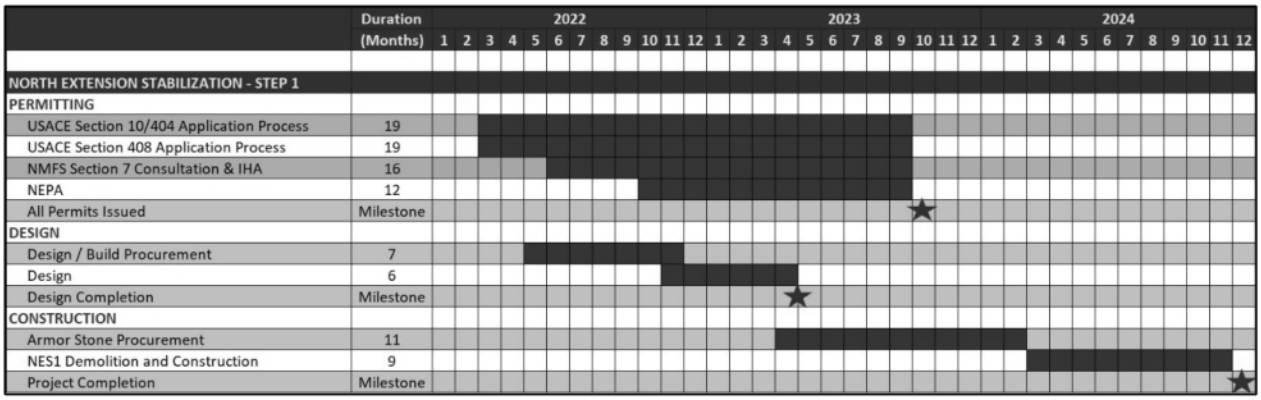


Figure 14: Project Schedule

B. Environmental Risk

As evident from the schedule above, environmental permitting is part of the critical path to begin construction and complete the Project on time. The Port has scheduled 19 months to complete the environmental review.

i. NEPA Status

An Environmental Assessment (EA) will likely be required for the Project. The Port can assist Federal agencies by helping to prepare draft EAs or provide input for many sections of the EA. The EA will include public input from a public notice and public hearings/meetings, as required. An EA, or other appropriate NEPA documentation, will be completed prior to construction.

The Port is currently working with USACE as the lead NEPA agency. The Port's representatives for the project have met with MARAD on both April 21 and May 6, 2022, where we were given advice on both how to involve MARAD and how the NEPA process would apply to the project. After these meetings, USACE has agreed to send a letter requesting MARAD participating in the NEPA process prior to receiving potential notification of a grant award.

ii. Environmental Permits and Reviews

Permitting for the Project is underway, although there will be the potential need to modify the permit applications as the design build contract develops their design.

iii. State and Local Approvals

A State Water Quality Certification pursuant to Section 401 of the Clean Water Act will be required for the Project from the Alaska Department of Environmental Conservation as well as a Flood Hazard Permit from the Municipality of Anchorage.

iv. Environmental Reviews, Approvals, and Permits by Other Agencies

The Project site does not contain any wetlands as it is and a previously permitted industrial site containing relatively recent fill. The Project will involve work in navigable waters and the placement of armor rock in waters of the United States.

The Project will require authorization pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act as well as a Section 408 (33 USC 408) review from the USACE, Alaska District. A Section 408 approval was granted for the 2016 design, however, modifications to that original design require additional coordination. These applications were submitted in April of this year.

Marine mammals that could occur in the project area include three that are listed as threatened or endangered under the Endangered Species Act (ESA)—Steller sea lions, humpback whales, and Cook Inlet beluga whales. However, humpback whales and Steller sea lions are rarely expected to occur in the project area.

A Section 7 Consultation pursuant to the Endangered Species Act (ESA) will be required with the National Marine Fisheries Service (NMFS) because the Project will require in-water work that is likely affect Cook Inlet beluga whales so a. Authorization pursuant to the Marine Mammals Protection Act may also be required in the form of an Incidental Harassment Authorization (IHA) from NMFS, depending on what means and methods are used during construction. This IHA will be submitted in June and is expected to take a minimum of 16 months to complete. It is the longest permit duration and largely drives the permitting schedule.

v. USACE Involvement

Project construction will maximize the retention of salvageable lands that were created while supporting the improvement of hydrodynamic conditions of the USACE Anchorage Harbor project. This alignment and beneficial result were confirmed through hydrological and sedimentation modeling performed by USACE's Engineer Research and Development Center, which completed its modeling analysis and provided confirmation of the proposed design in 2016. The Port has partnered with USACE to develop a permitting strategy and is currently actively working with them to move forward in the permitting application process for the Project. Additionally, the Port has secured a USACE Regulatory Project Manager assigned through a Section 214 Agreement with the Alaska District, USACE.

vi. Environmental Studies

A Biological Assessment may be required for Section 7 Consultation under the Endangered Species Act. The Port is acting as the non-Federal designee and has started work to help prepare an Assessment for use by the Federal agencies during Section 7 Consultation. The Biological Assessment will be submitted in July of this year. NMFS is currently working with the Port through routine permitting meetings hosted by USACE as the lead NEPA agency.

C. Risk Mitigation

As a design-build project, the Project's ability to be delivered on time and on budget typically has few challenges. The minimal risks to Project financing and construction include those outlined in Table 4.

Table 4: Project Risks and Mitigation Strategies

Risk	Description	Impact / Probability	Mitigation
Funding Shortage	$68.7 million	High/Moderate	PIDP grant
Cost of Delay	Due to the limited Alaska construction season (May-October), a seemingly short delay can delay the Project by a year. Weather, ice, travel time for specialized barge equipment and restrictions on construction for beluga whale protection are just some of the Alaska-specific issues that could delay Project construction.	High/High	PIDP will provide funding certainty that enables earlier procurement of project services and materials.
NEPA	Possible new or unexplained permit requirements or regulations.	High / Low	Early involvement with MARAD

VI. DOMESTIC PREFERENCE

The Municipality of Anchorage and Port of Alaska are committed to maintaining compliance with the Build America, Buy America Act. The procurement the Project will include a provision to that effect. The Port will apply, comply with, and implement all provisions of the Build America, Buy America Act in the implementation of project components funded by the PIDP. The project components for which the Port is requesting funding under the PIDP have been selected to avoid any undue delays or risks associated with the process of requesting a waiver to the Build America, Buy America Act. The MARAD Terms and Conditions have been included in the Project's procurement documents.

VII. DETERMINATIONS

Project Determination	Guidance
1. The project improves the safety, efficiency, or reliability of the movement of goods through a port or intermodal connection to the port.	If a structural failure were to occur at the North Extension, the Port's cargo terminals' navigational channel could become blocked inhibiting transfer of goods to Alaska. The North Extension is currently deteriorating due to corrosion and ongoing earthquake activity. The overall conditions of the North Extension also do not meet generally accepted factors of safety for stability under seismic loadings in a highly seismically active region.
2. The project is cost effective.	The BCA reflects USDOT's standard guidance regarding forecast periods and discount rates. As such, all estimates were calculated over a 20-year period, beginning in 2025 following the Project's completion in 2024 in the With-Project scenario. Additionally, a discount rate of 7 percent was used throughout the analysis (a discount rate of 3 percent was used for CO_2 emission benefits) as suggested in USDOT BCA guidelines for 2022. The Project has a Benefit-to-Cost Ratio of 1.55. The results of the BCA are summarized in Table 3.
3. The eligible applicant has the authority to carry out the project.	Port of Alaska is a Municipality of Anchorage-owned facility that handles containers, liquid bulk, dry bulk, and breakbulk, as well as cruise ships. The Municipality/Port owns the land where the Project is located and has the authority to carry out construction of the Project.
4. The eligible applicant has sufficient funding available to meet the matching requirements.	Local matching funds to support the estimated eligible future costs to complete the North Extension Stabilization Step 1 Project have been identified and committed by the Municipality of Anchorages' Port of Alaska and are documented in the attached Letter of Funding Commitment. The Port's portion of the local match is $45.8 million.

Project Determination	Guidance
	The request of $68.7 million from the PIDP grant completes the project's total projected future costs of $114.5 million and represents 100 percent of the total projected future project cost.
5. The project will be completed without unreasonable delay.	The Project is ready for procurement and construction is expected to begin no later than March 2024 and be complete in December 2024, within the grant program's five-year performance period. Permitting has begun. Design will be complete well ahead of the PIDP obligation date of September 30, 2025. A detailed schedule is shown in Figure 14.
6. The project cannot be easily and efficiently completed without Federal funding or financial assistance available to the project sponsor.	Neither the Municipality nor the Port has sufficient funds on hand to fully fund the project in the time frame necessary to meet basic safety and seismic standards. Without Federal assistance, construction of the project will be further delayed, adding inflationary costs annually, delaying further necessary safety improvements, and increasing seismic risk due to the aging of Port assets.

NORTH EXTENSION STABILIZATION STEP 1 PROJECT

PORT OF ALASKA, ANCHORAGE, AK

U.S. DEPARTMENT OF TRANSPORTATION / MARITIME ADMINISTRATION
FY 2022 PORT INFRASTRUCTURE DEVELOPMENT PROGRAM (PIDP)
GRANT APPLICATION



BENEFIT-COST ANALYSIS REPORT

Submitted by:
Municipality of Anchorage

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I. OVERVIEW

The Municipality of Anchorage's Port of Alaska (the Port) is requesting $68.7 million in FY 22 Port Infrastructure Development Program (PIDP) grant funding for the North Extension Stabilization Step 1 Project (NES1, the Project). The Project is for stabilizing the land to the north of the Port's general cargo terminals to address structural stability, seismic resiliency, and navigational concerns, and will create a safe and cost-effective path for replacing the deteriorating marine terminals.

The Project is primarily intended to stabilize the northern portion of the Port uplands and bulkheads by removing the existing bulkhead, excavating deficient soils, and laying back the resulting slopes. The overall conditions of the North Extension do not meet generally accepted factors of safety for stability under seismic loadings and could severely disrupt Port operations in the event of a failure. Additionally, the structure is deteriorating due to corrosion. According to the Investigation of Open Cell Sheet Pile Structure – Export Report; Port of Anchorage Intermodal Expansion Project, Anchorage, AK, January 21, 2019, page 8, *"The Potential for corrosion was not adequately considered in the design of the sheet piling, particularly at the interlocks. If an impressed current cathodic protection system is not used, the sheet piling will be grossly inadequate after less than 25-years of use, even assuming defect-free galvanizing. However, an impressed current cathodic protection system is not likely to fully protect the interlocks of the sheet piling, resulting in a reduction of service life".* If a structural failure were to occur at the North Extension, the Port's cargo terminals' navigational channel could become blocked.



Figure 1: Port of Alaska Overview and NES1 Project Area

Currently, the North Extension protrudes from the shoreline into the water, limiting maneuverability for ships within the Port's navigational channel. Stabilization of the North Extension will involve the demolition of the existing sheet pile wall and removal of the embankment, which reduces both risk and cost for the replacement of the Port's cargo docks. The existing general cargo terminals are seismically vulnerable and at the end of their service lives. They will need a complete reconstruction to continue handling the Port of Alaska's cargo volume and to meet current safety and seismic standards. Completing the Project prior to the replacement of the cargo docks will significantly improve the safety and cost efficiency of the cargo dock replacements.

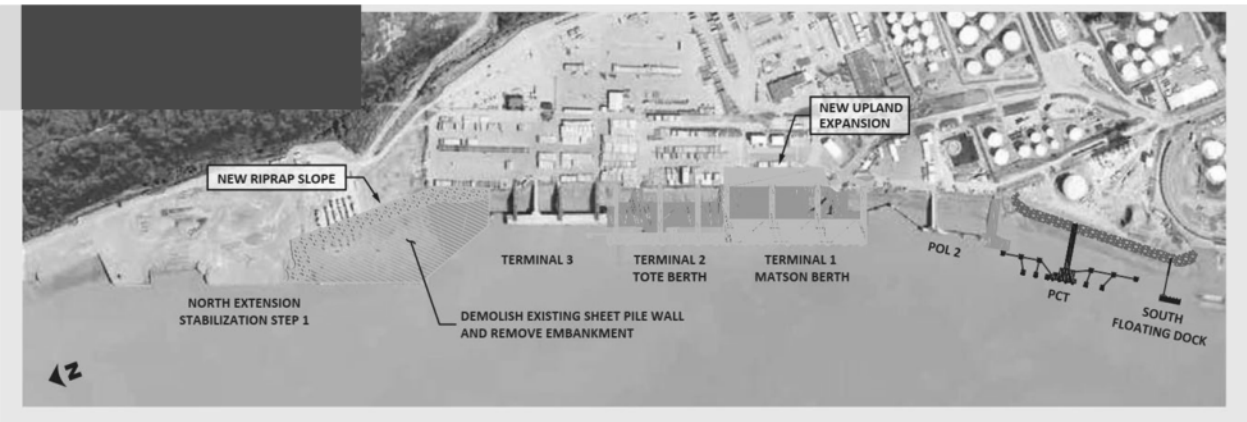


Figure 2: North Extension Stabilization and Cargo Dock Replacement Project Overview

Port of Alaska serves the Municipality of Anchorage, AK as well as coastal and interior communities throughout Alaska. The Port estimates that cargo moved through the Port reaches 90 percent of Alaska's population[1]. In total, the Port handles about half of all Alaska's inbound fuel and freight covering all modes of transportation. Almost 5 million tons of cargo was moved through the Port in 2021, including 80 percent of the vans and containers shipped into Southcentral Alaska ports and distributed statewide. The Port is the end destination for two twice-weekly container services from TOTE and Matson[1]. Both services originate from the Port of Tacoma in Washington. Other domestic and foreign carriers make regular deliveries of bulk materials and petroleum products.

The Project can begin construction in 2023 with a total Project cost estimate of $114.5 million (2020 US$). Once the Project is completed in 2025, the Port intends to continue to work on its port modernization program to replace old and failing infrastructure, including the Terminal 1 and Terminal 2 Replacement Projects. For this Benefit-Cost Analysis (BCA), the following With and Without-Project Scenario assumptions were considered:

With-Project Scenario: The Port of Alaska receives federal funding for NES1 and completes stabilization of the land north of the Port's general cargo terminals. In doing so, eliminates risks of failure of the North Extension bulkhead that is possible as the result of normal conditions and

[1] https://www.portofalaska.com/wp-content/uploads/PortOfAlaska_fact_sheet_Sept2020.pdf

/ or a range of seismic activity. After NES1 is complete, the Port can proceed with new upland expansions and construction of new cargo terminals.

Without-Project Scenario: The Port of Alaska does not receive federal funding for NES1 and must complete new upland expansions and construction of its upgraded cargo terminals without NES1. As a result, there will be added costs associated with construction of the new docks. Additionally, there will be increased maintenance dredging costs because of the NES1 eddy. Most importantly, the potential risk failure of the North Extension bulkhead would not be eliminated.

The BCA reflects USDOT's standard guidance regarding forecast periods and discount rates. As such, all estimates were calculated over a 30-year period, beginning in 2026 following the Project's completion in 2025 in the With-Project scenario. Additionally, a discount rate of seven percent was used throughout the analysis (a discount rate of 3 percent was used for CO_2 emission benefits) as suggested in USDOT BCA guidelines for 2022[2]. **The Project has a Benefit-to-Cost Ratio of 1.55.** The results of the BCA are summarized in Table 1.

Table 1: Summary of Project Benefits (2020 US$, Million)

Category	Present Value
Resiliency Benefits	$52.36
Economic Competitiveness & Opportunity Benefits	$48.69
Safety Benefits	$3.22
Environmental Sustainability Benefits	$1.73
Maintenance & Operating Costs	$22.52
Residual Value	$0.00
Total Benefits	**$128.52**
Project Costs	$82.99
Net Present Value	$45.53
Benefit-Cost Ratio	**1.55**

II. SUMMARY OF BENEFITS QUANTIFIED

The primary benefit of completing the North Extension stabilization Project is the elimination of ongoing geotechnical and seismic stability concerns. A minor failure of the North Extension could result in added maintenance dredging costs. A major failure would close the Port of Alaska's Terminal 3, divert cargo shipments, and an accelerated North Extension Stabilization Step 1 construction project would be needed. Consequently, ***the primary set of benefits associated with the Project relate to the likelihood of a seismic event causing either a minor or major failure of the North Extension and all these benefits are categorized under "Resiliency Benefits".***

As recommended by USDOT, "the frequency of the event should also be calculated as the expected probability of the disruptive event(s) occurring within a given year within the analysis period, producing a projected benefit stream of the improvement"[2]. Therefore, Project benefits are based on a seven percent annual probability of a minor failure and two percent annual probability of a major failure, and the costs associated with either event.

[2] Benefit-Cost Analysis Guidance for Discretionary Grant Programs (2022)

The North Extension Stabilization Project involves demolishing the existing sheet pile wall and removing a significant amount of embarkment area. As a result, NES1 will address some navigational concerns, specifically those associated with the construction plans for the cargo docks. Without the completion of NES1, the costs of completing cargo dock reconstruction will be increased. Additionally, operating costs of the cargo docks during construction will also increase. A summary of these added cargo dock costs during construction are as follows:

- Increased tug costs during normal cargo dock operations
- Closure of Terminal 3 during unfavorable conditions (diversion of cargo costs)
- Increased maintenance dredging costs
- Additional construction delay time due to maintenance dredging access

The new cargo dock location will be approximately 140 feet further offshore than the existing cargo dock. This location was selected in part due to the higher current velocities which will help to minimize sedimentation at the cargo dock. However, the current North Extension profile adds significant sediment loads due to the North Extension eddy. These sediment loads will continue unless the NES1 project is also completed. Therefore, if the NES1 is not completed, there will be added annual maintenance dredging costs at the Port, even if the cargo docks are relocated and reconstructed. Table 2 provides a more detailed breakdown of quantified Project benefits.

Table 2: Project Benefits Summary (Millions, 2020 US$)

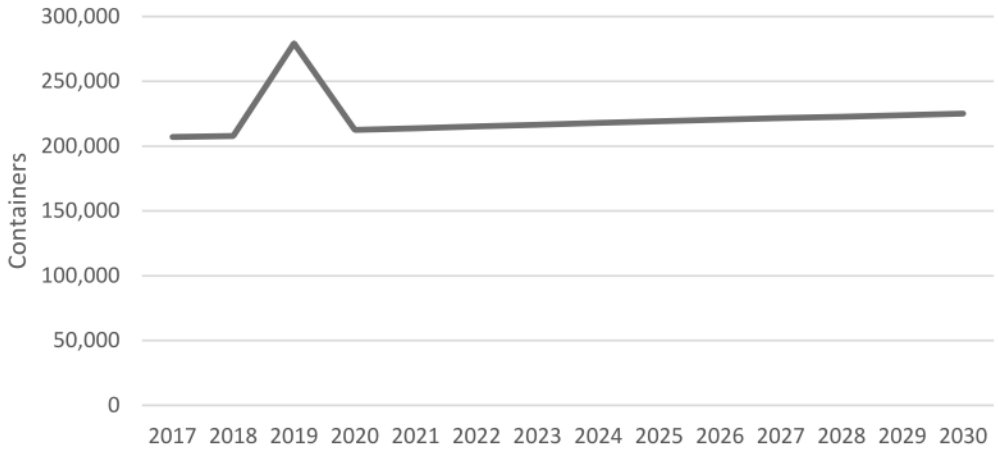
Without Project Event	Economic Benefits	Present Value	Total
Minor North Extension Failure	Increased Maintenance Dredging	$4.64	**$4.64**
Major North Extension Failure	Cost of NES1 + Acceleration Costs	$25.33	**$47.71**
	Cargo Diversion - Trucking Costs	$17.96	
	Cargo Diversion - Truck Safety Costs	$3.05	
	Cargo Diversion - Truck Emission Costs	$1.38	
During Cargo Dock Construction	Cargo Diversion - Trucking Costs	$18.98	**$53.64**
	Cargo Diversion - Truck Safety Costs	$3.22	
	Cargo Diversion - Truck Emission Costs	$1.73	
	Increased Tug Costs	$9.99	
	Increased Maintenance Dredging	$19.71	
Post Cargo-Dock Construction	Increased Maintenance Dredging	$22.52	**$22.52**
Total			**$128.52**

III. ASSUMPTIONS

A. VOLUME FORECASTS

In 2020, the Port of Alaska handled 212,410 containers, including inbound and outbound cargo. Since the Port of Alaska is the main gateway for Alaska's maritime cargo, it is anticipated that future volume growth at the Port will be directly tied to the population growth of the state of Alaska. The forecasted volumes used in this analysis were established by growing the number of boxes in 2020 by the expected population growth rate through 2045. Population growth rates were taken from Port of Alaska projections, and the Alaska Department of Labor & Workforce Development. To maintain a conservative analysis approach, volumes after 2045 were kept at the 2045 volume, as no official population estimate has been published by the state.

Figure 3: Port of Alaska Container Volume Forecasts



B. ALTERNATE PORT OPTIONS FOR CARGO DIVERSION

Without the NES1 Project, there is the possibility of temporary cargo diversion through alternate ports. This diversion may be due to North Extension failure or needed during cargo dock construction without the Project being completed. Failure to complete NES1 will increase the distance cargo would have to be transported from an alternative Alaska port to final destinations statewide.

There is no single or combination of other ports in South Central Alaska and connected to Alaska's Railbelt (road and rail system) that is/are capable of handling the Port of Alaska's volume without significant infrastructure improvements. For the purposes of this analysis, it is assumed that, in emergency (which it will be if needed), surrounding ports will be called upon to serve the region.



Figure 4: Major Ports in Alaska

It is assumed that the Ports of Seward, Whittier, and Valdez could help handle Port of Alaska volumes, when necessary, given their proximity to Anchorage. It is worth noting that this is an optimistic assumption, but one that must be made for the purpose of the analysis. Some of the shortfalls at these ports include the fact that none of these facilities have dock cranes, TOTE ramps, adequate cargo yards, or adequate work force or workforce housing. In addition, all of these facilities would require long, hazardous overland transport. Seward, Homer, Whittier, and Valdez are all connected by mountainous, two-lane highways with significant weather hazard. Meanwhile, Juneau, Kodiak, Unalaska (Dutch Harbor), and Nome have no land connections to Railbelt Alaska and therefore were not considered viable options.

Regardless, and given the uncertainty around which port will be used, the average distance between the three ports and Anchorage were used to calculate the added truck miles per container given the need for diverted cargo. It is possible that all three ports may be needed.

Table 3: Distance Between Anchorage and Alternate Port Options

	Miles
Distance from Whittier to Anchorage	60
Distance from Seward to Anchorage	126
Distance from Valdez to Anchorage	297
Average Distance	**161**

If cargo were to be moved from a further port, additional truck miles would be needed to move cargo to Anchorage. The added cost of transportation for diverted cargo is calculated by assuming all cargo will be first moved to Anchorage for redistribution to its final destination. By determining the total number of containers that would need to be moved from Seward, Whittier, or Valdez to Anchorage and multiplying by the 161 miles, the total number of added truck miles was calculated.

i. Seward

Seward is located 126 miles from Anchorage, and currently has port infrastructure to handle cruise, outbound dry bulk, container, and liquid bulk cargo. However, Seward would not have the ability to handle all diverted Port of Alaska volumes but could be handle some (e.g., Seward has no dock cranes, Ro-Ro ramps, minimal container yard, minimal fuel tankage, minimal local work force, etc.).



Figure 5: Port of Seward

ii. Whittier

Whittier was considered because it has cargo handling infrastructure and is only 60 miles from Anchorage. Whittier does not have a deep-water cargo dock and only handles barged cargo. Therefore, Whittier could only handle limited volumes of cargo diverted from Port of Alaska. Whittier has other limitations to consider. The Anton Anderson Memorial Tunnel, which is the only connection between the Town of Whittier and the rest of Alaska's highway system, is a 2.5-mile rail/car hybrid tunnel and would cause severe logistical problems and delays because of the tunnel's alternating one-way traffic and narrow design.



Figure 6: Town and Port of Whittier



Figure 7: Entrance to Anton Anderson Memorial Tunnel

iii. Valdez

Valdez was considered as an alternative to handle the Port of Alaska's cargo because it has available land and space for storage and other industrial activity. Valdez does not have the ability to handle all diverted Port of Alaska volumes but could handle some. Valdez is approximately 155 miles road miles from Anchorage and is equipped to handle cargo by trucks with access to the Richardson highway. This highway provides a direct link to Railbelt Alaska, but it is a circuitous and challenging drive, especially in winter. It takes more than 9 hours to reach Anchorage from Valdez using Richardson highway.

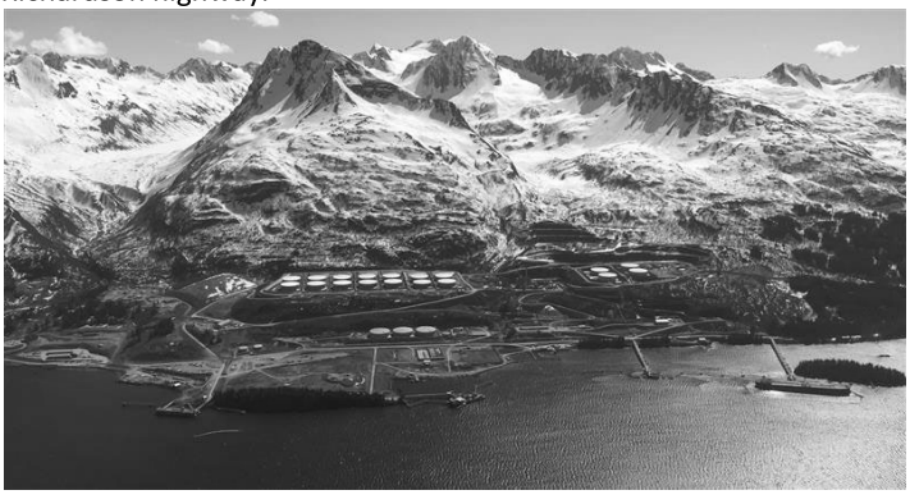


Figure 8: Port of Valdez Overview

C. Potential Failure of North Extension Bulkhead

i. Seismic Risk

Port of Alaska seismic risk is both real and significant. Cracks in the gravel fill behind the sheet pile retaining wall resulting from the 2018 earthquake suggest existing failure of the sheet pile support system, making the structure even more vulnerable to seismic activity. Routine

earthquakes will cause additional damage to the sheet pile system resulting in continued and accelerated deterioration of the structure. As the sheet pile system loses its ability of hold the gravel fill, more of the fill material and possibly the sheet pile system itself will spill into Terminal 3's navigation lane.

This analysis defines a minor failure as an earthquake with an intensity estimated to cause enough fill material loss to require dredging of the area. The level of earthquake shaking for a minor failure is associated with a Modified Mercalli Intensity (MMI) range of VI. The MMI is a USGS intensity scale commonly used in the insurance industry to associate earthquake intensity with predicted failure. The probability of annual occurrence of an event of this intensity is calculated to be about seven percent.

A more intense earthquake will cause more extensive failure resulting in both fill material and sheet piles to spill into Terminal 3's navigation lane. The seismic intensity estimated to cause this level of failure is a Modified Mercalli Intensity range of VII. The probability of annual occurrence of an event of this intensity is calculated to be nearly 2 percent. In this scenario we estimate that Terminal 3 will be inoperable for a period of three years. During this time, approximately 50 percent of all volumes will be diverted to other Alaska ports. Essentially, the NES1 Project would have to be undertaken after a major failure.[3]

D. Cargo Dock Construction Without NES1

i. Tug Costs

A third 5,000 HP tug will be required to dock cargo vessels while new cargo terminals are being constructed. The additional tug is required due to the "pocket effect" that the new construction will create at on the existing wharf face. However, Cook Inlet's existing fleet doesn't have enough tugs for this purpose, so a dedicated tug from outside would need to be contracted. Therefore, the tug cost in this scenario is derived from the cost of having a dedicated tug on-call 24-7 and comes from PPM's current contract. The operating cost of a tugboat is approximately $25,000 per vessel call in this scenario.

The pocket effect occurs after construction of new Terminal 1 and during construction of Terminal 2. As the construction of the new terminals moves south, the available berthing area for TOTE and Matson onto the existing berths shrinks due to the construction of the new terminals. A pocket develops between the North Extension and the new Terminals that requires the ships to approach perpendicular to the existing berths with an unsafe clearance at either end of the vessels.

The removal and stabilization done under the Project will allow the ships to more safely approach from the north on an angled approach to the existing berths.

Additionally, with this north approach into the confined area of existing Terminal 3 and Terminal 2 during construction, if NES1 is not completed and the sheet pile wall fails, that access to the existing berths would be cut off. Consequently, the perpendicular approach to the berth required at the pocket would require assistance from an additional tug. Also, if the North Extension fails,

[3] https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale

the retained soil and possibly portions of the bulkhead would likely slide into the Terminal 3 berth area, effectively blocking it until a dredging and salvage operation could be completed.

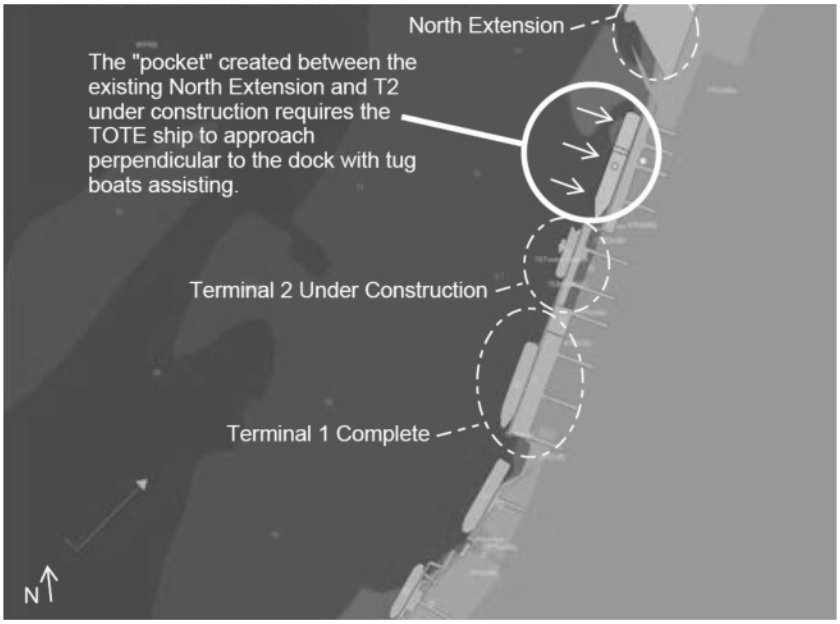


Figure 9: "Pock Effect" Overview

ii. Closure of Terminal 3 During Unfavorable Conditions

A third tugboat will be needed during construction of the cargo docks for handling cargo vessels during normal conditions. However, there are some days where unfavorable conditions will cause the closure of Terminal 3.

Historically dates for annual Knik Arm ice season, are from November 15 to April 4. Assumed unfavorable conditions that would restrict access to Terminal 3 include:

- High winds (>15mph Fastest 2-minute wind speed) and strong currents
- High winds (>15mph Fastest 2-minute wind speed), strong currents and ice
- Heavy ice (80 percent or more coverage) and/or thick ice (greater than 18")

Assuming a worse case ice scenario, although unlikely, it is possible Terminal 3 will be unusable for the entire ice season. More commonly, ice is not a problem every day of the ice season. An estimate of the lower bound of the ice impact on Terminal 3 is approximately two months.

Therefore, it is assumed that during construction Terminal 3 will be fully shutdown for eight weeks per year. Given that there are two vessel calls per week, it will impact 16 calls per year during the seven years of construction. As a result, it has been assumed that during construction years, (8 weeks / 52 weeks per year =) 15 percent of all cargo will be diverted to other Alaska ports.

iii. Increased Maintenance Dredging

The new Cargo Dock design is approximately 140 feet offshore of the existing wharf face. This location was selected in part due to the higher current velocities which would help to minimize sedimentation at the wharf face. In the Without-Project scenario, sedimentation from the NES1 eddy, will prevent complete dredging savings to be realized.

The average annual dredge quantity for the previous 10 years is 1,200,000 cubic yards (cy). Roughly 15 percent of the average annual quantity (180,000 cy) would be lost due to the North Extension eddy. Dredging costs are approximately $15 / cy for Manson dredging cost and $60 / cy for clam-shell project dredging. It is assumed that 70 percent of dredging will be done by Manson dredging and 30 percent completed with the clam-shell dredging. As a result, in the Without-Project scenario would increase annual maintenance dredging costs by $5.13 million during cargo dock construction.

E. Cargo Dock Operations Without NES1

i. Increased Maintenance Dredging

The new Cargo Dock design is approximately 140 feet offshore of the existing wharf face. This location was selected in part due to the higher current velocities which would help minimize sedimentation at the wharf face. Without the Project, the effects from the North Extension eddy would not allow for the complete dredging savings to be realized by the Port.

The average annual dredge quantity for the previous 10 years is 1,200,000 cubic yards (cy). Roughly 15 percent of the average annual quantity (180,000 cy) would be lost due to the NES1 eddy. Dredging costs are approximately $25 / cy. As a result, in the Without-Project scenario would increase annual maintenance dredging costs by $4.50 million following completion of cargo dock construction.

This condition would persist during the new cargo terminal's planned 75-year life span; but the expense would only be an annual cost until NES1 is performed or the North Extension fails.

F. North Extension Bulkhead Minor Failure

In the case of a minor earthquake, it is expected to cause enough fill material loss to require dredging of the area. There would be a cost of $7.5 million for maintenance repair dredging in the case of a minor failure.

G. North Extension Bulkhead Major Failure

i. Cost of NES1

As previously mentioned, in the scenario where there is a major failure of the North Extension bulkhead prior to the Project being undertaken, the NES1 Project would then have to be completed. However, there will be added costs associated with the acceleration of NES1 work under such emergency conditions. Construction costs are assumed to be 25 percent higher in this case to account for accelerated work under emergency conditions.

ii. Closure of Terminal 3

A more intense earthquake will cause more extensive failure resulting in both fill material and sheet piles to spill into the Terminal 3 navigation lane. In this scenario we estimate that Terminal 3 will be inoperable for a period of three years.

H. Project Costs

For the purposes of the analysis, the costs of the cargo docks were also considered given that many of the benefits associated with the Project are tied to the construction of the cargo docks. Therefore, With-Project and Without-Project costs for NES1 and Cargo Dock redevelopment were considered. It is important to note that the Port is operating with docks and pilings that are very nearly at the end of their useful life. Within five to six years, capacity restrictions will need to be imposed, potentially reducing operating efficiency and the size of freight loads that can safely cross the dock. Therefore, with or without NES1, the cargo docks will need to be replaced as this is critical to economy of Alaska.

Table 4: Summary of Total Project Costs (2020 US$, Million)

	2023	2024	2025	2026-2032	Total
With Project Scenario					
NES1	$38.17	$38.17	$38.17	$0.00	$114.50
Cargo Docks	$0.00	$0.00	$0.00	$1,103.00	$1,103.00
With Project Total	**$38.17**	**$38.17**	**$38.17**	**$1,103.00**	**$1,217.50**
Discounted at 7 percent	**$31.16**	**$29.12**	**$27.21**	**$607.09**	**$694.58**
Without Project Scenario					
NES1	$0.00	$0.00	$0.00	$0.00	$0.00
Cargo Docks	$0.00	$0.00	$0.00	$1,103.00	$1,103.00
Cargo Dock added delay costs	$0.00	$0.00	$0.00	$7.50	$7.50
Without Project Total	**$0.00**	**$0.00**	**$0.00**	**$1,110.50**	**$1,110.50**
Discounted at 7 percent	**$0.00**	**$0.00**	**$0.00**	**$611.59**	**$611.59**

In the With-Project scenario, project costs total $1.22 billion for both NES1 and cargo dock development. Here, NES1 will cost $114.5 million while cargo dock redevelopment will total $1.10 billion. The cost of the NES1 Project is estimated to be $114.5 million in 2020 US$ and has a present value of $87.48 million (seven percent discount rate, 2020 US$). Overall, the Project cost has a total cost of $1.22 billion and present value of $694.58 million (seven percent discount rate, 2020 US$) in the With-Project scenario.

In the Without-Project scenario, project costs total $1.11 billion for just the cargo dock development. Here, the cargo dock redevelopment will cost a total of $1.11 billion, which includes an additional $7.50 million in delay costs given the absence of NES1. Overall, the cost of cargo dock redevelopment totals $1.11 billion with a present value of $611.59 million (seven percent discount rate, 2020 US$) in the With-Project scenario.

As a result, the difference in project costs between the With- and Without-Project scenario has a present value of $82.99 million (seven percent discount rate, 2020 US$)

i. Construction Delays Due to Maintenance Dredging Access – Without-Project Scenario

In the Without Project scenario, the effects from the North Extension eddy will increase sedimentation at the cargo dock during the construction season. As a result, special access is expected to be required for the maintenance dredging equipment that will have a direct cost impact on marine construction activities. Marine construction equipment would be required to reposition or relocate and then return to provide access for the maintenance dredging equipment.

A delay impact on marine construction services of $500,000 is considered per occurrence. Five occurrences per construction season are expected when marine equipment is located between Terminal 2 and 3, for approximately the first two years of construction. One occurrence per construction season is expected when marine equipment is at the far south or north ends of the cargo terminals, for approximately the last five years of construction.

In total, the Without-Project scenario includes an $7.50 million (2020 US$) for construction delay costs of the cargo dock redevelopment project. These costs would be saved in the With-Project scenario.

I. Operating and Maintenance Costs

For the purposes of remaining conservative, the only considered difference in operating and maintenance costs between the With- and Without-Project is increased dredging costs post-construction in the Without-Project scenario. The new Cargo Dock design location is approximately 140 feet offshore of the existing wharf face. This location was selected in part due to the higher current velocities which would help to minimize sedimentation along the wharf face. In the Without-Project scenario, because of impacts from the NES1 eddy, the complete expected savings for dredging costs would not be realized.

The Port's annual dredge quantity for the previous 10 years has been an average 1,200,000 cubic yards (cy). Assuming a savings of 15 percent of the average annual quantity (180,000 cy) would be lost due to the North Extension eddy, and $25 / cy for dredging cost, an annual operating and maintenance cost of $4.50 million (2020 US$) has been considered in the Without-Project scenario.

Therefore, the Project has an operating and maintenance cost saving of $22.52 million (seven percent discount rate, 2020 US$) over the analysis period.

J. Residual Value

The residual value of the NES1 is not considered given the Project focuses on removing a constructed structure.

IV. CALCULATION OF BENEFITS - DETAILS

A. Economic Competitiveness and Opportunity Benefits

There are three main categories of benefits under economic and competitiveness:

1. Avoided increase in highway-truck miles
2. Increased tug costs because of the "pocket effect" during cargo terminal construction
3. Increased maintenance dredging costs during cargo terminal construction

The Project allows construction of cargo docks to go forward with no disruptions because of severe weather conditions. As previously mentioned, severe weather conditions for approximately eight weeks per year will result in shutting down of the Terminal 3 during construction of the cargo docks in the Without-Project scenario. As a result, (50 percent x 15 percent =) 7.5 percent of cargo volumes will be diverted to alternate ports of Whittier, Seward, and Valdez each year. This will lead to increased highway truck miles and increased highway operating, travel time, maintenance, congestion, and noise pollution costs. Meanwhile, during normal weather conditions, a third tugboat will be needed to assist vessels maneuver safely.

The avoided increase in highway-miles in the With-Project scenario will provide $18.98 million (present value discounted at seven percent in 2020 US$) in economic competitiveness and opportunity benefits during the seven-year construction of the cargo docks.

Table 5: Summary of Economic Competitiveness Benefits (2020 US$)

Category		PV of Benefits
Avoided increase in highway-truck miles	Operating Cost	$9,745,633
	Travel Time	$6,582,663
	Pavement Maintenance	$1,636,413
	Congestion	$946,571
	Noise Pollution	$71,537
Increased Tug Costs		$9,990,471
Increase Maintenance Dredging		$19,711,968
	TOTAL	**$18,982,818**

i. Avoided Increase in Highway Operating Costs

USDOT's value for truck operating costs of $0.94 per mile**Error! Bookmark not defined.** (2020 US$) was used in calculating the avoided increase in truck operating costs associated with the avoided increase in highway truck-miles. The Project provides a savings of $9.75 million (present value discounted at seven percent in 2020 US$) in highway truck operating benefits during the seven-year construction of the cargo docks.

ii. Avoided Increase in Highway Travel Time

In addition to truck operating costs, there will be benefits associated with value of time for the truck drivers. USDOT guidance for a value of time for truck drivers is $32.00 per hour**Error! Bookmark not defined.** (2020 US$). Additionally, it is assumed that the average truck speed on highways is 50 miles per hour. **As a result, 375,248 hours will be saved in highway travel time**

during the seven-year construction of the cargo docks in the With-Project Scenario. The Project will provide $6.58 million (present value discounted at seven percent in 2020 US$) in truck travel time benefits during the seven-year construction of the cargo docks.

iii. Avoided Increase in Highway Pavement Maintenance

The avoided increase in highway-miles will lead to savings in highway pavement maintenance costs. Pavement costs for urban and rural interstates were considered in this analysis. Based on Federal Highway Administration[4] values represented in 1994 dollars, pavement costs for trucks in urban areas were 26 per mile, while rural interstates were eight cents per mile. To determine the pavement costs for highways in Louisiana, the share of urban and rural highways was applied to the total sum of pavement costs for all highway types. By taking the weighted average of the urban and rural pavement costs by share of region type and inflating the pavement cost to 2020 dollars, pavement maintenance costs for trucks in Alaska are $0.16 per mile. Multiplying pavement maintenance costs by the avoided increase in highway-miles determines that the Project will provide $1.64 million (present value discounted at seven percent in 2020 US$) in highway maintenance benefits during the seven-year construction of the cargo docks.

iv. Avoided Increase in Highway Congestion

The avoided increase in highway-miles in the With-Project Scenario will lead to highway congestion cost savings. Congestion costs (for trucks) from the USDOT BCA guidance were considered in this analysis for urban and rural regions. The analysis assumes 90 percent of truck travel time will be on rural highways while the remaining 10 percent will be on urban highways to determine the highway congestion cost for trucks in Alaska.

Table 6: Congestion Costs Associated *with Region Types*

Category	Value
Urban Share of Impacted Highway	10%
Rural Share of Impacted Highway	90%
Congestion Cost – Urban Area	$0.3100
Congestion Cost – Rural Area	$0.0670
Congestion Cost	**$0.0913**

Multiplying the highway congestion cost by the avoided increase in highway-miles provides an estimate of $946,571 (present value discounted at seven percent in 2020 US$) in highway congestion benefits during the seven-year construction of the cargo docks.

v. Avoided Increase in Highway Noise Pollution

With the Project, there will be an avoided increase in noise pollution as highway-miles decrease. USDOT BCA guidance values for costs associated with noise pollution in urban and rural regions was used in this analysis. Following a similar approach previously mentioned, the share of urban and rural regions was applied to the noise pollution costs for urban and rural areas to determine the highway noise pollution costs for trucks in Alaska

[4] http://www.dot.state.oh.us/Divisions/Planning/TechServ/TIM/Documents/RI339/RI339.pdf

Table 7: Noise Pollution Costs Associated with Region Types

Category	Value
Urban Share of Impacted Highway	10%
Rural Share of Impacted Highway	90%
Noise Pollution Cost – Urban Area	$0.0393
Noise Pollution Cost – Rural Area	$0.0033
Noise Pollution Cost	**$0.0069**

Multiplying highway noise pollution costs from trucks by the avoided increase in highway-miles, the Project is expected to provide an estimate of $71,537 (present value discounted at seven percent in 2020 US$) in highway noise pollution benefit savings during the seven-year construction of the cargo docks.

vi. Increased Tug Costs

As previously mentioned in Section D.ii, the increased cost of a third tug is $25,000 per vessel call. Based on two vessel calls per week at the Port of Alaska, that is an increased cost of (104 x $25,000 =) $2.60 million per year during cargo dock construction. Overall, the Project is expected to provide an estimate of $9.99 million (present value discounted at seven percent in 2020 US$) in tugboat operating cost savings during the seven-year construction of the cargo docks.

vii. Increased Maintenance Dredging

As previously mentioned in Section D.iii, the increased maintenance dredging costs are $5.13 million annually during cargo dock construction without NES1. Overall, the Project is expected to provide an estimate of $19.71 million (present value discounted at seven percent in 2020 US$) in maintenance dredging cost savings during the seven-year construction of the cargo docks.

B. Safety Benefits

Safety benefits associated with the Project that have been quantified stem from the avoided increase highway truck-miles during the seven-year construction of the cargo docks. Therefore, the Project will result in a lower probability of truck crashes on Alaska highways and interstates.

For highway related crashes, the expected values – in incidents per 100 million vehicle miles traveled (VMT) – for an accident resulting in property damage only (PDO), an injury, or a fatality used in this analysis are represented in Table 8. Crash severity data from the Federal Motor Carrier Safety Administration[5] for reported traffic crashes was used in this analysis. Multiplying the expected number of accidents by the avoided increase in highway-miles will provide the estimated reduction in truck accidents in the With-Project Scenario. The monetized value for each accident severity type was provided by USDOT's BCA guidance.

[5] https://www.fmcsa.dot.gov/safety/data-and-statistics/trends-figure-5-persons-injured-large-truck-and-passenger-vehicle-0

Table 8: Expected Value of Truck Crashes by Type

Accident Severity Type	Expected Value (incidents / 100 million VMT)
Property Damage	138
Injury	53
Fatality	1.67

With the Project, there will be $3.22 million (present value discounted at seven percent in 2020 US$) in highway safety benefits during the seven-year construction of the cargo docks.

Table 9: Summary of Safety Benefits (2020 US$, Present Value)

Category	PDO	Injury	Fatality	Total
Incidents / 100 million VMT	138	53	1.67	
Avoided Incidents	26	10	0	
US$ / Incident	$4,600	$210,300	$11,600,000	
Truck Safety Benefits	**$65,814**	**$1,151,543**	**$2,006,088**	**$3,223,446**

C. Environmental Sustainability Benefits

In the With-Project Scenario, the avoided increase in highway truck-miles will reduce fuel and consumption and therefore, provide a savings in greenhouse gas emissions. Assuming a truck fuel efficiency is 6.50 miles per gallon[6], the Project will reduce truck fuel consumption by 2.91 million gallons during the seven-year construction of the cargo docks.

The emission types analyzed in this analysis to calculate the environmental benefits of the Project were CO_2, NO_X, $PM_{2.5}$, and SO_x. Based on USDOT's BCA guidance recommendations, benefits associated with CO_2 emissions were discounted at three percent, while benefits associated with NO_X, $PM_{2.5}$, and SO_x emissions were discounted at seven percent. Values from the USDOT BCA guidance were used to monetize the reduction in emissions in the With-Project scenario.

Table 10: Summary of Vehicle Emission Factors (2020 US$)

Emission Type	Emission Rate (2026)	Unit	US$ / Metric Ton (2026)
CO_2	10,180	grams / gallon	57
NO_X	0.8640	grams / mile	16,800
$PM_{2.5}$	0.0225	grams / mile	814,500
SO_x	0.0129	grams / mile	45,700

Diesel trucks produce 10,180 grams of CO_2 per gallon[7]. Emission rates from EMFAC were used for NO_X, $PM_{2.5}$, and SO_x. Multiplying the emission rates by the avoided increase in truck miles will determine the reduction in emissions in the With-Project scenario. Table 14 displays the savings in highway environmental benefits from the implementation of the Project during the seven-year construction of the cargo docks.

[6] https://truckingresearch.org/wp-content/uploads/2020/11/ATRI-Operational-Cost-of-Trucking-2020-FINAL.pdf
[7] https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references

Table 11: Summary of Emission Saving Benefits (2020 US$)

Emission Type	Emission Savings (metric tons)	Present Value
CO_2	29,620	$1,377,248
NO_X	16	$149,913
$PM_{2.5}$	0.4	$193,584
SO_x	0.2	$6,030
TOTAL		**$1,726,775**

With the reduction in truck fuel consumption, the Project will provide $1.73 million (present value discounted at seven percent in 2020 US$ with CO_2 discounted at three percent) in environmental sustainability benefits during the seven-year construction of the cargo docks.

D. Resilience Benefits

Resiliency benefits are based on the reduced seismic risks the Project brings to the Port. As previously mentioned, an earthquake in the area causing a minor failure is estimated to cause enough fill material loss to require dredging of the area, and the probability of an event of this intensity is about seven percent annually. Meanwhile, a more intense earthquake could cause a major failure resulting in both fill material and sheet piles to spill into the Terminal 3 navigation lane. The probability of annual occurrence of an event of this intensity is calculated to be nearly two percent. In this scenario we estimate that the Terminal 3 will be inoperable for a period of three years. During this time, approximately 50 percent of all volumes will be diverted to other Alaska ports. Essentially, the NES1 Project would have to be undertaken after a major failure.

Based on USDOT guidance, "the resulting costs to users from lost access to the damaged facility or the emergency maintenance or repairs to restore the facility" fall under resilience benefits. By improving infrastructure to withstand these hazards, the resulting costs of such events can be avoided, providing significant benefits. Table 12 displays a summary of the resilience benefits of the Project.

Table 12: Summary of Resilience Benefits (2020 U$)

Event	Economic Benefit	Present Value
Minor North Extension Failure	Increased Maintenance Dredging	$4,644,924
Major North Extension Failure	Cost of NES1 + Acceleration	$25,325,897
	Cargo Diversion - Reduced Trucking Costs	$17,962,724
	Cargo Diversion - Reduced Truck Safety Costs	$3,050,225
	Cargo Diversion - Reduced Truck Emission Costs	$1,375,045
Total		**$52,358,815**

i. Minor Failure

In the case of a minor failure, the Port will be faced with approximately $7.50 million in maintenance dredging costs. With an annual probability of a minor failure of seven percent, the annual cost of dredging is $525,000 (2020 US$). Over the 30-year analysis period, the Project provides $4.64 million (present value at seven percent discount rate, 2020 US$) in benefits

associated with avoided maintenance dredging costs in the case of a minor failure of the north extension bulkhead.

ii. Major Failure

As previously mentioned, in the case of a major failure of the north extension bulkheads, the NES1 project will need to be undertaken and Terminal 3 will be shut down for three years.

For the undertaking the NES1 project in the scenario of a major failure, construction costs will be increased by approximately 25 percent under the emergency conditions. Therefore, the NES1 project will have a total cost of ($114.5 + 25 percent =) $143.13 million. With an annual probability of major failure of two percent, the annual cost is $1.91 million. Over the 30-year analysis period, the Project provides $25.33 million (present value at seven percent discount rate, 2020 US$) in benefits associated with avoided costs of undertaking the NES1 project under emergency conditions in the case of a major failure of the north extension bulkhead.

If the Terminal 3 is shut down for three years, approximately 50 percent of all container volumes will need to be diverted to other Ports in the region. The assumptions made in this calculation regarding cargo diversion are the same as those made in Sections IV.A, B, and C. Therefore, the increased truck miles for three years following a major failure will increase highway operating, travel time, maintenance, congestion and noise pollution costs, safety risks, and emissions. Table 10 summarizes these Project benefits based on a 2 percent annual probably of major failure. Over the 30-year analysis period, the Project provides $22.39 million (present value at seven percent discount rate, 2020 US$) in benefits associated with avoided cargo diversion highway costs in the case of a major failure of the north extension bulkhead.

Table 13: Summary of Major Failure Cargo Diversion Benefits (2020 US$)

	Benefit	Present Value	Total Present Value
Economic Competitiveness	Operating Costs	$9,221,925	$17,962,724
	Travel Time	$6,228,926	
	Pavement Maintenance	$1,548,476	
	Congestion	$895,704	
	Noise Pollution	$67,693	
Safety	Property Damage Only	$62,277	$3,050,225
	Injuries	$1,089,662	
	Fatalities	$1,898,286	
Emissions	CO_2	$1,047,852	$1,375,045
	NO_x	$139,808	
	$PM_{2.5}$	$181,946	
	SO_x	$5,439	
Total			**$22,387,994**

Over the 30-year analysis period, the Project provides $4.64 million (present value at seven percent discount rate, 2020 US$) in benefits associated with avoided maintenance dredging costs in the case of a minor failure of the north extension bulkhead.

Category	Present Value (US$ Million)
Resilience	$52.36
Economic Competitiveness	$48.69
Safety	$3.22
Environmental Sustainability	$1.73
Maintenance and operating costs	$22.52
Residual Value	$0.00
Total Benefits	**$128.52**
Project Costs	$82.99
Net Present Value	$45.53
Benefit to Cost Ratio	**1.55**

Type of Impacts	Population Affected by Impacts	Economic Benefits	Summary of Results
Reduction in total truck highway miles traveled minus	Truck drivers, beneficial cargo owners and final consumers	Mobility Outcome	$18.98
	Beneficial cargo owners and final consumers	Economic Vitality	$48.69
	Highway users and population living along the truck corridors to alternate intermodal facilities	Safety Outcome	$3.22
	Highway users and population living along the truck corridors to alternate intermodal facilities	Environmental Sustainability Outcome	$1.73

	Property Damage Only (PDO)	Injuries	Fatalties	Total
Incidents / 100 million miles	138	53	1.67	192
Incidents avoided	26	10	0	36
$ / incident	$4,600	$210,300	$11,600,000	
Reduced highway crash benefits (PV)	**$65,814**	**$1,151,543**	**$2,006,088**	**$3,223,446**

	Emission Savings in Tons	PV of Benefits
CO2	29,620	$1,377,248
NOx	16	$149,913
PM2.5	0.4	$193,584
SOx	0.2	$6,030
Total		**$1,726,775**

	2023	2024	2025	2026-2032	Total
NES	$38.17	$38.17	$38.17	$0.00	$114.50
Cargo Docks	$0.00	$0.00	$0.00	$1,103.00	$1,103.00
With Project Total	**$38.17**	**$38.17**	**$38.17**	**$1,103.00**	**$1,217.50**
Discounted at 7 percent	**$31.16**	**$29.12**	**$27.21**	**$607.09**	**$694.58**
NES	$0.00	$0.00	$0.00	$0.00	$0.00
Cargo Docks	$0.00	$0.00	$0.00	$1,103.00	$1,103.00
Cargo Dock added delay costs	$0.00	$0.00	$0.00	$7.50	$7.50
With Project Total	**$0.00**	**$0.00**	**$0.00**	**$1,110.50**	**$1,110.50**
Discounted at 7 percent	**$0.00**	**$0.00**	**$0.00**	**$611.59**	**$611.59**

Without Project Event	Criteria	Economic Benefits	Present Value	Total
Minor North Extenstion Failure	Economic Competitiveness and Opportunity	Increased Maintenance Dredging	$4,644,924	$4,644,924
Major North Extension Failure	Economic Competitiveness and Opportunity	Cost of NES + Acceleration	$25,325,897	$47,713,890
	Economic Competitiveness and Opportunity	Cargo Diversion - Reduced Trucking Costs	$17,962,724	
	Safety	Cargo Diversion - Reduced Truck Safety Costs	$3,050,225	
	Environmental Sustainability	Cargo Diversion - Reduced Truck Emision Costs	$1,375,045	
During Cargo Dock Construction	Economic Competitiveness and Opportunity	Cargo Diversion - Reduced Trucking Costs	$18,982,818	$53,635,477
	Safety	Cargo Diversion - Reduced Truck Safety Costs	$3,223,446	
	Environmental Sustainability	Cargo Diversion - Reduced Truck Emision Costs	$1,726,775	
	Economic Competitiveness and Opportunity	Increased Tug Costs	$9,990,471	
	Economic Competitiveness and Opportunity	Increased Maintenance Dredging	$19,711,968	

Without Project Event	Economic Benefits	Present Value	Total
Minor North Extenstion Failure	Increased Maintenance Dredging	$4.64	$4.64
Major North Extension Failure	Cost of NES + Acceleration	$25.33	$47.71
	Cargo Diversion - Reduced Trucking Costs	$17.96	
	Cargo Diversion - Reduced Truck Safety Costs	$3.05	
	Cargo Diversion - Reduced Truck Emision Costs	$1.38	
During Cargo Dock Construction	Cargo Diversion - Reduced Trucking Costs	$18.98	$53.64
	Cargo Diversion - Reduced Truck Safety Costs	$3.22	
	Cargo Diversion - Reduced Truck Emission Costs	$1.73	
	Increased Tug Costs	$9.99	
	Increased Maintenance Dredging	$19.71	
Total			**$105.99**

Emission Source	Added Truck Miles	Emission Type	Total Emmissions	Notes
Cargo Diversion during Major Extension	12,327,149	CO2	19,306	Assumes an annual chance of major failure of 2%
		NOx	9.86	
		PM2.5	0.27	
		SOx	0.14	
Cargo Diversion during Cargo Dock Construction	18,912,476	CO2	29,620	
		NOx	15.53	
		PM2.5	0.42	
		SOx	0.23	

	Benefit	Present Value	Total Present Value
Economic Competitiveness	Operating Costs	$9,221,925	$17,962,724
	Travel Time	$6,228,926	
	Pavement Maintenance	$1,548,476	
	Congestion	$895,704	
	Noise Pollution	$67,693	
Safety	Property Damage Only	$62,277	$3,050,225
	Injuries	$1,089,662	
	Fatalities	$1,898,286	
Emissions	CO2	$1,047,852	$1,375,045
	NOx	$139,808	
	PM2.5	$181,946	
	SOx	$5,439	
Total			**$22,387,994**

Category	PV of Benefits
Operating Cost	$9,745,633
Travel Time	$6,582,663
Pavement Maintenance	$1,636,413
Congestion	$946,571
Noise Pollution	$71,537
TOTAL	$18,982,818

Without Project Event	Economic Benefit	PV of Benefits
Minor North Extenstion Failure	Increased Maintenance Dredging	$4,644,924
Major North Extension Failure	Cost of NES + Acceleration	$25,325,897
	Cargo Diversion - Reduced Trucking Costs	$17,962,724
	Cargo Diversion - Reduced Truck Safety Costs	$3,050,225
	Cargo Diversion - Reduced Truck Emission Costs	$1,375,045
Total		**$52,358,815**

Inputs - Constants

	Base Case		
	-	*Error Checks*	
	-	*Alerts*	
	Constant	**Unit**	**Notes**
SCENARIOS			
Active scenario name	Base Case		
Scenario selector	**2**		
TIMING ASSUMPTIONS			
1st model column start date	01 Jan 15	date	
Forecast start date	2023	year	
Length of BCA period (operating)	23	years	
Months per model period	12	months	
Financial year end month number	12	month #	
Project operation start year	2033	year	
Base year	2020	year	
Discount rate (excluding CO2 emissions)	7.00%	percent	
Discount rate (for CO2 emissions)	3.00%	percent	
PROJECT ASSUMUPTIONS			
Project design life	75	years	
Weeks per year added tug needed during construction of cargo docks	52	weeks / year	
Cargo vessel calls per week	2	days / week	
OPERATING ASSUMPTIONS			
No-Build			
During Construction of Cargo Docks			
Increased tug costs per call during normal conditions - During cargo dock construction - No-build	$ 25,000	US$ / call	
Increased annual dredging maintenance costs incurred by USACE - During cargo dock construction - No-build	$ 5,130,000	US$	
Post Cargo Dock Construction			
Increased annual maintenance dredging costs incurred by USACE - Post cargo dock construction - No-build	$ 4,500,000	US$	
NES Bulkhead Minor Failure			
Annual probability of a NES minor failure	7.00%	percent	
Cost of maitenance dredging, design, permitting - Minor NES bulkhead failure - No-build	$ 7,500,000	US$	
NES Bulkhead Major Failure			
Annual probability of a NES major failure	2.00%	percent	
Number of years for full closure of RoRo terminal - Major NES bulkhead failure - No-build	3	years	
Percent increase for acceleration of NES1 work under emergency conditions - Major NES bulkhead failure - No-build	25.00%	percent	
ECONOMIC COMPETITIVENESS			
Volumes			
Diverted volumes as a share of total during construction of docks	7.50%	percent	
Diverted volumes as a share of total during major failure	50.00%	percent	
Highway			
Distance from Whittier to Anchorage	60	miles	
Distance from Seward to Anchorage	126	miles	
Distance from Valdez to Anchorage	297	miles	
Increase in truck miles during construction - No-build	161	miles	
Increase in truck miles during major failure - No-build	161	miles	
Operating			
Vehicle operating cost - Truck - 2020 US$	0.9400	US$ / mile	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
Truck average speed	50	miles / hour	
Truck fuel efficiency - 2019 US$	7	mpg	https://truckingresearch.org/wp-content/uploads/2020/11/ATRI-Operational-Cost-of-Trucking-2020-FINAL.pdf
Travel time			
Average vehicle occupancy (AVO) - Trucks	1.0000	persons	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
Vehicle travel time savings - Truck operator - 2020 US$	32.0000	US$ / hr	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
Maintenance			
Pavement repair cost - Truck - 2020 US$	0.1578	US$ / mile	https://www.fhwa.dot.gov/policy/hcas/addendum.cfm
Congestion			
Congestion cost - Truck (urban) - 2020 US$	0.3100	US$ / mile	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
Congestion cost - Truck (rural) - 2020 US$	0.0670	US$ / mile	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
Noise			
Noise pollution cost - Truck (urban) - 2020 US$	0.0393	US$ / mile	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
Noise pollution cost - Truck (rural) - 2020 US$	0.0033	US$ / mile	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
SAFETY BENEFITS			
Highway			
Highway Split			
Urban share of impacted highway	10.00%	share	
Rural share of impacted highway	90.00%	share	
Property Damage Only (PDO)			
PDO rate per VMT - Truck	138	incident / 100 million VMT	https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812806
Property damage only (PDO) crash monetized value - 2020 US$	4,600	US$ / crash	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
Injuries			
Injury rate per VMT - Truck	53	person / 100 million VMT	https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812806
Unknown severity injury monetized value - 2020 US$	210,300	US$ / injury	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
Fatality			
Fatality per VMT - Truck	1.6681	person / 100 million VMT	https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812806
Fatal crash monitized value - 2020 US$	12,837,400	US$ / crash	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
Fatality monitized value - 2020 US$	11,600,000	US$ / fatality	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)
ENVIRONMENTAL SUSTAINABILITY			
CO2 emissions per gallon of diesel	10,180	g / gal	https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references
NON CHANGEABLE MODEL TECHNICAL INPUTS			
Grams per metric ton	1,000,000	gram / metric ton	
Units in thousand	1,000	units / 000s	
Weeks per year	52	weeks per year	

Mgmt.	Base Case	Upside	Downside	Scenario 5
1	**2**	**3**	**4**	**5**

Input - Time Series

				Base Case															
Model Period Ending				-	*Error Checks*	**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**	**31 Dec 21**	**31 Dec 22**	**31 Dec 23**	**31 Dec 24**	**31 Dec 25**	**31 Dec 26**	**31 Dec 27**	**31 Dec 28**
Pre-forecast vs Forecast				-	*Alerts*	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending						2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Model Column counter		**Constant**	**Unit**		**Total**	1	2	3	4	5	6	7	8	9	10	11	12	13	14
MACRO																			
CPI rate multiplier			multiplier			0.9212	0.9304	0.9481	0.9707	0.9881	1.0000	1.0416	1.0624	1.0836	1.1053	1.1274	1.1500	1.1730	1.1964
PROJECT COSTS																			
Build																			
Project approval/environmental document - Build - Constant dollars			US$		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - Constant dollars			US$		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - Constant dollars			US$		114,500,000	-	-	-	-	-	-	-	-	38,166,667	38,166,667	38,166,667	-	-	-
Additional construction delay time due to maintenance dredging access - Build - Constant dollars			US$		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - Build - Constant dollars			US$		1,103,000,000	-	-	-	-	-	-	-	-	-	-	-	160,750,000	160,750,000	160,750,000
Operations and maintenance costs - Build - Constant dollars			US$		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build																			
Project approval/environmental document - No-build - Constant dollars			US$		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - Constant dollars			US$		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - No-build - Constant dollars			US$		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - Constant dollars			US$		7,500,000	-	-	-	-	-	-	-	-	-	-	-	2,500,000	2,500,000	500,000
Cargo docks construction - No-build - Constant dollars			US$		1,103,000,000	-	-	-	-	-	-	-	-	-	-	-	160,750,000	160,750,000	160,750,000
Operations and maintenance costs - No-build - Constant dollars			US$		337,500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VOLUMES																			
Container volume demand - Forecast			boxes		1,344,962	222,480	215,900	207,006	207,839	279,326	212,410	-	-	-	-	-	-	-	-
Alaska population growth rate			percent	Port of Alaska & Alaska Department of Labor		-	-	-	-	-	0.43%	0.64%	0.63%	0.63%	0.63%	0.62%	0.53%	0.53%	0.52%
ENVIRONEMNTAL BENEFITS																			
Emissions																			
Costs																			
Damage costs for emissions - CO2 - 2020 US$			US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)		-	-	-	-	-	-	52	53	54	55	56	57	58	60
Damage costs for emissions - NOx - 2020 US$			US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)		-	-	-	-	-	-	15,600	15,800	16,000	16,200	16,500	16,800	17,100	17,400
Damage costs for emissions - PM2.5 - 2020 US$			US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)		-	-	-	-	-	-	748,600	761,600	774,700	788,100	801,700	814,500	827,400	840,600
Damage costs for emissions - SOx - 2020 US$			US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov)		-	-	-	-	-	-	41,500	42,300	43,100	44,000	44,900	45,700	46,500	47,300
Highway																			
NOx emission rate - Truck			gram / mile	EMFAC 2021		-	-	-	-	3.06	2.1509	1.6344	1.3440	0.9858	0.9332	0.8935	0.8640	0.8427	0.8270
PM2.5 emission rate - Truck			gram / mile	EMFAC 2021		-	-	-	-	0.06	0.0412	0.0310	0.0252	0.0239	0.0234	0.0228	0.0225	0.0223	0.0221
SOx emission rate - Truck			gram / mile	EMFAC 2021		-	-	-	-	0.01	0.0139	0.0138	0.0137	0.0136	0.0134	0.0132	0.0129	0.0127	0.0124

Input - Time Series

Model Period Ending	31 Dec 29	31 Dec 30	31 Dec 31	31 Dec 32	31 Dec 33	31 Dec 34	31 Dec 35	31 Dec 36	31 Dec 37	31 Dec 38	31 Dec 39	31 Dec 40	31 Dec 41	31 Dec 42	31 Dec 43	31 Dec 44	31 Dec 45	31 Dec 46	31 Dec 47	31 Dec 48
Pre-forecast vs Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
Model Column counter	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
MACRO																				
CPI rate multiplier	1.2204	1.2448	1.2697	1.2950	1.3209	1.3474	1.3743	1.4018	1.4298	1.4584	1.4876	1.5174	1.5477	1.5787	1.6102	1.6424	1.6753	1.7088	1.7430	1.7778
PROJECT COSTS																				
Build																				
Project approval/environmental document - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - Build - Constant dollars	160,750,000	153,333,333	153,333,333	153,333,333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build																				
Project approval/environmental document - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - Constant dollars	500,000	500,000	500,000	500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - No-build - Constant dollars	160,750,000	153,333,333	153,333,333	153,333,333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - Constant dollars	-	-	-	-	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000
VOLUMES																				
Container volume demand - Forecast	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	0.52%	0.52%	0.44%	0.42%	0.41%	0.40%	0.38%	0.37%	0.36%	0.35%	0.34%	0.33%	0.32%	0.31%	0.30%	0.30%	0.29%	0.29%	0.29%	0.29%
ENVIRONEMNTAL BENEFITS																				
Emissions																				
Costs																				
Damage costs for emissions - CO2 - 2020 US$	61	62	63	64	65	66	67	68	69	70	71	72	73	75	77	78	79	80	81	82
Damage costs for emissions - NOx - 2020 US$	17,700	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100
Damage costs for emissions - PM2.5 - 2020 US$	854,000	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600
Damage costs for emissions - SOx - 2020 US$	48,200	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100
Highway																				
NOx emission rate - Truck	0.8155	0.8067	0.8000	0.7947	0.7907	0.7875	0.7851	0.7830	0.7813	0.7796	0.7782	0.7769	0.7757	0.7747	0.7740	0.7735	0.7733	0.7732	0.7733	0.7735
PM2.5 emission rate - Truck	0.0220	0.0219	0.0218	0.0217	0.0216	0.0215	0.0215	0.0214	0.0214	0.0213	0.0213	0.0212	0.0212	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211
SOx emission rate - Truck	0.0121	0.0119	0.0116	0.0114	0.0113	0.0111	0.0110	0.0110	0.0109	0.0109	0.0108	0.0108	0.0108	0.0108	0.0108	0.0108	0.0108	0.0108	0.0107	0.0107

Input - Time Series

Model Period Ending	31 Dec 49	31 Dec 50	31 Dec 51	31 Dec 52	31 Dec 53	31 Dec 54	31 Dec 55	31 Dec 56	31 Dec 57	31 Dec 58	31 Dec 59	31 Dec 60	31 Dec 61	31 Dec 62	31 Dec 63	31 Dec 64	31 Dec 65	31 Dec 66	31 Dec 67	31 Dec 68
Pre-forecast vs Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068
Model Column counter	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
MACRO																				
CPI rate multiplier	1.8134	1.8496	1.8866	1.9244	1.9629	2.0021	2.0422	2.0830	2.1247	2.1672	2.2105	2.2547	2.2998	2.3458	2.3927	2.4406	2.4894	2.5392	2.5900	2.6417
PROJECT COSTS																				
Build																				
Project approval/environmental document - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build																				
Project approval/environmental document - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - Constant dollars	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000
VOLUMES																				
Container volume demand - Forecast	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
ENVIRONEMNTAL BENEFITS																				
Emissions																				
Costs																				
Damage costs for emissions - CO2 - 2020 US$	83	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Damage costs for emissions - NOx - 2020 US$	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100
Damage costs for emissions - PM2.5 - 2020 US$	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600
Damage costs for emissions - SOx - 2020 US$	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100
Highway																				
NOx emission rate - Truck	0.7737	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739
PM2.5 emission rate - Truck	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211
SOx emission rate - Truck	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107

Input - Time Series

Model Period Ending	31 Dec 69	31 Dec 70	31 Dec 71	31 Dec 72	31 Dec 73	31 Dec 74	31 Dec 75	31 Dec 76	31 Dec 77	31 Dec 78	31 Dec 79	31 Dec 80	31 Dec 81	31 Dec 82	31 Dec 83	31 Dec 84	31 Dec 85	31 Dec 86	31 Dec 87	31 Dec 88
Pre-forecast vs Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088
Model Column counter	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
MACRO																				
CPI rate multiplier	2.6946	2.7485	2.8034	2.8595	2.9167	2.9750	3.0345	3.0952	3.1571	3.2203	3.2847	3.3504	3.4174	3.4857	3.5554	3.6266	3.6991	3.7731	3.8485	3.9255
PROJECT COSTS																				
Build																				
Project approval/environmental document - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build																				
Project approval/environmental document - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - Constant dollars	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000
VOLUMES																				
Container volume demand - Forecast	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
ENVIRONEMNTAL BENEFITS																				
Emissions																				
Costs																				
Damage costs for emissions - CO2 - 2020 US$	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Damage costs for emissions - NOx - 2020 US$	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100
Damage costs for emissions - PM2.5 - 2020 US$	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600
Damage costs for emissions - SOx - 2020 US$	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100
Highway																				
NOx emission rate - Truck	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739
PM2.5 emission rate - Truck	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211
SOx emission rate - Truck	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107

Input - Time Series

Model Period Ending	31 Dec 89	31 Dec 90	31 Dec 91	31 Dec 92	31 Dec 93	31 Dec 94	31 Dec 95	31 Dec 96	31 Dec 97	31 Dec 98	31 Dec 99	31 Dec 00	31 Dec 01	31 Dec 02	31 Dec 03	31 Dec 04	31 Dec 05	31 Dec 06	31 Dec 07	31 Dec 08
Pre-forecast vs Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108
Model Column counter	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
MACRO																				
CPI rate multiplier	4.0040	4.0841	4.1658	4.2491	4.3341	4.4208	4.5092	4.5993	4.6913	4.7852	4.8809	4.9785	5.0781	5.1796	5.2832	5.3889	5.4966	5.6066	5.7187	5.8331
PROJECT COSTS																				
Build																				
Project approval/environmental document - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build																				
Project approval/environmental document - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - Constant dollars	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	-
VOLUMES																				
Container volume demand - Forecast	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
ENVIRONEMNTAL BENEFITS																				
Emissions																				
Costs																				
Damage costs for emissions - CO2 - 2020 US$	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Damage costs for emissions - NOx - 2020 US$	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100
Damage costs for emissions - PM2.5 - 2020 US$	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600
Damage costs for emissions - SOx - 2020 US$	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100
Highway																				
NOx emission rate - Truck	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739
PM2.5 emission rate - Truck	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211
SOx emission rate - Truck	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107

Input - Time Series

Model Period Ending	31 Dec 09	31 Dec 10	31 Dec 11	31 Dec 12	31 Dec 13	31 Dec 14	31 Dec 15	31 Dec 16	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20
Pre-forecast vs Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120
Model Column counter	95	96	97	98	99	100	101	102	103	104	105	106
MACRO												
CPI rate multiplier	5.9497	6.0687	6.1901	6.3139	6.4402	6.5690	6.7004	6.8344	6.9711	7.1105	7.2527	7.3978
PROJECT COSTS												
Build												
Project approval/environmental document - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - Build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
No-Build												
Project approval/environmental document - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - Constant dollars	-	-	-	-	-	-	-	-	-	-	-	-
VOLUMES												
Container volume demand - Forecast	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
ENVIRONEMNTAL BENEFITS												
Emissions												
Costs												
Damage costs for emissions - CO2 - 2020 US$	85	85	85	85	85	85	85	85	85	85	85	85
Damage costs for emissions - NOx - 2020 US$	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100
Damage costs for emissions - PM2.5 - 2020 US$	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600	867,600
Damage costs for emissions - SOx - 2020 US$	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100
Highway												
NOx emission rate - Truck	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739
PM2.5 emission rate - Truck	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211
SOx emission rate - Truck	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107

Time and Escalation

				Base Case																				
Model Period Ending				-	*Error Checks*		**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**	**31 Dec 21**	**31 Dec 22**	**31 Dec 23**	**31 Dec 24**	**31 Dec 25**	**31 Dec 26**	**31 Dec 27**	**31 Dec 28**	**31 Dec 29**	**31 Dec 30**	**31 Dec 31**	**31 Dec 32**	**31 Dec 33**	**31 Dec 34**
Pre-forecast vs Forecast				-	*Alerts*		Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending							2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Model Column counter	**Constant**	**Unit**	**Total**				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TIME RULER																										
Model column counter		counter					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
First model column flag		flag					1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1st model column start date	01 Jan 15	date																								
Months per model period	12	months																								
First model column flag	-	flag		-	-		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Model period beginning		date					01 Jan 15	01 Jan 16	01 Jan 17	01 Jan 18	01 Jan 19	01 Jan 20	01 Jan 21	01 Jan 22	01 Jan 23	01 Jan 24	01 Jan 25	01 Jan 26	01 Jan 27	01 Jan 28	01 Jan 29	01 Jan 30	01 Jan 31	01 Jan 32	01 Jan 33	01 Jan 34
Months per model period	12	months																								
Model period beginning	-	date		-	-		01 Jan 15	01 Jan 16	01 Jan 17	01 Jan 18	01 Jan 19	01 Jan 20	01 Jan 21	01 Jan 22	01 Jan 23	01 Jan 24	01 Jan 25	01 Jan 26	01 Jan 27	01 Jan 28	01 Jan 29	01 Jan 30	01 Jan 31	01 Jan 32	01 Jan 33	01 Jan 34
Model period ending		date					31 Dec 15	31 Dec 16	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20	31 Dec 21	31 Dec 22	31 Dec 23	31 Dec 24	31 Dec 25	31 Dec 26	31 Dec 27	31 Dec 28	31 Dec 29	31 Dec 30	31 Dec 31	31 Dec 32	31 Dec 33	31 Dec 34
1st model column start date	01 Jan 15	date																								
First modeling column financial year	2015	year																								
First modeling column financial year	2015	year																								
Financial year end month number	12	month #																								
Model period ending	-	date		-	-		31 Dec 15	31 Dec 16	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20	31 Dec 21	31 Dec 22	31 Dec 23	31 Dec 24	31 Dec 25	31 Dec 26	31 Dec 27	31 Dec 28	31 Dec 29	31 Dec 30	31 Dec 31	31 Dec 32	31 Dec 33	31 Dec 34
First model column flag	-	flag		-	-		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial year ending		year					2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
FLAGS AND ESCALATIONS																										
Timing Flags																										
Forecast start date	2023	year																								
Project operation start year	2033	year																								
Length of BCA period (operating)	23	years																								
Length of forecast period	32	year #																								
Forecast start date	2023	year																								
Length of forecast period	32	year #																								
Last forecast date	2055	date																								
Last forecast date	2055	date																								
Forecast start date	2023	year																								
Financial year ending	-	year		-	-		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Forecast period flag		flag		33			-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1
Forecast start date	2023	year																								
Financial year ending	-	year		-	-		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Pre-forecast flag		flag		8			1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag		33	-		-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1
Pre-forecast flag	-	flag		8	-		1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Forecast plus pre-forecast period flag		flag		41			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Forecast period flag	-	flag		33	-		-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1
Pre-forecast flag	-	flag		8	-		1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast vs forecast		timeline label					Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Forecast start date	2023	year																								
Financial year ending	-	year		-	-		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
First forecast period flag		flag		1			-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Last forecast date	2055	date																								
Financial year ending	-	year		-	-		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Last forecast period flag		flag		1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project operation start year	2033	year																								
Financial year ending	-	year		-	-		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Forecast period flag	-	flag		33	-		-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1
Operating period flag		flag		23			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Project operation start year	2033	year																								
Project design life	75	years																								
Operating period flag	-	flag		23	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Financial year ending	-	year		-	-		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Post analysis period remaining service life flag		flag		52			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction Flags																										
Cargo docks construction - No-build - Constant dollars	-	US$		1,103,000,000	-		-	-	-	-	-	-	-	-	-	-	-	160,750,000	160,750,000	160,750,000	160,750,000	153,333,333	153,333,333	153,333,333	-	-
Construction of cargo docks flag - No-build		flag		7			-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-
Operating period flag	-	flag		23	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Construction of cargo docks flag - No-build	-	flag		7	-		-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-
Construction of cargo docks and operating period flag - No-build		flag		30			-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1
Escalations																										
Base year	2020	year																								
Discount rate (excluding CO2 emissions)	7.00%	percent																								
Financial year ending	-	year		-	-		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Discount rate multiplier - 7 percent		factor					0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672	2.1049	2.2522	2.4098	2.5785
Base year	2020	year																								
Discount rate (for CO2 emissions)	3.00%	percent																								
Financial year ending	-	year		-	-		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Discount rate multiplier - 3 percent		factor					0.8626	0.8885	0.9151	0.9426	0.9709	1.0000	1.0300	1.0609	1.0927	1.1255	1.1593	1.1941	1.2299	1.2668	1.3048	1.3439	1.3842	1.4258	1.4685	1.5126

Time and Escalation

	Base Case																					
Model Period Ending	-	*Error Checks*			**31 Dec 35**	**31 Dec 36**	**31 Dec 37**	**31 Dec 38**	**31 Dec 39**	**31 Dec 40**	**31 Dec 41**	**31 Dec 42**	**31 Dec 43**	**31 Dec 44**	**31 Dec 45**	**31 Dec 46**	**31 Dec 47**	**31 Dec 48**	**31 Dec 49**	**31 Dec 50**	**31 Dec 51**	**31 Dec 52**	**31 Dec 53**	**31 Dec 54**
Pre-forecast vs Forecast	-	*Alerts*			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending					2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Model Column counter	**Constant**	**Unit**	**Total**		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
TIME RULER																								
Model column counter		counter			21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
First model column flag		flag			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1st model column start date	01 Jan 15	date																						
Months per model period	12	months																						
First model column flag	-	flag	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Model period beginning		date			01 Jan 35	01 Jan 36	01 Jan 37	01 Jan 38	01 Jan 39	01 Jan 40	01 Jan 41	01 Jan 42	01 Jan 43	01 Jan 44	01 Jan 45	01 Jan 46	01 Jan 47	01 Jan 48	01 Jan 49	01 Jan 50	01 Jan 51	01 Jan 52	01 Jan 53	01 Jan 54
Months per model period	12	months																						
Model period beginning	-	date	-	-	01 Jan 35	01 Jan 36	01 Jan 37	01 Jan 38	01 Jan 39	01 Jan 40	01 Jan 41	01 Jan 42	01 Jan 43	01 Jan 44	01 Jan 45	01 Jan 46	01 Jan 47	01 Jan 48	01 Jan 49	01 Jan 50	01 Jan 51	01 Jan 52	01 Jan 53	01 Jan 54
Model period ending		date			31 Dec 35	31 Dec 36	31 Dec 37	31 Dec 38	31 Dec 39	31 Dec 40	31 Dec 41	31 Dec 42	31 Dec 43	31 Dec 44	31 Dec 45	31 Dec 46	31 Dec 47	31 Dec 48	31 Dec 49	31 Dec 50	31 Dec 51	31 Dec 52	31 Dec 53	31 Dec 54
1st model column start date	01 Jan 15	date																						
First modeling column financial year	2015	year																						
First modeling column financial year	2015	year																						
Financial year end month number	12	month #																						
Model period ending	-	date	-	-	31 Dec 35	31 Dec 36	31 Dec 37	31 Dec 38	31 Dec 39	31 Dec 40	31 Dec 41	31 Dec 42	31 Dec 43	31 Dec 44	31 Dec 45	31 Dec 46	31 Dec 47	31 Dec 48	31 Dec 49	31 Dec 50	31 Dec 51	31 Dec 52	31 Dec 53	31 Dec 54
First model column flag	-	flag	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial year ending		year			2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
FLAGS AND ESCALATIONS																								
Timing Flags																								
Forecast start date	2023	year																						
Project operation start year	2033	year																						
Length of BCA period (operating)	23	years																						
Length of forecast period	32	year #																						
Forecast start date	2023	year																						
Length of forecast period	32	year #																						
Last forecast date	2055	date																						
Last forecast date	2055	date																						
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Forecast period flag		flag	33		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Pre-forecast flag		flag	8		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pre-forecast flag	-	flag	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast plus pre-forecast period flag		flag	41		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Forecast period flag	-	flag	33	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pre-forecast flag	-	flag	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast vs forecast		timeline label			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
First forecast period flag		flag	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Last forecast date	2055	date																						
Financial year ending	-	year	-	-	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Last forecast period flag		flag	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project operation start year	2033	year																						
Financial year ending	-	year	-	-	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Forecast period flag	-	flag	33	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Operating period flag		flag	23		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Project operation start year	2033	year																						
Project design life	75	years																						
Operating period flag	-	flag	23	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Financial year ending	-	year	-	-	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Post analysis period remaining service life flag		flag	52		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction Flags																								
Cargo docks construction - No-build - Constant dollars	-	US$	1,103,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag	-	flag	23	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build		flag	30		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Escalations																								
Base year	2020	year																						
Discount rate (excluding CO2 emissions)	7.00%	percent																						
Financial year ending	-	year	-	-	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Discount rate multiplier - 7 percent		factor			2.7590	2.9522	3.1588	3.3799	3.6165	3.8697	4.1406	4.4304	4.7405	5.0724	5.4274	5.8074	6.2139	6.6488	7.1143	7.6123	8.1451	8.7153	9.3253	9.9781
Base year	2020	year																						
Discount rate (for CO2 emissions)	3.00%	percent																						
Financial year ending	-	year	-	-	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Discount rate multiplier - 3 percent		factor			1.5580	1.6047	1.6528	1.7024	1.7535	1.8061	1.8603	1.9161	1.9736	2.0328	2.0938	2.1566	2.2213	2.2879	2.3566	2.4273	2.5001	2.5751	2.6523	2.7319

Time and Escalation

	Base Case																						
Model Period Ending	-	*Error Checks*			**31 Dec 55**	**31 Dec 56**	**31 Dec 57**	**31 Dec 58**	**31 Dec 59**	**31 Dec 60**	**31 Dec 61**	**31 Dec 62**	**31 Dec 63**	**31 Dec 64**	**31 Dec 65**	**31 Dec 66**	**31 Dec 67**	**31 Dec 68**	**31 Dec 69**	**31 Dec 70**	**31 Dec 71**	**31 Dec 72**	**31 Dec 73**	**31 Dec 74**
Pre-forecast vs Forecast	-	*Alerts*			Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
Model Column counter	**Constant**	**Unit**	**Total**		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
TIME RULER																								
Model column counter		counter			41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
First model column flag		flag			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1st model column start date	01 Jan 15	date																						
Months per model period	12	months																						
First model column flag	-	flag	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Model period beginning		date			01 Jan 55	01 Jan 56	01 Jan 57	01 Jan 58	01 Jan 59	01 Jan 60	01 Jan 61	01 Jan 62	01 Jan 63	01 Jan 64	01 Jan 65	01 Jan 66	01 Jan 67	01 Jan 68	01 Jan 69	01 Jan 70	01 Jan 71	01 Jan 72	01 Jan 73	01 Jan 74
Months per model period	12	months																						
Model period beginning	-	date	-	-	01 Jan 55	01 Jan 56	01 Jan 57	01 Jan 58	01 Jan 59	01 Jan 60	01 Jan 61	01 Jan 62	01 Jan 63	01 Jan 64	01 Jan 65	01 Jan 66	01 Jan 67	01 Jan 68	01 Jan 69	01 Jan 70	01 Jan 71	01 Jan 72	01 Jan 73	01 Jan 74
Model period ending		date			31 Dec 55	31 Dec 56	31 Dec 57	31 Dec 58	31 Dec 59	31 Dec 60	31 Dec 61	31 Dec 62	31 Dec 63	31 Dec 64	31 Dec 65	31 Dec 66	31 Dec 67	31 Dec 68	31 Dec 69	31 Dec 70	31 Dec 71	31 Dec 72	31 Dec 73	31 Dec 74
1st model column start date	01 Jan 15	date																						
First modeling column financial year	2015	year																						
First modeling column financial year	2015	year																						
Financial year end month number	12	month #																						
Model period ending	-	date	-	-	31 Dec 55	31 Dec 56	31 Dec 57	31 Dec 58	31 Dec 59	31 Dec 60	31 Dec 61	31 Dec 62	31 Dec 63	31 Dec 64	31 Dec 65	31 Dec 66	31 Dec 67	31 Dec 68	31 Dec 69	31 Dec 70	31 Dec 71	31 Dec 72	31 Dec 73	31 Dec 74
First model column flag	-	flag	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial year ending		year			2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
FLAGS AND ESCALATIONS																								
Timing Flags																								
Forecast start date	2023	year																						
Project operation start year	2033	year																						
Length of BCA period (operating)	23	years																						
Length of forecast period	32	year #																						
Forecast start date	2023	year																						
Length of forecast period	32	year #																						
Last forecast date	2055	date																						
Last forecast date	2055	date																						
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
Forecast period flag		flag	33		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
Pre-forecast flag		flag	8		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast flag	-	flag	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast plus pre-forecast period flag		flag	41		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast flag	-	flag	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast vs forecast		timeline label			Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
First forecast period flag		flag	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Last forecast date	2055	date																						
Financial year ending	-	year	-	-	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
Last forecast period flag		flag	1		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project operation start year	2033	year																						
Financial year ending	-	year	-	-	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
Forecast period flag	-	flag	33	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag		flag	23		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project operation start year	2033	year																						
Project design life	75	years																						
Operating period flag	-	flag	23	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial year ending	-	year	-	-	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
Post analysis period remaining service life flag		flag	52		-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Construction Flags																								
Cargo docks construction - No-build - Constant dollars	-	US$	1,103,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag	-	flag	23	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build		flag	30		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Escalations																								
Base year	2020	year																						
Discount rate (excluding CO2 emissions)	7.00%	percent																						
Financial year ending	-	year	-	-	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
Discount rate multiplier - 7 percent		factor			10.6766	11.4239	12.2236	13.0793	13.9948	14.9745	16.0227	17.1443	18.3444	19.6285	21.0025	22.4726	24.0457	25.7289	27.5299	29.4570	31.5190	33.7253	36.0861	38.6122
Base year	2020	year																						
Discount rate (for CO2 emissions)	3.00%	percent																						
Financial year ending	-	year	-	-	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
Discount rate multiplier - 3 percent		factor			2.8139	2.8983	2.9852	3.0748	3.1670	3.2620	3.3599	3.4607	3.5645	3.6715	3.7816	3.8950	4.0119	4.1323	4.2562	4.3839	4.5154	4.6509	4.7904	4.9341

Time and Escalation

Base Case

Model Period Ending	-	*Error Checks*			**31 Dec 75**	**31 Dec 76**	**31 Dec 77**	**31 Dec 78**	**31 Dec 79**	**31 Dec 80**	**31 Dec 81**	**31 Dec 82**	**31 Dec 83**	**31 Dec 84**	**31 Dec 85**	**31 Dec 86**	**31 Dec 87**	**31 Dec 88**	**31 Dec 89**	**31 Dec 90**	**31 Dec 91**	**31 Dec 92**	**31 Dec 93**	**31 Dec 94**
Pre-forecast vs Forecast	-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
Model Column counter	**Constant**	**Unit**	**Total**		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
TIME RULER																								
Model column counter		counter			61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
First model column flag		flag			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1st model column start date	01 Jan 15	date																						
Months per model period	12	months																						
First model column flag	-	flag	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Model period beginning		date			01 Jan 75	01 Jan 76	01 Jan 77	01 Jan 78	01 Jan 79	01 Jan 80	01 Jan 81	01 Jan 82	01 Jan 83	01 Jan 84	01 Jan 85	01 Jan 86	01 Jan 87	01 Jan 88	01 Jan 89	01 Jan 90	01 Jan 91	01 Jan 92	01 Jan 93	01 Jan 94
Months per model period	12	months																						
Model period beginning	-	date	-	-	01 Jan 75	01 Jan 76	01 Jan 77	01 Jan 78	01 Jan 79	01 Jan 80	01 Jan 81	01 Jan 82	01 Jan 83	01 Jan 84	01 Jan 85	01 Jan 86	01 Jan 87	01 Jan 88	01 Jan 89	01 Jan 90	01 Jan 91	01 Jan 92	01 Jan 93	01 Jan 94
Model period ending		date			31 Dec 75	31 Dec 76	31 Dec 77	31 Dec 78	31 Dec 79	31 Dec 80	31 Dec 81	31 Dec 82	31 Dec 83	31 Dec 84	31 Dec 85	31 Dec 86	31 Dec 87	31 Dec 88	31 Dec 89	31 Dec 90	31 Dec 91	31 Dec 92	31 Dec 93	31 Dec 94
1st model column start date	01 Jan 15	date																						
First modeling column financial year	2015	year																						
First modeling column financial year	2015	year																						
Financial year end month number	12	month #																						
Model period ending	-	date	-	-	31 Dec 75	31 Dec 76	31 Dec 77	31 Dec 78	31 Dec 79	31 Dec 80	31 Dec 81	31 Dec 82	31 Dec 83	31 Dec 84	31 Dec 85	31 Dec 86	31 Dec 87	31 Dec 88	31 Dec 89	31 Dec 90	31 Dec 91	31 Dec 92	31 Dec 93	31 Dec 94
First model column flag	-	flag	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial year ending		year			2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
FLAGS AND ESCALATIONS																								
Timing Flags																								
Forecast start date	2023	year																						
Project operation start year	2033	year																						
Length of BCA period (operating)	23	years																						
Length of forecast period	32	year #																						
Forecast start date	2023	year																						
Length of forecast period	32	year #																						
Last forecast date	2055	date																						
Last forecast date	2055	date																						
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
Forecast period flag		flag	33		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
Pre-forecast flag		flag	8		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast flag	-	flag	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast plus pre-forecast period flag		flag	41		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast flag	-	flag	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast vs forecast		timeline label			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
First forecast period flag		flag	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Last forecast date	2055	date																						
Financial year ending	-	year	-	-	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
Last forecast period flag		flag	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project operation start year	2033	year																						
Financial year ending	-	year	-	-	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag		flag	23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project operation start year	2033	year																						
Project design life	75	years																						
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial year ending	-	year	-	-	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
Post analysis period remaining service life flag		flag	52		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Construction Flags																								
Cargo docks construction - No-build - Constant dollars	-	US$	1,103,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build		flag	30		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Escalations																								
Base year	2020	year																						
Discount rate (excluding CO2 emissions)	7.00%	percent																						
Financial year ending	-	year	-	-	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
Discount rate multiplier - 7 percent		factor			41.3150	44.2071	47.3015	50.6127	54.1555	57.9464	62.0027	66.3429	70.9869	75.9559	81.2729	86.9620	93.0493	99.5627	106.5321	113.9894	121.9686	130.5065	139.6419	149.4168
Base year	2020	year																						
Discount rate (for CO2 emissions)	3.00%	percent																						
Financial year ending	-	year	-	-	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
Discount rate multiplier - 3 percent		factor			5.0821	5.2346	5.3917	5.5534	5.7200	5.8916	6.0684	6.2504	6.4379	6.6311	6.8300	7.0349	7.2459	7.4633	7.6872	7.9178	8.1554	8.4000	8.6520	8.9116

Time and Escalation

	Base Case																					
Model Period Ending	-	*Error Checks*			**31 Dec 95**	**31 Dec 96**	**31 Dec 97**	**31 Dec 98**	**31 Dec 99**	**31 Dec 00**	**31 Dec 01**	**31 Dec 02**	**31 Dec 03**	**31 Dec 04**	**31 Dec 05**	**31 Dec 06**	**31 Dec 07**	**31 Dec 08**	**31 Dec 09**	**31 Dec 10**	**31 Dec 11**	**31 Dec 12**	**31 Dec 13**	**31 Dec 14**
Pre-forecast vs Forecast	-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
Model Column counter	**Constant**	**Unit**	**Total**		81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
TIME RULER																								
Model column counter		counter			81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
First model column flag		flag			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1st model column start date	01 Jan 15	date																						
Months per model period	12	months																						
First model column flag	-	flag	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Model period beginning		date			01 Jan 95	01 Jan 96	01 Jan 97	01 Jan 98	01 Jan 99	01 Jan 00	01 Jan 01	01 Jan 02	01 Jan 03	01 Jan 04	01 Jan 05	01 Jan 06	01 Jan 07	01 Jan 08	01 Jan 09	01 Jan 10	01 Jan 11	01 Jan 12	01 Jan 13	01 Jan 14
Months per model period	12	months																						
Model period beginning	-	date	-	-	01 Jan 95	01 Jan 96	01 Jan 97	01 Jan 98	01 Jan 99	01 Jan 00	01 Jan 01	01 Jan 02	01 Jan 03	01 Jan 04	01 Jan 05	01 Jan 06	01 Jan 07	01 Jan 08	01 Jan 09	01 Jan 10	01 Jan 11	01 Jan 12	01 Jan 13	01 Jan 14
Model period ending		date			31 Dec 95	31 Dec 96	31 Dec 97	31 Dec 98	31 Dec 99	31 Dec 00	31 Dec 01	31 Dec 02	31 Dec 03	31 Dec 04	31 Dec 05	31 Dec 06	31 Dec 07	31 Dec 08	31 Dec 09	31 Dec 10	31 Dec 11	31 Dec 12	31 Dec 13	31 Dec 14
1st model column start date	01 Jan 15	date																						
First modeling column financial year	2015	year																						
First modeling column financial year	2015	year																						
Financial year end month number	12	month #																						
Model period ending	-	date	-	-	31 Dec 95	31 Dec 96	31 Dec 97	31 Dec 98	31 Dec 99	31 Dec 00	31 Dec 01	31 Dec 02	31 Dec 03	31 Dec 04	31 Dec 05	31 Dec 06	31 Dec 07	31 Dec 08	31 Dec 09	31 Dec 10	31 Dec 11	31 Dec 12	31 Dec 13	31 Dec 14
First model column flag	-	flag	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial year ending		year			2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
FLAGS AND ESCALATIONS																								
Timing Flags																								
Forecast start date	2023	year																						
Project operation start year	2033	year																						
Length of BCA period (operating)	23	years																						
Length of forecast period	32	year #																						
Forecast start date	2023	year																						
Length of forecast period	32	year #																						
Last forecast date	2055	date																						
Last forecast date	2055	date																						
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
Forecast period flag		flag	33		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
Pre-forecast flag		flag	8		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast flag	-	flag	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast plus pre-forecast period flag		flag	41		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast flag	-	flag	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-forecast vs forecast		timeline label			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Forecast start date	2023	year																						
Financial year ending	-	year	-	-	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
First forecast period flag		flag	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Last forecast date	2055	date																						
Financial year ending	-	year	-	-	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
Last forecast period flag		flag	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project operation start year	2033	year																						
Financial year ending	-	year	-	-	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag		flag	23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project operation start year	2033	year																						
Project design life	75	years																						
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial year ending	-	year	-	-	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
Post analysis period remaining service life flag		flag	52		1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-
Construction Flags																								
Cargo docks construction - No-build - Constant dollars	-	US$	1,103,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build		flag	30		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Escalations																								
Base year	2020	year																						
Discount rate (excluding CO2 emissions)	7.00%	percent																						
Financial year ending	-	year	-	-	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
Discount rate multiplier - 7 percent		factor			159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960
Base year	2020	year																						
Discount rate (for CO2 emissions)	3.00%	percent																						
Financial year ending	-	year	-	-	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
Discount rate multiplier - 3 percent		factor			9.1789	9.4543	9.7379	10.0301	10.3310	10.6409	10.9601	11.2889	11.6276	11.9764	12.3357	12.7058	13.0870	13.4796	13.8839	14.3005	14.7295	15.1714	15.6265	16.0953

Time and Escalation

		Base Case									
Model Period Ending		-	*Error Checks*			**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**
Pre-forecast vs Forecast		-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending						2115	2116	2117	2118	2119	2120
Model Column counter	**Constant**	**Unit**	**Total**			101	102	103	104	105	106
TIME RULER											
Model column counter		counter				101	102	103	104	105	106
First model column flag		flag				-	-	-	-	-	-
1st model column start date	01 Jan 15	date									
Months per model period	12	months									
First model column flag	-	flag	-	-		-	-	-	-	-	-
Model period beginning		date				01 Jan 15	01 Jan 16	01 Jan 17	01 Jan 18	01 Jan 19	01 Jan 20
Months per model period	12	months									
Model period beginning	-	date	-	-		01 Jan 15	01 Jan 16	01 Jan 17	01 Jan 18	01 Jan 19	01 Jan 20
Model period ending		date				31 Dec 15	31 Dec 16	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20
1st model column start date	01 Jan 15	date									
First modeling column financial year	2015	year									
First modeling column financial year	2015	year									
Financial year end month number	12	month #									
Model period ending	-	date	-	-		31 Dec 15	31 Dec 16	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20
First model column flag	-	flag	-	-		-	-	-	-	-	-
Financial year ending		year				2115	2116	2117	2118	2119	2120
FLAGS AND ESCALATIONS											
Timing Flags											
Forecast start date	2023	year									
Project operation start year	2033	year									
Length of BCA period (operating)	23	years									
Length of forecast period	32	year #									
Forecast start date	2023	year									
Length of forecast period	32	year #									
Last forecast date	2055	date									
Last forecast date	2055	date									
Forecast start date	2023	year									
Financial year ending	-	year	-	-		2115	2116	2117	2118	2119	2120
Forecast period flag		flag	33			-	-	-	-	-	-
Financial year ending	-	year	-	-		2115	2116	2117	2118	2119	2120
Pre-forecast flag		flag	8			-	-	-	-	-	-
Forecast period flag	-	flag	33	-		-	-	-	-	-	-
Pre-forecast flag	-	flag	8	-		-	-	-	-	-	-
Forecast plus pre-forecast period flag		flag	41			-	-	-	-	-	-
Forecast period flag	-	flag	33	-		-	-	-	-	-	-
Pre-forecast flag	-	flag	8	-		-	-	-	-	-	-
Pre-forecast vs forecast		timeline label				Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Forecast start date	2023	year									
Financial year ending	-	year	-	-		2115	2116	2117	2118	2119	2120
First forecast period flag		flag	1			-	-	-	-	-	-
Last forecast date	2055	date									
Financial year ending	-	year	-	-		2115	2116	2117	2118	2119	2120
Last forecast period flag		flag	1			-	-	-	-	-	-
Project operation start year	2033	year									
Financial year ending	-	year	-	-		2115	2116	2117	2118	2119	2120
Forecast period flag	-	flag	33	-		-	-	-	-	-	-
Operating period flag		flag	23			-	-	-	-	-	-
Project operation start year	2033	year									
Project design life	75	years									
Operating period flag	-	flag	23	-		-	-	-	-	-	-
Financial year ending	-	year	-	-		2115	2116	2117	2118	2119	2120
Post analysis period remaining service life flag		flag	52			-	-	-	-	-	-
Construction Flags											
Cargo docks construction - No-build - Constant dollars	-	US$	1,103,000,000	-		-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7			-	-	-	-	-	-
Operating period flag	-	flag	23	-		-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-		-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build		flag	30			-	-	-	-	-	-
Escalations											
Base year	2020	year									
Discount rate (excluding CO2 emissions)	7.00%	percent									
Financial year ending	-	year	-	-		2115	2116	2117	2118	2119	2120
Discount rate multiplier - 7 percent		factor				618.6697	661.9766	708.3150	757.8970	810.9498	867.7163
Base year	2020	year									
Discount rate (for CO2 emissions)	3.00%	percent									
Financial year ending	-	year	-	-		2115	2116	2117	2118	2119	2120
Discount rate multiplier - 3 percent		factor				16.5782	17.0755	17.5878	18.1154	18.6589	19.2186

Volume

Model Period Ending	Base Case	*Error Checks*			**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**	**31 Dec 21**	**31 Dec 22**	**31 Dec 23**	**31 Dec 24**	**31 Dec 25**	**31 Dec 26**	**31 Dec 27**	**31 Dec 28**	**31 Dec 29**	**31 Dec 30**	**31 Dec 31**	**31 Dec 32**
Pre-forecast vs Forecast	-	*Alerts*			Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending					2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Model Column counter	**Constant**	**Unit**	**Total**		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
VOLUME FORECAST																						
Container volume demand - Forecast	-	boxes	1,344,962	-	222,480	215,900	207,006	207,839	279,326	212,410	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	-	percent	Port of Alaska & Alaska Department of Labor	-	-	-	-	-	-	0.43%	0.64%	0.63%	0.63%	0.63%	0.62%	0.53%	0.53%	0.52%	0.52%	0.52%	0.44%	0.42%
Forecast plus pre-forecast period flag	-	flag	41	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Container volume demand - Forecast		boxes	9,430,462		222,480	215,900	207,006	207,839	279,326	212,410	213,769	215,116	216,471	217,835	219,186	220,347	221,515	222,667	223,825	224,989	225,979	226,928
INCREASE IN HIGHWAY MILES DURING CARGO DOCK CONSTRUCTION																						
Diverted volumes as a share of total during construction of docks	7.50%	percent																				
Container volume demand - Forecast	-	boxes	9,430,462	-	222,480	215,900	207,006	207,839	279,326	212,410	213,769	215,116	216,471	217,835	219,186	220,347	221,515	222,667	223,825	224,989	225,979	226,928
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1
Diverted cargo during construction of cargo docks - No-build		boxes	117,469		-	-	-	-	-	-	-	-	-	-	-	16,526	16,614	16,700	16,787	16,874	16,948	17,020
Increase in truck miles during construction - No-build	161	miles																				
Diverted cargo during construction of cargo docks - No-build	-	boxes	117,469	-	-	-	-	-	-	-	-	-	-	-	-	16,526	16,614	16,700	16,787	16,874	16,948	17,020
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,476		-	-	-	-	-	-	-	-	-	-	-	2,660,695	2,674,797	2,688,706	2,702,687	2,716,741	2,728,695	2,740,155
INCREASE IN HIGHWAY MILES DURING MAJOR FAILURE																						
Diverted volumes as a share of total during major failure	50.00%	percent																				
Container volume demand - Forecast	-	boxes	9,430,462	-	222,480	215,900	207,006	207,839	279,326	212,410	213,769	215,116	216,471	217,835	219,186	220,347	221,515	222,667	223,825	224,989	225,979	226,928
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1
Diverted cargo during construction following major failure - No-build		boxes	3,828,307		-	-	-	-	-	-	-	-	108,236	108,918	109,593	110,174	110,758	111,334	111,913	112,494	112,989	113,464
Increase in truck miles during major failure - No-build	161	miles																				
Diverted cargo during construction following major failure - No-build	-	boxes	3,828,307	-	-	-	-	-	-	-	-	-	108,236	108,918	109,593	110,174	110,758	111,334	111,913	112,494	112,989	113,464
Increase in truck miles - Post cargo dock construction major failure - No-build		miles	616,357,456		-	-	-	-	-	-	-	-	17,425,947	17,535,731	17,644,452	17,737,968	17,831,979	17,924,706	18,017,914	18,111,607	18,191,298	18,267,702

Volume

	Base Case																				
Model Period Ending	-	*Error Checks*			**31 Dec 33**	**31 Dec 34**	**31 Dec 35**	**31 Dec 36**	**31 Dec 37**	**31 Dec 38**	**31 Dec 39**	**31 Dec 40**	**31 Dec 41**	**31 Dec 42**	**31 Dec 43**	**31 Dec 44**	**31 Dec 45**	**31 Dec 46**	**31 Dec 47**	**31 Dec 48**	**31 Dec 49**	**31 Dec 50**
Pre-forecast vs Forecast	-	*Alerts*			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending					2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Model Column counter	**Constant**	**Unit**	**Total**		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
VOLUME FORECAST																						
Container volume demand - Forecast	-	boxes	1,344,962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	-	percent	Port of Alaska & Alaska Department of Labor	-	0.41%	0.40%	0.38%	0.37%	0.36%	0.35%	0.34%	0.33%	0.32%	0.31%	0.30%	0.30%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
Forecast plus pre-forecast period flag	-	flag	41	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Container volume demand - Forecast		boxes	9,430,462		227,858	228,770	229,639	230,489	231,319	232,128	232,917	233,686	234,434	235,161	235,866	236,574	237,260	237,948	238,638	239,330	240,024	240,720
INCREASE IN HIGHWAY MILES DURING CARGO DOCK CONSTRUCTION																						
Diverted volumes as a share of total during construction of docks	7.50%	percent																				
Container volume demand - Forecast	-	boxes	9,430,462	-	227,858	228,770	229,639	230,489	231,319	232,128	232,917	233,686	234,434	235,161	235,866	236,574	237,260	237,948	238,638	239,330	240,024	240,720
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diverted cargo during construction of cargo docks - No-build		boxes	117,469		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles during construction - No-build	161	miles																				
Diverted cargo during construction of cargo docks - No-build	-	boxes	117,469	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,476		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INCREASE IN HIGHWAY MILES DURING MAJOR FAILURE																						
Diverted volumes as a share of total during major failure	50.00%	percent																				
Container volume demand - Forecast	-	boxes	9,430,462	-	227,858	228,770	229,639	230,489	231,319	232,128	232,917	233,686	234,434	235,161	235,866	236,574	237,260	237,948	238,638	239,330	240,024	240,720
Forecast period flag	-	flag	33	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Diverted cargo during construction following major failure - No-build		boxes	3,828,307		113,929	114,385	114,820	115,244	115,659	116,064	116,459	116,843	117,217	117,580	117,933	118,287	118,630	118,974	119,319	119,665	120,012	120,360
Increase in truck miles during major failure - No-build	161	miles																				
Diverted cargo during construction following major failure - No-build	-	boxes	3,828,307	-	113,929	114,385	114,820	115,244	115,659	116,064	116,459	116,843	117,217	117,580	117,933	118,287	118,630	118,974	119,319	119,665	120,012	120,360
Increase in truck miles - Post cargo dock construction major failure - No-build		miles	616,357,456		18,342,599	18,415,970	18,485,950	18,554,348	18,621,144	18,686,318	18,749,852	18,811,726	18,871,924	18,930,427	18,987,218	19,044,179	19,099,408	19,154,796	19,210,345	19,266,055	19,321,926	19,377,960

Volume

	Base Case																					
Model Period Ending	-	*Error Checks*			**31 Dec 51**	**31 Dec 52**	**31 Dec 53**	**31 Dec 54**	**31 Dec 55**	**31 Dec 56**	**31 Dec 57**	**31 Dec 58**	**31 Dec 59**	**31 Dec 60**	**31 Dec 61**	**31 Dec 62**	**31 Dec 63**	**31 Dec 64**	**31 Dec 65**	**31 Dec 66**	**31 Dec 67**	**31 Dec 68**
Pre-forecast vs Forecast	-	*Alerts*			Forecast	Forecast	Forecast	Forecast	Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068
Model Column counter	**Constant**	**Unit**	**Total**		37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
VOLUME FORECAST																						
Container volume demand - Forecast	-	boxes	1,344,962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	-	percent	Port of Alaska & Alaska Department of Labor	-	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
Forecast plus pre-forecast period flag	-	flag	41	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Container volume demand - Forecast		boxes	9,430,462		241,418	242,118	242,820	243,525	244,231	-	-	-	-	-	-	-	-	-	-	-	-	-
INCREASE IN HIGHWAY MILES DURING CARGO DOCK CONSTRUCTION																						
Diverted volumes as a share of total during construction of docks	7.50%	percent																				
Container volume demand - Forecast	-	boxes	9,430,462	-	241,418	242,118	242,820	243,525	244,231	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diverted cargo during construction of cargo docks - No-build		boxes	117,469		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles during construction - No-build	161	miles																				
Diverted cargo during construction of cargo docks - No-build	-	boxes	117,469	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,476		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INCREASE IN HIGHWAY MILES DURING MAJOR FAILURE																						
Diverted volumes as a share of total during major failure	50.00%	percent																				
Container volume demand - Forecast	-	boxes	9,430,462	-	241,418	242,118	242,820	243,525	244,231	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Diverted cargo during construction following major failure - No-build		boxes	3,828,307		120,709	121,059	121,410	121,762	122,115	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles during major failure - No-build	161	miles																				
Diverted cargo during construction following major failure - No-build	-	boxes	3,828,307	-	120,709	121,059	121,410	121,762	122,115	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles - Post cargo dock construction major failure - No-build		miles	616,357,456		19,434,156	19,490,515	19,547,038	19,603,724	19,660,575	-	-	-	-	-	-	-	-	-	-	-	-	-

Volume

	Base Case																				
Model Period Ending	-	*Error Checks*			**31 Dec 69**	**31 Dec 70**	**31 Dec 71**	**31 Dec 72**	**31 Dec 73**	**31 Dec 74**	**31 Dec 75**	**31 Dec 76**	**31 Dec 77**	**31 Dec 78**	**31 Dec 79**	**31 Dec 80**	**31 Dec 81**	**31 Dec 82**	**31 Dec 83**	**31 Dec 84**	**31 Dec 85**	**31 Dec 86**
Pre-forecast vs Forecast	-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086
Model Column counter	**Constant**	**Unit**		**Total**	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
VOLUME FORECAST																						
Container volume demand - Forecast	-	boxes		1,344,962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	-	percent	Port of Alaska & Alaska Department of Labor		-	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
Forecast plus pre-forecast period flag	-	flag		41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Container volume demand - Forecast		boxes		9,430,462		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INCREASE IN HIGHWAY MILES DURING CARGO DOCK CONSTRUCTION																						
Diverted volumes as a share of total during construction of docks	7.50%	percent																				
Container volume demand - Forecast	-	boxes		9,430,462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag		7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diverted cargo during construction of cargo docks - No-build		boxes		117,469		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles during construction - No-build	161	miles																				
Diverted cargo during construction of cargo docks - No-build	-	boxes		117,469	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag		7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles - During cargo dock construction - No-build		miles		18,912,476		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INCREASE IN HIGHWAY MILES DURING MAJOR FAILURE																						
Diverted volumes as a share of total during major failure	50.00%	percent																				
Container volume demand - Forecast	-	boxes		9,430,462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag		33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diverted cargo during construction following major failure - No-build		boxes		3,828,307		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles during major failure - No-build	161	miles																				
Diverted cargo during construction following major failure - No-build	-	boxes		3,828,307	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles - Post cargo dock construction major failure - No-build		miles		616,357,456		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Volume

	Base Case																				
Model Period Ending	-	*Error Checks*			**31 Dec 87**	**31 Dec 88**	**31 Dec 89**	**31 Dec 90**	**31 Dec 91**	**31 Dec 92**	**31 Dec 93**	**31 Dec 94**	**31 Dec 95**	**31 Dec 96**	**31 Dec 97**	**31 Dec 98**	**31 Dec 99**	**31 Dec 00**	**31 Dec 01**	**31 Dec 02**	**31 Dec 03**	**31 Dec 04**
Pre-forecast vs Forecast	-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104
Model Column counter	**Constant**	**Unit**	**Total**		73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
VOLUME FORECAST																						
Container volume demand - Forecast	-	boxes	1,344,962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	-	percent	Port of Alaska & Alaska Department of Labor	-	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
Forecast plus pre-forecast period flag	-	flag	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Container volume demand - Forecast		boxes	9,430,462		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INCREASE IN HIGHWAY MILES DURING CARGO DOCK CONSTRUCTION																						
Diverted volumes as a share of total during construction of docks	7.50%	percent																				
Container volume demand - Forecast	-	boxes	9,430,462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diverted cargo during construction of cargo docks - No-build		boxes	117,469		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles during construction - No-build	161	miles																				
Diverted cargo during construction of cargo docks - No-build	-	boxes	117,469	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,476		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INCREASE IN HIGHWAY MILES DURING MAJOR FAILURE																						
Diverted volumes as a share of total during major failure	50.00%	percent																				
Container volume demand - Forecast	-	boxes	9,430,462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diverted cargo during construction following major failure - No-build		boxes	3,828,307		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles during major failure - No-build	161	miles																				
Diverted cargo during construction following major failure - No-build	-	boxes	3,828,307	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles - Post cargo dock construction major failure - No-build		miles	616,357,456		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Volume

	Base Case																		
Model Period Ending	-	*Error Checks*			**31 Dec 05**	**31 Dec 06**	**31 Dec 07**	**31 Dec 08**	**31 Dec 09**	**31 Dec 10**	**31 Dec 11**	**31 Dec 12**	**31 Dec 13**	**31 Dec 14**	**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**
Pre-forecast vs Forecast	-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120
Model Column counter	**Constant**	**Unit**	**Total**		91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106
VOLUME FORECAST																				
Container volume demand - Forecast	-	boxes	1,344,962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alaska population growth rate	-	percent	Port of Alaska & Alaska Department of Labor	-	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
Forecast plus pre-forecast period flag	-	flag	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Container volume demand - Forecast		boxes	9,430,462		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INCREASE IN HIGHWAY MILES DURING CARGO DOCK CONSTRUCTION																				
Diverted volumes as a share of total during construction of docks	7.50%	percent																		
Container volume demand - Forecast	-	boxes	9,430,462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diverted cargo during construction of cargo docks - No-build		boxes	117,469		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles during construction - No-build	161	miles																		
Diverted cargo during construction of cargo docks - No-build	-	boxes	117,469	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,476		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INCREASE IN HIGHWAY MILES DURING MAJOR FAILURE																				
Diverted volumes as a share of total during major failure	50.00%	percent																		
Container volume demand - Forecast	-	boxes	9,430,462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diverted cargo during construction following major failure - No-build		boxes	3,828,307		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles during major failure - No-build	161	miles																		
Diverted cargo during construction following major failure - No-build	-	boxes	3,828,307	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck miles - Post cargo dock construction major failure - No-build		miles	616,357,456		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Cargo Diversion Benefits During Construction

Model Period Ending
Pre-forecast vs Forecast
Model Year Ending
Model Column Counter

| | Base Case | | |

Cargo Diversion Benefits During Construction

Model Period Ending	Base Case	
Pre-forecast vs. Forecast	Error Checks	
Model Column Header	Alerts	
Model Column Counter		

	Constant	Unit	Total	31 Dec 01 Pre-forecast 2001	31 Dec 02 Pre-forecast 2002	31 Dec 03 Pre-forecast 2003	31 Dec 04 Pre-forecast 2004	31 Dec 05 Pre-forecast 2005	31 Dec 06 Pre-forecast 2006	31 Dec 07 Pre-forecast 2007	31 Dec 08 Pre-forecast 2008	31 Dec 09 Pre-forecast 2009	31 Dec 00 Pre-forecast 2000	31 Dec 01 Pre-forecast 2001	31 Dec 02 Pre-forecast 2002	31 Dec 03 Pre-forecast 2003	31 Dec 04 Pre-forecast 2004	31 Dec 05 Pre-forecast 2005	31 Dec 06 Pre-forecast 2006	31 Dec 07 Pre-forecast 2007	31 Dec 08 Pre-forecast 2008	31 Dec 09 Pre-forecast 2009	31 Dec 10 Pre-forecast 2010	31 Dec 11 Pre-forecast 2011	31 Dec 12 Pre-forecast 2012	31 Dec 13 Pre-forecast 2013	31 Dec 14 Pre-forecast 2014	31 Dec 15 Pre-forecast 2015	31 Dec 16 Pre-forecast 2016	31 Dec 17 Pre-forecast 2017	31 Dec 18 Pre-forecast 2018	31 Dec 19 Pre-forecast 2019	31 Dec 20 Pre-forecast 2020
				77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106
ECONOMIC COMPETITIVENESS COSTS - TRUCK MILE INCREASE																																	
Truck Operating Cost																																	
Truck operating cost - Truck - 2020 US$	0.9400	US$ / mile																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck operating costs - No-build		US$	17,777,728	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck operating costs - No-build		US$	17,777,728	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in highway truck operating costs - No-build - PV		US$		8,745,833	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Travel Time																																	
Truck average speed	50	miles / hour																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck travel time - No-build		hours	375,246	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average vehicle occupancy (AVO) - Trucks	1	persons																															
Vehicle travel time savings - Truck operator - 2020 US$	32.9200	US$ / hr																															
Increase in highway truck travel time costs - No-build		US$	375,246	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck travel time costs - No-build		US$	12,007,921	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in highway truck travel time costs - No-build - PV		US$		8,552,663	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Maintenance																																	
Pavement repair cost - Truck - 2020 US$	0.1078	US$ / mile																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway maintenance costs - No-build		US$	2,985,102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway maintenance costs - No-build		US$	2,985,102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in highway maintenance costs - No-build - PV		US$		1,836,413	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Congestion																																	
Urban share of impacted highway	10.00%	share																															
Rural share of impacted highway	90.00%	share																															
Congestion cost - Truck (urban) - 2020 US$	0.3100	US$ / mile																															
Congestion cost - Truck (rural) - 2020 US$	0.0870	US$ / mile																															
Congestion cost - Truck - 2020 US$	0.0913	US$ / mile																															
Congestion cost - Truck - 2020 US$	0.0913	US$ / mile																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway congestion - No-build		US$	1,726,709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway congestion - No-build		US$	1,726,709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in highway congestion - No-build - PV		US$		948,571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Noise Pollution																																	
Urban share of impacted highway	10.00%	share																															
Rural share of impacted highway	90.00%	share																															
Noise pollution cost - Truck (urban) - 2020 US$	0.0300	US$ / mile																															
Noise pollution cost - Truck (rural) - 2020 US$	0.0033	US$ / mile																															
Noise pollution cost - Truck - 2020 US$	0.0089	US$ / mile																															
Noise pollution cost - Truck - 2020 US$	0.0089	US$ / mile																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway noise pollution - No-build		US$	130,486	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway noise pollution - No-build		US$	130,486	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in highway noise pollution - No-build - PV		US$		71,537	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total																																	
Increase in highway truck operating costs - No-build - PV		US$	8,745,833	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck travel time costs - No-build - PV		US$	8,552,663	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway maintenance costs - No-build - PV		US$	1,836,413	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway congestion - No-build - PV		US$	948,571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway noise pollution - No-build - PV		US$	71,537	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during cargo dock construction - No-build - PV		US$	19,962,918	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAFETY COSTS - TRUCK MILE INCREASE																																	
Property Damage Only Accidents																																	
Fatality per VMT - Truck	138	incident / 100 million VMT																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway PDO accidents - No-build		incidents	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Property damage only (PDO) crash monetized value - 2020 US$	4,600	US$ / crash																															
Increase in highway PDO accidents - No-build		incidents	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway PDO accident costs - No-build		US$	120,096	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway PDO accident costs - No-build		US$	120,096	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in highway PDO accident costs - No-build - PV		US$	65,814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury Accidents																																	
Injury rate per VMT - Truck	53	person / 100 million VMT																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway injury accidents - No-build		incidents	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown severity injury monetized value - 2020 US$	210,300	US$ / injury																															
Increase in highway injury accidents - No-build		incidents	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway injury accidents - No-build		US$	2,108,619	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway injury accident costs - No-build		US$	2,108,619	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in highway injury accident costs - No-build - PV		US$	1,101,542	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fatal Accidents																																	
Fatality per VMT - Truck	1.5881	person / 100 million VMT																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in fatalities in highway accidents - No-build		fatalities	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fatality monitized value - 2020 US$	########	US$ / fatality																															
Increase in fatalities in highway accidents - No-build		**fatalities**	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in fatalities in highway accident costs - No-build		**US$**	3,859,454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in fatalities in highway accident costs - No-build		US$	3,859,454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in fatalities in highway accident costs - No-build - PV		US$	2,056,356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total																																	
Increase in highway PDO accident costs - No-build - PV		US$	65,814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway injury accident costs - No-build - PV		US$	1,101,542	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in fatalities in highway accident costs - No-build - PV		US$	2,056,356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety costs - Cargo diversion during cargo dock construction - No-build - PV		US$	3,223,448	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ENVIRONMENTAL COSTS - TRUCK MILE INCREASE																																	
Fuel Increase																																	
Truck fuel efficiency - 2019 US$	6.5000	mpg																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck fuel consumption - No-build		gal	2,909,612	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2 Emissions																																	
CO2 grams per metric ton	1,000,000	gram / metric ton																															
CO2 emissions per gallon of diesel	10.180	$ / gal																															
Increase in truck fuel consumption - No-build		gal	2,909,612	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in carbon dioxide emissions - Highway - No-build		metric tons	29,620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in carbon dioxide emissions - Highway - No-build - 3 percent		metric tons		85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Increase in carbon dioxide emissions - Highway - No-build - 3 percent - PV		US$	1,788,041	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in carbon dioxide emissions - Highway - No-build - 3 percent		US$	1,788,041	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 3 percent		factor		8.1054	8.4930	8.8520	9.3116	9.1759	9.4543	9.7375	10.0351	10.3312	10.6409	10.9601	11.2888	11.6276	11.9764	12.3357	12.7058	13.0870	13.4796	13.8839	14.3005	14.7295	15.1714	15.6265	16.0953	16.5782	17.0755	17.5878	18.1154	18.6589	19.2186
Increase in carbon dioxide emissions - Highway - No-build - 3 percent - PV		US$	1,377,248	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOx Emissions																																	
Grams per metric ton	1,000,000	gram / metric ton																															
NOx emission rate - Truck		gram / mile	EMFAC 2021	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in NOx emissions - Highway - No-build		metric tons	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Damage costs for emissions - NOx - 2020 US$		US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100
Increase in NOx emission costs - Highway - No-build		US$	272,460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in NOx emission costs - Highway - No-build		US$	272,460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in NOx emission costs - Highway - No-build - PV		US$	149,913	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PM2.5 Emissions																																	
Grams per metric ton	1,000,000	gram / metric ton																															
PM2.5 emission rate - Truck		gram / mile	EMFAC 2021	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in PM2.5 emissions - Highway - No-build		metric tons	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Damage costs for emissions - PM2.5 - 2020 US$		US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800	857,800
Increase in PM2.5 emission costs - Highway - No-build		US$	353,808	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in PM2.5 emission costs - Highway - No-build		US$	353,808	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in PM2.5 emission costs - Highway - No-build - PV		US$	193,584	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SOx Emissions																																	
Grams per metric ton	1,000,000	gram / metric ton																															
Increase in truck miles - During cargo dock construction - No-build		miles	18,912,479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SOx emission rate - Truck		gram / mile	EMFAC 2021	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107
Construction of cargo docks flag - No-build		flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in SOx emissions - Highway - No-build		metric tons	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in SOx emissions - Highway - No-build		metric tons	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Damage costs for emissions - SOx - 2020 US$		US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100
Increase in SOx emission costs - Highway - No-build		US$	10,976	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in SOx emission costs - Highway - No-build		US$	10,976	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent		factor		121.3696	130.5065	139.6419	149.4168	159.8760	171.0873	183.0421	195.8550	209.5648	224.2344	239.9308	256.7280	274.6968	293.9255	314.5003	336.5104	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9798	708.3150	757.8970	810.9496	867.7163
Increase in SOx emission costs - Highway - No-build - PV		US$	8,030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total																																	
Increase in carbon dioxide emissions - Highway - No-build - 3 percent - PV		US$	1,377,248	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Operating Benefits

	Base Case																			
Model Period Ending	-	*Error Checks*		**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**	**31 Dec 21**	**31 Dec 22**	**31 Dec 23**	**31 Dec 24**	**31 Dec 25**	**31 Dec 26**	**31 Dec 27**	**31 Dec 28**	**31 Dec 29**	**31 Dec 30**	**31 Dec 31**	**31 Dec 32**
Pre-forecast vs Forecast	-	*Alerts*		Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending				2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Model Column counter	**Constant**	**Unit**	**Total**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
OPERATING COSTS DURING CARGO DOCK CONSTRUCTION																					
Weeks per year added tug needed during construction of cargo docks	52	weeks / year																			
Cargo vessel calls per week	2	days / week																			
Vessel port calls during normal conditions	104	calls																			
Tug Costs																					
Vessel port calls during normal conditions	104	calls																			
Increased tug costs per call during normal conditions - During cargo dock construction - No-build	25,000	US$ / call																			
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1
Increased tug costs during normal conditions - During cargo dock construction - No-build		US$	18,200,000		-	-	-	-	-	-	-	-	-	-	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000
Increased tug costs during normal conditions - During cargo dock construction - No-build	-	US$	18,200,000	-	-	-	-	-	-	-	-	-	-	-	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672	2.1049	2.2522
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV		US$	9,990,471		-	-	-	-	-	-	-	-	-	-	-	1,732,490	1,619,149	1,513,224	1,414,228	1,321,708	1,235,241	1,154,431
Dredging Costs																					
Increased annual dredging maintenance costs incurred by USACE - During cargo dock construction - No-build	5,130,000	US$																			
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1
Increased dredging maintenance - During cargo dock construction - No-build		US$	35,910,000		-	-	-	-	-	-	-	-	-	-	5,130,000	5,130,000	5,130,000	5,130,000	5,130,000	5,130,000	5,130,000
Increased dredging maintenance - During cargo dock construction - No-build	-	US$	35,910,000	-	-	-	-	-	-	-	-	-	-	-	5,130,000	5,130,000	5,130,000	5,130,000	5,130,000	5,130,000	5,130,000
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672	2.1049	2.2522
Increased dredging maintenance - During cargo dock construction - No-build - PV		US$	19,711,968		-	-	-	-	-	-	-	-	-	-	-	3,418,336	3,194,706	2,985,707	2,790,380	2,607,832	2,437,226	2,277,781

Operating Benefits

	Base Case																					
Model Period Ending	-	*Error Checks*			**31 Dec 33**	**31 Dec 34**	**31 Dec 35**	**31 Dec 36**	**31 Dec 37**	**31 Dec 38**	**31 Dec 39**	**31 Dec 40**	**31 Dec 41**	**31 Dec 42**	**31 Dec 43**	**31 Dec 44**	**31 Dec 45**	**31 Dec 46**	**31 Dec 47**	**31 Dec 48**	**31 Dec 49**	**31 Dec 50**
Pre-forecast vs Forecast	-	*Alerts*			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending					2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Model Column counter	**Constant**	**Unit**	**Total**		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
OPERATING COSTS DURING CARGO DOCK CONSTRUCTION																						
Weeks per year added tug needed during construction of cargo docks	52	weeks / year																				
Cargo vessel calls per week	2	days / week																				
Vessel port calls during normal conditions	104	calls																				
Tug Costs																						
Vessel port calls during normal conditions	104	calls																				
Increased tug costs per call during normal conditions - During cargo dock construction - No-build	25,000	US$ / call																				
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build		US$	18,200,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build	-	US$	18,200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	2.4098	2.5785	2.7590	2.9522	3.1588	3.3799	3.6165	3.8697	4.1406	4.4304	4.7405	5.0724	5.4274	5.8074	6.2139	6.6488	7.1143	7.6123
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV		US$	9,990,471		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dredging Costs																						
Increased annual dredging maintenance costs incurred by USACE - During cargo dock construction - No-build	5,130,000	US$																				
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build		US$	35,910,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build	-	US$	35,910,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	2.4098	2.5785	2.7590	2.9522	3.1588	3.3799	3.6165	3.8697	4.1406	4.4304	4.7405	5.0724	5.4274	5.8074	6.2139	6.6488	7.1143	7.6123
Increased dredging maintenance - During cargo dock construction - No-build - PV		US$	19,711,968		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Operating Benefits

	Base Case																				
Model Period Ending	-	*Error Checks*			**31 Dec 51**	**31 Dec 52**	**31 Dec 53**	**31 Dec 54**	**31 Dec 55**	**31 Dec 56**	**31 Dec 57**	**31 Dec 58**	**31 Dec 59**	**31 Dec 60**	**31 Dec 61**	**31 Dec 62**	**31 Dec 63**	**31 Dec 64**	**31 Dec 65**	**31 Dec 66**	**31 Dec 67**	**31 Dec 68**
Pre-forecast vs Forecast	-	*Alerts*			Forecast	Forecast	Forecast	Forecast	Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068
Model Column counter	**Constant**	**Unit**	**Total**		37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
OPERATING COSTS DURING CARGO DOCK CONSTRUCTION																						
Weeks per year added tug needed during construction of cargo docks	52	weeks / year																				
Cargo vessel calls per week	2	days / week																				
Vessel port calls during normal conditions	104	calls																				
Tug Costs																						
Vessel port calls during normal conditions	104	calls																				
Increased tug costs per call during normal conditions - During cargo dock construction - No-build	25,000	US$ / call																				
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build		US$	18,200,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build	-	US$	18,200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	8.1451	8.7153	9.3253	9.9781	10.6766	11.4239	12.2236	13.0793	13.9948	14.9745	16.0227	17.1443	18.3444	19.6285	21.0025	22.4726	24.0457	25.7289
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV		US$	9,990,471		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dredging Costs																						
Increased annual dredging maintenance costs incurred by USACE - During cargo dock construction - No-build	5,130,000	US$																				
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build		US$	35,910,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build	-	US$	35,910,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	8.1451	8.7153	9.3253	9.9781	10.6766	11.4239	12.2236	13.0793	13.9948	14.9745	16.0227	17.1443	18.3444	19.6285	21.0025	22.4726	24.0457	25.7289
Increased dredging maintenance - During cargo dock construction - No-build - PV		US$	19,711,968		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Operating Benefits

	Base Case																			
Model Period Ending	-	*Error Checks*			**31 Dec 69**	**31 Dec 70**	**31 Dec 71**	**31 Dec 72**	**31 Dec 73**	**31 Dec 74**	**31 Dec 75**	**31 Dec 76**	**31 Dec 77**	**31 Dec 78**	**31 Dec 79**	**31 Dec 80**	**31 Dec 81**	**31 Dec 82**	**31 Dec 83**	**31 Dec 84**	**31 Dec 85**	**31 Dec 86**
Pre-forecast vs Forecast	-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086
Model Column counter	**Constant**	**Unit**	**Total**		55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
OPERATING COSTS DURING CARGO DOCK CONSTRUCTION																						
Weeks per year added tug needed during construction of cargo docks	52	weeks / year																				
Cargo vessel calls per week	2	days / week																				
Vessel port calls during normal conditions	104	calls																				
Tug Costs																						
Vessel port calls during normal conditions	104	calls																				
Increased tug costs per call during normal conditions - During cargo dock construction - No-build	25,000	US$ / call																				
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build		US$	18,200,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build	-	US$	18,200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	27.5299	29.4570	31.5190	33.7253	36.0861	38.6122	41.3150	44.2071	47.3015	50.6127	54.1555	57.9464	62.0027	66.3429	70.9869	75.9559	81.2729	86.9620
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV		US$	9,990,471		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dredging Costs																						
Increased annual dredging maintenance costs incurred by USACE - During cargo dock construction - No-build	5,130,000	US$																				
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build		US$	35,910,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build	-	US$	35,910,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	27.5299	29.4570	31.5190	33.7253	36.0861	38.6122	41.3150	44.2071	47.3015	50.6127	54.1555	57.9464	62.0027	66.3429	70.9869	75.9559	81.2729	86.9620
Increased dredging maintenance - During cargo dock construction - No-build - PV		US$	19,711,968		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Operating Benefits

	Base Case																			
Model Period Ending	-	*Error Checks*			**31 Dec 87**	**31 Dec 88**	**31 Dec 89**	**31 Dec 90**	**31 Dec 91**	**31 Dec 92**	**31 Dec 93**	**31 Dec 94**	**31 Dec 95**	**31 Dec 96**	**31 Dec 97**	**31 Dec 98**	**31 Dec 99**	**31 Dec 00**	**31 Dec 01**	**31 Dec 02**	**31 Dec 03**	**31 Dec 04**
Pre-forecast vs Forecast	-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104
Model Column counter	**Constant**	**Unit**	**Total**		73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
OPERATING COSTS DURING CARGO DOCK CONSTRUCTION																						
Weeks per year added tug needed during construction of cargo docks	52	weeks / year																				
Cargo vessel calls per week	2	days / week																				
Vessel port calls during normal conditions	104	calls																				
Tug Costs																						
Vessel port calls during normal conditions	104	calls																				
Increased tug costs per call during normal conditions - During cargo dock construction - No-build	25,000	US$ / call																				
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build		US$	18,200,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build	-	US$	18,200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	93.0493	99.5627	106.5321	113.9894	121.9686	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV		US$	9,990,471		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dredging Costs																						
Increased annual dredging maintenance costs incurred by USACE - During cargo dock construction - No-build	5,130,000	US$																				
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build		US$	35,910,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build	-	US$	35,910,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	93.0493	99.5627	106.5321	113.9894	121.9686	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255
Increased dredging maintenance - During cargo dock construction - No-build - PV		US$	19,711,968		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Operating Benefits

	Base Case																		
Model Period Ending	-	*Error Checks*			**31 Dec 05**	**31 Dec 06**	**31 Dec 07**	**31 Dec 08**	**31 Dec 09**	**31 Dec 10**	**31 Dec 11**	**31 Dec 12**	**31 Dec 13**	**31 Dec 14**	**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**
Pre-forecast vs Forecast	-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120
Model Column counter	**Constant**	**Unit**	**Total**		91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106
OPERATING COSTS DURING CARGO DOCK CONSTRUCTION																				
Weeks per year added tug needed during construction of cargo docks	52	weeks / year																		
Cargo vessel calls per week	2	days / week																		
Vessel port calls during normal conditions	104	calls																		
Tug Costs																				
Vessel port calls during normal conditions	104	calls																		
Increased tug costs per call during normal conditions - During cargo dock construction - No-build	25,000	US$ / call																		
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build		US$	18,200,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build	-	US$	18,200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9766	708.3150	757.8970	810.9498	867.7163
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV		US$	9,990,471		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dredging Costs																				
Increased annual dredging maintenance costs incurred by USACE - During cargo dock construction - No-build	5,130,000	US$																		
Construction of cargo docks flag - No-build	-	flag	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build		US$	35,910,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build	-	US$	35,910,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9766	708.3150	757.8970	810.9498	867.7163
Increased dredging maintenance - During cargo dock construction - No-build - PV		US$	19,711,968		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Cargo Diversion Benefits During Major Failure

Base Case: Model Period Ending
Pre-forecast vs Forecast
Model Version Number
Model Column Counter

Error Checks
Alerts

| Constant | Unit | Total | 31 Dec 15 Pre-forecast 2015 | 31 Dec 16 Pre-forecast 2016 | 31 Dec 17 Pre-forecast 2017 | 31 Dec 18 Pre-forecast 2018 | 31 Dec 19 Pre-forecast 2019 | 31 Dec 20 Pre-forecast 2020 | 31 Dec 21 Pre-forecast 2021 | 31 Dec 22 Pre-forecast 2022 | 31 Dec 23 Forecast 2023 | 31 Dec 24 Forecast 2024 | 31 Dec 25 Forecast 2025 | 31 Dec 26 Forecast 2026 | 31 Dec 27 Forecast 2027 | 31 Dec 28 Forecast 2028 | 31 Dec 29 Forecast 2029 | 31 Dec 30 Forecast 2030 | 31 Dec 31 Forecast 2031 | 31 Dec 32 Forecast 2032 | 31 Dec 33 Forecast 2033 | 31 Dec 34 Forecast 2034 | 31 Dec 35 Forecast 2035 | 31 Dec 36 Forecast 2036 | 31 Dec 37 Forecast 2037 | 31 Dec 38 Forecast 2038 | 31 Dec 39 Forecast 2039 | 31 Dec 40 Forecast 2040 | 31 Dec 41 Forecast 2041 | 31 Dec 42 Forecast 2042 | 31 Dec 43 Forecast 2043 | 31 Dec 44 Forecast 2044 | 31 Dec 45 Forecast 2045 | 31 Dec 46 Forecast 2046 | 31 Dec 47 Forecast 2047 | 31 Dec 48 Forecast 2048 | 31 Dec 49 Forecast 2049 | 31 Dec 50 Forecast 2050 | 31 Dec 51 Forecast 2051 | 31 Dec 52 Forecast 2052 | 31 Dec 53 Forecast 2053 | 31 Dec 54 Forecast 2054 | 31 Dec 55 Forecast 2055 | 31 Dec 56 Forecast 2056 | 31 Dec 57 Forecast 2057 | 31 Dec 58 Forecast 2058 | 31 Dec 59 Forecast 2059 | 31 Dec 60 Forecast 2060 | 31 Dec 61 Forecast 2061 | 31 Dec 62 Forecast 2062 | 31 Dec 63 Forecast 2063 | 31 Dec 64 Forecast 2064 | 31 Dec 65 Forecast 2065 | 31 Dec 66 Forecast 2066 | 31 Dec 67 Forecast 2067 | 31 Dec 68 Forecast 2068 | 31 Dec 69 Forecast 2069 | 31 Dec 70 Forecast 2070 | 31 Dec 71 Forecast 2071 | 31 Dec 72 Forecast 2072 | 31 Dec 73 Forecast 2073 | 31 Dec 74 Forecast 2074 | 31 Dec 75 Forecast 2075 | 31 Dec 76 Forecast 2076 | 31 Dec 77 Forecast 2077 | 31 Dec 78 Forecast 2078 | 31 Dec 79 Forecast 2079 | 31 Dec 80 Forecast 2080 | 31 Dec 81 Forecast 2081 | 31 Dec 82 Forecast 2082 | 31 Dec 83 Forecast 2083 | 31 Dec 84 Forecast 2084 | 31 Dec 85 Forecast 2085 | 31 Dec 86 Forecast 2086 | 31 Dec 87 Forecast 2087 | 31 Dec 88 Forecast 2088 | 31 Dec 89 Forecast 2089 | 31 Dec 90 Forecast 2090 | 31 Dec 91 Forecast 2091 | 31 Dec 92 Forecast 2092 | 31 Dec 93 Forecast 2093 | 31 Dec 94 Forecast 2094 | 31 Dec 95 Forecast 2095 | 31 Dec 96 Forecast 2096 | 31 Dec 97 Forecast 2097 | 31 Dec 98 Forecast 2098 | 31 Dec 99 Forecast 2099 | 31 Dec 00 Forecast 2100 |
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Cargo Diversion Benefits During Major Failure

Base Case
Error Checks
Alerts

Model Period Ending
Pre-forecast vs. Forecast
Model Year Counter
Model Column Counter

	Constant	Unit	Total	31 Dec 92 Post-forecast 76	31 Dec 93 Post-forecast 77	31 Dec 94 Post-forecast 78	31 Dec 95 Post-forecast 79	31 Dec 96 Post-forecast 80	31 Dec 97 Post-forecast 81	31 Dec 98 Post-forecast 82	31 Dec 99 Post-forecast 83	31 Dec 00 Post-forecast 84	31 Dec 01 Post-forecast 85	31 Dec 02 Post-forecast 86	31 Dec 03 Post-forecast 87	31 Dec 04 Post-forecast 88	31 Dec 05 Post-forecast 89	31 Dec 06 Post-forecast 90	31 Dec 07 Post-forecast 91	31 Dec 08 Post-forecast 92	31 Dec 09 Post-forecast 93	31 Dec 10 Post-forecast 94	31 Dec 11 Post-forecast 95	31 Dec 12 Post-forecast 96	31 Dec 13 Post-forecast 97	31 Dec 14 Post-forecast 98	31 Dec 15 Post-forecast 99	31 Dec 16 Post-forecast 100	31 Dec 17 Post-forecast 101	31 Dec 18 Post-forecast 102	31 Dec 19 Post-forecast 103	31 Dec 20 Post-forecast 104
ECONOMIC COMPETITIVENESS COSTS - TRUCK MILE INCREASE																																
Truck Operating Cost																																
Truck operating cost - Truck - 2020 US$	0.9400	US$ / mile																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck operating costs - No-build	-	US$	579,376,508	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck operating costs - No-build	-	US$	579,376,508	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in highway truck operating costs - No-build - PV	-	US$	191,470,712	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Travel Time																																
Truck average speed	50	miles / hour																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck travel time - No-build	-	hours	12,229,315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average vehicle occupancy (AVO) - Trucks	1	persons																														
Vehicle travel time savings - Truck operator - 2020 US$	32.0000	US$ / hr																														
Increase in highway truck travel time costs - No-build	-	US$	12,229,315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck travel time costs - No-build	-	US$	391,338,067	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in highway truck travel time costs - No-build - PV	-	US$	126,526,411	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Maintenance																																
Pavement repair cost - Truck - 2020 US$	0.1576	US$ / mile																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway maintenance costs - No-build	-	US$	97,094,401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway maintenance costs - No-build	-	US$	97,094,401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in highway maintenance costs - No-build - PV	-	US$	32,150,318	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Congestion																																
Urban share of impacted highway	10.00%	share																														
Rural share of impacted highway	90.00%	share																														
Congestion cost - Truck (urban) - 2020 US$	0.3100	US$ / mile																														
Congestion cost - Truck (rural) - 2020 US$	0.0670	US$ / mile																														
Congestion cost - Truck - 2020 US$	0.0913	US$ / mile																														
Congestion cost - Truck - 2020 US$	0.0913	US$ / mile																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway congestion - No-build	-	US$	56,213,430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway congestion - No-build	-	US$	56,213,430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in highway congestion - No-build - PV	-	US$	18,597,102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Noise Pollution																																
Urban share of impacted highway	10.00%	share																														
Rural share of impacted highway	90.00%	share																														
Noise pollution cost - Truck (urban) - 2020 US$	0.0300	US$ / mile																														
Noise pollution cost - Truck (rural) - 2020 US$	0.0033	US$ / mile																														
Noise pollution cost - Truck - 2020 US$	0.0099	US$ / mile																														
Noise pollution cost - Truck - 2020 US$	0.0099	US$ / mile																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway noise pollution - No-build	-	US$	4,253,995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway noise pollution - No-build	-	US$	4,253,995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in highway noise pollution - No-build - PV	-	US$	1,406,477	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total																																
Increase in highway truck operating costs - No-build - PV	-	US$	191,470,712	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck travel time costs - No-build - PV	-	US$	126,526,411	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway maintenance costs - No-build - PV	-	US$	32,150,318	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway congestion costs - No-build - PV	-	US$	18,597,102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway noise pollution - No-build - PV	-	US$	1,406,477	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major failure - No-build - PV		US$	372,962,020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAFETY COSTS - TRUCK MILE INCREASE																																
Property Damage Only Accidents																																
PDO rate per VMT - Truck	138	incident / 100 million VMT																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway PDO accidents - No-build	-	incidents	850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Property damage only (PDO) crash monetized value - 2020 US$	4,000	US$ / crash																														
Increase in highway PDO accidents - No-build	-	incidents	850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway PDO accident costs - No-build	-	US$	3,912,837	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway PDO accident costs - No-build	-	US$	3,912,837	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in highway PDO accident costs - No-build - PV	-	US$	1,293,038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Injury Accidents																																
Injury rate per VMT - Truck	53	person / 100 million VMT																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway injury accidents - No-build	-	incidents	326	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown severity injury monetized value - 2020 US$	210,300	US$ / injury																														
Increase in highway injury accidents - No-build	-	incidents	326	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway injury accident costs - No-build	-	US$	68,499,021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway injury accident costs - No-build	-	US$	68,499,021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in highway injury accident costs - No-build - PV	-	US$	32,624,763	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fatal Accidents																																
Fatality per VMT - Truck	1.6681	person / 100 million VMT																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in fatalities in highway accidents - No-build	-	fatalities	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fatality monetized value - 2020 US$	11,600,000	US$ / fatality																														
Increase in fatalities in highway accidents - No-build	-	fatalities	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in fatalities in highway accident costs - No-build	-	US$	119,261,392	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in fatalities in highway accident costs - No-build	-	US$	119,261,392	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in fatalities in highway accident costs - No-build - PV	-	US$	34,413,209	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total																																
Increase in highway PDO accident costs - No-build - PV	-	US$	1,293,038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway injury accident costs - No-build - PV	-	US$	32,624,763	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in fatalities in highway accident costs - No-build - PV	-	US$	34,413,209	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety costs - Cargo diversion during major failure - No-build - PV		US$	68,330,491	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ENVIRONMENTAL COSTS - TRUCK MILE INCREASE																																
Fuel Increase																																
Truck fuel efficiency - 2019 US$	6.0000	mpg																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in truck fuel consumption - No-build	-	gal																														
CO2 Emissions																																
CO2 emissions per metric ton	1,000,000	gram / metric ton																														
CO2 emissions per gallon of diesel	10,180	g / gal																														
Increase in truck fuel consumption - No-build	-	gal	-																													
Forecast period flag	-	flag	33																													
Increase in carbon dioxide emissions - Highway - No-build	-	metric tons	985,311																													
Increase in carbon dioxide emission costs - Highway - No-build - 3 percent	-	US$	39,080,529	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Increase in carbon dioxide emission costs - Highway - No-build - 3 percent	-	US$	39,080,529																													
Discount rate multiplier - 7 percent	-	factor	-																													
Increase in carbon dioxide emissions - Highway - No-build - PV	-	US$	56,232,490																													
Increase in carbon dioxide emission costs - Highway - No-build - 3 percent	-	US$	69,292,966																													
Discount rate multiplier - 3 percent	-	factor	8.4000	8.6520	8.9116	9.1789	9.4543	9.7379	10.0301	10.3310	10.6409	10.9601	11.2889	11.6276	11.9764	12.3357	12.7058	13.0870	13.4796	13.8839	14.3005	14.7295	15.1714	15.6265	16.0953	16.5782	17.0755	17.5878	18.1154	18.6588	19.2186	
Increase in carbon dioxide emission costs - Highway - No-build - 3 percent - PV	-	US$	39,080,529																													
NOx Emissions																																
Grams per metric ton	1,000,000	gram / metric ton																														
NOx emission rate - Truck	-	gram / mile	EMFAC 2021	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739	0.7739
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway NOx emissions - No-build	-	metric tons	490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Damage costs for emissions - NOx - 2020 US$	-	US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov –	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100	18,100
Increase in NOx emission costs - Highway - No-build	-	US$	8,777,462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in NOx emission costs - Highway - No-build	-	US$	8,777,462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in NOx emission costs - Highway - No-build - PV	-	US$	2,942,224	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PM2.5 Emissions																																
Grams per metric ton	1,000,000	gram / metric ton																														
PM2.5 emission rate - Truck	-	gram / mile	EMFAC 2021	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211	0.0211
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in highway PM2.5 emissions - Highway - No-build	-	metric tons	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in PM2.5 emissions - Highway - No-build	-	metric tons	13																													
Damage costs for emissions - PM2.5 - 2020 US$	-	US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov –	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800	867,800
Increase in PM2.5 emission costs - Highway - No-build	-	US$	11,378,436																													
Increase in PM2.5 emission costs - Highway - No-build	-	US$	11,378,436	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in PM2.5 emission costs - Highway - No-build - PV	-	US$	3,773,322	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SOx Emissions																																
Grams per metric ton	1,000,000	gram / metric ton																														
Increase in truck miles - Post cargo dock construction major failure - No-build	-	miles	616,357,456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SOx emission rate - Truck	-	gram / mile	EMFAC 2021	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107	0.0107
Forecast period flag	-	flag	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in SOx emissions - Highway - No-build	-	metric tons	7																													
Increase in SOx emissions - Highway - No-build	-	metric tons	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Damage costs for emissions - SOx - 2020 US$	-	US$ / metric ton	Benefit Cost Analysis Guidance 2022 (Revised).pdf (transportation.gov –	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100	49,100
Increase in SOx emission costs - Highway - No-build	-	US$	336,644																													
Increase in SOx emission costs - Highway - No-build	-	US$	336,644	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	130.5065	139.6419	149.4168	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7290	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030	471.9802	505.0188	540.3701	578.1960	618.6697	661.9796	708.3150	757.8975	810.9498	867.7163
Increase in SOx emission costs - Highway - No-build - PV	-	US$	114,279	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total																																
Increase in carbon dioxide emission costs - Highway - No-build - 3 percent - PV	-	US$	39,080,529	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in NOx emission costs - Highway - No-build - PV	-	US$	2,942,224	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in PM2.5 emission costs - Highway - No-build - PV	-	US$	3,773,322	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in SOx emission costs - Highway - No-build - PV	-	US$	114,279	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during major failure - No-build - PV		US$	45,910,354	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summary																																
Increase in carbon dioxide emissions - Highway - No-build	-	metric tons	985,311	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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CO2 emissions		metric tons	985,311																													
Increase in NOx emissions - Highway - No-build	-	metric tons	490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Failure of NES Benefits

Model Period Ending	Base Case	*Error Checks*	
Pre-forecast vs Forecast	-	*Alerts*	
Financial Year Ending	-		
Model Column counter	**Constant**	**Unit**	**Total**

	31 Dec 15	31 Dec 16	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20	31 Dec 21	31 Dec 22	31 Dec 23	31 Dec 24	31 Dec 25	31 Dec 26	31 Dec 27	31 Dec 28	31 Dec 29	31 Dec 30	31 Dec 31	31 Dec 32	31 Dec 33	31 Dec 34	31 Dec 35	31 Dec 36	31 Dec 37	31 Dec 38	31 Dec 39	31 Dec 40	31 Dec 41	31 Dec 42	31 Dec 43	31 Dec 44	31 Dec 45	31 Dec 46	31 Dec 47	31 Dec 48	31 Dec 49	31 Dec 50	31 Dec 51	31 Dec 52	31 Dec 53	31 Dec 54	31 Dec 55	31 Dec 56	31 Dec 57	31 Dec 58	31 Dec 59	31 Dec 60	31 Dec 61	31 Dec 62	31 Dec 63	31 Dec 64	31 Dec 65
	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51

MINOR FAILURE OF NES BULKHEAD

Annual probability of a NES minor failure	7.00%	percent																																																	
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build	7,500,000	US$																																																	
Construction of cargo docks and operating period flag - No-build	-	flag	30																																															
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build	-	US$	15,750,000	-	-	-	-	-	-	-	-	-	-	-	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	-	-	-	-	-	-	-	-	-	-	-
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build - PV	-	US$	15,750,000	-	-	-	-	-	-	-	-	-	-	-	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672	2.1049	2.2522	2.4098	2.5785	2.7590	2.9522	3.1588	3.3799	3.6165	3.8697	4.1406	4.4304	4.7405	5.0724	5.4274	5.8074	6.2139	6.6488	7.1143	7.6123	8.1451	8.7153	9.3253	9.9781	10.6766	11.4229	12.2236	13.0793	13.9948	14.9745	16.0227	17.1443	18.3444	19.6285	21.0025
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build - PV	-	US$	4,644,924	-	-	-	-	-	-	-	-	349,830	328,944	305,555	285,565	266,893	249,424	233,136	217,896	203,604	190,264	177,836	166,202	155,329	145,187	135,670	126,764	118,419	110,597	103,502	96,731	90,403	84,488	78,961	73,795	68,966	64,456	60,239	56,298	52,615	49,173	-	-	-	-	-	-	-	-	-	-	-

MAJOR FAILURE OF NES BULKHEAD

Accelerated Construction costs

Percent increase for acceleration of NES1 work under emergency conditions - Major NES bulkhead failure - No-build	25.00%	percent																																																	
NES construction - Build - Constant dollars	-	US$	114,500,000	-	-	-	-	-	-	-	-	38,166,667	38,166,667	38,166,667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build	##########	US$																																																	
Annual probability of a NES major failure	2.00%	percent																																																	
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build	##########	US$																																																	
Construction of cargo docks and operating period flag - No-build	-	flag	30																																															
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build	-	US$	85,875,000	-	-	-	-	-	-	-	-	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	-	-	-	-	-	-	-	-	-	-	-
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build - PV	-	US$	85,875,000	-	-	-	-	-	-	-	-	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	2,862,500	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672	2.1049	2.2522	2.4098	2.5785	2.7590	2.9522	3.1588	3.3799	3.6165	3.8697	4.1406	4.4304	4.7405	5.0724	5.4274	5.8074	6.2139	6.6488	7.1143	7.6123	8.1451	8.7153	9.3253	9.9781	10.6766	11.4229	12.2236	13.0793	13.9948	14.9745	16.0227	17.1443	18.3444	19.6285	21.0025
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build - PV	-	US$	25,325,897	-	-	-	-	-	-	-	-	1,907,405	1,782,621	1,666,001	1,557,010	1,455,150	1,359,953	1,270,984	1,187,836	1,110,127	1,037,502	969,628	906,194	846,910	791,505	739,724	691,331	646,104	603,835	564,332	527,413	492,910	460,663	430,526	402,361	376,038	351,438	328,446	306,959	286,878	268,110	-	-	-	-	-	-	-	-	-	-	-

Cargo Diversion

Economic Competitiveness

Increase in highway truck operating costs - No-build	-	US$	579,376,008	-	-	-	-	-	-	-	-	16,380,391	16,483,587	16,585,785	16,673,690	16,762,061	16,849,223	16,936,839	17,024,911	17,099,820	17,171,640	17,242,043	17,311,011	17,376,793	17,441,087	17,503,875	17,565,139	17,624,860	17,683,022	17,739,608	17,794,601	17,847,985	17,901,529	17,953,443	18,005,508	18,057,724	18,110,091	18,162,611	18,215,282	18,268,107	18,321,084	18,374,215	18,427,501	18,480,940	-	-	-	-	-	-	-	-	-	-	-
Increase in highway truck travel time costs - No-build	-	US$	391,338,067	-	-	-	-	-	-	-	-	11,064,094	11,133,797	11,202,827	11,262,202	11,321,892	11,380,765	11,439,945	11,499,433	11,550,031	11,598,541	11,646,095	11,692,679	11,737,111	11,780,539	11,822,949	11,864,329	11,904,668	11,943,953	11,982,174	12,019,318	12,055,376	12,091,543	12,126,608	12,161,775	12,197,044	12,232,416	12,267,890	12,303,467	12,339,147	12,374,930	12,410,817	12,446,809	12,482,905	-	-	-	-	-	-	-	-	-	-	-
Increase in highway maintenance costs - No-build	-	US$	97,284,451	-	-	-	-	-	-	-	-	2,750,472	2,767,800	2,784,960	2,799,720	2,814,559	2,829,195	2,843,906	2,858,695	2,871,273	2,883,332	2,895,154	2,906,735	2,917,780	2,928,576	2,939,119	2,949,406	2,959,434	2,969,200	2,978,701	2,987,935	2,996,899	3,005,890	3,014,607	3,023,349	3,032,117	3,040,910	3,049,729	3,058,573	3,067,443	3,076,338	3,085,260	3,094,207	3,103,180	-	-	-	-	-	-	-	-	-	-	-
Increase in highway noise pollution - No-build	-	US$	56,273,624	-	-	-	-	-	-	-	-	1,590,989	1,601,012	1,610,939	1,619,476	1,628,060	1,636,526	1,645,035	1,653,590	1,660,866	1,667,841	1,674,679	1,681,378	1,687,767	1,694,012	1,700,110	1,706,061	1,711,861	1,717,511	1,723,007	1,728,348	1,733,533	1,738,734	1,743,776	1,748,833	1,753,904	1,758,991	1,764,092	1,769,208	1,774,338	1,779,484	1,784,645	1,789,820	1,795,010	-	-	-	-	-	-	-	-	-	-	-
Increase in highway noise pollution - No-build	-	US$	4,252,866	-	-	-	-	-	-	-	-	120,239	120,997	121,747	122,392	123,041	123,680	124,324	124,970	125,520	126,047	126,564	127,070	127,553	128,025	128,486	128,936	129,374	129,801	130,218	130,620	131,012	131,405	131,796	132,188	132,581	132,976	133,321	133,708	134,096	134,485	134,875	135,266	135,658	-	-	-	-	-	-	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	##########		-	-	-	-	-	-	-	-	31,906,184	32,107,193	32,306,257	32,477,481	32,649,611	32,819,389	32,990,050	33,161,598	33,307,509	33,447,401	33,584,535	33,718,873	33,847,005	33,972,239	34,094,539	34,213,870	34,330,197	34,443,487	34,553,706	34,660,822	34,764,805	34,869,099	34,970,220	35,071,633	35,173,341	35,275,344	35,377,642	35,480,237	35,583,130	35,686,321	35,789,812	35,893,602	35,997,693	-	-	-	-	-	-	-	-	-	-	-

Annual probability of a NES major failure	2.00%	percent																																															
Number of years for full closure of Rolls terminal - Major NES bulkhead failure - No-build	3	years																																																
Increase in highway truck operating costs - No-build	-	US$	579,376,008	-	-	-	-	-	-	-	-	16,380,391	16,483,587	16,585,785	16,673,690	16,762,061	16,849,223	16,936,839	17,024,911	17,099,820	17,171,640	17,242,043	17,311,011	17,376,793	17,441,087	17,503,875	17,565,139	17,624,860	17,683,022	17,739,608	17,794,601	17,847,985	17,901,529	17,953,443	18,005,508	18,057,724	18,110,091	18,162,611	18,215,282	18,268,107	18,321,084	18,374,215	18,427,501	18,480,940	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30																																															
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	31,795,575	-	-	-	-	-	-	-	-	1,000,421	1,005,724	1,010,953	1,016,210	1,021,495	1,025,989	1,030,298	1,034,523	1,038,661	1,042,608	1,046,465	1,050,233	1,053,908	1,057,492	1,060,981	1,064,376	1,067,676	1,070,879	1,074,092	1,077,207	1,080,330	1,083,463	1,086,605	1,089,757	1,092,917	1,096,086	1,099,265	1,102,453	1,105,650	1,108,856	-	-	-	-	-	-	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	31,795,575	-	-	-	-	-	-	-	-	1,000,421	1,005,724	1,010,953	1,016,210	1,021,495	1,025,989	1,030,298	1,034,523	1,038,661	1,042,608	1,046,465	1,050,233	1,053,908	1,057,492	1,060,981	1,064,376	1,067,676	1,070,879	1,074,092	1,077,207	1,080,330	1,083,463	1,086,605	1,089,757	1,092,917	1,096,086	1,099,265	1,102,453	1,105,650	1,108,856	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672	2.1049	2.2522	2.4098	2.5785	2.7590	2.9522	3.1588	3.3799	3.6165	3.8697	4.1406	4.4304	4.7405	5.0724	5.4274	5.8074	6.2139	6.6488	7.1143	7.6123	8.1451	8.7153	9.3253	9.9781	10.6766	11.4229	12.2236	13.0793	13.9948	14.9745	16.0227	17.1443	18.3444	19.6285	21.0025
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	9,221,925	-	-	-	-	-	-	-	-	666,623	626,314	588,384	552,751	519,276	487,440	457,465	429,290	402,811	377,889	354,474	332,477	311,813	292,405	274,178	257,061	240,989	225,899	211,754	198,474	186,028	174,362	163,428	153,179	143,573	134,570	126,131	118,221	110,808	103,859	-	-	-	-	-	-	-	-	-	-	-

Annual probability of a NES major failure	2.00%	percent																																														
Number of years for full closure of Rolls terminal - Major NES bulkhead failure - No-build	3	years																																															
Increase in carbon dioxide emission costs - Highway - No-build - 3 percent	-	US$	69,252,988	-	-	-	-	-	-	-	-	1,473,753	1,510,501	1,547,500	1,583,482	1,619,802	1,684,371	1,721,348	1,758,665	1,794,893	1,831,042	1,867,277	1,903,588	1,939,773	1,976,010	2,012,287	2,048,595	2,084,926	2,121,268	2,157,613	2,223,597	2,289,742	2,326,437	2,363,096	2,399,949	2,436,995	2,474,236	2,511,672	2,579,654	2,587,135	2,594,637	2,602,162	2,609,708	2,617,276	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30																																															
Environmental sustainability costs - CO2 - Cargo diversion during major NES bulkhead failure - No-build	-	US$	3,883,274	-	-	-	-	-	-	-	-	95,009	97,188	101,062	103,281	105,520	107,694	109,863	112,037	114,215	116,386	118,561	120,737	122,916	125,096	127,276	129,457	133,416	137,384	139,586	141,786	143,997	146,220	148,454	150,700	154,779	155,228	155,678	156,130	156,582	157,037	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - CO2 - Cargo diversion during major NES bulkhead failure - No-build	-	US$	3,883,274	-	-	-	-	-	-	-	-	95,009	97,188	101,062	103,281	105,520	107,694	109,863	112,037	114,215	116,386	118,561	120,737	122,916	125,096	127,276	129,457	133,416	137,384	139,586	141,786	143,997	146,220	148,454	150,700	154,779	155,228	155,678	156,130	156,582	157,037	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672	2.1049	2.2522	2.4098	2.5785	2.7590	2.9522	3.1588	3.3799	3.6165	3.8697	4.1406	4.4304	4.7405	5.0724	5.4274	5.8074	6.2139	6.6488	7.1143	7.6123	8.1451	8.7153	9.3253	9.9781	10.6766	11.4229	12.2236	13.0793	13.9948	14.9745	16.0227	17.1443	18.3444	19.6285	21.0025
Environmental sustainability costs - CO2 - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	1,047,852	-	-	-	-	-	-	-	-	63,306	60,524	58,819	56,178	53,641	51,164	48,780	46,491	44,295	42,184	40,161	38,222	36,366	34,590	32,891	31,265	30,114	28,981	27,519	26,124	24,796	23,531	22,328	21,183	20,333	19,058	17,863	16,743	15,693	14,709	-	-	-	-	-	-	-	-	-	-	-

NOx

Annual probability of a NES major failure	2.00%	percent																																														
Number of years for full closure of Rolls terminal - Major NES bulkhead failure - No-build	3	years																																															
Increase in NOx emission costs - Highway - No-build	-	US$	8,777,462	-	-	-	-	-	-	-	-	274,856	265,104	260,140	257,467	256,947	257,947	260,065	264,466	263,413	262,762	262,500	262,496	262,695	262,968	263,341	263,685	264,099	264,524	264,954	265,443	265,989	266,619	267,314	268,078	268,888	269,730	270,578	271,424	272,211	273,000	273,792	274,586	275,382	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30																																															
Environmental sustainability costs - NOx - Cargo diversion during major NES bulkhead failure - No-build	-	US$	478,642	-	-	-	-	-	-	-	-	15,448	15,417	15,477	15,604	15,868	15,805	15,766	15,750	15,750	15,762	15,778	15,800	15,821	15,846	15,871	15,897	15,927	15,959	15,997	16,039	16,085	16,133	16,184	16,235	16,285	16,333	16,380	16,428	16,475	16,523	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - NOx - Cargo diversion during major NES bulkhead failure - No-build	-	US$	478,642	-	-	-	-	-	-	-	-	15,448	15,417	15,477	15,604	15,868	15,805	15,766	15,750	15,750	15,762	15,778	15,800	15,821	15,846	15,871	15,897	15,927	15,959	15,997	16,039	16,085	16,133	16,184	16,235	16,285	16,333	16,380	16,428	16,475	16,523	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672	2.1049	2.2522	2.4098	2.5785	2.7590	2.9522	3.1588	3.3799	3.6165	3.8697	4.1406	4.4304	4.7405	5.0724	5.4274	5.8074	6.2139	6.6488	7.1143	7.6123	8.1451	8.7153	9.3253	9.9781	10.6766	11.4229	12.2236	13.0793	13.9948	14.9745	16.0227	17.1443	18.3444	19.6285	21.0025
Environmental sustainability costs - NOx - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	139,808	-	-	-	-	-	-	-	-	10,294	9,601	9,008	8,467	8,066	7,509	7,000	6,536	6,108	5,713	5,345	5,002	4,681	4,382	4,101	3,839	3,595	3,367	3,154	2,955	2,770	2,596	2,434	2,282	2,139	2,005	1,879	1,762	1,651	1,548	-	-	-	-	-	-	-	-	-	-	-

PM 2.5

Annual probability of a NES major failure	2.00%	percent																																														
Number of years for full closure of Rolls terminal - Major NES bulkhead failure - No-build	3	years																																															
Increase in PM2.5 emission costs - Highway - No-build	-	US$	11,378,436	-	-	-	-	-	-	-	-	322,966	323,579	323,143	325,649	329,136	333,497	338,367	343,674	343,549	343,513	343,695	343,991	344,434	344,861	345,334	345,811	346,183	346,527	346,842	347,235	347,729	348,381	349,185	350,143	351,216	352,370	353,549	354,731	355,760	356,792	357,826	358,864	359,905	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30																																															
Environmental sustainability costs - PM 2.5 - Cargo diversion during major NES bulkhead failure - No-build	-	US$	624,525	-	-	-	-	-	-	-	-	19,539	19,748	20,010	20,302	20,620	20,613	20,611	20,622	20,639	20,666	20,692	20,720	20,749	20,771	20,792	20,810	20,834	20,864	20,903	20,951	21,009	21,073	21,142	21,213	21,284	21,346	21,408	21,470	21,532	21,594	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - PM 2.5 - Cargo diversion during major NES bulkhead failure - No-build	-	US$	624,525	-	-	-	-	-	-	-	-	19,539	19,748	20,010	20,302	20,620	20,613	20,611	20,622	20,639	20,666	20,692	20,720	20,749	20,771	20,792	20,810	20,834	20,864	20,903	20,951	21,009	21,073	21,142	21,213	21,284	21,346	21,408	21,470	21,532	21,594	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672	2.1049	2.2522	2.4098	2.5785	2.7590	2.9522	3.1588	3.3799	3.6165	3.8697	4.1406	4.4304	4.7405	5.0724	5.4274	5.8074	6.2139	6.6488	7.1143	7.6123	8.1451	8.7153	9.3253	9.9781	10.6766	11.4229	12.2236	13.0793	13.9948	14.9745	16.0227	17.1443	18.3444	19.6285	21.0025
Environmental sustainability costs - PM 2.5 - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	181,946	-	-	-	-	-	-	-	-	13,020	12,298	11,646	11,043	10,482	9,793	9,151	8,557	8,004	7,490	7,009	6,559	6,139	5,743	5,373	5,026	4,703	4,401	4,121	3,860	3,618	3,391	3,180	2,982	2,796	2,621	2,456	2,302	2,158	2,023	-	-	-	-	-	-	-	-	-	-	-

PM 2.5

Annual probability of a NES major failure	2.00%	percent																																														
Number of years for full closure of Rolls terminal - Major NES bulkhead failure - No-build	3	years																																															
Increase in SOx emission costs - Highway - No-build	-	US$	336,844	-	-	-	-	-	-	-	-	10,194	10,322	10,430	10,485	10,496	10,492	10,513	10,543	10,391	10,264	10,161	10,082	10,025	9,988	9,969	9,964	9,968	9,979	9,995	10,014	10,036	10,060	10,084	10,110	10,138	10,165	10,194	10,222	10,252	10,282	10,311	10,341	10,371	-	-	-	-	-	-	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30																																															
Environmental sustainability costs - SOx - Cargo diversion during major NES bulkhead failure - No-build	-	US$	18,354	-	-	-	-	-	-	-	-	629	630	630	631	633	623	616	610	605	601	599	598	598	598	598	599	600	601	602	604	605	607	608	610	612	613	615	617	619	620	622	-	-	-	-	-	-	-	-	-	-	-
Environmental sustain

Failure of NES Benefits

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Failure of NES Benefits

	Base Case						
Model Period Ending	-	*Error Checks*		**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**
Pre-forecast vs Forecast	-	*Alerts*		Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending				2117	2118	2119	2120
Model Column counter	**Constant**	**Unit**	**Total**	103	104	105	106
MINOR FAILURE OF NES BULKHEAD							
Annual probability of a NES minor failure	7.00%	percent					
Cost of maitenance dredging, design, permitting - Minor NES bulkhead failure - No-build	7,500,000	US$					
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build		US$	15,750,000	-	-	-	-	-
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build	-	US$	15,750,000	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build - PV		US$	4,644,924		-	-	-	-
MAJOR FAILURE OF NES BULKHEAD							
Accelerated Construction costs							
Percent increase for acceleration of NES1 work under emergency conditions - Major NES bulkhead failure - No-build	25.00%	percent					
NES construction - Build - Constant dollars	-	US$	114,500,000	-	-	-	-	-
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build	##########	US$						
Annual probability of a NES major failure	2.00%	percent					
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build	##########	US$					
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build		US$	85,875,000		-	-	-	-
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build	-	US$	85,875,000	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build - PV		US$	25,325,897		-	-	-	-
Cargo Diversion							
Economic Competitiveness							
Increase in highway truck operating costs - No-build	-	US$	579,376,008	-	-	-	-	-
Increase in highway truck travel time costs - No-build	-	US$	391,338,067	-	-	-	-	-
Increase in highway maintenance costs - No-build	-	US$	97,284,451	-	-	-	-	-
Increase in highway congestion - No-build	-	US$	56,273,436	-	-	-	-	-
Increase in highway noise pollution - No-build	-	US$	4,252,866	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build		US$	############		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in highway truck operating costs - No-build	-	US$	579,376,008	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build		US$	31,795,575		-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	31,795,575	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	9,221,925		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in highway truck travel time costs - No-build	-	US$	391,338,067	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build		US$	21,478,241		-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	21,478,241	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	6,228,926		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in highway maintenance costs - No-build	-	US$	97,284,451	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build		US$	5,338,873		-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	5,338,873	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	1,548,478		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in NOx emission costs - Highway - No-build	-	US$	56,273,436	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build		US$	3,088,230		-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	3,088,230	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	895,704		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in highway noise pollution - No-build	-	US$	4,252,866	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build		US$	233,393		-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	233,393	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	67,693		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	############		-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build		US$	61,932,312		-	-	-	-
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	61,932,312	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	17,962,724		-	-	-	-
Safety								
Increase in highway PDO accident costs - No-build	-	US$	3,912,637	-	-	-	-	-
Increase in highway injury accident costs - No-build	-	US$	66,459,021	-	-	-	-	-
Increase in fatalities in highway accident costs - No-build	-	US$	119,261,565	-	-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build		US$	191,633,222		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in highway PDO accident costs - No-build	-	US$	3,912,637	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build		US$	214,722		-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	214,722	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	62,277		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in highway injury accident costs - No-build	-	US$	66,459,021	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build		US$	3,756,962		-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	3,756,962	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	1,089,662		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in fatalities in highway accident costs - No-build	-	US$	119,261,565	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build		US$	6,544,955		-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	6,544,955	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	1,898,296		-	-	-	-
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Safety costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	191,633,222	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build		US$	10,516,639		-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build	-	US$	10,516,639	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	3,050,225		-	-	-	-
Environmental Sustainability								
CO2								
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in carbon dioxide emission costs - Highway - No-build - 3 percent	-	US$	69,252,988	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Environmental sustainability costs - CO2 - Cargo diversion during major NES bulkhead failure - No-build		US$	3,883,274		-	-	-	-
Environmental sustainability costs - CO2 - Cargo diversion during major NES bulkhead failure - No-build	-	US$	3,883,274	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Environmental sustainability costs - CO2 - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	1,047,852		-	-	-	-
NOx								
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in NOx emission costs - Highway - No-build	-	US$	8,777,462	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Environmental sustainability costs - NOx - Cargo diversion during major NES bulkhead failure - No-build		US$	478,642		-	-	-	-
Environmental sustainability costs - NOx - Cargo diversion during major NES bulkhead failure - No-build	-	US$	478,642	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Environmental sustainability costs - NOx - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	139,808		-	-	-	-
PM 2.5								
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in PM2.5 emission costs - Highway - No-build	-	US$	11,378,436	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Environmental sustainability costs - PM 2.5 - Cargo diversion during major NES bulkhead failure - No-build		US$	624,525		-	-	-	-
Environmental sustainability costs - PM 2.5 - Cargo diversion during major NES bulkhead failure - No-build	-	US$	624,525	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Environmental sustainability costs - PM 2.5 - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	181,946		-	-	-	-
PM 2.5								
Annual probability of a NES major failure	2.00%	percent						
Number of years for full closure of Roffs terminal - Major NES bulkhead failure - No-build	3	years						
Increase in SOx emission costs - Highway - No-build	-	US$	336,844	-	-	-	-	-
Construction of cargo docks and operating period flag - No-build	-	flag	30	-	-	-	-	-
Environmental sustainability costs - SOx - Cargo diversion during major NES bulkhead failure - No-build		US$	18,554		-	-	-	-
Environmental sustainability costs - SOx - Cargo diversion during major NES bulkhead failure - No-build	-	US$	18,554	-				
Discount rate multiplier - 7 percent	-	factor		-	708.3150	757.8970	810.9498	867.7163
Environmental sustainability costs - SOx - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	5,439		-	-	-	-
Total								
Environmental sustainability costs - CO2 - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	1,047,852	-	-	-	-	-
Environmental sustainability costs - NOx - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	139,808	-	-	-	-	-
Environmental sustainability costs - PM 2.5 - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	181,946	-	-	-	-	-
Environmental sustainability costs - SOx - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	5,439	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during major NES bulkhead failure - No-build - PV		US$	1,375,045		-	-	-	-

Project Costs

		Base Case																		
Model Period Ending		-	*Error Checks*		**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**	**31 Dec 21**	**31 Dec 22**	**31 Dec 23**	**31 Dec 24**	**31 Dec 25**	**31 Dec 26**	**31 Dec 27**	**31 Dec 28**	**31 Dec 29**	**31 Dec 30**
Pre-forecast vs Forecast		-	*Alerts*		Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending					2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Model Column counter	**Constant**	**Unit**	**Total**		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PROJECT COSTS																				
Build																				
Project approval/environmental document - Build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
Project approval/environmental document - Build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
Design - Build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - Constant dollars	-	US$	114,500,000	-	-	-	-	-	-	-	-	-	38,166,667	38,166,667	38,166,667	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
NES construction - Build - PV		US$	87,484,842		-	-	-	-	-	-	-	-	31,155,369	29,117,167	27,212,306	-	-	-	-	-
Cargo docks construction - Build - Constant dollars	-	US$	###########	-	-	-	-	-	-	-	-	-	-	-	-	160,750,000	160,750,000	160,750,000	160,750,000	153,333,333
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
Cargo docks construction - Build - PV		US$	607,093,133		-	-	-	-	-	-	-	-	-	-	-	107,114,512	100,107,021	93,557,964	87,437,349	77,946,891
Project approval/environmental document - Build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - PV	-	US$	87,484,842	-	-	-	-	-	-	-	-	-	31,155,369	29,117,167	27,212,306	-	-	-	-	-
Cargo docks construction - Build - PV	-	US$	607,093,133	-	-	-	-	-	-	-	-	-	-	-	-	107,114,512	100,107,021	93,557,964	87,437,349	77,946,891
Total project costs - Build - PV		US$	694,577,976		-	-	-	-	-	-	-	-	31,155,369	29,117,167	27,212,306	107,114,512	100,107,021	93,557,964	87,437,349	77,946,891
No-Build																				
Project approval/environmental document - No-build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
Project approval/environmental document - No-build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
Design - No-build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - Constant dollars	-	US$	7,500,000	-	-	-	-	-	-	-	-	-	-	-	-	2,500,000	2,500,000	500,000	500,000	500,000
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
Additional construction delay time due to maintenance dredging access - No-build - PV		US$	4,499,428		-	-	-	-	-	-	-	-	-	-	-	1,665,856	1,556,874	291,005	271,967	254,175
Cargo docks construction - No-build - Constant dollars	-	US$	###########	-	-	-	-	-	-	-	-	-	-	-	-	160,750,000	160,750,000	160,750,000	160,750,000	153,333,333
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
Cargo docks construction - No-build - PV		US$	607,093,133		-	-	-	-	-	-	-	-	-	-	-	107,114,512	100,107,021	93,557,964	87,437,349	77,946,891
Project approval/environmental document - No-build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - PV	-	US$	4,499,428	-	-	-	-	-	-	-	-	-	-	-	-	1,665,856	1,556,874	291,005	271,967	254,175
Cargo docks construction - No-build - PV	-	US$	607,093,133	-	-	-	-	-	-	-	-	-	-	-	-	107,114,512	100,107,021	93,557,964	87,437,349	77,946,891
Total project costs - No-build - PV		US$	611,592,562		-	-	-	-	-	-	-	-	-	-	-	108,780,368	101,663,895	93,848,968	87,709,316	78,201,066
Total																				
Total project costs - Build - PV	-	US$	694,577,976	-	-	-	-	-	-	-	-	-	31,155,369	29,117,167	27,212,306	107,114,512	100,107,021	93,557,964	87,437,349	77,946,891
Total project costs - No-build - PV	-	US$	611,592,562	-	-	-	-	-	-	-	-	-	-	-	-	108,780,368	101,663,895	93,848,968	87,709,316	78,201,066
Total project costs - Build - PV		US$	82,985,414		-	-	-	-	-	-	-	-	31,155,369	29,117,167	27,212,306	(1,665,856)	(1,556,874)	(291,005)	(271,967)	(254,175)
MAINTENANCE & OPERATING COSTS																				
Build																				
Operations and maintenance costs - Build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - Build - Constant dollars - Annual average	-	US$																		
Operations and maintenance costs - Build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - Build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build																				
Operations and maintenance costs - No-build - Constant dollars	-	US$	337,500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - Constant dollars - Annual average	4,500,000	US$																		
Operations and maintenance costs - No-build - Constant dollars	-	US$	337,500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	0.7130	0.7629	0.8163	0.8734	0.9346	1.0000	1.0700	1.1449	1.2250	1.3108	1.4026	1.5007	1.6058	1.7182	1.8385	1.9672
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - PV		US$	22,522,437		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total																				
Operations and maintenance costs - Build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - PV	-	US$	22,522,437	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance cost savings - Build - PV		US$	22,522,437		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project Costs

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Project Costs

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Project Costs

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Project Costs

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Project Costs

		Base Case																		
Model Period Ending		-	*Error Checks*		**31 Dec 95**	**31 Dec 96**	**31 Dec 97**	**31 Dec 98**	**31 Dec 99**	**31 Dec 00**	**31 Dec 01**	**31 Dec 02**	**31 Dec 03**	**31 Dec 04**	**31 Dec 05**	**31 Dec 06**	**31 Dec 07**	**31 Dec 08**	**31 Dec 09**	**31 Dec 10**
Pre-forecast vs Forecast		-	*Alerts*		Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110
Model Column counter	**Constant**	**Unit**	**Total**		81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
PROJECT COSTS																				
Build																				
Project approval/environmental document - Build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
Project approval/environmental document - Build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
Design - Build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - Constant dollars	-	US$	114,500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
NES construction - Build - PV		US$	87,484,842		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - Build - Constant dollars	-	US$	###########	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
Cargo docks construction - Build - PV		US$	607,093,133		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project approval/environmental document - Build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - Build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NES construction - Build - PV	-	US$	87,484,842	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - Build - PV	-	US$	607,093,133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total project costs - Build - PV		US$	694,577,976		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build																				
Project approval/environmental document - No-build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
Project approval/environmental document - No-build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
Design - No-build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - Constant dollars	-	US$	7,500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
Additional construction delay time due to maintenance dredging access - No-build - PV		US$	4,499,428		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - No-build - Constant dollars	-	US$	###########	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
Cargo docks construction - No-build - PV		US$	607,093,133		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project approval/environmental document - No-build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design - No-build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional construction delay time due to maintenance dredging access - No-build - PV	-	US$	4,499,428	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cargo docks construction - No-build - PV	-	US$	607,093,133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total project costs - No-build - PV		US$	611,592,562		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total																				
Total project costs - Build - PV	-	US$	694,577,976	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total project costs - No-build - PV	-	US$	611,592,562	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total project costs - Build - PV		US$	82,985,414		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAINTENANCE & OPERATING COSTS																				
Build																				
Operations and maintenance costs - Build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - Build - Constant dollars - Annual average	-	US$																		
Operations and maintenance costs - Build - Constant dollars	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - Build - PV		US$	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build																				
Operations and maintenance costs - No-build - Constant dollars	-	US$	337,500,000	-	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	-	-	-
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - Constant dollars - Annual average	4,500,000	US$																		
Operations and maintenance costs - No-build - Constant dollars	-	US$	337,500,000	-	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	-	-	-
Discount rate multiplier - 7 percent	-	factor	-	-	159.8760	171.0673	183.0421	195.8550	209.5648	224.2344	239.9308	256.7260	274.6968	293.9255	314.5003	336.5154	360.0714	385.2764	412.2458	441.1030
Operating period flag	-	flag	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - PV		US$	22,522,437		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total																				
Operations and maintenance costs - Build - PV	-	US$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance costs - No-build - PV	-	US$	22,522,437	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance cost savings - Build - PV		US$	22,522,437		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project Costs

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Benefit-Cost Analysis

Model Period Ending	Base Case				**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**	**31 Dec 21**	**31 Dec 22**	**31 Dec 23**	**31 Dec 24**	**31 Dec 25**	**31 Dec 26**	**31 Dec 27**	**31 Dec 28**	**31 Dec 29**	**31 Dec 30**	**31 Dec 31**	**31 Dec 32**	**31 Dec 33**	**31 Dec 34**
	-	*Error Checks*																							
Pre-forecast vs Forecast	-	*Alerts*			Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Pre-forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending					2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Model Column counter	**Constant**	**Unit**	**Total**		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PROJECT BENEFITS																									
Economic competitiveness costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	18,982,818	-	-	-	-	-	-	-	-	-	-	-	-	3,246,168	3,049,881	2,865,178	2,691,660	2,528,651	2,373,624	2,227,657	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV	-	US$	9,990,471	-	-	-	-	-	-	-	-	-	-	-	-	1,732,490	1,619,149	1,513,224	1,414,228	1,321,708	1,235,241	1,154,431	-	-
Increased dredging maintenance - During cargo dock construction - No-build - PV	-	US$	19,711,968	-	-	-	-	-	-	-	-	-	-	-	-	3,418,336	3,194,706	2,985,707	2,790,380	2,607,832	2,437,226	2,277,781	-	-
[Stretch row]																									
Economic competitiveness benefits - Build - PV		US$	48,685,256		-	-	-	-	-	-	-	-	-	-	-	8,396,993	7,863,736	7,364,108	6,896,268	6,458,191	6,046,091	5,659,869	-	-
Safety costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	551,227	517,896	486,532	457,067	429,387	403,062	378,275	-	-
[Stretch row]																									
Safety outcome benefits - Build - PV		US$	3,223,446		-	-	-	-	-	-	-	-	-	-	-	551,227	517,896	486,532	457,067	429,387	403,062	378,275	-	-
Environmental sustainability costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	258,252	253,285	251,999	247,574	243,468	238,495	233,701	-	-
[Stretch row]																									
Environmental sustainability benefits - Build - PV		US$	1,726,775		-	-	-	-	-	-	-	-	-	-	-	258,252	253,285	251,999	247,574	243,468	238,495	233,701	-	-
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build - PV	-	US$	4,644,924	-	-	-	-	-	-	-	-	-	-	-	-	349,830	326,944	305,555	285,565	266,883	249,424	233,106	217,856	203,604
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build - PV	-	US$	25,325,897	-	-	-	-	-	-	-	-	-	-	-	-	1,907,405	1,782,621	1,666,001	1,557,010	1,455,150	1,359,953	1,270,984	1,187,836	1,110,127
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	17,962,724	-	-	-	-	-	-	-	-	-	-	-	-	1,298,467	1,219,952	1,146,071	1,076,664	1,011,461	949,449	891,063	836,183	784,606
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	3,050,225	-	-	-	-	-	-	-	-	-	-	-	-	220,491	207,158	194,613	182,827	171,755	161,225	151,310	141,991	133,233
Environmental sustainability costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	1,375,045	-	-	-	-	-	-	-	-	-	-	-	-	87,041	82,815	79,839	76,052	72,511	68,762	65,205	61,837	58,642
[Stretch row]																									
Resilience benefits - Build - PV		US$	52,358,815		-	-	-	-	-	-	-	-	-	-	-	3,863,233	3,619,490	3,392,079	3,178,118	2,977,760	2,788,813	2,611,669	2,445,704	2,290,211
Economic competitiveness benefits - Build - PV	-	US$	48,685,256	-	-	-	-	-	-	-	-	-	-	-	-	8,396,993	7,863,736	7,364,108	6,896,268	6,458,191	6,046,091	5,659,869	-	-
Safety outcome benefits - Build - PV	-	US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	551,227	517,896	486,532	457,067	429,387	403,062	378,275	-	-
Environmental sustainability benefits - Build - PV	-	US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	258,252	253,285	251,999	247,574	243,468	238,495	233,701	-	-
Resilience benefits - Build - PV	-	US$	52,358,815	-	-	-	-	-	-	-	-	-	-	-	-	3,863,233	3,619,490	3,392,079	3,178,118	2,977,760	2,788,813	2,611,669	2,445,704	2,290,211
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,867,340	1,745,178
Total project benefits - No-build - PV		US$	128,516,729		-	-	-	-	-	-	-	-	-	-	-	13,069,706	12,254,407	11,494,717	10,779,027	10,108,806	9,476,462	8,883,514	4,313,044	4,035,389

BENEFIT-COST RATIO

Economic competitiveness benefits - Build - PV	-	US$	48,685,256
Safety outcome benefits - Build - PV	-	US$	3,223,446
Environmental sustainability benefits - Build - PV	-	US$	1,726,775
Resilience benefits - Build - PV	-	US$	52,358,815
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437
Total benefits		US$	128,516,729
Total project costs - Build - PV	-	US$	82,985,414
Net present value		US$	45,531,315
Benefit-cost ratio			1.5487

Benefit-Cost Analysis

Model Period Ending	Base Case	*Error Checks*		**31 Dec 35**	**31 Dec 36**	**31 Dec 37**	**31 Dec 38**	**31 Dec 39**	**31 Dec 40**	**31 Dec 41**	**31 Dec 42**	**31 Dec 43**	**31 Dec 44**	**31 Dec 45**	**31 Dec 46**	**31 Dec 47**	**31 Dec 48**	**31 Dec 49**	**31 Dec 50**	**31 Dec 51**	**31 Dec 52**	**31 Dec 53**	**31 Dec 54**
Pre-forecast vs Forecast	-	*Alerts*		Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Financial Year Ending				2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054		
Model Column counter	**Constant**	**Unit**	**Total**	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
PROJECT BENEFITS																									
Economic competitiveness costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	18,982,818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV	-	US$	9,990,471	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Increased dredging maintenance - During cargo dock construction - No-build - PV	-	US$	19,711,968	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
[Stretch row]																									
Economic competitiveness benefits - Build - PV		US$	48,685,256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Safety costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
[Stretch row]																									
Safety outcome benefits - Build - PV		US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Environmental sustainability costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
[Stretch row]																									
Environmental sustainability benefits - Build - PV		US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build - PV	-	US$	4,644,924	-	190,284	177,836	166,202	155,329	145,167	135,670	126,794	118,499	110,747	103,502	96,731	90,403	84,488	78,961	73,795	68,968	64,456	60,239	56,298	52,615	
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build - PV	-	US$	25,325,897	-	1,037,502	969,628	906,194	846,910	791,505	739,724	691,331	646,104	603,835	564,332	527,413	492,910	460,663	430,526	402,361	376,038	351,438	328,446	306,959	286,878	
Economic competitiveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	17,962,724	-	736,063	690,454	647,607	607,359	569,555	534,051	500,710	469,404	440,012	412,460	386,594	362,351	339,628	318,329	298,367	279,656	262,119	245,681	230,275	215,834	
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	3,050,225	-	124,990	117,245	109,969	103,135	96,715	90,686	85,025	79,709	74,718	70,039	65,647	61,530	57,672	54,055	50,665	47,488	44,510	41,719	39,103	36,650	
Environmental sustainability costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	1,375,045	-	55,605	52,717	49,973	47,363	44,880	42,520	40,276	38,547	36,876	34,913	33,051	31,287	29,617	28,033	26,533	25,349	23,759	22,269	20,873	19,564	
[Stretch row]																									
Resilience benefits - Build - PV		US$	52,358,815		2,144,443	2,007,880	1,879,946	1,760,096	1,647,823	1,542,652	1,444,137	1,352,263	1,266,188	1,185,246	1,109,436	1,038,480	972,068	909,905	851,721	797,499	746,282	698,355	653,507	611,541	
Economic competitiveness benefits - Build - PV	-	US$	48,685,256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Safety outcome benefits - Build - PV	-	US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Environmental sustainability benefits - Build - PV	-	US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Resilience benefits - Build - PV	-	US$	52,358,815	-	2,144,443	2,007,880	1,879,946	1,760,096	1,647,823	1,542,652	1,444,137	1,352,263	1,266,188	1,185,246	1,109,436	1,038,480	972,068	909,905	851,721	797,499	746,282	698,355	653,507	611,541	
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437	-	1,631,007	1,524,306	1,424,585	1,331,388	1,244,287	1,162,886	1,086,809	1,015,709	949,261	887,160	829,121	774,880	724,187	676,810	632,533	591,152	552,479	516,335	482,556	450,987	
Total project benefits - No-build - PV		US$	128,516,729		3,775,450	3,532,186	3,304,530	3,091,483	2,892,110	2,705,537	2,530,945	2,367,972	2,215,448	2,072,405	1,938,557	1,813,360	1,696,254	1,586,715	1,484,254	1,388,651	1,298,760	1,214,690	1,136,064	1,062,528	

BENEFIT-COST RATIO

Economic competitiveness benefits - Build - PV	-	US$	48,685,256
Safety outcome benefits - Build - PV	-	US$	3,223,446
Environmental sustainability benefits - Build - PV	-	US$	1,726,775
Resilience benefits - Build - PV	-	US$	52,358,815
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437
Total benefits		US$	128,516,729
Total project costs - Build - PV	-	US$	82,985,414
Net present value		US$	45,531,315
Benefit-cost ratio			1.5487

Benefit-Cost Analysis

Model Period Ending	Base Case				**31 Dec 55**	**31 Dec 56**	**31 Dec 57**	**31 Dec 58**	**31 Dec 59**	**31 Dec 60**	**31 Dec 61**	**31 Dec 62**	**31 Dec 63**	**31 Dec 64**	**31 Dec 65**	**31 Dec 66**	**31 Dec 67**	**31 Dec 68**	**31 Dec 69**	**31 Dec 70**	**31 Dec 71**	**31 Dec 72**	**31 Dec 73**	**31 Dec 74**
Pre-forecast vs Forecast	-	*Error Checks*			Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending	-	*Alerts*			2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074
Model Column counter	**Constant**	**Unit**	**Total**		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
PROJECT BENEFITS																								
Economic competitiveness costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	18,982,818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV	-	US$	9,990,471	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build - PV	-	US$	19,711,968	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Economic competitiveness benefits - Build - PV		US$	48,685,256		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Safety outcome benefits - Build - PV		US$	3,223,446		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Environmental sustainability benefits - Build - PV		US$	1,726,775		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build - PV	-	US$	4,644,924	-	49,173	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build - PV	-	US$	25,325,897	-	268,110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Economic competitveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	17,962,724	-	202,299	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	3,050,225	-	34,352	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	1,375,045	-	18,337	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Resilience benefits - Build - PV		US$	52,358,815		572,271	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Economic competitiveness benefits - Build - PV	-	US$	48,685,256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety outcome benefits - Build - PV	-	US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability benefits - Build - PV	-	US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Resilience benefits - Build - PV	-	US$	52,358,815	-	572,271	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437	-	421,483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total project benefits - No-build - PV		US$	128,516,729		993,754	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BENEFIT-COST RATIO

Economic competitiveness benefits - Build - PV	-	US$	48,685,256
Safety outcome benefits - Build - PV	-	US$	3,223,446
Environmental sustainability benefits - Build - PV	-	US$	1,726,775
Resilience benefits - Build - PV	-	US$	52,358,815
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437
Total benefits		US$	128,516,729
Total project costs - Build - PV	-	US$	82,985,414
Net present value		US$	45,531,315
Benefit-cost ratio			1.5487

Benefit-Cost Analysis

Model Period Ending	Base Case				**31 Dec 75**	**31 Dec 76**	**31 Dec 77**	**31 Dec 78**	**31 Dec 79**	**31 Dec 80**	**31 Dec 81**	**31 Dec 82**	**31 Dec 83**	**31 Dec 84**	**31 Dec 85**	**31 Dec 86**	**31 Dec 87**	**31 Dec 88**	**31 Dec 89**	**31 Dec 90**	**31 Dec 91**	**31 Dec 92**	**31 Dec 93**	**31 Dec 94**
Pre-forecast vs Forecast	-	*Error Checks*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending	-	*Alerts*			2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094
Model Column counter	**Constant**	**Unit**	**Total**		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
PROJECT BENEFITS																								
Economic competitiveness costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	18,982,818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV	-	US$	9,990,471	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build - PV	-	US$	19,711,968	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Economic competitiveness benefits - Build - PV		US$	48,685,256		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Safety outcome benefits - Build - PV		US$	3,223,446		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during cargo dock construction - No-build - PV	-	US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Environmental sustainability benefits - Build - PV		US$	1,726,775		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build - PV	-	US$	4,644,924	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build - PV	-	US$	25,325,897	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Economic competitveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	17,962,724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	3,050,225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-	US$	1,375,045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Resilience benefits - Build - PV		US$	52,358,815		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Economic competitiveness benefits - Build - PV	-	US$	48,685,256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety outcome benefits - Build - PV	-	US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability benefits - Build - PV	-	US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Resilience benefits - Build - PV	-	US$	52,358,815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total project benefits - No-build - PV		US$	128,516,729		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BENEFIT-COST RATIO																								
Economic competitiveness benefits - Build - PV	-	US$	48,685,256																					
Safety outcome benefits - Build - PV	-	US$	3,223,446																					
Environmental sustainability benefits - Build - PV	-	US$	1,726,775																					
Resilience benefits - Build - PV	-	US$	52,358,815																					
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437																					
Total benefits		US$	128,516,729																					
Total project costs - Build - PV	-	US$	82,985,414																					
Net present value		US$	45,531,315																					
Benefit-cost ratio			1.5487																					

Benefit-Cost Analysis

Model Period Ending	Base Case				**31 Dec 95**	**31 Dec 96**	**31 Dec 97**	**31 Dec 98**	**31 Dec 99**	**31 Dec 00**	**31 Dec 01**	**31 Dec 02**	**31 Dec 03**	**31 Dec 04**	**31 Dec 05**	**31 Dec 06**	**31 Dec 07**	**31 Dec 08**	**31 Dec 09**	**31 Dec 10**	**31 Dec 11**	**31 Dec 12**	**31 Dec 13**	**31 Dec 14**
	-	*Error Checks*																							
Pre-forecast vs Forecast	-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending					2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114
Model Column counter					81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	Constant		**Unit**	**Total**																				
PROJECT BENEFITS																								
Economic competitiveness costs - Cargo diversion during cargo dock construction - No-build - PV	-		US$	18,982,818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV	-		US$	9,990,471	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build - PV	-		US$	19,711,968	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Economic competitiveness benefits - Build - PV			US$	48,685,256		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety costs - Cargo diversion during cargo dock construction - No-build - PV	-		US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Safety outcome benefits - Build - PV			US$	3,223,446		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during cargo dock construction - No-build - PV	-		US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Environmental sustainability benefits - Build - PV			US$	1,726,775		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build - PV	-		US$	4,644,924	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build - PV	-		US$	25,325,897	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Economic competitveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-		US$	17,962,724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-		US$	3,050,225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during major NES bulkhead failure - No-build - PV	-		US$	1,375,045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[Stretch row]																								
Resilience benefits - Build - PV			US$	52,358,815		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Economic competitiveness benefits - Build - PV	-		US$	48,685,256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety outcome benefits - Build - PV	-		US$	3,223,446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental sustainability benefits - Build - PV	-		US$	1,726,775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Resilience benefits - Build - PV	-		US$	52,358,815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operations and maintenance cost savings - Build - PV	-		US$	22,522,437	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total project benefits - No-build - PV			US$	128,516,729		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BENEFIT-COST RATIO

Economic competitiveness benefits - Build - PV	-	US$	48,685,256
Safety outcome benefits - Build - PV	-	US$	3,223,446
Environmental sustainability benefits - Build - PV	-	US$	1,726,775
Resilience benefits - Build - PV	-	US$	52,358,815
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437
Total benefits		US$	128,516,729
Total project costs - Build - PV	-	US$	82,985,414
Net present value		US$	45,531,315
Benefit-cost ratio			1.5487

Benefit-Cost Analysis

		Base Case									
Model Period Ending		-	*Error Checks*			**31 Dec 15**	**31 Dec 16**	**31 Dec 17**	**31 Dec 18**	**31 Dec 19**	**31 Dec 20**
Pre-forecast vs Forecast		-	*Alerts*			Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
Financial Year Ending						2115	2116	2117	2118	2119	2120
Model Column counter		**Constant**	**Unit**	**Total**		101	102	103	104	105	106
PROJECT BENEFITS											
Economic competitiveness costs - Cargo diversion during cargo dock construction - No-build - PV		-	US$	18,982,818	-	-	-	-	-	-	-
Increased tug costs during normal conditions - During cargo dock construction - No-build - PV		-	US$	9,990,471	-	-	-	-	-	-	-
Increased dredging maintenance - During cargo dock construction - No-build - PV		-	US$	19,711,968	-	-	-	-	-	-	-
[Stretch row]											
Economic competitiveness benefits - Build - PV			US$	48,685,256		-	-	-	-	-	-
Safety costs - Cargo diversion during cargo dock construction - No-build - PV		-	US$	3,223,446	-	-	-	-	-	-	-
[Stretch row]											
Safety outcome benefits - Build - PV			US$	3,223,446		-	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during cargo dock construction - No-build - PV		-	US$	1,726,775	-	-	-	-	-	-	-
[Stretch row]											
Environmental sustainability benefits - Build - PV			US$	1,726,775		-	-	-	-	-	-
Cost of maintenance dredging, design, permitting - Minor NES bulkhead failure - No-build - PV		-	US$	4,644,924	-	-	-	-	-	-	-
Increase construction cost for acceleration of NES work under emergency conditions - Major NES bulkhead failure - No-build - PV		-	US$	25,325,897	-	-	-	-	-	-	-
Economic competitveness costs - Cargo diversion during major NES bulkhead failure - No-build - PV		-	US$	17,962,724	-	-	-	-	-	-	-
Safety costs - Cargo diversion during major NES bulkhead failure - No-build - PV		-	US$	3,050,225	-	-	-	-	-	-	-
Environmental sustainability costs - Cargo diversion during major NES bulkhead failure - No-build - PV		-	US$	1,375,045	-	-	-	-	-	-	-
[Stretch row]											
Resilience benefits - Build - PV			US$	52,358,815		-	-	-	-	-	-
Economic competitiveness benefits - Build - PV		-	US$	48,685,256	-	-	-	-	-	-	-
Safety outcome benefits - Build - PV		-	US$	3,223,446	-	-	-	-	-	-	-
Environmental sustainability benefits - Build - PV		-	US$	1,726,775	-	-	-	-	-	-	-
Resilience benefits - Build - PV		-	US$	52,358,815	-	-	-	-	-	-	-
Operations and maintenance cost savings - Build - PV		-	US$	22,522,437	-	-	-	-	-	-	-
Total project benefits - No-build - PV			US$	128,516,729		-	-	-	-	-	-

BENEFIT-COST RATIO			
Economic competitiveness benefits - Build - PV	-	US$	48,685,256
Safety outcome benefits - Build - PV	-	US$	3,223,446
Environmental sustainability benefits - Build - PV	-	US$	1,726,775
Resilience benefits - Build - PV	-	US$	52,358,815
Operations and maintenance cost savings - Build - PV	-	US$	22,522,437
Total benefits		US$	128,516,729
Total project costs - Build - PV	-	US$	82,985,414
Net present value		US$	45,531,315
Benefit-cost ratio			1.5487

Results Library

Model Product Pricing
Model Column Counter

Base Case
User Choice

Constant	Unit	Total
Scenario list		
1 Base		
2 Bear Case		
3 Bull		
4 Scenario		
5 Scenario		
Size as scenario	B	
Position in library	101	

	31 Dec 31 Product 1	31 Dec 19 Product 2	31 Dec 18 Product 3	31 Dec 17 Product 4	31 Dec 16 Product 5	31 Dec 15 Product 6	31 Dec 14 Product 7	31 Dec 13 Product 8	31 Dec 12 Product 9	31 Dec 11 Product 10	31 Dec 10 Product 11	31 Dec 09 Product 12	31 Dec 08 Product 13	31 Dec 07 Product 14	31 Dec 06 Product 15	31 Dec 05 Product 16	31 Dec 04 Product 17	31 Dec 03 Product 18	31 Dec 02 Product 19	31 Dec 01 Product 20	31 Dec 00 Product 21	31 Dec 99 Product 22	31 Dec 98 Product 23	31 Dec 97 Product 24	31 Dec 96 Product 25	31 Dec 95 Product 26	31 Dec 94 Product 27	31 Dec 93 Product 28	31 Dec 92 Product 29	31 Dec 91 Product 30	31 Dec 90 Product 31	31 Dec 89 Product 32	31 Dec 88 Product 33	31 Dec 87 Product 34
Line Links																																			
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A1	1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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A3	3	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A4	4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A5	5	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A6	6	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A7	7	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A8	8	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A9	9	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A10	10	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A11	11	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A12	12	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A13	13	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A14	14	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A15	15	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A16	16	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A17	17	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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A25	25	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A26	26	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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A30	30	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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A33	33	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A34	34	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A35	35	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A36	36	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A37	37	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A38	38	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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A40	40	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A41	41	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A42	42	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A43	43	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A44	44	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A45	45	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A46	46	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A47	47	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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A51	51	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A52	52	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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A58	58	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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A60	60	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A61	61	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A62	62	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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A65	65	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A66	66	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A67	67	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A68	68	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A69	69	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A70	70	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A71	71	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A72	72	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
A73	73	A

31 Dec 48	31 Dec 49	31 Dec 50	31 Dec 51	31 Dec 52	31 Dec 53	31 Dec 54	31 Dec 55	31 Dec 56	31 Dec 57	31 Dec 58	31 Dec 59	31 Dec 60	31 Dec 61	31 Dec 62	31 Dec 63	31 Dec 64	31 Dec 65	31 Dec 66	31 Dec 67	31 Dec 68	31 Dec 69	31 Dec 70	31 Dec 71	31 Dec 72	31 Dec 73	31 Dec 74	31 Dec 75	31 Dec 76	31 Dec 77	31 Dec 78	31 Dec 79	31 Dec 80	31 Dec 81	31 Dec 82	31 Dec 83	31 Dec 84	31 Dec 85	31 Dec 86
Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast	Post-forecast
2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086
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31 Dec 47	31 Dec 48	31 Dec 49	31 Dec 50	31 Dec 51	31 Dec 52	31 Dec 53	31 Dec 54	31 Dec 55	31 Dec 56	31 Dec 57	31 Dec 58	31 Dec 59	31 Dec 60	31 Dec 61	31 Dec 62	31 Dec 63	31 Dec 64	31 Dec 65	31 Dec 66	31 Dec 67	31 Dec 68	31 Dec 69	31 Dec 70
Post 1 Dec 47	Post 1 Dec 48	Post 1 Dec 49	Post 1 Dec 50	Post 1 Dec 51	Post 1 Dec 52	Post 1 Dec 53	Post 1 Dec 54	Post 1 Dec 55	Post 1 Dec 56	Post 1 Dec 57	Post 1 Dec 58	Post 1 Dec 59	Post 1 Dec 60	Post 1 Dec 61	Post 1 Dec 62	Post 1 Dec 63	Post 1 Dec 64	Post 1 Dec 65	Post 1 Dec 66	Post 1 Dec 67	Post 1 Dec 68	Post 1 Dec 69	Post 1 Dec 70
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Post 1 Dec 71	Post 1 Dec 72	Post 1 Dec 73	Post 1 Dec 74	Post 1 Dec 75	Post 1 Dec 76	Post 1 Dec 77	Post 1 Dec 78	Post 1 Dec 79	Post 1 Dec 80	Post 1 Dec 81	Post 1 Dec 82	Post 1 Dec 83	Post 1 Dec 84	Post 1 Dec 85	Post 1 Dec 86	Post 1 Dec 87	Post 1 Dec 88	Post 1 Dec 89	Post 1 Dec 90	Post 1 Dec 91	Post 1 Dec 92	Post 1 Dec 93	Post 1 Dec 94
97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120

Checks and Alerts

Base Case	
-	*Error Checks*
-	*Alerts*

	Constant	Unit	Total
CHECK SUMMARY			
Total checks	-	check	
[do not delete row]			
Check #1	-	check	
Check #2	-	check	
[do not delete row]			
ALERT SUMMARY			
Total alerts	-	alert	
[do not delete row]			
Alert #1	-	alert	
Alert #2	-	alert	
[do not delete row]			

Cost Item	Rate	Amount	Unit	Total Estimated Cost	Comments
No NES During Construction				**$ 32,420,000**	
Increased tug costs during normal conditions	$ 25,000	728	Days	**$ 18,200,000**	During normal operations a third 5000HP tug will be required from the beginning of the Cargo Docks Construction Sequencing until completion. This is required due to the "pocket effect" that the new construction with have on the existing wharf face.
Closure of RORO Terminal during unfavorable conditions	Unknown	126	Days		Historically dates for annual Knik Arm Ice Season, are from November 15 to April 4. Assumed unfavorable conditions that would restrict access to RORO Terminal: High winds (>15mph Fastest 2 minute wind speed) and strong currents High winds (>15mph Fastest 2 minute wind speed), strong currents and ice Heavy ice (80% or more coverage) and/or thick ice (greater than 18") Assuming a worse case ice scenario, although unlikely, it is possible the RORO Terminal will be unusable for the entire ice season. More commonly, ice is not a problem on every day of the ice season. An estimate of the lower bound of the ice impact on the RORO Terminal is approximately 2 months.
Increased maintenance dredging costs incurred by USACE	$ 5,130,000	7	Years	**$ 35,910,000**	The new Cargo Dock design is approximately 140' offshore of the existing wharf face. This location was selected in part due to the higher current velocities which would help to minimize sedimentation at the wharf face. In the No NES scenario, the effects from the NES eddy, will not allow for the complete dredging savings to be realized by the POA. Average POA annual dredge quantities for the previous 10 years is 1,200,000 cubic yards (cy). Assume 15% of the average annual quantity (180,000 cy) would be lost due to the NES eddy. Assume $15/cy for Manson dredging cost and assume $60/cy for clam-shell project dredging. Assume 70% of dreding will be done by Manson and 30% completed with the clam-shell dredging.
Additional construction delay time due to maintenance dredging access	$ 500,000	15	EA	**$ 7,500,000**	In the No NES scenario, the effects from the NES eddy will increase sedimentation at the wharf face during the construction season. Because of this, special access is expected to be required for the maintenance dredging equipment that will have a direct cost impact on marine construction activities. Marine construction equipment would be required to reposition or relocate and then return to provide access for the maintenance dredging equipment. Assume $500,000 delay impact on marine construction activities per each occurrence. Assume 1 occurrence per construction season when marine equipment is at the far south or north ends of the cargo terminals, for approximately 5 years of construction. Assume 5 occurrences per construction season when marine equipment is located between the LOLO and RORO terminals, for approximately 2 years of construction.
No NES Post Construction				**$ 300,900,000**	
Increased Port maintenance dredging costs incurred by USACE	$ 4,500,000	75	Years	**$ 337,500,000**	The new Cargo Dock design location is approximately 140' offshore of the existing wharf face. This location was selected in part due to the higher current velocities which would help to minimize sedimentation at the wharf face. In the No NES scenario, because of the effects from the NES eddy, the complete expected savings for dredging costs would not be realized by the POA. Average POA annual dredge quantity for the previous 10 years is 1,200,000 cubic yards (cy). Assume a savings of 15% of the average annual quantity (180,000 cy) would be lost due to the NES eddy. Assume $25/cy for dredging cost, this does not include escalation. This covers the entire 75 year life span of the new cargo terminals; however, this would only be an annual cost until NES is addressed or fails.
NES Bulkhead minor failure				**$ 7,500,000**	
Cost of maintenance dredging, design and permitting	$ 7,500,000	1	EA	**$ 7,500,000**	This is assumed per event and does not include escalation.
NES Bulkhead major failure				**$ 158,400,000**	
Full Closure of RORO Terminal	Unknown	3	Years		
Cost of NES1 design, permitting and construction	$ 132,000,000	1	EA	**$ 132,000,000**	Assumes removal of NES1 at the midpoint of the remaining design life of 30 years.
Additional acceleration costs	$ 33,000,000	1	EA	**$ 33,000,000**	Assume 25% increase for acceleration of NES1 work under emergency conditions

PHASE II PROJECT	PROJECT COST
Phase II Administration Building	$ 11,000,000
Phase II NES Step 1	$ 114,500,000
Phase II Terminal 1 Cargo Dock LOLO	$ 643,000,000
Phase II Terminal 2 Cargo Dock RORO	$ 460,000,000
TOTAL PHASE II COST	**$ 1,228,500,000**

PHASE	FACILITY	TOTAL COST `	CONSTRUCTION	
			START	FINISH
PHASE 2A	Administration Building	$11M	4Q 2022	4Q 2023
	North Extension Stabilization - Step 1	$132M	4Q 2022	4Q 2024
PHASE 2B	Cargo Docks Replacement - Terminal 1	$643M	3Q 2025	4Q 2029
	Cargo Docks Replacement - Terminal 2	$460M	3Q 2029	4Q 2032
PHASE 3	Petroleum Terminal	$184M	1Q 2032	4Q 2035
PHASE 4	North Extension Stabilization - Step 2	$134M	4Q 2031	4Q 2033
PHASE 5	Terminal 3 Demolition	$59M	1Q 2035	4Q 2035

	CURRENT PLAN			POTENTIAL ACCELERATION		
	Cost	AWARD	COMPLETION	Cost	AWARD	:OMPLETION
NES 1						
Permitting	$1M	Jan-22	May-23			
Design/Build	$131M	Sep-22	Dec-24			
Admin Building						
Design/Build	$11M	May-22	Dec-23			
Cargo Docks Replacement						
Permitting	$2.5M	Jan-22	Dec-25	$2.5M	Jan-22	Dec-24
NEPA Process	$5M	Jul-22	Jun-25	$5M	Jul-22	Jun-24
Preliminary D	$2.5M	Oct-21	Dec-22	$2.5M	Oct-21	Dec-22
Detailed Desi	$15M	Apr-23	Sep-25	$15M	Apr-23	Sep-24
Terminal 1 Cc	$630M	Dec-25	Dec-29	$880M	Dec-24	Dec-27
Terminal 2 Cc	$448M	Dec-29	Dec-32	$548M	Dec-27	Dec-30

Table 13. 2000 Pavement, Congestion, Crash, Air Pollution, and Noise Costs for Illustrative Vehicles Under Specific Conditions						
Vehicle Class/Highway Class	**Cents per Mile**					
	Pavement	**Congestion**	**Crash**	**Air Pollution**	**Noise**	**Total**
Autos/Rural Interstate	-	0.78	0.98	1.14	0.01	2.91
Autos/Urban Interstate	0.10	7.70	1.19	1.33	0.09	10.41
40 kip 4-axle S.U. Truck/Rural Interstate	1.00	2.45	0.47	3.85	0.09	7.86
40 kip 4-axle S.U. Truck/Urban Interstate	3.10	24.48	0.86	4.49	1.50	34.43
60 kip 4-axle S.U. Truck/Rural Interstate	5.60	3.27	0.47	3.85	0.11	13.30
60 kip 4-axle S.U. Truck/Urban Interstate	18.10	32.64	0.86	4.49	1.68	57.77
60 kip 5-axle Comb/Rural Interstate	3.30	1.88	0.88	3.85	0.17	10.08
60 kip 5-axle Comb/Urban Interstate	10.50	18.39	1.15	4.49	2.75	37.28
80 kip 5-axle Comb/Rural Interstate	12.70	2.23	0.88	3.85	0.19	19.85
80 kip 5-axle Comb/Urban Interstate	40.90	20.06	1.15	4.49	3.04	69.64
NOTE: S.U. = Single Unit, Comb. = Combination; Air pollution costs are averages of costs of travel on all rural and urban highway classes, not just Interstate. Available data do not allow differences in air pollution costs for heavy truck classes to be distinguished.						

	Miles	Share	Pavement	Congestion
Rural	90.00%	0.90	7.20	1.85
Urban	10.00%	0.10	2.57	1.92
		Weighted average	9.77	3.77
		GDP Inflator	*1.62*	*1.62*
		cents per mile (2020 USD)	15.78	6.09
Source: http://www.dot.state.oh.us/Divisions/Planning/TechServ/TIM/Documents/RI339/RI339.pdf (pg. 89)				

Table 1.1.9. Implicit Price Deflators for Gross Domestic Product
[Index numbers, 2012=100]
Bureau of Economic Analysis
Last Revised on: February 24, 2022 - Next Release Date March 30, 2022

Line		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Line																													
1	**Gross domestic product**	70	72	73	74	75	76	78	80	81	83	85	88	90	93	94	95	96	98	100	102	104	105	106	108	110	112	114	118
2	**Personal consumption expenditures**	70	72	73	74	75	76	78	80	81	82	84	87	89	92	94	94	96	98	100	101	103	103	104	106	108	110	111	116
3	Goods	87	87	88	88	87	87	89	89	88	88	89	91	92	93	96	94	95	99	100	99	99	96	94	95	95	95	94	99
4	Durable goods	139	140	138	135	132	128	126	123	120	116	113	112	110	108	106	104	102	101	100	98	95	93	91	89	88	86	86	91
5	Nondurable goods	67	67	69	70	69	71	74	75	75	76	79	82	85	87	92	89	92	98	100	100	101	97	96	97	99	99	99	103
6	Services	63	64	66	68	69	71	73	75	77	80	82	85	88	91	93	94	96	98	100	102	105	107	109	112	115	118	120	124
7	**Gross private domestic investment**	85	86	86	86	86	86	87	87	88	89	91	95	98	100	101	99	98	99	100	101	103	104	104	105	107	109	110	113
8	Fixed investment	84	85	85	86	85	85	86	87	88	88	91	95	98	99	100	99	98	99	100	101	103	104	104	106	108	110	111	115
9	Nonresidential	95	96	95	95	93	92	93	92	92	91	92	94	97	98	100	99	97	99	100	100	101	102	101	102	103	104	105	106
10	Structures	44	46	48	49	52	53	55	58	61	63	67	76	85	90	94	93	92	95	100	101	107	109	110	113	114	119	121	128
11	Equipment	135	134	131	127	121	117	114	111	109	106	105	105	104	103	103	103	99	99	100	100	99	99	98	98	98	98	97	98
12	Intellectual property products	90	93	94	94	94	95	98	98	96	96	95	96	97	98	100	99	98	100	100	100	101	101	100	101	102	103	105	106
13	Residential	62	64	66	67	69	72	75	79	81	84	90	97	102	104	102	99	98	99	100	105	111	114	118	123	130	134	139	153
14	Change in private inventories	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	**Net exports of goods and services**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	Exports	81	83	82	81	79	78	80	79	78	80	82	85	88	91	95	90	93	99	100	100	100	95	93	96	99	99	96	107
17	Goods	85	87	85	82	80	79	80	80	79	79	82	85	88	91	96	89	93	100	100	99	98	91	88	90	93	92	88	101
18	Services	73	74	75	76	76	77	79	77	77	80	83	86	89	92	95	92	94	98	100	102	104	104	106	109	112	114	115	121
19	Imports	79	81	79	77	72	73	76	74	73	75	79	84	87	90	99	88	93	100	100	99	98	90	87	89	92	90	88	95
20	Goods	80	83	80	77	72	73	76	74	73	74	78	83	86	89	99	87	92	100	100	98	97	88	84	86	88	86	84	90
21	Services	70	72	74	74	72	75	74	73	75	80	84	87	90	93	98	94	96	99	100	102	104	103	103	105	108	109	110	116
22	**Government consumption expenditures and gross investment**	58	60	61	63	64	66	69	71	72	75	78	82	86	90	93	93	95	98	100	102	104	105	105	107	111	113	115	120
23	Federal	64	66	67	68	69	71	73	74	77	80	83	86	89	92	94	94	96	99	100	101	103	103	104	106	109	111	112	116
24	National defense	63	65	66	67	68	70	72	73	76	80	82	86	89	92	95	94	96	99	100	101	102	102	103	104	107	109	110	114
25	Nondefense	65	67	68	70	71	72	75	76	78	81	84	87	89	91	94	94	97	99	100	101	104	104	105	108	111	114	115	119
26	State and local	55	57	58	59	61	63	66	68	70	72	75	80	84	88	93	92	95	98	100	103	106	106	106	109	113	115	117	123
	Addendum:																												
27	Gross national product	70	72	73	74	75	76	78	80	81	83	85	87	90	93	94	95	96	98	100	102	104	105	106	108	110	112	114	---
		1.6155	1.5823	1.5539	1.5275	1.5106	1.4896	1.4566	1.4245	1.4026	1.3755	1.3395	1.2988	1.2599	1.2267	1.2037	1.1960	1.1818	1.1577	1.1365	1.1169	1.0964	1.0856	1.0748	1.0548	1.0302	1.0121	1.0000	
			2.10%	1.83%	1.72%	1.13%	1.41%	2.27%	2.25%	1.56%	1.97%	2.68%	3.14%	3.09%	2.70%	1.92%	0.64%	1.20%	2.08%	1.87%	1.75%	1.87%	1.00%	1.00%	1.90%	2.39%	1.79%	1.21%	4.16%
		1.0000	1.0210	1.0397	1.0576	1.0695	1.0846	1.1091	1.1341	1.1518	1.1745	1.2061	1.2439	1.2823	1.3169	1.3422	1.3508	1.3670	1.3954	1.4215	1.4464	1.4735	1.4882	1.5031	1.5317	1.5682	1.5963	1.6155	1.6827

Source: EMFAC2021 (v1.0.0) Emission Rates
Region Type: Statewide
Region: California
Calendar Year: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, g/mile for RUNEX, PMBW and PMTW, mph for Speed

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	CVMT	EVMT	NOx_RUNEX	PM2.5_RUNEX	PM10_RUNEX	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	SOx_RUNEX	NH3_RUNEX	PM10_PMBW	PM2.5_PMBW
Statewide	2,019.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	213,179.86	213,179.86	-	3.06	0.06	0.06	1,474.76	0.00	0.23	0.08	0.09	0.32	0.01	0.19	0.07	0.03
Statewide	2,020.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	216,980.25	216,980.25	-	2.15	0.04	0.04	1,472.04	0.00	0.23	0.04	0.05	0.18	0.01	0.20	0.07	0.02
Statewide	2,021.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	221,288.84	221,288.84	-	1.63	0.03	0.03	1,461.81	0.00	0.23	0.03	0.03	0.11	0.01	0.21	0.07	0.02
Statewide	2,022.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	225,691.94	225,691.94	-	1.34	0.03	0.03	1,451.09	0.00	0.23	0.02	0.02	0.07	0.01	0.21	0.07	0.02
Statewide	2,023.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	228,442.33	228,442.33	-	0.99	0.02	0.03	1,433.40	0.00	0.23	0.01	0.01	0.05	0.01	0.22	0.07	0.02
Statewide	2,024.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	231,295.31	231,295.31	-	0.93	0.02	0.02	1,412.80	0.00	0.22	0.01	0.01	0.04	0.01	0.22	0.07	0.02
Statewide	2,025.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	235,931.71	235,931.71	-	0.89	0.02	0.02	1,390.35	0.00	0.22	0.01	0.01	0.04	0.01	0.22	0.07	0.02
Statewide	2,026.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	238,149.07	238,149.07	-	0.86	0.02	0.02	1,365.91	0.00	0.22	0.01	0.01	0.04	0.01	0.22	0.07	0.02
Statewide	2,027.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	234,670.90	234,670.90	-	0.84	0.02	0.02	1,336.78	0.00	0.21	0.01	0.01	0.04	0.01	0.22	0.07	0.02
Statewide	2,028.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	239,377.79	239,377.79	-	0.83	0.02	0.02	1,306.89	0.00	0.21	0.01	0.01	0.03	0.01	0.22	0.07	0.03
Statewide	2,029.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	244,189.03	244,189.03	-	0.82	0.02	0.02	1,278.34	0.00	0.20	0.01	0.01	0.03	0.01	0.22	0.07	0.03
Statewide	2,030.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	249,107.17	249,107.17	-	0.81	0.02	0.02	1,252.04	0.00	0.20	0.01	0.01	0.03	0.01	0.22	0.07	0.03
Statewide	2,031.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	256,631.79	256,631.79	-	0.80	0.02	0.02	1,228.59	0.00	0.19	0.01	0.01	0.03	0.01	0.22	0.07	0.03
Statewide	2,032.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	264,452.51	264,452.51	-	0.79	0.02	0.02	1,208.40	0.00	0.19	0.01	0.01	0.03	0.01	0.22	0.07	0.03
Statewide	2,033.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	269,572.13	269,572.13	-	0.79	0.02	0.02	1,191.43	0.00	0.19	0.01	0.01	0.03	0.01	0.22	0.07	0.03
Statewide	2,034.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	277,747.48	277,747.48	-	0.79	0.02	0.02	1,177.44	0.00	0.19	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,035.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	286,183.88	286,183.88	-	0.79	0.02	0.02	1,166.37	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,036.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	332,264.97	332,264.97	-	0.78	0.02	0.02	1,157.84	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,037.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	342,395.80	342,395.80	-	0.78	0.02	0.02	1,151.48	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,038.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	319,830.72	319,830.72	-	0.78	0.02	0.02	1,146.86	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,039.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	329,602.49	329,602.49	-	0.78	0.02	0.02	1,143.42	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,040.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	339,687.29	339,687.29	-	0.78	0.02	0.02	1,140.91	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,041.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	350,095.48	350,095.48	-	0.78	0.02	0.02	1,139.09	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,042.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	360,837.79	360,837.79	-	0.77	0.02	0.02	1,137.76	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,043.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	371,925.31	371,925.31	-	0.77	0.02	0.02	1,136.80	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,044.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	383,369.50	383,369.50	-	0.77	0.02	0.02	1,136.11	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,045.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	395,182.22	395,182.22	-	0.77	0.02	0.02	1,135.61	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,046.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	407,375.75	407,375.75	-	0.77	0.02	0.02	1,135.25	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,047.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	419,962.76	419,962.76	-	0.77	0.02	0.02	1,134.99	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,048.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	432,956.38	432,956.38	-	0.77	0.02	0.02	1,134.80	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,049.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	446,370.18	446,370.18	-	0.77	0.02	0.02	1,134.67	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03
Statewide	2,050.00	T7 NOOS Class 8	Aggregate	55.00	Diesel	460,218.20	460,218.20	-	0.77	0.02	0.02	1,134.58	0.00	0.18	0.01	0.01	0.03	0.01	0.22	0.08	0.03

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-12-31 07:46 -09:00	2020-01-02 19:27 -09:00	2d 11h 41m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-12-31 07:41 -09:00	2020-01-05 21:46 -09:00	5d 14h 5m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-31 07:04 -09:00	2019-12-31 07:15 -09:00	11m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-12-30 09:17 -09:00	2019-12-31 22:32 -09:00	1d 13h 15m	Anchorage AK	Anchorage AK
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-12-30 06:13 -09:00	2019-12-30 18:59 -09:00	12h 46m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-12-30 06:12 -09:00	2019-12-30 07:21 -09:00	1h 9m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-12-30 05:55 -09:00	2019-12-31 06:52 -09:00	1d 0h 57m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-30 02:38 -09:00	2019-12-31 22:32 -09:00	1d 19h 54m	Anchorage AK	
PACIFIC WOLF	7404047	United States of America	Tug		2019-12-29 19:45 -09:00	2019-12-30 07:24 -09:00	11h 39m	Kodiak	
BERING WIND	9369198	United States of America	Tug		2019-12-29 19:11 -09:00	2019-12-30 05:34 -09:00	10h 23m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-12-26 09:12 -09:00	2019-12-30 05:32 -09:00	3d 20h 20m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-26 08:38 -09:00	2019-12-30 02:24 -09:00	3d 17h 46m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-12-26 05:30 -09:00	2019-12-29 15:08 -09:00	3d 9h 38m	Anchorage AK	Anchorage AK
TURQUOISE	9717761	Marshall Islands	Chemical Oil Products Tanker	49990	2019-12-26 05:30 -09:00	2019-12-27 16:10 -09:00	1d 10h 40m	Los Angeles / Long Beach	Daesan-Seosan
CAPE ANN	9848510	United States of America	Tug		2019-12-25 05:34 -09:00	2019-12-26 07:18 -09:00	1d 1h 44m	Valdez	Valdez
STELLAR WIND	9096911	United States of America	Tug		2019-12-25 05:13 -09:00	2019-12-26 07:19 -09:00	1d 2h 6m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-25 05:07 -09:00	2019-12-26 09:01 -09:00	1d 3h 54m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-24 19:39 -09:00	2019-12-25 01:28 -09:00	5h 49m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-12-24 05:31 -09:00	2019-12-26 14:08 -09:00	2d 8h 37m	Tacoma	Kodiak
TODD E PROPHET	9840740	United States of America	Tug		2019-12-23 15:10 -09:00	2019-12-24 16:48 -09:00	1d 1h 38m	Valdez	Homer
GLACIER WIND	8662593	United States of America	Tug		2019-12-23 15:09 -09:00	2019-12-25 04:56 -09:00	1d 13h 47m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-23 14:54 -09:00	2019-12-24 16:47 -09:00	1d 1h 53m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-22 23:40 -09:00	2019-12-23 12:10 -09:00	12h 30m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-12-22 23:39 -09:00	2019-12-26 05:01 -09:00	3d 5h 22m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-12-22 23:39 -09:00	2019-12-23 14:35 -09:00	14h 56m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-22 22:16 -09:00	2019-12-22 22:40 -09:00	24m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-12-22 12:20 -09:00	2019-12-22 22:39 -09:00	10h 19m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-12-22 12:18 -09:00	2019-12-22 22:37 -09:00	10h 19m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-12-22 11:51 -09:00	2019-12-22 11:59 -09:00	8m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-12-22 11:48 -09:00	2019-12-22 22:39 -09:00	10h 51m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-12-22 06:04 -09:00	2019-12-23 07:56 -09:00	1d 1h 52m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-12-22 06:04 -09:00	2019-12-22 11:35 -09:00	5h 31m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-22 05:30 -09:00	2019-12-22 05:46 -09:00	16m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-22 05:24 -09:00	2019-12-22 22:01 -09:00	16h 37m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-21 20:55 -09:00	2019-12-22 05:13 -09:00	8h 18m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-21 15:26 -09:00	2019-12-22 05:14 -09:00	13h 48m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-18 13:21 -09:00	2019-12-20 11:33 -09:00	1d 22h 12m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-18 09:50 -09:00	2019-12-18 11:57 -09:00	2h 7m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-18 01:28 -09:00	2019-12-18 09:27 -09:00	7h 59m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-17 14:12 -09:00	2019-12-18 01:17 -09:00	11h 5m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-12-17 10:56 -09:00	2019-12-22 11:32 -09:00	5d 0h 36m	Anchorage AK	Anchorage AK
STI DONALD CTRAUSCHT	9794422	Marshall Islands	Chemical Oil Products Tanker	49990	2019-12-17 08:54 -09:00	2019-12-19 17:13 -09:00	2d 8h 19m	Hong Kong	Yosu
BOB FRANCO	9637820	United States of America	Tug	569	2019-12-17 08:53 -09:00	2019-12-18 22:05 -09:00	1d 13h 12m	Nikiski	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-12-17 08:06 -09:00	2019-12-18 02:11 -09:00	18h 5m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-12-17 08:02 -09:00	2019-12-21 20:44 -09:00	4d 12h 42m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-15 23:03 -09:00	2019-12-16 02:21 -09:00	3h 18m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-15 16:55 -09:00	2019-12-15 22:53 -09:00	5h 58m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-12-15 16:54 -09:00	2019-12-16 09:09 -09:00	16h 15m	Anchorage AK	Anchorage AK
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-12-15 16:49 -09:00	2019-12-16 02:20 -09:00	9h 31m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-12-15 16:49 -09:00	2019-12-17 07:45 -09:00	1d 14h 56m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-15 06:20 -09:00	2019-12-15 16:11 -09:00	9h 51m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-12-15 06:20 -09:00	2019-12-16 00:33 -09:00	18h 13m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-12-15 06:20 -09:00	2019-12-15 16:12 -09:00	9h 52m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-12 11:55 -09:00	2019-12-15 05:53 -09:00	2d 17h 58m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-10 04:48 -09:00	2019-12-12 11:38 -09:00	2d 6h 50m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-12-10 04:48 -09:00	2019-12-10 21:48 -09:00	17h 0m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-12-10 04:47 -09:00	2019-12-15 05:54 -09:00	5d 1h 7m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-12-10 02:32 -09:00	2019-12-15 16:10 -09:00	5d 13h 38m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-12-10 02:32 -09:00	2019-12-10 04:13 -09:00	1h 41m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-12-10 02:31 -09:00	2019-12-10 15:51 -09:00	13h 20m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-12-10 02:31 -09:00	2019-12-10 04:13 -09:00	1h 42m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-12-08 04:18 -09:00	2019-12-09 09:01 -09:00	1d 4h 43m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-12-08 04:17 -09:00	2019-12-10 02:10 -09:00	1d 21h 53m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-08 04:16 -09:00	2019-12-10 02:11 -09:00	1d 21h 55m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-12-08 01:11 -09:00	2019-12-09 04:49 -09:00	1d 3h 38m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-12-08 01:10 -09:00	2019-12-10 01:58 -09:00	2d 0h 48m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-12-08 00:53 -09:00	2019-12-08 03:49 -09:00	2h 56m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-12-06 00:19 -09:00	2019-12-08 00:38 -09:00	2d 0h 19m	Anchorage AK	Anchorage AK
SAGAMI	9379911	Panama	Chemical Tanker	33614	2019-12-06 00:18 -09:00	2019-12-06 22:24 -09:00	22h 6m	Kashima	Vancouver WA
STELLAR WIND	9096911	United States of America	Tug		2019-12-06 00:18 -09:00	2019-12-08 03:49 -09:00	2d 3h 31m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-05 14:18 -09:00	2019-12-08 00:40 -09:00	2d 10h 22m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-05 13:22 -09:00	2019-12-05 14:01 -09:00	39m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-05 09:54 -09:00	2019-12-05 12:20 -09:00	2h 26m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-12-05 00:11 -09:00	2019-12-05 22:27 -09:00	22h 16m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-12-05 00:11 -09:00	2019-12-05 09:37 -09:00	9h 26m	Anchorage AK	
PACIFIC WOLF	7404047	United States of America	Tug		2019-12-04 12:45 -09:00	2019-12-04 23:09 -09:00	10h 24m	Nikiski	
GLACIER WIND	8662593	United States of America	Tug		2019-12-04 11:23 -09:00	2019-12-04 23:30 -09:00	12h 7m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-12-04 11:22 -09:00	2019-12-05 12:56 -09:00	1d 1h 34m	Valdez	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-12-04 08:39 -09:00	2019-12-04 10:58 -09:00	2h 19m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-12-03 15:54 -09:00	2019-12-04 00:04 -09:00	8h 10m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-03 11:31 -09:00	2019-12-05 23:33 -09:00	2d 12h 2m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-02 01:56 -09:00	2019-12-03 10:53 -09:00	1d 8h 57m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-12-01 06:54 -09:00	2019-12-02 09:18 -09:00	1d 2h 24m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-12-01 06:53 -09:00	2019-12-02 22:10 -09:00	1d 15h 17m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-01 06:52 -09:00	2019-12-02 01:45 -09:00	18h 53m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-12-01 06:18 -09:00	2019-12-01 06:37 -09:00	19m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-12-01 06:17 -09:00	2019-12-01 06:31 -09:00	14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-12-01 06:17 -09:00	2019-12-05 23:35 -09:00	4d 17h 18m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-12-01 06:17 -09:00	2019-12-02 02:13 -09:00	19h 56m	Tacoma	Tacoma
SAND ISLAND		United States of America	Other		2019-11-30 09:49 -09:00	2019-11-30 10:15 -09:00	26m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-30 07:40 -09:00	2019-12-01 05:41 -09:00	22h 1m	Anchorage AK	
GARNET EXPRESS	9609639	Marshall Islands	Chemical Oil Products Tanker	46724	2019-11-30 07:38 -09:00	2019-12-01 19:07 -09:00	1d 11h 29m	Yeosu	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-11-30 07:37 -09:00	2019-12-01 05:41 -09:00	22h 4m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-11-27 17:51 -09:00	2019-12-01 05:42 -09:00	3d 11h 51m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-11-27 17:51 -09:00	2019-11-28 17:13 -09:00	23h 22m	Valdez	
SAND ISLAND		United States of America	Other		2019-11-26 16:10 -09:00	2019-11-26 16:30 -09:00	20m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-11-26 14:44 -09:00	2019-11-27 07:06 -09:00	16h 22m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-11-26 14:43 -09:00	2019-11-30 06:43 -09:00	3d 16h 0m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-26 14:42 -09:00	2019-11-27 17:19 -09:00	1d 2h 37m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-26 05:28 -09:00	2019-11-26 14:09 -09:00	8h 41m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-11-26 05:27 -09:00	2019-11-30 06:44 -09:00	4d 1h 17m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-11-26 05:27 -09:00	2019-11-26 14:10 -09:00	8h 43m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-11-26 05:27 -09:00	2019-11-26 15:46 -09:00	10h 19m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-11-25 13:11 -09:00	2019-11-26 05:00 -09:00	15h 49m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-24 21:44 -09:00	2019-11-24 22:24 -09:00	40m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-11-24 13:20 -09:00	2019-11-26 04:58 -09:00	1d 15h 38m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-11-24 13:19 -09:00	2019-11-24 22:10 -09:00	8h 51m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-11-24 13:18 -09:00	2019-11-24 21:34 -09:00	8h 16m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-24 13:18 -09:00	2019-11-26 05:01 -09:00	1d 15h 43m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-24 10:13 -09:00	2019-11-24 12:40 -09:00	2h 27m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-24 10:12 -09:00	2019-11-24 12:41 -09:00	2h 29m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-11-24 10:06 -09:00	2019-11-25 01:21 -09:00	15h 15m	Tacoma	Kodiak
BERING WIND	9369198	United States of America	Tug		2019-11-24 02:06 -09:00	2019-11-24 12:40 -09:00	10h 34m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-11-23 15:45 -09:00	2019-11-24 09:23 -09:00	17h 38m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-23 12:25 -09:00	2019-11-23 15:30 -09:00	3h 5m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-11-23 06:46 -09:00	2019-11-23 07:07 -09:00	21m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-11-22 11:18 -09:00	2019-11-22 19:39 -09:00	8h 21m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-11-20 22:29 -09:00	2019-11-20 22:33 -09:00	4m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-20 16:08 -09:00	2019-11-22 15:53 -09:00	1d 23h 45m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-20 14:06 -09:00	2019-11-24 08:28 -09:00	3d 18h 22m	Anchorage AK	
NUNANIQ		United States of America	Other		2019-11-20 12:34 -09:00	2019-11-20 14:47 -09:00	2h 13m	Dutch Harbor	
GLACIER WIND	8662593	United States of America	Tug		2019-11-20 11:12 -09:00	2019-11-20 14:59 -09:00	3h 47m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-11-20 10:01 -09:00	2019-11-21 13:21 -09:00	1d 3h 20m	Valdez	
BOB FRANCO	9637820	United States of America	Tug	569	2019-11-20 07:53 -09:00	2019-11-23 06:13 -09:00	2d 22h 20m	Nikiski	
STELLAR WIND	9096911	United States of America	Tug		2019-11-20 02:07 -09:00	2019-11-20 13:48 -09:00	11h 41m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-19 16:00 -09:00	2019-11-20 01:55 -09:00	9h 55m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-19 09:02 -09:00	2019-11-19 15:50 -09:00	6h 48m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-11-19 09:02 -09:00	2019-11-20 01:55 -09:00	16h 53m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-11-19 09:01 -09:00	2019-11-20 10:31 -09:00	1d 1h 30m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-19 08:18 -09:00	2019-11-19 08:44 -09:00	26m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-11-19 08:18 -09:00	2019-11-19 16:48 -09:00	8h 30m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-11-19 08:18 -09:00	2019-11-23 06:03 -09:00	3d 21h 45m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-11-19 08:18 -09:00	2019-11-19 08:44 -09:00	26m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-11-18 20:58 -09:00	2019-11-18 21:30 -09:00	32m	Nikiski	
GLACIER WIND	8662593	United States of America	Tug		2019-11-18 01:19 -09:00	2019-11-19 07:39 -09:00	1d 6h 20m	Anchorage AK	
CHALLENGE PRELUDE	9333278	Hong Kong	Oil Products Tanker	48555	2019-11-17 08:55 -09:00	2019-11-18 17:32 -09:00	1d 8h 37m	Yeosu	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-11-17 08:45 -09:00	2019-11-19 07:39 -09:00	1d 22h 54m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-11-17 08:44 -09:00	2019-11-19 07:42 -09:00	1d 22h 58m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-11-17 07:20 -09:00	2019-11-18 02:30 -09:00	19h 10m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-11-17 07:20 -09:00	2019-11-18 01:09 -09:00	17h 49m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-17 07:19 -09:00	2019-11-17 07:50 -09:00	31m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-11-17 06:27 -09:00	2019-11-17 08:03 -09:00	1h 36m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-11-17 06:27 -09:00	2019-11-17 16:52 -09:00	10h 25m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-11-17 06:26 -09:00	2019-11-17 06:49 -09:00	23m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-17 06:24 -09:00	2019-11-17 06:50 -09:00	26m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-11-15 19:58 -09:00	2019-11-15 20:07 -09:00	9m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-15 12:33 -09:00	2019-11-17 05:57 -09:00	1d 17h 24m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-11-14 07:18 -09:00	2019-11-14 08:31 -09:00	1h 13m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-13 19:13 -09:00	2019-11-17 06:00 -09:00	3d 10h 47m	Anchorage AK	
ARI CRUZ	9107849	United States of America	Tug	120	2019-11-13 05:44 -09:00	2019-11-13 09:51 -09:00	4h 7m	Valdez	
GLACIER WIND	8662593	United States of America	Tug		2019-11-12 20:46 -09:00	2019-11-15 12:19 -09:00	2d 15h 33m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-11-12 16:49 -09:00	2019-11-12 16:53 -09:00	4m	Nikiski	
GLACIER WIND	8662593	United States of America	Tug		2019-11-12 14:29 -09:00	2019-11-12 20:35 -09:00	6h 6m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-12 08:59 -09:00	2019-11-13 18:34 -09:00	1d 9h 35m	Anchorage AK	
ISLAND SCOUT	6728018	United States of America	Tug		2019-11-12 08:50 -09:00	2019-11-13 18:35 -09:00	1d 9h 45m	Anchorage AK	
ISLAND SCOUT	6728018	United States of America	Tug		2019-11-12 06:19 -09:00	2019-11-12 08:38 -09:00	2h 19m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-11-12 05:05 -09:00	2019-11-12 21:35 -09:00	16h 30m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-11-12 05:04 -09:00	2019-11-12 08:46 -09:00	3h 42m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-12 05:04 -09:00	2019-11-12 14:17 -09:00	9h 13m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-11-12 03:34 -09:00	2019-11-17 05:52 -09:00	5d 2h 18m	Anchorage AK	Anchorage AK
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-11-12 03:33 -09:00	2019-11-12 15:01 -09:00	11h 28m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-11-12 03:33 -09:00	2019-11-12 04:16 -09:00	43m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-12 03:33 -09:00	2019-11-12 04:18 -09:00	45m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-11 19:00 -09:00	2019-11-12 02:59 -09:00	7h 59m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-11-11 18:59 -09:00	2019-11-12 19:20 -09:00	1d 0h 21m	Valdez	Homer

	Count	Average DWT
Container Ship	103	21,226
Ro Ro Cargo Ship	100	22,437
Total	**203**	**21,823**

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
STELLAR WIND	9096911	United States of America	Tug		2019-11-11 06:19 -09:00	2019-11-12 03:04 -09:00	20h 45m	Anchorage AK	
ISLAND SCOUT	6728018	United States of America	Tug		2019-11-11 06:01 -09:00	2019-11-12 05:19 -09:00	23h 18m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-11 05:26 -09:00	2019-11-11 06:04 -09:00	38m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-11 05:26 -09:00	2019-11-11 18:29 -09:00	13h 3m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-10 20:44 -09:00	2019-11-11 05:14 -09:00	8h 30m	Anchorage AK	
ISLAND SCOUT	6728018	United States of America	Tug		2019-11-10 20:36 -09:00	2019-11-11 05:01 -09:00	8h 25m	Seattle	
GLACIER WIND	8662593	United States of America	Tug		2019-11-10 20:33 -09:00	2019-11-11 05:13 -09:00	8h 40m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-10 19:52 -09:00	2019-11-10 20:32 -09:00	40m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-10 19:52 -09:00	2019-11-10 20:22 -09:00	30m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-10 04:35 -09:00	2019-11-10 17:59 -09:00	13h 24m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-11-10 04:35 -09:00	2019-11-10 21:46 -09:00	17h 11m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-11-10 04:35 -09:00	2019-11-10 18:05 -09:00	13h 30m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-11-10 02:34 -09:00	2019-11-12 02:59 -09:00	2d 0h 25m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-11-10 02:33 -09:00	2019-11-10 16:07 -09:00	13h 34m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-11-10 02:33 -09:00	2019-11-10 03:59 -09:00	1h 26m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-10 02:33 -09:00	2019-11-10 03:58 -09:00	1h 25m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-09 14:24 -09:00	2019-11-10 01:56 -09:00	11h 32m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-08 12:43 -09:00	2019-11-09 14:11 -09:00	1d 1h 28m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-06 15:29 -09:00	2019-11-10 02:04 -09:00	3d 10h 35m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-11-05 21:29 -09:00	2019-11-10 02:02 -09:00	4d 4h 33m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-11-05 14:29 -09:00	2019-11-08 11:21 -09:00	2d 20h 52m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-11-05 11:16 -09:00	2019-11-05 21:18 -09:00	10h 2m	Anchorage AK	Anchorage AK
BW COUGAR	9675494	Singapore	Oil Products Tanker	50300	2019-11-05 11:16 -09:00	2019-11-06 20:13 -09:00	1d 8h 57m	Yeosu	Dalian
STELLAR WIND	9096911	United States of America	Tug		2019-11-05 11:16 -09:00	2019-11-06 13:53 -09:00	1d 2h 37m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-05 08:25 -09:00	2019-11-05 10:42 -09:00	2h 17m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-05 08:25 -09:00	2019-11-05 14:18 -09:00	5h 53m	Anchorage AK	
OCEAN JAZZ	9509970	United States of America	Heavy Load Carrier	10662	2019-11-05 08:24 -09:00	2019-11-05 22:42 -09:00	14h 18m	Grays Harbor Hoquiam	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-11-05 04:03 -09:00	2019-11-05 21:59 -09:00	17h 56m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-11-05 04:03 -09:00	2019-11-05 07:48 -09:00	3h 45m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-05 03:57 -09:00	2019-11-05 07:48 -09:00	3h 51m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-05 02:48 -09:00	2019-11-05 03:06 -09:00	18m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-11-05 00:03 -09:00	2019-11-05 08:38 -09:00	8h 35m	Anchorage AK	Anchorage AK
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-11-05 00:02 -09:00	2019-11-05 14:52 -09:00	14h 50m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-11-05 00:02 -09:00	2019-11-05 03:07 -09:00	3h 5m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-05 00:02 -09:00	2019-11-05 02:22 -09:00	2h 20m	Anchorage AK	
POLAR CLOUD	7367172	United States of America	Offshore Tug Supply	1	2019-11-04 13:49 -09:00	2019-11-05 02:20 -09:00	12h 31m	Dutch Harbor	
STELLAR WIND	9096911	United States of America	Tug		2019-11-04 13:44 -09:00	2019-11-04 23:27 -09:00	9h 43m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-04 12:53 -09:00	2019-11-04 13:30 -09:00	37m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-11-04 08:36 -09:00	2019-11-04 13:31 -09:00	4h 55m	Anchorage AK	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-11-04 08:35 -09:00	2019-11-04 09:34 -09:00	59m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-04 08:34 -09:00	2019-11-04 23:25 -09:00	14h 51m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-04 06:02 -09:00	2019-11-04 08:10 -09:00	2h 8m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-04 06:01 -09:00	2019-11-04 08:11 -09:00	2h 10m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-03 17:05 -09:00	2019-11-04 05:50 -09:00	12h 45m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-03 16:29 -09:00	2019-11-04 05:48 -09:00	13h 19m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-11-03 13:44 -09:00	2019-11-03 16:17 -09:00	2h 33m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-11-03 13:44 -09:00	2019-11-04 08:12 -09:00	18h 28m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-11-03 13:43 -09:00	2019-11-03 16:46 -09:00	3h 3m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-11-03 10:49 -09:00	2019-11-04 12:13 -09:00	1d 1h 24m	Valdez	
GLACIER WIND	8662593	United States of America	Tug		2019-11-03 10:46 -09:00	2019-11-03 13:04 -09:00	2h 18m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-11-02 20:45 -08:00	2019-11-03 16:43 -09:00	20h 58m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-11-02 20:45 -08:00	2019-11-03 10:18 -09:00	14h 33m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-11-02 20:44 -08:00	2019-11-03 13:03 -09:00	17h 19m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-11-02 20:43 -08:00	2019-11-04 23:25 -09:00	2d 3h 42m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-11-01 11:08 -08:00	2019-11-02 20:14 -08:00	1d 9h 6m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-10-31 21:01 -08:00	2019-10-31 21:46 -08:00	45m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-10-31 08:57 -08:00	2019-10-31 10:16 -08:00	1h 19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-31 07:56 -08:00	2019-10-31 20:50 -08:00	12h 54m	Anchorage AK	Ketchikan
GLADYS M		United States of America	Tug		2019-10-31 02:14 -08:00	2019-10-31 07:21 -08:00	5h 7m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-30 19:41 -08:00	2019-11-02 20:13 -08:00	3d 0h 32m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-10-30 19:40 -08:00	2019-10-31 19:39 -08:00	23h 59m	Valdez	Valdez
GLADYS M		United States of America	Tug		2019-10-30 19:31 -08:00	2019-10-31 01:49 -08:00	6h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-30 17:51 -08:00	2019-10-30 18:11 -08:00	20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-30 09:50 -08:00	2019-10-30 17:16 -08:00	7h 26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-30 08:04 -08:00	2019-10-30 09:17 -08:00	1h 13m	Anchorage AK	
RED DOG	7917630	United States of America	Fishing Vessel		2019-10-30 06:53 -08:00	2019-10-30 09:03 -08:00	2h 10m	Anchorage AK	Nikiski
GLADYS M		United States of America	Tug		2019-10-30 00:23 -08:00	2019-10-30 07:07 -08:00	6h 44m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-29 18:53 -08:00	2019-10-30 00:01 -08:00	5h 8m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-10-29 18:30 -08:00	2019-10-29 18:39 -08:00	9m	Nikiski	
GLACIER WIND	8662593	United States of America	Tug		2019-10-29 15:54 -08:00	2019-10-30 19:19 -08:00	1d 3h 25m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-29 15:50 -08:00	2019-11-02 20:13 -08:00	4d 4h 23m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-10-29 10:08 -08:00	2019-10-29 18:02 -08:00	7h 54m	Anchorage AK	
RED DOG	7917630	United States of America	Fishing Vessel		2019-10-29 06:46 -08:00	2019-10-29 08:59 -08:00	2h 13m	Nikiski	Nikiski
GLADYS M		United States of America	Tug		2019-10-29 06:43 -08:00	2019-10-29 09:24 -08:00	2h 41m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-10-29 05:53 -08:00	2019-10-29 22:23 -08:00	16h 30m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-10-29 05:52 -08:00	2019-10-29 15:39 -08:00	9h 47m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-29 05:52 -08:00	2019-11-01 10:56 -08:00	3d 5h 4m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-29 05:12 -08:00	2019-10-29 05:33 -08:00	21m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-10-29 05:12 -08:00	2019-10-29 15:37 -08:00	10h 25m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-10-29 05:12 -08:00	2019-10-29 05:34 -08:00	22m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-29 05:11 -08:00	2019-10-29 15:38 -08:00	10h 27m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-10-29 02:25 -08:00	2019-10-29 06:22 -08:00	3h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-28 20:08 -08:00	2019-10-29 01:59 -08:00	5h 51m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-28 14:58 -08:00	2019-10-28 19:44 -08:00	4h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-28 08:28 -08:00	2019-10-28 14:34 -08:00	6h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-28 02:06 -08:00	2019-10-28 07:53 -08:00	5h 47m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-27 22:01 -08:00	2019-10-29 04:36 -08:00	1d 6h 35m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-27 22:00 -08:00	2019-10-29 04:39 -08:00	1d 6h 39m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-27 20:06 -08:00	2019-10-28 01:42 -08:00	5h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-27 13:03 -08:00	2019-10-27 19:38 -08:00	6h 35m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-10-27 12:57 -08:00	2019-10-28 08:08 -08:00	19h 11m	Anchorage AK	Valdez
GLADYS M		United States of America	Tug		2019-10-27 06:28 -08:00	2019-10-27 12:41 -08:00	6h 13m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-10-27 05:55 -08:00	2019-10-27 12:36 -08:00	6h 41m	Valdez	Anchorage AK
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-10-27 05:21 -08:00	2019-10-27 23:13 -08:00	17h 52m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-10-27 05:21 -08:00	2019-10-27 21:49 -08:00	16h 28m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-27 05:20 -08:00	2019-10-27 21:49 -08:00	16h 29m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-27 03:57 -08:00	2019-10-27 04:35 -08:00	38m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-27 03:56 -08:00	2019-10-29 04:37 -08:00	2d 0h 41m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-10-27 03:56 -08:00	2019-10-27 17:00 -08:00	13h 4m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-10-27 03:54 -08:00	2019-10-27 04:22 -08:00	28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-27 01:41 -08:00	2019-10-27 05:58 -08:00	4h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-26 19:39 -08:00	2019-10-27 01:19 -08:00	5h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-26 13:13 -08:00	2019-10-26 19:15 -08:00	6h 2m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-26 06:34 -08:00	2019-10-26 12:47 -08:00	6h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-26 01:14 -08:00	2019-10-26 06:13 -08:00	4h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-25 18:44 -08:00	2019-10-26 00:49 -08:00	6h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-25 12:29 -08:00	2019-10-25 18:21 -08:00	5h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-25 06:00 -08:00	2019-10-25 11:36 -08:00	5h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-24 22:37 -08:00	2019-10-25 05:10 -08:00	6h 33m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-24 18:03 -08:00	2019-10-27 03:30 -08:00	2d 9h 27m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-24 17:30 -08:00	2019-10-24 17:37 -08:00	7m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-24 17:01 -08:00	2019-10-24 22:13 -08:00	5h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-24 11:04 -08:00	2019-10-24 16:31 -08:00	5h 27m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-24 03:25 -08:00	2019-10-24 10:36 -08:00	7h 11m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-23 21:25 -08:00	2019-10-24 03:03 -08:00	5h 38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-23 18:35 -08:00	2019-10-24 17:06 -08:00	22h 31m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-23 18:31 -08:00	2019-10-27 03:27 -08:00	3d 8h 56m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-10-23 16:00 -08:00	2019-10-23 16:10 -08:00	10m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-23 10:13 -08:00	2019-10-23 16:10 -08:00	5h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-23 03:45 -08:00	2019-10-23 09:45 -08:00	6h 0m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-22 22:45 -08:00	2019-10-23 03:24 -08:00	4h 39m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-22 17:17 -08:00	2019-10-22 22:23 -08:00	5h 6m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-22 15:54 -08:00	2019-10-23 18:22 -08:00	1d 2h 28m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-22 15:53 -08:00	2019-10-23 18:19 -08:00	1d 2h 26m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-10-22 15:53 -08:00	2019-10-23 19:29 -08:00	1d 3h 36m	Tacoma	Kodiak
SAND ISLAND		United States of America	Other		2019-10-22 12:52 -08:00	2019-10-22 14:28 -08:00	1h 36m	Nikiski	
GLADYS M		United States of America	Tug		2019-10-22 10:54 -08:00	2019-10-22 16:35 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-22 04:49 -08:00	2019-10-22 10:30 -08:00	5h 41m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-21 23:02 -08:00	2019-10-22 15:23 -08:00	16h 21m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-10-21 23:02 -08:00	2019-10-22 15:20 -08:00	16h 18m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-10-21 23:01 -08:00	2019-10-22 15:25 -08:00	16h 24m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-21 23:00 -08:00	2019-10-27 03:27 -08:00	5d 4h 27m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-10-21 21:51 -08:00	2019-10-22 04:25 -08:00	6h 34m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-21 15:58 -08:00	2019-10-21 22:32 -08:00	6h 34m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-21 15:58 -08:00	2019-10-21 22:28 -08:00	6h 30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-21 15:50 -08:00	2019-10-21 21:23 -08:00	5h 33m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-21 11:03 -08:00	2019-10-21 15:47 -08:00	4h 44m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-21 11:02 -08:00	2019-10-21 22:27 -08:00	11h 25m	Anchorage AK	Anchorage AK
CHALLENGE POLLUX	9793284	Singapore	Chemical Oil Products Tanker	50068	2019-10-21 11:01 -08:00	2019-10-23 08:58 -08:00	1d 21h 57m	Ningbo	
GLADYS M		United States of America	Tug		2019-10-21 09:03 -08:00	2019-10-21 15:26 -08:00	6h 23m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-21 04:57 -08:00	2019-10-21 15:46 -08:00	10h 49m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-21 04:56 -08:00	2019-10-21 10:22 -08:00	5h 26m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-10-21 02:45 -08:00	2019-10-21 08:42 -08:00	5h 57m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-10-20 23:15 -08:00	2019-10-21 17:24 -08:00	18h 9m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-10-20 23:14 -08:00	2019-10-21 10:22 -08:00	11h 8m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-20 23:12 -08:00	2019-10-21 04:45 -08:00	5h 33m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-10-20 21:12 -08:00	2019-10-20 22:46 -08:00	1h 34m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-10-20 21:12 -08:00	2019-10-21 05:44 -08:00	8h 32m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-10-20 21:11 -08:00	2019-10-20 22:44 -08:00	1h 33m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-10-20 21:11 -08:00	2019-10-21 04:47 -08:00	7h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-20 19:09 -08:00	2019-10-21 02:22 -08:00	7h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-20 12:08 -08:00	2019-10-20 18:40 -08:00	6h 32m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-20 05:42 -08:00	2019-10-20 11:45 -08:00	6h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-19 23:18 -08:00	2019-10-20 05:19 -08:00	6h 1m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-19 17:16 -08:00	2019-10-19 22:53 -08:00	5h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-19 11:18 -08:00	2019-10-19 16:51 -08:00	5h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-19 05:03 -08:00	2019-10-19 10:55 -08:00	5h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-18 22:27 -08:00	2019-10-19 04:37 -08:00	6h 10m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-18 21:43 -08:00	2019-10-20 20:36 -08:00	1d 22h 53m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-10-18 21:23 -08:00	2019-10-19 22:40 -08:00	1d 1h 17m	Anacortes WA	Valdez
GLADYS M		United States of America	Tug		2019-10-18 17:02 -08:00	2019-10-18 22:05 -08:00	5h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-18 11:07 -08:00	2019-10-18 16:37 -08:00	5h 30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-18 05:38 -08:00	2019-10-18 10:44 -08:00	5h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-17 23:03 -08:00	2019-10-18 05:12 -08:00	6h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-17 17:30 -08:00	2019-10-17 22:38 -08:00	5h 8m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
GLADYS M		United States of America	Tug		2019-10-17 11:16 -08:00	2019-10-17 17:01 -08:00	5h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-17 07:55 -08:00	2019-10-17 10:32 -08:00	2h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-17 02:26 -08:00	2019-10-17 07:04 -08:00	4h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-16 20:28 -08:00	2019-10-17 02:00 -08:00	5h 32m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-16 14:09 -08:00	2019-10-16 20:02 -08:00	5h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-16 08:06 -08:00	2019-10-16 13:43 -08:00	5h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-16 01:11 -08:00	2019-10-16 07:13 -08:00	6h 2m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-15 21:13 -08:00	2019-10-20 20:39 -08:00	4d 23h 26m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-15 20:29 -08:00	2019-10-18 21:02 -08:00	3d 0h 33m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-10-15 18:57 -08:00	2019-10-15 19:38 -08:00	41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-15 18:08 -08:00	2019-10-16 00:45 -08:00	6h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-15 12:10 -08:00	2019-10-15 17:36 -08:00	5h 26m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-15 11:05 -08:00	2019-10-15 19:58 -08:00	8h 53m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-10-15 06:02 -08:00	2019-10-15 15:10 -08:00	9h 8m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-10-15 06:01 -08:00	2019-10-15 10:49 -08:00	4h 48m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-15 06:01 -08:00	2019-10-15 19:57 -08:00	13h 56m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-15 06:01 -08:00	2019-10-20 20:37 -08:00	5d 14h 36m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-10-15 05:26 -08:00	2019-10-15 11:46 -08:00	6h 20m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-10-15 05:17 -08:00	2019-10-15 22:51 -08:00	17h 34m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-10-15 05:15 -08:00	2019-10-15 05:46 -08:00	31m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-15 05:14 -08:00	2019-10-15 05:44 -08:00	30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-14 23:25 -08:00	2019-10-15 04:59 -08:00	5h 34m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-14 16:41 -08:00	2019-10-14 20:38 -08:00	3h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-14 10:54 -08:00	2019-10-14 16:15 -08:00	5h 21m	Anchorage AK	
INCHEON BAY	9791963	Hong Kong	Bulk Carrier	37501	2019-10-14 10:35 -08:00	2019-11-01 07:16 -08:00	17d 20h 41m	Donghae	Prince Rupert
BERING WIND	9369198	United States of America	Tug		2019-10-14 10:35 -08:00	2019-10-15 05:35 -08:00	19h 0m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-10-14 10:35 -08:00	2019-10-15 04:46 -08:00	18h 11m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-14 10:14 -08:00	2019-10-14 10:22 -08:00	8m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-10-14 09:02 -08:00	2019-10-14 09:07 -08:00	5m	Nikiski	
STELLAR WIND	9096911	United States of America	Tug		2019-10-14 07:47 -08:00	2019-10-14 09:51 -08:00	2h 4m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-14 07:47 -08:00	2019-10-15 04:45 -08:00	20h 58m	Anchorage AK	
POLAR RANGER		United States of America	Other		2019-10-14 07:20 -08:00	2019-10-15 19:34 -08:00	1d 12h 14m	Dutch Harbor	
GLACIER WIND	8662593	United States of America	Tug		2019-10-14 06:53 -08:00	2019-10-14 07:31 -08:00	38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-14 04:10 -08:00	2019-10-14 09:41 -08:00	5h 31m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-14 03:27 -08:00	2019-10-14 09:52 -08:00	6h 25m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-10-14 03:27 -08:00	2019-10-14 06:42 -08:00	3h 15m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-13 21:38 -08:00	2019-10-14 03:37 -08:00	5h 59m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-13 17:08 -08:00	2019-10-14 06:44 -08:00	13h 36m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-10-13 17:08 -08:00	2019-10-14 03:48 -08:00	10h 40m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-10-13 17:08 -08:00	2019-10-14 03:16 -08:00	10h 8m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-10-13 17:05 -08:00	2019-10-14 03:16 -08:00	10h 11m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-13 16:28 -08:00	2019-10-13 16:49 -08:00	21m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-10-13 16:28 -08:00	2019-10-14 07:30 -08:00	15h 2m	Tacoma	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-10-13 16:27 -08:00	2019-10-13 16:49 -08:00	22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-13 15:38 -08:00	2019-10-13 21:14 -08:00	5h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-13 09:40 -08:00	2019-10-13 14:56 -08:00	5h 16m	Anchorage AK	
DREAM CATCHER		United States of America	Passenger Ship		2019-10-13 08:04 -08:00	2020-05-29 11:42 -08:00	7m 16d 3h 38m	Dutch Harbor	
GLADYS M		United States of America	Tug		2019-10-13 03:49 -08:00	2019-10-13 09:11 -08:00	5h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-12 21:04 -08:00	2019-10-13 03:22 -08:00	6h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-12 15:34 -08:00	2019-10-12 20:39 -08:00	5h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-12 09:12 -08:00	2019-10-12 15:09 -08:00	5h 57m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-12 07:16 -08:00	2019-10-13 16:01 -08:00	1d 8h 45m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-12 07:05 -08:00	2019-10-13 16:04 -08:00	1d 8h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-12 03:11 -08:00	2019-10-12 08:43 -08:00	5h 32m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-11 21:01 -08:00	2019-10-12 02:42 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-11 15:35 -08:00	2019-10-11 20:40 -08:00	5h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-11 09:40 -08:00	2019-10-11 15:11 -08:00	5h 31m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-11 06:13 -08:00	2019-10-12 06:16 -08:00	1d 0h 3m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-11 06:00 -08:00	2019-10-12 06:15 -08:00	1d 0h 15m	Anchorage AK	
OCEAN NAVIGATOR	8700711	United States of America	Tug		2019-10-11 05:56 -08:00	2019-10-12 05:51 -08:00	23h 55m	Seattle	Whittier
GLADYS M		United States of America	Tug		2019-10-11 03:29 -08:00	2019-10-11 09:06 -08:00	5h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-10 20:20 -08:00	2019-10-11 03:02 -08:00	6h 42m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-10 14:30 -08:00	2019-10-10 19:57 -08:00	5h 27m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-10 08:40 -08:00	2019-10-10 14:06 -08:00	5h 26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-10 01:50 -08:00	2019-10-10 08:08 -08:00	6h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-09 19:58 -08:00	2019-10-10 01:26 -08:00	5h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-09 13:45 -08:00	2019-10-09 19:34 -08:00	5h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-09 08:11 -08:00	2019-10-09 13:25 -08:00	5h 14m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-09 06:11 -08:00	2019-10-11 05:07 -08:00	1d 22h 56m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-09 06:06 -08:00	2019-10-11 04:58 -08:00	1d 22h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-09 01:39 -08:00	2019-10-09 07:36 -08:00	5h 57m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-08 21:27 -08:00	2019-10-09 05:23 -08:00	7h 56m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-08 21:25 -08:00	2019-10-09 05:24 -08:00	7h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-08 19:09 -08:00	2019-10-09 01:12 -08:00	6h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-08 13:15 -08:00	2019-10-08 18:45 -08:00	5h 30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-08 06:35 -08:00	2019-10-08 12:30 -08:00	5h 55m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-10-08 04:06 -08:00	2019-10-08 22:18 -08:00	18h 12m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-10-08 04:05 -08:00	2019-10-08 21:16 -08:00	17h 11m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-08 04:05 -08:00	2019-10-08 21:14 -08:00	17h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-08 00:49 -08:00	2019-10-08 06:10 -08:00	5h 21m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-08 00:44 -08:00	2019-10-08 03:33 -08:00	2h 49m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-10-08 00:43 -08:00	2019-10-08 16:19 -08:00	15h 36m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-10-08 00:42 -08:00	2019-10-08 03:35 -08:00	2h 53m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-08 00:41 -08:00	2019-10-13 16:33 -08:00	5d 15h 52m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-10-07 18:12 -08:00	2019-10-08 00:29 -08:00	6h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-07 12:11 -08:00	2019-10-07 17:29 -08:00	5h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-07 11:07 -08:00	2019-10-07 11:41 -08:00	34m	Anchorage AK	
ISLAND SCOUT	6728018	United States of America	Tug		2019-10-07 10:53 -08:00	2019-10-09 05:01 -08:00	1d 18h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-07 08:38 -08:00	2019-10-07 10:28 -08:00	1h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-07 02:20 -08:00	2019-10-07 08:15 -08:00	5h 55m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-10-07 01:57 -08:00	2019-10-07 10:20 -08:00	8h 23m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-10-07 01:57 -08:00	2019-10-08 00:11 -08:00	22h 14m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-10-07 01:56 -08:00	2019-10-08 00:11 -08:00	22h 15m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-07 01:55 -08:00	2019-10-08 00:10 -08:00	22h 15m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-06 21:05 -08:00	2019-10-07 01:56 -08:00	4h 51m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-06 18:02 -08:00	2019-10-07 01:22 -08:00	7h 20m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-06 18:01 -08:00	2019-10-07 01:21 -08:00	7h 20m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-10-06 14:56 -08:00	2019-10-06 20:40 -08:00	5h 44m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-06 14:36 -08:00	2019-10-06 17:50 -08:00	3h 14m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-06 14:30 -08:00	2019-10-07 01:22 -08:00	10h 52m	Anchorage AK	
ISLAND SCOUT	6728018	United States of America	Tug		2019-10-06 14:25 -08:00	2019-10-07 10:39 -08:00	20h 14m	Seattle	
GLADYS M		United States of America	Tug		2019-10-06 08:29 -08:00	2019-10-06 14:32 -08:00	6h 3m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-10-06 06:12 -08:00	2019-10-07 01:18 -08:00	19h 6m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-10-06 06:11 -08:00	2019-10-06 13:35 -08:00	7h 24m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-06 06:08 -08:00	2019-10-06 13:58 -08:00	7h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-06 02:48 -08:00	2019-10-06 08:06 -08:00	5h 18m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-06 01:40 -08:00	2019-10-06 05:28 -08:00	3h 48m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-06 01:36 -08:00	2019-10-06 05:27 -08:00	3h 51m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-05 21:18 -08:00	2019-10-06 02:23 -08:00	5h 5m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-05 17:02 -08:00	2019-10-06 01:07 -08:00	8h 5m	Anchorage AK	
OCEAN RANGER	9010656	United States of America	Tug		2019-10-05 15:47 -08:00	2019-10-06 00:49 -08:00	9h 2m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-10-05 15:47 -08:00	2019-10-06 01:08 -08:00	9h 21m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-05 15:39 -08:00	2019-10-05 20:51 -08:00	5h 12m	Anchorage AK	
OCEAN RANGER	9010656	United States of America	Tug		2019-10-05 12:35 -08:00	2019-10-05 15:36 -08:00	3h 1m	Dutch Harbor	
STELLAR WIND	9096911	United States of America	Tug		2019-10-05 12:19 -08:00	2019-10-05 15:35 -08:00	3h 16m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-05 12:18 -08:00	2019-10-05 15:40 -08:00	3h 22m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-10-05 11:28 -08:00	2019-10-05 13:46 -08:00	2h 18m	Anchorage AK	
ALPINE MADELEINE	9380518	Hong Kong	Chemical Oil Products Tanker	49999	2019-10-05 10:14 -08:00	2019-10-06 20:17 -08:00	1d 10h 3m	Yeosu	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-10-05 10:08 -08:00	2019-10-06 17:51 -08:00	1d 7h 43m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-10-05 10:06 -08:00	2019-10-05 11:23 -08:00	1h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-05 09:45 -08:00	2019-10-05 15:04 -08:00	5h 19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-05 03:57 -08:00	2019-10-05 09:18 -08:00	5h 21m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-04 21:18 -08:00	2019-10-05 03:32 -08:00	6h 14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-04 15:35 -08:00	2019-10-04 20:55 -08:00	5h 20m	Anchorage AK	
CHALLENGE PEGASUS	9349198	Singapore	Oil Products Tanker	47786	2019-10-04 09:51 -08:00	2019-10-07 09:34 -08:00	2d 23h 43m	Cairns	
STELLAR WIND	9096911	United States of America	Tug		2019-10-04 09:51 -08:00	2019-10-05 09:02 -08:00	23h 11m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-04 09:50 -08:00	2019-10-05 09:08 -08:00	23h 18m	Anchorage AK	Anchorage AK
SAND ISLAND		United States of America	Other		2019-10-04 09:39 -08:00	2019-10-04 10:46 -08:00	1h 7m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-04 09:23 -08:00	2019-10-04 15:04 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-04 02:57 -08:00	2019-10-04 08:53 -08:00	5h 56m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-03 22:05 -08:00	2019-10-05 11:46 -08:00	1d 13h 41m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-10-03 20:42 -08:00	2019-10-03 20:49 -08:00	7m	Nikiski	
GLADYS M		United States of America	Tug		2019-10-03 20:37 -08:00	2019-10-04 02:30 -08:00	5h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-03 15:31 -08:00	2019-10-03 20:12 -08:00	4h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-03 09:30 -08:00	2019-10-03 14:59 -08:00	5h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-03 01:52 -08:00	2019-10-03 09:11 -08:00	7h 19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-02 18:38 -08:00	2019-10-03 01:24 -08:00	6h 46m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-02 12:53 -08:00	2019-10-03 21:52 -08:00	1d 8h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-02 12:20 -08:00	2019-10-02 18:13 -08:00	5h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-02 06:46 -08:00	2019-10-02 11:52 -08:00	5h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-02 01:11 -08:00	2019-10-02 06:15 -08:00	5h 4m	Anchorage AK	
SAM B		United States of America	Other		2019-10-01 20:11 -08:00	2019-10-05 15:41 -08:00	3d 19h 30m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-10-01 19:43 -08:00	2019-10-02 00:43 -08:00	5h 0m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-01 13:49 -08:00	2019-10-01 19:18 -08:00	5h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-10-01 08:18 -08:00	2019-10-01 13:26 -08:00	5h 8m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-10-01 08:10 -08:00	2019-10-02 08:18 -08:00	1d 0h 8m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-10-01 08:10 -08:00	2019-10-02 12:34 -08:00	1d 4h 24m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-01 07:08 -08:00	2019-10-01 07:50 -08:00	42m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-10-01 07:08 -08:00	2019-10-01 22:46 -08:00	15h 38m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-10-01 07:08 -08:00	2019-10-04 09:17 -08:00	3d 2h 9m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-10-01 06:08 -08:00	2019-10-01 17:16 -08:00	11h 8m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-10-01 06:08 -08:00	2019-10-01 06:33 -08:00	25m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-10-01 06:07 -08:00	2019-10-01 06:35 -08:00	28m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-10-01 06:06 -08:00	2019-10-04 09:20 -08:00	3d 3h 14m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-10-01 03:46 -08:00	2019-10-01 08:00 -08:00	4h 14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-30 21:59 -08:00	2019-10-01 03:24 -08:00	5h 25m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-30 17:48 -08:00	2019-09-30 21:37 -08:00	3h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-30 11:48 -08:00	2019-09-30 17:27 -08:00	5h 39m	Anchorage AK	
SAM B		United States of America	Other		2019-09-30 09:34 -08:00	2019-10-01 19:54 -08:00	1d 10h 20m	Dutch Harbor	Anchorage AK
GLADYS M		United States of America	Tug		2019-09-30 06:16 -08:00	2019-09-30 11:18 -08:00	5h 2m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-30 04:02 -08:00	2019-10-01 05:37 -08:00	1d 1h 35m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-09-30 00:33 -08:00	2019-09-30 05:54 -08:00	5h 21m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-29 23:01 -08:00	2019-10-01 05:39 -08:00	1d 6h 38m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-29 23:00 -08:00	2019-10-01 05:36 -08:00	1d 6h 36m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-29 16:51 -08:00	2019-09-29 22:49 -08:00	5h 58m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-09-29 16:51 -08:00	2019-09-30 04:21 -08:00	11h 30m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-09-29 16:50 -08:00	2019-09-30 03:49 -08:00	10h 59m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-09-29 16:49 -08:00	2019-09-29 22:47 -08:00	5h 58m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-29 05:46 -08:00	2019-09-29 16:15 -08:00	10h 29m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-09-29 05:46 -08:00	2019-09-29 23:32 -08:00	17h 46m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-09-29 05:45 -08:00	2019-09-29 16:17 -08:00	10h 32m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-28 08:03 -08:00	2019-09-28 17:00 -08:00	8h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-28 02:49 -08:00	2019-09-28 06:24 -08:00	3h 35m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-27 21:25 -08:00	2019-09-28 02:27 -08:00	5h 2m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-27 15:03 -08:00	2019-09-27 20:59 -08:00	5h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-27 09:31 -08:00	2019-09-27 14:37 -08:00	5h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-27 03:29 -08:00	2019-09-27 09:07 -08:00	5h 38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-27 03:21 -08:00	2019-09-29 05:23 -08:00	2d 2h 2m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-27 03:19 -08:00	2019-09-29 16:16 -08:00	2d 12h 57m	Anchorage AK	Anchorage AK
LIHUE	7105471	United States of America	Container Ship	38656	2019-09-27 03:19 -08:00	2019-09-27 17:20 -08:00	14h 1m	Tacoma	Tacoma
GLADYS M		United States of America	Tug		2019-09-26 22:52 -08:00	2019-09-27 03:06 -08:00	4h 14m	Anchorage AK	
PACIFIC WOLF	7404047	United States of America	Tug		2019-09-26 17:17 -08:00	2019-09-27 05:40 -08:00	12h 23m	Nikiski	
GLADYS M		United States of America	Tug		2019-09-26 17:06 -08:00	2019-09-26 22:27 -08:00	5h 21m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-26 11:00 -08:00	2019-09-26 16:41 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-26 07:05 -08:00	2019-09-26 10:14 -08:00	3h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-26 03:10 -08:00	2019-09-26 06:05 -08:00	2h 55m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-25 22:05 -08:00	2019-09-26 02:49 -08:00	4h 44m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-25 18:44 -08:00	2019-09-27 02:48 -08:00	1d 8h 4m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-25 18:43 -08:00	2019-09-29 05:22 -08:00	3d 10h 39m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-09-25 16:55 -08:00	2019-09-26 16:08 -08:00	23h 13m	Valdez	
GLACIER WIND	8662593	United States of America	Tug		2019-09-25 16:54 -08:00	2019-09-25 18:13 -08:00	1h 19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-25 15:52 -08:00	2019-09-25 21:43 -08:00	5h 51m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-25 11:35 -08:00	2019-09-25 16:13 -08:00	4h 38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-25 11:33 -08:00	2019-09-25 18:13 -08:00	6h 40m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-25 11:31 -08:00	2019-09-27 02:47 -08:00	1d 15h 16m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-09-25 11:21 -08:00	2019-09-25 11:23 -08:00	2m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-25 11:19 -08:00	2019-09-25 11:22 -08:00	3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-25 10:10 -08:00	2019-09-25 15:28 -08:00	5h 18m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-25 09:58 -08:00	2019-09-25 10:59 -08:00	1h 1m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-25 09:52 -08:00	2019-09-25 11:10 -08:00	1h 18m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-25 09:50 -08:00	2019-09-25 11:11 -08:00	1h 21m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-09-25 09:44 -08:00	2019-09-25 09:45 -08:00	1m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-25 09:37 -08:00	2019-09-25 09:41 -08:00	4m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-25 05:03 -08:00	2019-09-25 09:51 -08:00	4h 48m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-24 21:18 -08:00	2019-09-25 04:44 -08:00	7h 26m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-24 16:49 -08:00	2019-09-25 09:20 -08:00	16h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-24 15:11 -08:00	2019-09-24 20:52 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-24 10:47 -08:00	2019-09-24 14:34 -08:00	3h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-24 05:46 -08:00	2019-09-24 10:31 -08:00	4h 45m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-24 01:12 -08:00	2019-09-24 16:38 -08:00	15h 26m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-09-24 01:12 -08:00	2019-09-24 17:05 -08:00	15h 53m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-09-24 01:11 -08:00	2019-09-25 09:29 -08:00	1d 8h 18m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-09-24 01:11 -08:00	2019-09-25 09:27 -08:00	1d 8h 16m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-23 22:27 -08:00	2019-09-24 05:25 -08:00	6h 58m	Anchorage AK	
US NAVY VESSEL 45		United States of America	Other		2019-09-23 18:10 -08:00	2019-09-27 10:03 -08:00	3d 15h 53m	Seward	
STELLAR WIND	9096911	United States of America	Tug		2019-09-23 18:10 -08:00	2019-09-24 00:42 -08:00	6h 32m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-23 18:06 -08:00	2019-09-24 00:43 -08:00	6h 37m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-09-23 16:30 -08:00	2019-09-23 22:01 -08:00	5h 31m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-23 15:07 -08:00	2019-09-23 17:34 -08:00	2h 27m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-23 15:04 -08:00	2019-09-24 00:40 -08:00	9h 36m	Anchorage AK	
MALOLO	7614082	United States of America	Tug		2019-09-23 14:58 -08:00	2019-09-25 18:06 -08:00	2d 3h 8m	Dutch Harbor	
CAPE ANN	9848510	United States of America	Tug		2019-09-23 14:02 -08:00	2019-09-24 15:00 -08:00	1d 0h 58m	Kodiak	Valdez
BERING WIND	9369198	United States of America	Tug		2019-09-23 14:02 -08:00	2019-09-23 17:37 -08:00	3h 35m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-09-23 10:18 -08:00	2019-09-23 15:20 -08:00	5h 2m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-23 04:32 -08:00	2019-09-23 14:26 -08:00	9h 54m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-23 04:08 -08:00	2019-09-23 10:01 -08:00	5h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-22 22:30 -08:00	2019-09-23 03:48 -08:00	5h 18m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-22 17:28 -08:00	2019-09-23 13:24 -08:00	19h 56m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-09-22 17:28 -08:00	2019-09-23 04:20 -08:00	10h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-22 16:33 -08:00	2019-09-22 22:06 -08:00	5h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-22 10:33 -08:00	2019-09-22 16:05 -08:00	5h 32m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-22 10:30 -08:00	2019-09-22 17:17 -08:00	6h 47m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-22 10:28 -08:00	2019-09-23 14:27 -08:00	1d 3h 59m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-09-22 10:28 -08:00	2019-09-23 05:34 -08:00	19h 6m	Tacoma	Kodiak
GLADYS M		United States of America	Tug		2019-09-22 04:36 -08:00	2019-09-22 10:15 -08:00	5h 39m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-09-21 23:46 -08:00	2019-09-22 18:01 -08:00	18h 15m	Tacoma	Seattle
STELLAR WIND	9096911	United States of America	Tug		2019-09-21 23:46 -08:00	2019-09-22 10:00 -08:00	10h 14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-21 23:46 -08:00	2019-09-22 17:18 -08:00	17h 32m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-09-21 23:46 -08:00	2019-09-22 09:59 -08:00	10h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-21 21:18 -08:00	2019-09-22 04:15 -08:00	6h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-21 15:29 -08:00	2019-09-21 20:53 -08:00	5h 24m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-21 09:40 -08:00	2019-09-21 14:54 -08:00	5h 14m	Anchorage AK	
STI DONALD CTRAUSCHT	9794422	Marshall Islands	Chemical Oil Products Tanker	49990	2019-09-21 09:38 -08:00	2019-09-22 18:26 -08:00	1d 8h 48m	Yeosu	Ulsan
STELLAR WIND	9096911	United States of America	Tug		2019-09-21 09:37 -08:00	2019-09-21 23:11 -08:00	13h 34m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-21 09:37 -08:00	2019-09-21 23:10 -08:00	13h 33m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-09-21 03:33 -08:00	2019-09-21 09:21 -08:00	5h 48m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-20 19:21 -08:00	2019-09-21 03:14 -08:00	7h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-20 12:28 -08:00	2019-09-20 18:57 -08:00	6h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-20 08:54 -08:00	2019-09-20 11:40 -08:00	2h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-20 02:23 -08:00	2019-09-20 08:15 -08:00	5h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-19 18:52 -08:00	2019-09-20 02:05 -08:00	7h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-19 12:16 -08:00	2019-09-19 18:31 -08:00	6h 15m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-19 06:24 -08:00	-		Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-19 06:24 -08:00	2019-09-19 11:50 -08:00	5h 26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-18 23:56 -08:00	2019-09-19 06:02 -08:00	6h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-18 18:13 -08:00	2019-09-18 23:37 -08:00	5h 24m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-18 15:15 -08:00	2019-09-21 08:49 -08:00	2d 17h 34m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-09-18 14:54 -08:00	2019-09-21 23:08 -08:00	3d 8h 14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-18 13:48 -08:00	2019-09-18 14:57 -08:00	1h 9m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-09-18 12:20 -08:00	2019-09-18 17:45 -08:00	5h 25m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-18 10:42 -08:00	2019-09-21 09:02 -08:00	2d 22h 20m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-18 10:20 -08:00	2019-09-18 13:33 -08:00	3h 13m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-09-18 09:49 -08:00	2019-09-18 14:39 -08:00	4h 50m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-18 09:23 -08:00	2019-09-18 09:24 -08:00	1m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-18 07:41 -08:00	2019-09-18 08:52 -08:00	1h 11m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-18 07:40 -08:00	2019-09-18 09:01 -08:00	1h 21m	Anchorage AK	Anchorage AK
LIHUE	7105471	United States of America	Container Ship	38656	2019-09-18 07:40 -08:00	2019-09-19 07:27 -08:00	23h 47m	Tacoma	
GLADYS M		United States of America	Tug		2019-09-18 06:11 -08:00	2019-09-18 11:51 -08:00	5h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-17 23:13 -08:00	2019-09-18 05:48 -08:00	6h 35m	Anchorage AK	
SHAMROCK		United States of America	Offshore Support Vessel		2019-09-17 22:32 -08:00	2019-09-20 10:18 -08:00	2d 11h 46m	Nikiski	
GLACIER WIND	8662593	United States of America	Tug		2019-09-17 22:18 -08:00	2019-09-18 09:03 -08:00	10h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-17 17:38 -08:00	2019-09-17 22:50 -08:00	5h 12m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-17 11:20 -08:00	2019-09-17 22:05 -08:00	10h 45m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-17 11:19 -08:00	2019-09-18 07:08 -08:00	19h 49m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-17 11:17 -08:00	2019-09-18 09:02 -08:00	21h 45m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-17 10:50 -08:00	2019-09-17 10:51 -08:00	1m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-17 10:20 -08:00	2019-09-17 15:21 -08:00	5h 1m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-09-17 06:57 -08:00	2019-09-17 23:26 -08:00	16h 29m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-09-17 06:57 -08:00	2019-09-17 11:04 -08:00	4h 7m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-17 06:51 -08:00	2019-09-17 11:05 -08:00	4h 14m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-17 06:33 -08:00	2019-09-17 07:07 -08:00	34m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-17 06:10 -08:00	2019-09-18 07:10 -08:00	1d 1h 0m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-09-17 06:10 -08:00	2019-09-17 06:37 -08:00	27m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-09-17 06:10 -08:00	2019-09-17 16:55 -08:00	10h 45m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-09-17 06:09 -08:00	2019-09-17 06:36 -08:00	27m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-17 04:55 -08:00	2019-09-17 10:03 -08:00	5h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-16 21:47 -08:00	2019-09-17 04:30 -08:00	6h 43m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-16 20:43 -08:00	2019-09-17 05:38 -08:00	8h 55m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-16 17:01 -08:00	2019-09-16 17:12 -08:00	11m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-16 15:40 -08:00	2019-09-16 15:46 -08:00	6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-16 15:39 -08:00	2019-09-16 21:25 -08:00	5h 46m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-16 14:32 -08:00	2019-09-16 14:38 -08:00	6m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-16 13:05 -08:00	2019-09-16 13:20 -08:00	15m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-16 10:51 -08:00	2019-09-16 11:50 -08:00	59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-16 09:40 -08:00	2019-09-16 15:10 -08:00	5h 30m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-16 09:10 -08:00	2019-09-16 10:38 -08:00	1h 28m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-16 08:58 -08:00	2019-09-16 13:03 -08:00	4h 5m	Anchorage AK	
BOLETTE	9188037	Bahamas	Cruise Ship	7327	2019-09-16 07:40 -08:00	2019-09-16 20:57 -08:00	13h 17m	Ketchikan	
PETER M	8964549	United States of America	Tug		2019-09-16 06:40 -08:00	2019-09-16 06:44 -08:00	4m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-16 05:53 -08:00	2019-09-16 06:07 -08:00	14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-16 04:02 -08:00	2019-09-16 09:20 -08:00	5h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-15 21:27 -08:00	2019-09-16 03:44 -08:00	6h 17m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-15 21:00 -08:00	2019-09-17 05:40 -08:00	1d 8h 40m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-15 20:57 -08:00	2019-09-16 20:31 -08:00	23h 34m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-15 15:43 -08:00	2019-09-15 21:04 -08:00	5h 21m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-15 10:10 -08:00	2019-09-15 15:18 -08:00	5h 8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-15 09:18 -08:00	2019-09-15 21:09 -08:00	11h 51m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-15 05:12 -08:00	2019-09-15 20:22 -08:00	15h 10m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-15 05:12 -08:00	2019-09-17 05:39 -08:00	2d 0h 27m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-09-15 05:11 -08:00	2019-09-15 17:56 -08:00	12h 45m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-09-15 05:10 -08:00	2019-09-15 20:22 -08:00	15h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-15 03:48 -08:00	2019-09-15 09:50 -08:00	6h 2m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-14 23:01 -08:00	2019-09-14 23:02 -08:00	1m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-14 20:12 -08:00	2019-09-15 03:29 -08:00	7h 17m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-09-14 19:21 -08:00	2019-09-15 19:11 -08:00	23h 50m	Anacortes WA	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-09-14 19:20 -08:00	2019-09-15 04:41 -08:00	9h 21m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-09-14 18:57 -08:00	2019-09-15 20:01 -08:00	1d 1h 4m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-09-14 18:57 -08:00	2019-09-15 04:43 -08:00	9h 46m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-14 18:33 -08:00	2019-09-14 18:40 -08:00	7m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-14 17:13 -08:00	2019-09-14 17:51 -08:00	38m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-14 16:49 -08:00	2019-09-14 16:55 -08:00	6m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-14 14:47 -08:00	2019-09-14 14:54 -08:00	7m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-14 13:51 -08:00	2019-09-14 19:50 -08:00	5h 59m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-14 13:15 -08:00	2019-09-14 13:22 -08:00	7m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-14 12:15 -08:00	2019-09-14 12:23 -08:00	8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-14 10:55 -08:00	2019-09-14 11:43 -08:00	48m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-14 09:19 -08:00	2019-09-14 09:28 -08:00	9m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-14 08:16 -08:00	2019-09-14 12:53 -08:00	4h 37m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-14 08:12 -08:00	2019-09-14 08:30 -08:00	18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-14 07:56 -08:00	2019-09-14 13:25 -08:00	5h 29m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
STELLAR WIND	9096911	United States of America	Tug		2019-09-14 07:14 -08:00	2019-09-14 19:01 -08:00	11h 47m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-14 07:13 -08:00	2019-09-14 18:29 -08:00	11h 16m	Anchorage AK	
POLAR RANGER		United States of America	Other		2019-09-14 06:59 -08:00	2019-09-15 20:09 -08:00	1d 13h 10m	Seattle	
PETER M	8964549	United States of America	Tug		2019-09-14 05:54 -08:00	2019-09-14 06:17 -08:00	23m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-14 02:01 -08:00	2019-09-14 07:37 -08:00	5h 36m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-14 00:13 -08:00	2019-09-14 00:21 -08:00	8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-14 00:05 -08:00	2019-09-14 00:13 -08:00	8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-13 22:52 -08:00	2019-09-13 23:50 -08:00	58m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 22:39 -08:00	2019-09-13 23:52 -08:00	1h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 21:15 -08:00	2019-09-13 21:17 -08:00	2m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 20:55 -08:00	2019-09-13 21:00 -08:00	5m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-13 20:54 -08:00	2019-09-13 20:57 -08:00	3m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 19:48 -08:00	2019-09-13 19:54 -08:00	6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-13 19:09 -08:00	2019-09-14 01:36 -08:00	6h 27m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 17:37 -08:00	2019-09-13 17:40 -08:00	3m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-13 16:25 -08:00	2019-09-13 19:16 -08:00	2h 51m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 13:29 -08:00	2019-09-13 14:27 -08:00	58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-13 12:26 -08:00	2019-09-13 18:46 -08:00	6h 20m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 11:29 -08:00	2019-09-13 12:45 -08:00	1h 16m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-13 11:24 -08:00	2019-09-13 12:45 -08:00	1h 21m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-13 07:22 -08:00	2019-09-13 11:34 -08:00	4h 12m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 06:22 -08:00	2019-09-13 07:56 -08:00	1h 34m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 05:54 -08:00	2019-09-13 06:05 -08:00	11m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-13 02:26 -08:00	2019-09-13 06:41 -08:00	4h 15m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-13 00:13 -08:00	2019-09-13 00:21 -08:00	8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-12 22:06 -08:00	2019-09-12 23:54 -08:00	1h 48m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-12 21:07 -08:00	2019-09-13 02:04 -08:00	4h 57m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-12 19:51 -08:00	2019-09-12 20:01 -08:00	10m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-12 14:53 -08:00	2019-09-12 20:45 -08:00	5h 52m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-12 12:27 -08:00	2019-09-12 14:12 -08:00	1h 45m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-12 10:47 -08:00	2019-09-12 12:07 -08:00	1h 20m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-12 09:19 -08:00	2019-09-12 09:20 -08:00	1m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-12 08:16 -08:00	2019-09-12 08:29 -08:00	13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-12 08:02 -08:00	2019-09-12 14:20 -08:00	6h 18m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-12 05:09 -08:00	2019-09-12 06:27 -08:00	1h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-12 03:38 -08:00	2019-09-12 07:30 -08:00	3h 52m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-12 00:07 -08:00	2019-09-12 00:15 -08:00	8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 22:52 -08:00	2019-09-11 23:49 -08:00	57m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 21:44 -08:00	2019-09-11 21:47 -08:00	3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-11 21:11 -08:00	2019-09-12 03:14 -08:00	6h 3m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 20:23 -08:00	2019-09-11 20:31 -08:00	8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 16:52 -08:00	2019-09-11 17:37 -08:00	45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-11 15:07 -08:00	2019-09-11 20:36 -08:00	5h 29m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-11 14:54 -08:00	2019-09-13 08:25 -08:00	1d 17h 31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-11 13:54 -08:00	2019-09-11 14:34 -08:00	40m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 12:19 -08:00	2019-09-11 12:53 -08:00	34m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 10:48 -08:00	2019-09-11 12:03 -08:00	1h 15m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-11 10:06 -08:00	2019-09-11 13:20 -08:00	3h 14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-11 09:16 -08:00	2019-09-11 14:43 -08:00	5h 27m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 09:16 -08:00	2019-09-11 10:03 -08:00	47m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 07:56 -08:00	2019-09-11 08:05 -08:00	9m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 04:51 -08:00	2019-09-11 06:45 -08:00	1h 54m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-11 03:37 -08:00	2019-09-11 08:43 -08:00	5h 6m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-11 01:09 -08:00	2019-09-11 09:13 -08:00	8h 4m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-11 00:14 -08:00	2019-09-11 00:24 -08:00	10m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-10 23:29 -08:00	2019-09-14 06:20 -08:00	3d 6h 51m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-10 23:26 -08:00	2019-09-14 06:18 -08:00	3d 6h 52m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-10 22:53 -08:00	2019-09-10 23:54 -08:00	1h 1m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-10 21:51 -08:00	2019-09-10 22:05 -08:00	14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-10 21:16 -08:00	2019-09-11 03:15 -08:00	5h 59m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-10 20:35 -08:00	2019-09-10 20:44 -08:00	9m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-10 15:29 -08:00	2019-09-10 23:16 -08:00	7h 47m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-10 15:28 -08:00	2019-09-10 23:17 -08:00	7h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-10 15:05 -08:00	2019-09-10 20:50 -08:00	5h 45m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-10 14:10 -08:00	2019-09-10 19:49 -08:00	5h 39m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-10 14:05 -08:00	2019-09-11 00:33 -08:00	10h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-10 08:59 -08:00	2019-09-10 14:40 -08:00	5h 41m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-10 07:32 -08:00	2019-09-15 04:44 -08:00	4d 21h 12m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-09-10 07:03 -08:00	2019-09-10 13:36 -08:00	6h 33m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-10 05:14 -08:00	2019-09-10 15:18 -08:00	10h 4m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-10 05:13 -08:00	2019-09-10 15:17 -08:00	10h 4m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-09-10 05:13 -08:00	2019-09-11 00:16 -08:00	19h 3m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-09-10 02:40 -08:00	2019-09-10 04:38 -08:00	1h 58m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-10 02:39 -08:00	2019-09-10 04:38 -08:00	1h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-10 02:03 -08:00	2019-09-10 08:34 -08:00	6h 31m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-10 02:00 -08:00	2019-09-10 02:29 -08:00	29m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-10 02:00 -08:00	2019-09-10 02:29 -08:00	29m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-09-10 02:00 -08:00	2019-09-10 16:34 -08:00	14h 34m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-09-10 02:00 -08:00	2019-09-10 07:21 -08:00	5h 21m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-09-09 19:26 -08:00	2019-09-10 01:43 -08:00	6h 17m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-09 18:32 -08:00	2019-09-10 06:30 -08:00	11h 58m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-09 17:08 -08:00	2019-09-10 13:15 -08:00	20h 7m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-09 13:32 -08:00	2019-09-09 19:01 -08:00	5h 29m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-09 10:40 -08:00	2019-09-09 16:35 -08:00	5h 55m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-09 10:22 -08:00	2019-09-09 18:00 -08:00	7h 38m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-09 07:32 -08:00	2019-09-09 10:14 -08:00	2h 42m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-09 07:16 -08:00	2019-09-09 12:54 -08:00	5h 38m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-09 05:02 -08:00	2019-09-09 05:13 -08:00	11m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-09 04:37 -08:00	2019-09-09 04:51 -08:00	14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-09 03:29 -08:00	2019-09-09 06:59 -08:00	3h 30m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-09 03:07 -08:00	2019-09-10 01:28 -08:00	22h 21m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-09 03:05 -08:00	2019-09-10 01:25 -08:00	22h 20m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-09 02:17 -08:00	2019-09-09 02:51 -08:00	34m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-09 00:57 -08:00	2019-09-09 01:55 -08:00	58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-08 21:27 -08:00	2019-09-09 03:10 -08:00	5h 43m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-08 20:25 -08:00	2019-09-09 00:46 -08:00	4h 21m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-08 16:14 -08:00	2019-09-08 20:14 -08:00	4h 0m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-08 16:12 -08:00	2019-09-08 21:08 -08:00	4h 56m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-08 16:04 -08:00	2019-09-09 02:52 -08:00	10h 48m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-08 08:42 -08:00	2019-09-08 15:52 -08:00	7h 10m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-09-08 05:32 -08:00	2019-09-09 02:51 -08:00	21h 19m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-09-08 05:32 -08:00	2019-09-08 15:58 -08:00	10h 26m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-08 05:31 -08:00	2019-09-08 15:51 -08:00	10h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-08 05:31 -08:00	2019-09-08 08:18 -08:00	2h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-08 02:07 -08:00	2019-09-08 05:04 -08:00	2h 57m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-07 23:47 -08:00	2019-09-08 04:54 -08:00	5h 7m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-09-07 23:46 -08:00	2019-09-10 01:26 -08:00	2d 1h 40m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-09-07 23:45 -08:00	2019-09-08 16:43 -08:00	16h 58m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-09-07 23:43 -08:00	2019-09-08 04:53 -08:00	5h 10m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-07 21:43 -08:00	2019-09-09 02:40 -08:00	1d 4h 57m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-07 21:24 -08:00	2019-09-09 09:48 -08:00	1d 12h 24m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-07 19:22 -08:00	2019-09-08 01:48 -08:00	6h 26m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-07 15:55 -08:00	2019-09-07 23:04 -08:00	7h 9m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-07 15:40 -08:00	2019-09-07 21:19 -08:00	5h 39m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-07 15:14 -08:00	2019-09-07 20:57 -08:00	5h 43m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-09-07 14:15 -08:00	2019-09-08 14:42 -08:00	1d 0h 27m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-09-07 14:05 -08:00	2019-09-07 15:38 -08:00	1h 33m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-07 13:03 -08:00	2019-09-07 23:01 -08:00	9h 58m	Anchorage AK	
SAGAMI	9379911	Panama	Chemical Tanker	33614	2019-09-07 13:03 -08:00	2019-09-10 08:11 -08:00	2d 19h 8m	Kashima	Vancouver
BERING WIND	9369198	United States of America	Tug		2019-09-07 13:03 -08:00	2019-09-07 23:05 -08:00	10h 2m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-09-07 13:01 -08:00	2019-09-07 19:03 -08:00	6h 2m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-07 09:23 -08:00	2019-09-07 14:36 -08:00	5h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-07 04:55 -08:00	2019-09-07 12:38 -08:00	7h 43m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-07 01:57 -08:00	2019-09-07 15:11 -08:00	13h 14m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-07 01:00 -08:00	2019-09-07 12:34 -08:00	11h 34m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-06 22:40 -08:00	2019-09-07 04:26 -08:00	5h 46m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-06 20:23 -08:00	2019-09-07 08:12 -08:00	11h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-06 16:18 -08:00	2019-09-06 22:22 -08:00	6h 4m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-06 11:13 -08:00	2019-09-06 19:22 -08:00	8h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-06 09:17 -08:00	2019-09-06 15:57 -08:00	6h 40m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-06 08:08 -08:00	2019-09-07 01:36 -08:00	17h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-06 04:14 -08:00	2019-09-06 08:53 -08:00	4h 39m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-06 01:35 -08:00	2019-09-06 07:43 -08:00	6h 8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-05 22:54 -08:00	2019-09-06 01:11 -08:00	2h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-05 21:38 -08:00	2019-09-06 03:50 -08:00	6h 12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-05 21:31 -08:00	2019-09-06 10:12 -08:00	12h 41m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-05 20:08 -08:00	2019-09-05 20:33 -08:00	25m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-05 19:09 -08:00	2019-09-05 19:28 -08:00	19m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-05 15:48 -08:00	2019-09-05 20:55 -08:00	5h 7m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-05 15:45 -08:00	2019-09-05 21:13 -08:00	5h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-05 12:10 -08:00	2019-09-05 14:59 -08:00	2h 49m	Anchorage AK	
ISLAND SCOUT	6728018	United States of America	Tug		2019-09-05 12:09 -08:00	2019-09-07 00:43 -08:00	1d 12h 34m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-05 11:11 -08:00	2019-09-05 11:24 -08:00	13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-05 10:40 -08:00	2019-09-05 18:37 -08:00	7h 57m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-05 10:13 -08:00	2019-09-05 10:20 -08:00	7m	Anchorage AK	
ISLAND SCOUT	6728018	United States of America	Tug		2019-09-05 09:52 -08:00	2019-09-05 11:58 -08:00	2h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-05 08:14 -08:00	2019-09-05 10:54 -08:00	2h 40m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-05 08:07 -08:00	2019-09-05 08:14 -08:00	7m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-05 06:50 -08:00	2019-09-05 06:52 -08:00	2m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-05 06:43 -08:00	2019-09-05 15:13 -08:00	8h 30m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-05 03:42 -08:00	2019-09-05 03:46 -08:00	4m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-05 01:35 -08:00	2019-09-05 07:52 -08:00	6h 17m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-04 23:06 -08:00	2019-09-05 01:03 -08:00	1h 57m	Anchorage AK	
SAND ISLAND		United States of America	Other		2019-09-04 22:58 -08:00	2019-09-04 23:45 -08:00	47m	Nikiski	
PETER M	8964549	United States of America	Tug		2019-09-04 21:04 -08:00	2019-09-05 05:33 -08:00	8h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-04 19:37 -08:00	2019-09-05 01:10 -08:00	5h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-04 19:22 -08:00	2019-09-04 19:26 -08:00	4m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-04 17:46 -08:00	2019-09-04 22:42 -08:00	4h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-04 15:11 -08:00	2019-09-04 20:26 -08:00	5h 15m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-04 12:27 -08:00	2019-09-04 18:40 -08:00	6h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-04 10:52 -08:00	2019-09-04 17:01 -08:00	6h 9m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-04 10:48 -08:00	2019-09-07 13:42 -08:00	3d 2h 54m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-04 10:46 -08:00	2019-09-07 00:42 -08:00	2d 13h 56m	Anchorage AK	
ISLAND SCOUT	6728018	United States of America	Tug		2019-09-04 10:42 -08:00	2019-09-05 09:38 -08:00	22h 56m	Seattle	
STELLAR WIND	9096911	United States of America	Tug		2019-09-04 10:26 -08:00	2019-09-04 10:34 -08:00	8m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
GLADYS M		United States of America	Tug		2019-09-04 06:20 -08:00	2019-09-04 11:58 -08:00	5h 38m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-04 05:34 -08:00	2019-09-04 14:43 -08:00	9h 9m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-04 05:33 -08:00	2019-09-04 10:27 -08:00	4h 54m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-04 02:28 -08:00	2019-09-04 05:41 -08:00	3h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-03 21:25 -08:00	2019-09-04 04:39 -08:00	7h 14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-03 19:30 -08:00	2019-09-04 02:02 -08:00	6h 32m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-03 17:56 -08:00	2019-09-04 09:52 -08:00	15h 56m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-03 17:55 -08:00	2019-09-04 09:43 -08:00	15h 48m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-03 17:11 -08:00	2019-09-04 05:01 -08:00	11h 50m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-03 14:50 -08:00	2019-09-03 20:37 -08:00	5h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-03 13:07 -08:00	2019-09-03 18:35 -08:00	5h 28m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-09-03 09:52 -08:00	2019-09-03 16:33 -08:00	6h 41m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-03 08:29 -08:00	2019-09-03 14:14 -08:00	5h 45m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-03 08:11 -08:00	2019-09-03 08:13 -08:00	2m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-03 07:53 -08:00	2019-09-03 17:44 -08:00	9h 51m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-03 07:51 -08:00	2019-09-03 17:45 -08:00	9h 54m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-03 07:42 -08:00	2019-09-03 08:01 -08:00	19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-03 07:23 -08:00	2019-09-03 12:41 -08:00	5h 18m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-09-03 07:15 -08:00	2019-09-03 18:22 -08:00	11h 7m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-09-03 07:15 -08:00	2019-09-07 12:41 -08:00	4d 5h 26m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-09-03 07:15 -08:00	2019-09-03 07:41 -08:00	26m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-03 07:12 -08:00	2019-09-03 07:41 -08:00	29m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-03 05:31 -08:00	2019-09-03 07:28 -08:00	1h 57m	Anchorage AK	
HARRY M		United States of America	Tug		2019-09-03 04:43 -08:00	2019-09-03 05:18 -08:00	35m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-03 00:50 -08:00	2019-09-03 07:00 -08:00	6h 10m	Anchorage AK	
BOLETTE	9188037	Bahamas	Cruise Ship	7327	2019-09-02 07:15 -08:00	2019-09-02 20:43 -08:00	13h 28m	Ketchikan	
STELLAR WIND	9096911	United States of America	Tug		2019-09-02 00:58 -08:00	2019-09-03 06:44 -08:00	1d 5h 46m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-02 00:57 -08:00	2019-09-03 06:42 -08:00	1d 5h 45m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-01 17:56 -08:00	2019-09-02 00:47 -08:00	6h 51m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-01 17:54 -08:00	2019-09-02 00:47 -08:00	6h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-01 14:50 -08:00	2019-09-01 19:55 -08:00	5h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-01 09:27 -08:00	2019-09-01 14:22 -08:00	4h 55m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-01 06:39 -08:00	2019-09-01 08:57 -08:00	2h 18m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-09-01 06:32 -08:00	2019-09-01 17:46 -08:00	11h 14m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-09-01 06:30 -08:00	2019-09-01 17:44 -08:00	11h 14m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-09-01 06:30 -08:00	2019-09-02 01:25 -08:00	18h 55m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-09-01 05:41 -08:00	2019-09-01 06:03 -08:00	22m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-09-01 05:40 -08:00	2019-09-01 17:43 -08:00	12h 3m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-09-01 05:40 -08:00	2019-09-03 06:42 -08:00	2d 1h 2m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-09-01 05:39 -08:00	2019-09-01 06:04 -08:00	25m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-09-01 04:44 -08:00	2019-09-01 06:27 -08:00	1h 43m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 21:58 -08:00	2019-09-03 04:26 -08:00	2d 6h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-31 21:46 -08:00	2019-09-01 04:21 -08:00	6h 35m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-31 21:41 -08:00	2019-09-03 09:18 -08:00	2d 11h 37m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 21:28 -08:00	2019-08-31 21:47 -08:00	19m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 19:42 -08:00	2019-08-31 20:58 -08:00	1h 16m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-31 15:40 -08:00	2019-08-31 21:21 -08:00	5h 41m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-31 15:31 -08:00	2019-08-31 21:10 -08:00	5h 39m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 10:55 -08:00	2019-08-31 19:28 -08:00	8h 33m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 09:35 -08:00	2019-08-31 09:50 -08:00	15m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-31 09:00 -08:00	2019-08-31 14:56 -08:00	5h 56m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 08:21 -08:00	2019-08-31 09:03 -08:00	42m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-08-31 07:11 -08:00	2019-09-01 07:38 -08:00	1d 0h 27m	Valdez	
GLACIER WIND	8662593	United States of America	Tug		2019-08-31 07:10 -08:00	2019-09-01 05:18 -08:00	22h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-31 05:19 -08:00	2019-08-31 14:55 -08:00	9h 36m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 03:32 -08:00	2019-08-31 06:34 -08:00	3h 2m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-31 03:17 -08:00	2019-08-31 08:41 -08:00	5h 24m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 02:05 -08:00	2019-08-31 03:18 -08:00	1h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 01:19 -08:00	2019-08-31 01:50 -08:00	31m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-31 00:40 -08:00	2019-08-31 00:57 -08:00	17m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-30 22:07 -08:00	2019-08-31 04:44 -08:00	6h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-30 20:55 -08:00	2019-08-31 02:57 -08:00	6h 2m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-30 20:12 -08:00	2019-08-31 06:45 -08:00	10h 33m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-30 17:21 -08:00	2019-08-30 21:35 -08:00	4h 14m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-30 16:31 -08:00	2019-08-31 00:03 -08:00	7h 32m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-30 15:18 -08:00	2019-08-30 20:35 -08:00	5h 17m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-30 11:14 -08:00	2019-08-30 15:53 -08:00	4h 39m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-30 11:06 -08:00	2019-08-30 16:39 -08:00	5h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-30 09:32 -08:00	2019-08-30 14:54 -08:00	5h 22m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-30 07:13 -08:00	2019-08-30 09:25 -08:00	2h 12m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-30 06:14 -08:00	2019-08-30 06:57 -08:00	43m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-30 05:28 -08:00	2019-08-30 10:41 -08:00	5h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-30 03:39 -08:00	2019-08-30 09:05 -08:00	5h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-29 21:49 -08:00	2019-08-30 04:52 -08:00	7h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-29 20:33 -08:00	2019-08-30 03:14 -08:00	6h 41m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-29 17:30 -08:00	2019-08-29 21:03 -08:00	3h 33m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-29 15:29 -08:00	2019-08-30 05:38 -08:00	14h 9m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-29 15:03 -08:00	2019-09-01 05:19 -08:00	2d 14h 16m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-29 14:52 -08:00	2019-08-30 20:01 -08:00	1d 5h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-29 14:45 -08:00	2019-08-29 20:06 -08:00	5h 21m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-29 11:10 -08:00	2019-08-29 16:48 -08:00	5h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-29 09:27 -08:00	2019-08-29 14:19 -08:00	4h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-29 06:57 -08:00	2019-08-29 08:34 -08:00	1h 37m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-29 05:46 -08:00	2019-08-29 14:31 -08:00	8h 45m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-29 05:32 -08:00	2019-08-29 10:31 -08:00	4h 59m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-29 00:28 -08:00	2019-08-29 05:21 -08:00	4h 53m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-28 23:18 -08:00	2019-08-29 14:49 -08:00	15h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-28 22:53 -08:00	2019-08-29 06:13 -08:00	7h 20m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-28 22:18 -08:00	2019-08-29 04:56 -08:00	6h 38m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-28 17:51 -08:00	2019-08-29 00:04 -08:00	6h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-28 16:59 -08:00	2019-08-28 22:30 -08:00	5h 31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-28 13:25 -08:00	2019-08-28 21:47 -08:00	8h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-28 11:14 -08:00	2019-08-28 16:36 -08:00	5h 22m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-28 10:59 -08:00	2019-08-28 17:25 -08:00	6h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-28 04:53 -08:00	2019-08-28 12:59 -08:00	8h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-28 04:51 -08:00	2019-08-28 10:57 -08:00	6h 6m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-28 02:40 -08:00	2019-08-28 10:42 -08:00	8h 2m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-27 22:52 -08:00	2019-08-28 04:18 -08:00	5h 26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-27 21:55 -08:00	2019-08-28 04:29 -08:00	6h 34m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-27 21:00 -08:00	2019-08-28 19:01 -08:00	22h 1m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-27 20:58 -08:00	2019-08-28 23:08 -08:00	1d 2h 10m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-27 16:58 -08:00	2019-08-27 22:29 -08:00	5h 31m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-27 16:37 -08:00	2019-08-27 20:47 -08:00	4h 10m	Anchorage AK	
TORM ASTRID	9510682	Singapore	Chemical Oil Products Tanker	49999	2019-08-27 15:08 -08:00	2019-08-29 15:26 -08:00	2d 0h 18m	Yeosu	
STELLAR WIND	9096911	United States of America	Tug		2019-08-27 15:07 -08:00	2019-08-27 20:48 -08:00	5h 41m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-27 15:05 -08:00	2019-09-01 05:19 -08:00	4d 14h 14m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-08-27 14:55 -08:00	2019-08-27 21:31 -08:00	6h 36m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-27 13:39 -08:00	2019-08-28 02:23 -08:00	12h 44m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-27 11:12 -08:00	2019-08-27 16:32 -08:00	5h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-27 09:21 -08:00	2019-08-27 14:24 -08:00	5h 3m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-27 06:25 -08:00	2019-08-27 10:43 -08:00	4h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-27 04:12 -08:00	2019-08-27 08:59 -08:00	4h 47m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-27 03:49 -08:00	2019-08-27 14:42 -08:00	10h 53m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-08-27 03:48 -08:00	2019-08-27 22:31 -08:00	18h 43m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-08-27 03:47 -08:00	2019-08-27 15:57 -08:00	12h 10m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-27 02:28 -08:00	2019-08-27 13:07 -08:00	10h 39m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-27 02:24 -08:00	2019-08-27 03:26 -08:00	1h 2m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-27 01:51 -08:00	2019-08-27 03:25 -08:00	1h 34m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-08-27 01:51 -08:00	2019-08-27 16:32 -08:00	14h 41m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-08-27 01:50 -08:00	2019-08-27 02:10 -08:00	20m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-27 01:49 -08:00	2019-08-27 14:42 -08:00	12h 53m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-08-26 23:04 -08:00	2019-08-27 05:54 -08:00	6h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-26 21:57 -08:00	2019-08-27 03:42 -08:00	5h 45m	Anchorage AK	
CAPE HUDSON	7704930	United States of America	Vehicles Carrier	32441	2019-08-26 21:54 -08:00	2019-08-26 22:32 -08:00	38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-26 21:31 -08:00	2019-08-27 01:20 -08:00	3h 49m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-26 21:30 -08:00	2019-08-27 01:21 -08:00	3h 51m	Anchorage AK	Anchorage AK
HARRY M		United States of America	Tug		2019-08-26 19:58 -08:00	2019-08-27 02:00 -08:00	6h 2m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-26 17:52 -08:00	2019-08-26 21:19 -08:00	3h 27m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-26 17:46 -08:00	2019-08-27 01:21 -08:00	7h 35m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-26 16:47 -08:00	2019-08-26 22:44 -08:00	5h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-26 16:05 -08:00	2019-08-26 21:30 -08:00	5h 25m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-26 14:07 -08:00	2019-08-26 19:20 -08:00	5h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-26 10:19 -08:00	2019-08-26 15:41 -08:00	5h 22m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-26 08:11 -08:00	2019-08-26 16:21 -08:00	8h 10m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-26 07:12 -08:00	2019-08-26 13:27 -08:00	6h 15m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-26 03:43 -08:00	2019-08-26 09:57 -08:00	6h 14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-26 03:27 -08:00	2019-08-26 21:20 -08:00	17h 53m	Anchorage AK	Anchorage AK
CAPE RISE	7530808	United States of America	Vehicles Carrier	22853	2019-08-26 03:26 -08:00	2019-08-26 23:29 -08:00	20h 3m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-26 03:05 -08:00	2019-08-26 17:19 -08:00	14h 14m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-26 03:04 -08:00	2019-08-26 17:18 -08:00	14h 14m	Anchorage AK	
OCEAN RANGER	9010656	United States of America	Tug		2019-08-26 02:51 -08:00	2019-08-26 17:02 -08:00	14h 11m	Seattle	
GLACIER WIND	8662593	United States of America	Tug		2019-08-25 23:32 -08:00	2019-08-26 02:10 -08:00	2h 38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-25 23:30 -08:00	2019-08-26 02:25 -08:00	2h 55m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-25 22:29 -08:00	2019-08-25 23:19 -08:00	50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-25 21:49 -08:00	2019-08-26 03:20 -08:00	5h 31m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-25 19:26 -08:00	2019-08-26 02:57 -08:00	7h 31m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-08-25 19:26 -08:00	2019-08-25 23:19 -08:00	3h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-25 15:20 -08:00	2019-08-25 21:25 -08:00	6h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-25 08:55 -08:00	2019-08-25 14:56 -08:00	6h 1m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-25 05:30 -08:00	2019-08-25 08:31 -08:00	3h 1m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-08-25 05:24 -08:00	2019-08-25 23:17 -08:00	17h 53m	Tacoma	Kodiak
BERING WIND	9369198	United States of America	Tug		2019-08-25 05:23 -08:00	2019-08-25 17:37 -08:00	12h 14m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-08-25 05:23 -08:00	2019-08-25 17:39 -08:00	12h 16m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-25 02:47 -08:00	2019-08-25 04:41 -08:00	1h 54m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-25 02:46 -08:00	2019-08-25 04:40 -08:00	1h 54m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-08-25 01:37 -08:00	2019-08-25 04:58 -08:00	3h 21m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-08-25 01:25 -08:00	2019-08-26 02:09 -08:00	1d 0h 44m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-08-25 01:23 -08:00	2019-08-25 22:18 -08:00	20h 55m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-24 23:32 -08:00	2019-08-25 01:53 -08:00	2h 21m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-08-24 23:29 -08:00	2019-08-25 17:41 -08:00	18h 12m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-08-24 23:28 -08:00	2019-08-24 23:54 -08:00	26m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-24 23:26 -08:00	2019-08-25 01:56 -08:00	2h 30m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-24 22:03 -08:00	2019-08-26 06:45 -08:00	1d 8h 42m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-24 22:01 -08:00	2019-08-25 01:11 -08:00	3h 10m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-24 18:19 -08:00	2019-08-24 21:23 -08:00	3h 4m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
GLADYS M		United States of America	Tug		2019-08-24 16:01 -08:00	2019-08-24 21:40 -08:00	5h 39m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-24 14:26 -08:00	2019-08-26 07:20 -08:00	1d 16h 54m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-24 10:05 -08:00	2019-08-24 15:35 -08:00	5h 30m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-24 07:09 -08:00	2019-08-24 17:50 -08:00	10h 41m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-24 05:37 -08:00	2019-08-24 13:50 -08:00	8h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-24 03:41 -08:00	2019-08-24 09:44 -08:00	6h 3m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-24 01:27 -08:00	2019-08-24 22:56 -08:00	21h 29m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-08-23 21:01 -08:00	2019-08-24 03:22 -08:00	6h 21m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-23 19:58 -08:00	2019-08-24 05:03 -08:00	9h 5m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-23 15:33 -08:00	2019-08-24 06:45 -08:00	15h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-23 15:28 -08:00	2019-08-23 20:40 -08:00	5h 12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-23 10:58 -08:00	2019-08-23 19:27 -08:00	8h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-23 09:30 -08:00	2019-08-23 15:04 -08:00	5h 34m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-23 06:51 -08:00	2019-08-23 15:06 -08:00	8h 15m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-23 05:07 -08:00	2019-08-23 10:26 -08:00	5h 19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-23 03:40 -08:00	2019-08-23 09:10 -08:00	5h 30m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-23 00:41 -08:00	2019-08-23 06:34 -08:00	5h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-22 21:56 -08:00	2019-08-23 03:15 -08:00	5h 19m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-22 19:27 -08:00	2019-08-23 04:37 -08:00	9h 10m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-22 17:13 -08:00	2019-08-23 00:21 -08:00	7h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-22 16:08 -08:00	2019-08-22 21:36 -08:00	5h 28m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-22 12:10 -08:00	2019-08-24 22:56 -08:00	2d 10h 46m	Anchorage AK	
CAPE HUDSON	7704930	United States of America	Vehicles Carrier	32441	2019-08-22 12:10 -08:00	2019-08-25 01:54 -08:00	2d 13h 44m	San Francisco	
BERING WIND	9369198	United States of America	Tug		2019-08-22 12:08 -08:00	2019-08-24 01:15 -08:00	1d 13h 7m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-08-22 11:01 -08:00	2019-08-22 19:00 -08:00	7h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-22 10:26 -08:00	2019-08-22 15:46 -08:00	5h 20m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-22 08:26 -08:00	2019-08-22 16:48 -08:00	8h 22m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-22 08:21 -08:00	2019-08-22 11:18 -08:00	2h 57m	Anchorage AK	Anchorage AK
CAPE RISE	7530808	United States of America	Vehicles Carrier	22853	2019-08-22 08:21 -08:00	2019-08-24 02:39 -08:00	1d 18h 18m	Balboa	
STELLAR WIND	9096911	United States of America	Tug		2019-08-22 08:20 -08:00	2019-08-22 11:20 -08:00	3h 0m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-22 05:09 -08:00	2019-08-22 10:31 -08:00	5h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-22 03:58 -08:00	2019-08-22 10:05 -08:00	6h 7m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-22 00:37 -08:00	2019-08-22 08:02 -08:00	7h 25m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-21 22:06 -08:00	2019-08-22 03:37 -08:00	5h 31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-21 17:37 -08:00	2019-08-22 04:44 -08:00	11h 7m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-21 16:54 -08:00	2019-08-21 21:43 -08:00	4h 49m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-21 14:09 -08:00	2019-08-22 00:11 -08:00	10h 2m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-21 11:11 -08:00	2019-08-21 16:32 -08:00	5h 21m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-21 10:21 -08:00	2019-08-21 16:57 -08:00	6h 36m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-21 07:59 -08:00	2019-08-21 13:30 -08:00	5h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-21 06:59 -08:00	2019-08-21 10:33 -08:00	3h 34m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-21 02:24 -08:00	2019-08-21 09:49 -08:00	7h 25m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-21 02:12 -08:00	2019-08-21 07:33 -08:00	5h 21m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-21 02:10 -08:00	2019-08-21 06:18 -08:00	4h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-20 20:16 -08:00	2019-08-21 01:47 -08:00	5h 31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-20 18:11 -08:00	2019-08-21 01:47 -08:00	7h 36m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-20 17:47 -08:00	2019-08-21 01:50 -08:00	8h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-20 15:21 -08:00	2019-08-20 19:54 -08:00	4h 33m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-20 14:41 -08:00	2019-08-22 07:45 -08:00	1d 17h 4m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-20 14:40 -08:00	2019-08-24 22:56 -08:00	4d 8h 16m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-20 14:11 -08:00	2019-08-20 14:49 -08:00	38m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-20 11:11 -08:00	2019-08-20 17:42 -08:00	6h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-20 08:29 -08:00	2019-08-20 13:47 -08:00	5h 18m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-20 07:32 -08:00	2019-08-20 17:15 -08:00	9h 43m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-20 07:24 -08:00	2019-08-20 14:30 -08:00	7h 6m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-08-20 07:22 -08:00	2019-08-20 20:55 -08:00	13h 33m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-08-20 07:21 -08:00	2019-08-20 14:29 -08:00	7h 8m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-20 06:43 -08:00	2019-08-20 07:00 -08:00	17m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-08-20 06:43 -08:00	2019-08-20 15:19 -08:00	8h 36m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-08-20 06:42 -08:00	2019-08-22 07:46 -08:00	2d 1h 4m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-08-20 06:42 -08:00	2019-08-20 07:00 -08:00	18m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-20 04:26 -08:00	2019-08-20 10:42 -08:00	6h 16m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-20 01:48 -08:00	2019-08-20 08:04 -08:00	6h 16m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-20 00:48 -08:00	2019-08-20 07:10 -08:00	6h 22m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-19 20:04 -08:00	2019-08-20 03:46 -08:00	7h 42m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-19 19:52 -08:00	2019-08-20 01:22 -08:00	5h 30m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-19 17:27 -08:00	2019-08-19 19:06 -08:00	1h 39m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-19 15:56 -08:00	2019-08-20 00:24 -08:00	8h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-19 13:42 -08:00	2019-08-19 19:22 -08:00	5h 40m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-19 11:15 -08:00	2019-08-19 16:54 -08:00	5h 39m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-19 09:15 -08:00	2019-08-19 15:18 -08:00	6h 3m	Anchorage AK	
SHAMROCK		United States of America	Offshore Support Vessel		2019-08-19 08:58 -08:00	2019-08-19 21:36 -08:00	12h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-19 08:02 -08:00	2019-08-19 13:15 -08:00	5h 13m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-19 07:36 -08:00	2019-08-19 10:41 -08:00	3h 5m	Anchorage AK	
BOLETTE	9188037	Bahamas	Cruise Ship	7327	2019-08-19 07:06 -08:00	2019-08-19 20:38 -08:00	13h 32m	Ketchikan	
GLADYS M		United States of America	Tug		2019-08-19 02:29 -08:00	2019-08-19 07:31 -08:00	5h 2m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-19 01:04 -08:00	2019-08-19 06:59 -08:00	5h 55m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-19 00:27 -08:00	2019-08-19 00:31 -08:00	4m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-18 23:29 -08:00	2019-08-19 00:11 -08:00	42m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-18 23:22 -08:00	2019-08-18 23:29 -08:00	7m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-18 23:01 -08:00	2019-08-20 06:11 -08:00	1d 7h 10m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-18 21:49 -08:00	2019-08-18 22:35 -08:00	46m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-08-18 20:42 -08:00	2019-08-19 21:54 -08:00	1d 1h 12m	Anchorage AK	Valdez
BERING WIND	9369198	United States of America	Tug		2019-08-18 20:42 -08:00	2019-08-20 06:11 -08:00	1d 9h 29m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-08-18 18:09 -08:00	2019-08-18 22:51 -08:00	4h 42m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-18 16:35 -08:00	2019-08-20 06:11 -08:00	1d 13h 36m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-18 16:05 -08:00	2019-08-18 17:58 -08:00	1h 53m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-18 15:51 -08:00	2019-08-18 20:15 -08:00	4h 24m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-08-18 15:18 -08:00	2019-08-18 15:24 -08:00	6m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-08-18 13:46 -08:00	2019-08-18 13:59 -08:00	13m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-18 12:20 -08:00	2019-08-18 12:25 -08:00	5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-18 10:46 -08:00	2019-08-18 11:23 -08:00	37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-18 06:58 -08:00	2019-08-18 09:25 -08:00	2h 27m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-08-18 06:56 -08:00	2019-08-18 17:54 -08:00	10h 58m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-08-18 06:56 -08:00	2019-08-18 10:46 -08:00	3h 50m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-18 06:56 -08:00	2019-08-18 12:17 -08:00	5h 21m	Anchorage AK	Anchorage AK
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-08-18 06:11 -08:00	2019-08-18 23:59 -08:00	17h 48m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-08-18 06:10 -08:00	2019-08-18 12:17 -08:00	6h 7m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-18 06:09 -08:00	2019-08-18 06:43 -08:00	34m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-18 02:29 -08:00	2019-08-18 06:31 -08:00	4h 2m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-08-18 02:02 -08:00	2019-08-18 04:10 -08:00	2h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-17 22:22 -08:00	2019-08-18 23:16 -08:00	1d 0h 54m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-17 22:01 -08:00	2019-08-19 08:56 -08:00	1d 10h 55m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-17 21:54 -08:00	2019-08-18 01:43 -08:00	3h 49m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-17 21:49 -08:00	2019-08-18 04:09 -08:00	6h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-17 21:19 -08:00	2019-08-18 03:21 -08:00	6h 2m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-08-17 19:36 -08:00	2019-08-18 04:09 -08:00	8h 33m	Valdez	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-08-17 19:36 -08:00	2019-08-17 21:16 -08:00	1h 40m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-17 18:46 -08:00	2019-08-17 21:57 -08:00	3h 11m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-17 17:47 -08:00	2019-08-17 21:38 -08:00	3h 51m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-17 15:39 -08:00	2019-08-17 18:13 -08:00	2h 34m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-17 15:12 -08:00	2019-08-17 20:50 -08:00	5h 38m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-17 13:55 -08:00	2019-08-17 17:16 -08:00	3h 21m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-17 12:37 -08:00	2019-08-17 13:43 -08:00	1h 6m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-17 11:00 -08:00	2019-08-17 12:26 -08:00	1h 26m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-17 10:11 -08:00	2019-08-17 10:43 -08:00	32m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-17 09:32 -08:00	2019-08-17 14:46 -08:00	5h 14m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-17 08:52 -08:00	2019-08-17 15:05 -08:00	6h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-17 08:01 -08:00	2019-08-17 09:55 -08:00	1h 54m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-17 07:48 -08:00	2019-08-17 21:16 -08:00	13h 28m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-17 07:48 -08:00	-		Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-17 07:48 -08:00	2019-08-17 19:12 -08:00	11h 24m	Anchorage AK	
SNOHOMISH	7227384	United States of America	Tug		2019-08-17 07:29 -08:00	2019-08-17 21:09 -08:00	13h 40m	Seattle	
PETER M	8964549	United States of America	Tug		2019-08-17 04:07 -08:00	2019-08-17 08:16 -08:00	4h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-17 03:12 -08:00	-		Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-17 03:12 -08:00	2019-08-17 09:12 -08:00	6h 0m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-16 22:23 -08:00	2019-08-17 03:26 -08:00	5h 3m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-16 21:32 -08:00	2019-08-17 07:42 -08:00	10h 10m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-16 21:24 -08:00	2019-08-17 02:52 -08:00	5h 28m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-16 20:12 -08:00	2019-08-16 20:33 -08:00	21m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-16 19:24 -08:00	2019-08-16 21:47 -08:00	2h 23m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-16 16:43 -08:00	2019-08-16 18:51 -08:00	2h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-16 15:02 -08:00	2019-08-16 20:52 -08:00	5h 50m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-16 11:09 -08:00	2019-08-16 16:04 -08:00	4h 55m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-16 11:01 -08:00	2019-08-16 19:52 -08:00	8h 51m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-16 09:19 -08:00	2019-08-16 14:39 -08:00	5h 20m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-16 06:08 -08:00	2019-08-16 10:37 -08:00	4h 29m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-16 04:51 -08:00	2019-08-16 10:32 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-16 03:01 -08:00	2019-08-16 09:01 -08:00	6h 0m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-16 00:35 -08:00	2019-08-16 05:47 -08:00	5h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-15 21:03 -08:00	2019-08-16 02:40 -08:00	5h 37m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-15 17:46 -08:00	2019-08-16 04:08 -08:00	10h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-15 15:04 -08:00	2019-08-15 20:42 -08:00	5h 38m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-15 13:13 -08:00	2019-08-16 00:16 -08:00	11h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-15 09:09 -08:00	2019-08-15 14:45 -08:00	5h 36m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-15 08:45 -08:00	2019-08-15 17:01 -08:00	8h 16m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-15 06:49 -08:00	2019-08-15 08:26 -08:00	1h 37m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-15 03:56 -08:00	2019-08-15 12:41 -08:00	8h 45m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-15 03:48 -08:00	2019-08-15 08:01 -08:00	4h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-15 01:40 -08:00	2019-08-15 06:10 -08:00	4h 30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-14 20:11 -08:00	2019-08-15 01:17 -08:00	5h 6m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-14 20:07 -08:00	2019-08-17 06:34 -08:00	2d 10h 27m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-14 20:07 -08:00	2019-08-17 06:32 -08:00	2d 10h 25m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-14 20:05 -08:00	2019-08-18 02:11 -08:00	3d 6h 6m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-08-14 19:43 -08:00	2019-08-15 03:00 -08:00	7h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-14 17:10 -08:00	2019-08-14 19:45 -08:00	2h 35m	Anchorage AK	
KIWI TRADER	9218313	Hong Kong	Bulk Carrier	33048	2019-08-14 17:02 -08:00	2019-08-29 00:00 -08:00	14d 6h 58m	Donghae	
STELLAR WIND	9096911	United States of America	Tug		2019-08-14 17:01 -08:00	2019-08-14 19:40 -08:00	2h 39m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-14 17:01 -08:00	2019-08-14 19:39 -08:00	2h 38m	Anchorage AK	Anchorage AK
HARRY M		United States of America	Tug		2019-08-14 15:33 -08:00	2019-08-15 03:32 -08:00	11h 59m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-14 14:49 -08:00	2019-08-14 19:09 -08:00	4h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-14 14:05 -08:00	2019-08-14 16:52 -08:00	2h 47m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-14 13:26 -08:00	2019-08-14 16:34 -08:00	3h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-14 08:10 -08:00	2019-08-14 13:23 -08:00	5h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-14 06:05 -08:00	2019-08-14 15:01 -08:00	8h 56m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
PETER M	8964549	United States of America	Tug		2019-08-14 04:44 -08:00	2019-08-14 14:04 -08:00	9h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-14 02:15 -08:00	2019-08-14 07:44 -08:00	5h 29m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-14 01:47 -08:00	2019-08-14 19:31 -08:00	17h 44m	Anchorage AK	
GB PACIFIC	9135834	Israel	Multi Purpose Carrier	5820	2019-08-14 01:46 -08:00	2019-08-14 19:30 -08:00	17h 44m	Balboa	Kodiak
HARRY M		United States of America	Tug		2019-08-13 22:20 -08:00	2019-08-14 05:43 -08:00	7h 23m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-13 19:04 -08:00	2019-08-14 01:53 -08:00	6h 49m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-13 18:04 -08:00	2019-08-14 03:56 -08:00	9h 52m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-13 15:38 -08:00	2019-08-14 01:15 -08:00	9h 37m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-13 14:58 -08:00	2019-08-13 21:37 -08:00	6h 39m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-13 12:55 -08:00	2019-08-13 18:40 -08:00	5h 45m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-13 11:11 -08:00	2019-08-13 17:30 -08:00	6h 19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-13 06:07 -08:00	2019-08-13 12:31 -08:00	6h 24m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-13 05:29 -08:00	2019-08-13 15:28 -08:00	9h 59m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-13 05:28 -08:00	2019-08-14 13:13 -08:00	1d 7h 45m	Anchorage AK	
WESTERN NAVIGATOR	9032953	United States of America	Tug		2019-08-13 05:21 -08:00	2019-08-14 19:28 -08:00	1d 14h 7m	Vancouver	
PETER M	8964549	United States of America	Tug		2019-08-13 05:07 -08:00	2019-08-13 10:38 -08:00	5h 31m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-08-13 04:15 -08:00	2019-08-13 15:26 -08:00	11h 11m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-08-13 04:14 -08:00	2019-08-13 04:26 -08:00	12m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-13 04:14 -08:00	2019-08-14 16:32 -08:00	1d 12h 18m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-08-13 04:08 -08:00	2019-08-13 04:39 -08:00	31m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-13 03:44 -08:00	2019-08-13 14:28 -08:00	10h 44m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-13 02:57 -08:00	2019-08-13 05:47 -08:00	2h 50m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-13 02:53 -08:00	2019-08-13 03:46 -08:00	53m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-08-13 02:53 -08:00	2019-08-13 21:33 -08:00	18h 40m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-08-13 02:51 -08:00	2019-08-13 03:45 -08:00	54m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-12 21:24 -08:00	2019-08-13 02:35 -08:00	5h 11m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-12 20:34 -08:00	2019-08-13 04:11 -08:00	7h 37m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-12 18:58 -08:00	2019-08-13 03:21 -08:00	8h 23m	Anchorage AK	
STI MILWAUKEE	9686974	Marshall Islands	Oil Products Tanker	49990	2019-08-12 16:40 -08:00	2019-08-14 14:03 -08:00	1d 21h 23m	Guaymas	Ulsan
BERING WIND	9369198	United States of America	Tug		2019-08-12 16:40 -08:00	2019-08-13 03:45 -08:00	11h 5m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-08-12 16:39 -08:00	2019-08-13 02:14 -08:00	9h 35m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-12 15:18 -08:00	2019-08-12 21:00 -08:00	5h 42m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-12 15:05 -08:00	2019-08-12 19:50 -08:00	4h 45m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-12 10:57 -08:00	2019-08-12 17:56 -08:00	6h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-12 09:47 -08:00	2019-08-12 15:00 -08:00	5h 13m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-12 08:26 -08:00	2019-08-12 14:01 -08:00	5h 35m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-12 06:34 -08:00	2019-08-12 15:49 -08:00	9h 15m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-12 06:33 -08:00	2019-08-13 02:16 -08:00	19h 43m	Anchorage AK	
SHAMROCK		United States of America	Offshore Support Vessel		2019-08-12 04:59 -08:00	2019-08-18 22:44 -08:00	6d 17h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-12 03:59 -08:00	2019-08-12 09:23 -08:00	5h 24m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-12 00:07 -08:00	2019-08-12 05:39 -08:00	5h 32m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-11 22:35 -08:00	2019-08-11 23:53 -08:00	1h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-11 21:33 -08:00	2019-08-12 03:36 -08:00	6h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-11 15:16 -08:00	2019-08-11 21:05 -08:00	5h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-11 09:18 -08:00	2019-08-11 14:56 -08:00	5h 38m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-08-11 06:07 -08:00	2019-08-11 23:53 -08:00	17h 46m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-08-11 06:07 -08:00	2019-08-11 22:21 -08:00	16h 14m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-11 06:06 -08:00	2019-08-12 05:39 -08:00	23h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-11 03:16 -08:00	2019-08-11 09:00 -08:00	5h 44m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-11 01:23 -08:00	2019-08-11 05:36 -08:00	4h 13m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-08-11 01:23 -08:00	2019-08-11 17:05 -08:00	15h 42m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-08-11 01:22 -08:00	2019-08-11 05:39 -08:00	4h 17m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-11 01:22 -08:00	2019-08-12 15:49 -08:00	1d 14h 27m	Anchorage AK	Anchorage AK
HARRY M		United States of America	Tug		2019-08-10 22:17 -08:00	2019-08-12 10:34 -08:00	1d 12h 17m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-10 22:07 -08:00	2019-08-12 07:40 -08:00	1d 9h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-10 21:26 -08:00	2019-08-11 02:57 -08:00	5h 31m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-10 16:38 -08:00	2019-08-11 00:52 -08:00	8h 14m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-10 16:37 -08:00	2019-08-11 00:51 -08:00	8h 14m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-10 16:18 -08:00	2019-08-10 21:40 -08:00	5h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-10 16:01 -08:00	2019-08-10 21:00 -08:00	4h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-10 09:51 -08:00	2019-08-10 15:25 -08:00	5h 34m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-10 09:33 -08:00	2019-08-10 21:37 -08:00	12h 4m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-10 06:28 -08:00	2019-08-10 15:33 -08:00	9h 5m	Anchorage AK	
DON QUIXOTE		United States of America	Other		2019-08-10 04:28 -08:00	2019-08-10 17:07 -08:00	12h 39m	Kodiak	
HARRY M		United States of America	Tug		2019-08-10 04:19 -08:00	2019-08-10 09:11 -08:00	4h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-10 04:11 -08:00	2019-08-10 09:35 -08:00	5h 24m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-09 22:50 -08:00	2019-08-10 03:56 -08:00	5h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-09 21:30 -08:00	2019-08-10 03:50 -08:00	6h 20m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-09 19:39 -08:00	2019-08-10 05:19 -08:00	9h 40m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-09 18:02 -08:00	2019-08-09 22:22 -08:00	4h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-09 15:21 -08:00	2019-08-09 21:07 -08:00	5h 46m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-08-09 14:11 -08:00	2019-08-10 15:48 -08:00	1d 1h 37m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-08-09 14:02 -08:00	2019-08-10 15:51 -08:00	1d 1h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-09 09:49 -08:00	2019-08-09 14:54 -08:00	5h 5m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-09 09:02 -08:00	2019-08-09 17:26 -08:00	8h 24m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-09 08:36 -08:00	2019-08-09 18:20 -08:00	9h 44m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-09 03:11 -08:00	2019-08-09 09:24 -08:00	6h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-09 00:38 -08:00	2019-08-09 08:30 -08:00	7h 52m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-08 22:52 -08:00	2019-08-09 07:50 -08:00	8h 58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-08 20:56 -08:00	2019-08-09 02:50 -08:00	5h 54m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-08 16:47 -08:00	2019-08-09 00:14 -08:00	7h 27m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-08 16:44 -08:00	2019-08-08 22:00 -08:00	5h 16m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-08 15:29 -08:00	2019-08-08 20:32 -08:00	5h 3m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-08-08 13:24 -08:00	2019-08-09 13:22 -08:00	23h 58m	Valdez	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-08-08 13:24 -08:00	2019-08-09 13:22 -08:00	23h 58m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-08 11:15 -08:00	2019-08-08 15:55 -08:00	4h 40m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-08 10:39 -08:00	2019-08-08 16:26 -08:00	5h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-08 10:00 -08:00	2019-08-08 15:00 -08:00	5h 0m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-08 04:03 -08:00	2019-08-08 10:36 -08:00	6h 33m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-08 03:52 -08:00	2019-08-08 10:21 -08:00	6h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-08 03:22 -08:00	2019-08-08 09:34 -08:00	6h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-07 21:03 -08:00	2019-08-08 03:00 -08:00	5h 57m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-07 19:30 -08:00	2019-08-08 03:31 -08:00	8h 1m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-07 17:20 -08:00	2019-08-08 03:24 -08:00	10h 4m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-07 15:07 -08:00	2019-08-07 20:37 -08:00	5h 30m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-07 13:05 -08:00	2019-08-10 15:11 -08:00	3d 2h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-07 12:49 -08:00	2019-08-07 14:20 -08:00	1h 31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-07 10:12 -08:00	2019-08-07 16:37 -08:00	6h 25m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-07 09:32 -08:00	2019-08-07 18:44 -08:00	9h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-07 08:37 -08:00	2019-08-07 12:06 -08:00	3h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-07 03:55 -08:00	2019-08-07 08:13 -08:00	4h 18m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-06 23:13 -08:00	2019-08-07 09:25 -08:00	10h 12m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-06 22:18 -08:00	2019-08-07 08:47 -08:00	10h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-06 20:41 -08:00	2019-08-07 03:35 -08:00	6h 54m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-06 17:16 -08:00	2019-08-06 22:45 -08:00	5h 29m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-06 15:00 -08:00	2019-08-07 12:43 -08:00	21h 43m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-06 14:59 -08:00	2019-08-08 12:54 -08:00	1d 21h 55m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-06 14:59 -08:00	2019-08-11 00:52 -08:00	4d 9h 53m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-08-06 14:32 -08:00	2019-08-06 20:08 -08:00	5h 36m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-06 14:09 -08:00	2019-08-06 21:55 -08:00	7h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-06 08:31 -08:00	2019-08-06 14:05 -08:00	5h 34m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-06 06:14 -08:00	2019-08-06 16:22 -08:00	10h 8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-06 04:07 -08:00	2019-08-06 13:42 -08:00	9h 35m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-08-06 04:05 -08:00	2019-08-06 22:42 -08:00	18h 37m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-08-06 04:05 -08:00	2019-08-06 14:49 -08:00	10h 44m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-06 03:55 -08:00	2019-08-06 14:46 -08:00	10h 51m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-06 03:15 -08:00	2019-08-06 08:09 -08:00	4h 54m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-05 22:27 -08:00	2019-08-06 03:15 -08:00	4h 48m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-05 22:27 -08:00	2019-08-06 03:14 -08:00	4h 47m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-08-05 22:27 -08:00	2019-08-06 15:40 -08:00	17h 13m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-08-05 22:26 -08:00	2019-08-06 14:47 -08:00	16h 21m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-08-05 20:42 -08:00	2019-08-06 02:55 -08:00	6h 13m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-05 20:37 -08:00	2019-08-06 05:20 -08:00	8h 43m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-05 16:16 -08:00	2019-08-05 19:52 -08:00	3h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-05 14:42 -08:00	2019-08-05 20:20 -08:00	5h 38m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-05 11:41 -08:00	2019-08-05 21:59 -08:00	10h 18m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-08-05 11:38 -08:00	2019-08-05 22:00 -08:00	10h 22m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-08-05 09:03 -08:00	-		Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-05 09:03 -08:00	2019-08-05 15:36 -08:00	6h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-05 08:31 -08:00	2019-08-05 14:16 -08:00	5h 45m	Anchorage AK	
BOLETTE	9188037	Bahamas	Cruise Ship	7327	2019-08-05 07:11 -08:00	2019-08-05 20:55 -08:00	13h 44m	Ketchikan	
GLADYS M		United States of America	Tug		2019-08-05 02:14 -08:00	2019-08-05 08:08 -08:00	5h 54m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-05 01:35 -08:00	2019-08-05 22:00 -08:00	20h 25m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-05 01:32 -08:00	2019-08-05 11:17 -08:00	9h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-04 19:19 -08:00	2019-08-05 01:46 -08:00	6h 27m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-04 18:11 -08:00	2019-08-05 01:21 -08:00	7h 10m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-04 18:09 -08:00	2019-08-05 01:21 -08:00	7h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-04 13:02 -08:00	2019-08-04 18:53 -08:00	5h 51m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-04 09:35 -08:00	2019-08-04 17:59 -08:00	8h 24m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-04 09:33 -08:00	2019-08-04 18:00 -08:00	8h 27m	Anchorage AK	
ISLAND EXPLORER	7028996	United States of America	Tug		2019-08-04 09:24 -08:00	2019-08-07 12:43 -08:00	3d 3h 19m	Seattle	Anchorage AK
GLADYS M		United States of America	Tug		2019-08-04 07:51 -08:00	2019-08-04 12:38 -08:00	4h 47m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-08-04 07:17 -08:00	2019-08-05 02:34 -08:00	19h 17m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-08-04 07:16 -08:00	2019-08-04 08:50 -08:00	1h 34m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-04 07:15 -08:00	2019-08-04 08:54 -08:00	1h 39m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-04 06:29 -08:00	2019-08-04 06:49 -08:00	20m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-04 06:29 -08:00	2019-08-04 06:49 -08:00	20m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-08-04 06:29 -08:00	2019-08-04 18:25 -08:00	11h 56m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-08-04 06:28 -08:00	2019-08-05 11:24 -08:00	1d 4h 56m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-08-04 01:44 -08:00	2019-08-04 07:20 -08:00	5h 36m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-03 22:08 -08:00	2019-08-05 07:57 -08:00	1d 9h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-03 19:27 -08:00	2019-08-04 01:19 -08:00	5h 52m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-03 17:28 -08:00	2019-08-03 21:37 -08:00	4h 9m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-03 15:04 -08:00	2019-08-06 03:41 -08:00	2d 12h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-03 13:14 -08:00	2019-08-03 18:59 -08:00	5h 45m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-03 07:50 -08:00	2019-08-03 16:48 -08:00	8h 58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-03 07:50 -08:00	2019-08-03 12:34 -08:00	4h 44m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-03 07:18 -08:00	2019-08-03 14:37 -08:00	7h 19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-03 00:55 -08:00	2019-08-03 07:21 -08:00	6h 26m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-02 22:52 -08:00	2019-08-03 06:54 -08:00	8h 2m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-02 19:49 -08:00	2019-08-03 07:06 -08:00	11h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-02 19:18 -08:00	2019-08-03 00:31 -08:00	5h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-02 15:35 -08:00	2019-08-02 22:24 -08:00	6h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-02 12:40 -08:00	2019-08-02 18:53 -08:00	6h 13m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-02 10:50 -08:00	2019-08-02 19:04 -08:00	8h 14m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
HARRY M		United States of America	Tug		2019-08-02 06:17 -08:00	2019-08-02 15:05 -08:00	8h 48m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-02 05:38 -08:00	2019-08-02 12:07 -08:00	6h 29m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-02 04:32 -08:00	2019-08-02 10:15 -08:00	5h 43m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-01 23:14 -08:00	2019-08-02 05:12 -08:00	5h 58m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-01 22:44 -08:00	2019-08-02 03:40 -08:00	4h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-01 20:58 -08:00	2019-08-01 21:37 -08:00	39m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-01 18:54 -08:00	2019-08-01 22:13 -08:00	3h 19m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-01 16:51 -08:00	2019-08-02 05:50 -08:00	12h 59m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-01 15:10 -08:00	2019-08-01 18:23 -08:00	3h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-01 14:34 -08:00	2019-08-01 20:35 -08:00	6h 1m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-01 09:58 -08:00	2019-08-01 14:47 -08:00	4h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-01 08:49 -08:00	2019-08-01 14:08 -08:00	5h 19m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-01 08:12 -08:00	2019-08-01 16:22 -08:00	8h 10m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-08-01 04:17 -08:00	2019-08-04 05:55 -08:00	3d 1h 38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-08-01 04:12 -08:00	2019-08-04 05:57 -08:00	3d 1h 45m	Anchorage AK	
HARRY M		United States of America	Tug		2019-08-01 03:07 -08:00	2019-08-01 07:51 -08:00	4h 44m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-08-01 02:41 -08:00	2019-08-01 08:18 -08:00	5h 37m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-08-01 02:11 -08:00	2019-08-01 09:24 -08:00	7h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-31 20:08 -08:00	2019-08-01 02:11 -08:00	6h 3m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-31 15:58 -08:00	2019-08-01 01:23 -08:00	9h 25m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-31 13:52 -08:00	2019-08-01 02:47 -08:00	12h 55m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-31 13:37 -08:00	2019-07-31 19:38 -08:00	6h 1m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-31 12:54 -08:00	2019-08-01 03:34 -08:00	14h 40m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-31 12:44 -08:00	2019-08-01 03:36 -08:00	14h 52m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-31 11:39 -08:00	2019-08-04 05:56 -08:00	3d 18h 17m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-07-31 11:14 -08:00	2019-07-31 15:21 -08:00	4h 7m	Anchorage AK	
C.I.R.3 CISPRI		United States of America	Other		2019-07-31 09:44 -08:00	2020-07-15 08:47 -08:00	11m 14d 23h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-31 06:50 -08:00	2019-07-31 11:48 -08:00	4h 58m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-31 06:12 -08:00	2019-07-31 10:41 -08:00	4h 29m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-31 05:06 -08:00	2019-07-31 13:18 -08:00	8h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-31 03:07 -08:00	2019-07-31 06:04 -08:00	2h 57m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-31 02:15 -08:00	2019-07-31 05:41 -08:00	3h 26m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-30 22:59 -08:00	2019-07-31 12:17 -08:00	13h 18m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-30 21:33 -08:00	2019-07-31 04:41 -08:00	7h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-30 20:53 -08:00	2019-07-31 01:30 -08:00	4h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-30 20:37 -08:00	2019-07-31 02:43 -08:00	6h 6m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-30 15:47 -08:00	2019-07-30 22:49 -08:00	7h 2m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-30 15:28 -08:00	2019-07-30 20:57 -08:00	5h 29m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-30 15:26 -08:00	2019-07-30 20:22 -08:00	4h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-30 14:35 -08:00	2019-07-30 20:11 -08:00	5h 36m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-30 11:09 -08:00	2019-07-30 14:55 -08:00	3h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-30 07:56 -08:00	2019-07-30 14:08 -08:00	6h 12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-30 07:00 -08:00	2019-07-30 10:30 -08:00	3h 30m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-30 05:45 -08:00	2019-07-30 15:36 -08:00	9h 51m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-30 05:02 -08:00	2019-07-31 12:42 -08:00	1d 7h 40m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-07-30 05:02 -08:00	2019-07-30 23:42 -08:00	18h 40m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-07-30 05:02 -08:00	2019-07-30 05:35 -08:00	33m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-30 04:26 -08:00	2019-07-30 06:23 -08:00	1h 57m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-30 03:55 -08:00	2019-07-30 04:28 -08:00	33m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-30 03:14 -08:00	2019-07-30 04:28 -08:00	1h 14m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-30 03:14 -08:00	2019-07-30 03:34 -08:00	20m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-07-30 03:14 -08:00	2019-07-30 15:36 -08:00	12h 22m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-07-30 03:13 -08:00	2019-07-31 11:24 -08:00	1d 8h 11m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-07-30 01:41 -08:00	2019-07-30 07:30 -08:00	5h 49m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-30 00:47 -08:00	2019-07-30 15:02 -08:00	14h 15m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-29 22:55 -08:00	2019-07-30 03:52 -08:00	4h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-29 19:00 -08:00	2019-07-30 01:10 -08:00	6h 10m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-29 18:58 -08:00	2019-07-29 22:34 -08:00	3h 36m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-29 16:43 -08:00	2019-07-30 00:16 -08:00	7h 33m	Anchorage AK	
SHAMROCK		United States of America	Offshore Support Vessel		2019-07-29 16:38 -08:00	2019-08-07 12:48 -08:00	8d 20h 10m	Nikiski	
PETER M	8964549	United States of America	Tug		2019-07-29 15:17 -08:00	2019-07-29 18:37 -08:00	3h 20m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-29 14:02 -08:00	2019-07-30 02:47 -08:00	12h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-29 12:43 -08:00	2019-07-29 18:36 -08:00	5h 53m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-29 11:13 -08:00	2019-07-29 14:34 -08:00	3h 21m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-29 10:22 -08:00	2019-07-29 10:48 -08:00	26m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-29 10:11 -08:00	2019-07-29 16:14 -08:00	6h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-29 06:19 -08:00	2019-07-29 12:15 -08:00	5h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-29 05:36 -08:00	2019-07-29 09:49 -08:00	4h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-29 05:19 -08:00	2019-07-29 09:50 -08:00	4h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-29 00:40 -08:00	2019-07-29 05:56 -08:00	5h 16m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-28 13:43 -08:00	2019-07-29 04:57 -08:00	15h 14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-28 12:55 -08:00	2019-07-30 02:45 -08:00	1d 13h 50m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-07-28 03:59 -08:00	2019-07-29 13:19 -08:00	1d 9h 20m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-07-28 03:59 -08:00	2019-07-29 03:25 -08:00	23h 26m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-07-28 03:58 -08:00	2019-07-30 02:48 -08:00	1d 22h 50m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-28 01:23 -08:00	2019-07-28 12:44 -08:00	11h 21m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-07-28 01:23 -08:00	2019-07-28 03:23 -08:00	2h 0m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-28 01:23 -08:00	2019-07-28 03:21 -08:00	1h 58m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-07-28 01:22 -08:00	2019-07-28 17:30 -08:00	16h 8m	Tacoma	Tacoma
HARRY M		United States of America	Tug		2019-07-27 22:11 -08:00	2019-07-28 13:26 -08:00	15h 15m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-27 22:04 -08:00	2019-07-29 04:59 -08:00	1d 6h 55m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 20:49 -08:00	2019-07-27 21:18 -08:00	29m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 20:10 -08:00	2019-07-27 20:29 -08:00	19m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-27 18:57 -08:00	2019-07-27 21:39 -08:00	2h 42m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 18:44 -08:00	2019-07-27 19:57 -08:00	1h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-27 17:21 -08:00	2019-07-27 21:03 -08:00	3h 42m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 16:48 -08:00	2019-07-27 17:22 -08:00	34m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 16:07 -08:00	2019-07-27 16:16 -08:00	9m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-27 14:59 -08:00	2019-07-27 18:15 -08:00	3h 16m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 14:01 -08:00	2019-07-27 15:22 -08:00	1h 21m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 13:03 -08:00	2019-07-27 13:29 -08:00	26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-27 10:36 -08:00	2019-07-27 16:53 -08:00	6h 17m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-27 09:25 -08:00	2019-07-27 14:17 -08:00	4h 52m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 08:44 -08:00	2019-07-27 12:50 -08:00	4h 6m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 08:16 -08:00	2019-07-27 08:24 -08:00	8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 07:13 -08:00	2019-07-27 08:03 -08:00	50m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 06:53 -08:00	2019-07-27 06:54 -08:00	1m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 06:30 -08:00	2019-07-27 06:41 -08:00	11m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 06:15 -08:00	2019-07-27 06:17 -08:00	2m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 04:43 -08:00	2019-07-27 05:39 -08:00	56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-27 04:26 -08:00	2019-07-27 08:49 -08:00	4h 23m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-27 04:24 -08:00	2019-07-27 10:10 -08:00	5h 46m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 03:41 -08:00	2019-07-27 04:21 -08:00	40m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-27 02:46 -08:00	2019-07-27 03:24 -08:00	38m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-26 22:58 -08:00	2019-07-27 01:23 -08:00	2h 25m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-26 22:14 -08:00	2019-07-27 03:47 -08:00	5h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-26 22:03 -08:00	2019-07-27 03:56 -08:00	5h 53m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-26 19:05 -08:00	2019-07-26 22:26 -08:00	3h 21m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-26 18:42 -08:00	2019-07-26 18:53 -08:00	11m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-26 18:18 -08:00	2019-07-26 21:35 -08:00	3h 17m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-26 16:17 -08:00	2019-07-26 18:27 -08:00	2h 10m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-26 15:40 -08:00	2019-07-26 21:40 -08:00	6h 0m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-26 15:15 -08:00	2019-07-26 17:36 -08:00	2h 21m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-26 13:11 -08:00	2019-07-28 00:43 -08:00	1d 11h 32m	Anchorage AK	
ATLANTIC PISCES	9392781	Hong Kong	Chemical Oil Products Tanker	49999	2019-07-26 13:11 -08:00	2019-07-28 13:57 -08:00	2d 0h 46m	Liuheng	
BERING WIND	9369198	United States of America	Tug		2019-07-26 13:09 -08:00	2019-07-28 00:41 -08:00	1d 11h 32m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-07-26 09:53 -08:00	2019-07-26 14:33 -08:00	4h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-26 09:07 -08:00	2019-07-26 15:13 -08:00	6h 6m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-26 04:22 -08:00	2019-07-26 09:13 -08:00	4h 51m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-26 02:27 -08:00	2019-07-26 08:39 -08:00	6h 12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-25 22:33 -08:00	2019-07-26 03:43 -08:00	5h 10m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-25 21:24 -08:00	2019-07-26 15:44 -08:00	18h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-25 21:15 -08:00	2019-07-26 02:03 -08:00	4h 48m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-25 18:36 -08:00	2019-07-25 22:04 -08:00	3h 28m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-25 16:25 -08:00	2019-07-25 20:47 -08:00	4h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-25 15:18 -08:00	2019-07-25 20:49 -08:00	5h 31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-25 14:16 -08:00	2019-07-25 17:56 -08:00	3h 40m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-25 10:50 -08:00	2019-07-25 15:55 -08:00	5h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-25 09:39 -08:00	2019-07-25 14:37 -08:00	4h 58m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-25 09:02 -08:00	2019-07-25 13:31 -08:00	4h 29m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-25 03:41 -08:00	2019-07-25 08:25 -08:00	4h 44m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-25 03:31 -08:00	2019-07-25 09:07 -08:00	5h 36m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-25 02:49 -08:00	2019-07-25 10:30 -08:00	7h 41m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-24 22:12 -08:00	2019-07-25 03:10 -08:00	4h 58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-24 21:29 -08:00	2019-07-25 03:06 -08:00	5h 37m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-24 20:56 -08:00	2019-07-25 02:28 -08:00	5h 32m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-24 17:53 -08:00	2019-07-24 21:37 -08:00	3h 44m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-24 15:26 -08:00	2019-07-24 20:25 -08:00	4h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-24 15:14 -08:00	2019-07-24 21:00 -08:00	5h 46m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-24 14:37 -08:00	2019-07-24 17:20 -08:00	2h 43m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-24 10:24 -08:00	2019-07-24 13:54 -08:00	3h 30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-24 09:34 -08:00	2019-07-24 14:43 -08:00	5h 9m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-24 08:25 -08:00	2019-07-24 14:58 -08:00	6h 33m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-24 05:14 -08:00	2019-07-24 09:50 -08:00	4h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-24 03:26 -08:00	2019-07-24 09:05 -08:00	5h 39m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-24 02:21 -08:00	2019-07-24 08:08 -08:00	5h 47m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-23 20:40 -08:00	2019-07-24 04:39 -08:00	7h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-23 20:24 -08:00	2019-07-24 03:04 -08:00	6h 40m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-23 15:54 -08:00	2019-07-28 00:41 -08:00	4d 8h 47m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-23 15:53 -08:00	2019-07-26 12:32 -08:00	2d 20h 39m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-07-23 14:17 -08:00	2019-07-23 20:00 -08:00	5h 43m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-23 13:15 -08:00	2019-07-24 02:05 -08:00	12h 50m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-23 12:50 -08:00	2019-07-26 12:35 -08:00	2d 23h 45m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-23 12:47 -08:00	2019-07-23 15:43 -08:00	2h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-23 11:09 -08:00	2019-07-23 20:01 -08:00	8h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-23 08:14 -08:00	2019-07-23 13:51 -08:00	5h 37m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-23 08:03 -08:00	2019-07-23 12:24 -08:00	4h 21m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-07-23 08:03 -08:00	2019-07-24 00:21 -08:00	16h 18m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-07-23 08:00 -08:00	2019-07-23 12:24 -08:00	4h 24m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-23 07:16 -08:00	2019-07-23 12:47 -08:00	5h 31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-23 04:53 -08:00	2019-07-23 10:39 -08:00	5h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-23 02:44 -08:00	2019-07-23 07:50 -08:00	5h 6m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-22 22:45 -08:00	2019-07-23 07:29 -08:00	8h 44m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-22 22:22 -08:00	2019-07-23 06:57 -08:00	8h 35m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-22 22:19 -08:00	2019-07-23 04:20 -08:00	6h 1m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
GLACIER WIND	8662593	United States of America	Tug		2019-07-22 22:15 -08:00	2019-07-22 22:34 -08:00	19m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-22 22:15 -08:00	2019-07-23 07:30 -08:00	9h 15m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-07-22 22:15 -08:00	2019-07-23 16:13 -08:00	17h 58m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-07-22 22:13 -08:00	2019-07-23 15:42 -08:00	17h 29m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-07-22 19:31 -08:00	2019-07-23 02:24 -08:00	6h 53m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-22 18:19 -08:00	2019-07-22 21:29 -08:00	3h 10m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-22 13:54 -08:00	2019-07-22 17:39 -08:00	3h 45m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-22 13:24 -08:00	2019-07-22 21:53 -08:00	8h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-22 12:27 -08:00	2019-07-22 19:03 -08:00	6h 36m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-22 10:23 -08:00	2019-07-22 21:45 -08:00	11h 22m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-22 10:22 -08:00	2019-07-22 21:45 -08:00	11h 23m	Anchorage AK	
MIKE OLEARY	7417367	United States of America	Tug		2019-07-22 10:08 -08:00	2019-07-23 12:24 -08:00	1d 2h 16m	Seattle	Dutch Harbor
GLADYS M		United States of America	Tug		2019-07-22 08:51 -08:00	2019-07-22 11:43 -08:00	2h 52m	Anchorage AK	
BOLETTE	9188037	Bahamas	Cruise Ship	7327	2019-07-22 07:12 -08:00	2019-07-22 21:39 -08:00	14h 27m	Ketchikan	
PETER M	8964549	United States of America	Tug		2019-07-22 06:25 -08:00	2019-07-22 13:23 -08:00	6h 58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-22 05:04 -08:00	2019-07-22 08:03 -08:00	2h 59m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-21 23:43 -08:00	2019-07-22 09:36 -08:00	9h 53m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-21 23:42 -08:00	2019-07-22 09:44 -08:00	10h 2m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-21 21:55 -08:00	2019-07-22 04:41 -08:00	6h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-21 15:23 -08:00	2019-07-21 21:33 -08:00	6h 10m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-21 11:50 -08:00	2019-07-21 23:30 -08:00	11h 40m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-21 11:49 -08:00	2019-07-21 23:29 -08:00	11h 40m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-21 10:56 -08:00	2019-07-21 11:39 -08:00	43m	Kodiak	
CAPE ANN	9848510	United States of America	Tug		2019-07-21 09:08 -08:00	2019-07-22 09:34 -08:00	1d 0h 26m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-07-21 09:07 -08:00	2019-07-21 11:04 -08:00	1h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-21 08:08 -08:00	2019-07-21 15:01 -08:00	6h 53m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-21 07:57 -08:00	2019-07-21 08:23 -08:00	26m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-07-21 07:57 -08:00	2019-07-21 19:14 -08:00	11h 17m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-07-21 07:56 -08:00	2019-07-22 21:45 -08:00	1d 13h 49m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-07-21 07:09 -08:00	2019-07-21 07:42 -08:00	33m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-21 07:08 -08:00	2019-07-21 07:34 -08:00	26m	Anchorage AK	Anchorage AK
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-07-21 07:07 -08:00	2019-07-22 01:19 -08:00	18h 12m	Tacoma	Kodiak
GLADYS M		United States of America	Tug		2019-07-21 02:04 -08:00	2019-07-21 07:46 -08:00	5h 42m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-20 22:07 -08:00	2019-07-22 12:58 -08:00	1d 14h 51m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-20 21:41 -08:00	2019-07-22 05:48 -08:00	1d 8h 7m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-20 18:54 -08:00	2019-07-21 01:41 -08:00	6h 47m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-20 16:44 -08:00	2019-07-20 21:42 -08:00	4h 58m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-20 16:25 -08:00	2019-07-20 21:18 -08:00	4h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-20 12:56 -08:00	2019-07-20 18:16 -08:00	5h 20m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-20 11:10 -08:00	2019-07-20 15:54 -08:00	4h 44m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-20 07:20 -08:00	2019-07-20 16:10 -08:00	8h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-20 06:58 -08:00	2019-07-20 12:28 -08:00	5h 30m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-20 05:19 -08:00	2019-07-20 10:43 -08:00	5h 24m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-20 01:44 -08:00	2019-07-21 06:36 -08:00	1d 4h 52m	Nikiski	
GLADYS M		United States of America	Tug		2019-07-20 00:19 -08:00	2019-07-20 06:38 -08:00	6h 19m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-19 22:38 -08:00	2019-07-20 04:32 -08:00	5h 54m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-19 22:14 -08:00	2019-07-20 07:03 -08:00	8h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-19 18:55 -08:00	2019-07-19 23:59 -08:00	5h 4m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-19 16:47 -08:00	2019-07-19 22:11 -08:00	5h 24m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-19 12:29 -08:00	2019-07-19 18:25 -08:00	5h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-19 11:23 -08:00	2019-07-19 16:21 -08:00	4h 58m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-19 08:16 -08:00	2019-07-19 21:46 -08:00	13h 30m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-19 06:24 -08:00	2019-07-19 10:55 -08:00	4h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-19 06:19 -08:00	2019-07-19 12:06 -08:00	5h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-18 23:25 -08:00	2019-07-19 05:59 -08:00	6h 34m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-18 22:34 -08:00	2019-07-19 05:48 -08:00	7h 14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-18 17:27 -08:00	2019-07-18 22:59 -08:00	5h 32m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-18 14:36 -08:00	2019-07-18 21:59 -08:00	7h 23m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-18 14:22 -08:00	2019-07-19 07:36 -08:00	17h 14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-18 14:10 -08:00	2019-07-21 06:34 -08:00	2d 16h 24m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-07-18 11:07 -08:00	2019-07-18 16:59 -08:00	5h 52m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-18 06:44 -08:00	2019-07-18 14:05 -08:00	7h 21m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-18 05:45 -08:00	2019-07-18 13:44 -08:00	7h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-18 04:52 -08:00	2019-07-18 10:47 -08:00	5h 55m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-18 00:42 -08:00	2019-07-18 05:20 -08:00	4h 38m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-17 22:39 -08:00	2019-07-18 06:01 -08:00	7h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-17 21:44 -08:00	2019-07-18 04:30 -08:00	6h 46m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-17 17:43 -08:00	2019-07-17 22:05 -08:00	4h 22m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-17 17:28 -08:00	2019-07-18 00:17 -08:00	6h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-17 15:38 -08:00	2019-07-17 21:20 -08:00	5h 42m	Anchorage AK	
EMERY ZIDELL	9767924	United States of America	Pusher Tug	460	2019-07-17 15:10 -08:00	2019-07-17 20:18 -08:00	5h 8m	Anchorage AK	Seattle
EMERY ZIDELL	9767924	United States of America	Pusher Tug	460	2019-07-17 12:49 -08:00	2019-07-17 14:52 -08:00	2h 3m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-17 09:39 -08:00	2019-07-17 17:14 -08:00	7h 35m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-17 09:16 -08:00	2019-07-17 15:13 -08:00	5h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-17 07:01 -08:00	2019-07-17 08:31 -08:00	1h 30m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-17 06:32 -08:00	2019-07-17 16:42 -08:00	10h 10m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-17 01:00 -08:00	2019-07-17 06:15 -08:00	5h 15m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-16 22:12 -08:00	2019-07-17 09:06 -08:00	10h 54m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-16 22:09 -08:00	2019-07-18 08:35 -08:00	1d 10h 26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-16 19:16 -08:00	2019-07-17 00:39 -08:00	5h 23m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-16 18:47 -08:00	2019-07-18 13:20 -08:00	1d 18h 33m	Anchorage AK	Anchorage AK
TVERSKOY BRIDGE	9344033	Liberia	Oil Products Tanker	46564	2019-07-16 18:47 -08:00	2019-07-18 06:31 -08:00	1d 11h 44m	Yeosu	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-07-16 18:45 -08:00	2019-07-16 20:09 -08:00	1h 24m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-16 16:09 -08:00	2019-07-16 18:00 -08:00	1h 51m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-16 16:07 -08:00	2019-07-16 21:57 -08:00	5h 50m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-16 15:41 -08:00	2019-07-16 15:57 -08:00	16m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-16 15:39 -08:00	2019-07-16 21:35 -08:00	5h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-16 13:04 -08:00	2019-07-16 18:52 -08:00	5h 48m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-16 09:49 -08:00	2019-07-16 15:11 -08:00	5h 22m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-16 06:02 -08:00	2019-07-16 15:30 -08:00	9h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-16 05:52 -08:00	2019-07-16 12:38 -08:00	6h 46m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-07-16 05:16 -08:00	2019-07-16 22:53 -08:00	17h 37m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-07-16 05:16 -08:00	2019-07-16 15:57 -08:00	10h 41m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-16 05:15 -08:00	2019-07-16 05:52 -08:00	37m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-16 03:59 -08:00	2019-07-16 04:22 -08:00	23m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-16 03:59 -08:00	2019-07-16 04:23 -08:00	24m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-07-16 03:58 -08:00	2019-07-16 15:55 -08:00	11h 57m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-07-16 03:56 -08:00	2019-07-16 18:01 -08:00	14h 5m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-07-16 02:47 -08:00	2019-07-16 09:19 -08:00	6h 32m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-16 02:41 -08:00	2019-07-17 05:58 -08:00	1d 3h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-15 23:38 -08:00	2019-07-16 05:31 -08:00	5h 53m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-15 19:36 -08:00	2019-07-16 02:06 -08:00	6h 30m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-15 18:38 -08:00	2019-07-16 02:16 -08:00	7h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-15 17:17 -08:00	2019-07-15 23:00 -08:00	5h 43m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-15 15:29 -08:00	2019-07-16 03:25 -08:00	11h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-15 11:32 -08:00	2019-07-15 16:57 -08:00	5h 25m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-15 11:10 -08:00	2019-07-15 18:08 -08:00	6h 58m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-15 09:31 -08:00	2019-07-15 19:00 -08:00	9h 29m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-15 08:58 -08:00	2019-07-15 09:16 -08:00	18m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-15 06:54 -08:00	2019-07-15 10:50 -08:00	3h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-15 04:38 -08:00	2019-07-15 11:09 -08:00	6h 31m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-14 23:57 -08:00	2019-07-15 15:07 -08:00	15h 10m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-14 23:57 -08:00	2019-07-16 03:25 -08:00	1d 3h 28m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-14 23:41 -08:00	2019-07-15 08:26 -08:00	8h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-14 22:03 -08:00	2019-07-15 04:16 -08:00	6h 13m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-14 18:33 -08:00	2019-07-14 23:37 -08:00	5h 4m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-14 18:33 -08:00	2019-07-14 23:34 -08:00	5h 1m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-14 16:27 -08:00	2019-07-14 17:58 -08:00	1h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-14 15:14 -08:00	2019-07-14 21:13 -08:00	5h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-14 08:30 -08:00	2019-07-14 14:49 -08:00	6h 19m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-14 06:16 -08:00	2019-07-14 17:59 -08:00	11h 43m	Anchorage AK	
OCEAN RANGER	9010656	United States of America	Tug		2019-07-14 06:05 -08:00	2019-07-14 16:58 -08:00	10h 53m	Seattle	
GLACIER WIND	8662593	United States of America	Tug		2019-07-14 06:05 -08:00	2019-07-14 16:11 -08:00	10h 6m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-07-14 04:36 -08:00	2019-07-15 00:52 -08:00	20h 16m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-07-14 04:33 -08:00	2019-07-14 05:30 -08:00	57m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-14 04:32 -08:00	2019-07-14 05:28 -08:00	56m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-14 03:27 -08:00	2019-07-14 03:54 -08:00	27m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-14 03:27 -08:00	2019-07-14 03:54 -08:00	27m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-07-14 03:26 -08:00	2019-07-14 17:31 -08:00	14h 5m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-07-14 03:23 -08:00	2019-07-16 03:26 -08:00	2d 0h 3m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-07-14 02:06 -08:00	2019-07-14 08:04 -08:00	5h 58m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-13 22:29 -08:00	2019-07-15 06:18 -08:00	1d 7h 49m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-13 21:42 -08:00	2019-07-14 23:19 -08:00	1d 1h 37m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-13 19:28 -08:00	2019-07-13 22:08 -08:00	2h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-13 18:41 -08:00	2019-07-14 01:47 -08:00	7h 6m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-13 15:25 -08:00	2019-07-13 21:07 -08:00	5h 42m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-13 14:29 -08:00	2019-07-13 19:05 -08:00	4h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-13 12:07 -08:00	2019-07-13 18:21 -08:00	6h 14m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-13 09:56 -08:00	2019-07-13 13:56 -08:00	4h 0m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-13 06:17 -08:00	2019-07-13 14:54 -08:00	8h 37m	Anchorage AK	
BOB FRANCO	9637820	United States of America	Tug	569	2019-07-13 05:20 -08:00	2019-07-13 05:40 -08:00	20m	Nikiski	
EMERY ZIDELL	9767924	United States of America	Pusher Tug	460	2019-07-13 05:15 -08:00	2019-07-17 12:03 -08:00	4d 6h 48m	San Francisco	
GLACIER WIND	8662593	United States of America	Tug		2019-07-13 05:14 -08:00	2019-07-14 03:02 -08:00	21h 48m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-13 04:52 -08:00	2019-07-13 11:44 -08:00	6h 52m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-13 03:58 -08:00	2019-07-13 09:26 -08:00	5h 28m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-12 21:42 -08:00	2019-07-13 05:51 -08:00	8h 9m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-12 21:33 -08:00	2019-07-14 03:02 -08:00	1d 5h 29m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-12 20:44 -08:00	2019-07-13 03:32 -08:00	6h 48m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-12 19:35 -08:00	2019-07-13 04:32 -08:00	8h 57m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-12 16:05 -08:00	2019-07-12 20:24 -08:00	4h 19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-12 12:57 -08:00	2019-07-12 19:04 -08:00	6h 7m	Anchorage AK	
C.I.R.3 CISPRI		United States of America	Other		2019-07-12 10:18 -08:00	2019-07-31 07:50 -08:00	18d 21h 32m		
HARRY M		United States of America	Tug		2019-07-12 09:54 -08:00	2019-07-12 20:33 -08:00	10h 39m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-12 09:12 -08:00	2019-07-12 15:39 -08:00	6h 27m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-12 04:25 -08:00	2019-07-12 08:42 -08:00	4h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-11 22:26 -08:00	2019-07-12 11:39 -08:00	13h 13m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-11 21:36 -08:00	2019-07-12 03:59 -08:00	6h 23m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-11 21:23 -08:00	2019-07-12 08:59 -08:00	11h 36m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-11 20:29 -08:00	2019-07-11 21:21 -08:00	52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-11 18:41 -08:00	2019-07-11 21:14 -08:00	2h 33m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-11 13:47 -08:00	2019-07-11 19:58 -08:00	6h 11m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-11 12:06 -08:00	2019-07-11 18:16 -08:00	6h 10m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-11 10:37 -08:00	2019-07-11 20:39 -08:00	10h 2m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-11 06:14 -08:00	2019-07-11 13:19 -08:00	7h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-11 05:57 -08:00	2019-07-11 11:44 -08:00	5h 47m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
CAPE ANN	9848510	United States of America	Tug		2019-07-11 01:34 -08:00	2019-07-12 03:10 -08:00	1d 1h 36m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-07-11 01:34 -08:00	2019-07-13 04:44 -08:00	2d 3h 10m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-11 00:47 -08:00	2019-07-11 05:40 -08:00	4h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-10 23:18 -08:00	2019-07-11 05:36 -08:00	6h 18m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-10 18:28 -08:00	2019-07-11 00:11 -08:00	5h 43m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-10 17:25 -08:00	2019-07-10 22:57 -08:00	5h 32m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-10 17:10 -08:00	2019-07-11 10:02 -08:00	16h 52m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-10 16:34 -08:00	2019-07-12 21:13 -08:00	2d 4h 39m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-10 16:33 -08:00	2019-07-11 01:11 -08:00	8h 38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-10 15:15 -08:00	2019-07-10 16:23 -08:00	1h 8m	Anchorage AK	
SHAMROCK		United States of America	Offshore Support Vessel		2019-07-10 14:56 -08:00	2019-07-13 03:53 -08:00	2d 12h 57m	Anchorage AK	
POLAR STORM	8101771	United States of America	Offshore Tug Supply		2019-07-10 14:52 -08:00	2019-07-10 14:53 -08:00	1m	Anchorage AK	Dutch Harbor
GLADYS M		United States of America	Tug		2019-07-10 12:49 -08:00	2019-07-10 16:40 -08:00	3h 51m	Anchorage AK	
SHAMROCK		United States of America	Offshore Support Vessel		2019-07-10 12:46 -08:00	2019-07-10 14:13 -08:00	1h 27m	Nikiski	
PETER M	8964549	United States of America	Tug		2019-07-10 10:58 -08:00	2019-07-10 17:59 -08:00	7h 1m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-10 10:38 -08:00	2019-07-10 12:05 -08:00	1h 27m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-10 08:00 -08:00	2019-07-10 16:26 -08:00	8h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-10 05:16 -08:00	2019-07-10 10:33 -08:00	5h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-10 04:24 -08:00	2019-07-10 10:19 -08:00	5h 55m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-10 02:31 -08:00	2019-07-10 14:51 -08:00	12h 20m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-10 01:23 -08:00	2019-07-10 16:23 -08:00	15h 0m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-07-10 01:23 -08:00	2019-07-10 17:55 -08:00	16h 32m	Tacoma	Dutch Harbor
STELLAR WIND	9096911	United States of America	Tug		2019-07-10 01:18 -08:00	2019-07-10 02:13 -08:00	55m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-10 00:44 -08:00	2019-07-10 07:20 -08:00	6h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-09 22:12 -08:00	2019-07-10 04:04 -08:00	5h 52m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-09 21:26 -08:00	2019-07-10 04:45 -08:00	7h 19m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-09 20:33 -08:00	2019-07-10 00:59 -08:00	4h 26m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-09 20:33 -08:00	2019-07-10 00:55 -08:00	4h 22m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-09 16:37 -08:00	2019-07-09 20:57 -08:00	4h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-09 16:24 -08:00	2019-07-09 21:54 -08:00	5h 30m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-09 15:52 -08:00	2019-07-09 20:23 -08:00	4h 31m	Anchorage AK	
SLNC YORK	9538907	United States of America	Multi Purpose Carrier	9503	2019-07-09 15:52 -08:00	2019-07-12 21:11 -08:00	3d 5h 19m	Everett WA	Everett WA
BERING WIND	9369198	United States of America	Tug		2019-07-09 15:48 -08:00	2019-07-14 03:02 -08:00	4d 11h 14m	Anchorage AK	Anchorage AK
HARRY M		United States of America	Tug		2019-07-09 15:34 -08:00	2019-07-10 00:14 -08:00	8h 40m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-09 11:18 -08:00	2019-07-09 15:15 -08:00	3h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-09 10:51 -08:00	2019-07-09 15:50 -08:00	4h 59m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-09 10:42 -08:00	2019-07-09 11:07 -08:00	25m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-07-09 10:42 -08:00	2019-07-09 20:46 -08:00	10h 4m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-07-09 10:41 -08:00	2019-07-09 20:22 -08:00	9h 41m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-09 10:41 -08:00	2019-07-09 15:14 -08:00	4h 33m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-07-09 08:19 -08:00	2019-07-09 16:06 -08:00	7h 47m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-09 06:04 -08:00	2019-07-09 15:00 -08:00	8h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-09 04:13 -08:00	2019-07-09 10:29 -08:00	6h 16m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-09 03:23 -08:00	2019-07-09 07:57 -08:00	4h 34m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-08 23:52 -08:00	2019-07-09 10:12 -08:00	10h 20m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-08 23:51 -08:00	2019-07-09 10:10 -08:00	10h 19m	Anchorage AK	
POLAR STORM	8101771	United States of America	Offshore Tug Supply		2019-07-08 23:44 -08:00	2019-07-10 14:29 -08:00	1d 14h 45m	Seattle	Dutch Harbor
GLADYS M		United States of America	Tug		2019-07-08 22:07 -08:00	2019-07-09 03:49 -08:00	5h 42m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-08 19:13 -08:00	2019-07-09 02:51 -08:00	7h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-08 15:57 -08:00	2019-07-08 21:43 -08:00	5h 46m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-08 14:45 -08:00	2019-07-08 18:42 -08:00	3h 57m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-08 11:01 -08:00	2019-07-09 05:09 -08:00	18h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-08 08:51 -08:00	2019-07-08 14:26 -08:00	5h 35m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-08 08:31 -08:00	2019-07-08 14:07 -08:00	5h 36m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-08 04:35 -08:00	2019-07-08 23:04 -08:00	18h 29m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-08 04:35 -08:00	2019-07-08 23:28 -08:00	18h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-08 03:34 -08:00	2019-07-08 08:25 -08:00	4h 51m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-07 20:18 -08:00	2019-07-08 03:14 -08:00	6h 56m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-07 19:00 -08:00	2019-07-08 04:25 -08:00	9h 25m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-07 18:58 -08:00	2019-07-08 04:21 -08:00	9h 23m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-07 18:58 -08:00	2019-07-09 10:12 -08:00	1d 15h 14m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-07-07 14:12 -08:00	2019-07-07 19:57 -08:00	5h 45m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-07 10:31 -08:00	2019-07-07 18:46 -08:00	8h 15m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-07 10:26 -08:00	2019-07-07 18:49 -08:00	8h 23m	Anchorage AK	
ISLAND EXPLORER	7028996	United States of America	Tug		2019-07-07 10:25 -08:00	2019-07-10 02:14 -08:00	2d 15h 49m	Seattle	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-07-07 09:03 -08:00	2019-07-07 19:15 -08:00	10h 12m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-07-07 09:03 -08:00	2019-07-07 09:42 -08:00	39m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-07 09:00 -08:00	2019-07-07 10:06 -08:00	1h 6m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-07 08:59 -08:00	2019-07-07 18:47 -08:00	9h 48m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-07-07 07:59 -08:00	2019-07-07 13:48 -08:00	5h 49m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-07-07 07:51 -08:00	2019-07-08 05:27 -08:00	21h 36m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-07-07 07:51 -08:00	2019-07-07 08:19 -08:00	28m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-07 07:51 -08:00	2019-07-07 08:20 -08:00	29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-07 03:17 -08:00	2019-07-07 07:36 -08:00	4h 19m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-06 21:14 -08:00	2019-07-07 02:57 -08:00	5h 43m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-06 15:12 -08:00	2019-07-06 20:49 -08:00	5h 37m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-07-06 09:34 -08:00	2019-07-07 10:05 -08:00	1d 0h 31m	Valdez	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-07-06 09:34 -08:00	2019-07-07 07:26 -08:00	21h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-06 08:54 -08:00	2019-07-06 14:49 -08:00	5h 55m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-06 03:42 -08:00	2019-07-06 08:30 -08:00	4h 48m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-05 20:11 -08:00	2019-07-06 03:21 -08:00	7h 10m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-05 18:11 -08:00	2019-07-07 07:32 -08:00	1d 13h 21m	Nikiski	
BERING WIND	9369198	United States of America	Tug		2019-07-05 16:59 -08:00	2019-07-07 08:30 -08:00	1d 15h 31m	Nikiski	Anchorage AK
GLADYS M		United States of America	Tug		2019-07-05 13:36 -08:00	2019-07-05 19:47 -08:00	6h 11m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-07-05 08:01 -08:00	2019-07-06 09:01 -08:00	1d 1h 0m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-07-05 08:00 -08:00	2019-07-06 09:02 -08:00	1d 1h 2m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-05 07:35 -08:00	2019-07-05 13:04 -08:00	5h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-05 00:51 -08:00	2019-07-05 07:15 -08:00	6h 24m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-04 13:54 -08:00	2019-07-08 07:47 -08:00	3d 17h 53m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-04 08:36 -08:00	2019-07-05 07:34 -08:00	22h 58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-03 16:49 -08:00	2019-07-03 20:16 -08:00	3h 27m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-03 09:58 -08:00	2019-07-03 16:25 -08:00	6h 27m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-03 06:33 -08:00	2019-07-03 07:17 -08:00	44m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-07-03 06:33 -08:00	2019-07-04 08:07 -08:00	1d 1h 34m	Anchorage AK	
BILLIE H		United States of America	Tug		2019-07-03 06:33 -08:00	2019-07-04 08:08 -08:00	1d 1h 35m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-03 04:12 -08:00	2019-07-03 09:34 -08:00	5h 22m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-02 23:18 -08:00	2019-07-03 06:13 -08:00	6h 55m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-07-02 23:17 -08:00	2019-07-03 06:18 -08:00	7h 1m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-02 22:09 -08:00	2019-07-04 13:28 -08:00	1d 15h 19m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-02 21:20 -08:00	2019-07-02 21:37 -08:00	17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-02 21:04 -08:00	2019-07-03 03:54 -08:00	6h 50m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-02 15:43 -08:00	2019-07-02 20:58 -08:00	5h 15m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-02 15:30 -08:00	2019-07-02 23:05 -08:00	7h 35m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-02 15:30 -08:00	2019-07-02 21:05 -08:00	5h 35m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-02 15:17 -08:00	2019-07-08 10:37 -08:00	5d 19h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-02 15:07 -08:00	2019-07-02 20:40 -08:00	5h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-02 09:34 -08:00	2019-07-02 14:40 -08:00	5h 6m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-02 09:06 -08:00	2019-07-02 15:14 -08:00	6h 8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-02 07:11 -08:00	2019-07-02 14:49 -08:00	7h 38m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-07-02 04:26 -08:00	2019-07-03 01:14 -08:00	20h 48m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-07-02 04:26 -08:00	2019-07-02 15:20 -08:00	10h 54m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-07-02 04:14 -08:00	2019-07-02 15:19 -08:00	11h 5m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-02 03:52 -08:00	2019-07-02 08:41 -08:00	4h 49m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-07-02 03:38 -08:00	2019-07-02 04:01 -08:00	23m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-07-02 03:37 -08:00	2019-07-02 15:54 -08:00	12h 17m	Tacoma	
GLACIER WIND	8662593	United States of America	Tug		2019-07-02 03:36 -08:00	2019-07-02 04:04 -08:00	28m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-07-02 03:36 -08:00	2019-07-02 23:06 -08:00	19h 30m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-07-02 03:07 -08:00	2019-07-02 09:09 -08:00	6h 2m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-01 21:34 -08:00	2019-07-02 06:34 -08:00	9h 0m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-01 21:12 -08:00	2019-07-02 03:18 -08:00	6h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-01 20:11 -08:00	2019-07-02 02:50 -08:00	6h 39m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-01 15:18 -08:00	2019-07-01 19:48 -08:00	4h 30m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-01 14:38 -08:00	2019-07-01 20:43 -08:00	6h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-01 13:37 -08:00	2019-07-01 14:33 -08:00	56m	Anchorage AK	
HARRY M		United States of America	Tug		2019-07-01 10:31 -08:00	2019-07-01 21:04 -08:00	10h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-07-01 07:54 -08:00	2019-07-01 13:11 -08:00	5h 17m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-07-01 07:14 -08:00	2019-07-01 14:11 -08:00	6h 57m	Anchorage AK	
PEREGRINE		United States of America	Other		2019-07-01 07:08 -08:00	2019-07-01 18:28 -08:00	11h 20m	Anchorage AK	Homer
GLADYS M		United States of America	Tug		2019-07-01 01:23 -08:00	2019-07-01 07:24 -08:00	6h 1m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-30 20:45 -08:00	2019-07-02 03:06 -08:00	1d 6h 21m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-30 20:45 -08:00	2019-07-02 03:06 -08:00	1d 6h 21m	Anchorage AK	
PEREGRINE		United States of America	Other		2019-06-30 19:30 -08:00	2019-06-30 19:36 -08:00	6m	Anchorage AK	Homer
GLADYS M		United States of America	Tug		2019-06-30 19:19 -08:00	2019-07-01 01:04 -08:00	5h 45m	Anchorage AK	
PEREGRINE		United States of America	Other		2019-06-30 17:10 -08:00	2019-06-30 17:17 -08:00	7m	Nikiski	Homer
GLADYS M		United States of America	Tug		2019-06-30 12:27 -08:00	2019-06-30 18:54 -08:00	6h 27m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-30 07:06 -08:00	2019-06-30 12:01 -08:00	4h 55m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-06-30 04:58 -08:00	2019-06-30 21:51 -08:00	16h 53m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-06-30 04:57 -08:00	2019-06-30 20:33 -08:00	15h 36m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-30 04:57 -08:00	2019-06-30 20:34 -08:00	15h 37m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-06-30 02:50 -08:00	2019-06-30 16:47 -08:00	13h 57m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-06-30 02:50 -08:00	2019-06-30 04:37 -08:00	1h 47m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-30 02:50 -08:00	2019-07-02 03:05 -08:00	2d 0h 15m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-06-30 02:50 -08:00	2019-06-30 04:37 -08:00	1h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-29 23:59 -08:00	2019-06-30 06:42 -08:00	6h 43m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-29 21:44 -08:00	2019-07-01 10:07 -08:00	1d 12h 23m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-29 21:37 -08:00	2019-07-01 06:48 -08:00	1d 9h 11m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-29 18:22 -08:00	2019-06-29 21:23 -08:00	3h 1m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-29 18:09 -08:00	2019-06-29 23:42 -08:00	5h 33m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-29 17:36 -08:00	2019-06-30 02:26 -08:00	8h 50m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-29 16:26 -08:00	2019-06-29 21:04 -08:00	4h 38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-29 16:12 -08:00	2019-06-30 02:29 -08:00	10h 17m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-29 12:39 -08:00	2019-06-29 15:51 -08:00	3h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-29 11:36 -08:00	2019-06-29 17:46 -08:00	6h 10m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-29 11:06 -08:00	2019-06-29 12:12 -08:00	1h 6m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-29 07:20 -08:00	2019-06-29 17:56 -08:00	10h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-29 05:45 -08:00	2019-06-29 11:18 -08:00	5h 33m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-29 05:17 -08:00	2019-06-29 10:42 -08:00	5h 25m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-28 22:56 -08:00	2019-06-29 05:22 -08:00	6h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-28 20:22 -08:00	2019-06-29 04:35 -08:00	8h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-28 19:56 -08:00	2019-06-29 06:55 -08:00	10h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-28 17:07 -08:00	2019-06-28 22:36 -08:00	5h 29m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-28 16:06 -08:00	2019-06-30 02:26 -08:00	1d 10h 20m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-06-28 13:38 -08:00	2019-06-28 15:07 -08:00	1h 29m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-28 09:45 -08:00	2019-06-28 19:50 -08:00	10h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-28 09:09 -08:00	2019-06-28 12:51 -08:00	3h 42m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
HARRY M		United States of America	Tug		2019-06-28 06:36 -08:00	2019-06-28 19:21 -08:00	12h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-28 03:33 -08:00	2019-06-28 08:41 -08:00	5h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-27 22:46 -08:00	2019-06-28 09:17 -08:00	10h 31m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-27 21:37 -08:00	2019-06-28 06:09 -08:00	8h 32m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-27 21:15 -08:00	2019-06-28 03:11 -08:00	5h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-27 17:54 -08:00	2019-06-27 22:11 -08:00	4h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-27 15:32 -08:00	2019-06-27 20:52 -08:00	5h 20m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-06-27 14:21 -08:00	2019-06-28 16:04 -08:00	1d 1h 43m	Valdez	
GLACIER WIND	8662593	United States of America	Tug		2019-06-27 14:18 -08:00	2019-06-29 05:47 -08:00	1d 15h 29m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-27 13:17 -08:00	2019-06-27 21:11 -08:00	7h 54m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-27 13:06 -08:00	2019-06-27 17:21 -08:00	4h 15m	Anchorage AK	
AEGEAN MYTH	8919257	Bermuda	Cruise Ship	7406	2019-06-27 07:29 -08:00	2019-06-27 17:12 -08:00	9h 43m	Valdez	
PETER M	8964549	United States of America	Tug		2019-06-27 06:48 -08:00	2019-06-27 12:35 -08:00	5h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-27 06:15 -08:00	2019-06-27 09:33 -08:00	3h 18m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-27 06:06 -08:00	2019-06-27 12:52 -08:00	6h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-27 00:59 -08:00	2019-06-27 05:53 -08:00	4h 54m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-26 23:18 -08:00	2019-06-27 06:26 -08:00	7h 8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-26 20:16 -08:00	2019-06-27 05:42 -08:00	9h 26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-26 17:48 -08:00	2019-06-27 00:39 -08:00	6h 51m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-26 17:22 -08:00	2019-06-26 22:51 -08:00	5h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-26 12:10 -08:00	2019-06-26 17:25 -08:00	5h 15m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-26 11:06 -08:00	2019-06-26 16:50 -08:00	5h 44m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-26 05:53 -08:00	2019-06-26 11:48 -08:00	5h 55m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-26 04:45 -08:00	2019-06-26 10:43 -08:00	5h 58m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-26 03:54 -08:00	2019-06-26 19:51 -08:00	15h 57m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-25 23:55 -08:00	2019-06-27 13:55 -08:00	1d 14h 0m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-25 23:09 -08:00	2019-06-25 23:43 -08:00	34m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-25 22:49 -08:00	2019-06-26 05:24 -08:00	6h 35m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-25 22:34 -08:00	2019-06-26 04:14 -08:00	5h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-25 16:45 -08:00	2019-06-25 22:27 -08:00	5h 42m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-25 16:37 -08:00	2019-06-25 22:04 -08:00	5h 27m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-25 16:35 -08:00	2019-06-26 03:31 -08:00	10h 56m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-25 14:59 -08:00	2019-06-25 22:49 -08:00	7h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-25 10:40 -08:00	2019-06-25 16:24 -08:00	5h 44m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-25 09:36 -08:00	2019-06-25 16:00 -08:00	6h 24m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-25 06:35 -08:00	2019-06-25 16:07 -08:00	9h 32m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-25 04:27 -08:00	2019-06-25 14:47 -08:00	10h 20m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-06-25 04:27 -08:00	2019-06-25 23:43 -08:00	19h 16m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-06-25 04:26 -08:00	2019-06-29 05:48 -08:00	4d 1h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-25 04:18 -08:00	2019-06-25 10:19 -08:00	6h 1m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-25 02:43 -08:00	2019-06-25 09:04 -08:00	6h 21m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-24 22:52 -08:00	2019-06-25 06:07 -08:00	7h 15m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-06-24 22:36 -08:00	2019-06-25 15:30 -08:00	16h 54m	Anchorage AK	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-06-24 22:36 -08:00	2019-06-25 03:43 -08:00	5h 7m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-24 22:36 -08:00	2019-06-25 03:44 -08:00	5h 8m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-24 22:35 -08:00	2019-06-28 15:54 -08:00	3d 17h 19m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-06-24 22:16 -08:00	2019-06-25 03:57 -08:00	5h 41m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-24 19:24 -08:00	2019-06-25 02:03 -08:00	6h 39m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-24 16:25 -08:00	2019-06-24 21:59 -08:00	5h 34m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-24 15:57 -08:00	2019-06-24 22:25 -08:00	6h 28m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-24 14:06 -08:00	2019-06-24 18:53 -08:00	4h 47m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-24 12:21 -08:00	2019-06-24 22:11 -08:00	9h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-24 10:27 -08:00	2019-06-24 16:05 -08:00	5h 38m	Anchorage AK	
BOLETTE	9188037	Bahamas	Cruise Ship	7327	2019-06-24 07:33 -08:00	2019-06-24 21:06 -08:00	13h 33m	Ketchikan	
PETER M	8964549	United States of America	Tug		2019-06-24 07:09 -08:00	2019-06-24 13:32 -08:00	6h 23m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-24 05:08 -08:00	2019-06-24 10:08 -08:00	5h 0m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-23 22:43 -08:00	2019-06-24 04:45 -08:00	6h 2m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-23 17:58 -08:00	2019-06-24 11:50 -08:00	17h 52m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-23 17:57 -08:00	2019-06-24 22:11 -08:00	1d 4h 14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-23 17:57 -08:00	2019-06-24 22:10 -08:00	1d 4h 13m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-06-23 17:08 -08:00	2019-06-23 22:21 -08:00	5h 13m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-23 11:03 -08:00	2019-06-23 16:44 -08:00	5h 41m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-23 10:34 -08:00	2019-06-23 17:47 -08:00	7h 13m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-23 10:34 -08:00	2019-06-23 17:46 -08:00	7h 12m	Anchorage AK	
POLAR RANGER		United States of America	Other		2019-06-23 10:18 -08:00	2019-06-24 11:47 -08:00	1d 1h 29m	Seattle	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-06-23 08:27 -08:00	2019-06-23 09:39 -08:00	1h 12m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-06-23 08:27 -08:00	2019-06-23 18:24 -08:00	9h 57m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-06-23 08:27 -08:00	2019-06-23 17:46 -08:00	9h 19m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-06-23 08:24 -08:00	2019-06-23 09:40 -08:00	1h 16m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-23 04:58 -08:00	2019-06-23 07:51 -08:00	2h 53m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-06-23 04:53 -08:00	2019-06-24 00:20 -08:00	19h 27m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-06-23 04:52 -08:00	2019-06-23 07:52 -08:00	3h 0m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-23 04:52 -08:00	2019-06-23 10:38 -08:00	5h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-22 22:53 -08:00	2019-06-23 04:28 -08:00	5h 35m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-22 22:31 -08:00	2019-06-24 15:26 -08:00	1d 16h 55m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-22 22:29 -08:00	2019-06-24 06:43 -08:00	1d 8h 14m	Anchorage AK	
ARDMORE SEAWOLF	9708227	Marshall Islands	Chemical Oil Products Tanker	49999	2019-06-22 21:31 -08:00	2019-06-24 08:06 -08:00	1d 10h 35m	Los Angeles / Long Beach	Vancouver
STELLAR WIND	9096911	United States of America	Tug		2019-06-22 21:31 -08:00	2019-06-23 04:06 -08:00	6h 35m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-22 21:26 -08:00	2019-06-23 07:50 -08:00	10h 24m	Anchorage AK	Anchorage AK
HARRY M		United States of America	Tug		2019-06-22 19:31 -08:00	2019-06-22 21:57 -08:00	2h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-22 18:52 -08:00	2019-06-22 22:01 -08:00	3h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-22 16:59 -08:00	2019-06-22 22:37 -08:00	5h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-22 10:50 -08:00	2019-06-22 16:37 -08:00	5h 47m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-22 10:44 -08:00	2019-06-23 04:06 -08:00	17h 22m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-22 09:42 -08:00	2019-06-22 18:14 -08:00	8h 32m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-22 09:36 -08:00	2019-06-22 19:02 -08:00	9h 26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-22 04:18 -08:00	2019-06-22 10:23 -08:00	6h 5m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-22 03:02 -08:00	2019-06-22 08:49 -08:00	5h 47m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-21 22:48 -08:00	2019-06-22 09:17 -08:00	10h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-21 22:23 -08:00	2019-06-22 03:56 -08:00	5h 33m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-21 19:54 -08:00	2019-06-22 02:02 -08:00	6h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-21 16:19 -08:00	2019-06-21 21:56 -08:00	5h 37m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-21 14:13 -08:00	2019-06-21 19:24 -08:00	5h 11m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-21 10:13 -08:00	2019-06-21 15:56 -08:00	5h 43m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-21 08:08 -08:00	2019-06-21 09:32 -08:00	1h 24m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-21 05:35 -08:00	2019-06-21 22:16 -08:00	16h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-21 03:55 -08:00	2019-06-21 07:21 -08:00	3h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-21 02:30 -08:00	2019-06-21 13:26 -08:00	10h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-20 23:24 -08:00	2019-06-21 03:37 -08:00	4h 13m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-20 20:14 -08:00	2019-06-21 01:45 -08:00	5h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-20 17:48 -08:00	2019-06-20 23:02 -08:00	5h 14m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-20 17:05 -08:00	2019-06-21 05:10 -08:00	12h 5m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-20 15:50 -08:00	2019-06-22 20:59 -08:00	2d 5h 9m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-06-20 15:50 -08:00	2019-06-22 10:30 -08:00	1d 18h 40m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-20 15:47 -08:00	2019-06-20 19:39 -08:00	3h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-20 11:43 -08:00	2019-06-20 17:21 -08:00	5h 38m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-20 09:50 -08:00	2019-06-20 15:13 -08:00	5h 23m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-06-20 07:54 -08:00	2019-06-21 09:53 -08:00	1d 1h 59m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-06-20 07:53 -08:00	2019-06-20 14:15 -08:00	6h 22m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-20 06:50 -08:00	2019-06-20 16:28 -08:00	9h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-20 05:29 -08:00	2019-06-20 11:15 -08:00	5h 46m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-20 03:51 -08:00	2019-06-20 09:20 -08:00	5h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-19 23:25 -08:00	2019-06-20 05:04 -08:00	5h 39m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-19 22:15 -08:00	2019-06-20 03:26 -08:00	5h 11m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-19 20:35 -08:00	2019-06-20 06:24 -08:00	9h 49m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-19 17:39 -08:00	2019-06-19 21:40 -08:00	4h 1m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-19 14:43 -08:00	2019-06-19 20:00 -08:00	5h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-19 13:55 -08:00	2019-06-19 17:49 -08:00	3h 54m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-19 13:46 -08:00	2019-06-19 17:12 -08:00	3h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-19 06:10 -08:00	2019-06-19 13:22 -08:00	7h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-19 04:22 -08:00	2019-06-19 11:09 -08:00	6h 47m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-18 22:39 -08:00	2019-06-19 05:30 -08:00	6h 51m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-18 22:37 -08:00	2019-06-19 03:59 -08:00	5h 22m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-18 18:44 -08:00	2019-06-18 22:16 -08:00	3h 32m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-18 18:30 -08:00	2019-06-20 14:18 -08:00	1d 19h 48m	Anchorage AK	Anchorage AK
PAN EDELWEISS	9449508	South Korea	Bulk Carrier	32949	2019-06-18 18:30 -08:00	2019-07-02 20:23 -08:00	14d 1h 53m	Donghae	Vancouver
STELLAR WIND	9096911	United States of America	Tug		2019-06-18 18:30 -08:00	2019-06-22 21:01 -08:00	4d 2h 31m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-18 16:30 -08:00	2019-06-18 18:04 -08:00	1h 34m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-18 16:30 -08:00	2019-06-20 07:22 -08:00	1d 14h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-18 15:51 -08:00	2019-06-18 22:16 -08:00	6h 25m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-18 14:49 -08:00	2019-06-18 18:01 -08:00	3h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-18 10:07 -08:00	2019-06-18 15:28 -08:00	5h 21m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-06-18 05:31 -08:00	2019-06-18 21:16 -08:00	15h 45m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-06-18 05:24 -08:00	2019-06-18 16:19 -08:00	10h 55m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-18 05:24 -08:00	2019-06-18 16:19 -08:00	10h 55m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-18 04:41 -08:00	2019-06-18 18:03 -08:00	13h 22m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-06-18 04:40 -08:00	2019-06-18 05:10 -08:00	30m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-06-18 04:40 -08:00	2019-06-18 16:46 -08:00	12h 6m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-06-18 04:40 -08:00	2019-06-18 05:10 -08:00	30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-18 04:19 -08:00	2019-06-18 09:46 -08:00	5h 27m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-18 04:17 -08:00	2019-06-18 14:16 -08:00	9h 59m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-17 22:48 -08:00	2019-06-18 03:42 -08:00	4h 54m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-17 21:58 -08:00	2019-06-18 03:55 -08:00	5h 57m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-17 18:54 -08:00	2019-06-17 22:19 -08:00	3h 25m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-17 15:49 -08:00	2019-06-17 21:34 -08:00	5h 45m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-17 13:56 -08:00	2019-06-17 18:08 -08:00	4h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-17 10:04 -08:00	2019-06-17 15:12 -08:00	5h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-17 07:07 -08:00	2019-06-17 13:24 -08:00	6h 17m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-17 04:59 -08:00	2019-06-19 14:04 -08:00	2d 9h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-17 03:27 -08:00	2019-06-17 09:41 -08:00	6h 14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-16 20:58 -08:00	2019-06-17 03:04 -08:00	6h 6m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-16 17:39 -08:00	2019-06-18 04:07 -08:00	1d 10h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-16 14:59 -08:00	2019-06-16 20:35 -08:00	5h 36m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-16 09:43 -08:00	2019-06-16 14:37 -08:00	4h 54m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-16 04:48 -08:00	2019-06-18 04:06 -08:00	1d 23h 18m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-06-16 04:07 -08:00	2019-06-17 05:22 -08:00	1d 1h 15m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-06-16 04:07 -08:00	2019-06-16 17:28 -08:00	13h 21m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-16 04:05 -08:00	2019-06-16 04:36 -08:00	31m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-16 03:28 -08:00	2019-06-16 03:45 -08:00	17m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-06-16 03:28 -08:00	2019-06-16 17:27 -08:00	13h 59m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-06-16 03:27 -08:00	2019-06-18 04:05 -08:00	2d 0h 38m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-06-16 03:26 -08:00	2019-06-16 03:46 -08:00	20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-16 02:47 -08:00	2019-06-16 09:19 -08:00	6h 32m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-15 22:12 -08:00	2019-06-17 04:18 -08:00	1d 6h 6m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-15 22:01 -08:00	2019-06-17 06:31 -08:00	1d 8h 30m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
GLADYS M		United States of America	Tug		2019-06-15 20:15 -08:00	2019-06-16 02:29 -08:00	6h 14m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-15 18:43 -08:00	2019-06-15 21:24 -08:00	2h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-15 13:46 -08:00	2019-06-15 19:36 -08:00	5h 50m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-15 13:37 -08:00	2019-06-15 21:29 -08:00	7h 52m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-15 11:12 -08:00	2019-06-15 18:13 -08:00	7h 1m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-15 07:40 -08:00	2019-06-15 13:23 -08:00	5h 43m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-15 03:48 -08:00	2019-06-15 12:57 -08:00	9h 9m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-15 02:56 -08:00	2019-06-15 10:42 -08:00	7h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-15 01:47 -08:00	2019-06-15 07:13 -08:00	5h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-14 20:39 -08:00	2019-06-15 02:20 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-14 19:14 -08:00	2019-06-15 01:26 -08:00	6h 12m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-14 18:27 -08:00	2019-06-16 02:50 -08:00	1d 8h 23m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-14 17:46 -08:00	2019-06-15 03:00 -08:00	9h 14m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-14 16:24 -08:00	2019-06-14 20:09 -08:00	3h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-14 12:45 -08:00	2019-06-14 18:50 -08:00	6h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-14 09:43 -08:00	2019-06-14 12:19 -08:00	2h 36m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-14 09:36 -08:00	2019-06-14 17:06 -08:00	7h 30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-14 07:04 -08:00	2019-06-14 08:53 -08:00	1h 49m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-13 23:12 -08:00	2019-06-14 15:56 -08:00	16h 44m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-13 22:53 -08:00	2019-06-14 06:19 -08:00	7h 26m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-13 21:04 -08:00	2019-06-14 09:07 -08:00	12h 3m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-13 19:29 -08:00	2019-06-13 22:44 -08:00	3h 15m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-13 16:40 -08:00	2019-06-13 22:28 -08:00	5h 48m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-06-13 15:52 -08:00	2019-06-14 17:30 -08:00	1d 1h 38m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-06-13 15:51 -08:00	2019-06-16 02:49 -08:00	2d 10h 58m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-13 15:14 -08:00	2019-06-13 19:01 -08:00	3h 47m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-13 13:00 -08:00	2019-06-13 20:38 -08:00	7h 38m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-13 10:56 -08:00	2019-06-13 14:46 -08:00	3h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-13 10:46 -08:00	2019-06-13 16:16 -08:00	5h 30m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-13 06:34 -08:00	2019-06-13 10:32 -08:00	3h 58m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-13 05:05 -08:00	2019-06-13 12:22 -08:00	7h 17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-13 04:59 -08:00	2019-06-13 10:24 -08:00	5h 25m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-13 02:23 -08:00	2019-06-13 06:05 -08:00	3h 42m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-12 22:31 -08:00	2019-06-13 04:34 -08:00	6h 3m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-12 22:00 -08:00	2019-06-13 01:56 -08:00	3h 56m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-12 18:59 -08:00	2019-06-13 04:44 -08:00	9h 45m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-12 18:08 -08:00	2019-06-12 21:26 -08:00	3h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-12 16:44 -08:00	2019-06-12 21:56 -08:00	5h 12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-12 14:30 -08:00	2019-06-12 17:42 -08:00	3h 12m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-12 14:25 -08:00	2019-06-14 18:03 -08:00	2d 3h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-12 10:57 -08:00	2019-06-12 16:18 -08:00	5h 21m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-12 09:13 -08:00	2019-06-12 14:05 -08:00	4h 52m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-12 06:13 -08:00	2019-06-12 18:26 -08:00	12h 13m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-12 05:21 -08:00	2019-06-12 08:46 -08:00	3h 25m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-12 05:01 -08:00	2019-06-12 10:34 -08:00	5h 33m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-11 23:11 -08:00	2019-06-12 04:57 -08:00	5h 46m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-11 21:46 -08:00	2019-06-12 02:06 -08:00	4h 20m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-11 21:44 -08:00	2019-06-13 15:29 -08:00	1d 17h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-11 21:42 -08:00	2019-06-12 04:32 -08:00	6h 50m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-11 19:37 -08:00	2019-06-12 05:47 -08:00	10h 10m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-11 17:41 -08:00	2019-06-11 22:40 -08:00	4h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-11 15:26 -08:00	2019-06-11 21:20 -08:00	5h 54m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-11 14:40 -08:00	2019-06-11 21:30 -08:00	6h 50m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-11 14:38 -08:00	2019-06-11 21:35 -08:00	6h 57m	Anchorage AK	
ISLAND EXPLORER	7028996	United States of America	Tug		2019-06-11 14:32 -08:00	2019-06-14 18:04 -08:00	3d 3h 32m	Seattle	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-06-11 14:25 -08:00	2019-06-11 14:27 -08:00	2m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-11 13:23 -08:00	2019-06-11 17:06 -08:00	3h 43m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-11 09:48 -08:00	2019-06-11 15:03 -08:00	5h 15m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-11 09:02 -08:00	2019-06-11 18:57 -08:00	9h 55m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-11 08:36 -08:00	2019-06-11 12:44 -08:00	4h 8m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-11 08:09 -08:00	2019-06-11 08:47 -08:00	38m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-06-11 06:42 -08:00	2019-06-11 22:23 -08:00	15h 41m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-06-11 06:42 -08:00	2019-06-11 13:56 -08:00	7h 14m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-11 06:41 -08:00	2019-06-11 13:53 -08:00	7h 12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-11 03:48 -08:00	2019-06-11 07:53 -08:00	4h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-11 02:43 -08:00	2019-06-11 09:29 -08:00	6h 46m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-10 23:59 -08:00	2019-06-16 02:52 -08:00	5d 2h 53m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-06-10 23:59 -08:00	2019-06-11 06:21 -08:00	6h 22m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-10 23:59 -08:00	2019-06-11 05:54 -08:00	5h 55m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-06-10 23:59 -08:00	2019-06-11 16:07 -08:00	16h 8m	Tacoma	Tacoma
PETER M	8964549	United States of America	Tug		2019-06-10 22:23 -08:00	2019-06-11 03:10 -08:00	4h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-10 20:32 -08:00	2019-06-11 02:26 -08:00	5h 54m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-10 19:45 -08:00	2019-06-11 07:41 -08:00	11h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-10 18:54 -08:00	2019-06-10 21:56 -08:00	3h 2m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-10 10:48 -08:00	2019-06-10 18:28 -08:00	7h 40m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-10 09:49 -08:00	2019-06-10 19:16 -08:00	9h 27m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-10 08:49 -08:00	2019-06-10 20:11 -08:00	11h 22m	Anchorage AK	
BOLETTE	9188037	Bahamas	Cruise Ship	7327	2019-06-10 07:22 -08:00	2019-06-10 21:02 -08:00	13h 40m	Ketchikan	
PETER M	8964549	United States of America	Tug		2019-06-10 07:10 -08:00	2019-06-10 10:16 -08:00	3h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-10 02:52 -08:00	2019-06-10 08:29 -08:00	5h 37m	Anchorage AK	
SAM B		United States of America	Other		2019-06-10 01:19 -08:00	2019-06-15 19:41 -08:00	5d 18h 22m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-06-09 23:32 -08:00	2019-06-10 23:28 -08:00	23h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-09 20:36 -08:00	2019-06-10 02:29 -08:00	5h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-09 14:31 -08:00	2019-06-09 20:13 -08:00	5h 42m	Anchorage AK	
SAM B		United States of America	Other		2019-06-09 12:12 -08:00	2019-06-09 12:22 -08:00	10m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-06-09 08:16 -08:00	2019-06-09 14:10 -08:00	5h 54m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-06-09 04:39 -08:00	2019-06-10 00:16 -08:00	19h 37m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-06-09 04:38 -08:00	2019-06-09 23:19 -08:00	18h 41m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-09 04:33 -08:00	2019-06-10 23:29 -08:00	1d 18h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-09 00:32 -08:00	2019-06-09 07:49 -08:00	7h 17m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-08 22:41 -08:00	2019-06-10 08:37 -08:00	1d 9h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-08 22:29 -08:00	2019-06-10 06:39 -08:00	1d 8h 10m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-08 21:58 -08:00	2019-06-10 23:28 -08:00	2d 1h 30m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-06-08 21:58 -08:00	2019-06-09 17:18 -08:00	19h 20m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-06-08 21:57 -08:00	2019-06-09 03:54 -08:00	5h 57m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-08 21:57 -08:00	2019-06-09 03:53 -08:00	5h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-08 19:04 -08:00	2019-06-08 22:06 -08:00	3h 2m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-08 18:07 -08:00	2019-06-09 00:10 -08:00	6h 3m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-08 16:53 -08:00	2019-06-08 21:27 -08:00	4h 34m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-08 16:47 -08:00	2019-06-08 22:11 -08:00	5h 24m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-08 15:35 -08:00	2019-06-08 18:41 -08:00	3h 6m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-08 13:21 -08:00	2019-06-08 21:31 -08:00	8h 10m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-08 12:48 -08:00	2019-06-08 16:31 -08:00	3h 43m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-08 12:31 -08:00	2019-06-08 12:32 -08:00	1m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-08 12:25 -08:00	2019-06-08 17:41 -08:00	5h 16m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-08 10:30 -08:00	2019-06-08 15:04 -08:00	4h 34m	Anchorage AK	
BILLIE H		United States of America	Tug		2019-06-08 10:01 -08:00	2019-06-08 12:17 -08:00	2h 16m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-06-08 09:53 -08:00	2019-06-08 12:09 -08:00	2h 16m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-08 09:53 -08:00	2019-06-08 12:11 -08:00	2h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-08 06:02 -08:00	2019-06-08 11:49 -08:00	5h 47m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-08 04:46 -08:00	2019-06-08 09:59 -08:00	5h 13m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-08 03:42 -08:00	2019-06-08 16:21 -08:00	12h 39m	Anchorage AK	
BILLIE H		United States of America	Tug		2019-06-08 01:18 -08:00	2019-06-08 09:23 -08:00	8h 5m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-06-07 23:08 -08:00	2019-06-08 04:17 -08:00	5h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-07 23:07 -08:00	2019-06-08 05:35 -08:00	6h 28m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-07 21:28 -08:00	2019-06-08 09:24 -08:00	11h 56m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-07 21:27 -08:00	2019-06-08 09:23 -08:00	11h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-07 18:56 -08:00	2019-06-07 22:44 -08:00	3h 48m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-07 17:22 -08:00	2019-06-07 22:46 -08:00	5h 24m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-07 16:13 -08:00	2019-06-08 02:54 -08:00	10h 41m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-07 15:04 -08:00	2019-06-07 18:27 -08:00	3h 23m	Anchorage AK	
BILLIE H		United States of America	Tug		2019-06-07 12:21 -08:00	2019-06-08 00:29 -08:00	12h 8m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-06-07 11:14 -08:00	2019-06-07 16:56 -08:00	5h 42m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-07 08:58 -08:00	2019-06-07 14:28 -08:00	5h 30m	Anchorage AK	
ARI CRUZ	9107849	United States of America	Tug	120	2019-06-07 08:54 -08:00	2019-06-08 11:47 -08:00	1d 2h 53m	Port MacKenzie	Homer
GLADYS M		United States of America	Tug		2019-06-07 08:51 -08:00	2019-06-07 10:32 -08:00	1h 41m	Anchorage AK	
BILLIE H		United States of America	Tug		2019-06-07 08:42 -08:00	2019-06-07 11:36 -08:00	2h 54m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-06-07 08:19 -08:00	2019-06-07 21:05 -08:00	12h 46m	Anchorage AK	
BILLIE H		United States of America	Tug		2019-06-07 08:19 -08:00	2019-06-07 08:26 -08:00	7m	Kodiak	Anchorage AK
GLADYS M		United States of America	Tug		2019-06-07 05:32 -08:00	2019-06-07 08:07 -08:00	2h 35m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-07 04:56 -08:00	2019-06-07 15:36 -08:00	10h 40m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-07 02:42 -08:00	2019-06-07 08:32 -08:00	5h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-06 23:34 -08:00	2019-06-07 05:06 -08:00	5h 32m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-06 20:31 -08:00	2019-06-07 02:08 -08:00	5h 37m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-06 17:47 -08:00	2019-06-06 20:03 -08:00	2h 16m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-06 17:20 -08:00	2019-06-06 23:12 -08:00	5h 52m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-06 17:11 -08:00	2019-06-07 04:23 -08:00	11h 12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-06 13:48 -08:00	2019-06-06 17:20 -08:00	3h 32m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-06 12:25 -08:00	2019-06-06 16:52 -08:00	4h 27m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-06 07:42 -08:00	2019-06-06 12:00 -08:00	4h 18m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-06 07:38 -08:00	2019-06-06 13:11 -08:00	5h 33m	Anchorage AK	
AEGEAN MYTH	8919257	Bermuda	Cruise Ship	7406	2019-06-06 07:15 -08:00	2019-06-06 17:17 -08:00	10h 2m	Valdez	
GLADYS M		United States of America	Tug		2019-06-06 06:03 -08:00	2019-06-06 07:31 -08:00	1h 28m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-06 03:46 -08:00	2019-06-06 06:56 -08:00	3h 10m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-06 00:24 -08:00	2019-06-06 05:38 -08:00	5h 14m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-05 22:19 -08:00	2019-06-06 03:12 -08:00	4h 53m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-05 21:47 -08:00	2019-06-06 16:43 -08:00	18h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-05 19:05 -08:00	2019-06-05 21:52 -08:00	2h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-05 18:14 -08:00	2019-06-06 00:02 -08:00	5h 48m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-05 13:40 -08:00	2019-06-05 18:33 -08:00	4h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-05 12:19 -08:00	2019-06-05 17:48 -08:00	5h 29m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-05 08:03 -08:00	2019-06-05 21:16 -08:00	13h 13m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-05 07:37 -08:00	2019-06-05 13:00 -08:00	5h 23m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-05 06:44 -08:00	2019-06-05 11:50 -08:00	5h 6m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-05 03:28 -08:00	2019-06-05 06:56 -08:00	3h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-05 01:00 -08:00	2019-06-05 06:20 -08:00	5h 20m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-04 22:38 -08:00	2019-06-07 21:04 -08:00	2d 22h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-04 21:28 -08:00	2019-06-05 02:46 -08:00	5h 18m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-06-04 19:28 -08:00	2019-06-05 20:41 -08:00	1d 1h 13m	Valdez	Valdez
STELLAR WIND	9096911	United States of America	Tug		2019-06-04 19:19 -08:00	2019-06-04 22:25 -08:00	3h 6m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-04 18:13 -08:00	2019-06-04 21:01 -08:00	2h 48m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-04 16:06 -08:00	2019-06-07 07:31 -08:00	2d 15h 25m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-04 16:01 -08:00	2019-06-04 18:53 -08:00	2h 52m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-04 16:00 -08:00	2019-06-08 21:28 -08:00	4d 5h 28m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-06-04 15:15 -08:00	2019-06-04 17:46 -08:00	2h 31m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
PETER M	8964549	United States of America	Tug		2019-06-04 08:52 -08:00	2019-06-04 14:44 -08:00	5h 52m	Anchorage AK	
HARRY M		United States of America	Tug		2019-06-04 06:57 -08:00	2019-06-05 07:39 -08:00	1d 0h 42m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-06-04 04:51 -08:00	2019-06-04 16:38 -08:00	11h 47m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-06-04 04:50 -08:00	2019-06-04 15:50 -08:00	11h 0m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-04 04:50 -08:00	2019-06-04 15:48 -08:00	10h 58m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-06-04 04:49 -08:00	2019-06-04 15:49 -08:00	11h 0m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-04 04:16 -08:00	2019-06-04 08:16 -08:00	4h 0m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-04 03:51 -08:00	2019-06-04 04:27 -08:00	36m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-06-04 03:51 -08:00	2019-06-04 22:26 -08:00	18h 35m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-06-04 03:50 -08:00	2019-06-04 04:27 -08:00	37m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-03 23:30 -08:00	2019-06-04 03:39 -08:00	4h 9m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-03 20:18 -08:00	2019-06-03 23:00 -08:00	2h 42m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-03 19:49 -08:00	2019-06-04 03:25 -08:00	7h 36m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-03 19:47 -08:00	2019-06-04 03:22 -08:00	7h 35m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-03 18:10 -08:00	2019-06-03 18:34 -08:00	24m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-03 17:24 -08:00	2019-06-03 19:57 -08:00	2h 33m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-03 14:37 -08:00	2019-06-03 16:57 -08:00	2h 20m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-03 09:55 -08:00	2019-06-03 14:03 -08:00	4h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-03 04:57 -08:00	2019-06-03 09:22 -08:00	4h 25m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-02 21:10 -08:00	2019-06-03 19:21 -08:00	22h 11m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-06-02 19:30 -08:00	2019-06-03 20:17 -08:00	1d 0h 47m	Valdez	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-06-02 19:24 -08:00	2019-06-03 19:21 -08:00	23h 57m	Anchorage AK	
POLAR WIND	9056258	United States of America	Tug		2019-06-02 18:22 -08:00	2019-06-03 19:10 -08:00	1d 0h 48m	Dutch Harbor	
STELLAR WIND	9096911	United States of America	Tug		2019-06-02 18:21 -08:00	2019-06-02 19:06 -08:00	45m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-02 18:21 -08:00	2019-06-02 21:00 -08:00	2h 39m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-06-02 04:47 -08:00	2019-06-02 21:52 -08:00	17h 5m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-06-02 04:46 -08:00	2019-06-02 17:56 -08:00	13h 10m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-02 04:46 -08:00	2019-06-02 17:56 -08:00	13h 10m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-06-02 03:38 -08:00	2019-06-04 04:19 -08:00	2d 0h 41m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-06-02 03:37 -08:00	2019-06-02 17:02 -08:00	13h 25m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-06-02 03:37 -08:00	2019-06-02 04:05 -08:00	28m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-02 03:35 -08:00	2019-06-02 04:06 -08:00	31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-01 22:38 -08:00	2019-06-03 04:12 -08:00	1d 5h 34m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-01 19:57 -08:00	2019-06-01 22:11 -08:00	2h 14m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-01 19:46 -08:00	2019-06-02 03:05 -08:00	7h 19m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-01 19:45 -08:00	2019-06-02 03:06 -08:00	7h 21m	Anchorage AK	
CHALLENGE PRELUDE	9333278	Hong Kong	Oil Products Tanker	48555	2019-06-01 16:57 -08:00	2019-06-03 03:35 -08:00	1d 10h 38m	Shimotsu	Ulsan
BERING WIND	9369198	United States of America	Tug		2019-06-01 16:57 -08:00	2019-06-02 03:03 -08:00	10h 6m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-06-01 16:57 -08:00	2019-06-01 19:12 -08:00	2h 15m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-01 16:22 -08:00	2019-06-01 19:31 -08:00	3h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-01 14:33 -08:00	2019-06-01 19:27 -08:00	4h 54m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-01 11:06 -08:00	2019-06-01 15:53 -08:00	4h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-06-01 08:18 -08:00	2019-06-01 14:08 -08:00	5h 50m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-06-01 06:18 -08:00	2019-06-01 16:22 -08:00	10h 4m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-06-01 06:18 -08:00	2019-06-01 19:12 -08:00	12h 54m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-01 05:29 -08:00	2019-06-01 10:40 -08:00	5h 11m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-06-01 01:02 -08:00	2019-06-01 04:56 -08:00	3h 54m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-31 20:19 -08:00	2019-06-01 00:33 -08:00	4h 14m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-31 15:42 -08:00	2019-05-31 19:54 -08:00	4h 12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-31 10:36 -08:00	2019-05-31 15:14 -08:00	4h 38m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-31 06:43 -08:00	2019-05-31 10:09 -08:00	3h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-31 03:14 -08:00	2019-05-31 06:18 -08:00	3h 4m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-30 22:34 -08:00	2019-05-31 02:34 -08:00	4h 0m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-30 18:56 -08:00	2019-05-30 22:04 -08:00	3h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-30 16:09 -08:00	2019-05-30 18:30 -08:00	2h 21m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-30 13:31 -08:00	2019-05-30 15:45 -08:00	2h 14m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-30 07:46 -08:00	2019-05-30 13:00 -08:00	5h 14m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-30 03:48 -08:00	2019-05-30 07:24 -08:00	3h 36m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-29 22:57 -08:00	2019-05-30 03:23 -08:00	4h 26m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-29 19:11 -08:00	2019-05-29 22:34 -08:00	3h 23m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-29 14:27 -08:00	2019-05-29 18:46 -08:00	4h 19m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-29 09:07 -08:00	2019-05-29 13:52 -08:00	4h 45m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-29 06:15 -08:00	2019-06-01 16:21 -08:00	3d 10h 6m	Anchorage AK	Anchorage AK
HARBOUR PIONEER	9572757	Portugal	Chemical Oil Products Tanker	19122	2019-05-29 06:13 -08:00	2019-05-29 23:10 -08:00	16h 57m	Dutch Harbor	Vancouver
STELLAR WIND	9096911	United States of America	Tug		2019-05-29 06:13 -08:00	2019-06-01 05:27 -08:00	2d 23h 14m	Anchorage AK	
DEVON		United States of America	Other		2019-05-29 04:43 -08:00	2019-06-04 20:18 -08:00	6d 15h 35m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-29 02:34 -08:00	2019-05-29 08:31 -08:00	5h 57m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-28 20:07 -08:00	2019-05-29 01:44 -08:00	5h 37m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-28 15:38 -08:00	2019-05-28 19:48 -08:00	4h 10m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-28 11:25 -08:00	2019-05-28 15:12 -08:00	3h 47m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-28 07:11 -08:00	2019-05-28 11:04 -08:00	3h 53m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-28 05:46 -08:00	2019-06-01 05:27 -08:00	3d 23h 41m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-05-28 05:24 -08:00	2019-05-28 21:50 -08:00	16h 26m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-05-28 05:24 -08:00	2019-05-29 05:50 -08:00	1d 0h 26m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-05-28 00:28 -08:00	2019-05-28 14:54 -08:00	14h 26m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-05-28 00:28 -08:00	2019-05-28 05:32 -08:00	5h 4m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-28 00:27 -08:00	2019-05-29 05:44 -08:00	1d 5h 17m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-05-28 00:26 -08:00	2019-05-28 04:49 -08:00	4h 23m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-05-27 12:54 -08:00	2019-05-28 14:37 -08:00	1d 1h 43m	Valdez	Homer
GLACIER WIND	8662593	United States of America	Tug		2019-05-27 12:54 -08:00	2019-05-27 23:55 -08:00	11h 1m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-26 17:28 -08:00	2019-05-27 23:54 -08:00	1d 6h 26m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-26 17:27 -08:00	2019-05-27 12:28 -08:00	19h 1m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-26 17:27 -08:00	2019-05-27 23:53 -08:00	1d 6h 26m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-05-26 07:22 -08:00	2019-05-26 17:18 -08:00	9h 56m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-05-26 07:22 -08:00	2019-05-26 17:49 -08:00	10h 27m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-05-26 07:22 -08:00	2019-05-26 17:16 -08:00	9h 54m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-05-26 07:21 -08:00	2019-05-26 17:17 -08:00	9h 56m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-26 05:46 -08:00	2019-05-26 06:16 -08:00	30m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-26 05:41 -08:00	2019-05-26 06:16 -08:00	35m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-05-26 05:36 -08:00	2019-05-27 00:58 -08:00	19h 22m	Tacoma	Kodiak
PETER M	8964549	United States of America	Tug		2019-05-25 22:38 -08:00	2019-05-28 06:49 -08:00	2d 8h 11m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-25 18:56 -08:00	2019-05-25 22:08 -08:00	3h 12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-25 14:27 -08:00	2019-05-25 18:33 -08:00	4h 6m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-25 12:30 -08:00	2019-05-26 05:08 -08:00	16h 38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-25 12:18 -08:00	2019-05-26 05:10 -08:00	16h 52m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-25 08:41 -08:00	2019-05-25 13:52 -08:00	5h 11m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-25 03:17 -08:00	2019-05-25 08:14 -08:00	4h 57m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-24 21:23 -08:00	2019-05-25 02:48 -08:00	5h 25m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-24 17:25 -08:00	2019-05-24 20:53 -08:00	3h 28m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-24 11:06 -08:00	2019-05-24 16:57 -08:00	5h 51m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-24 08:12 -08:00	2019-05-24 10:46 -08:00	2h 34m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-24 04:19 -08:00	2019-05-24 07:48 -08:00	3h 29m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-23 19:46 -08:00	2019-05-24 03:42 -08:00	7h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-23 15:13 -08:00	2019-05-23 19:23 -08:00	4h 10m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-23 14:53 -08:00	2019-05-24 00:05 -08:00	9h 12m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-23 14:46 -08:00	2019-05-24 16:13 -08:00	1d 1h 27m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-23 14:01 -08:00	2019-05-23 14:03 -08:00	2m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-23 13:10 -08:00	2019-05-23 13:14 -08:00	4m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-23 12:07 -08:00	2019-05-23 12:09 -08:00	2m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-23 11:02 -08:00	2019-06-04 06:31 -08:00	11d 19h 29m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-23 10:01 -08:00	2019-05-23 11:36 -08:00	1h 35m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-23 05:51 -08:00	2019-05-23 14:45 -08:00	8h 54m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-23 00:36 -08:00	2019-05-23 12:13 -08:00	11h 37m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-23 00:34 -08:00	2019-05-23 09:50 -08:00	9h 16m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-22 19:05 -08:00	2019-05-23 05:26 -08:00	10h 21m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-22 15:49 -08:00	2019-05-23 10:41 -08:00	18h 52m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-22 14:59 -08:00	2019-05-23 00:00 -08:00	9h 1m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-22 08:47 -08:00	2019-05-22 18:37 -08:00	9h 50m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-22 07:26 -08:00	2019-05-22 15:29 -08:00	8h 3m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-22 05:31 -08:00	2019-05-22 06:02 -08:00	31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-22 03:16 -08:00	2019-05-22 08:25 -08:00	5h 9m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-21 23:05 -08:00	2019-05-22 14:03 -08:00	14h 58m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-21 22:04 -08:00	2019-05-23 00:00 -08:00	1d 1h 56m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-21 21:58 -08:00	2019-05-21 22:52 -08:00	54m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-21 21:43 -08:00	2019-05-22 02:46 -08:00	5h 3m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-21 18:35 -08:00	2019-05-21 21:14 -08:00	2h 39m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-21 17:46 -08:00	2019-05-21 19:07 -08:00	1h 21m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-21 17:30 -08:00	2019-05-21 21:54 -08:00	4h 24m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-21 17:04 -08:00	2019-05-21 17:17 -08:00	13m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-21 17:02 -08:00	2019-05-21 21:48 -08:00	4h 46m	Anchorage AK	
WESTERN RANGER	7437214	United States of America	Tug		2019-05-21 16:01 -08:00	2019-05-23 00:00 -08:00	1d 7h 59m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-05-21 15:52 -08:00	2019-05-21 18:08 -08:00	2h 16m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-21 15:34 -08:00	2019-05-21 16:20 -08:00	46m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-21 13:58 -08:00	2019-05-21 15:54 -08:00	1h 56m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-21 13:11 -08:00	2019-05-21 14:27 -08:00	1h 16m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-21 12:41 -08:00	2019-05-21 15:14 -08:00	2h 33m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-21 11:16 -08:00	2019-05-21 11:30 -08:00	14m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-21 10:23 -08:00	2019-05-21 15:53 -08:00	5h 30m	Anchorage AK	
WESTERN RANGER	7437214	United States of America	Tug		2019-05-21 10:19 -08:00	2019-05-21 14:37 -08:00	4h 18m	Vancouver	Anchorage AK
HARRY M		United States of America	Tug		2019-05-21 09:45 -08:00	2019-05-21 10:32 -08:00	47m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-21 09:30 -08:00	2019-05-21 13:48 -08:00	4h 18m	Anchorage AK	
EMERY ZIDELL	9767924	United States of America	Pusher Tug	460	2019-05-21 09:30 -08:00	2019-05-22 11:16 -08:00	1d 1h 46m	San Francisco	Anchorage AK
SAND ISLAND		United States of America	Other		2019-05-21 08:57 -08:00	2019-05-21 09:14 -08:00	17m	Nikiski	Nikiski
HARRY M		United States of America	Tug		2019-05-21 07:54 -08:00	2019-05-21 08:24 -08:00	30m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-05-21 05:58 -08:00	2019-05-21 22:54 -08:00	16h 56m	Tacoma	
GLACIER WIND	8662593	United States of America	Tug		2019-05-21 05:57 -08:00	2019-05-21 09:05 -08:00	3h 8m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-21 05:57 -08:00	2019-05-21 09:41 -08:00	3h 44m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-21 05:34 -08:00	2019-05-21 12:28 -08:00	6h 54m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-21 05:32 -08:00	2019-05-21 05:58 -08:00	26m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-21 05:13 -08:00	2019-05-21 05:33 -08:00	20m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-05-21 05:12 -08:00	2019-05-21 14:21 -08:00	9h 9m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-05-21 05:12 -08:00	2019-05-26 06:14 -08:00	5d 1h 2m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-05-21 05:12 -08:00	2019-05-21 05:37 -08:00	25m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-20 21:20 -08:00	2019-05-21 04:48 -08:00	7h 28m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-20 18:00 -08:00	2019-05-20 19:17 -08:00	1h 17m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-20 17:26 -08:00	2019-05-20 17:45 -08:00	19m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-20 15:53 -08:00	2019-05-20 16:02 -08:00	9m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-20 15:51 -08:00	2019-05-20 20:40 -08:00	4h 49m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-20 15:21 -08:00	2019-05-20 15:29 -08:00	8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-20 15:07 -08:00	2019-05-20 15:19 -08:00	12m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-20 14:20 -08:00	2019-05-20 14:31 -08:00	11m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-20 13:31 -08:00	2019-05-20 13:41 -08:00	10m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-20 12:55 -08:00	2019-05-20 13:18 -08:00	23m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-20 12:18 -08:00	2019-05-20 14:50 -08:00	2h 32m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-20 09:39 -08:00	2019-05-20 12:20 -08:00	2h 41m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
STELLAR WIND	9096911	United States of America	Tug		2019-05-20 08:53 -08:00	2019-05-21 04:40 -08:00	19h 47m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-20 07:44 -08:00	2019-05-20 12:07 -08:00	4h 23m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-20 05:30 -08:00	2019-05-20 06:08 -08:00	38m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-20 00:02 -08:00	2019-05-20 08:29 -08:00	8h 27m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-19 16:44 -08:00	2019-05-21 04:39 -08:00	1d 11h 55m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-05-19 15:14 -08:00	2019-05-21 04:40 -08:00	1d 13h 26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-19 14:32 -08:00	2019-05-19 19:27 -08:00	4h 55m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-19 12:34 -08:00	2019-05-19 12:46 -08:00	12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-19 09:17 -08:00	2019-05-19 14:04 -08:00	4h 47m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-05-19 05:29 -08:00	2019-05-20 01:02 -08:00	19h 33m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-05-19 05:28 -08:00	2019-05-19 23:51 -08:00	18h 23m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-19 04:28 -08:00	2019-05-19 04:52 -08:00	24m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-05-19 04:26 -08:00	2019-05-19 16:31 -08:00	12h 5m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-05-19 04:26 -08:00	2019-05-19 16:34 -08:00	12h 8m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-05-19 04:23 -08:00	2019-05-19 14:51 -08:00	10h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-19 02:56 -08:00	2019-05-19 08:49 -08:00	5h 53m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-18 23:36 -08:00	2019-05-19 12:00 -08:00	12h 24m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-18 22:42 -08:00	2019-05-20 06:58 -08:00	1d 8h 16m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-18 21:06 -08:00	2019-05-19 02:33 -08:00	5h 27m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-18 18:30 -08:00	2019-05-18 22:10 -08:00	3h 40m	Anchorage AK	
PEREGRINE		United States of America	Other		2019-05-18 18:19 -08:00	2019-05-23 22:24 -08:00	5d 4h 5m	Anchorage AK	Homer
PEREGRINE		United States of America	Other		2019-05-18 18:04 -08:00	2019-05-18 18:07 -08:00	3m	Nikiski	Homer
HARRY M		United States of America	Tug		2019-05-18 17:04 -08:00	2019-05-18 17:35 -08:00	31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-18 15:17 -08:00	2019-05-18 20:42 -08:00	5h 25m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-18 14:10 -08:00	2019-05-18 17:49 -08:00	3h 39m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-18 12:48 -08:00	2019-05-18 13:16 -08:00	28m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-18 11:48 -08:00	2019-05-18 12:34 -08:00	46m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-18 10:49 -08:00	2019-05-18 11:06 -08:00	17m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-18 10:19 -08:00	2019-05-18 10:36 -08:00	17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-18 09:22 -08:00	2019-05-18 14:49 -08:00	5h 27m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-18 09:22 -08:00	2019-05-18 10:01 -08:00	39m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-18 08:39 -08:00	2019-05-18 13:36 -08:00	4h 57m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-18 06:37 -08:00	2019-05-18 07:05 -08:00	28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-18 03:28 -08:00	2019-05-18 08:56 -08:00	5h 28m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-18 03:09 -08:00	2019-05-18 08:09 -08:00	5h 0m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-17 21:29 -08:00	2019-05-18 02:43 -08:00	5h 14m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-17 21:20 -08:00	2019-05-17 22:01 -08:00	41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-17 19:16 -08:00	2019-05-18 03:01 -08:00	7h 45m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-17 17:48 -08:00	2019-05-17 18:13 -08:00	25m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-17 16:13 -08:00	2019-05-17 16:20 -08:00	7m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-17 15:58 -08:00	2019-05-19 03:55 -08:00	1d 11h 57m	Kodiak	
PETER M	8964549	United States of America	Tug		2019-05-17 14:49 -08:00	2019-05-17 20:58 -08:00	6h 9m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-17 13:45 -08:00	2019-05-17 15:17 -08:00	1h 32m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-17 13:32 -08:00	2019-05-17 14:21 -08:00	49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-17 13:24 -08:00	2019-05-17 18:52 -08:00	5h 28m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-17 12:08 -08:00	2019-05-17 12:20 -08:00	12m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-17 11:08 -08:00	2019-05-17 12:33 -08:00	1h 25m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-17 10:57 -08:00	2019-05-17 11:38 -08:00	41m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-17 08:34 -08:00	2019-05-17 10:35 -08:00	2h 1m	Anchorage AK	
HARRY M		United States of America	Tug		2019-05-17 07:57 -08:00	2019-05-17 09:13 -08:00	1h 16m	Seattle	
GLADYS M		United States of America	Tug		2019-05-17 07:54 -08:00	2019-05-17 13:01 -08:00	5h 7m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-17 07:53 -08:00	2019-05-17 08:02 -08:00	9m	Anchorage AK	
ISLAND EXPLORER	7028996	United States of America	Tug		2019-05-17 05:51 -08:00	2019-05-20 08:30 -08:00	3d 2h 39m	Seattle	Anchorage AK
CAPE ANN	9848510	United States of America	Tug		2019-05-17 05:30 -08:00	2019-05-18 07:00 -08:00	1d 1h 30m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-05-17 05:29 -08:00	2019-05-19 03:54 -08:00	1d 22h 25m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-17 03:07 -08:00	2019-05-17 06:17 -08:00	3h 10m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-17 02:06 -08:00	2019-05-17 07:30 -08:00	5h 24m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-16 21:44 -08:00	2019-05-17 02:27 -08:00	4h 43m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-16 19:34 -08:00	2019-05-17 01:45 -08:00	6h 11m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-16 18:13 -08:00	2019-05-16 21:19 -08:00	3h 6m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-16 15:04 -08:00	2019-05-16 17:47 -08:00	2h 43m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-16 13:56 -08:00	2019-05-16 19:11 -08:00	5h 15m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-16 09:59 -08:00	2019-05-16 14:39 -08:00	4h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-16 08:59 -08:00	2019-05-16 12:05 -08:00	3h 6m	Anchorage AK	
QUEEN ELIZABETH	9477438	Bermuda	Cruise Ship	7685	2019-05-16 07:33 -08:00	2019-05-16 17:39 -08:00	10h 6m	Kodiak	Juneau
PETER M	8964549	United States of America	Tug		2019-05-16 04:00 -08:00	2019-05-16 09:21 -08:00	5h 21m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-16 02:45 -08:00	2019-05-16 08:25 -08:00	5h 40m	Anchorage AK	
GRETA	8971061	United States of America	Landing Craft		2019-05-15 23:46 -08:00	2019-05-16 11:47 -08:00	12h 1m		
PETER M	8964549	United States of America	Tug		2019-05-15 23:03 -08:00	2019-05-16 03:25 -08:00	4h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-15 20:50 -08:00	2019-05-16 02:21 -08:00	5h 31m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-15 17:58 -08:00	2019-05-15 22:37 -08:00	4h 39m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-15 16:48 -08:00	2019-05-19 03:53 -08:00	3d 11h 5m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-05-15 16:27 -08:00	2019-05-17 05:04 -08:00	1d 12h 37m	Anchorage AK	
GRETA	8971061	United States of America	Landing Craft		2019-05-15 16:24 -08:00	2019-05-17 07:03 -08:00	1d 14h 39m	Seattle	
GLADYS M		United States of America	Tug		2019-05-15 15:28 -08:00	2019-05-15 20:24 -08:00	4h 56m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-15 11:28 -08:00	2019-05-15 17:33 -08:00	6h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-15 09:03 -08:00	2019-05-15 15:04 -08:00	6h 1m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-15 05:25 -08:00	2019-05-15 11:02 -08:00	5h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-15 03:18 -08:00	2019-05-15 08:31 -08:00	5h 13m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-14 23:05 -08:00	2019-05-15 04:55 -08:00	5h 50m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-14 22:51 -08:00	2019-05-15 16:11 -08:00	17h 20m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-14 22:43 -08:00	2019-05-15 16:12 -08:00	17h 29m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-05-14 19:56 -08:00	2019-05-14 22:43 -08:00	2h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-14 19:42 -08:00	2019-05-15 02:50 -08:00	7h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-14 17:07 -08:00	2019-05-14 19:23 -08:00	2h 16m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-14 15:42 -08:00	2019-05-14 22:29 -08:00	6h 47m	Anchorage AK	Anchorage AK
SNOHOMISH	7227384	United States of America	Tug		2019-05-14 15:28 -08:00	2019-05-15 16:12 -08:00	1d 0h 44m	Seattle	
GLACIER WIND	8662593	United States of America	Tug		2019-05-14 14:28 -08:00	2019-05-14 22:36 -08:00	8h 8m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-14 14:21 -08:00	2019-05-14 14:59 -08:00	38m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-05-14 13:55 -08:00	2019-05-14 16:37 -08:00	2h 42m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-14 13:39 -08:00	2019-05-14 19:17 -08:00	5h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-14 11:28 -08:00	2019-05-14 12:09 -08:00	41m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-14 10:34 -08:00	2019-05-14 13:21 -08:00	2h 47m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-14 09:41 -08:00	2019-05-14 10:12 -08:00	31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-14 09:38 -08:00	2019-05-14 10:46 -08:00	1h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-14 07:53 -08:00	2019-05-14 09:12 -08:00	1h 19m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-05-14 05:40 -08:00	2019-05-14 23:33 -08:00	17h 53m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-05-14 05:40 -08:00	2019-05-14 15:32 -08:00	9h 52m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-14 05:37 -08:00	2019-05-14 14:14 -08:00	8h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-14 05:35 -08:00	2019-05-14 09:11 -08:00	3h 36m	Anchorage AK	
SAM B		United States of America	Other		2019-05-14 03:42 -08:00	2019-05-15 05:08 -08:00	1d 1h 26m	Dutch Harbor	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-05-14 02:30 -08:00	2019-05-14 07:23 -08:00	4h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-14 02:25 -08:00	2019-05-14 05:13 -08:00	2h 48m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-14 00:24 -08:00	2019-05-14 05:02 -08:00	4h 38m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-05-14 00:24 -08:00	2019-05-14 14:54 -08:00	14h 30m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-05-14 00:24 -08:00	2019-05-14 05:02 -08:00	4h 38m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-14 00:23 -08:00	2019-05-14 14:10 -08:00	13h 47m	Anchorage AK	Anchorage AK
PETER M	8964549	United States of America	Tug		2019-05-13 22:10 -08:00	2019-05-14 01:59 -08:00	3h 49m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-13 20:09 -08:00	2019-05-13 21:47 -08:00	1h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-13 20:08 -08:00	2019-05-14 01:55 -08:00	5h 47m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-13 19:16 -08:00	2019-05-13 19:35 -08:00	19m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-13 16:37 -08:00	2019-05-13 18:45 -08:00	2h 8m	Anchorage AK	
NAIAD		United States of America	Sailing Vessel		2019-05-13 15:15 -08:00	2019-05-13 15:22 -08:00	7m		
GLADYS M		United States of America	Tug		2019-05-13 13:52 -08:00	2019-05-13 19:22 -08:00	5h 30m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-13 13:29 -08:00	2019-05-13 23:50 -08:00	10h 21m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-05-13 13:28 -08:00	2019-05-13 23:50 -08:00	10h 22m	Anchorage AK	
POLAR RANGER		United States of America	Other		2019-05-13 13:19 -08:00	2019-05-14 15:32 -08:00	1d 2h 13m	Seattle	
PETER M	8964549	United States of America	Tug		2019-05-13 12:54 -08:00	2019-05-13 15:59 -08:00	3h 5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-13 09:59 -08:00	2019-05-13 13:01 -08:00	3h 2m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-13 07:44 -08:00	2019-05-13 12:29 -08:00	4h 45m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-13 05:51 -08:00	2019-05-13 12:57 -08:00	7h 6m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-13 05:48 -08:00	2019-05-13 23:49 -08:00	18h 1m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-13 04:59 -08:00	2019-05-13 05:36 -08:00	37m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-13 04:59 -08:00	2019-05-13 05:37 -08:00	38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-13 03:44 -08:00	2019-05-13 09:38 -08:00	5h 54m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-12 21:47 -08:00	2019-05-13 03:24 -08:00	5h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-12 16:31 -08:00	2019-05-12 21:19 -08:00	4h 48m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-12 16:28 -08:00	2019-05-13 04:48 -08:00	12h 20m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-12 16:26 -08:00	2019-05-13 04:47 -08:00	12h 21m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-05-12 10:07 -08:00	2019-05-13 05:36 -08:00	19h 29m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-05-12 10:07 -08:00	2019-05-12 16:15 -08:00	6h 8m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-12 10:05 -08:00	2019-05-12 16:15 -08:00	6h 10m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-12 09:40 -08:00	2019-05-12 16:00 -08:00	6h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-12 02:42 -08:00	2019-05-12 09:02 -08:00	6h 20m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-11 23:21 -08:00	2019-05-12 09:13 -08:00	9h 52m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-05-11 23:21 -08:00	2019-05-12 17:09 -08:00	17h 48m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-05-11 23:20 -08:00	2019-05-13 12:47 -08:00	1d 13h 27m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-05-11 23:18 -08:00	2019-05-12 09:12 -08:00	9h 54m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-11 20:11 -08:00	2019-05-12 02:19 -08:00	6h 8m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-11 15:54 -08:00	2019-05-13 07:18 -08:00	1d 15h 24m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-11 14:08 -08:00	2019-05-11 22:42 -08:00	8h 34m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-05-11 14:06 -08:00	2019-05-11 19:48 -08:00	5h 42m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-11 10:56 -08:00	2019-05-11 15:33 -08:00	4h 37m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-11 07:59 -08:00	2019-05-11 13:39 -08:00	5h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-11 01:38 -08:00	2019-05-11 07:32 -08:00	5h 54m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-10 21:57 -08:00	2019-05-11 22:46 -08:00	1d 0h 49m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-10 21:56 -08:00	2019-05-11 22:41 -08:00	1d 0h 45m	Anchorage AK	
ARDMORE SEAVENTURE	9539925	Marshall Islands	Oil Products Tanker	49997	2019-05-10 21:56 -08:00	2019-05-13 00:44 -08:00	2d 2h 48m	Los Angeles / Long Beach	Yeosu
GLADYS M		United States of America	Tug		2019-05-10 19:25 -08:00	2019-05-11 01:18 -08:00	5h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-10 13:25 -08:00	2019-05-10 19:00 -08:00	5h 35m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-10 12:57 -08:00	2019-05-11 10:32 -08:00	21h 35m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-10 09:32 -08:00	2019-05-10 10:16 -08:00	44m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-10 07:24 -08:00	2019-05-10 12:54 -08:00	5h 30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-10 01:03 -08:00	2019-05-10 06:56 -08:00	5h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-09 19:09 -08:00	2019-05-10 00:40 -08:00	5h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-09 13:48 -08:00	2019-05-09 18:43 -08:00	4h 55m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-09 11:30 -08:00	2019-05-10 09:08 -08:00	21h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-09 07:41 -08:00	2019-05-09 10:20 -08:00	2h 39m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-09 02:25 -08:00	2019-05-09 07:13 -08:00	4h 48m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-05-08 08:43 -08:00	2019-05-09 08:55 -08:00	1d 0h 12m	Valdez	Homer
GLACIER WIND	8662593	United States of America	Tug		2019-05-08 08:43 -08:00	2019-05-10 21:26 -08:00	2d 12h 43m	Anchorage AK	
SHAMROCK		United States of America	Offshore Support Vessel		2019-05-08 08:25 -08:00	2019-05-12 13:46 -08:00	4d 5h 21m	Nikiski	
GLACIER WIND	8662593	United States of America	Tug		2019-05-07 17:10 -08:00	2019-05-08 08:20 -08:00	15h 10m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-07 17:10 -08:00	2019-05-11 13:26 -08:00	3d 20h 16m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-05-07 14:01 -08:00	2019-05-07 19:37 -08:00	5h 36m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
GLADYS M		United States of America	Tug		2019-05-07 06:23 -08:00	2019-05-07 10:19 -08:00	3h 56m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-05-07 06:09 -08:00	2019-05-07 22:23 -08:00	16h 14m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-05-07 06:08 -08:00	2019-05-10 21:22 -08:00	3d 15h 14m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-07 05:20 -08:00	2019-05-07 05:44 -08:00	24m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-05-07 05:19 -08:00	2019-05-07 17:41 -08:00	12h 22m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-05-07 05:19 -08:00	2019-05-07 16:59 -08:00	11h 40m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-07 05:19 -08:00	2019-05-07 17:00 -08:00	11h 41m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-05-07 01:02 -08:00	2019-05-07 05:55 -08:00	4h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-06 19:16 -08:00	2019-05-07 00:39 -08:00	5h 23m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-06 13:43 -08:00	2019-05-06 18:51 -08:00	5h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-06 08:33 -08:00	2019-05-06 13:13 -08:00	4h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-06 02:57 -08:00	2019-05-06 08:07 -08:00	5h 10m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-05 23:38 -08:00	2019-05-07 04:50 -08:00	1d 5h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-05 20:25 -08:00	2019-05-06 02:36 -08:00	6h 11m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-05 14:24 -08:00	2019-05-05 20:05 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-05 08:14 -08:00	2019-05-05 13:53 -08:00	5h 39m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-05-05 05:43 -08:00	2019-05-06 00:29 -08:00	18h 46m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-05-05 05:43 -08:00	2019-05-05 23:27 -08:00	17h 44m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-05-05 05:43 -08:00	2019-05-07 04:50 -08:00	1d 23h 7m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-05-05 04:52 -08:00	2019-05-07 04:51 -08:00	1d 23h 59m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-05-05 04:50 -08:00	2019-05-05 05:16 -08:00	26m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-05-05 04:49 -08:00	2019-05-05 17:10 -08:00	12h 21m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-05-05 04:48 -08:00	2019-05-05 05:18 -08:00	30m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-05 02:33 -08:00	2019-05-05 07:44 -08:00	5h 11m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-04 20:42 -08:00	2019-05-05 02:12 -08:00	5h 30m	Anchorage AK	
PACIFIC WOLF	7404047	United States of America	Tug		2019-05-04 19:09 -08:00	2019-05-05 08:00 -08:00	12h 51m	Nikiski	Homer
GLADYS M		United States of America	Tug		2019-05-04 14:35 -08:00	2019-05-04 20:16 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-04 08:30 -08:00	2019-05-04 14:10 -08:00	5h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-04 02:57 -08:00	2019-05-04 08:09 -08:00	5h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-03 21:18 -08:00	2019-05-04 02:36 -08:00	5h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-03 14:47 -08:00	2019-05-03 20:50 -08:00	6h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-03 09:03 -08:00	2019-05-03 14:19 -08:00	5h 16m	Anchorage AK	
SAM M TAALAK	8988698	United States of America	Landing Craft	450	2019-05-03 06:15 -08:00	2019-05-03 19:14 -08:00	12h 59m	Seward	
GLADYS M		United States of America	Tug		2019-05-03 02:48 -08:00	2019-05-03 08:38 -08:00	5h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-02 20:38 -08:00	2019-05-03 02:19 -08:00	5h 41m	Anchorage AK	
BILLIE H		United States of America	Tug		2019-05-02 15:18 -08:00	2019-05-03 19:17 -08:00	1d 3h 59m	Anchorage AK	
BILLIE H		United States of America	Tug		2019-05-02 15:02 -08:00	2019-05-02 15:05 -08:00	3m	Anchorage AK	
PETER M	8964549	United States of America	Tug		2019-05-02 15:01 -08:00	2019-05-09 10:51 -08:00	6d 19h 50m	Seattle	
STELLAR WIND	9096911	United States of America	Tug		2019-05-02 14:54 -08:00	2019-05-05 04:11 -08:00	2d 13h 17m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-02 14:53 -08:00	2019-05-05 04:11 -08:00	2d 13h 18m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-02 14:33 -08:00	2019-05-02 19:39 -08:00	5h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-02 09:36 -08:00	2019-05-02 14:09 -08:00	4h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-02 07:01 -08:00	2019-05-02 08:36 -08:00	1h 35m	Anchorage AK	
POLAR CLOUD	7367172	United States of America	Offshore Tug Supply	1	2019-05-02 06:14 -08:00	2019-05-03 07:20 -08:00	1d 1h 6m	Kodiak	Ketchikan
BERING WIND	9369198	United States of America	Tug		2019-05-02 06:14 -08:00	2019-05-05 04:11 -08:00	2d 21h 57m	Anchorage AK	Anchorage AK
BILLIE H		United States of America	Tug		2019-05-02 06:02 -08:00	2019-05-02 14:48 -08:00	8h 46m	Seattle	
GLADYS M		United States of America	Tug		2019-05-02 01:16 -08:00	2019-05-02 06:20 -08:00	5h 4m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-01 20:16 -08:00	2019-05-02 00:54 -08:00	4h 38m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-01 14:51 -08:00	2019-05-01 19:49 -08:00	4h 58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-01 09:22 -08:00	2019-05-01 14:24 -08:00	5h 2m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-05-01 04:54 -08:00	2019-05-01 08:51 -08:00	3h 57m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-05-01 04:41 -08:00	2019-05-02 05:56 -08:00	1d 1h 15m	Valdez	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-05-01 04:40 -08:00	2019-05-02 13:50 -08:00	1d 9h 10m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-05-01 00:30 -08:00	2019-05-01 04:15 -08:00	3h 45m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-30 23:16 -08:00	2019-05-01 04:28 -08:00	5h 12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-30 10:44 -08:00	2019-04-30 11:35 -08:00	51m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-30 07:06 -08:00	2019-04-30 10:20 -08:00	3h 14m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-30 03:56 -08:00	2019-05-02 13:54 -08:00	2d 9h 58m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-04-30 03:51 -08:00	2019-05-01 02:52 -08:00	23h 1m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-04-30 03:50 -08:00	2019-05-01 00:19 -08:00	20h 29m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-30 01:48 -08:00	2019-04-30 03:16 -08:00	1h 28m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-30 01:47 -08:00	2019-05-02 06:00 -08:00	2d 4h 13m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-04-30 01:47 -08:00	2019-04-30 03:16 -08:00	1h 29m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-04-30 01:47 -08:00	2019-04-30 15:03 -08:00	13h 16m	Tacoma	Tacoma
KEY WEST	9726176	Hong Kong	General Cargo Ship	37599	2019-04-29 18:01 -08:00	2019-05-14 18:16 -08:00	15d 0h 15m	Donghae	
STELLAR WIND	9096911	United States of America	Tug		2019-04-29 18:01 -08:00	2019-04-30 01:19 -08:00	7h 18m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-29 18:00 -08:00	2019-04-30 01:17 -08:00	7h 17m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-04-28 17:00 -08:00	2019-04-30 01:19 -08:00	1d 8h 19m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-28 16:59 -08:00	2019-04-29 17:29 -08:00	1d 0h 30m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-28 16:58 -08:00	2019-04-29 17:19 -08:00	1d 0h 21m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-04-28 13:59 -08:00	2019-04-28 16:48 -08:00	2h 49m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-04-28 13:58 -08:00	2019-04-29 14:11 -08:00	1d 0h 13m	Anacortes WA	Kodiak
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-04-28 06:39 -08:00	2019-04-29 01:04 -08:00	18h 25m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-04-28 06:33 -08:00	2019-04-28 16:49 -08:00	10h 16m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-04-27 22:46 -08:00	2019-04-28 13:37 -08:00	14h 51m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-27 22:45 -08:00	2019-04-28 06:12 -08:00	7h 27m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-27 22:45 -08:00	2019-04-28 16:47 -08:00	18h 2m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-04-27 22:45 -08:00	2019-04-28 17:23 -08:00	18h 38m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-04-27 13:14 -08:00	2019-04-27 22:00 -08:00	8h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-27 11:24 -08:00	2019-04-27 17:32 -08:00	6h 8m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-26 23:44 -08:00	2019-04-27 06:13 -08:00	6h 29m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-26 23:16 -08:00	2019-04-26 23:33 -08:00	17m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-26 11:21 -08:00	2019-04-26 17:01 -08:00	5h 40m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-26 01:01 -08:00	2019-04-26 07:32 -08:00	6h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-25 13:33 -08:00	2019-04-25 19:21 -08:00	5h 48m	Anchorage AK	
SHAMROCK		United States of America	Offshore Support Vessel		2019-04-25 11:50 -08:00	2019-04-26 11:47 -08:00	23h 57m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-25 03:34 -08:00	2019-04-25 09:56 -08:00	6h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-24 12:20 -08:00	2019-04-24 17:50 -08:00	5h 30m	Anchorage AK	
SHAMROCK		United States of America	Offshore Support Vessel		2019-04-24 11:40 -08:00	2019-04-25 10:38 -08:00	22h 58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-24 10:58 -08:00	2019-04-24 11:37 -08:00	39m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-04-24 09:40 -08:00	2019-04-26 00:03 -08:00	1d 14h 23m	Valdez	Valdez
STELLAR WIND	9096911	United States of America	Tug		2019-04-24 09:38 -08:00	2019-04-27 22:01 -08:00	3d 12h 23m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-23 23:11 -08:00	2019-04-24 06:39 -08:00	7h 28m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-23 21:06 -08:00	2019-04-24 09:11 -08:00	12h 5m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-23 21:06 -08:00	2019-04-27 21:59 -08:00	4d 0h 53m	Anchorage AK	Anchorage AK
DEE4 ACACIA	9311048	Denmark	Oil Products Tanker	53688	2019-04-23 21:05 -08:00	2019-04-25 07:58 -08:00	1d 10h 53m	Honolulu	Yokkaichi
GLACIER WIND	8662593	United States of America	Tug		2019-04-23 16:56 -08:00	2019-04-27 13:02 -08:00	3d 20h 6m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-23 14:43 -08:00	2019-04-23 20:29 -08:00	5h 46m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-23 07:02 -08:00	2019-04-23 14:31 -08:00	7h 29m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-04-23 07:01 -08:00	2019-04-23 15:18 -08:00	8h 17m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-04-23 06:59 -08:00	2019-04-23 20:33 -08:00	13h 34m	Anchorage AK	Anchorage AK
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-04-23 06:14 -08:00	2019-04-23 22:10 -08:00	15h 56m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-04-23 06:13 -08:00	2019-04-23 06:44 -08:00	31m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-23 06:13 -08:00	2019-04-23 06:41 -08:00	28m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-22 11:12 -08:00	2019-04-22 17:02 -08:00	5h 50m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-22 02:01 -08:00	2019-04-22 08:20 -08:00	6h 19m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-21 11:03 -08:00	2019-04-23 05:49 -08:00	1d 18h 46m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-04-21 06:29 -08:00	2019-04-22 00:20 -08:00	17h 51m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-04-21 06:29 -08:00	2019-04-21 09:47 -08:00	3h 18m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-21 06:28 -08:00	2019-04-23 05:46 -08:00	1d 23h 18m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-04-21 05:24 -08:00	2019-04-21 06:00 -08:00	36m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-04-21 05:23 -08:00	2019-04-21 17:14 -08:00	11h 51m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-04-21 05:22 -08:00	2019-04-21 05:58 -08:00	36m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-04-20 20:33 -08:00	2019-04-21 04:51 -08:00	8h 18m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-04-20 20:19 -08:00	2019-04-21 04:54 -08:00	8h 35m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-04-20 18:18 -08:00	2019-04-23 16:40 -08:00	2d 22h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-20 12:11 -08:00	2019-04-20 16:47 -08:00	4h 36m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-20 06:37 -08:00	2019-04-20 20:06 -08:00	13h 29m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-04-20 06:37 -08:00	2019-04-20 20:05 -08:00	13h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-20 04:43 -08:00	2019-04-20 11:46 -08:00	7h 3m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-19 15:28 -08:00	2019-04-19 21:19 -08:00	5h 51m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-19 08:35 -08:00	2019-04-20 06:19 -08:00	21h 44m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-19 05:10 -08:00	2019-04-19 11:37 -08:00	6h 27m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-18 14:07 -08:00	2019-04-18 19:56 -08:00	5h 49m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-18 06:57 -08:00	2019-04-18 09:25 -08:00	2h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-17 23:19 -08:00	2019-04-18 06:10 -08:00	6h 51m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-17 11:13 -08:00	2019-04-17 17:35 -08:00	6h 22m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-16 23:19 -08:00	2019-04-17 06:32 -08:00	7h 13m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-16 20:47 -08:00	2019-04-19 08:14 -08:00	2d 11h 27m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-16 18:30 -08:00	2019-04-16 18:50 -08:00	20m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-16 17:46 -08:00	2019-04-20 06:07 -08:00	3d 12h 21m	Anchorage AK	Anchorage AK
ISLAND EXPLORER	7028996	United States of America	Tug		2019-04-16 17:42 -08:00	2019-04-19 08:14 -08:00	2d 14h 32m	Seattle	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-04-16 17:39 -08:00	2019-04-16 20:36 -08:00	2h 57m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-04-16 04:59 -08:00	2019-04-16 21:47 -08:00	16h 48m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-04-16 04:58 -08:00	2019-04-16 17:07 -08:00	12h 9m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-16 04:26 -08:00	2019-04-16 17:09 -08:00	12h 43m	Anchorage AK	Anchorage AK
CAPE ANN	9848510	United States of America	Tug		2019-04-16 04:25 -08:00	2019-04-17 06:59 -08:00	1d 2h 34m	Valdez	Valdez
STELLAR WIND	9096911	United States of America	Tug		2019-04-16 02:06 -08:00	2019-04-16 04:26 -08:00	2h 20m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-04-16 02:05 -08:00	2019-04-16 14:56 -08:00	12h 51m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-04-16 02:05 -08:00	2019-04-16 03:53 -08:00	1h 48m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-15 11:38 -08:00	2019-04-15 17:54 -08:00	6h 16m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-15 00:25 -08:00	2019-04-16 01:31 -08:00	1d 1h 6m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-14 23:09 -08:00	2019-04-15 06:16 -08:00	7h 7m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-14 05:18 -08:00	2019-04-15 00:11 -08:00	18h 53m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-04-14 05:18 -08:00	2019-04-15 00:10 -08:00	18h 52m	Tacoma	Kodiak
BERING WIND	9369198	United States of America	Tug		2019-04-14 05:15 -08:00	2019-04-16 01:30 -08:00	1d 20h 15m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-04-13 23:16 -08:00	2019-04-14 04:31 -08:00	5h 15m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-04-13 23:16 -08:00	2019-04-14 17:04 -08:00	17h 48m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-04-13 23:14 -08:00	2019-04-14 04:28 -08:00	5h 14m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-13 11:13 -08:00	2019-04-13 17:05 -08:00	5h 52m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-12 23:10 -08:00	2019-04-13 06:30 -08:00	7h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-12 11:14 -08:00	2019-04-12 17:08 -08:00	5h 54m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-12 00:59 -08:00	2019-04-13 22:30 -08:00	1d 21h 31m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-11 23:13 -08:00	2019-04-12 06:33 -08:00	7h 20m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-11 15:29 -08:00	2019-04-11 21:10 -08:00	5h 41m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-11 00:08 -08:00	2019-04-11 06:43 -08:00	6h 35m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-11 00:03 -08:00	2019-04-13 22:33 -08:00	2d 22h 30m	Anchorage AK	
GREEN BAY	9339818	United States of America	Vehicles Carrier	18312	2019-04-11 00:03 -08:00	2019-04-12 02:30 -08:00	1d 2h 27m	Busan	
BERING WIND	9369198	United States of America	Tug		2019-04-10 23:53 -08:00	2019-04-12 00:47 -08:00	1d 0h 54m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-10 23:11 -08:00	2019-04-10 23:57 -08:00	46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-10 11:15 -08:00	2019-04-10 17:48 -08:00	6h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-09 23:16 -08:00	2019-04-10 06:01 -08:00	6h 45m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-09 14:47 -08:00	2019-04-10 23:29 -08:00	1d 8h 42m	Anchorage AK	Anchorage AK
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-04-09 06:56 -08:00	2019-04-09 21:51 -08:00	14h 55m	Tacoma	Kodiak
BERING WIND	9369198	United States of America	Tug		2019-04-09 06:55 -08:00	2019-04-09 14:37 -08:00	7h 42m	Anchorage AK	Anchorage AK

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
STELLAR WIND	9096911	United States of America	Tug		2019-04-09 06:55 -08:00	2019-04-10 23:26 -08:00	1d 16h 31m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-09 06:15 -08:00	2019-04-09 06:36 -08:00	21m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-04-09 06:14 -08:00	2019-04-09 15:12 -08:00	8h 58m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-04-09 06:13 -08:00	2019-04-20 17:38 -08:00	11d 11h 25m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-09 06:13 -08:00	2019-04-09 06:36 -08:00	23m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-08 23:01 -08:00	2019-04-08 23:26 -08:00	25m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-08 11:26 -08:00	2019-04-08 17:57 -08:00	6h 31m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-07 23:12 -08:00	2019-04-08 07:24 -08:00	8h 12m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-04-07 16:57 -08:00	2019-04-09 05:42 -08:00	1d 12h 45m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-07 16:47 -08:00	2019-04-09 05:42 -08:00	1d 12h 55m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-04-07 05:54 -08:00	2019-04-08 00:04 -08:00	18h 10m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-04-07 05:50 -08:00	2019-04-07 16:31 -08:00	10h 41m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-04-07 05:23 -08:00	2019-04-07 17:14 -08:00	11h 51m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-04-07 05:22 -08:00	2019-04-07 16:47 -08:00	11h 25m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-07 05:22 -08:00	2019-04-07 05:36 -08:00	14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-07 05:17 -08:00	2019-04-09 05:41 -08:00	2d 0h 24m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-06 23:17 -08:00	2019-04-06 23:33 -08:00	16m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-06 20:39 -08:00	2019-04-07 04:46 -08:00	8h 7m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-06 20:39 -08:00	2019-04-07 04:44 -08:00	8h 5m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-06 11:23 -08:00	2019-04-06 19:19 -08:00	7h 56m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-06 06:56 -08:00	2019-04-06 08:54 -08:00	1h 58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-06 06:20 -08:00	2019-04-06 06:44 -08:00	24m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-06 00:19 -08:00	2019-04-06 06:05 -08:00	5h 46m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-05 19:33 -08:00	2019-04-06 20:11 -08:00	1d 0h 38m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-04-05 19:29 -08:00	2019-04-06 20:16 -08:00	1d 0h 47m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-05 17:49 -08:00	2019-04-05 23:56 -08:00	6h 7m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-04-05 16:41 -08:00	2019-04-07 04:45 -08:00	1d 12h 4m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-04-05 16:41 -08:00	2019-04-05 19:14 -08:00	2h 33m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-05 07:44 -08:00	2019-04-05 09:42 -08:00	1h 58m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-04 23:11 -08:00	2019-04-05 02:26 -08:00	3h 15m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-04 18:16 -08:00	2019-04-05 18:20 -08:00	1d 0h 4m	Anchorage AK	Anchorage AK
CAPE ANN	9848510	United States of America	Tug		2019-04-04 18:16 -08:00	2019-04-05 19:16 -08:00	1d 1h 0m	Valdez	
GLADYS M		United States of America	Tug		2019-04-04 11:32 -08:00	2019-04-04 17:13 -08:00	5h 41m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-04-04 08:50 -08:00	2019-04-05 16:18 -08:00	1d 7h 28m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-03 23:20 -08:00	2019-04-04 06:20 -08:00	7h 0m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-04-03 21:27 -08:00	2019-04-04 08:23 -08:00	10h 56m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-03 20:29 -08:00	2019-04-04 17:51 -08:00	21h 22m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-03 11:12 -08:00	2019-04-03 18:11 -08:00	6h 59m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-03 00:49 -08:00	2019-04-03 06:53 -08:00	6h 4m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-02 16:24 -08:00	2019-04-02 20:17 -08:00	3h 53m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-04-02 03:57 -08:00	2019-04-02 22:32 -08:00	18h 35m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-04-02 03:57 -08:00	2019-04-03 18:11 -08:00	1d 14h 14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-02 03:57 -08:00	2019-04-03 20:07 -08:00	1d 16h 10m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-04-02 03:00 -08:00	2019-04-02 03:24 -08:00	24m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-04-02 02:59 -08:00	2019-04-02 15:20 -08:00	12h 21m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-04-02 02:59 -08:00	2019-04-03 19:48 -08:00	1d 16h 49m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-04-02 02:53 -08:00	2019-04-02 03:22 -08:00	29m	Anchorage AK	Anchorage AK
GLADYS M		United States of America	Tug		2019-04-01 23:24 -08:00	2019-04-01 23:36 -08:00	12m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-01 12:57 -08:00	2019-04-01 18:23 -08:00	5h 26m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-01 06:38 -08:00	2019-04-01 12:24 -08:00	5h 46m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-04-01 04:34 -08:00	2019-04-01 05:43 -08:00	1h 9m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-03-31 23:53 -08:00	2019-04-01 03:46 -08:00	3h 53m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-03-31 18:13 -08:00	2019-03-31 18:18 -08:00	5m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-03-31 17:24 -08:00	2019-03-31 17:38 -08:00	14m	Anchorage AK	
GLADYS M		United States of America	Tug		2019-03-31 06:24 -08:00	2019-03-31 16:38 -08:00	10h 14m	Ketchikan	
STELLAR WIND	9096911	United States of America	Tug		2019-03-31 03:18 -08:00	2019-04-02 02:25 -08:00	1d 23h 7m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-03-31 03:18 -08:00	2019-04-01 01:28 -08:00	22h 10m	Tacoma	Kodiak
BERING WIND	9369198	United States of America	Tug		2019-03-31 03:17 -08:00	2019-04-02 02:23 -08:00	1d 23h 6m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-03-31 01:12 -08:00	-		Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-03-31 01:12 -08:00	2019-03-31 16:56 -08:00	15h 44m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-03-31 01:12 -08:00	2019-03-31 02:39 -08:00	1h 27m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-03-31 01:12 -08:00	2019-03-31 02:41 -08:00	1h 29m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-31 01:12 -08:00	2019-04-02 02:25 -08:00	2d 1h 13m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-03-31 00:47 -08:00	2019-03-31 00:55 -08:00	8m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-03-29 14:09 -08:00	2019-03-30 14:08 -08:00	23h 59m	Valdez	Valdez
STELLAR WIND	9096911	United States of America	Tug		2019-03-29 14:01 -08:00	2019-03-31 00:36 -08:00	1d 10h 35m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-28 14:44 -08:00	2019-03-31 00:36 -08:00	2d 9h 52m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-28 11:01 -08:00	2019-03-28 14:27 -08:00	3h 26m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-27 23:10 -08:00	2019-03-31 00:34 -08:00	3d 1h 24m	Anchorage AK	Anchorage AK
STI DONALD CTRAUSCHT	9794422	Marshall Islands	Chemical Oil Products Tanker	49990	2019-03-27 23:10 -08:00	2019-03-30 13:18 -08:00	2d 14h 8m	Yeosu	Daesan-Seosan
STELLAR WIND	9096911	United States of America	Tug		2019-03-27 23:09 -08:00	2019-03-29 13:40 -08:00	1d 14h 31m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-26 20:40 -08:00	2019-03-28 10:45 -08:00	1d 14h 5m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-26 11:35 -08:00	2019-03-26 20:29 -08:00	8h 54m	Anchorage AK	
ISLAND EXPLORER	7028996	United States of America	Tug		2019-03-26 09:39 -08:00	2019-03-26 11:15 -08:00	1h 36m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-03-26 07:41 -08:00	2019-03-27 22:29 -08:00	1d 14h 48m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-03-26 07:40 -08:00	2019-03-26 16:25 -08:00	8h 45m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-03-26 07:39 -08:00	2019-03-26 11:15 -08:00	3h 36m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-26 07:37 -08:00	2019-03-27 22:28 -08:00	1d 14h 51m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-03-26 04:42 -08:00	2019-03-26 07:12 -08:00	2h 30m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-26 04:37 -08:00	2019-03-26 07:03 -08:00	2h 26m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-03-26 04:36 -08:00	2019-03-26 21:29 -08:00	16h 53m	Tacoma	Kodiak
ISLAND EXPLORER	7028996	United States of America	Tug		2019-03-26 02:00 -08:00	2019-03-26 09:13 -08:00	7h 13m	Anchorage AK	Anchorage AK
ISLAND EXPLORER	7028996	United States of America	Tug		2019-03-25 21:36 -08:00	2019-03-26 01:21 -08:00	3h 45m	Anchorage AK	Anchorage AK
ISLAND EXPLORER	7028996	United States of America	Tug		2019-03-25 13:29 -08:00	2019-03-25 21:11 -08:00	7h 42m	Anchorage AK	Anchorage AK
ISLAND EXPLORER	7028996	United States of America	Tug		2019-03-25 08:28 -08:00	2019-03-25 12:52 -08:00	4h 24m	Anchorage AK	Anchorage AK
ISLAND EXPLORER	7028996	United States of America	Tug		2019-03-25 01:24 -08:00	2019-03-25 07:51 -08:00	6h 27m	Anchorage AK	Anchorage AK
TODD E PROPHET	9840740	United States of America	Tug		2019-03-24 21:25 -08:00	2019-03-25 22:07 -08:00	1d 0h 42m	Valdez	Valdez
BERING WIND	9369198	United States of America	Tug		2019-03-24 21:23 -08:00	2019-03-26 07:04 -08:00	1d 9h 41m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-03-24 20:33 -08:00	2019-03-26 03:42 -08:00	1d 7h 9m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-03-24 20:32 -08:00	2019-03-26 03:39 -08:00	1d 7h 7m	Anchorage AK	
ISLAND EXPLORER	7028996	United States of America	Tug		2019-03-24 20:27 -08:00	2019-03-25 00:49 -08:00	4h 22m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-03-24 20:12 -08:00	2019-03-24 20:20 -08:00	8m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-24 20:11 -08:00	2019-03-24 20:13 -08:00	2m	Anchorage AK	
ISLAND EXPLORER	7028996	United States of America	Tug		2019-03-24 20:11 -08:00	2019-03-24 20:12 -08:00	1m	Seattle	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-03-24 17:57 -08:00	2019-03-24 20:01 -08:00	2h 4m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-24 17:54 -08:00	2019-03-24 20:50 -08:00	2h 56m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-03-24 16:28 -08:00	2019-03-24 19:57 -08:00	3h 29m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-03-24 16:27 -08:00	2019-03-24 16:47 -08:00	20m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-03-24 07:04 -08:00	2019-03-25 01:54 -08:00	18h 50m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-03-24 06:28 -08:00	2019-03-24 16:17 -08:00	9h 49m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-03-24 06:27 -08:00	2019-03-24 16:46 -08:00	10h 19m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-03-24 06:26 -08:00	2019-03-24 16:45 -08:00	10h 19m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-03-24 06:00 -08:00	2019-03-24 06:07 -08:00	7m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-03-23 15:30 -08:00	2019-03-24 16:16 -08:00	1d 0h 46m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-21 13:56 -08:00	2019-03-24 05:50 -08:00	2d 15h 54m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-03-21 09:36 -08:00	2019-03-24 05:53 -08:00	2d 20h 17m	Anchorage AK	
HARBOUR PIONEER	9572757	Portugal	Chemical Oil Products Tanker	19122	2019-03-20 17:12 -08:00	2019-03-21 14:37 -08:00	21h 25m	Vancouver	Vancouver
STELLAR WIND	9096911	United States of America	Tug		2019-03-20 17:11 -08:00	2019-03-23 15:18 -08:00	2d 22h 7m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-20 17:11 -08:00	2019-03-21 13:45 -08:00	20h 34m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-03-19 20:45 -08:00	2019-03-20 16:40 -08:00	19h 55m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-19 16:39 -08:00	2019-03-21 07:22 -08:00	1d 14h 43m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-19 16:38 -08:00	2019-03-20 16:39 -08:00	1d 0h 1m	Anchorage AK	Anchorage AK
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-03-19 16:29 -08:00	2019-03-20 03:24 -08:00	10h 55m	Tacoma	Tacoma
STELLAR WIND	9096911	United States of America	Tug		2019-03-19 16:29 -08:00	2019-03-19 20:35 -08:00	4h 6m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-03-19 04:46 -08:00	2019-03-19 22:08 -08:00	17h 22m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-03-19 04:44 -08:00	2019-03-19 16:04 -08:00	11h 20m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-19 04:40 -08:00	2019-03-19 16:08 -08:00	11h 28m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-03-18 02:04 -08:00	2019-03-19 04:12 -08:00	1d 2h 8m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-03-17 06:22 -08:00	2019-03-18 01:52 -08:00	19h 30m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-03-17 06:15 -08:00	2019-03-18 01:52 -08:00	19h 37m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-17 06:14 -08:00	2019-03-19 04:12 -08:00	1d 21h 58m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-17 01:11 -08:00	2019-03-17 05:31 -08:00	4h 20m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-03-17 01:11 -08:00	2019-03-17 05:29 -08:00	4h 18m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-03-17 01:11 -08:00	2019-03-17 16:40 -08:00	15h 29m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-03-17 01:11 -08:00	2019-03-19 16:01 -08:00	2d 14h 50m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-03-16 22:00 -08:00	2019-03-17 00:58 -08:00	2h 58m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-16 14:27 -08:00	2019-03-17 00:29 -08:00	10h 2m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-03-16 14:13 -08:00	2019-03-16 14:17 -08:00	4m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-03-14 15:06 -08:00	2019-03-17 00:29 -08:00	2d 9h 23m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-14 12:44 -08:00	2019-03-14 14:16 -08:00	1h 32m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-03-13 15:15 -08:00	2019-03-16 21:48 -08:00	3d 6h 33m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-13 15:11 -08:00	2019-03-16 14:03 -08:00	2d 22h 52m	Anchorage AK	Anchorage AK
TODD E PROPHET	9840740	United States of America	Tug		2019-03-12 22:05 -08:00	2019-03-14 01:05 -08:00	1d 3h 0m	Valdez	Homer
GLACIER WIND	8662593	United States of America	Tug		2019-03-12 22:05 -08:00	2019-03-14 11:21 -08:00	1d 13h 16m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-03-12 21:09 -08:00	2019-03-13 15:04 -08:00	17h 55m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-03-12 21:08 -08:00	2019-03-13 15:37 -08:00	18h 29m	Port Angeles	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-03-12 21:08 -08:00	2019-03-12 21:25 -08:00	17m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-12 21:07 -08:00	2019-03-13 15:00 -08:00	17h 53m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-03-12 08:29 -08:00	2019-03-12 20:42 -08:00	12h 13m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-03-12 08:28 -08:00	2019-03-12 23:27 -08:00	14h 59m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-03-12 08:28 -08:00	2019-03-12 20:36 -08:00	12h 8m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-03-10 07:09 -08:00	2019-03-11 01:23 -08:00	18h 14m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-03-10 07:08 -08:00	2019-03-12 07:56 -08:00	2d 0h 48m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-10 06:26 -08:00	2019-03-12 20:42 -08:00	2d 14h 16m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-03-10 06:23 -08:00	2019-03-10 18:00 -08:00	11h 37m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-03-10 06:22 -08:00	2019-03-10 06:47 -08:00	25m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-03-10 06:06 -08:00	2019-03-12 07:56 -08:00	2d 1h 50m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-09 23:12 -09:00	2019-03-10 05:47 -08:00	5h 35m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-07 11:53 -09:00	2019-03-09 22:14 -09:00	2d 10h 21m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-07 08:01 -09:00	2019-03-07 11:40 -09:00	3h 39m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-06 04:11 -09:00	2019-03-07 07:42 -09:00	1d 3h 31m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-06 04:09 -09:00	2019-03-10 05:47 -08:00	4d 0h 38m	Anchorage AK	Anchorage AK
CAPE ORLANDO	7909968	United States of America	Vehicles Carrier	20731	2019-03-06 04:09 -09:00	2019-03-07 16:28 -09:00	1d 12h 19m	Port Angeles	
STELLAR WIND	9096911	United States of America	Tug		2019-03-06 01:38 -09:00	2019-03-10 05:49 -08:00	4d 3h 11m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-03-05 05:10 -09:00	2019-03-05 22:19 -09:00	17h 9m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-03-05 05:08 -09:00	2019-03-06 03:54 -09:00	22h 46m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-03-05 04:03 -09:00	2019-03-05 04:55 -09:00	52m	Anchorage AK	
CHALLENGE PRELUDE	9333278	Hong Kong	Oil Products Tanker	48555	2019-03-05 04:03 -09:00	2019-03-06 15:34 -09:00	1d 11h 31m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-03-05 04:00 -09:00	2019-03-06 03:54 -09:00	23h 54m	Anchorage AK	Anchorage AK
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-03-05 03:15 -09:00	2019-03-05 14:32 -09:00	11h 17m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-03-05 03:11 -09:00	2019-03-05 03:45 -09:00	34m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-05 03:09 -09:00	2019-03-05 03:44 -09:00	35m	Anchorage AK	Anchorage AK
CAPE ANN	9848510	United States of America	Tug		2019-03-04 16:59 -09:00	2019-03-05 17:44 -09:00	1d 0h 45m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-03-04 16:58 -09:00	2019-03-05 02:35 -09:00	9h 37m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-03-04 16:40 -09:00	2019-03-05 17:43 -09:00	1d 1h 3m	Anchorage AK	

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-03-03 03:06 -09:00	2019-03-04 04:01 -09:00	1d 0h 55m	Tacoma	Kodiak
BERING WIND	9369198	United States of America	Tug		2019-03-03 01:53 -09:00	2019-03-05 02:35 -09:00	2d 0h 42m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-03-03 01:52 -09:00	2019-03-03 15:27 -09:00	13h 35m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-03-03 01:50 -09:00	2019-03-04 16:25 -09:00	1d 14h 35m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-03-03 01:26 -09:00	2019-03-03 01:29 -09:00	3m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-03-02 22:29 -09:00	2019-03-04 08:59 -09:00	1d 10h 30m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-28 13:53 -09:00	2019-03-03 01:05 -09:00	2d 11h 12m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-02-28 04:34 -09:00	2019-03-02 22:19 -09:00	2d 17h 45m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-02-27 00:11 -09:00	2019-02-28 01:46 -09:00	1d 1h 35m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-02-27 00:11 -09:00	2019-02-28 13:34 -09:00	1d 13h 23m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-02-26 23:53 -09:00	2019-02-28 01:44 -09:00	1d 1h 51m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-26 07:35 -09:00	2019-02-26 23:55 -09:00	16h 20m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-02-26 07:35 -09:00	2019-02-26 16:08 -09:00	8h 33m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-02-26 07:25 -09:00	2019-03-03 01:05 -09:00	4d 17h 40m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-02-26 06:56 -09:00	2019-02-26 07:06 -09:00	10m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-02-26 06:53 -09:00	2019-02-26 16:08 -09:00	9h 15m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-02-26 04:26 -09:00	2019-02-26 21:34 -09:00	17h 8m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-02-26 04:26 -09:00	2019-02-26 07:20 -09:00	2h 54m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-02-26 03:41 -09:00	2019-02-26 06:40 -09:00	2h 59m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-02-24 09:06 -09:00	2019-02-25 02:31 -09:00	17h 25m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-02-24 09:05 -09:00	2019-02-26 03:47 -09:00	1d 18h 42m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-02-24 06:48 -09:00	2019-02-26 06:43 -09:00	1d 23h 55m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-02-24 06:48 -09:00	2019-02-24 18:24 -09:00	11h 36m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-02-24 06:46 -09:00	2019-02-24 08:40 -09:00	1h 54m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-02-24 06:27 -09:00	2019-02-24 06:32 -09:00	5m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-02-21 13:45 -09:00	2019-02-24 06:34 -09:00	2d 16h 49m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-21 09:03 -09:00	2019-02-21 13:27 -09:00	4h 24m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-21 07:53 -09:00	2019-02-21 07:56 -09:00	3m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-02-19 05:25 -09:00	2019-02-19 21:46 -09:00	16h 21m	Tacoma	Kodiak
BERING WIND	9369198	United States of America	Tug		2019-02-19 05:25 -09:00	2019-02-24 06:10 -09:00	5d 0h 45m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-02-19 05:25 -09:00	2019-02-21 07:36 -09:00	2d 2h 11m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-02-19 03:20 -09:00	2019-02-19 14:23 -09:00	11h 3m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-02-19 03:19 -09:00	2019-02-19 04:44 -09:00	1h 25m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-02-17 21:04 -09:00	2019-02-26 03:30 -09:00	8d 6h 26m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-17 21:00 -09:00	2019-02-19 04:47 -09:00	1d 7h 47m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-02-17 07:51 -09:00	2019-02-17 20:53 -09:00	13h 2m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-02-17 06:07 -09:00	2019-02-17 22:02 -09:00	15h 55m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-02-17 06:06 -09:00	2019-02-17 20:49 -09:00	14h 43m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-02-17 06:03 -09:00	2019-02-19 03:03 -09:00	1d 21h 0m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-02-17 05:36 -09:00	2019-02-17 05:47 -09:00	11m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-02-17 01:54 -09:00	2019-02-17 05:25 -09:00	3h 31m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-02-17 01:54 -09:00	2019-02-17 15:40 -09:00	13h 46m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-02-17 01:52 -09:00	2019-02-17 05:47 -09:00	3h 55m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-02-16 03:01 -09:00	2019-02-17 04:37 -09:00	1d 1h 36m	Valdez	Valdez
STELLAR WIND	9096911	United States of America	Tug		2019-02-16 02:46 -09:00	2019-02-17 04:35 -09:00	1d 1h 49m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-14 19:13 -09:00	2019-02-17 01:36 -09:00	2d 6h 23m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-02-14 18:04 -09:00	2019-02-15 20:58 -09:00	1d 2h 54m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-02-14 18:03 -09:00	2019-02-17 01:34 -09:00	2d 7h 31m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-02-14 12:37 -09:00	2019-02-14 18:41 -09:00	6h 4m	Anchorage AK	
STI DONALD CTRAUSCHT	9794422	Marshall Islands	Chemical Oil Products Tanker	49990	2019-02-12 22:57 -09:00	2019-02-14 17:56 -09:00	1d 18h 59m	Anchorage AK	Yosu
BERING WIND	9369198	United States of America	Tug		2019-02-12 22:56 -09:00	2019-02-14 17:52 -09:00	1d 18h 56m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-02-12 14:27 -09:00	2019-02-14 12:22 -09:00	1d 21h 55m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-02-12 07:59 -09:00	2019-02-12 22:14 -09:00	14h 15m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-02-12 07:58 -09:00	2019-02-12 14:15 -09:00	6h 17m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-12 07:23 -09:00	2019-02-12 07:45 -09:00	22m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-02-12 07:23 -09:00	2019-02-12 15:43 -09:00	8h 20m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-02-12 07:22 -09:00	2019-02-12 22:32 -09:00	15h 10m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-02-12 06:47 -09:00	2019-02-12 07:05 -09:00	18m	Anchorage AK	
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-02-10 07:18 -09:00	2019-02-10 16:23 -09:00	9h 5m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-02-10 07:18 -09:00	2019-02-12 06:57 -09:00	1d 23h 39m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-02-10 07:14 -09:00	2019-02-12 06:28 -09:00	1d 23h 14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-02-10 06:53 -09:00	2019-02-10 07:01 -09:00	8m	Anchorage AK	Anchorage AK
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-02-10 06:23 -09:00	2019-02-10 22:12 -09:00	15h 49m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-02-10 06:23 -09:00	2019-02-10 07:01 -09:00	38m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-02-08 08:07 -09:00	2019-02-09 08:24 -09:00	1d 0h 17m	Valdez	Valdez
GLACIER WIND	8662593	United States of America	Tug		2019-02-08 08:07 -09:00	2019-02-10 05:37 -09:00	1d 21h 30m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-02-08 07:44 -09:00	2019-02-14 17:52 -09:00	6d 10h 8m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-07 09:18 -09:00	2019-02-08 07:34 -09:00	22h 16m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-05 21:16 -09:00	2019-02-07 07:37 -09:00	1d 10h 21m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-05 05:21 -09:00	2019-02-05 21:04 -09:00	15h 43m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-02-05 05:20 -09:00	2019-02-05 22:13 -09:00	16h 53m	Tacoma	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-02-05 04:10 -09:00	2019-02-05 14:21 -09:00	10h 11m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-02-05 04:02 -09:00	2019-02-10 06:39 -09:00	5d 2h 37m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-02-05 03:42 -09:00	2019-02-05 04:59 -09:00	1h 17m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-03 16:07 -09:00	2019-02-05 03:21 -09:00	1d 11h 14m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-02-03 16:04 -09:00	2019-02-05 03:42 -09:00	1d 11h 38m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-02-03 07:20 -09:00	2019-02-03 15:48 -09:00	8h 28m	Anchorage AK	Anchorage AK
TODD E PROPHET	9840740	United States of America	Tug		2019-02-03 06:06 -09:00	2019-02-04 07:36 -09:00	1d 1h 30m	Anacortes WA	Valdez
STELLAR WIND	9096911	United States of America	Tug		2019-02-03 06:05 -09:00	2019-02-08 02:37 -09:00	4d 20h 32m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-03 04:09 -09:00	2019-02-03 15:48 -09:00	11h 39m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-02-03 04:09 -09:00	2019-02-04 02:19 -09:00	22h 10m	Tacoma	Kodiak
BERING WIND	9369198	United States of America	Tug		2019-02-03 03:09 -09:00	2019-02-03 06:36 -09:00	3h 27m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-02-03 03:09 -09:00	2019-02-03 16:56 -09:00	13h 47m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-02-03 03:04 -09:00	2019-02-03 03:53 -09:00	49m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-02-03 02:38 -09:00	2019-02-03 02:45 -09:00	7m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-02-03 02:36 -09:00	2019-02-03 02:45 -09:00	9m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-02-01 17:33 -09:00	2019-02-03 02:16 -09:00	1d 8h 43m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-02-01 17:32 -09:00	2019-02-03 06:42 -09:00	1d 13h 10m	Valdez	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-02-01 15:50 -09:00	2019-02-03 05:18 -09:00	1d 13h 28m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-31 18:12 -09:00	2019-02-01 15:37 -09:00	21h 25m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-01-31 15:55 -09:00	2019-02-03 02:17 -09:00	2d 10h 22m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-01-31 15:01 -09:00	2019-01-31 17:58 -09:00	2h 57m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-31 05:35 -09:00	2019-01-31 14:11 -09:00	8h 36m	Anchorage AK	
CHALLENGE PRELUDE	9333278	Hong Kong	Oil Products Tanker	48555	2019-01-31 05:35 -09:00	2019-02-01 17:11 -09:00	1d 11h 36m	Anchorage AK	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-01-31 05:34 -09:00	2019-02-01 05:05 -09:00	23h 31m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-29 22:10 -09:00	2019-01-31 05:06 -09:00	1d 6h 56m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-01-29 22:09 -09:00	2019-01-31 05:06 -09:00	1d 6h 57m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-29 20:58 -09:00	2019-01-29 21:56 -09:00	58m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-01-29 20:57 -09:00	2019-01-29 21:55 -09:00	58m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-01-29 14:55 -09:00	2019-01-29 20:46 -09:00	5h 51m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-01-29 04:24 -09:00	2019-01-29 21:55 -09:00	17h 31m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-01-29 04:23 -09:00	2019-01-29 20:47 -09:00	16h 24m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-01-29 04:23 -09:00	2019-01-29 14:44 -09:00	10h 21m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-28 22:24 -09:00	2019-01-29 03:56 -09:00	5h 32m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-01-28 22:19 -09:00	2019-01-29 15:43 -09:00	17h 24m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-01-28 22:18 -09:00	2019-01-31 15:24 -09:00	2d 17h 6m	Anchorage AK	Anchorage AK
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-01-27 08:13 -09:00	2019-01-28 04:36 -09:00	20h 23m	Tacoma	
GLACIER WIND	8662593	United States of America	Tug		2019-01-27 08:10 -09:00	2019-01-28 22:09 -09:00	1d 13h 59m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-01-26 20:11 -09:00	2019-01-28 21:52 -09:00	2d 1h 41m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-01-26 20:10 -09:00	2019-01-27 16:17 -09:00	20h 7m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-01-26 20:08 -09:00	2019-01-27 07:57 -09:00	11h 49m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-01-24 20:29 -09:00	2019-01-29 03:54 -09:00	4d 7h 25m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-01-22 05:52 -09:00	2019-01-22 22:53 -09:00	17h 1m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-01-22 05:51 -09:00	2019-01-26 19:54 -09:00	4d 14h 3m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-01-22 04:49 -09:00	2019-01-22 15:47 -09:00	10h 58m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-01-22 04:49 -09:00	2019-01-22 05:39 -09:00	50m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-01-22 04:49 -09:00	2019-01-26 19:33 -09:00	4d 14h 44m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-01-21 17:45 -09:00	2019-01-22 04:37 -09:00	10h 52m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-01-21 17:45 -09:00	2019-01-23 07:38 -09:00	1d 13h 53m	Valdez	Valdez
STELLAR WIND	9096911	United States of America	Tug		2019-01-21 17:16 -09:00	2019-01-23 07:37 -09:00	1d 14h 21m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-21 17:08 -09:00	2019-01-21 17:20 -09:00	12m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-01-20 04:42 -09:00	2019-01-21 02:30 -09:00	21h 48m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-01-20 04:39 -09:00	2019-01-21 16:58 -09:00	1d 12h 19m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-01-20 03:03 -09:00	2019-01-22 04:33 -09:00	2d 1h 30m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-01-20 02:57 -09:00	2019-01-20 17:12 -09:00	14h 15m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-01-20 02:57 -09:00	2019-01-20 04:24 -09:00	1h 27m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-01-20 02:27 -09:00	2019-01-20 02:38 -09:00	11m	Anchorage AK	Anchorage AK
BERING WIND	9369198	United States of America	Tug		2019-01-18 11:48 -09:00	2019-01-20 02:16 -09:00	1d 14h 28m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-01-17 17:47 -09:00	2019-01-20 02:38 -09:00	2d 8h 51m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-17 12:32 -09:00	2019-01-17 17:27 -09:00	4h 55m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-01-17 11:49 -09:00	2019-01-21 05:01 -09:00	3d 17h 12m	Port MacKenzie	
STELLAR WIND	9096911	United States of America	Tug		2019-01-16 12:26 -09:00	2019-01-17 11:16 -09:00	22h 50m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-01-16 12:10 -09:00	2019-01-18 11:36 -09:00	1d 23h 26m	Port MacKenzie	Anchorage AK
STELLAR WIND	9096911	United States of America	Tug		2019-01-15 15:58 -09:00	2019-01-16 02:08 -09:00	10h 10m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-15 15:58 -09:00	2019-01-17 12:19 -09:00	1d 20h 21m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-01-15 15:58 -09:00	2019-01-16 11:15 -09:00	19h 17m	Anchorage AK	Anchorage AK
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-01-15 03:24 -09:00	2019-01-16 00:46 -09:00	21h 22m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-01-15 03:23 -09:00	2019-01-15 15:47 -09:00	12h 24m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-15 02:40 -09:00	2019-01-15 02:57 -09:00	17m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-01-14 22:13 -09:00	2019-01-15 16:40 -09:00	18h 27m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-01-14 22:05 -09:00	2019-01-15 15:47 -09:00	17h 42m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-01-14 21:41 -09:00	2019-01-15 02:26 -09:00	4h 45m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-01-14 21:33 -09:00	2019-01-14 21:47 -09:00	14m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-01-14 11:43 -09:00	2019-01-14 21:20 -09:00	9h 37m	Anchorage AK	
CAPE ANN	9848510	United States of America	Tug		2019-01-14 11:41 -09:00	2019-01-16 02:10 -09:00	1d 14h 29m	Valdez	Valdez
STELLAR WIND	9096911	United States of America	Tug		2019-01-14 11:14 -09:00	2019-01-15 15:48 -09:00	1d 4h 34m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-01-13 03:41 -09:00	2019-01-14 00:16 -09:00	20h 35m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-01-13 03:35 -09:00	2019-01-14 11:16 -09:00	1d 7h 41m	Anchorage AK	
BERING WIND	9369198	United States of America	Tug		2019-01-12 20:31 -09:00	2019-01-14 21:20 -09:00	2d 0h 49m	Anchorage AK	Anchorage AK
MIDNIGHT SUN	92322780	United States of America	Ro Ro Cargo Ship	22437	2019-01-12 20:30 -09:00	2019-01-13 17:42 -09:00	21h 12m	Tacoma	Tacoma
GLACIER WIND	8662593	United States of America	Tug		2019-01-12 20:29 -09:00	2019-01-13 03:18 -09:00	6h 49m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-01-10 04:37 -09:00	2019-01-14 00:19 -09:00	3d 19h 42m	Anchorage AK	
HARBOUR PIONEER	9572757	Portugal	Chemical Oil Products Tanker	19122	2019-01-09 06:10 -09:00	2019-01-10 03:54 -09:00	21h 44m	Vancouver	Dutch Harbor
GLACIER WIND	8662593	United States of America	Tug		2019-01-09 06:10 -09:00	2019-01-12 19:38 -09:00	3d 13h 28m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-08 22:17 -09:00	2019-01-09 05:26 -09:00	7h 9m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-01-08 22:17 -09:00	2019-01-09 19:40 -09:00	21h 23m	Anchorage AK	
TODD E PROPHET	9840740	United States of America	Tug		2019-01-08 06:56 -09:00	2019-01-09 19:41 -09:00	1d 12h 45m	Valdez	
STELLAR WIND	9096911	United States of America	Tug		2019-01-08 06:39 -09:00	2019-01-08 22:05 -09:00	15h 26m	Anchorage AK	
MATSON KODIAK	8419166	United States of America	Container Ship	20668	2019-01-08 05:25 -09:00	2019-01-08 23:02 -09:00	17h 37m	Tacoma	Kodiak
GLACIER WIND	8662593	United States of America	Tug		2019-01-08 05:24 -09:00	2019-01-08 22:03 -09:00	16h 39m	Anchorage AK	
NORTHSTAR	9232280	United States of America	Ro Ro Cargo Ship	22437	2019-01-07 05:54 -09:00	2019-01-07 18:46 -09:00	12h 52m	Tacoma	Tacoma
BERING WIND	9369198	United States of America	Tug		2019-01-07 05:53 -09:00	2019-01-12 20:13 -09:00	5d 14h 20m	Anchorage AK	Anchorage AK
GLACIER WIND	8662593	United States of America	Tug		2019-01-07 02:35 -09:00	2019-01-08 04:34 -09:00	1d 1h 59m	Anchorage AK	
MATSON TACOMA	8419154	United States of America	Container Ship	20668	2019-01-06 04:36 -09:00	2019-01-07 04:27 -09:00	23h 51m	Tacoma	Kodiak
STI DONALD CTRAUSCHT	9794422	Marshall Islands	Chemical Oil Products Tanker	49990	2019-01-05 04:23 -09:00	2019-01-07 03:12 -09:00	1d 22h 49m	Yeosu	Anchorage AK

Count	Average DWT

shipName	imo	shipCountry	type	dwt	portCallStart	portCallEnd	portCallDuration	previousPort	nextPort
STELLAR WIND	9096911	United States of America	Tug		2019-01-05 04:22 -09:00	2019-01-08 00:26 -09:00	2d 20h 4m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-05 03:44 -09:00	2019-01-07 02:25 -09:00	1d 22h 41m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-03 14:27 -09:00	2019-01-05 03:33 -09:00	1d 13h 6m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-03 10:53 -09:00	2019-01-03 14:10 -09:00	3h 17m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-03 09:15 -09:00	2019-01-03 10:35 -09:00	1h 20m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-02 05:32 -09:00	2019-01-03 06:24 -09:00	1d 0h 52m	Anchorage AK	
MATSON ANCHORAGE	8419142	United States of America	Container Ship	21282	2019-01-02 05:32 -09:00	2019-01-03 06:24 -09:00	1d 0h 52m	Tacoma	Kodiak
STELLAR WIND	9096911	United States of America	Tug		2019-01-02 05:32 -09:00	2019-01-05 03:57 -09:00	2d 22h 25m	Anchorage AK	
STELLAR WIND	9096911	United States of America	Tug		2019-01-01 08:01 -09:00	2019-01-02 05:02 -09:00	21h 1m	Anchorage AK	
GLACIER WIND	8662593	United States of America	Tug		2019-01-01 08:00 -09:00	2019-01-02 05:12 -09:00	21h 12m	Anchorage AK	

Count	Average DWT

	TEU count through POA			
	Inbound	Outbound	Total	Lifts
1996	169,616	168,154	337,770	154,776
1997	173,118	163,792	336,910	154,382
1998	179,860	178,620	358,480	164,266
1999	184,312	183,498	367,810	168,541
2000	229,322	195,474	424,796	194,654
2001	196,548	164,066	360,614	165,244
2002	270,436	201,970	472,406	216,470
2003	292,188	229,805	521,993	239,192
2004	306,595	237,236	543,831	249,199
2005	314,143	242,428	556,571	255,037
2006				-
2007				-
2008				-
2009				-
2010	256,656	189,158	445,814	204,285
2011	250,950	177,889	423,381	194,005
2012	253,724	317,564	571,288	261,780
2013	251,023	325,164	576,187	264,025
2014	186,493	229,625	416,118	190,677
2015	258,737	226,785	485,522	222,480
2016	248,135	223,028	471,163	215,900
2017	236,710	215,043	451,753	207,006
2018	248,826	204,745	453,571	207,839
2019	387,526	222,053	609,579	279,326
2020	253,178	210,368	463,546	212,410

Volume splits	Domestic (53')	45'	40'	20'
TOTE	50.00 %	-	50.00 %	-
Matson	-	40.00 %	60.00 %	-
Total	**25.00 %**	**20.00 %**	**55.00 %**	**-**
Ratio	*2.6500*	*2.2500*	*2.0000*	

	Mode	Within AK	From AK	To AK	Total	Mode Share
Domestic	Truck	18,154	231	123	18,508	29.50 %
	Rail	3,099	3		3,102	4.90 %
	Water	310	26,555	2,181	29,046	46.30 %
	Air (including truck-air)	108	15	68	191	0.30 %
	Multiple modes & mail	111	133	991	1,235	2.00 %
	Pipeline	8,731	-	1,907	10,638	17.00 %
	Total	**30,513**	**26,937**	**5,270**	**62,720**	**100.00 %**
Imports	Truck	800	25	13	838	26.20 %
	Rail	236	1	19	256	8.00 %
	Water	488	1	55	544	17.00 %
	Air (including truck-air)	349	603	21	973	30.40 %
	Multiple modes & mail	9	6	160	175	5.50 %
	Pipeline	418	-	-	418	13.00 %
	Total	**2,300**	**636**	**268**	**3,204**	**100.10 %**
Exports	Truck	1,022	12	14	1,048	27.90 %
	Rail	636	1	1	638	17.00 %
	Water	226	71	133	430	11.40 %
	Air (including truck-air)	126	29	399	554	14.70 %
	Multiple modes & mail	3	84	818	905	24.10 %
	Pipeline	183	-	-	183	4.90 %
	Total	**2,196**	**197**	**1,365**	**3,758**	**100.00 %**

Source: *https://www.muni.org/Departments/OCPD/Planning/AMATS/Documents/Freight_Mobility/Study_2016/Draft_FMS.pdf*

	Mode	Within AK	From AK	To AK	Total	Truck %
Totals	Truck	19,976	268	150	20,394	83.62 %
	Rail	3,971	5	20	3,996	

Trends Figure 6. Large Trucks and Passenger Vehicles Involved in Property Damage Only (PDO) Crashes per 100 Million Vehicle Miles Traveled by Vehicle Type, 1999-2019

Year	Trucks	r
1999	182.2	281.8
2000	170.9	280.9
2001	160.3	275.4
2002	156.3	274.3
2003	166.7	269.6
2004	146.9	260.4
2005	159.2	257.8
2006	134.7	251.7
2007	109.5	260.9
2008	99.6	257.8
2009	83.0	248.8
2010	74.7	243.8
2011	82.7	238.5
2012	93.9	247.0
2013	96.3	252.6
2014	123.9	269.6
2015	122.0	274.7
2016*	122.0	270.8
2017*	122.1	227.8
2018*	135.7	239.9
2019*	138.0	237.9

Notes: A large truck is defined as a truck with a gross vehicle weight rating (GVWR) greater than 10,000 pounds. A passenger vehicle is defined as a car or light truck (including pickups, vans, and sport utility vehicles). The Federal Highway Administration (FHWA) implemented an enhanced methodology for estimating registered vehicles and vehicle miles traveled (VMT) by vehicle type beginning with data from 2007. As a result, involvement rates may differ, and in some cases significantly, from earlier years. Beginning with data for 2016, the National Highway Traffic Safety Administration (NHTSA) replaced the General Estimates System (GES) with the Crash Report Sampling System (CRSS). Comparisons of 2016 (and later) CRSS estimates with older GES estimates should be performed with caution. The rates depicted in this figure are based on unrounded GES and CRSS data.
Sources: VMT and Registered Vehicles: FHWA, Highway Statistics 2019. PDO Crashes and Vehicles Involved: NHTSA, GES (1999-2015) and CRSS (2016-2019).

Trends Figure 3. Fatalities in Crashes Involving Large Trucks and Passenger Vehicles per 100 Million Vehicle Miles Traveled by Vehicle Type, 1975-2019

Year	Large Trucks	Passenger Vehicles
1975	5.5	3.3
1976	5.8	3.1
1977	6.0	3.1
1978	6.0	3.1
1979	6.1	3.2
1980	5.5	3.2
1981	5.3	3.0
1982	4.7	2.7
1983	4.7	2.5
1984	4.6	2.5
1985	4.6	2.4
1986	4.4	2.4
1987	4.2	2.4
1988	4.1	2.3
1989	3.8	2.2
1990	3.6	2.1
1991	3.2	1.9
1992	2.9	1.7
1993	3.0	1.8
1994	3.0	1.7
1995	2.8	1.8
1996	2.8	1.7
1997	2.8	1.7
1998	2.7	1.6
1999	2.7	1.6
2000	2.6	1.5
2001	2.4	1.5
2002	2.3	1.5
2003	2.3	1.5
2004	2.4	1.4
2005	2.4	1.4
2006	2.3	1.4
2007	1.6	1.4
2008	1.4	1.2
2009	1.2	1.1
2010	1.3	1.1
2011	1.4	1.1
2012	1.5	1.1
2013	1.4	1.1
2014	1.4	1.1
2015	1.5	1.1
2016†	1.6	1.2
2017†	1.6	1.1
2018†	1.6	1.1
2019†	1.7	1.1

†Beginning with data for 2016, the National Highway Traffic Safety Administration (NHTSA) implemented changes to revise vehicle classification based on gross vehicle weight
Notes: A large truck is defined as a truck with a GVWR greater than 10,000 pounds. A passenger vehicle is defined as a car or light truck (including pickups, vans, and sport utility
Sources: VMT: FHWA, *Highway Statistics 2019*. Fatal Crashes, Vehicles Involved, and Fatalities: NHTSA, FARS.

Trends Figure 5. Persons Injured in Large Truck and Passenger Vehicle Crashes per 100 Million Vehicle Miles Traveled by Vehicle Type, 1999-2019

Year	Large Trucks	Passenger Vehicles
1999	69.9	128.5
2000	68.0	123.8
2001	62.5	115.7
2002	60.4	109.1
2003	56.0	106.5
2004	52.6	99.7
2005	51.2	95.5
2006	47.5	90.2
2007	33.2	89.6
2008	28.8	86.1
2009	25.6	81.6
2010	27.9	82.0
2011	32.9	81.3
2012	38.6	85.9
2013	34.6	83.7
2014	39.8	83.6
2015	41.5	85.3
2016*	46.7	104.5
2017*	49.7	88.6
2018*	49.4	86.4
2019*	52.8	86.5

Notes: A large truck is defined as a truck with a gross vehicle weight rating (GVWR) greater than 10,000 pounds. A passenger vehicle is defined as a car or light truck (including pickups,
Sources: Vehicle Miles Traveled: FHWA, *Highway Statistics 2019*. Injury Crashes, Vehicles Involved, and Persons Injured: NHTSA, GES (1999-2015) and CRSS (2016-2019).

2000 Anchorage Port Road
Anchorage, Alaska 99501
907-343-6200
PortOfAlaska@AnchorageAK.gov
PortOfAlaska.com

May 12, 2022

Secretary Pete Buttigieg
US Department of Transportation
1200 New Jersey Avenue SE
Washington DC, 20590

Dear Secretary Buttigieg:

Port of Alaska in Anchorage submits the attached PIDP grant application with a true sense of urgency. Our facility opened in 1961 and is today Alaska's primary inbound cargo port that handles half of the fuel and freight shipped into Alaska annually, which directly benefits 90 percent of all state residents. Port of Alaska also serves our nation as one of 18 U.S. Department of Defense designated commercial strategic seaports. Alaska's population is too small to cost-effectively support redundant inbound cargo ports. Unfortunately, Port of Alaska's aging docks and related infrastructure has long exceeded its economic and design life and is on the verge of failing. This grant application seeks funds to support our North Extension Stabilization project that must be constructed before we can replace Port of Alaska's failing cargo docks.

The North Extension Stabilization Project Step 1 will improve Port of Alaska's seismic stability and enable safe and sustainable vessel docking operations. This project is critical to economically maintaining Alaska's statewide freight and fuel distribution network that benefits more than 150 cities, towns, remote villages, military bases, worker camps and other communities statewide. It will support national defense missions across Alaska and around the world. And it will significantly improve infrastructure resiliency in North America's most seismically active region.

Our North Extension Stabilization Project Step 1 aligns with critical federal goals. It will revitalize aging public infrastructure that supports economic development, and reduced-carbon cargo transport to communities that have been historically underserved, marginalized and adversely affected by persistent poverty and inequality. It will support U.S. national defense interests. And it is poised to create hundreds of Alaska jobs almost as soon as project funding is secured.

I certify that the local matching funds to support the estimated eligible future costs to complete the North Extension Stabilization Project Step 1 have been identified and committed by the Municipality of Anchorages' Port of Alaska. Currently, the Port's portion of the local match is $45.8 million. The request of $68.7 million from the PIDP grant completes the project's total projected future costs of $114.5 million and represents 100 percent of the total projected future project cost.

This requested PIDP grant award for Port of Alaska's North Extension Stabilization Project Step 1 represents a relatively small U.S. Department of Transportation investment in a project that will provide oversized economic, climate change, social justice and defense benefits to an entire state and the nation.

Sincerely,

Stephen Ribuffo

Stephen Ribuffo, Director
Port of Alaska

THE NORTHWEST
SEAPORT ALLIANCE
Gateway to Solutions
nwseaportalliance.com

May 11, 2022

The Honorable Pete Buttigieg
U.S. Secretary of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Subject: Support for the Port of Alaska's North Extension Stabilization Project INFRA/Mega Grant Application

Dear Secretary Buttigieg:

The Northwest Seaport Alliance (NWSA) is pleased to support the Port of Alaska's Nationally Significant Multimodal Freight and Highway Projects Program/Mega (INFRA/Mega) grant application for the North Extension Stabilization Project. This work is a key component of Port of Alaska's (POA) overall Modernization Program, a multi-year effort to update critical infrastructure that handles 50 percent of all cargo moving to and from the state of Alaska.

The NWSA is a partnership between the Ports of Seattle and Tacoma for the joint management of our marine cargo facilities. We are the fourth largest gateway for containerized cargo in North America and support an estimated 58,400 jobs. An important part of our business is moving goods to and from Alaska which represents about 20 percent of the NWSA's containerized cargo volumes. In turn, we provide nearly 90 percent of all the goods consumed in the state. Our gateway brings essential items to Alaska like groceries, consumer goods, automobiles, and project-related cargo to support natural resource development and vessels returning from Alaska bring an abundance of seafood to the lower 48 for domestic consumption and foreign export.

Successful completion of the North Extension Stabilization Project is a key step in furthering the Port of Alaska Modernization Program. Our domestic carrier customers that move cargo between our Gateway and the Port of Alaska have four vessel services a week and move roughly 380,000 twenty-foot equivalent units (TEUs) a year, all of which passes through the Port of Alaska's general cargo terminals. The successful buildout of the Port of Alaska Modernization Program will ensure that the POA has modern and reliable dock infrastructure that is needed to safeguard future cargo operations between our ports and protect the economic well-being of the Alaska and the Pacific Northwest.

Failure of POA's dock infrastructure would have an immediate, direct, and longstanding impact on Alaskans, the NWSA, and our key stakeholders that facilitate trade with Alaska. Alaskans would have a hard time getting essential goods that they need and ships loaded in the Puget Sound would have limited alternative options for discharging cargo in Alaska, resulting in gridlock in our domestic and international terminals, with regional and national economic implications. The criticality of the infrastructure that supports this trade route was further reaffirmed by the US Department of Transportation when they recently approved the joint project designation application between the POA and NWSA for the Marine Highways Program.

For these reasons, we strongly support this project as the next step in modernizing and strengthening POA's infrastructure.

Please reach out to me if you have any questions regarding our support of this necessary project.

Sincerely,



John Wolfe
Chief Executive Officer

Port of Alaska Users Group

May 12, 2022

The Honorable Pete Buttigieg
US Department of
Transportation 1200
New Jersey Ave, SE
Washington DC 20590

Secretary Buttigieg:

On behalf of the Port of Alaska Users Group (PAUG), representing the nine private companies that transport cargo, fuel and cement to Alaska via the Port of Alaska (Port), we are writing in support of the Port's grant applications under the current Port Infrastructure Development Program (PIDP) Notice of Funding Opportunity (NOFO) which closes on May 16, 2022, and the MEGA/INFRA NOFO, which closes on May 23, 2022. Each grant application is for approximately $68,000,000. The funds are vital for the Port of Alaska Modernization Program (PAMP) and preservation of the most critical port in Alaska.

The Port of Alaska is the lynchpin of our state's supply chain and critical to Alaskans' food security and the transportation of fuel and cement. Over 60 years of use and corrosion have deteriorated the dock's support piles, leaving the Port in a race against time to replace them.

The Port supports $14 billion in statewide economic activity annually, while 9 in 10 Alaskans rely on goods that come through the Port, including half of all containers shipped to south-central Alaska and 80% of cement used for construction in the state. Despite its significance, the Port's infrastructure has far exceeded its design life, where the pilings supporting the dock have experienced severe corrosion.

The deteriorating condition of the piles and the state's reliance on the Port require that modernization be completed as soon as possible. If the cargo docks became inoperable, there are no viable alternatives for delivering food and supplies Alaskans rely on. The Port of Alaska is the only Southcentral-Alaska facility with the waterfront infrastructure, inter-modal transportation network and work force to support Alaska's cargo needs. Funding is needed now to protect Alaska's critical link to the supply chain.

These grants are an integral component of the overall funding the PAMP is seeking from federal, state, and municipal sources. The project will rebuild a port that serves the entire state,

is a vital link to the Pacific Northwest, and serves significant military installations and bases in the Arctic. These grants are specifically seeking funding for the north extension stabilization project, one of the three projects in phase 2 of the PAMP

The PAMP is critical to Alaska and to National interests in the Arctic. As such, we request the USDOT support the Port's grant applications. Thank you for your attention to this matter.

Respectfully,

Bal Dreyfus
Port of Alaska Users Group, Co-chair
Matson, Senior Vice President, Alaska

Alex Hofeling
Port of Alaska Users Group, Co-chair
TOTE Maritime Alaska, President

The PAUG consists of the following companies:

1. Alaska Maritime Agencies
2. Anchorage Sand and Gravel
3. Anchorage Fueling & Service Company
4. Crowley
5. Delta Western
6. Marathon
7. Matson
8. Petro Star
9. TOTE Maritime Alaska

Matson

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Anchorage, AK 99501-1036
Tel. 907.263.5016
www.matson.com

The Honorable Pete Buttigieg
US Department of Transportation
1200 New Jersey Ave, SE
Washington DC 20590

May 11, 2022

RE: Letter of Support - Port of Alaska

Secretary Buttigieg:

As a leading ocean carrier of cargo providing regular service to three Alaska ports carrying roughly half of Alaska's ocean-borne freight, we are writing in support of grant applications submitted by the Port of Alaska (Port), in Anchorage, to help fund the Port of Alaska Modernization Program (PAMP).

The applications were in response to the Port Infrastructure Development Program (PIDP) Notice of Funding Opportunity (NOFO), which closes on May 16, 2022, and the MEGA/INFRA NOFO which closes on May 23, 2022. Each grant application is for approximately $68,000,000 and are part of a plan of finance that includes municipal, state, and federal funds.

The Port is in a race against time to replace the aging cargo docks before they are further derated or incapacitated due to an earthquake. The state's dependence on the Port cannot be overemphasized with 90% of Alaskans reliant on the Port for everyday essentials. The Port provides the only fully operational facility for handling containers and roll-on-roll-off cargo in the state. There is no viable alternative for delivering the volume of subsistence goods and materials needed for Alaskans. The Port is also critical to the U.S. Department of Defense's operations in the Arctic and Pacific.

The PAMP began in 2016 to replace the Port's aging infrastructure. Following the successful completion of phase 1 of the project, phase 2, cargo dock design and permitting, are underway. These grant applications are seeking funding for the north extension stabilization project, one of the three projects in phase 2 of the PAMP.

The PAMP is critical to Alaska and to our nation's interests in the Arctic and Pacific. We are requesting the USDOT's support for funding of this urgently needed infrastructure project. Thank you for your attention to this matter.

Sincerely,

Bal Dreyfus
Senior Vice President, Alaska
Matson

TOTE Maritime Alaska

May 12, 2022

The Honorable Pete Buttigieg
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Dear Mr. Secretary:

TOTE Maritime Alaska, LLC supports the Port of Alaska's efforts to secure public funding through grant applications under the Port Infrastructure Development Program (PIDP) and the MEGA/INFRA program. Each grant application is for approximately $68,000,000 to be used for modernization and structural stabilization of the single largest port in Alaska – a port through which 90% of Alaskans, many of whom are in remote Villages, receive some of their most critical supplies and goods, including food, fuel, and medicine.

Located in Anchorage, the Port is operating with docks and pilings that are very nearly at the end of their useful life. According to the Municipality of Anchorage, capacity restrictions will need to be imposed within five to six years, potentially reducing operating efficiency and the size of freight loads that can safely cross the dock unless the Port receives federal funds from the one of these grant programs.

These grants are an integral component of the overall funding the Port is seeking from Federal, State, Local, and Private sources to modernize a port that serves the entire state, is a vital link to the Pacific Northwest, and serves significant military installations and bases in the Arctic.

The Port of Alaska is in an earthquake-prone area of South-central Alaska and the existing port structures are only one major earthquake away from catastrophic destruction and/or condemnation in a State where most of the population faces a one-week food supply.

We respectfully request your support for funding this critical infrastructure project that is so vital to the consumers and communities in Alaska.

Sincerely,

Alex Hofeling
President, TOTE Maritime Alaska

2511 Tidewater Road, Anchorage, AK 99501 | P: 907.276.5868 | F: 907.278.0461 | www.totemaritime.com

TOTE Maritime Alaska

May 12, 2022

The Honorable Pete Buttigieg
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Dear Mr. Secretary:

TOTE Maritime Alaska, LLC supports the Port of Alaska's efforts to secure public funding through grant applications under the Port Infrastructure Development Program (PIDP) and the MEGA/INFRA program. Each grant application is for approximately $68,000,000 to be used for modernization and structural stabilization of the single largest port in Alaska – a port through which 90% of Alaskans, many of whom are in remote Villages, receive some of their most critical supplies and goods, including food, fuel, and medicine.

Located in Anchorage, the Port is operating with docks and pilings that are very nearly at the end of their useful life. According to the Municipality of Anchorage, capacity restrictions will need to be imposed within five to six years, potentially reducing operating efficiency and the size of freight loads that can safely cross the dock unless the Port receives federal funds from the one of these grant programs.

These grants are an integral component of the overall funding the Port is seeking from Federal, State, Local, and Private sources to modernize a port that serves the entire state, is a vital link to the Pacific Northwest, and serves significant military installations and bases in the Arctic.

The Port of Alaska is in an earthquake-prone area of South-central Alaska and the existing port structures are only one major earthquake away from catastrophic destruction and/or condemnation in a State where most of the population faces a one-week food supply.

We respectfully request your support for funding this critical infrastructure project that is so vital to the consumers and communities in Alaska.

Sincerely,

Alex Hofeling
President, TOTE Maritime Alaska

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FUELING ALASKA SAFELY
DELTAWESTERN™
PETROLEUM

May 10, 2022

The Honorable Pete Buttigieg, Secretary
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Dear Secretary Buttigieg:

We are writing in support of the Port of Alaska's grant application under the current Port Infrastructure Development Program (PIDP) Notice of Funding Opportunity (NOFO) which closes on May 16, 2022, and in support of the Port of Alaska's grant application under the MEGA/INFRA NOFO which closes on May 23, 2022. Each grant application is for approximately $68,000,000 and the funds are vital for the modernization and structural stabilization of the single largest port in Alaska—a port through which 90% of Alaskans, many of whom are in remote Villages, receive some of their most critical supplies and goods, including food, fuel, and medicine.

The Port of Alaska, located in Anchorage, is operating with docks and pilings that are very nearly at the end of their useful life. Within 5 to 6 years, capacity restrictions will need to be imposed, potentially reducing operating efficiency and the size of freight loads that can safely cross the dock unless the Port of Alaska Modernization Program (PAMP) receives additional federal funds from the aforementioned grants. These grants are an integral component of the overall funding the PAMP is seeking from Federal, State, Local, and Private sources to modernize a port that serves the entire state, is a vital link to the Pacific Northwest, and serves significant military installations and bases in the Arctic. These grants are specifically seeking federal funding for the North Extension Stabilization project, one of the three projects in Phase 2 of the PAMP.

The Port of Alaska is located in an earthquake-prone area of South-central Alaska and the existing port structures are only one major earthquake away from catastrophic destruction and/or condemnation in a State where the vast majority of the population faces a one-week food supply. The PAMP is critical to Alaska and to National interests in the Arctic. Please look favorably upon the POA's grant submissions in the upcoming review by your Department.

Sincerely,

Don Stone
President
Delta Western, LLC

Delta Western, LLC
450 Alaskan Way S., Suite 707
Seattle, WA 98104

ANCHORAGE CHAMBER
of COMMERCE

1016 W. Sixth Avenue, Suite 303
Anchorage, AK 99501

February 2, 2022

The Honorable Pete Buttigieg
Secretary
U. S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Dear Secretary Buttigieg:

As the largest business organization in Alaska, the mission at the Anchorage Chamber of Commerce is to support growth and success for our members and ultimately the economic strength and resiliency of all Anchorage. The Port of Alaska is critical to the citizens of Alaska, the community of Anchorage our economy as a whole. Unfortunately, it is beyond disrepair. We are asking for your full support for the expedited funding and permitting for the Port of Alaska Modernization Program (PAMP).

Based on a recent study conducted by the McDowell Group, the Port of Alaska serves three critical functions.

1) It is Alaska's key cargo gateway, benefiting virtually every region and every segment of Alaska's economy.
2) It is critical national defense infrastructure, playing an essential role in Department of Defense missions in Alaska and around the world.
3) It provides a resilient transportation lifeline that supports routine movement of consumer goods, industrial development and disaster recovery.

I am writing this letter in support of the Port of Alaska's grant application under the current Port Infrastructure Development Program (PIDP) Notice of Funding Opportunity (NOFO) which closes on May 16, 2022, and in support of the Port of Alaska's grant application under the MEGA/INFRA NOFO which closes on May 23, 2022. We understand that Each grant application is for approximately $68,000,000 and the funds are vital for the modernization and structural stabilization of Port of Alaska.

These grants are an integral component of the overall funding the PAMP is seeking from Federal, State, Local, and Private sources to modernize a port that serves the entire state, is a vital link to the Pacific Northwest, and serves significant military installations and bases in the Arctic. These grants are specifically seeking federal funding for the North Extension Stabilization project, one of the three projects in Phase 2 of the PAMP

The Port of Alaska is critical infrastructure and has far exceeded its design life. The pilings supporting the dock have experienced severe corrosion and 20% of the pilings at one dock failed during the November 2018 magnitude 7.1 earthquake. The condition of the Port requires that replacement and modernization be completed as soon as possible to ensure ongoing safe, reliable and efficient operations.

For the reasons noted above the Anchorage Chamber of Commerce fully supports the improvements to the Port of Alaska and respectfully requests U.S. Department of Transportation's support for funding of the urgently needed improvements necessary to keep this critical infrastructure operational.

Sincerely,

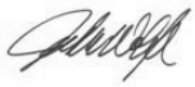
Bruce Bustamante

Bruce Bustamante
President & CEO
Anchorage Chamber of Commerce

For these reasons, we strongly support this project as the next step in modernizing and strengthening POA's infrastructure.

Please reach out to me if you have any questions regarding our support of this necessary project.

Sincerely,



John Wolfe
Chief Executive Officer

ALASKA
BASIC
INDUSTRIES

SUBSIDIARIES:
ANCHORAGE SAND & GRAVEL CO., INC.
FAIRBANKS MATERIALS, INC.

May 10, 2022

The Honorable Pete Buttigieg
Secretary
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Dear Secretary Buttigieg,

We are writing in support of the Port of Alaska's grant application under the current Port Infrastructure Development Program (PIDP) Notice of Funding Opportunity (NOFO) which closes on May 16, 2022, and in support of the Port of Alaska's grant application under the MEGA/INFRA NOFO which closes on May 23, 2022. Each grant application is for approximately $68,000,000 and the funds are vital for the modernization and structural stabilization of the single largest port in Alaska—a port through which 90% of Alaskans, many of whom are in remote Villages, receive some of their most critical supplies and goods, including food, fuel, and medicine.

The Port of Alaska, located in Anchorage, is operating with docks and pilings that are very nearly at the end of their useful life. Within 5 to 6 years, capacity restrictions will need to be imposed, potentially reducing operating efficiency and the size of freight loads that can safely cross the dock unless the Port of Alaska Modernization Program (PAMP) receives additional federal funds from the aforementioned grants. These grants are an integral component of the overall funding the PAMP is seeking from Federal, State, Local, and Private sources to modernize a port that serves the entire state, is a vital link to the Pacific Northwest, and serves significant military installations and bases in the Arctic. These grants are specifically seeking federal funding for the North Extension Stabilization project, one of the three projects in Phase 2 of the PAMP

The Port of Alaska is located in an earthquake-prone area of South-central Alaska and the existing port structures are only one major earthquake away from catastrophic destruction and/or condemnation in a State where the vast majority of the population faces a one-week food supply. The PAMP is critical to Alaska and to National interests in the Arctic. Please look favorably upon the POA's grant submissions in the upcoming review by your Department.

Sincerely,

Ryan Zins
Vice President / General Manager

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COOK INLET TUG & BARGE

Jeff Johnson, President
4510 Old International Airport Rd
Anchorage, AK 99502
Phone: 907.306.9267

www.cookinlettug.com

May 10, 2022

The Honorable Pete Buttigieg
Secretary
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Dear Secretary Buttigieg:

I run a small tug company based in Anchorage Alaska – where our tugs enable the free flow of commerce into Alaska by providing critical docking support for all the shipping companies calling here.

I am writing in support of the Port of Alaska's grant application under the current Port Infrastructure Development Program (PIDP) Notice of Funding Opportunity (NOFO) which closes on May 16, 2022, and in support of the Port of Alaska's grant application under the MEGA/INFRA NOFO which closes on May 23, 2022. Each grant application is for approximately $68,000,000 and the funds are vital for the modernization and structural stabilization of the single largest port in Alaska—a port through which 90% of Alaskans, many of whom are in remote Villages, receive some of their most critical supplies and goods, including food, fuel, and medicine.

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The Port of Alaska is in an earthquake-prone area of South-central Alaska and the existing port structures are only one major earthquake away from catastrophic destruction and/or condemnation in a State where most of the population faces a one-week food supply. The PAMP is critical to Alaska and to National interests in the Arctic. Please look favorably upon the POA's grant submissions in the upcoming review by your Department.

Respectfully,

Jeff Johnson

	Duration	2022												2023												2024											
	(Months)	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
NORTH EXTENSION STABILIZATION - STEP 1																																					
PERMITTING																																					
USACE Section 10/404 Application Process	19																																				
USACE Section 408 Application Process	19																																				
NMFS Section 7 Consultation & IHA	16																																				
NEPA	12																																				
All Permits Issued	Milestone																						★														
DESIGN																																					
Design / Build Procurement	7																																				
Design	6																																				
Design Completion	Milestone																★																				
CONSTRUCTION																																					
Armor Stone Procurement	11																																				
NES1 Demolition and Construction	9																																				
Project Completion	Milestone																																				★

Ship Simulation Modeling and Mariner Study of the Maritime Implications of Maneuvering TOTE and Matson Vessels during Re-Phasing of the Port of Alaska Modernization Program

Captain Jeff Pierce and Jonathan Pierce, Ph.D.
Safeguard Marine LLC
June 1, 2018
Prepared for the Municipality of Anchorage, Port of Alaska, and CH2M

Executive Summary

Purpose
The purpose of this research is to better understand the maritime implications associated with implementing the Port of Alaska Modernization Project (PAMP) Phase 2 projects (construction of Terminals 1 and 2) without first completing the North Extension Stabilization project. This research explores the level of concern for safety by pilots maneuvering TOTE and Matson vessels during PAMP and tests whether this level of concern for safety can be effectively mitigated by utilizing tugboats with various levels of horsepower.

Methods
Multiple methods of data collection and analyses are utilized. First, 25 interviews were conducted with local subject matter experts to identify the context, primary issues of concern for safety, and develop simulation parameters regarding the proposed changes to PAMP phasing. Second, pilots performed 64 vessel maneuvers using 121 simulations. These maneuvers varied in terms of the vessel, pilot, tugboat assist as well as environmental conditions, such as wind, ice, and current. Finally, to help interpret and validate the results, two focus groups were convened including research participants and stakeholders.

Results
Under operational conditions expected during Phase 2 of PAMP, the safe maneuvering of Matson and TOTE vessels alongside of the berths may not be possible without removal of portions of the north extension. Furthermore, the utilization of three tugboats including two 5,000 horsepower tugboats and the *Stellar Wind* does not effectively mitigate the level of concern for safety for multiple maneuvers by TOTE and Matson vessels during PAMP Construction Phase 2 with the north extension in place.

Recommendations
On Cooperation between TOTE and Matson
1. During PAMP Construction Phase 2, Matson and TOTE vessels should coordinate their schedules to arrive and depart from the Port of Alaska on different days.

On Construction Design
2. The North Extension Stabilization project should be completed as early as possible and prior to construction Phase 2 of PAMP to provide space for vessels to maneuver at POA.

On Future Research and Pilot Familiarization
3. Research should be conducted utilizing ship pilots to develop operational guidelines for maneuvering Matson and TOTE vessels during PAMP Construction Phase 2.
4. Research should be conducted on possible dock length adjustments during PAMP to address mooring line conflicts during construction.
5. Simulations should continue to be used to familiarize pilots with the PAMP.

Acknowledgements

We want to acknowledge the support provided by the following individuals and organizations: AVTEC Maritime Department whose support ensured the successful completion of the simulations. We thank Steve Fink, AVTEC Maritime Simulator Technician and Operator, and Terry Federer, AVTEC Maritime Department Director, who were instrumental in the completion of this study. Mike Angove, a previous AVTEC Maritime Simulator Technician and Operator developed the port design databases for the simulations and assisted in ship model development, and AVTEC Simulator Operator Rob Chadwell were extremely helpful in this process. Cook Inlet Tug and Barge for providing Captain Dan Butts, a tugboat operator at the Port of Alaska. We thank CH2M representatives, George Newman, who attended simulations and provided guidance about the port's operational practices during PAMP, and Doug Playter who attended all of the simulations and focus group meetings providing guidance about the port design.

We would like to thank Todd Cowles, Port of Alaska Port Engineer, and Port Director Steve Ribuffo for their attendance in Seward during simulations and in Anchorage at the focus groups. Both provided guidance and insight throughout the research process about the port and PAMP. Their knowledge and participation are greatly appreciated.

The Anchorage Assembly and the Port of Alaska have demonstrated great support by giving mariners a voice in the development of this port. The inclusion of mariners will increase their ability to operate safely and efficiently within the port and will set a precedence of consultation and cooperation between mariners and port developers across the state. We would also like to thank the research assistants that provided critical support and insight on this project: Nicole Schmitt, Megan Hillyard, and Cielle Thiry-Hardenburg. Finally, we would like to thank the local subject-matter experts who participated in the interviews, simulations and/or focus group. Their contribution is essential for conducting this research.

Citing this Report: Pierce, Jeffrey D., and Jonathan J. Pierce. 2018. "Ship Simulating Modeling and Mariner Study of the Maritime Implications of Re-Phasing the Port of Alaska Modernization Program". Prepared for the Municipality of Anchorage and the Port of Alaska by Safeguard Marine LLC.

Questions, Comments and Requests for More Information:

Captain Jeff Pierce
Safeguard Marine LLC
17321 Yellowstone Dr.
Eagle River, AK 99577
907-240-2149
aksafeguardmarine@gmail.com
http://www.safeguardmarinealaska.com/

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Purpose

The purpose of this research is to better understand the maritime implications associated with implementing the Port of Alaska Modernization Project (PAMP) Phase 2 projects (construction of Terminals 1 and 2) without first completing the North Extension Stabilization (NES) project. This research explores the level of concern for safety by pilots maneuvering TOTE and Matson vessels during PAMP and tests whether this level of concern for safety can be effectively mitigated by utilizing tugboats with various levels of horsepower.

Background Maritime Overview

Ship handling is an art that utilizes the science of directing various vectors to create a successful safe maneuver. Multiple vectors of different forces act upon the ship, some of these are uncontrollable such as wind, current and ice, while others are controllable such as a ship's propulsion, rudder effect, and assist tugboats. Every maneuver is unique due to the multiple number of variables involved including the error chain. Ship pilots' capability to safely maneuver the ship is dependent upon their ability to utilize the controllable vectors to compensate for the affect upon the ship from the uncontrollable forces. Ultimately, the safety of the ship, property, environment, and personnel is the prerequisite goal while accomplishing the final objective of safely maneuvering the ship.

The Port of Alaska (POA) experiences significant currents, and pilots compensate for these with the rudder and ship propulsion by steering a course that uses the current force to facilitate safe maneuvers. Wind vectors applied to this study were considered extreme, however mariners experience these conditions annually, and are required to compensate for them using the current vector or tugboat assist. Pilots manage vessel movements by creating an equilibrium of the wind effect and the current angle by using the ship's propulsion and rudder effect. Tugboat assistance is utilized to balance the vessel when their speed over the ground is minimized.

This study focused on Matson D7 and TOTE Orca Class vessels. Matson and TOTE ships call on the Port of Alaska (POA) on the same day, twice a week, Sundays and Tuesdays. Cargo operations commence at 7 AM for both operations, thus the two ships are maneuvering at POA in relatively close spatial and temporal proximity on the same day, twice a week.

These two vessels are not considered large in comparison to other container ships, however navigating upper Cook Inlet requires extensive mariner due diligence to maintain safety in the extreme tides and currents at POA. The mariners that operate these vessels at POA are ship pilots.

When pilots navigate POA, they compensate for extreme environmental conditions which include winds at 25 knots, currents as great as five knots, and ice during the winter season. Docking, or parking of the vessel, requires minimal speed to prevent damage from occurring to the ship or dock while maneuvering alongside the berth. POA has established allowable approach velocities for all vessels based upon their tonnages or weight. Both of the ships being studied have maximum approach velocity of 0.21 knots or 21 feet per minute.[1] In comparison,

[1] Port of Anchorage Terminal Tariff NO. 8.1, Part 9 Berthing, Page 26, 2017.

normal human walking speed is 275 feet per minute or ten times greater than the allowable speed for the ships coming alongside the berth at POA.

The pilot is required to compensate for the ship's speed through the water, which could be five times greater or less than the ships actual speed, or speed over the ground, due to the environmental conditions at POA. Altering speed of the ships requires time due to the large amount of weight in motion. Ships differ from motor vehicles in that they are not fitted with a braking mechanism to reduce speed. Control of speed must therefore rely on controlling the speed of the main engine, reversing the main engine, or the assistance of a tugboat. The time available for corrective actions while docking these ships is minimal due to their length and overall size. One knot of speed equates to approximately 100 feet traveled per minute. The pilot is constantly compensating for the environmental conditions effecting the vessel, which vary greatly. As an example, if a current vector alone is acting upon a ship at the speed of three knots, it will move the ship 50 feet within 10 seconds.

The vessels modeled for this study, *Horizon Tacoma* (Matson) (710 feet) and MV *NorthStar* (TOTE) (839 feet), are greater than two lengths of football field or twice the height of the tallest building in Anchorage (the Conoco-Phillips Building at 296 feet). The safe movement of these ships is reliant upon the pilot's ability to perform the maneuvers without being able to personally see obstructions or obstacles close to the ship. Due to the height of the bridge and length of the vessel, a pilot's line of sight is approximately 150 – 200 feet forward from the bow. This means that during construction, obstructions or another vessel that are less than 150 – 200 feet are not within the pilot's line of sight. During portions of PAMP Phase 2, the designed distances between the bow to construction obstruction or another vessel can be as little as 50 feet for TOTE and 75 feet for Matson. Visual sight line is similar to standing on the goal line of a football field and not be able to see anything within the first 50 Yards.

Summary of Safeguard Marine Research on Port of Alaska Modernization Project

The PAMP seeks to develop modern, safe, and efficient terminals for vessels docking and undocking at the POA. Safeguard Marine (SGM) has conducted multiple studies (2015, 2016, and 2017), working in collaboration with CH2M and POA, to identify aspects of the PAMP that pose a marine safety concern and make recommendations that mitigate such concerns. All of these studies applied similar methods of data collection and analyses including: interviews with local subject matter experts and stakeholders, design and implementation of simulated maneuvers using local pilots, and focus groups including stakeholders and local subject matter experts to review the results of simulations, draw conclusions, and develop recommendations. The results and recommendations of the most recent study in 2017 have limited relevance to this study as they pertain to tankers and bulkers operating at Petroleum Terminal (PT) and Petroleum Cement Terminal (PCT).

The results and recommendations of the 2015 and 2016 studies are relevant to this study as they both are concerned with maneuvering TOTE and Matson (previously Horizon in 2015) at

Terminals 1, 2 and 3 during PAMP using similar environmental conditions.[2] Therefore, these studies have high internal validity in terms of building knowledge on previous results and recommendations. However, the 2015, 2016, and 2018 studies vary in their purpose, scope, PAMP designs analyzed, objectives and vessels analyzed.[3] Therefore, they have limited external validity in terms of comparing the results of specific maneuvers.

The current SGM research builds on the knowledge developed from these past studies including using similar research designs, analyses, and building on past conclusions and recommendations. Some of the recommendations made by SGM in 2015 and 2016 have been satisfactorily addressed but others have not. These recommendations and how they have been addressed are described below.

On Third Tugboat Assist

Recommendation from 2015: "Make a third tugboat available during construction to assist vessels during the ice season" (22).

Recommendation from 2016: "Utilizing a tugboat with increased horsepower is an important tool and also the tugboat must be highly maneuverable. Therefore, the utilization of conventional tugboats even with higher horsepower is not beneficial" (31).

This recommendation has been satisfactorily addressed as a third tugboat will be available during PAMP.

On Tugboat Assist Horsepower

Recommendation from 2015: "Make a second tugboat assist available, with bollard pull equivalent to or greater than the *Stellar Wind*, during the construction process to minimize docking and undocking risks" (22).

Recommendation from 2016: "Utilizing a tugboat with increased horsepower is an important tool and also the tugboat must be highly maneuverable. Therefore, the utilization of conventional tugboats even with higher horsepower is not beneficial" (28).

This recommendation has been satisfactorily addressed as a highly maneuverable Dolphin Class tugboat of 5,000 Horse Power (HP) will be made available during PAMP. SGM has rounded the quoted HP from 5,080 to 5,000 HP within this study due to an insignificant difference in the tugboat model tested.

[2] The same currents and wind directions are used in all three studies, but part of the purpose of 2015 and 2016 was to explore variations in wind velocity. Only the highest sustained wind velocities were used in 2018.
[3] For example, the assist tugboats used in 2015 were limited to the *Stellar Wind* and *Glacier Wind* and did not use a 5,000 HP tugboat that was used in subsequent studies. The 2016 study also used tankers and bulkers.

On Pilot Familiarization

Recommendation from 2015: “Provide ship simulation training to ship pilots prior to APMP in order to expose them to the port facilities” (29).

Recommendation from 2016: “Pilots should complete a familiarization process of APMP utilizing simulations” (31).

This recommendation has been mostly addressed as discussed in a separate report. At this time, SGM has conducted eight familiarization maneuvers with six different SWAPA pilots. In addition, five more SWAPA pilots and two TOTE pilots took part in this research. Therefore, 11/17 current SWAPA pilots and 2/4 TOTE pilots have completed multiple maneuvers simulated under the direction of SGM during PAMP.

On Stabilizing the North Extension

Recommendation from 2015: “The highest priority for mariners concerning the port modernization project is to cut back the present North End Extension as soon as possible” (21).

Recommendation from 2016: “Alternative 3 is preferred in particular the partial cutback of the northern extension during Phase 1 is important.” (31).

Recommendation from 2016: “The cutback of the northern extension should be completed as early as possible to provide space to maneuver for TOTE and other vessels POA.” (31).

The purpose of this study is explicitly to determine the maritime implications of not addressing these recommendations.

On PAMP Phase 2 causing “off-set docks” for Matson (Step 1) and TOTE (Step 3)

Recommendation from 2015: “During construction APMP will be disruptive for ships and port activity due to the offset alignment of berths. The APMP construction phasing plan should not be initiated and then stopped without the capability for completion, due to the berths offset alignment. This means that funding for completion of construction should be secured prior to making the docks offset” (22).

Recommendations from 2016: “Once Terminal 1 is pulled out, do not utilize Terminal 2; Managing who is where on the dock is necessary as a vessel cannot dock between Matson and TOTE; Do not start Phase 2 of APMP if it cannot be completed” (27).

Much of the research conducted in 2018 focuses on maneuvering Matson at Terminal 2 during Phase 2 Step 2.1, and maneuvering TOTE at Terminal 3 during Phase 2 Step 2.3 with the north extension in place. The simulations had three tugboats available and compared the effects of one or two high horsepower 5,000 HP tugboats. The results indicate high levels of concern for safety by pilots maneuvering Matson and TOTE at these terminals during these stages of construction

even with the high horsepower tugboats. Therefore, the concern for safety by the pilots for maneuvering at off-set docks during Phase 2 has not been satisfactorily addressed.

Furthermore, according to current designs, TOTE at Terminal 3 during Phase 2 Step 2.3 has 50' from its bow to construction, and TOTE and Terminal 2 during Phase 2 Step 2.4 has 60' from its bow to a Matson vessel docked at Terminal 1. Similarly, Matson at Terminal 2 during Phase 2 Step 2.1 has 75' from its stern to TOTE docked at Terminal 1 and 75' from its bow to construction. This amount of distance is a concern for pilots in this report as it was in 2015 with similar distances under a different design.

It should be noted that some shipping companies do request 100' minimum distances between their vessel and other vessels when docking at POA. From our 2015 report,

> "The guideline for distance between ships should be 100 feet or 30 meters. This distance is a guideline based upon past experiences and other shipping companies' requirements. For example, in a recent communication to SWAPA in June 2015 concerning the docking and undocking of vessels at POA, Kirby Offshore Marine requested the "Establishment of the minimum proximity distance between the cement ship and the DBL 185. Kirby is agreeable to 100' minimum distance" (Personal communication with Louis Audette Kirby Marine Alaska operations manager, June 2015)" (22).

On Cooperation between TOTE and Matson (Formerly Horizon)

Recommendation from 2015: "Propose an agreement of cooperation between TOTE and Horizon docking priority to assure the safety of all ships" (28).

This recommendation has not been satisfactorily addressed. The 2015 study emphasized the potential of having ships arrive at POA on different days to allow them sufficient maneuvering room during the construction process.

Methods of Data Collection

Methods: Interviews

Local subject-matter experts were interviewed to identify and discuss the maritime implications of PAMP, as well as provide input on environmental conditions and vessels to be simulated. Interviews for TOTE and Matson were designed for them specifically due to differences in how the maneuvers performed by their specific vessels and their berth locations at POA. Tugboat interviews were designed for both TOTE and Matson because they provide assistance for both ships. Twenty-five interviews in total were conducted with four TOTE-specific interviews, fifteen Matson-specific interviews and six assist tugboat interviews being performed during the month of January 2018. The interviews are confidential, meaning that they are reported without naming the individual or their organization in association with the response. Representatives from the following organizations were interviewed: Southwest Alaska Pilots Association (SWAPA), TOTE, Matson, Cook Inlet Tug and Barge, and Harley Marine. Interviews were conducted via the telephone and notes were taken during the interview. The interview notes were then emailed to the interviewees to verify their accuracy and invite further comment.

The interviews gathered information about proposed PAMP simulations, including: the quality and quantity of simulation participants, tugboat assist information, the range of environmental conditions (ice coverage, ice thickness, current, and wind direction and speed), attributes of the model vessels, and any concerns relating to PAMP construction Phases Two and Three including the proposed change in phasing of stabilizing the north extension. The aggregate answers to the interview questions are discussed in the Results section of this report.

Methods: Simulation Modeling

Simulations were conducted using three simulators from Kongsberg's "Polaris Ship's Bridge Simulator" at the Alaska Vocational Technical Center (AVTEC) Marine Training Center in Seward, Alaska. These simulators have been certified by the U.S. Coast Guard for instruction and training.[4] Appendix 1 depicts detailed information concerning the Det Norske Veritas (DNV) Class A (NAV) AVTEC Full Mission Ship Bridge Simulators. The simulations were supervised and administered with the assistance of Steve Fink, a maritime simulator technician who has been trained by Kongsberg to operate the simulator, with operational assistance from AVTEC instructor, Rob Chadwell.

Vessels

TOTE Orca Class ships have no Kongsberg model, so SGM requested that Kongsberg create a model with a similar block coefficient and twin propellers by cloaking a *Texas Ro Ro* model onto a *Fantasy* cruise ship model. After this was performed, Mike Angove (Kongsberg trained maritime simulator technician) modified the TOTE model's sail area, beam, draft, length, and

[4] For more information about the simulator, please see the website for Kongsberg Maritime AS (http://www.km.kongsberg.com/). For more information about the specific simulator used in this study, please see Alaska Vocational Technical Center (http://www.avtec.edu/AMTC-Sim.aspx).

weight, thus creating a model possessing identical characteristics of the present TOTE ships as displayed in Table 1 below:

Table 1. TOTE Ship Model Information

Ship Attributes	MV *North Star*	AVTEC Model: *North Star*
Length	255.7 m	255.7 m
Beam	36.0 m	36.0 m
Draft	8.992 m	8.992 m
Design Displacement	51,256 Tons Displacement	44,710 Tons Displacement

The Matson ship model was also sent to Kongsberg to have it reflect the exact dimensions of a D7 Matson container ship. The model was altered to represent the maneuvering characteristics, beam, draft, length, and weight of the Matson *Horizon Tacoma*, as displayed in Table 2 below:

Table 2. Matson Ship Model Information

Ship Attributes	Matson Ship: *Horizon Tacoma*	AVTEC Model: *Horizon Tacoma*
Length	216.4 m	216.4 m
Beam	23.8m	23.8m
Draft	9.5 m	9.5 m
Design Displacement	27,000 Tons Displacement	27,000 Tons Displacement

Assist Tugboats

Three different azimuth drive-ship assist tugboats were utilized during the simulations. This is the same as SGM's previous studies in 2016 and 2017. The majority of the assist tugboats in this study were utilized as vector tugboats. This means that forces were applied to the ship per direction of the pilots by simulator operators with guidance by Captain Dan Butts, Cook Inlet Tug and Barge (CITB).[5] The three tugboat models simulated were the *Stellar Wind, Glacier Wind,* and the Atlantic Oak tugboat model 16. The vessel attributes of the Atlantic Oak model are in Appendix 2. Multiple simulations were also conducted with Captain Dan Butts CITB in command of the Atlantic Oak model in a simulator interacting with either a TOTE or Matson vessel from another simulator.

As in previous SGM studies, the tonnage applied by vector tugboats *Stellar Wind* and *Glacier Wind* were provided by CITB management. The *Stellar Wind* bollard pull has increased 10 tons from previous studies to reflect their recent installation of new drive units and larger propellers. The applied tonnage for the various tugboat commands are listed below in Table 3. For safety reasons, SGM degrades tugboat bollard pulls by approximately 9% less than tonnage capacity. POA requires vessels berthing or departing piers or wharves use sufficient tugboats so that a vessel can be berthed or removed in a safe manner. [6]

[5] Harley Marine was invited to send an active tugboat operator with work experience at POA to AVTEC to take part in the simulations. They declined to send a tugboat operator but Brad Kroon, Harley Marine Alaska Marine Operations Manager, attended multiple days of simulations as an observer.
[6] Port of Anchorage Terminal Tariff NO. 8.1, Part 9 Berthing, Page 26, 2017.

Table 3. Tugboat Assist Information Bollard Pull in Tons by Command

COMMANDS	64 ton/ 5,080 HP (High powered Tugboat)	49 ton/ 3,500 HP (Stellar Wind)	26 ton/ 2,250 HP (Glacier Wind)
Hang	5	3	2
Dead Slow	12	8	5
One Third	20	13	8
Slow/Easy	24	17	10
Half	32	22	13
Two Thirds	43	29	20
Full	58	44	24

Environmental Conditions

Wind direction and velocity is a variable that effects the maneuverability of a ship. Wind speed and direction was based on several factors, including interviews with local subject-matter experts, previous SGM studies that used wind directions and velocities from historical data from Elmendorf Air Force Base, and a new source for this 2018 report is hourly data gathered from December 2016 – December 2017, by National Oceanic and Atmospheric Administration (NOAA). The instrument is located at Port of Alaska, station number 9455920, Latitude 61 14.2 N Longitude 149 53.4.

Table 4. Wind Direction, Velocity, and Frequency at POA, 12/7/2016 – 12/5/2017

Wind Direction	Frequency Approximate # Hours 2016-2017	Highest Sustained Speed in Knots for at least 1 Hour	Number of Days Wind Sustained Frequency	Frequency of Days with Gusts
Northwest (305 to 345) used 335	500	25	1 Day	10 Days
Northeast (025 to 065) used 045	1,000	20	2 Days	5 Days
Southwest (205 to 245) used 225	600	15	3 Days	17 Days

To minimize the number of variables involved, three wind directions and corresponding velocities were used to represent realistic and extreme conditions at POA: Northwest (335) at 25 knots, Northeast (045) at 20 knots, and Southwest (225) at 15 knots. These are the three most frequent wind directions at POA, and the highest sustained velocities (for at least one hour). Table 4 reports these directions, velocities, as well as gusts at POA. Wind gusts are problematic for the mariners due to inconsistent wind vectors acting upon the ship. This was confirmed using interviews with mariners that operate at POA.

Sustained winds and gusts from the Northwest most frequently occurred during the first two weeks of March 2017 with additional gusts occurring in January and November 2017. Sustained winds and gusts from the Northeast also most frequently occurred during the first two weeks of March 2017 with additional gusts occurring in January, August, and November 2017. Sustained winds and gusts from the Southwest most frequently occurred during the first week of September 2017 with additional gusts occurring in May, June, July, September, and December.

Ice conditions are extremely difficult to accurately replicate in simulations. Ice does not move along with water flow during simulations, so simulators utilize ice maps that correspond with the various currents, outlined in Table 5. Ship models previously simulated in ice conditions have been tested using various ice conditions and thickness. The results found that simulated models performed most realistically with 7/10 coverage and half meter-thick ice, representing mid-winter ice.

Table 5. Ice Maps, 1/2-Meter-Thick with 75% Coverage

Map Numbers	**1**	**2**	**3**	**4**
Location of Ice	Large Ebb/ Early Tide/ No back Eddy	Large Flood (Flood)	Small Flood (Flood)	Small Ebb (Ebb)
Face of Docks Outward Offshore	2.0 knots 200 degrees toward	2.0 knots 020 degrees toward	.75 knots 020 Degrees toward	.75 knots 200 Degrees toward

Current velocities and directions at POA are environmental conditions that require the utmost vigilance from mariners. Current conditions utilized during simulations were based upon multiple factors: personal experiences by SGM; approximately 70 interviews with local subject-matter experts from various studies conducted by SGM at POA; and NOAA data from four different current stations.[7] SGM contracted with CITB in 2015 to drift the proposed location of POL 1 South at POA, confirming directions and velocity prior to constructing current maps for previous studies. This information was integrated into five separate current maps representing five different current conditions, each based upon various stages of the tide and were used in previous SGM studies. In 2017, the current directions at POL 1 and 2 were modified based on information provided by the Army Corps of Engineers via CH2M. While Matson utilizes all five current maps, TOTE only uses current maps 3, 4, and 5 because Matson ships can go either Portside or Starboard side alongside the terminal while TOTE is only docked Portside alongside POA.

[7] NOAA, 2015.

Table 6. Current Maps Used for Matson POA Simulations

Map Numbers	1	2	3	4	5
Location of Current	Large Ebb/ Early Tide/ No Back Eddy	Large Ebb/ Late Tide/ Flood Back Eddy/ Face Dock	Large Flood	Small Flood	Small Ebb
From 1,255' off dock out into port continuous	4 knot Ebb 200 degrees	4 knot Ebb 200 degrees	5.1 knot Flood 020 degrees	3.0 knot Flood 020 degrees	3.0 knot ebb 200 degrees
From 865' off dock to 1,265' offshore	3.5 knot Ebb 200 degrees	3 knot Ebb 200 degrees	4.5 knot Flood 020 degrees	2.5 knot Flood 020 degrees	2.5 knot ebb 200 degrees
From 550' to 865' off shore	3.0 knot Ebb 200 degrees	2 knot Ebb 200 degrees	4.0 knot Flood 020 degrees	2.0 knot Flood 020 degrees	2.0 knot ebb 200 degrees
Face of Dock out to 550'	2.5 knot Ebb 200 degrees	1.5 knot Flood 020 degrees	3.0 knot Flood 020 degrees	1.5 knot Flood 020 degrees	1.5 knot Ebb 200 degrees

The **tide level** implemented for all simulations is three meters above NOAA Mean Lower Low Water (MLLW) charted depths for POA. Recent dredge sounding data was consulted for updating water depths in simulated areas.

Mooring Lines

Mooring line analysis is outside the scope of this study but has previously been studied by CH2M.

Visibility

Visibility was held constant as all of the maneuvers were performed during daylight and without precipitation.

Construction barges

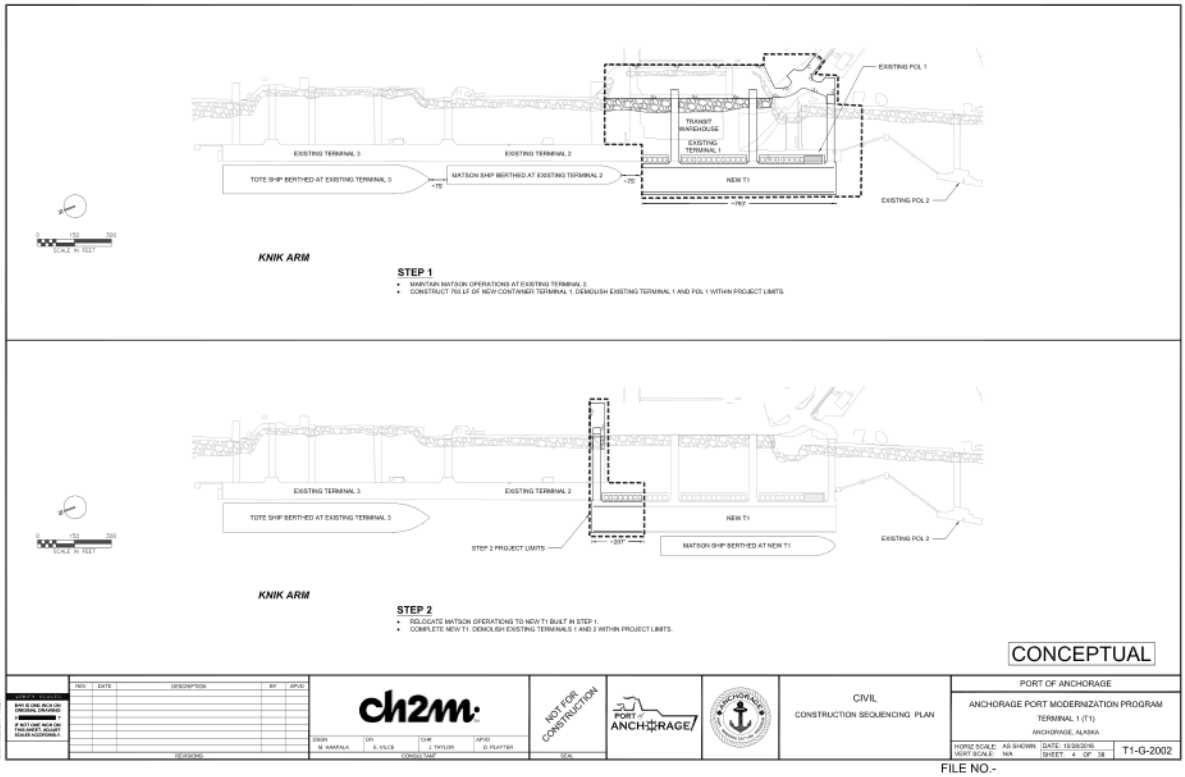
Construction barges were consistently referenced during the interviews as a possible problem for maneuvering both TOTE and Matson vessels during PAMP. Construction barges were placed in positions in association with the location of terminals under construction during PAMP. Construction barges will probably require anchors with anchor cables to hold barges in position due to the currents at POA. During the simulations barge anchors were placed 100' offshore and perpendicular to the barge located at the north end of the construction during Phase 2. Barge anchors were visually represented with a static tug boat (beam 30') at the anchor location to provide a visual representation for the anchor location and associated anchor wire for pilots during the ship simulations. Maneuvering the ships required the pilot to maneuver the vessel sideways into or out of the off-set docks during construction Phase 2 Steps 2.1 and 2.3. The off-set docks created a "hole" either between construction and the north extension for TOTE during Phase 2 Step 2.3 or between construction and a docked TOTE ship for Matson during Phase 2 Step 2.1. The depth of this "hole" is the result of the dock face 140' offshore with construction barge outside the dock face with a beam of 75' and anchor cable is an additional 100' from the construction barge, marked with 30' wide tugboat. This requires the vessel to move sideways, parallel to the dock for over 300' with minimal clearances, ranging from 50' for TOTE to 75' for Matson forward and aft of the ships. The construction barges can be seen in the screenshots of the databases used for the various phases and steps of construction in Appendix 3.

Construction Phases

CH2M provided all information on the proposed construction phases of PAMP, including dock alignments and distances during construction. This information was designed for simulation purposes by Mike Angove, who is a Kongsberg trained simulator technician and previously designed PAMP construction for SGM in 2015, 2016, and 2017. There are five separate designed databases developed from CAD drawings for simulations representing Construction Phase 2 Steps 2.1, 2.2, 2.3, 2.4, and Phase 3.0. All of these included the north extension as depicted in the screenshots in Appendix 3. All of these were verified by CH2M as accurate representations of the construction drawings. The construction CAD drawings in Figures 1 and 2 below along with placards were forwarded to all interviewees prior to the interviews. During the interviews, participants were asked to comment on their concerns for each step of the construction process. This feedback was then used to create the simulations based upon the local subject-matter experts greatest concerns for safety.

Figure 1 below depicts construction Phase 2, Steps 2.1 and 2.2. Phase 2 Step 2.1 requires the demolition of Terminal 1 and POL 1 and the construction of new Terminal 1. To maintain present ship schedules, Matson will be berthing at Terminal 2. The designed distance between a berthed Matson vessel at Terminal 1 during Construction Phase 2 Step 2.1 is 75' from bow to construction and 75' from stern to a TOTE vessel berthed at Terminal 3. Construction Phase 2 Step 2.2 involves constructing of the remainder of the north end of Terminal 1 with Matson berthing at the finished section of the terminal.

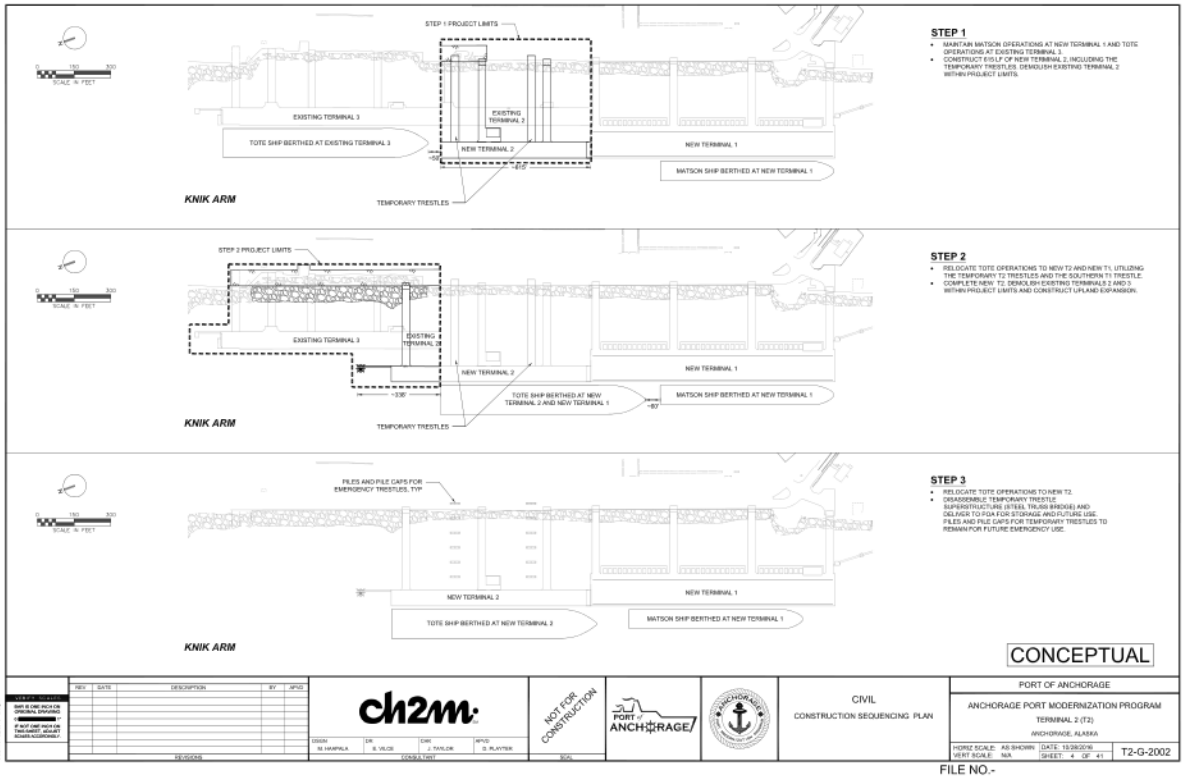
Figure 1. Construction Phase 2, Steps 2.1 and 2.2



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Figure 2 below depicts construction Phase 2, Steps 2.3 and 2.4. Phase 2, Step 2.3 requires the demolition of Terminal 2 and the construction of new Terminal 2. To maintain present ship schedules, TOTE will be berthing at Terminal 3. The designed distance between construction at Terminal 2 and the bow of the TOTE vessel is 50'. With the north extension in place the distance between the stern and ground is approximately 50' but this depends on dredging. Construction Phase 2, Step 2.4 involves demolishing Terminal 3 and operating TOTE at new Terminal 2. The designed distance between the bow of a TOTE vessel docked at Terminal 2 and the stern of a Matson vessel docked at Terminal 1 is 60'. Phase 3 of construction is the completed design with TOTE berthing at Terminal 2 and Matson berthing at Terminal 1.

Figure 2. Construction Phase 2 Steps 2.3 and 2.4, and Phase 3



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TOTE Mariners and Personnel Participating in Maneuver Simulations

Table 7. Personnel participating in the TOTE simulations

Individual	Position
Captain Frank Smith	TOTE Pilot
Captain Ed Kelly	TOTE Pilot
Captain Dan Butts	Cook Inlet Tug and Barge Captain
Steve Fink	Simulator Technician and Operator
Rob Chadwell	Simulator Operator; 1600 Master Military Pilot
Megan Hillyard	SGM Research Assistant
Nicole Schmitt	SGM Research Assistant
Captain Jeff Pierce	SGM President
Jonathan Pierce, Ph.D.	SGM Vice-President
Doug Playter	Engineer and Principal Project Manager CH2M

The mariners operating the vessels during the simulations were requested to participate because of their level competency and proficiency as ship handlers. The two TOTE pilots combined represent over 70 years of maritime experience.

Mariners and Personnel Participating in Matson Maneuver Simulations

Table 8. Personnel participating in the Matson simulations

Individual	Position
Captain Carolyn Vermette	SWAPA Pilot
Captain Matt Michalski	SWAPA Pilot
Captain Andy Wakefield	SWAPA Pilot
Captain Donal Ryan	SWAPA Pilot
Captain Vernon Adkison	SWAPA Pilot
Captain Josh Weston	SWAPA Pilot
Captain Dan Butts	Cook Inlet Tug and Barge Captain
Steve Fink	Simulator Technician and Operator
Rob Chadwell	Simulator Operator; 1600 Master Military Pilot
Megan Hillyard	SGM Research Assistant
Nicole Schmitt	SGM Research Assistant
Captain Jeff Pierce	SGM President
Jonathan Pierce, Ph.D.	SGM Vice-President
Doug Playter	Engineer and Principal Project Manager CH2M

Matson ship pilots are Southwest Alaska Pilot Association (SWAPA) members who were exposed to the State of Alaska approved training program. POA is part of the mandatory training program requiring a minimum of fourteen round trips as observer and obtaining the unlimited tonnage federal pilot license. After the federal license is obtained, SWAPA requires extensive ship maneuvers to be performed with a senior, state licensed training pilot prior to piloting at POA. The six participating SWAPA pilots combined represent over 180 years of maritime experience.

Methods: Simulation Strategy

Simulation Protocol

Each simulation takes approximately 15 to 45 minutes to perform depending on several factors including objective (docking or undocking). Some of the simulations were very intense and stressful and a great amount of effort was required to accomplish the objectives. To limit fatigue, each pilot performs approximately eight simulations per day. This is an industry standard to limit fatigue issues among the pilots and simulator operators.

Observations During Simulations

The personalities and demeanor of mariners is a crucial element for obtaining research data and performing highly complex and rigorous maneuvers. Every simulation performed included a pilot who was encouraged to comment on their immediate reactions inside the simulator while performing the task, with a research assistant taking notes inside the simulator. Research assistants were assigned to shadow the pilots for the duration of the simulation and then perform an exit interview upon completion. This maximized data collection, transparency, and trust

between the pilots and researchers. The comments by the mariners during the simulation and observations made by the research assistants provide context to the simulation results and can be found in Appendixes 4 and 5.

Exit Interview Process

Exit interviews were conducted immediately after each of the simulations were completed. Pilots were shown a screenshot with the vessel's position every three minutes, depicted on a screen in the debrief room. This process allowed the pilot to debrief with a graphic display of the actual maneuver just completed. Pilots were interviewed by a research assistant asking multiple open and close-ended questions concerning the completed simulations. A separate debrief sheet was created for each simulation. The debrief procedure was replicated from previous studies with revised questions based on the purpose of this study.

The questions asked, and their scales are provided in the results section. The main question of interest for this study is the perceived level of concern for safety of the completed maneuver. Pilots are asked the following question and scale.

What is your level of concern for the completed maneuver?

Table 9. Level of Concern, Score and Practical Implications

Score	Level of Concern	Practical Implications
1	Not at all	Normal maneuver
2	Slightly	Normal maneuver with slight concern
3	Somewhat	Questionable if you would complete this maneuver due to risk
4	Moderate	Maneuver that probably should not be performed
5	Extreme	Maneuver that should not be performed

Maneuvers that are identified as effectively safe are in the 1 – 2 range representing a maximum of slight concern. Maneuvers that are identified as a 3 (Somewhat Concerned) indicate the questionable and cautionary zone for safely maneuvering a vessel. Such maneuvers would be questionable if the pilot would attempt to complete in the real world. Any maneuvers scoring in the 4 – 5 range probably should not be performed and demonstrate a high level of concern for safety.

The effective range of safe maneuvers is a level of concern ranging from 1 – 2. Therefore, one measure for determining whether the level of concern for safety is effectively mitigated by using a second 5,000 HP tugboat is if the maneuvers performed are scored less than a 3 (somewhat concerned).

Simulation Objectives for TOTE During Construction Phase 2, Steps 2.3, 2.4, and Phase 3.0

Multiple rounds of maneuvers were simulated to determine the maritime implications of the proposed change in the phasing of north extension stabilization and whether two 5,000 HP tugboats could effectively mitigate concern for safety.

Round 1: Two TOTE pilots completed 32 original maneuvers simulating the TOTE ship in various environmental conditions and in various stages of construction at PAMP. These maneuvers focused on construction Phases 2, Steps 2.3, 2.4, and Phase 3.0. The environmental conditions that varied were wind direction and velocity, currents, and ice. The objectives of the maneuver were either docking or undocking portside. These 32 maneuvers were all performed with three tugboats available to the pilot: one 5,000 horsepower tugboat, the *Stellar Wind,* and the *Glacier Wind.*

A description of each of the 32 maneuvers simulated including the simulation #, objective, construction phase and step, wind direction, wind velocity, current map, and whether ice was present are below. It is important to note that TOTE only docks portside on a flood. Therefore, all dockings are portside and current during all dockings is either a small or a large flood. Un-dockings are typically performed during flood currents; however, they may occasionally be performed during a small ebb creating a fair current maneuver.

Table 10. TOTE Round One: 32 Original Maneuvers

Round 1 Sim#	Objective	Construction Phase Step	Wind Direction	Wind Speed Knots	Current	Ice
1	Dock	2.3	45	20	Small Flood	Yes
2	Dock	2.3	45	20	Large Flood	Yes
3	Undock	2.3	45	20	Large Flood	Yes
4	Undock	2.3	45	20	Large Flood	No
5	Dock	2.3	225	15	Large Flood	No
6	Dock	2.3	225	15	Large Flood	Yes
7	Dock	2.3	335	25	Large Flood	No
8	Undock	2.3	335	25	Small Flood	No
9	Dock	2.3	335	25	Large Flood	Yes
10	Dock	3	225	15	Small Flood	No
11	Undock	2.3	335	25	Large Flood	Yes

12	Undock	2.3	335	25	Small Ebb	No
13	Undock	2.4	335	25	Small Ebb	Yes
14	Undock	2.3	335	25	Large Flood	No
15	Dock	2.4	335	25	Small Flood	No
16	Dock	2.4	335	25	Large Flood	No
17	Dock	2.4	335	25	Small Flood	Yes
18	Dock	2.4	335	25	Large Flood	Yes
19	Undock	2.4	335	25	Large Flood	Yes
20	Dock	2.4	45	20	Large Flood	Yes
21	Dock	2.4	45	20	Small Flood	Yes
22	Undock	2.4	45	20	Small Ebb	No
23	Dock	3	45	20	Large Flood	Yes
24	Dock	2.4	45	20	Small Flood	No
25	Dock	3	45	20	Small Flood	No
26	Undock	2.4	45	20	Small Flood	No
27	Dock	3	225	15	Small Flood	Yes
28	Dock	2.4	225	15	Large Flood	No
29	Dock	2.3	335	25	Small Flood	Yes
30	Undock	2.4	225	15	Large Flood	No
31	Dock	3	335	25	Small Flood	Yes
32	Dock	3	335	25	Large Flood	No

Round 2: These 32 original maneuvers were analyzed to determine which had the greatest level of concern for safety and whether the pilots felt additional maneuvers should be further analyzed. Based on this action review, 12 maneuvers of the original 32 were identified as posing the greatest concern for safety. These 12 maneuvers were then performed by the alternative pilot from the one that performed the original maneuver. This allowed for a second observation of the maneuver by a different TOTE pilot. This practice increases the reliability of the observations.

These maneuvers were performed with the same objectives, construction phases, environmental conditions, and tugboats.

Table 11. TOTE Round Two: 12 Reliability Check Maneuvers

Round 1 Sim#	Round 2 Sim#	Objective	Construction Phase	Wind Direction	Wind Speed	Current	Ice
2	33	Dock	2.3	045	20	Large Flood	Yes
4	34	Undock	2.3	045	20	Large Flood	No
5	35	Dock	2.3	225	15	Large Flood	No
6	36	Dock	2.3	225	15	Large Flood	Yes
7	37	Dock	2.3	335	25	Large Flood	No
9	38	Dock	2.3	335	25	Large Flood	Yes
11	40	Undock	2.3	335	25	Large Flood	Yes
12	41	Undock	2.3	335	25	Small Ebb	No
14	42	Undock	2.3	335	25	Small Ebb	No
16	43	Dock	2.4	335	25	Small Flood	No
18	44	Dock	2.4	335	25	Large Flood	Yes
30	39	Undock	2.4	335	25	Large Flood	No

Round 3: The 12 maneuvers that were identified in Round 1 and verified in Round 2 as having the greatest concern for safely maneuvering TOTE at Terminals 2 and 3 during Construction Phase 2 were simulated a third time. This time one TOTE pilot completed all 12 maneuvers using two 5,000 HP tugboats along with the *Stellar Wind*. The purpose was to determine if a second 5,000 HP tugboat mitigates the level of concern for safety identified during Rounds 1 and 2 of simulations. In addition to simulating each of these maneuvers using a second 5,000 HP tugboat, five of the maneuvers that had the greatest concern for safety were simulated twice using a second 5,000 HP tugboat.

Table 12. TOTE Round Three: 12 Maneuvers Using Two 5,000 HP Tugboats

Rounds 1 & 2 Sim#	Round 3 Sim #	Objective	Construction Phase	Wind Direction	Wind Speed	Current	Ice
2, 33	50	Dock	2.3	045	20	Large Flood	Yes
4, 34	54	Undock	2.3	045	20	Large Flood	No
5, 35	46, 60	Dock	2.3	225	15	Large Flood	No
6, 36	49	Dock	2.3	225	15	Large Flood	Yes
7, 37	55, 59	Dock	2.3	335	25	Large Flood	No
9, 38	48, 57	Dock	2.3	335	25	Large Flood	Yes
11, 40	45	Undock	2.3	335	25	Large Flood	Yes
12, 41	52	Undock	2.3	335	25	Small Ebb	No
14, 42	53	Undock	2.3	335	25	Small Ebb	No
16, 43	51, 58	Dock	2.4	335	25	Small Flood	No
18, 44	47, 61	Dock	2.4	335	25	Large Flood	Yes
30, 39	56	Undock	2.4	335	25	Large Flood	No

In total, 61 simulations were performed. The frequency of the number of simulations performed by each pilot during each round are below.

Table 13. TOTE Pilots and Frequency of Simulations Performed

Pilot Name	Round 1	Round 2	Round 3	Total
Ed Kelly	14	6	0	20
Frank Smith	18	6	17	41
Total	32	12	17	61

Simulation Objectives for Matson During Construction Phase 2, Steps 2.1, 2.2, and Phase 3.0

Multiple rounds of maneuvers were simulated to determine the maritime implications of the proposed change in the phasing of north extension stabilization and whether two 5,000 HP tugboats could effectively mitigate concern for safety.

Round 1: Four SWAPA pilots completed 32 original maneuvers simulating the Matson vessel in various environmental conditions and various phases and steps of PAMP. These maneuvers

focused on construction Phase 2, Steps 2.1 and 2.2, and Phase 3.0. The various environmental conditions were wind direction and velocity, currents, and ice. The objective of each maneuver was either docking or undocking portside or starboard side. These 32 maneuvers were all performed with three available tugboats: one 5,000 HP tugboat, the *Stellar Wind,* and the *Glacier Wind*.

Table 14. Matson Round 1: 32 Original Maneuvers

Round 1 Sim#	Objective	Construction	Wind Direction	Wind Speed Knots	Current	Ice
1	Docking Port	3	225	15	Small Flood	Yes
2	Docking Port	3	335	25	Large Flood	No
3	Docking Port	2.2	225	15	Small Flood	Yes
4	Undocking Starboard	2.2	225	15	Large Flood	Yes
5	Docking Port	2.1	225	15	Small Flood	Yes
6	Undocking Port	2.2	335	25	Large Ebb/ Early Tide/ No Back Eddy	No
7	Undocking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
8	Docking Port	2.2	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
9	Docking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
10	Undocking Portside	2.2	335	25	Small Flood	No
11	Undocking Port	2.1	225	15	Large Ebb/ Early Tide/ No Back Eddy	Yes
12	Docking Port	2.2	335	25	Small Flood	Yes
13	Docking Port	2.1	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No
14	Undocking Port	2.1	335	25	Large Flood	No
15	Docking Starboard	2.1	45	20	Large Ebb/ Early Tide/	No
16	Docking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
17	Docking Starboard	3	45	20	Large Ebb/ Early Tide/	Yes

18	Undocking Starboard	3	335	25	Large Flood	No
19	Docking Port	2.2	45	20	Large Flood	Yes
20	Undocking Port	2.2	335	25	Small Ebb	Yes
21	Docking Port	2.2	335	25	Large Flood	Yes
22	Docking Port	2.2	335	25	Large Flood	No
23	Docking Port	2.2	45	20	Small Flood	Yes
24	Undocking Port	2.2	45	20	Large Flood	Yes
25	Undocking Port	2.1	335	25	Small Ebb	No
26	Undocking Port	2.1	225	15	Large Flood	Yes
27	Docking Port	2.1	225	15	Large Ebb/ Late Tide/ Flood Back Eddy	No
28	Undocking Port	2.1	225	15	Large Ebb/ Early Tide/ No Back Eddy	No
29	Undocking Port	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
30	Docking Port	2.1	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
31	Docking Port	2.1	45	20	Small Flood	No
32	Docking Starboard	2.1	45	20	Small Ebb	No

Round 2: These 32 original maneuvers were analyzed to determine which had the greatest level of concern for safety and whether the pilots felt any additional maneuvers should be further analyzed. Based on this action review, 16 maneuvers of the original 32 were identified as posing a concern for safety. These 16 maneuvers were then performed by two alternative SWAPA pilots who did not perform the original maneuver. This allowed for a second observation of the maneuver by a different SWAPA pilot. This practice increased the reliability of the first round's observations. These maneuvers were performed with the same objectives, construction phases, environmental conditions, and available tugboats. During this process, 8/16 maneuvers were not verified as having a high concern for safety; these maneuvers, when conducted by an alternative pilot, had low levels of concern for safety and could be safely completed using one 5,000 horsepower (HP) tugboat, the *Stellar Wind,* and the *Glacier Wind*. Therefore, only eight maneuvers were verified as having high levels of concern for safety and were further studied using two 5,000 HP tugboats and the *Stellar Wind* in Round 3.

Table 15. Matson Round 2: 16 Reliability Check Maneuvers

Round 1 Sim#	Round 2 Sim#	Objective	Construction	Wind Direction	Wind Speed Knots	Current	Ice
2	33	Docking Port	3	335	25	Large Flood	No
5	37	Docking Port	2.1	225	15	Small Flood	Yes
6	35	Undocking Port	2.2	335	25	Large Ebb/ Early Tide/ No Back Eddy	No
8	39	Docking Port	2.2	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
9	41	Docking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
11	43	Undocking Port	2.1	225	15	Large Ebb/ Early Tide/ No Back Eddy	Yes
13	45	Docking Port	2.1	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No
15	47	Docking Starboard	2.1	45	20	Large Ebb/ Early Tide/ No Back Eddy	No
16	48	Docking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
22	34	Docking Port	2.2	335	25	Large Flood	No
23	38	Docking Port	2.2	45	20	Small Flood	Yes
25	36	Undocking Port	2.1	335	25	Small Ebb	No
27	40	Docking Port	2.1	225	15	Large Ebb/ Late Tide/ Flood Back Eddy	No

28	42	Undocking Port	2.1	225	15	Large Ebb/ Early Tide/ No Back Eddy	No
30	44	Docking Port	2.1	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
31	46	Docking Port	2.1	45	20	Small Flood	No

Round 3: The eight maneuvers that were identified in Round 1 and verified in Round 2 as having the greatest concern for safely maneuvering Matson were simulated a third time. This time an alternative SWAPA pilot from the previous rounds completed all eight maneuvers using two 5,000 HP tugboats, along with the *Stellar Wind*. The purpose was to determine if a second 5,000 HP tugboat mitigates the concern for safety identified during Rounds 1 and 2 of simulations. In addition to simulating each of these maneuvers using a second 5,000 HP tugboat, four of the maneuvers that had the greatest concern for safety were simulated twice.

Table 16. Matson Round Three: Eight Maneuvers Using Two 5,000 HP Tugboats

Rounds 1 & 2 Sim#	Round 3 Sim#	Objective	Construction Phase	Wind Direction	Wind Speed	Current	Ice
2 / 33	57 / 67	Docking Port	3	335	25	Large Flood	No
13 / 45	58 / 66	Docking Port	2.1	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No
15 / 47	59 / 69	Docking Starboard	2.1	45	20	Large Ebb/ Early Tide/ No Back Eddy	No
16 / 48	60	Docking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
22 / 34	61 / 70	Docking Port	2.2	335	25	Large Flood	No
23 / 38	62	Docking Port	2.2	45	20	Small Flood	Yes
30 / 44	63	Docking Port	2.1	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No

31 / 46	64	Docking Port	2.1	45	20	Small Flood	No

In total, 60 simulations were performed. The frequency of the number of simulations performed by each pilot during each round are below.

Table 17. SWAPA Pilots and Frequency of Maneuvers Performed

Pilot Name	Round 1	Round 2	Round 3	Total
Carolyn Vermette	8	0	0	8
Matt Michalski	8	0	0	8
Andy Wakefield	8	0	0	8
Vernon Adkison	8	8	0	16
Donal Ryan	0	8	0	8
Josh Weston	0	0	12	12
Total	32	16	12	60

Methods: Focus Groups

To disseminate, validate, and interpret the results of both Matson and TOTE simulations, as well as develop recommendations, two separate focus groups were conducted with local subject-matter experts and stakeholders at the CH2M conference room at POA on April 16th and 17th, 2018. The comments made during the focus group are not attributed to a specific individual. Much like the interviews, these comments are analyzed in aggregate and used to develop recommendations. The focus groups included the following participants:

Table 18. TOTE Focus Group Attendance April 17, 2018

Name	Affiliation
Jeff Bool	CH2M
Todd Cowles	Port of Alaska
Doug Playter	CH2M
Nicole Schmitt	SGM
Jonathan Pierce	SGM
Jeff Pierce	SGM
Frank Smith	TOTE
Terry Federer	AVTEC
Dan Butts	CITB
George Newman	CH2M

Table 19. Matson Focus Group Attendance April 16, 2018

Name	Affiliation
Steve Ribuffo	Port of Alaska
Todd Cowles	Port of Alaska
Jeff Bool	CH2M
Doug Playter (Phone)	CH2M
Nicole Schmitt	SGM
Jonathan Pierce	SGM
Jeff Pierce	SGM
Peter Garay	SWAPA
Andy Wakefield	SWAPA
Josh Weston (Phone)	SWAPA
Vernon Adkison (Phone)	SWAPA
Brad Kroon	Harley Marine Services, Port of Alaska Commission
Dan Butts	CITB
George Newman	CH2M

The questions that focus group participants discussed were: Does the use of a second 5,000 HP tugboat mitigate the level of risk for maneuvering at POA during PAMP? If yes, is the level of mitigation sufficient to make maneuvering Matson and TOTE vessels safe during the studied phases of the PAMP?

These questions were supported with visual evidence from simulation screen shots. Notes were taken throughout the discussion and synthesized into multiple recommendations. These recommendations were then discussed with widespread support from the participants. The recommendations discussed during the focus group are outlined in the Results section of the report.

Also, some general maritime questions about the POA, such as mooring line leads, were discussed. Mooring line leads require a sufficient length to facilitate the mooring system for tidal influxes at POA. Mooring line conflicts between TOTE and Matson were discussed, with photos made available for participants, to view the bow lines of Matson with close proximity to TOTE ship lines when Matson was moored starboard side alongside.

Results

The results are divided into three sections: the interviews, simulations, and focus groups. Each of these sections presents the results for TOTE then Matson.

Results: TOTE Interview Questions

Ten interviews were conducted with TOTE pilots, captains and tugboat operators. The questions are in bold and quotes are in italics below.

1) **Based upon the information provided, do you have any input concerning the following environmental conditions: Currents, Wind and Ice?**

All interviewees stated that the wind and currents provided accurately depicted environmental conditions at POA. Also, interviewees reflected that ice flows would be difficult to simulate due to ice packing at the north end of Terminal 3 due to the north extension.

"If the Port proceeds with re-phasing the project and they do not remove the sheet pile embankment to the north, we will continue to have a hole at the north end that fills with ice."

Also, currents and eddies are difficult to simulate due to the north extension. *"We often have unpredictable current eddies around our stern close to the TOTE berth".*

2) **Do you think the environmental conditions described above are representative of extreme conditions that you may encounter on an annual basis at the Port of Alaska? If not, can you please identify what would be more representative of extreme environmental conditions.**

Interviewees responded positively to the question. In addition, many referenced the impact of the north extension on increasing silting at Terminal 3 and the subsequent effect on safety for TOTE.

"Another environmental condition that isn't being addressed is the silting. The silting seems to be getting worse every year, especially since the sheet pile embankment was installed to the north. And once construction begins and the new Terminal 1 & 2 are erected, the currents may be reduced, causing accelerated silting. Our biggest problem is in the Spring, prior to the arrival of the dredge. Depth at low tide becomes very critical, and the possibility of being forced to get underway to avoid grounding at the berth can have a huge impact upon our operations. It would also affect crew fatigue and their rest hours. The risks presented from increased silting must be addressed and the re-phasing of the modernization project should be reconsidered."

3) **About half of the simulations will occur in ice. During these simulations two tugboats will directly assist the vessel and a third tugboat will be washing ice at the dock. Do you agree that this is representative use of tugboats when operating in ice at POA during PAMP?**

All interviewees agreed this was representative or routine procedure during the last year of maneuvers when ice was present. Multiple comments were made about the limited

maneuverability and therefore utility of the third tugboat now available the *Daniel Foss*. However, it was stated that TOTE requires three assist tugboats for their vessel operations due to the inability to wash ice clear from the most northern section of Terminal 3. The north extension was identified as a cause of this problem regarding the ice buildup at Terminal 3.

"This has been our routine during normal ice conditions but will not be adequate without initial removal of the north end extension sheet pile embankment. Presently, the tug Stellar Wind is utilized just south and up-current of our mooring position washing ice. She is able to provide the best thrust of the three tugs while still holding her position perpendicular to the dock. Her thrust creates an area clear of ice where we maneuver our bow and cut off the ice flow. When ice concentrations are heavy, or if currents are weak at the dock, the Glacier Wind is also utilized for washing ice. As needed, especially since the addition of the sheet wall embankment to the north, the Glacier is key as her size is small enough to safely maneuver between the vessel and the dock and walk sideways clearing ice."

Construction phases were also mentioned, and the effect it may have on the abilities of the ships to maneuver with the present infrastructure with only three tugboats assisting. The main concern was the continued use of the *Daniel Foss* due to its limitations in particular in ice.

"Once construction gets started, we will need a replacement for the Daniel Foss. The hull shape of the Daniel is not ideal for ship assist, and she has difficulty holding her heading in the ice/current while providing thrust. And, in 2023, when the new Matson terminal is in place, we may require a 4th tug to assist maneuvering the TOTE ships sideways the extra distance. Especially in ice!"

4) Will the simulations proposed utilizing the TOTE vessel be sufficient to determine whether one or two Dolphin class tugboats (64 ton, 5,080 HP)[8] are required to create an acceptable level of risk during PAMP?

All respondents responded positively to performing ship simulations to determine if two 5,000 HP tugboats would create an acceptable level of risk. Interviewees had questions pertaining to the ability of these tugboats to minimize the overall risk for their ships with the north extension remaining in place.

"Yes, I think so. My only thing with simulations is you need to subtract 20%. When I did Army Corps simulations in Vicksburg there were things I did there I would not do in real life. They are helpful and beneficial. Concerning the tugboats, more is always better but what are the minimum requirements? In particular, the concern is will the ice wash out during construction. During construction during the phasing without knowing for sure if the ice will wash out. We need the

[8] The question references a Dolphin class tugboat that is 64-ton bollard pull with 5,000 HP. During simulations an Atlantic Oak tugboat with 64-ton bollard pull and 5,080 HP was utilized. This is because AVTEC did not have available a Dolphin class tugboat in the Kongsberg library of vessel models. The main difference between the models is the length as the Dolphin class tugboat is 78' in length compared to the Atlantic Oak that is 101' in length. However, as the tugboats utilized are vector forces of tonnage that are input into the computer their lengths do not affect the simulated maneuver rather only the tonnage or bollard pull effects the simulated maneuver. The bollard pulls, and horsepower of the Dolphin class and Atlantic Oak are approximately same at 64-ton and 5,080 HP. SGM uses 5,000 HP was referenced continuously during the project as a rounded number instead of 5,080 HP.

Stellar Wind washing ice and then the Glacier Wind helping. You will need two tugboats on the ship at all times and another boat to sweep. Part of the problem with how the dock is setup and not removing the North End it is going to be hard getting the ice out. Will it be sufficient to determine in terms of one or two tugs? It is sufficient on the ship, but not in terms of getting the ice out. It is hard to simulate getting the ice out during construction. You can simulate impact on the ship, but will it be the final qualification of what we need to do, I am not sure."

"Yes, unfortunately simulations will not be able to simulate ice jams or flows. The simulations will help, but they may not indicate the true risks that will be encountered. The Dolphin Class type is very powerful and has the maneuverability that may be required in the extreme conditions presented during construction. With both the sheet pile embankment to the north, and the new Matson dock just 50 feet from our bow to the south, we will have no wiggle room for any mistakes. Factor in the silting and reduced water depths, and the TOTE operation could become unmanageable."

5) **On a scale of 1 to 10, with 1 being "not benefit at all" and 10 being "extremely beneficial", how beneficial will having a second Dolphin class tugboat (64 ton, 5,080 HP) be to decrease the risk of operating a TOTE vessel at POA during PAMP?**
6) **What about in ice?**
7) **What about during offset docks during Phase 2 of construction?**

This question was answered by a majority of the respondents as an 8 to 10 (highly beneficial). Therefore, respondents indicated they believed a second 5,000 HP tugboat would greatly mitigate the concern for safety. Interviewees questioned the timing of having a second 5,000 HP tugboat available. All except one stated the need for a second 5,000 HP tugboat as necessary during winter ice season when maneuvering with offset docks. An example of the responses is provided below:

"In the winter when we will need two tugs available just to clear ice (Glacier & Stellar), I give the need for two additional Dolphin Class type boats a 10. And a dredge on scene and ready to go by the middle of March (not the middle of April). And just for clarification, the line of questioning discusses the addition of two Dolphin Class type tugboats. There has been no mention of what boats (if any) would be removed. The Glacier is critical for her size and her ability to sweep ice in tight areas, and the Stellar does pretty well as she stands."

One respondent felt horsepower alone does not create sufficient mitigation of the risks associated with keeping the north extension and creating offset docks.

8) **Can you please describe your organization's interests, if any, involving the determination of the number and type of tugboats operating at POA beyond the safe maneuvering of vessels?**

The safety of the vessel was the objective amongst all of the respondents. Some were more concise with their response concerning the specifics of the tugboat assist required, as an example listed below:

"The boats that are chosen to fit the bill not only should have the Bollard pull but they should be of design that they can work in the ice and strong currents of upper Cook inlet. We are interested in a margin of safety with more boats."

"The added risk of re-phasing the modernization project is a huge mistake and must be reconsidered. If the Port of Alaska proceeds with this new plan, the addition of two more tugboats is not the best answer, however could help reduce some of the risk."

Results: Matson Interview Questions

Twenty-one interviews were conducted with SWAPA pilots, stakeholders for Matson, and tugboat operators. Responses from tugboat operators pertain to both vessels. The questions are in bold and quotes are in italics below.

1) **Based upon the information provided, do you have any input concerning the following environmental conditions: Currents, Wind and Ice?**

Almost all of the respondents agreed with the environmental conditions described as representing realistic conditions at POA. Two interviewees stated that the proposed currents were representative of POA's present currents but were unsure what could occur if the north extension was removed. As all of the simulations conducted were with the north extension in place this is not a threat to validity.

"No, I think these conditions are a good representation of what I would expect to encounter. Concerning the currents, this information is good and in the ballpark of real conditions. No, I think these conditions are pretty spot on- very close to what you would actually encounter."

All of respondents except three expressed satisfaction with the wind conditions presented for the simulations. All three requested that higher wind velocities be utilized during the simulations. An example of the higher wind velocities prescribed are 30 knots from 335 degrees (northwest). This does represent the velocity of gusts recorded in 2017, but the wind velocities utilized in this study were chosen to represent sustained wind velocities rather than gusts. The other respondents agreed with the proposed winds as depicted by examples below:

"No, from our perspective the previous inputs in the simulation are as close as real life."

"No, I think these conditions are pretty spot on- very close to what you would actually encounter."

"They all seem fine, especially the wind. Everything looks good to me. Winds- those seem perfect."

All but three respondents agreed with the proposed ice simulations. Three raised concerns with the capabilities of the simulator to accurately depict the ice scenarios. This issue about simulating ice is discussed in the methods section above.

"The ice is not representative of this winter, but of a real winter."

"*Yes, it all looks pretty realistic to me."*

2) **Do you think the environmental conditions described above are representative of extreme conditions that you may encounter on an annual basis at the Port of Alaska? If not, can you please identify what would be more representative of extreme environmental conditions.**

All but three respondents agreed that the conditions depicted were representative of extreme environmental conditions they have encountered at POA. The three who disagreed requested higher wind velocities or thicker and higher ice coverage to depict extreme conditions. As addressed above the wind and ice were selected based on 2016-17 environmental conditions at POA rather than historical conditions that do have greater wind velocities as well as ice thickness and coverage.

"Yes, that is accurate. For an average of the extremes."

"Wind at 25 knots is not extreme, but more of an average. Wind at 40 would be extreme."

"No, it can be far worse. You could double the ice thickness if you wanted. Yes, that is accurate. For an average of the extremes. Yes, the information is accurate."

3) **About half of the simulations will occur in ice. During these simulations two tugboats will directly assist the vessel and a third tugboat will be washing ice at the dock. Do you agree that this is an appropriate use of tugboats when operating in ice at POA during PAMP?**

Every respondent agreed with the above statement and a few elaborated further to clarify the requirement for a third tugboat to assist during ice season while PAMP is occurring.

"Yes, three tugboats are mandatory under these conditions."

"Absolutely," the respondent states*, "We need to have three tugs during stages of construction. Yes, with emphasis."*

"Yes, [the respondent] believes that three tugs are appropriate in the simulated positioning. Yes. To expand upon that, I think that a fourth tug might be beneficial in extreme cases. Sticking it in some of those holes in different phases will be tricky in any condition. Depending on how many construction barges there are and how much equipment there is- that will play into it as well."

4) **Will the simulations proposed utilizing the Matson vessel be sufficient to determine whether one or two Dolphin class tugboats (64 ton, 5,080 HP) are required to create an acceptable level of risk during PAMP?**

All the responses were positive, and some elaborated upon the point of utilizing simulations to

study the concern for safety associated with PAMP.

"I can think of many infrequent callers- military vessels and others- that wouldn't have the same degree of readiness and expertise as a Matson ship. Even so, I still think two Dolphins is a good idea. They've operated without it before, but the added risk of construction makes this an extremely smart move."

"Yes. I think you need the safety factor of the higher-powered tug to mitigate risk."

"Yes. It is difficult to predict what happens when the wind is at 60, but for a working baseline the simulations will be sufficient."

"Yes. More horsepower will be better under these circumstances. [Their] control will be very low on stage two at Terminal 2; We won't be able to drive the ship anymore, we'll basically be parallel parking, increasing the risk"

5) **On a scale of 1 to 10, with 1 being "not benefit at all" and 10 being "extremely beneficial", how beneficial will having a second Dolphin class tugboat (64 ton, 5,080 HP) be to decrease the risk of operating a Matson vessel at POA during PAMP? What about in ice? What about during offset docks during Phase 2 of construction?**

All interviewees responded that it could be beneficial. The majority of respondents gave all three a 10 (extremely beneficial), while some gave scores of ranging from 5-10 depending on various caveats. Risk of damage to the ship or construction associated with PAMP was the emphasis of the comments received. Some of the comments were about how frequent mechanical problems occur (10-14 times annually) on Matson vessels and that a second 5,000 HP would mitigate risks if a vessel lost power. Furthermore, some respondents noted that offset docks there is an increased level of risk and one way to mitigate that risk is through more tugboats with high levels of horsepower.

"10 would be the benefit – having two 5,000 HP – you have to look at the increase of risk during construction. Maneuvering on an ebb tide departure will create risk for Matson due to construction. There currently is no risk for such a departure. If there is construction at PCT on an ebb tide departure, there is not enough horsepower in particular in the ice for maneuvering Matson. Two 5,000 HP would mitigate risk from environmental and mechanical malfunction from the vessel departing. We pull Matson off and push them back in because of mechanical failures. There are on average 192 maneuvers in and off the dock for Matson and about 10 times per year we have to push them off and on again because of mechanical problems. This means about 5 percent of the time there are mechanical problems. This may actually be closer to 14 times per year. It only takes one event to wipe everything out. If we are trying to mitigate risk, then using the two 5,000 HP are necessary."

"This is a 5, because the utilization of tugs is so heavily influenced by market conditions…If you want zero risk, you need three 10,000 horsepower tugs, but that isn't cost effective enough to be realistic."

"More is always better in ice," but that the cost of having massive horsepower is weighed against the cost of the ship. *"We've gotten away with what we've had, with a lot of luck involved."*

"With the offset docks in Phase 2, we're going to need more horsepower. If we're parking the ship in a notch with ice and currents, there's more risk. Especially with construction barges there, more is better."

The respondent rates this as a, *"10+, very crucial." The respondent emphasized to say that, "Tugs need to be value added, with good and experienced captains. Additionally, the tugs must be constructed to maneuver in ice. Essentially, the most useful tugs would have operators of the experience of Glacier and Steller with more horsepower."*

6) **On a scale of 1 to 10, with 1 being "not benefit at all" and 10 being "extremely beneficial", how beneficial will having a second Dolphin class tugboat (64 ton, 5,080 HP) be to decrease the risk of operating a Matson vessel at POA during PAMP? What about in ice? What about during offset docks during Phase 2 of construction?**

All respondents agreed it could be beneficial with almost all respondents gave this all 10 scores (extremely beneficial). Only three respondents ranged from 5-7 scores based on various contexts and caveats similar to above.

7) **Can you please describe your organization's interests, if any, involving the determination of the number and type of tugboats operating at POA beyond the safe maneuvering of vessels?**

Answers to the question were predominately based upon the safe movements of the ship. A few responses from tugboat operators emphasized that their primary goal is to maintain safe and efficient operations of the Port and not financial considerations. State pilots (SWAPA members) answered the question as independent contractors with a state mandate to protect life, property, and environment without the financial considerations involved.

"Myself and my organization are responsible for maneuvering the vessels throughout the Port, including Terminal three. The question of Dolphin class tugs and the change of sequence for the North End Extension and stabilization have a lot of consequences throughout the port. If it all stays like it is, we have the adequate vessels. But with all the unknowns we will come across throughout the different phases of construction, I do believe that more horsepower will be needed throughout. Safe navigation, safety, and low property damage is what we are about. Anything we can do in our power to make sure business is conducted safety without environmental damage or loss of life is what we care for. Our organization's interest is primarily the safe maneuvering of vessels— I have no economic interest other than wanting the Port to be economically viable."

"Onerous economic interests are bad for everyone." The respondent states that it is, *"in [their] own, and everyone else's, best interest to have zero tolerance for incidents…. [they]receive no monetary gain for having more tugboats, and it is in everyone interests to do this as safely and*

efficiently as possible."

"It is a loaded question. We are a tugboat operator. As the tugboat operator, our number one mission is to provide as much assistance to the ship owner and to the pilots to maneuver the vessel safely into the facility. The challenge we have is being able to provide the size and type of equipment that may be required but may not make sense commercially. As an operator, we have an interest in understanding the needs and what is necessary for the environment."

8) Do you have any other thoughts we should consider when developing ship simulations?

Several very important points were presented during this final open-ended question. The local subject-matter experts stated that construction increases danger and delays. It is critical to determine how to mitigate those risks.

"My thoughts are that construction is just as risky as changes in environmental conditions. In other ports with ongoing construction- where they don't have safeguards like tugs- there has been increased danger and delays. It is critical to reduce the risks posed by construction. You should also consider maximum ice and current."

The respondent reflected that the study has a, *"good handle"* on the environmental and logistical conditions of the Port, and noted that, *"the dock design keeps changing, and [they]want to confirm that the simulations will test the most recent design."*

The respondent did not have any additional thought on simulations but did have comments for the overall POA process. Their first concern regards shoaling, as the respondent believes there, *"May be a problematic aftermath of shoaling in the North End that isn't being fully considered."* The respondent notes that there is, *"no real way to simulate shoaling,"* but that it should be considered by POA.

Furthermore, other respondents stated that maneuvers that were once common at POA may not be practical or safe anymore due to PAMP. For example, docking Matson starboard side on an ebb current. This maneuver referenced as the "cow turn" was simulated and the results below indicate that it poses a high amount of concern for safety.

"There may be some maneuvers, particularly the cow turns in Phase 2 on an ebb, that pilots will no longer be able to do under this construction. Making a starboard side approach on an ebb, in ice, would be very concerning. Additionally, we may find more eddies with ice as the POA development continues and I'm concerned if POA is willing to accept that sometimes pilots may not be able to dock in certain circumstances. The west wind with ice and Starboard side 2 (2.1)- with the barges and whatnot outside of that- will be a very challenging docking. With barges, buoys and the current, this will be difficult. I don't see the Glacier as an adequate tug for that maneuver during construction. When you back out, the forward tug needs to be strong enough to swing the bow starboard through the current and the Glacier Wind is not capable of the power needed for this task."

Results: TOTE Simulations (n = 61)

Validity of Simulations

These first two questions pertain to all TOTE simulations as they establish that the environmental conditions and attributes and maneuverability of the vessel are valid.

The simulation represented realistic environmental conditions at POA.
Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree

Table 20. Frequency for how realistic environmental conditions (n = 61)

Response	1	2	3	4	5
Frequency	0%	2% (1)	8% (5)	33% (20)	57% (35)

The median score is a 5 (Strongly Agree) with respondents indicating that they agree 90% of simulations had realistic environmental conditions. There were no systematic issues with the environmental conditions of the simulator for TOTE.

The simulation represented realistic attributes and maneuverability of the vessel.
Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree

Table 21. Frequency for how realistic attributes and maneuverability of the vessel (n = 61)

Response	1	2	3	4	5
Frequency	0%	3% (2)	7% (4)	31% (19)	59% (36)

The median score is a 5 (Strongly Agree) with respondents indicating that they agree 90% of simulations had realistic attributes and maneuverability of the vessel. There were no systematic issues with the attributes and maneuverability of the vessel for TOTE.

Results: TOTE Round 1 (n = 32)

Frequencies and Descriptive Statistics

The results in this section are only for the first round of 32 original maneuvers. These are described above in the methods section.

What was the result of the maneuver?
Scale: 0 = Failed to achieve the objective (i.e. either docking or undocking), or 1 = Completed the objective

During Round 1, 30/32 (94%) maneuvers were successful. The two maneuvers that were not successful are described below.

Table 22. Describing Maneuvers that Failed to Complete the Objective Round 1

Round 1 Sim#	Objective	Construction	Wind Direction	Wind Speed Knots	Current	Ice
7	Docking Port	2.3	335	25	Large Flood	No
14	Undocking Port	2.3	335	25	Large Flood	No

Both of these maneuvers are during construction Phase 2, Step 2.3 on a large flood with wind 335 (northwest) at 25 knots.

What is your level of concern for the completed simulation?
Scale: 1 = Not at all concerned, 2 = Slightly concerned, 3 = Somewhat concerned, 4 = Moderately concerned, 5 = Extremely concerned

Table 23. Frequency for level of concern for safety

Response	1	2	3	4	5
Frequency	31% (10)	38% (12)	9% (3)	16% (5)	6% (2)

The median score is a 2, indicating that there is not systematic concern for safety. However, there are 10/32 simulations that scored equal to or greater than a 3, which represents at least some concern for safely completing the maneuver.

The North Extension effects the maneuver.
Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree

Table 24. Frequency for the North Extension effects the maneuver

Response	1	2	3	4	5
Frequency	44% (14)	13% (4)	6% (2)	6% (2)	31% (10)

The median score is a 2, indicating that there is not systematic effect of the north extension on the maneuvers. However, there are 12/32 simulations that scored equal to or greater than a 4, which represents at least agreement that the north extension effects the maneuver.

The North Extension increased your level of concern when performing the maneuver. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree

Table 25. Frequency for North Extension increases concern of the maneuver

Response	1	2	3	4	5
Frequency	50% (16)	6% (2)	6% (2)	3% (1)	34% (11)

The median score is a 1.5, indicating that there is not a systematic effect of the north extension increasing concern for the maneuvers. However, there are 12/32 simulations that scored equal to or greater than a 4, which represents at least some agreeance that it does increase the level of concern of the maneuver.

Association Between Maneuvers and Levels of Concern for Safety

As the level of concern for safety is not systematic across all maneuvers, to further investigate what is associated with high levels of concern three types of maneuvers are analyzed. The decision to focus on these three types of maneuvers was based on an action review with the pilots. These are: 1. Docking during construction Phase 2, Step 2.3 on a large flood; 2. Undocking during construction Phase 2, Step 2.3; and 3. Docking and undocking during construction Phase 2, Step 2.4 with wind 335 (northwest) at 25 knots. Among these three types of maneuvers, 12 total maneuvers were performed varying items such as wind, current, and ice. These 12 maneuvers will be utilized for the rest of analyses.

Table 26. Round 1 Docking During Construction Phase 2.3 on a Large Flood

Round 1 Sim#	Level Concern	Wind Direction	Wind Speed	Ice
2	4	045	20	Yes
5	2	225	15	No
6	2	225	15	Yes
7	3	335	25	No
9	2	335	25	Yes

The level of concern for this type of maneuver during Round 1 ranges from a low of 2 (slightly concerned) to a high of 4 (moderately concerned), with 3/5 maneuvers being scored a 2.

Table 27. Round 1 Undocking During Construction Phase 2.3

Round 1 Sim#	Level Concern	Wind Direction	Wind Speed	Current	Ice
4	4	045	20	Large Flood	No
11	4	335	25	Large Flood	Yes
12	4	335	25	Small Ebb	No
14	5	335	25	Small Ebb	No

The level of concern for this type of maneuver during Round 1 ranges from a low of 4 (moderately concerned) to a high of 5 (extremely concerned).

Table 28. Round 1 Docking and Undocking During Construction Phase 2.4 with Wind from 335 at 25 knots

Round 1 Sim#	Level Concern	Objective	Current	Ice
16	5	Dock	Small Flood	No
18	4	Dock	Large Flood	Yes
30	1	Undock	Large Flood	No

The level of concern for this type of maneuver during Round 1 ranges from a low of 1 (not concerned) to a high of 5 (extremely concerned).

Overall, there are three types of maneuvers described above during construction Phase 2, Steps 2.3 and 2.4 that received at least one score of 4 (moderately concerned) for level of concern for safety.

Association Between Construction Phases and Steps with the North Extension

As the north extension does not have a systematic effect or increase of concern for all maneuvers, to further investigate this issue construction phases and steps are analyzed in association with the north extension.

Table 29. Maneuvers during Construction Phase 2, Step 2.3

Round 1 Sim#	Effect NE	NE Increases Concern	Objective	Wind	Current	Ice
2	5	5	Dock	045/20	Large Flood	Yes
4	5	5	Undock	045/20	Large Flood	No
5	4	4	Dock	225/15	Large Flood	No
6	5	5	Dock	225/15	Large Flood	Yes
7	5	5	Dock	335/25	Large Flood	No
9	5	5	Dock	335/25	Large Flood	Yes
11	5	5	Undock	335/25	Large Flood	Yes
12	5	5	Undock	335/25	Small Ebb	No
14	5	5	Undock	335/25	Small Ebb	No

The level of agreement that the north extension effects the maneuver and increases the concern for the maneuver ranges from 4 (agree) to a 5 (strongly agree). In addition, 8/9 maneuvers receive a score of 5 for both effect and increase in concern.

Table 30. Maneuvers during Construction Phase 2, Step 2.4

Round 1 Sim#	Effect NE	NE Increases Concern	Objective	Wind	Current	Ice
16	3	3	Dock	335/25	Small Flood	No
18	1	1	Dock	335/25	Large Flood	Yes
30	1	1	Undock	335/25	Large Flood	No

The level of agreement that the north extension effects the maneuver and increases the concern for the maneuver ranges from 1 (strongly disagree) to a 3 (neither agree nor disagree). In addition, 2/3 maneuvers receiving a score of 1 for both effect and increase in concern.

Based on Round 1, the north extension effects maneuvers during construction Phase 2, Step 2.3 but not Step 2.4.

Results: TOTE Round 2 (n = 12)

To verify the reliability of the observed results of the maneuver in Round 1, a second alternative pilot performed the same maneuver. Among the original 32 maneuvers, three types of maneuvers were identified including 12 individual maneuvers. The 12 individual maneuvers are described below.

Table 31. TOTE Round Two: 12 Reliability Check Maneuvers

Round 1 Sim#	Round 2 Sim#	Objective	Construction Phase	Wind Direction	Wind Speed	Current	Ice
2	33	Dock	2.3	045	20	Large Flood	Yes
4	34	Undock	2.3	045	20	Large Flood	No
5	35	Dock	2.3	225	15	Large Flood	No
6	36	Dock	2.3	225	15	Large Flood	Yes
7	37	Dock	2.3	335	25	Large Flood	No
9	38	Dock	2.3	335	25	Large Flood	Yes
11	40	Undock	2.3	335	25	Large Flood	Yes
12	41	Undock	2.3	335	25	Small Ebb	No
14	42	Undock	2.3	335	25	Small Ebb	No
16	43	Dock	2.4	335	25	Small Flood	No
18	44	Dock	2.4	335	25	Large Flood	Yes
30	39	Undock	2.4	335	25	Large Flood	No

Frequencies and Descriptive Statistics

Table 32. Comparing Rounds 1 and 2 for Level of Concern for Safety

Round 1 Sim#	Round 1 Level Concern	Round 2 Sim#	Round 2 Level of Concern	Median Level of Concern
2	4	33	5	4.5
4	4	34	2	3
5	2	35	4	3
6	2	36	5	3.5
7	3	37	5	4
9	2	38	5	3.5
11	4	40	1	2.5
12	4	41	2	3
14	5	42	5	5
16	5	43	1	3
18	4	44	2	3
30	1	39	1	1

The level of concern for safety for the same maneuver in Rounds 1 and 2 and the median score are reported above. Only 2/12 maneuvers did both pilots rate the level of concern for safety as a 4 or 5, and only 3/12 maneuvers did both pilots rate within one unit of each other. Therefore, on 9/12 maneuvers there was some disagreement between the pilots about the level of concern for safety. When comparing these scores, both pilots rated some maneuvers higher than the other, as well as some lower than the other. Therefore, there was no systematic problem of one pilot rating maneuvers lower than the other. To help control for these differences in observations median scores are used. Furthermore, after Round 2 was completed an action review was conducted asking the pilots whether each of these 12 maneuvers should be simulated in Round 3 using the two 5,000 HP tugboats to determine whether it mitigates the risk for the maneuver. Both pilots agreed that all 12 maneuvers should be simulated in Round 3.

Table 33. Comparing Rounds 1 and 2 for Effect of North Extension

Round 1 Sim#	Round 1 Effect North Extension	Round 2 Sim#	Round 2 Effect North Extension	Median Effect North Extension
2	5	33	5	5
4	5	34	5	5
5	4	35	5	4.5
6	5	36	5	5
7	5	37	5	5
9	5	38	5	5
11	5	40	5	5
12	5	41	5	5
14	5	42	5	5
16	3	43	1	2
18	1	44	2	1.5
30	1	39	1	1

When examining whether the north extension had an effect on the maneuver, pilots in Round 1 indicated that they at least agreed (4) it did have an effect on 9/12 maneuvers. When re-simulated to ensure the reliability of the observation by the alternative pilot, the same 9/12 maneuvers had at least strongly agreed (5) that it was affected by the north extension.

Table 34. Comparing Rounds 1 and 2 for North Extension Increases Concern for the Maneuver

Round 1 Sim#	Round 1 North Extension Increases Concern	Round 2 Sim#	Round 2 North Extension Increases Concern	Median North Extension Increases Concern
2	5	33	5	5
4	5	34	5	5
5	4	35	5	4.5
6	5	36	5	5
7	5	37	5	5
9	5	38	5	5
11	5	40	5	5
12	5	41	5	5
14	5	42	5	5
16	3	43	1	2
18	1	44	2	1.5
30	1	39	2	1.5

When examining whether the north extension increases the level of concern for safety of the maneuver, pilots in Round 1 indicated that they at least agreed (4) on 9/12 maneuvers. When re-simulated to ensure the reliability of the observation by the alternative pilot, the same 9/12 maneuvers had at least strongly agreed (5) that the north extension increases their concern for the maneuver.

Association Between Maneuvers and Levels of Concern for Safety

Similar to Round 1, as the level of concern for safety is not systematic across all maneuvers, to further investigate what is associated with high levels of concern three types of maneuvers are analyzed.

Table 35. Rounds 1 and 2 Level of Concern Docking During Construction Phase 2.3 on a Large Flood

Round 1 Sim#	Level Concern	Round 2 Sim#	Level Concern	Median Level Concern	Wind Direction	Wind Speed	Ice
2	4	33	5	4.5	045	20	Yes
5	2	35	4	3	225	15	No
6	2	36	5	3.5	225	15	Yes
7	3	37	5	4	335	25	No
9	2	38	5	3.5	335	25	Yes

The level of concern for this type of maneuver during Round 2 ranges from 4 (moderately concerned) to 5 (extremely concerned), with 4/5 maneuvers being scored a 5. Comparing Rounds 1 and 2 finds that the level of concern is greater for all simulations during Round 2. Furthermore, the results find that 4/5 maneuvers changed qualitatively from being in the safe range of 2 or less during Round 1, to increasing during Round 2 to the high level of concern range being a 3 or greater.

Table 36. Rounds 1 and 2 Level of Concern Undocking During Construction Phase 2.3

Round 1 Sim#	Level Concern	Round 2 Sim#	Level Concern	Median Level Concern	Wind Direction	Wind Speed	Current	Ice
4	4	34	2	3	045	20	Large Flood	No
11	4	40	1	2.5	335	25	Large Flood	Yes
12	4	41	2	3	335	25	Small Ebb	No
14	5	42	5	5	335	25	Small Ebb	No

The level of concern for this type of maneuver during Round 2 ranges from 1 (not at all concerned) to 5 (extremely concerned), with 3/4 maneuvers being scored equal to or less than a 2 (slightly concerned). Comparing Rounds 1 and 2 finds that the level of concern is lower in Round 2 compared to Round 1 for 3/4 simulations. Furthermore, the results find that 3/4 maneuvers changed qualitatively from being in the high level of concern range being a 3 or greater during Round 1 to the safe range of 2 or less during Round 2.

Table 37. Rounds 1 and 2 Level of Concern Docking and Undocking During Construction Phase 2.4 with Wind from 335 at 25 knots

Round 1 Sim#	Level Concern	Round 2 Sim#	Level Concern	Median Level Concern	Objective	Current	Ice
16	5	43	1	3	Dock	Small Flood	No
18	4	44	2	3	Dock	Large Flood	Yes
30	1	39	1	1	Undock	Large Flood	No

The level of concern for this type of maneuver during Round 2 ranges from 1 (not at all concerned) to 2 (slightly concerned), with 2/3 maneuvers being scored equal to or less than a 1 (not at all concerned). Comparing Rounds 1 and 2 finds that the level of concern is lower in Round 2 compared to Round 1 for 2/3 simulations. Furthermore, the results find that 2/3 maneuvers changed qualitatively from being in the high level of concern range being a 3 or greater during Round 1 to the safe range of 2 or less during Round 2.

Examining these types of maneuvers during Round 2 reveals that both types of maneuvers during construction Phase 2, Step 2.3 have at least one specific maneuver equal to or greater than 3 (somewhat concerned). There is a great amount of disagreement between the simulations doing the same maneuver. This issue is mitigated by using median scores for Round 3 analyses.

Association Between Construction Phases and Steps with the North Extension
Similar to Round 1, the north extension does not have a systematic effect or increase of concern for all maneuvers, to further investigate this issue construction phases and steps are analyzed.

Table 38. Rounds 1 and 2 Effect of North Extension and Increases Concern for Maneuvers during Construction Phase 2, Step 2.3

Rounds 1 & 2 Sim#	Median Effect NE	Median NE Increases Concern	Objective	Wind	Current	Ice
2/33	5	5	Dock	045/20	Large Flood	Yes
4/34	5	5	Undock	045/20	Large Flood	No
5/35	4.5	4.5	Dock	225/15	Large Flood	No
6/36	5	5	Dock	225/15	Large Flood	Yes
7/37	5	5	Dock	335/25	Large Flood	No
9/38	5	5	Dock	335/25	Large Flood	Yes
11/40	5	5	Undock	335/25	Large Flood	Yes
12/41	5	5	Undock	335/25	Small Ebb	No
14/42	5	5	Undock	335/25	Small Ebb	No

The median level of agreement that the north extension effects the maneuver ranges from 4.5 (between agree and strongly agree) to a 5 (strongly agree). In addition, 8/9 maneuvers receive a median score of 5 (strongly agree) that it effects the maneuver.

Table 39. Rounds 1 and 2 Effect of North Extension and Increases Concern for Maneuvers during Construction Phase 2, Step 2.4

Rounds 1 & 2 Sim#	Median Effect NE	Median NE Increases Concern	Objective	Wind	Current	Ice
16/43	2	2	Dock	335/25	Small Flood	No
18/44	1.5	1.5	Dock	335/25	Large Flood	Yes
30/39	1	1.5	Undock	335/25	Large Flood	No

The median level of agreement that the north extension increases the concern for the maneuver ranges from 1.5 (between strongly disagree and disagree) to a 2 (disagree). Based on Round 2, the north extension effects maneuvers during construction Phase 2, Step 2.3 but not Step 2.4.

Results: TOTE Round 3 Utilizing Two 5,000 Horsepower Tugboats (n = 17)

To determine whether the utilization of two 5,000 horsepower tugboats effectively mitigates the level of concern for safety of operating TOTE vessels at POA with the re-phasing of the north extension, 12 maneuvers were simulated. Five of these maneuvers were repeated to better assess the reliability of the scores for a total of 17 simulations. Therefore, the analysis below first describes the scores for the simulations that utilized two 5,000 horsepower tugboats along with the *Stellar Wind,* then compares those scores with the baseline scores of the same maneuvers that were performed in Rounds 1 and 2 using one 5,000 horsepower tugboat along with the *Stellar Wind* and *Glacier Wind.*

Frequencies and Descriptive Statistics

Table 40. Frequency for Level of Concern for the Maneuver Using Two 5,000 HP Tugboats and the *Stellar Wind* (n = 17)

Response	1	2	3	4	5
Frequency	0%	18% (3)	47% (8)	24% (4)	12% (2)

Even with a second 5,000 HP tugboat the level of concern ranges from Slightly Concerned (2) to Extremely Concerned (5). The median level of concern is Somewhat Concerned (3).

Table 41. Frequency for the North Extension Effecting the Maneuver Using Two 5,000 HP Tugboats and the *Stellar Wind* (n = 17)

Response	1	2	3	4	5
Frequency	0%	6% (1)	18% (3)	0%	76% (13)

Even with a second 5,000 HP tugboat, the level of agreement that the north extension effects the maneuver ranges from Slightly Disagree (2) to Strongly Agree (5). The median level of agreement is Strongly Agree (5).

Table 42. Frequency for North Extension Increasing Concern for the Maneuver Using Two 5,000 HP Tugboats and the *Stellar Wind* (n = 17)

Response	1	2	3	4	5
Frequency	0%	6% (1)	18% (3)	0%	76% (13)

Even with a second 5,000 HP tugboat, the level of agreement that the north extension increases the level of concern when performing the maneuver ranges from Slightly Disagree (2) to Strongly Agree (5). The median level of agreement is Strongly Agree (5).

Table 43. Comparing Level of Concern Between Maneuvers Using One 5,000 HP Tugboat and Two 5,000 HP Tugboats

Rounds 1 & 2 Sim#	Median Level Concern	Round 3 Sim#	Median Level Concern	Difference
2/33	4.5	50	3	**-1.5**
4/34	3	54	3	**0**
5/35	3	46 / 60	3.5	**+0.5**
6/36	3.5	49	3	**-0.5**
7/37	4	55 / 59	5	**+1**
9/38	3.5	48 / 57	4	**+0.5**
11/40	2.5	45	3	**+0.5**
12/41	3	52	3	**0**
14/42	5	53	3	**-2**
16/43	3	51 / 58	3	**0**
18/44	3	47 / 61	2.5	**-0.5**
30/39	1	56	2	**+1**

The results on the level of concern for safety comparing the same maneuver using two 5,000 HP tugboats with one 5,000 HP tugboat are mixed. The difference ranges from a decrease of concern by -2 to an increase in the level of concern by +1. The median difference is 0. Therefore, there is no systematic decrease in the level of concern by using a second 5,000 HP tugboat assisting TOTE.

Table 44. Comparing Level of Agreement that the North Extension Effects the Maneuver Between Maneuvers Using One 5,000 HP Tugboat and Two 5,000 HP Tugboats

Rounds 1 & 2 Sim#	Rounds 1 & 2 Median NE Effect	Round 3 Sim #	Round 3 Median NE Effect	Difference NE Effect
2/33	5	50	5	**0**
4/34	5	54	5	**0**
5/35	4.5	46, 60	5	**+0.5**
6/36	5	49	5	**0**
7/37	5	55, 59	5	**0**
9/38	5	48, 57	5	**0**
11/40	5	45	5	**0**
12/41	5	52	5	**0**
14/42	5	53	5	**0**
16/43	2	51, 58	3	**+1**
18/44	1.5	47, 61	3.5	**+2**
30/39	1	56	3	**+2**

The results indicate that the use of two 5,000 HP tugboats does not reduce the effect of the north extension on the maneuver. The results range from a 3 (neither agree nor disagree) to a 5 (strongly agree) with the median score being a 5 (strongly agree). The difference ranges from a 0 in most cases to +2. However, in both cases that of an increase of 2 it went from disagreeing (1)

that there is an effect to being neutral (3). Therefore, the difference was not qualitatively changing from agree to disagree or vice versa.

Table 45. Comparing Level of Agreement that the North Extension Increases Concern for the Maneuver Between One 5,000 HP Tugboat and Two 5,000 HP Tugboats

Rounds 1 & 2 Sim#	Rounds 1 & 2 Median NE Increases Concern	Round 3 Sim #	Round 3 Median NE Increases Concern	Difference NE Increases Concern
2/33	5	50	5	**0**
4/34	5	54	5	**0**
5/35	4.5	46, 60	5	**+0.5**
6/36	5	49	5	**0**
7/37	5	55, 59	5	**0**
9/38	5	48, 57	5	**0**
11/40	5	45	5	**0**
12/41	5	52	5	**0**
14/42	5	53	5	**0**
16/43	2	51, 58	3	**+1**
18/44	1.5	47, 61	3.5	**+2**
30/39	1.5	56	3	**+1.5**

The results indicate that the use of two 5,000 HP tugboats does not reduce the level of agreement that the north extension increases concern for the maneuver. The results range from a 3 (neither agree nor disagree) to a 5 (strongly agree) with the median score being a 5 (strongly agree). The difference ranges from a 0 in most cases to +2. However, in both cases that of an increase of 2 it went from disagreeing (1.5) that there is an effect to being neutral (3). Therefore, the difference was not qualitatively changing from agree to disagree or vice versa.

Association Between Maneuvers and Levels of Concern for Safety

Similar to Rounds 1 and 2, as the level of concern for safety is not systematic across all maneuvers, to further investigate what is associated with high levels of concern three types of maneuvers are analyzed.

Table 46. Round 3 Level of Concern for Docking on a Large Flood During Construction Phase 2, Step 2.3

Rounds 1&2 Sim#	Median Level of Concern	Round 3 Sim#	Median Level of Concern	Difference Concern	Wind Direction	Wind Speed	Ice
2/33	4.5	50	3	**-1.5**	045	20	Yes
5/35	3	46 / 60	3.5	**+0.5**	225	15	No
6/36	3.5	49	3	**-0.5**	225	15	Yes
7/37	4	55 / 59	5	**+1**	335	25	No
9/38	3.5	48 / 57	4	**+0.5**	335	25	Yes

The median level of concern for this type of maneuver during Round 3 ranges from 3 (somewhat concerned) to 5 (extremely concerned). Comparing Rounds 1 and 2 with Round 3 finds that the level of concern both decreases and increases. All of the individual maneuvers in Round 3 are equal to or greater than 3 (somewhat concerned) and are therefore too high to be effectively safe.

Table 47. Round 3 Level of Concern for Undocking During Construction Phase 2, Step 2.3

Rounds 1&2 Sim#	Median Level of Concern	Round 3 Sim#	Median Level of Concern	Difference Concern	Current	Wind Direction	Wind Speed	Ice
4/34	3	54	3	**0**	Large Flood	045	20	No
11/40	2.5	45	3	**+0.5**	Large Flood	335	25	Yes
12/41	3	52	3	**0**	Small Ebb	335	25	No
14/42	5	53	3	**-2**	Small Ebb	335	25	No

The level of concern for this type of maneuver during Round 3 is 3 (somewhat concerned) for all four individual maneuvers. Comparing Rounds 1 and 2 with Round 3 finds that the level of concern both decreases and increases. The level of concern only qualitatively changes for one specific maneuver decreasing from a 5 (extremely concerned) to a 3 (somewhat concerned). All of the individual maneuvers in Round 3 are equal to or greater than 3 (somewhat concerned) and are therefore too high to be effectively safe.

Table 48. Round 3 Level of Concern for Undocking and Docking During Construction Phase 2, Step 2.4 with Wind 335 at 25 knots

Rounds 1&2 Sim#	Median Level of Concern	Round 3 Sim#	Median Level of Concern	Difference Concern	Objective	Current	Ice
16/43	3	51 / 58	3	**0**	Docking	Small Flood	No
18/44	3	47 / 61	2.5	**-0.5**	Docking	Large Flood	Yes
30/39	1	56	2	**+1**	Undocking	Large Flood	No

The median level of concern for this type of maneuver during Round 3 ranges from 2 (slightly concerned) to 3 (somewhat concerned). Comparing Rounds 1 and 2 with Round 3 finds that the level of concern both decreases and increases. The level of concern does not qualitatively change between high or low levels of concern for safety. Two of the individual maneuvers in Round 3 are less than 3 (somewhat concerned) and should be considered effectively safe. One maneuver is equal to 3 (somewhat concerned) and should not be considered effectively safe.

This provides evidence that docking and undocking during construction Phase 2, Step 2.3 is a maneuver with high levels of concern for safety that are not effectively mitigated by utilizing a

second 5,000 HP tugboat. The level of concern for safety can be effectively mitigated by using a second 5,000 HP tugboat for some of the maneuvers during construction Phase 2, Step 2.4.

Association Between Construction Phases and Steps with the North Extension
Similar to Rounds 1 and 2, the north extension does not have a systematic effect or increase of concern for all maneuvers, to further investigate this issue construction phases and steps are analyzed in association with the north extension.

Table 49. Round 3 Effect of North Extension and Increases Concern for Maneuvers during Construction Phase 2, Step 2.3

Round 3 Sim#	Median Effect NE	Median NE Increases Concern	Objective	Wind	Current	Ice
50	5	5	Dock	045/20	Large Flood	Yes
54	5	5	Undock	045/20	Large Flood	No
46, 60	5	5	Dock	225/15	Large Flood	No
49	5	5	Dock	225/15	Large Flood	Yes
55, 59	5	5	Dock	335/25	Large Flood	No
48, 57	5	5	Dock	335/25	Large Flood	Yes
45	5	5	Undock	335/25	Large Flood	Yes
52	5	5	Undock	335/25	Small Ebb	No
53	5	5	Undock	335/25	Small Ebb	No

The median level of agreement that the north extension effects the maneuver and increases concern is 5 (strongly agree) for every maneuver.

Table 50. Round 3 Effect of North Extension and Increases Concern for Maneuvers during Construction Phase 2, Step 2.4

Round 3 Sim#	Median Effect NE	Median NE Increases Concern	Objective	Wind	Current	Ice
51, 58	3	3	Dock	335/25	Small Flood	No
47, 61	3.5	3.5	Dock	335/25	Large Flood	Yes
56	3	3	Undock	335/25	Large Flood	No

The median level of agreement that the north extension effects the maneuver and increases the concern for the maneuver ranges from 3 (neither agree nor disagree) to 3.5 (between neither agree nor disagree and agree).

Based on Round 3, the north extension effects maneuvers during construction Phase 2, Step 2.3. It cannot be rejected that the north extension effects and increases concern for the maneuver during construction Phase 2, Step 2.4.

TOTE Pilot Comments

In addition to the closed ended questions associated with each maneuver, the pilots were encouraged to comment about why these maneuvers are associated with high levels of concern for safety. These comments associated with specific maneuvers are depicted in Appendix 4, while general reflections are captured in the focus group results below.

Results: Matson Simulations (n = 60)

Validity of Simulations

The first two sets of questions are about the validity of the environmental conditions and maneuverability of the vessel in the simulator. These include all 60 Matson simulations observed by the pilots.

The simulation represented realistic environmental conditions at POA.
Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree

Table 51. Frequency Level of Agreement Environmental Conditions were Realistic (n = 60)

Response	1	2	3	4	5
Frequency	0%	7% (4)	3% (2)	10% (6)	80% (48)

The median score is a 5 (Strongly Agree). There were no systematic issues with the environmental conditions of the simulator for Matson. Many of the comments associated with scores less than Strongly Agree (5) were that the conditions were extreme and rarely seen by the pilot. However, that was the purpose of the maneuvers — to perform them in the most extreme, but realistic environmental conditions at the POA.

The simulation represented realistic attributes and maneuverability of the vessel.
Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree

Table 52. Frequency Level of Agreement Attributes and Maneuverability of the Vessel were Realistic (n = 60)

Response	1	2	3	4	5
Frequency	2% (1)	8% (5)	15% (4)	27% (16)	57% (34)

The median score is a 5 (Strongly Agree). There were no systematic issues with the attributes and maneuverability of the vessel for Matson. Many of the comments associated with scores less than Strongly Agree (5) were that the speed control on the vessel was more reactive than on the actual vessel.

Results: Matson Round 1 (n = 32)

Frequencies and Descriptive Statistics

What was the result of the maneuver?
Scale: 0 = Failed to achieve the objective (i.e. either docking or undocking), or 1 = Completed the objective

In total, 29 of the 32 (91%) maneuvers were successful. The three maneuvers that were not successful are described below.

Table 53. Describing Maneuvers that Failed to Complete the Objective Round 1

Round 1 Sim#	Objective	Construction	Wind Direction	Wind Speed Knots	Current	Ice
2	Docking Port	3	335	25	Large Flood	No
8	Docking Port	2.2	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
13	Docking Port	2.1	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No

These maneuvers are all dockings portside. They occurred during construction Phase 2, Steps 2.1 and 2.2, as well as during the final construction Phase 3. Simulations 2 and 8 occurred with wind 335 (northwest) at 25 knots. Maneuvers 8 and 13 represent docking portside during a large ebb current with a flood back eddy. This maneuver is achieved by doing a "cow turn" where the vessel does a 180 degree turn at the dock face. These two issues of wind 335 (northwest) at 25 knots and performing the cow turn are two of the maneuvers that cause the greatest amount of concern for safety when maneuvering Matson.

What is your level of concern for the completed simulation?
Scale: 1 = Not at all concerned, 2 = Slightly concerned, 3 = Somewhat concerned, 4 = Moderately concerned, 5 = Extremely concerned

Table 54. Frequency for Level of Concern for the Maneuver (n = 32)

Response	1	2	3	4	5
Frequency	22% (7)	19% (6)	19% (6)	25% (8)	16% (5)

The median score is "Somewhat Concerned" (3). The majority of maneuvers (19/32, or 59%) were equal to or greater than a 3 (somewhat concerned). Therefore, there is a high level of concern for safety when maneuvering Matson at Terminals 1 and 2 during this phase of the PAMP.

The North Extension effects the maneuver.
Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree

Table 55. Frequency of Level of Agreement that the North Extension Effects the Maneuver

Response	1	2	3	4	5
Frequency	56% (18)	16% (5)	6% (2)	6% (2)	16% (5)

The median score is a 1 (strongly disagree), indicating that there is not a systematic effect of the north extension on the maneuvers. However, the level of agreement is equal to or greater than 4 (agree) on 7/32 (22%) maneuvers that the north extension has an effect.

The North Extension increased your level of concern when performing the maneuver.
Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree

Table 56. Frequency of Level of Agreement that the North Extension Increases the Level of Concern for Performing the Maneuver

Response	1	2	3	4	5
Frequency	66% (21)	3% (1)	13% (4)	16% (5)	3% (1)

The median score is a 1, indicating that there is not systematic effect of the north extension on increasing the level of concern. However, there are 6/32 (19%) maneuvers that were scored equal to or greater than a 4 (agree), which represents that some agree that it does increase the level of concern for performing the maneuver.

Association Between Maneuvers and Levels of Concern
As the level of concern for safety is not high across all maneuvers, to further investigate what is associated with high levels of concern all maneuvers with a score of 4 (moderately concerned) or greater are analyzed. These 13 individual maneuvers can be categorized into three types of maneuvers. The decision to focus on these three types of maneuvers was based on an action review with the pilots. These are: 1. Performing the cow turn or docking portside on a large ebb; 2. Docking and undocking during construction Phase 2, Step 2.1 with wind from the north (both 335 and 045); and 3. Docking portside on a flood. Among these three types of maneuvers 13 individual maneuvers were performed. These individual maneuvers along with their level of concern for safety are reported below.

Table 57. Round 1 Level Concern Cow Turn Maneuver, Docking Portside on a Large Ebb

Rounds 1 Sim#	Level Concern	Objective	Construction	Wind Direction	Wind Speed Knots	Current	Ice
8	4	Docking Port	2.2	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
13	5	Docking Port	2.1	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No
30	4	Docking Port	2.1	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No

The level of concern for this type of maneuver during Round 1 ranges from a 4 (moderately concerned) to a 5 (extremely concerned).

Table 58. Round 1 Level Concern Docking and Undocking during Construction Phase 2, Step 2.1 on a Large Ebb

Rounds 1 Sim #	Level Concern	Objective	Construction	Wind Direction	Wind Speed Knots	Current	Ice
9	4	Docking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
11	4	Undocking Port	2.1	225	15	Large Ebb/ Early Tide/ No Back Eddy	Yes
15	4	Docking Starboard	2.1	45	20	Large Ebb/ Early Tide/	No
16	5	Docking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
28	4	Undocking Port	2.1	225	15	Large Ebb/ Early Tide/ No Back Eddy	No

The level of concern for this type of maneuver during Round 1 ranges from a 4 (moderately concerned) to a 5 (extremely concerned).

Table 59. Round 1 Level Concern Docking Portside on a Flood

Round 1 Sim #	Level Concern	Objective	Construction	Wind Direction	Wind Speed Knots	Current	Ice
2	5	Docking Port	3	335	25	Large Flood	No
5	5	Docking Port	2.1	225	15	Small Flood	Yes
22	5	Docking Port	2.2	335	25	Large Flood	No
23	4	Docking Port	2.2	45	20	Small Flood	Yes
31	4	Docking Port	2.1	45	20	Small Flood	No

The level of concern for this type of maneuver during Round 1 ranges from a 4 (moderately concerned) to a 5 (extremely concerned).

Association Between Construction Phases and Steps with the North Extension

As the north extension does not have a systematic effect or increase of concern for all maneuvers, to further investigate this issue construction phases and steps are analyzed in association with the north extension. The maneuvers analyzed below are the same 13 individual maneuvers that had a Round 1 score of 4 (moderately concerned) or greater.

Table 60. Round 1 Effect of North Extension and Increases Concern for Maneuvers during Construction Phase 2, Step 2.1

Round 1 Sim#	Effect NE	NE Increases Concern	Objective	Wind	Current	Ice
5	1	1	Docking Port	225/15	Small Flood	Yes
9	5	4	Docking Starboard	335/25	Large Ebb/ Early Tide/ No Back Eddy	Yes
11	1	1	Undocking Port	225/15	Large Ebb/ Early Tide/ No Back Eddy	Yes
13	5	5	Docking Port	045/20	Large Ebb/ Late Tide/ Flood Back Eddy	No
15	5	4	Docking Starboard	045/20	Large Ebb/ Early Tide/ No Back Eddy	No
16	1	1	Docking Starboard	335/25	Large Ebb/ Early Tide/ No Back Eddy	Yes
28	1	1	Undocking Port	225/15	Large Ebb/ Early Tide/ No Back Eddy	No
30	1	1	Docking Port	335/25	Large Ebb/ Late Tide/ Flood Back Eddy	No
31	1	1	Docking Port	045/20	Small Flood	No

The level of agreement that the north extension effects the maneuver and increases the concern for the maneuver ranges from 1 (strongly disagree) to a 5 (strongly agree). In addition, 3/9 maneuvers receive a score of 5 for either effect or increase in concern. Based on these mixed results it is unclear about the relationship between construction Phase 2, Step 2.1 and the north extension.

Table 61. Round 1 Effect of North Extension and Increases Concern for Maneuvers during Construction Phase 2, Step 2.2 and Phase 3.0

Round 1 Sim#	Effect NE	NE Increases Concern	Construction	Objective	Wind	Current	Ice
2	1	1	3	Docking Port	335/25	Large Flood	No
8	1	1	2.2	Docking Port	335/25	Large Ebb/ Late Tide/ Flood Back Eddy	No
22	3	1	2.2	Docking Port	335/25	Large Flood	No
23	2	4	2.2	Docking Port	045/20	Small Flood	Yes

The level of agreement that the north extension effects the maneuver and increases the concern for the maneuver ranges from 1 (strongly disagree) to a 4 (agree). In addition, two maneuvers during construction Phase 2, Step 2.2 receive a score of at least 3 (neither agree nor disagree) for either effect or increase in concern. Based on these mixed results it is unclear about the relationship between construction Phase 2, Step 2.2 and the north extension. However, the results for construction Phase 3.0 are clear that the north extension does not have a direct effect.

Results: Matson Round 2 (n = 16)

To verify the reliability of the observed results of the maneuvers in Round 1, a second pilot performed the same maneuvers in Round 2. Among the original 32 maneuvers, 16 were simulated a second time. The 16 maneuvers were selected based on including the 13 individual maneuvers with the highest levels of concern (all had at least a 4 moderately concerned) and three additional maneuvers based on input from the pilots. The 16 maneuvers ran during Round 2 are described below.

Table 62. Matson Round 2: 16 Reliability Check Maneuvers

Round 1 Sim#	Round 2 Sim#	Objective	Construction	Wind Direction	Wind Speed Knots	Current	Ice
2	33	Docking Port	3	335	25	Large Flood	No
5	37	Docking Port	2.1	225	15	Small Flood	Yes
6	35	Undocking Port	2.2	335	25	Large Ebb/ Early Tide/ No Back Eddy	No
8	39	Docking Port	2.2	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
9	41	Docking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
11	43	Undocking Port	2.1	225	15	Large Ebb/ Early Tide/ No Back Eddy	Yes
13	45	Docking Port	2.1	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No
15	47	Docking Starboard	2.1	45	20	Large Ebb/ Early Tide/ No Back Eddy	No
16	48	Docking Starboard	2.1	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes

22	34	Docking Port	2.2	335	25	Large Flood	No
23	38	Docking Port	2.2	45	20	Small Flood	Yes
25	36	Undocking Port	2.1	335	25	Small Ebb	No
27	40	Docking Port	2.1	225	15	Large Ebb/ Late Tide/ Flood Back Eddy	No
28	42	Undocking Port	2.1	225	15	Large Ebb/ Early Tide/ No Back Eddy	No
30	44	Docking Port	2.1	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
31	46	Docking Port	2.1	45	20	Small Flood	No

Frequencies and Descriptive Statistics

Table 63. Comparing Level of Concern Between Rounds 1 Round 2

Round 1 Sim#	Round 1 Level Concern	Round 2 Sim #	Round 2 Level of Concern	Median Level of Concern
2	5	33	3	4
5	5	37	1	3
6	3	35	2	2.5
8	4	39	2	3
9	4	41	1	2.5
11	4	43	1	2.5
13	5	45	5	5
15	4	47	3	3.5
16	5	48	4	4.5
22	5	34	5	5
23	4	38	4	4
25	3	36	2	2.5
27	2	40	2	2
28	4	42	2	3
30	4	44	4	4
31	4	46	4	4

The level of concern for the maneuver during Round 2 ranged from 1 (not at all concerned) to 5 (extremely concerned). After the maneuver was simulated a second time by a different SWAPA

pilot, the levels of concern decreased to “Slightly Concerned” (2) or less for the following eight maneuvers: 5, 6, 8, 9, 11, 25, 27, and 28. After doing an action review discussing these maneuvers with the pilots it was decided that these maneuvers would not be simulated a third time testing the effect of using two 5,000 horsepower tugboats. The maneuvers identified as having a high level of concern for safety equal to or greater than 3 (somewhat concerned) during Rounds 1 and 2 were selected for further simulations during Round 3.

Further examination of these eight individual maneuvers that have been verified as high levels of concern reveal two types of maneuvers associated with high levels of concern for safety. These are: 1. Docking during construction Phase 2, Step 2.1 on a large ebb late in tide with wind from the north; 2. Docking portside on a flood with wind from the north. The first type of maneuver includes the cow turn maneuver. These two types of maneuvers and eight individual maneuvers will be the focus of the remaining analyses.

Table 64. Comparing Rounds 1 and 2 Level of Agreement that the North Extension Effects the Maneuver

Round 1 Sim #	Round 1 NE Effects the Maneuver	Round 2 Sim #	Round 2 NE Effects the Maneuver	Median NE Effects the Maneuver
2	1	33	2	1.5
13	5	45	4	4.5
15	5	47	3	4
16	1	48	4	2.5
22	3	34	5	4
23	2	38	3	2.5
30	1	44	3	2
31	1	46	3	2

During Round 2, the level of agreement that the north extension effects the maneuver ranges from 2 (disagree) to 5 (strongly agree). Among 3/8 maneuvers the difference in level of agreement between Rounds 1 and 2 is one unit or less. In addition, only one maneuver comparing simulations 16 and 48 have a qualitative difference between disagree and agree. In order to help account for these differences median scores are used.

Table 65. Comparing Rounds 1 and 2 Level of Agreement that the North Extension Increase Concern for the Maneuver

Round 1 Sim#	Round 1 NE Increases Concern	Round 2 Sim #	Round 2 NE Increases Concern	Median NE Increases Concern
2	1	33	1	1
13	5	45	3	4
15	4	47	2	3
16	1	48	5	3
22	1	34	5	3
23	4	38	3	3.5
30	1	44	3	2
31	1	46	3	2

During Round 2, the level of agreement that the north extension increases concern for the maneuver ranges from 1 (strongly disagree) to 5 (strongly agree). Among 1/8 maneuvers the difference in level of agreement between Rounds 1 and 2 is one unit or less. In addition, 3/8 maneuvers have a qualitative difference between disagree and agree. In order to help account for these differences median scores are used.

Association Between Maneuvers and Levels of Concern

Table 66. Rounds 1 and 2 Level Concern for Docking during Construction Phase 2, Step 2.1 on a Large Ebb with Wind from the North (both 335 and 045)

Round 1 Sim#	Level Concern	Round 2 Sim#	Level Concern	Objective	Wind Direction	Wind Speed Knots	Current	Ice
13	5	45	5	Docking Port	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No
15	4	47	3	Docking Starboard	45	20	Large Ebb/ Early Tide/ No Back Eddy	No
16	5	48	4	Docking Starboard	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
30	4	44	4	Docking Port	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No

The level of concern for this type of maneuver during Round 2 ranges from 3 (somewhat concerned) to 5 (extremely concerned), with 3/4 maneuvers being scored at least a 4 (moderately concerned). Comparing Rounds 1 and 2 finds that the level of concern is lower in Round 2 for two simulations and equal for two simulations. However, there is no qualitative difference between low and high scores between rounds.

Table 67. Rounds 1 and 2 Level Concern for Docking Portside on a Flood with Wind from the North

Round 1 Sim#	Level Concern	Round 2 Sim#	Level Concern	Construction	Wind Direction	Wind Speed Knots	Current	Ice
2	5	33	3	3	335	25	Large Flood	No
22	5	34	5	2.2	335	25	Large Flood	No
23	4	38	4	2.2	45	20	Small Flood	Yes
31	4	46	4	2.1	45	20	Small Flood	No

The level of concern for this type of maneuver during Round 2 ranges from 3 (somewhat concerned) to 5 (extremely concerned), with 3/4 maneuvers being scored at least a 4. Comparing Rounds 1 and 2 finds that the level of concern is the same for 3/4 of the maneuvers.

Examining these two types of maneuvers during Round 2 reveals that both have a majority of individual maneuvers with a level of concern for safety equal to or greater than 4 (moderately concerned).

Association Between Construction Phases and Steps with the North Extension
Similar to Round 1, the north extension does not have a systematic effect or increase of concern for all maneuvers, to further investigate this issue construction phases and steps are analyzed in association with the north extension.

Table 68. Rounds 1 and 2 Effect of North Extension and Increases Concern for Maneuvers during Docking during Construction Phase 2, Step 2.1

Rounds 1 & 2 Sim#	Median NE Effect	Median NE Increases Concern	Objective	Wind Direction	Wind Speed Knots	Current	Ice
13 / 45	4	4	Docking Port	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No
15 / 47	3	3	Docking Starboard	45	20	Large Ebb/ Early Tide/ No Back Eddy	No
16 / 48	3	3	Docking Starboard	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
30 / 44	2	2	Docking Port	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
31 / 46	2	2	Docking Port	45	20	Small Flood	No

These maneuvers of docking during construction Phase 2, Step 2.1 have a range of median agreement that the north extension effects the maneuver from 2 (disagree) to 4 (agree). Whether the north extension effects and increases concern for maneuvering Matson during construction Phase 2, Step 2.1 depends on multiple factors such as objective, wind, and current.

Table 69. Rounds 1 and 2 Effect of North Extension and Increases Concern for Maneuvers during Docking Portside during construction Phase 2, Step 2, and Phase 3.0

Rounds 1 & 2 Sim#	Median NE Effect	Median NE Increases Concern	Construction	Wind Direction	Wind Speed Knots	Current	Ice
22 / 34	3	3	2.2	335	25	Large Flood	No
23 / 38	3.5	3.5	2.2	45	20	Small Flood	Yes
2 / 33	1	1	3	335	25	Large Flood	No

These maneuvers of docking during construction Phase 2, Step 2.2, and Phase 3.0 have a range of median agreement that the north extension effects the maneuver from 1 (strongly disagree) to 3.5 (between neither agree nor disagree and agree).

Overall, it is clear that the north extension does not affect maneuvers during construction Phase 3, but the results are mixed during construction Phase 2, Steps 2.1 and 2.2.

Results: Matson Round 3 Utilizing Two 5,000 Horsepower Tugboats (n = 12)

To explore whether the utilization of two 5,000 horsepower tugboats effectively mitigates level of concern for safety for operating Matson vessels at POA with the re-phasing of the north extension, eight maneuvers were simulated. Four of these maneuvers were simulated twice to better assess the reliability of the scores for a total of 12 simulations. Therefore, the analysis below first describes the scores for the simulations that utilized two 5,000 horsepower tugboats along with the *Stellar Wind*, then compares these scores with the median scores from Rounds 1 and 2 of the same maneuvers that were performed using one 5,000 horsepower tugboat along with the *Stellar Wind* and *Glacier Wind.*

Frequencies and Descriptive Statistics

Table 70. Frequency for Level of Concern for the Maneuver Using Two 5,000 HP Tugboats and the Stellar Wind (n = 12)

Response	1	2	3	4	5
Frequency	0%	25% (3)	50% (6)	17% (2)	8% (1)

Even with a second 5,000 HP tugboat, the level of concern for safety ranges from Slightly Concerned (2) to Extremely Concerned (5). The median level of concern is Somewhat Concerned (3).

Table 71. Frequency for the North Extension Effects the Maneuver Using Two 5,000 HP Tugboats and the Stellar Wind (n = 12)

Response	1	2	3	4	5
Frequency	42% (5)	17% (2)	33% (4)	8% (1)	0%

Maneuvers using a second 5,000 HP tugboat are not systematically affected by the north extension. The level of agreement that the north extension effects the maneuver ranges from Strongly Disagree (1) to Agree (4). The median level of agreement is Disagree (2). However, five of the 12 simulations have a score of at least 3 (neither agree nor disagree) indicating that specific maneuvers may be impacted.

Table 72. Frequency for North Extension increases concern of the maneuver Using Two 5,000 HP Tugboats and the Stellar Wind (n = 12)

Response	1	2	3	4	5
Frequency	58% (7)	25% (3)	8% (1)	8% (1)	0%

The north extension does not systematically increase the level of concern for maneuvers using a second 5,000 HP tugboat. The level of agreement that the north extension increases the level of concern for the maneuver ranges from Strongly Disagree (1) to Agree (4). The median level of agreement is Strongly Disagree (1). However, two of the simulations have a score of at least 3 (neither agree nor disagree) indicating that specific maneuvers may be associated with the north extension increasing concern during Round 3.

Table 73. Comparing Level of Concern Between Rounds 1 & 2 with Round 3

Rounds 1 & 2 Sim#	Rounds 1 & 2 Median Level Concern	Round 3 Sim #	Round 3 Median Level Concern	Difference Level Concern
2 / 33	4	57 / 67	2.5	**-1.5**
13 / 45	5	58 / 66	3.5	**-1.5**
15 / 47	3.5	59 / 69	3	**-0.5**
16 / 48	4.5	60	3	**-1.5**
22 / 34	5	61 / 70	4	**-1**
23 / 38	4	62	2	**-2**
30 / 44	4	63	4	**0**
31 / 46	4	64	2	**-2**

For Round 3, the level of concern for safety ranges from 2 (slightly concerned) to 4 (moderately concerned). The results on the level of concern for the same maneuver using two 5,000 HP tugboats (Round 3) compared to one 5,000 HP tugboat (Rounds 1 and 2) show a decrease in the level of concern for safety. The difference in level of concern for safety ranges from a decrease of concern by -2 to 0. The median difference is -1.5. However, only 3/8 maneuvers have a level of concern less than 3 (somewhat concerned) indicating that most of these maneuvers still pose too great of a concern for safety.

Table 74. Comparing Level of Agreement that the North Extension Effects the Maneuver Between One and Two 5,000 HP Tugboats

Rounds 1 & 2 Sim #	Rounds 1 & 2 Median NE Effect	Round 3 Sim #	Round 3 Median NE Effect	Difference
2 / 33	1.5	57 / 67	1	**-0.5**
13 / 45	4.5	58 / 66	3	**-1.5**
15 / 47	4	59 / 69	2.5	**-1.5**
16 / 48	2.5	60	3	**+0.5**
22 / 34	4	61 / 70	1	**-3**
23 / 38	2.5	62	1	**-1.5**
30 / 44	2	63	3	**+1**
31 / 46	2	64	3	**+1**

The median level of agreement whether the north extension effects the maneuver in Round 3 ranges from 1 (strongly disagree) to 3 (neither agree nor disagree). The difference between Rounds 1 and 2 compared to Round 3 are mixed. To better understand these results, they are presented below by maneuvering grouped by phase and step of construction.

Table 75. Comparing Level of Agreement that the North Extension Increases Concern of the Maneuver Between Rounds 1 & 2 with Round 3

Round 1 & 2 Sim #	Rounds 1 & 2 Median NE Increases Concern	Round 3 Sim #	Round 3 Median NE Increases Concern	Difference
2 / 33	1	57 / 67	1	**0**
13 / 45	4	58 / 66	3	**-1**
15 / 47	3	59 / 69	2	**-1**
16 / 48	3	60	2	**-1**
22 / 34	3	61 / 70	1	**-2**
23 / 38	3.5	62	1	**-2.5**
30 / 44	2	63	2	**0**
31 / 46	2	64	1	**-1**

Among the eight maneuvers presented the range of agreement for Round 3 is from 1 (strongly disagree) to 3 (neither agree nor disagree). Among only 2/8 maneuvers is the difference in level of agreement greater than one unit comparing Rounds 1 and 2 with Round 3. To further explore patterns about whether the north extension increases concern individual maneuvers are described in association with construction phases and steps.

Association Between Maneuvers and Levels of Concern

Similar to Rounds 1 and 2, as the level of concern for safety is not systematic across all maneuvers, to further investigate what is associated with high levels of concern three types of maneuvers are analyzed.

Table 76. Rounds 1 and 2 Compared to Round 3 Level Concern for Docking during Construction Phase 2, Step 2.1 on a Large Ebb with Wind from the North (both 335 and 045)

Rounds 1 & 2 Sim#	Rounds 1 & 2 Median Level Concern	Round 3 Sim#	Round 3 Median Level Concern	Objective	Wind Direction	Wind Speed Knots	Current	Ice
13 / 45	5	58 / 66	3.5	Docking Port	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No
15 / 47	3.5	59 / 69	3	Docking Starboard	45	20	Large Ebb/ Early Tide/ No Back Eddy	No
16 / 48	4.5	60	3	Docking Starboard	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
30 / 44	4	63	4	Docking Port	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No

These Round 3 maneuvers of docking during construction Phase 2, Step 2.1 on a large ebb in a north wind have a range of median concern from a low of 3 (somewhat concerned) to a high of 4 (moderately concerned). These maneuvers include docking port and starboard sides. Two of these maneuvers are performing a cow turn as there is a flood back eddy. While 3/4 maneuvers here decreased to some degree in terms of the level of concern for safety, all four maneuvers remain equal to or greater than a 3 (somewhat concerned) above the acceptable safety threshold.

Table 77. Rounds 1 and 2 Compared to Round 3 Level Concern for Docking Portside on a Flood with Wind from the North (both 335 and 045)

Rounds 1 & 2 Sim#	Rounds 1 & 2 Median Level Concern	Round 3 Sim#	Round 3 Median Level Concern	Construction	Wind	Current	Ice
2 / 33	4	57 / 67	2.5	3	335/25	Large Flood	No
22 / 34	5	61 / 70	4	2.2	335/25	Large Flood	No
23 / 38	4	62	2	2.2	45/20	Small Flood	Yes
31 / 46	4	64	2	2.1	45/20	Small Flood	No

These maneuvers are all docking portside on a flood with wind from the north. They occur during both construction Phase 2, Steps 2.1 and 2.2, and Phase 3. For Round 3, these range in median level of concern from a low of 2 (slightly concerned) to a high of 4 (moderately concerned). All four maneuvers decreased to some degree in terms of the level of concern for safety, and 3/4 maneuvers have decreased to a level of concern of about 2 (slightly concerned) that is in the acceptable safety range. The only maneuver that was not effectively mitigated by the second 5,000 HP tugboat was docking portside during construction Phase 2, Step 2.2 with wind 335 (northwest) at 25 knots on a large flood.

This provides evidence that docking during construction Phase 2, Step 2.1 on a large ebb with wind from the north is a maneuver with high levels of concern for safety that are not effectively mitigated by utilizing a second 5,000 HP tugboat. The level of concern for safety can be effectively mitigated by using a second 5,000 HP tugboat for some of the maneuvers during construction Phase 3.0 and Phase 2, Step 2.2 when docking portside on a flood with wind from the north.

Association Between Construction Phases and Steps with the North Extension
Similar to Rounds 1 and 2, the north extension does not have a systematic effect or increase of concern for all maneuvers, to further investigate this issue construction phases and steps are analyzed in association with the north extension.

Table 78. Round 3 Effect of North Extension and Increases Concern for Maneuvers during Docking during Construction Phase 2, Step 2.1

Round 3 Sim#	Median NE Effect	Median NE Increases Concern	Objective	Wind Direction	Wind Speed Knots	Current	Ice
58 / 66	3	3	Docking Port	45	20	Large Ebb/ Late Tide/ Flood Back Eddy	No
59 / 69	2.5	2	Docking Starboard	45	20	Large Ebb/ Early Tide/ No Back Eddy	No
60	3	2	Docking Starboard	335	25	Large Ebb/ Early Tide/ No Back Eddy	Yes
63	3	2	Docking Port	335	25	Large Ebb/ Late Tide/ Flood Back Eddy	No
64	3	1	Docking Port	45	20	Small Flood	No

These maneuvers of docking during construction Phase 2, Step 2.1 have a range of median agreement that the north extension effects or increases concern for the maneuver from 1 (strongly disagree) to 3 (neither agree nor disagree). Among four of the five maneuvers the score was a 3 (neither agree nor disagree) for either effect or increases concern. This neutral response indicates that it cannot be concluded that the effect of the north extension is mitigated using a second 5,000 HP tugboat during construction Phase 2, Step 2.1.

Table 79. Round 3 Effect of North Extension and Increases Concern for Maneuvers during Docking Portside during construction Phase 2, Step 2, and Phase 3.0

Round 3 Sim#	Median NE Effect	Median NE Increases Concern	Construction	Wind Direction	Wind Speed Knots	Current	Ice
57 / 67	1	1	3.0	335	25	Large Flood	No
61 / 70	1	1	2.2	335	25	Large Flood	No
62	1	1	2.2	45	20	Small Flood	Yes

All three of these maneuvers of docking during construction Phase 2, Step 2.2, and Phase 3.0 have a result of 1 (strongly disagree) that the north extension effects the maneuver and that it increases concern.

Overall, it is clear that the north extension does not affect maneuvers during construction Phase 2, Step 2.2 or Phase 3 when using a second 5,000 HP tugboat. However, the results also show when using a second 5,000 HP tugboat that the effect of the north extension is much more ambiguous during construction Phase 2, Step 2.1.

SWAPA Pilot Comments

In addition to the closed ended questions associated with each maneuver, the pilots were encouraged to comment about why these maneuvers are associated with high levels of concern for safety. These comments associated with specific maneuvers are depicted in Appendix 5, while general reflections are captured in the focus group results below.

Focus Group Results

Results: TOTE Focus Group

Mariners that took part in the simulations along with stakeholders were involved in a focus group to discuss the results of the simulations and develop recommendations. Participants involved in the focus group are identified in the methods section above. Based on the simulations and interviews, SGM developed two main questions for discussion concerning whether the second 5,000 HP tugboat mitigates the concern for safety when operating TOTE and if it does so sufficiently. When applicable these questions were presented along with evidence from the simulated maneuver including the screenshot of the maneuver, simulation description (objective, vessel, and environmental conditions) and the closed ended scores for concern for safety, effect of the north extension, and whether the north extension increased concern of the maneuver.

During the focus group the discussion began with comments by the pilot that the vessels used in the simulations and environmental conditions were valid. The frequency of the wind direction and velocity were presented, and attendees were asked to comment. They stated that these wind velocities are common at POA and that attendees have experienced higher wind velocities.

All three closed ended questions were analyzed for construction Phase 2, Steps 2.3 and 2.4, as well as construction Phase 3. First Round 1 and Round 2 scores were presented demonstrating the baseline of using a single 5,000 HP tugboat along with the *Stellar Wind* and *Glacier Wind* tugboats during variations in construction and environmental conditions. This led to the establishment that there are three types of maneuvers that pose high levels of concern for safety. These are: 1. Docking during construction Phase 2, Step 2.3 on a large flood; 2. Undocking during construction Phase 2, Step 2.3; and Docking during construction Phase 2, Step 2.4 with wind 335 (northwest) at 25 knots. Among these three maneuvers the results show that the north extension effects the maneuver and increases the concern for the maneuver during construction Phase 2, Step 2.3 but not during construction Phase 2, Step 2.4.

The focus of the discussion was the following question:

Does the use of a second 5,000 HP tugboat mitigate the level of risk for maneuvering at POA during PAMP? If yes, is the level of mitigation sufficient to make maneuvering TOTE vessels safe during PAMP?

The results of Round 3 using a second 5,000 HP tugboat were presented to the focus group. The results focused on the three types of maneuvers identified above. For docking and undocking during construction Phase 2, Step 2.3 there was mixed results as during some simulations the level of concern for safety decreased while during other simulations it increased compared to the results of Rounds 1 and 2. Similar mixed results also were found when maneuvering during construction Phase 2, Step 2.4 with wind 335 (northwest) at 25 knots. However, in all cases the maneuver was still rated at least a 3 (somewhat concerned). This is greater than the effective range of concern for safety from 1 – 2. Furthermore, for all maneuvers during construction Phase 2, Step 2.3 the results for level of agreement that the north extension effects the maneuver and it

increases the level of concern were 5 (strongly agree). When maneuvering during construction Phase 2, Step 2.4 these scores decreased to 3's (neither agree nor disagree).

Therefore, while there is some mitigation of concern for safety and the effect of the north extension by utilizing two 5,000 HP tugboats, it is not sufficient to make maneuvering TOTE safe during PAMP with the re-phasing of the north extension.

The following comments were made by the TOTE pilot during the focus group to better understand why maneuvering with the north extension re-phased during PAMP increases concern for safety, and why a second 5,000 HP tugboat does not sufficiently mitigate the level of concern for safety.

On docking or undocking on a flood current with wind at 335 (northwest) at 25 knots:

- We always dock on a flood. The northwest wind is common during the spring months and the velocity frequently ranges between 10-20 knots so there is high concern for the wind. In particular for TOTE, the large sail area makes high winds very concerning.
- When having a large flood, it is difficult to get underway in particular with this type of wind. We get more out of the tugs by pushing but we couldn't get the tugs inside to push because there was no room. We had to attach a tug and pull. I don't like using tugs to pull because they cannot release as quickly in the case of an emergency.

On the role of ice:

- When docking the ice is friendly and helps the ship work against something.
- We are not able to simulate the ice that gets caught in the hole (space between the north extension and construction for Terminal 3). If we take the beam of the *Stellar Wind* that is washing ice then the 50' of room for the bow becomes 20' between the *Stellar Wind* and our bow. There is just no way that is safe.
- Today, we are able to come in at a steep enough angle to allow the ice to flush out. During simulations we were coming in too flat and we would bring too much ice in with us. The reason is because I couldn't hold the ship out at a 20-30-degree angle to avoid the north extension and clear ice in high winds.

On the north extension:

- There is no room today. We have always been concerned with the north extension since 2003. TOTE already damaged a wheel on the north extension a few years ago. So, it's already a problem and a huge concern for us.
- The only difference with what is being proposed compared to today is that we will have less room, only have 50' ahead of our bow.
- About 75% of the time TOTE is the first ship in, so TOTE comes in at Matson's berth and backs in to avoid the north extension. If Matson is already there we still have about 100' in front of us when docking. However, the amount of room today is just as bad astern as proposed in this construction design. The future plans make an already tight situation worse because 100% of the time we wouldn't have time to do anything in an emergency. The construction plan designed to have the north extension cut back 400' will allow us to come in a little flatter, but current plans allow for no room.

- At times in simulation we had as little as 20' of room behind the wheel to the north extension. This creates a situation that we are not going to do. There is just not enough room to maneuver. If you have a tugboat in front of you then you may only have 20' in front and 20' behind you.

On using three tugboats including two 5,000 HP tugboats:

- By using two 5,000 HP tugboats it may be able to make the maneuver passable and could maybe do it. However, if a tug line breaks, anyone loses power there is no time to react. In 1998, I was tied up to Terminal 1 and ready to offload. I had the engines on and had 10 lines out. Then every line broke and I was underway, full astern, and did not stop until almost off of Terminal 3 and that was acting as quickly as possible. Looking at the position of TOTE that is proposed there is not enough room. It doesn't matter if we have 10,000 HP tugboats, there just is not the space to provide the time to fix anything if something goes wrong, and things often go wrong.
- Where do I put a third tugboat? You can have three tugboats, but I will have a hard time putting them on the ship to make a difference. When undocking I have to wait to get off the dock to get enough clearance for a third tug to come inside between the ship and the dock. With tight maneuvering during construction Phase 2, Step 2.3, there's not enough room to even get the third tug on the ship when undocking.
- Horsepower is a tool but it's not getting the ship into a safety zone. Having a second 5,000 HP tugboat makes such maneuvers possible, but they should not be performed. Having this type of horsepower does not effectively mitigate concern and the potential problems. It makes it easier to maneuver, but it does not overcome the obstacle of small space. We could have 10,000 HP and it will not change the amount of risk because we do not have enough room.
- Could you maneuver with two 5,000 HP tugboats, maybe or maybe not. Do you want to risk multimillion dollar operations over maybe?

On construction Phase 2, Step 2.3:

- I know we could do many maneuvers in the that hole (space between the north extension and construction for Terminal 3), but I would not feel comfortable doing this in real life. It's a matter of room, and I just can't think that fast.
- The sightline from the bridge is almost 200' to the water. Once we get around 100' in terms of room towards something we can't see anything. In such cases we rely on communication with the mates that adds an additional element of human error already to an error chain. The distance of as little as 20' for the stern or the bow with the *Stellar Wind* washing ice means I can't see the dock. I am constantly talking to the tugs to know if I'm going to hit something. This particular step of construction just can't happen. Most port minimum distances are 30 meters on both ends. It doesn't matter if the wind is calm this is just a crazy maneuver.
- My recommendation will be to not maneuver in this condition [also during large flood currents and high velocity winds from the north]. There is no sleeve oil allowing you to fix anything if trouble happens. Ultimately, safety and accident prevention are important to TOTE for operating at the dock.
- Maneuvering during this step of construction makes TOTE change the way that they use tugboats during docking and undocking. They cannot get the tugboats inside during

undocking because there is not enough room meaning they have to pull the ship off the dock. This is a problem because tugboats backing on a line lose 25-30% of their power, and if backing in ice they lose 60-80% of their power. Backing in ice can make the tugboats practically useless.

On construction Phase 2, Step 2.4:

- There can be issues with this step when it comes to mooring lines on the dock, ice loads, and overall the length of the dock coming down to room. When Matson comes in on the ebb current and TOTE comes in on the flood current when the ships are bow-to-bow tying up the mooring lines can be tricky. I thought there was agreement on 100' of room, but now being proposed is 60' of room to tie up in a bow-to-bow configuration. We need 100' between bows for the mooring lines to work.

On this research using simulators:

- I was at first a non-believer in research using simulators. But the data collection along with the interviews and having the research assistants writing down what we are saying on the bridge and asking us questions afterwards brought a more realistic perspective. I am now a full believer in this research and the data of this study.
- One thing you can't simulate is the captain in your ear telling you not to go north, but you see that you can't go south either. No one wants to go north but there is just not much room to maneuver.
- What we don't simulate is staying on the dock. If the north extension is in place you probably want three tugboats waiting by the ship for the full 12 hours when at the dock just in case.

Other Comments:

- How long will Matson and TOTE keep using the current ships of these lengths? If the ship sizes increase to take advantage of the larger cranes, what does this mean for room at the docks? There should be consideration of the size of the dock to accommodate potential changes in vessel dimensions.
- If the north extension re-phasing remains but new Terminal 1 could be changed to accommodate 110' of space during 2.3, can TOTE operate with two ramps temporarily? This is not possible because the stern would be hanging off the dock. Even with stern lines there could be problems of ice getting in between the vessel and the dock. Today, TOTE ramps act as mooring lines. We only have six lines out until the ramps are attached.

The focus group resulted in four statements about findings and three recommendations. The statements of agreement and recommendations are the following:

Findings

1. The highest level of concern is associated with docking in a Large Flood during Construction Phase 2 Step 3. There is no systematic decrease in the level of concern by using a second 5,000 HP tugboat assisting TOTE during Construction Phase 2 Step 3 in a Large Flood.

2. High winds (25 knots) from the Northwest (335) are associated with high levels of concern for docking and undocking TOTE in Construction Phase 2 Step 3. There is no systematic decrease in the level of concern by using a second 5,000 HP tugboat assisting TOTE in winds from 335 at 25 knots.
3. Regardless of the horsepower of the two larger tugboats assisting, there is not enough clearance for TOTE forward (at 50') or aft (at 30' – 40') to safely maneuver at Terminal 3 during Construction Phase 2 Step 3. Because of the limited space available there is insufficient time for the maneuvering operations to react to unexpected human and environmental factors. Best practice is a minimum clearance of 100 feet fore and aft.
4. There is concern over mooring line conflicts during construction.

Recommendations

On Construction Design

1. The cutback of the Northern Extension should be completed as early as possible to provide space to maneuver for TOTE and other vessels at POA.
2. Research on possible dock length adjustments during PAMP to address mooring line conflicts during construction.

On Pilot Familiarization

3. Simulations should continue to be used to familiarize pilots with the PAMP.

Results: Matson Focus Group Results

Mariners that took part in the simulations along with stakeholders were involved in a focus group to discuss the results of the simulations and develop recommendations. Participants involved in the focus group are identified in the methods section above. Based on the simulations and interviews, SGM developed two main questions for discussion concerning whether the second 5,000 HP tugboat mitigates the concern for safety when operating Matson and if it does so sufficiently. When applicable these questions were presented along with evidence from the simulated maneuver including the screenshot of the maneuver, simulation description (objective, vessel, and environmental conditions) and the closed ended scores for concern for safety, effect of the north extension, and whether the north extension increased concern of the maneuver.

During the focus group the discussion began with comments by the pilots that the vessel used in the simulations and environmental conditions were valid. The frequency of the wind direction and velocity were presented, and attendees were asked to comment. They stated that these wind velocities are common at POA and that attendees have experienced higher wind velocities.

All three closed ended questions were analyzed for construction Phase 2, Steps 2.1 and 2.2, as well as construction Phase 3. First Round 1 and Round 2 scores were presented demonstrating the baseline of using a single 5,000 HP tugboat along with the *Stellar Wind* and *Glacier Wind* tugboats during variations in construction and environmental conditions. This led to the establishment that there are two types of maneuvers that pose high levels of concern for safety. These are: 1. Docking during construction Phase 2, Step 2.1 on a large ebb with wind from the north (both 335 and 045); 2. Docking portside on a flood with wind from the north (both 335 and 045). Among these two maneuvers the results show that the north extension effects the maneuver and increases the concern for the maneuver during construction Phase 2, Step 2.1 but not during construction Phase 2, Step 2.2, or Phase 3.

The focus of the discussion was the following question:

Does the use of a second 5,000 HP tugboat mitigate the level of risk for maneuvering at POA during PAMP? If yes, is the level of mitigation sufficient to make maneuvering Matson vessels safe during PAMP?

The results of Round 3 using a second 5,000 HP tugboat were presented to the focus group. The results focused on the two types of maneuvers identified above. For docking during construction Phase 2, Step 2.1 on a large ebb with wind from the north there was a decrease in the level of concern for safety for 3/4 of the maneuvers. However, in all cases the maneuver was still rated at least a 3 (somewhat concerned). This is greater than the acceptable range of concern for safety from 1 – 2. Furthermore, among all maneuvers during construction Phase 2, Step 2.1, 4/5 resulted in a level of agreement that the north extension effects the maneuver and it increases the level of concern were a 3 (neither agree nor disagree). This indicates that the role of the north extension cannot be rejected.

For the other type of maneuver, docking portside on a flood with wind from the north during various phases and steps of construction, the results are mixed. Among 3/4 maneuvers during

Round 3 the level of concern for safety reaches safe levels of about 2 (slightly concerned) while one maneuver remained rated at a 4 (moderately concerned). In addition, all maneuvers during construction Phase 2, Step 2.2 and Phase 3 were rated as 1 (strongly disagree) that the north extension effects or increases concern for the maneuver.

Therefore, while there is some mitigation of concern for safety and the effect of the north extension by utilizing two 5,000 HP tugboats, it is not sufficient to make maneuvering Matson safe during PAMP with the re-phasing of the north extension.

The following comments were made by the SWAPA pilots during the focus group to better explore why there are high levels of concern for safety for maneuvering Matson with the north extension re-phased during PAMP, and why a second 5,000 HP tugboat does not sufficiently mitigate the level of concern for safety

On the cow turn maneuver during construction Phase 2, Step 2.1:

- Today, the cow turn maneuver is performed by Matson 1-2 times per month.
- There is not much of a mitigation effect when using a second 5,000 HP tugboat for this maneuver. This is because I am trying to turn starboard on a large ebb. If there was ice it could prevent you from turning. I have to get close to the dock then turn away from danger. I like to get the headway off and get sternway, so the pivot point is aft. When I'm looking aft it's hard to see obstructions behind me. The barge is out there. By having construction obstacles up to 300' from the current dock face it means this is a different current than I am used to. This changes the pitch of the ship and changes so much from the time you turn around to the time coming in alongside. I found I was paying a lot of attention to the position of the ship and the tugboats. I think it would be tough for a newer pilot to be successful 100% of the time.
- Even when having two 5,000 HP tugboats with this new construction it is difficult to know when to start the turn, and I will not know ultimately the position of the ship after the turn. Because of how far the terminal and construction is built out I cannot grab the counter current.
- Having a second 5,000 HP tugboat mitigates the concern for the maneuver but it's still a very difficult maneuver wrought with challenges.
- For the cow turn in the hole, the first time I did it I was not comfortable at all. The second time went better. It would be a lot easier if we didn't have to deal with TOTE and no construction obstructions. This maneuver could be doable with the two higher HP tugboats, a different approach, but wind is still a big factor.

On using three tugboats including two 5,000 HP tugboats:

- While Matson ships are equipped with thrusters they often do not work. This is one reason why a second tugboat is called in during non-ice conditions and a third tugboat is used to wash ice during ice conditions.
- You only have so much room to make the turn and with the large wind and currents sending the ship straight into the dock with one 5,000 HP tugboat you really don't have a way out. Having two 5,000 HP tugboats gives you more options to get out of a mess.
- Much of this analysis is based on tugboats going 100% but reality is that during high winds and seas, due to safety for the crew these tugs will not be working at 100%.

- Can there be a formula or recipe of how many tugs per how much wind and current? In Valdez we can use as many tugs as we want but we don't have that option at POA. Overall, too hard and difficult to apply a single formula of how much added HP for what wind and current. One reason is because there is no uniformity on how pilots use the tugs. Some use them to pull others to push. Some use them to counteract speeds, others use them as anchors. Overall, pilots use tugboats differently this means they apply and use added HP differently. This means that there would be a different formula for every pilot.
- I felt that having a second 5,000 HP tug added great amount of safety during construction in particular during 2.1.
- Using a third tugboat will help you go parallel. Even when I was using the higher HP tugboats it was notable how much HP I was using. The fact that I was using all the power on the tugboat was worrisome. Using max power on the tugboat isn't recommended practice.

On docking portside during construction Phase 2, Step 2.2 on a flood with high winds from the north (335 / 25 knots; 045 / 20 knots):

- These large winds and currents make it difficult to turn the ship in time. Having two 5,000 HP tugboats increases the rate of turn and helps mitigate the role of the wind.
- I would not do this maneuver with one 5,000 HP tugboat. In real life you don't have enough tug power to be docking in that wind.
- Even with two 5,000 HP tugboats this maneuver can be scary. The issue is not so much docking but trying to turn around in the wind from that direction on the flood. I was preparing to drop the anchor because I need speed to make the turn but wanted to be slowing down. This was a maneuver that shouldn't be performed.
- Construction Phase 2, Step 2.2 differs from current design of POA because it builds out the terminal 150' into the stream. That much distance results in a very different current velocity. When we are out 150' into the stream the current is much stronger, and we don't have the option to execute the turn farther out. Will this remain a problem after the north extension is cutback? I don't know.

On winds from 335 (northwest) at 25 knots and 045 (northeast) at 20 knots:

- The mariners all noted that they have experienced these winds in terms of direction and velocity at POA in the past. When the port has winds from 335 (northwest) at 20 knots or more then the seas are extreme. This occurs about 15-20 days per year and the tugboats have to go hide for safety. During these winds the *Glacier Wind* becomes useless.
- Tugboats don't want to tie up with the ships in these types of winds. The wind and current can oppose and it's really dangerous for the tugs. We get these types of winds during the winter. Also, the simulations are constant and do not represent the more difficult gusts.
- We have a problem now with these high winds. Moving the terminals further offshore there will be a need to adapt. There will be more delays.
- There is a problem with maneuvering Matson in winds from the north equal to or greater than 20 knots. This is not an engineering problem but something that establishing operational limits may assist.
- If we are docking, we always have the option to not dock. However, we can't undock on strong northwest winds. With strong southwest winds we can get the bow through and get

off. But winds can be as strong as 35 knots from the northwest and when undocking you have to get the ship away from the dock fast enough because there is a risk it could destroy the dock.

On position of TOTE during construction Phase 2, Step 2.1:

- Our biggest problem is that even with high HP tugboats, is the proximity to TOTE increases risk.
- There are two things we can do and its either move TOTE or the construction barges. If the TOTE ship was not there these maneuvers would be no brainers.
- I found that this is the most intense when tucked into that holes (Phase 2, Step 2.1 between TOTE and construction). To perform that maneuver you have to go sideways in. Even if you moved the barge I don't think it would decrease the risk because the risk is the hole a combination of the construction in front and TOTE on your stern.
- Will the mooring lines of TOTE clip the stern of Matson? If there is only 75' I don't see how there is enough room for the mooring lines.

On the construction barge:

- During construction Phase 2, Step 2.1 a construction barge with an anchor deployed 100' offshore is used. This means the ship must complete the cow turn maneuver further out from the dock than usual and can prevent the ship's stern from entering into the flooding back eddy. This makes the maneuver have very high levels of concern.
- We recommended using spuds instead of wires and anchors back in 2016 because of currents. Even if the wires are slack you still have the buoy and wires can get caught in the wheel.
- If spuds aren't utilized due to environmental conditions, then barge and anchor locations should be shifted to allow more room prior to vessels maneuvering.

Findings

1. The maneuvers of greatest concern for safety for Matson are during Construction Phase 2 Step 2.1 docking on a Large Ebb current. Additional maneuvers are also of high concern when docking Portside on a Flood current during Construction Phase 2, Steps 2.1 and 2.2.
2. Using the 5,000 HP tugboat did decrease the level of concern for safety for maneuvering Matson during construction Phase 2 Steps 1, 2 and Phase 3.0. However, the level of concern for safety remained too high to be sufficiently mitigated during construction Phase 2, Step 2.1 as well as some maneuvers during construction Phase 2, Step 2.2.
3. The utilization of a second 5,000 HP tugboat is most effective mitigating the level of concern for safety when docking Matson portside on a flood during construction Phase 2, Step 2.2 and construction Phase 3.0.
4. Regardless of the horsepower of the two larger tugboats assisting, there is not enough clearance for Matson forward (at 75') or aft (at 75') to safely maneuver at Terminal 2 during Construction Phase 2, Step 2.1. Best practice is a minimum clearance of 100 feet fore and aft.
5. A major concern for safety when maneuvering Matson during PAMP are winds from north (045 / 20 knots and 335 / 25 knots).
6. There is concern over mooring line conflicts during construction.

Recommendations

On Construction Design

1. The cutback of the Northern Extension should be completed as early as possible to provide space to maneuver vessels at POA.
2. Research on possible dock length adjustments during PAMP to address mooring line conflicts during construction.

On Pilot Familiarization

3. Simulations should continue to be used to familiarize pilots with the PAMP.

On Establishing Operational Guidelines

4. The development of operational guidelines in collaboration with Matson for docking/undocking with winds from the northwest (335) at 25 knots or greater.
5. When docking Matson on a large ebb late in the tide, a “cow turn” maneuver should not be performed, based upon these simulated environmental conditions and barge location during construction Phase 2, Step 2.1

Summary of Results

Results: Summary TOTE

There are three primary maneuvers for TOTE that have high levels of concern for safety during PAMP. The results of the effect of using a second 5,000 HP tugboat on the level of concern for safety and impact of the north extension are summarized below.

Docking during Construction Phase 2, Step 2.3 on a Large Flood
The level of concern for safety when docking on a large flood during construction Phase 2, Step 2.3 is not effectively mitigated by using a second 5,000 HP tugboat. For all maneuvers during construction Phase 2, Step 2.3 the north extension effects and increases the level of concern for safety of the maneuver even when utilizing a second 5,000 HP tugboat.

Undocking during Construction Phase 2, Step 2.3
The level of concern for safety when undocking during construction Phase 2, Step 2.3 is not effectively mitigated by using a second 5,000 HP tugboat.

Docking or Undocking during Construction Phase 2, Step 2.4 in wind 335 at 25 knots
The level of concern for safety when docking or undocking during construction Phase 2, Step 2.4 in wind 335 (northwest) at 25 knots is not effectively mitigated by using a second 5,000 HP tugboat. In addition, for all maneuvers during this construction Phase 2, Step 2.4 whether the north extension effects and increases the level of concern for safety of the maneuver cannot be rejected when utilizing a second 5,000 HP tugboat.

Results: Summary Matson

There are two primary maneuvers for Matson that have high levels of concern for safety during PAMP. The results of the effect of using a second 5,000 HP tugboat on the level of concern and impact of the north extension are summarized below.

Docking during Construction Phase 2, Step 2.1 on a Large Ebb with wind from the north
The level of concern for safety when docking during construction Phase 2, Step 2.1 on a large ebb with wind from the north (335 and 045) is not effectively mitigated by using a second 5,000 HP tugboat. In addition, for all maneuvers during this construction Phase 2, Step 2.1 whether the north extension effects and increases the level of concern for safety of the maneuver cannot be rejected when utilizing a second 5,000 HP tugboat.

Docking portside on a flood with wind from the north
The level of concern for safety when docking portside on a flood with wind from the north (335 and 045) during construction Phase 2, Steps 2.1, 2.2, and Phase 3.0 are effectively mitigated by using a second 5,000 HP tugboat except for one maneuver. For all maneuvers during construction Phase 2, Step 2.2 and Phase 3.0 the north extension does not affect and does not increase the level of concern for safety of the maneuver when utilizing a second 5,000 HP tugboat.

Conclusion

The research performed in this study analyzed pilot concern for safety when maneuvering TOTE and Matson vessels during PAMP without first completing the NES project. It found that the level of concern for safety is high for multiple maneuvers by both TOTE and Matson, and that increasing the tugboat horsepower available does not effectively mitigate the concern for safety when maneuvering TOTE and to a lesser extent Matson. Therefore, the NES project should be completed to safely maneuver TOTE and Matson vessels before Phase 2 of PAMP. In addition, while TOTE and Matson vessels can maneuver during Phase 2 of PAMP, high levels of concern are associated with some environmental and construction conditions and should probably not be attempted.

Recommendations

On Cooperation between TOTE and Matson

1. During PAMP Construction Phase 2, Matson and TOTE vessels should coordinate their schedules to arrive and depart from the Port of Alaska on different days.

On Construction Design

2. The North Extension Stabilization project should be completed as early as possible and prior to construction Phase 2 of PAMP to provide space for vessels to maneuver at POA.

On Future Research and Pilot Familiarization

3. Research should be conducted utilizing ship pilots to develop operational guidelines for maneuvering Matson and TOTE vessels during PAMP Construction Phase 2.
4. Research should be conducted on possible dock length adjustments during PAMP to address mooring line conflicts during construction.
5. Simulations should continue to be used to familiarize pilots with the PAMP.

Appendix 1. AVTEC Full Mission Ship Bridge Simulators

Alaska's Institute of Technology (AVTEC) upgraded their ship simulation capabilities 2016, increasing number of LED screens, new computers with newly installed data cables for simulators B and C. Specific details of three ship simulators for this study are listed below:

Specific Details	Simulator A	Simulator B	Simulator C
DNV Rating	DNV Class A (NAV)	DNV Class A (NAV)	DNV Class A (NAV)
Projected Visual Horizontal Field View	290 Degrees:	300 Degrees	300 Degrees
Projected Visual Vertical Field of View	31 Degrees	31 Degrees	31 Degrees
Projectors and LED Displays	7 Projectors forward 4 LED Displays Astern	14 LED Displays Forward 6 LED Displays Aft	14 LED Displays Forward 6 LED Displays Aft
Throttle Control	Console	Console	Console
Joy Stick Steering	Console	NA	NA
Steering Wheel	Separate Stand	Console	Console
Polaris Software	Yes	Yes	Yes
VHF radios	1 on Console	1 on Console	1 on Console
Internal ship phone	Yes	Yes	Yes
RADAR/ARPA	Yes	Yes	Yes
ECDIS	Yes	Yes	Yes
Conning Display	Yes	Yes	Yes
Anchor Control	Yes	Yes	Yes
Winch Control	Yes	Yes	Yes
Hawser	Yes	Yes	Yes
Tension/length display	Yes	Yes	Yes
Doppler, Gyro Compass	Yes	Yes	Yes
DGPS, AIS	Yes	Yes	Yes
Depth Sounder	Yes	Yes	Yes
Auto Pilot	Yes	Yes	Yes
Thruster Control	Yes	Yes	Yes
Pilot Plugs	Yes	Yes	Yes
Alarm/ fault display	Yes	Yes	Yes
Lights, Sound signals	Yes	Yes	Yes
Binocular view	Yes	Yes	Yes
Chart Table with light	Yes	Yes	Yes

Instructor Stations include following controls and capabilities: Interactive or separate exercises, target vessel routing, Wind, waves, current, weather, tide, faults, alarms, offsets, hawsers for tugging/towing/mooring, operator-controlled tugs (vector tugs), audio and video monitoring, playback for debrief with multiple variables available. Ice context includes bergs, brash, hummock, first year, multi-year ice.

Modeling Capability includes custom built area database based on NOAA chart with capability to modify area database for research projects. Research projects include editing capabilities of adding docks, buildings, land features, buoys, depth, current, wind.

Other features include: User-controlled viewing angle with 360-degree horizontal and 180-degree vertical capabilities. Additional smaller screens show the views from the stern of the vessel, through a binocular channel display and control panels. **Virtual Ship model** calculates ship response to the variety of forces that can be exerted upon a vessel, including changed topography, channel depth and width effects, and ship motion. **30 geographic area databases** with visual, coastline, landmass, radar and depth files. **46 ship and tow model databases** including inland waterways barges and towboats, bulk ship, cruise ships and variety tanker types. **S**hip-to-ship interaction; vessel responses to currents, waves and winds; vessel-to-vessel towing simulation; and interactive ability to maneuver and control a tow boat. First United States simulator awarded USCG certification teach ice class required for IMO certification.

Appendix 2. Description Atlantic Oak Tug 16

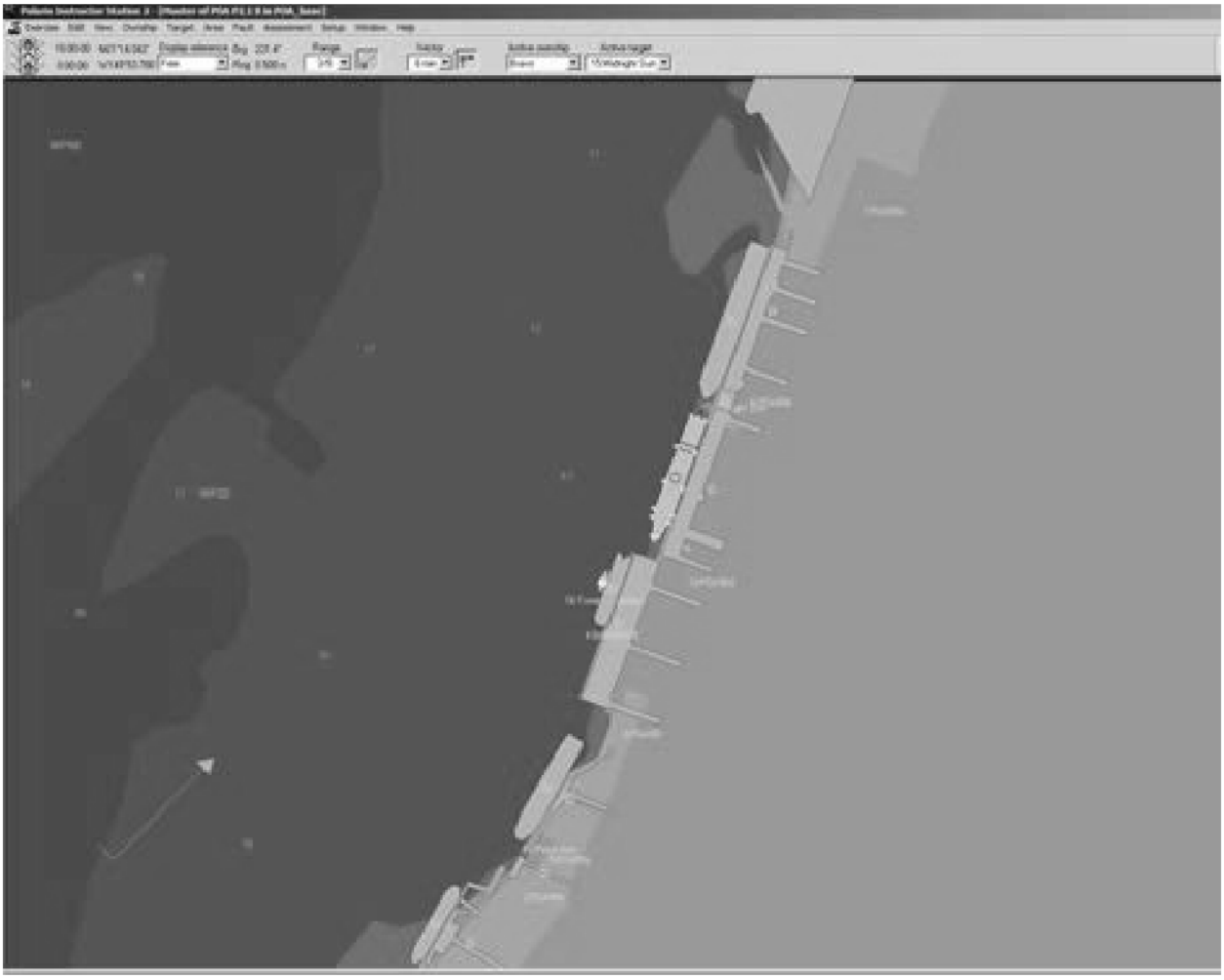
Length	Breadth	Draft Aft	Draft Forward	Twin Azimuth 64 Tons	Deadweight
101’	37’	11’ 7”	11’ 7”	5, 080 HP	230 tons

Tested Kongsberg library model tugboat Atlantic Oak with 64 Ton Bollard Pull

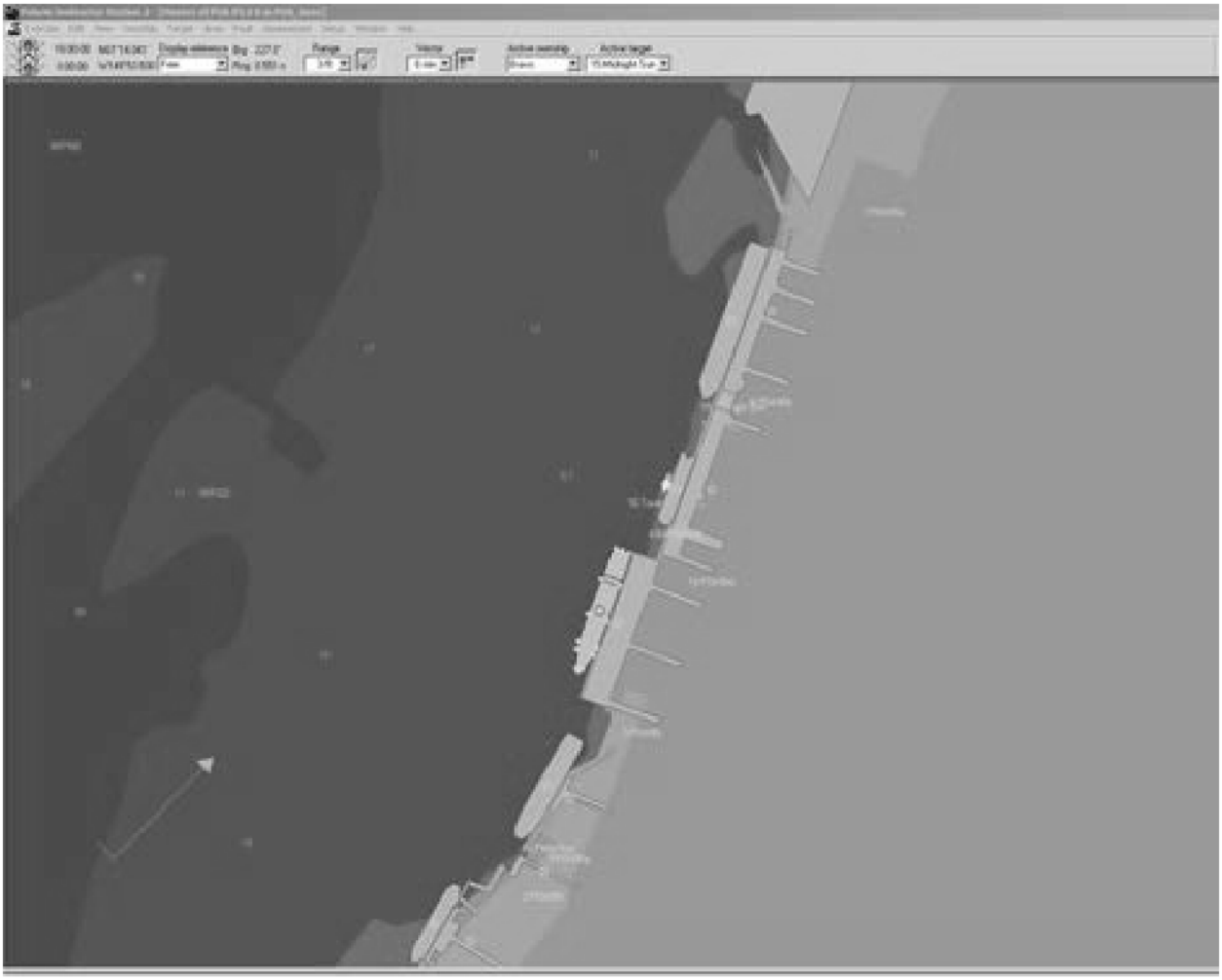
5,080 HP Rated @ 64 tons Bollard Pull	Pushing/ line on stern	Pulling/ line on bow	Current 3 knots in line/ pushing/ line on stern	Current 3 knots in line/ pulling/ line on bow
Full	71 tons	66 tons	61 tons	63 tons
90%	63 tons	58 tons	51 tons	53 tons
80%	55 tons	51 tons	43 tons	46 tons

Appendix 3. Screenshots of PAMP Design 2.1, 2.2, 2.3, and 3

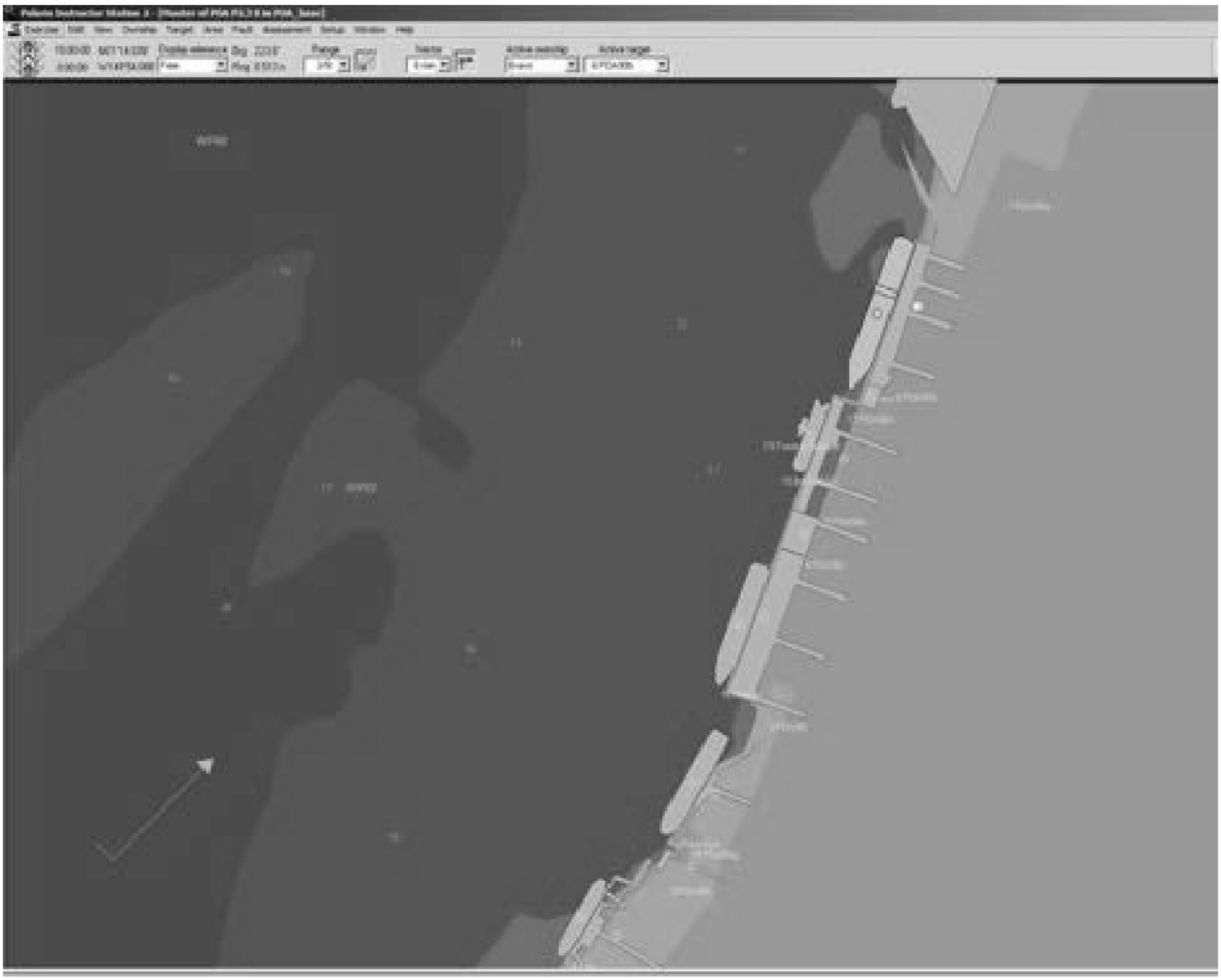
PAMP Construction Phase 2, Step 2.1



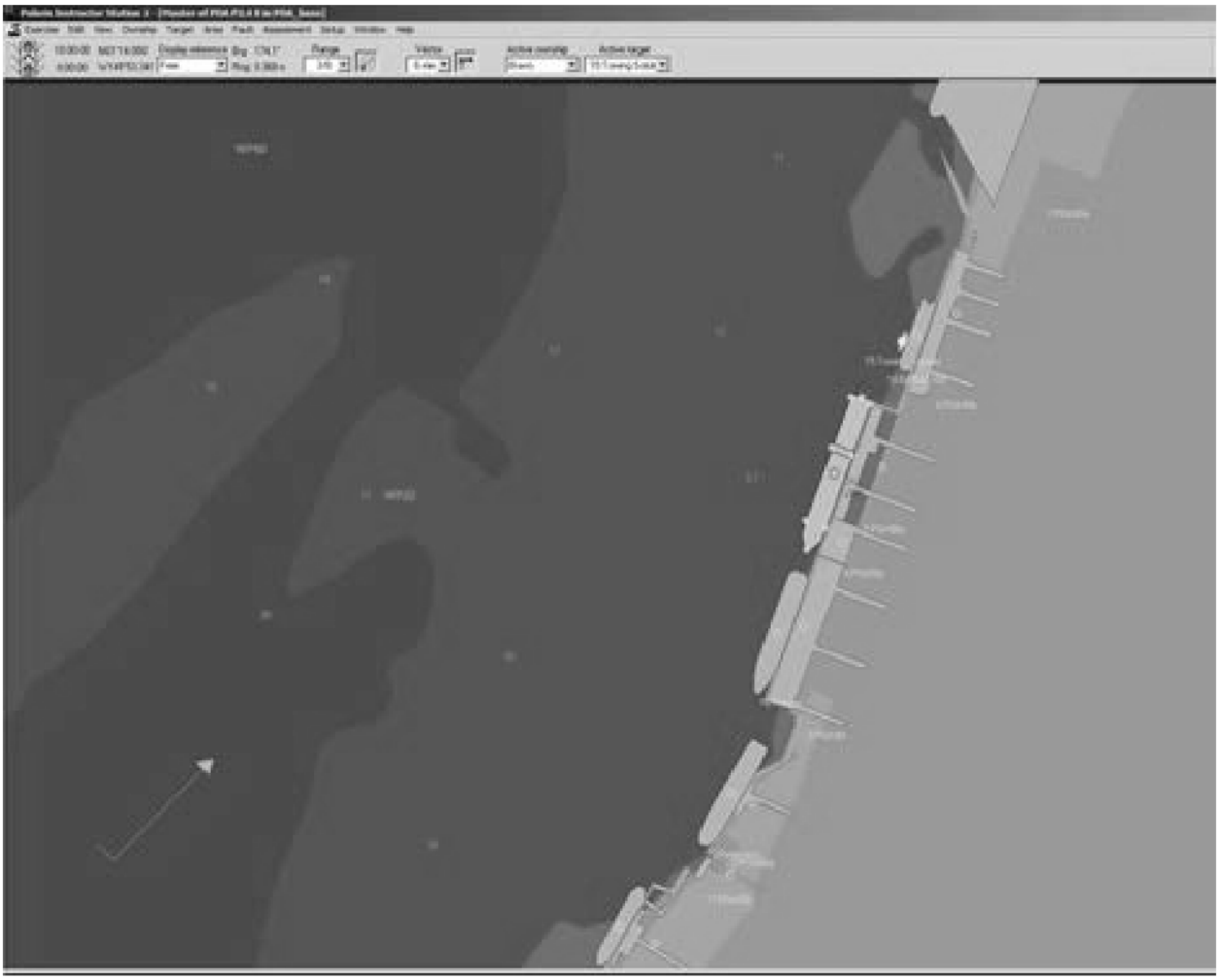
PAMP Construction Phase 2, Step 2.2



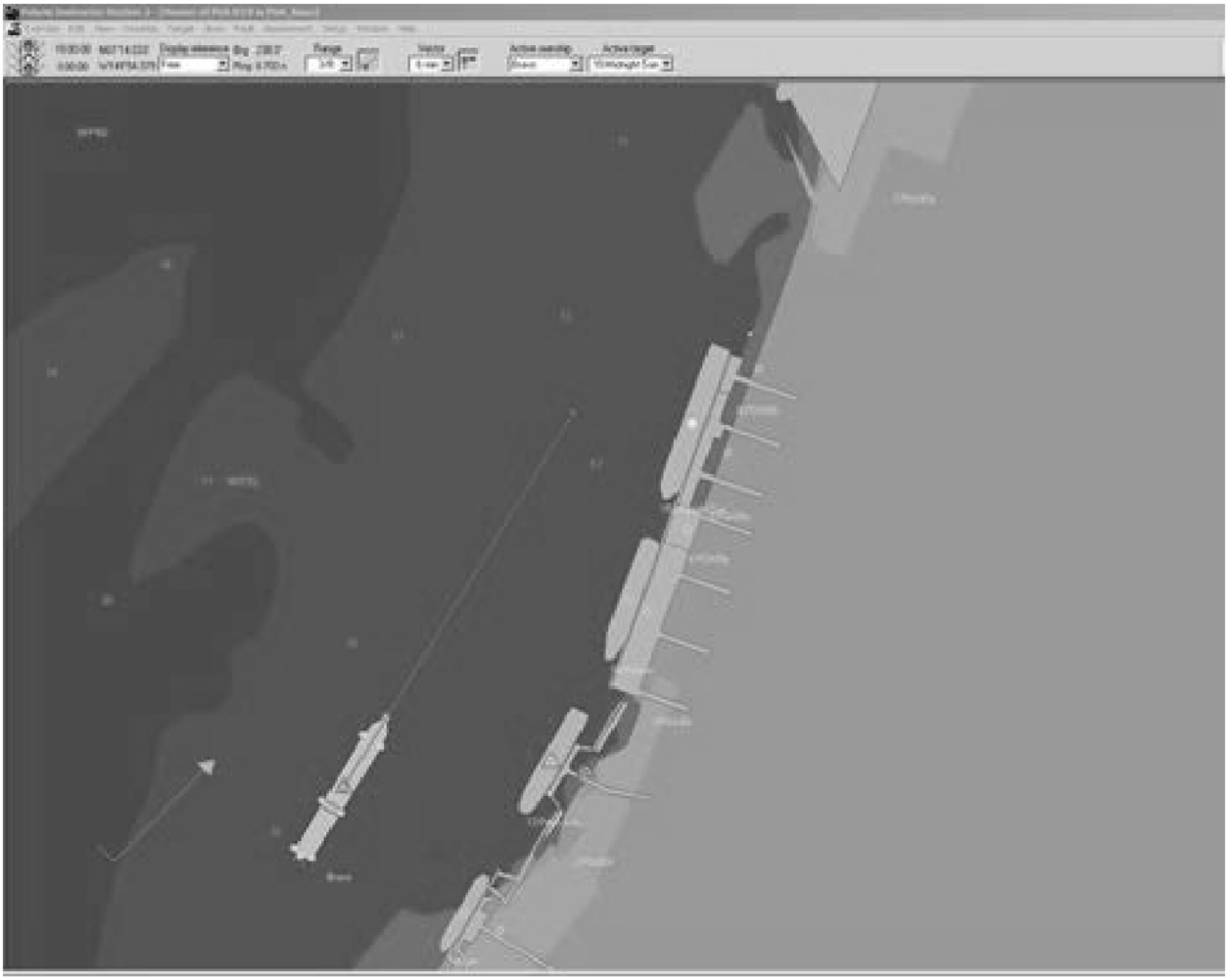
PAMP Construction Phase 2, Step 2.3



PAMP Construction Phase 2, Step 2.4



PAMP Construction Phase 3.0



Appendix 4. Selected comments by TOTE Pilots after simulations about why the level of concern safety is high

What is your level of concern for the completed simulation?
Scale: 1 = Not at all concerned, 2 = Slightly concerned, 3 = Somewhat concerned, 4 = Moderately concerned, 5 = Extremely concerned

Sim#	Docking Construction Phase 2.3 Wind 045 / 20 Knots Current Large Flood in Ice
2	Completed the objective, 4 = Moderately concerned because the tug having to be on a line instead of going inside, no room inside for them due to construction forward. Experiments with tugboat movements and lines, recognizing that the Dolphin isn't behaving on a line as powerfully as it should on the outside due to wind speed and force. The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. Assist tugs were at the limits of their capacity.
33	Completed the objective, 5 = Extremely concerned, The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. Assist tugs were at the limits of their capacity. would prefer bigger tugboats and even one more for assistance. Glacier Wind could have been placed on the inside to hold ship off until ice clears. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times. It was very intense and stressful and great amount of effort was required to accomplish the objective.
50	Completed the objective, 3 = Somewhat concerned because of the wind and flood effects in the ice. The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. maneuvers the ship at an angle in an attentive and vigilante manner; looks around and feels satisfied with outcome; slides into position effortlessly; tugs help level the ship out as the stern makes its way toward the dock; is more alert and focused at the end during the final micro movements.

Sim#	Undocking Construction Phase 2.3 Wind 045 / 20 Knots Current Large Flood
4	Completed the objective, 4 = Moderately concerned because the tug having to be on a line. The North Extension effects the maneuver, 5 Strongly agree. The North Extension increased your level of concern when performing the maneuver, 5 strongly agree. you are limited in space to the North. I was relaxed, any anxiety could easily be accommodated. Moderate amount of concentration with a considerable amount of attention and moderate amount of effort was required**.**
34	Completed the objective, 2 = Slightly concerned, extra tug horsepower increases lateral movement. The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. Was as straight forward as could make it.
54	Completed the objective, 3 = Somewhat concerned due to shallow water north of ship. Used larger tugs that provided more safety and better maneuverability of the vessel, with the third tug standing by. The third might have been used by other pilots. The

	North Extension effects the maneuver, 5 Strongly agree. The North Extension increased your level of concern when performing the maneuver, 5 Strongly Agree.

Sim#	Docking Construction Phase 2.3 Wind 225 / 15 Knots Current Large Flood
5	Completed the objective, 2 = Slightly concerned due to larger tides and smaller area to work with in terms of distance. Tugboats helped greatly for control and steering of the ship. The North Extension effects the maneuver, 4. The North Extension increased your level of concern when performing the maneuver, 4.
35	Completed the objective, 4 = Moderately concerned because coming in a long way sideways and keeping the speed is really hard to find the equilibrium. Just being able to get it perfect in, "if I go 20 ft. back I'll go aground, if I go 50ft ahead I'll hit the barge or the dock- finding that sweet spot and *maintaining it* is *really* difficult." The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times. I was under moderate stress which I could accommodate, and great amount of effort was required to accomplish the objective.
46	Completed the objective, 4 = Moderately concerned due to the limited amount of space, there isn't enough room for error. The North Extension effects the maneuver, 5 Strongly agree. The North Extension increased your level of concern when performing the maneuver, 5 Strongly agree. I occasionally had spare time as activities frequently overlapped. Moderate amount of concentration with a considerable amount of attention. I was under moderate stress that I could accommodate. Great amount of effort was required.
60	Completed the objective, 3 = Somewhat concerned as proceeds with creeping ahead into the hole. Appears satisfied with positioning and approach; remains calm and relaxed while waiting for the ship to move into the hole. Angles the bow toward the dock and is comfortable and alert; final adjustment of the stern while maintaining alertness and comfort; satisfied with final results. More assist tug horsepower provided greater safety and better maneuverability of the vessel. The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5.

Sim#	Docking Construction Phase 2.3 Wind 225 / 15 Knots Current Large Flood in Ice
6	Completed the objective, 2 = Slightly concerned. Having more powerful boat normally available has large benefit. During ship approach, main concern is to get the turn in without hitting the north end extension or getting pulled too far south. Once you get around the turn and in the clear with the north end extension, then see where the ship ends up and then plan the approach. Basically, complete the turn first and see where you're at, then adjust, but can't necessarily go in with a hard and fast plan- depends on the turn. Moderate amount of concentration with a considerable amount of attention, and moderate amount of effort was required.
36	Completed the objective, 5 = Extremely concerned, The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing

	the maneuver, 5. Biggest concern in this simulation is fitting onto the terminal with ice and wind conditions as they were. A bigger tugboat and a third for safety and maneuverability reasons. Small boats were maxed out. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times. It was very intense and stressful and great amount of effort was required to accomplish the objective.
49	Completed the objective, 3 = Somewhat concerned, satisfied with results, the maneuver was straightforward, he was able to hold the angle like he wanted, the main concern is the tight squeeze into the hole. The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. Assist tugs with higher horsepower enabled more safety and better maneuverability of the vessel.

Sim#	Docking Construction Phase 2.3 Wind 335 / 25 Knots Current Large Flood
7	Failed to achieve the objective, 3 = Somewhat concerned, Jeff's post simulation question: Would you have hit, or gone aground in the stern? Yes, likely had run aground at the stern. The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. Had to keep the tug pulling the stern because wind wants to push it out; took a lot to keep the stern off. Simulator was a lot more reactive than anticipated; trying to stay ahead of north extensions.
37	Completed the objective, 5 = Extremely concerned, The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. This simulation presents heavy wind and the challenge of fitting ship onto the terminal with no margin of error and limited space. Dolphin on bow; Stellar Wind on stern. Ship did not respond as anticipated, partly because interactive tug was attached to ship. As a result, ship ended up further north than desired and somewhat changes the approach strategy. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times. It was very intense and stressful and great amount of effort was required to accomplish the objective.
55	Completed the objective, 5 = Extremely concerned, Given the technical difficulties, the North Extension increased the level of concern greatly. Under normal simulator circumstance, he would rate this question a 4. Without the third tug and the horsepower of the other, and given the steering and engine problems, we would have been aground. managed to save the situation without steering and throttle and maintained composure the entire time; the tugs provided the extra power that saved him from running aground. Normal heartrate: 65 bpm and went up to 135 bpm. High stress situation. The North Extension effects the maneuver, 5 Strongly Agree. The North Extension increased your level of concern when performing the maneuver, 5 Strongly Agree. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times. It was very intense and stressful and great amount of effort was required to accomplish the objective.

59	Completed the objective, 5 = Extremely concerned, The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. Tug Horsepower enabled the ship to have better maneuverability and turn the ship safely. Captain looks around vigilantly, the ship creeps forward into the hole; perpetually looks portside at proximity to the North Extension; appears very focused as we near the dock; is hyperaware of clearance to the bow and stern, adjusts accordingly when we close in. I was constantly working, without spare time, and multiple activities were always occurring. Required extensive mental effort with a great amount of concentration and attention at all times. I was under moderate stress that I could accommodate, and great amount of effort was required.

Sim#	Docking Construction Phase 2.3 Wind 335 / 25 Knots Current Large Flood in Ice
9	Completed the objective, 2 = Slightly concerned. The North Extension effects the maneuver. 5 Strongly Agree; it presents an obstacle in terms of safety and the margin of error that exists. Tugs provided control and safety of the ship while approaching the dock, specifically towards the end of the simulation during docking.
38	Completed the objective, 5 = Extremely concerned, The North Extension effects the maneuver, 5. The North Extension increased your level of concern when performing the maneuver, 5. “This is a big time cowboy docking- this would make captains lose their shit, whoever was on the wing would have had to go below to change their pants” “Driving the ship is so much easier coming from the north, we can use the ships speed and rudder, have much more control. But coming in sideways is so much more work to get it in perfectly”. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times. It was very intense and stressful and great amount of effort was required to accomplish the objective.
48	Completed the objective, 4 = Moderately concerned because of ice combined with the heavy flood. Within .15 miles from the dock, the tugs are helpful in moving the ship into a parallel position before pushing into the hole; captain monitors environmental effects closely as the ship behaves and approaches closer to the dock; at full attention as he moves into the hole and makes micro movements confidently; feels good about the way the ice washed out; pushes the stern in and is alert and at ease; looks behind during the final moments to ensure we are clear of the North Extension. The North Extension effects the maneuver, 5 Strongly agree; The North Extension increased your level of concern when performing the maneuver, Strongly Agree 5. I occasionally had spare time as activities frequently overlapped. Extensive mental effort with a great amount of concentration and attention at all times and also great amount of effort was required.
57	Completed the objective, 4 = Moderately concerned, Captain appeared happy with the maneuverability of the vessel and response to the environmental conditions; slightly concerned about the distance to the North Extension as the stern moves in towards the dock. Higher horsepower tugs allowed for greater maneuverability and safety of the vessel. The North Extension effects the maneuver, 5 Strongly agree; The North Extension increased your level of concern when performing the maneuver, Strongly Agree 5. I occasionally had spare time as activities frequently overlapped. Moderate

	amount of concentration with a considerable amount of attention. Moderate amount of effort was required.

Sim#	Undocking Construction Phase 2.3 Wind 335 / 25 Knots Current Small Ebb
12	Completed the objective, 4 = Moderately concerned primarily because of strong ebb and not wanting to go back. The North Extension effects the maneuver. 5 Strongly Agree, because of the ebb and amount of RPM it takes to stabilize, it's scary going astern because of the shallow water. The North Extension effects the maneuver. 5 Strongly agree; The North Extension increased your level of concern when performing the maneuver. Strongly Agree 5; same as above (shallow water, close proximity, strong wind). Required Extensive mental effort with a great amount of concentration and attention at all times.
41	Completed the objective, 2=Slightly concerned, Pulling the stern into the ebb and keeping us away from dock. The North Extension effects the maneuver. Strongly agree 5; The North Extension increased your level of concern when performing the maneuver. Strongly Agree 5. Push bow around while pushing stern out and then hard over and spin right out of here, just can't go aft.
52	Completed the objective, 3 = Somewhat concerned, More control and safety of the vessel with larger tugs. The North Extension effects the maneuver. Strongly agree 5; The North Extension increased your level of concern when performing the maneuver. Strongly Agree 5. Shallow water closes to stern, monitoring ship for no sternway.

Sim#	Undocking Construction 2.3 Wind 335 / 25 Knots Current Large Flood
14	Failed to achieve the objective, 5 = Extremely concern. Not something would do with a real ship, extremely risky, would have pushed the ship back along the dock and wait for the wind to die down. The North Extension effects the maneuver. Strongly agree 5; The North Extension increased your level of concern when performing the maneuver. Strongly Agree 5; When I noticed that forward tug was ineffective would have pushed the ship back on the dock and waited until the wind died. "There are things we can do and things we should do. I can get it off the dock, but I shouldn't. Also, the captain wouldn't have allowed that maneuver under those conditions in real life." I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration was required my attention at all times and also great amount of effort was required.
42	Completed the objective, 5 = Extremely concerned, not much room from North Extension and the dock ahead. The North Extension effects the maneuver. Strongly agree 5; The North Extension increased your level of concern when performing the maneuver. Strongly Agree 5; Tugs provided Safety, control, and maneuverability of the vessel.
53	Completed the objective, 3 = Somewhat concerned a relatively straightforward procedure with no major concerns other than the forceful wind and current, which the two large tugs were helpful in assisting with. Larger horsepower, more safety and maneuverability of the vessel, third tugboat was standing by. I often had spare time and activities infrequently overlapped. Little mental effort was required as the maneuver was automatic. I was relaxed, any anxiety could easily be accommodated, and little effort was required.

Sim#	Docking Construction 2.4 Wind 335 / 25 Knots Current Large Flood
16	Completed the objective, 5 = Extremely concerned wind effected the ship's movement more than anticipated. Captain observes that the wind blew the ship around quite forcefully and the ship didn't respond like he anticipated. Appears to make much more calculated decisions to negotiate with wind speed and proximity to North Extension. He says, "we are all over the place and I'm in a somewhat uncomfortable position. I don't feel like I have full control of the vessel". Closed on dock rapidly, feels like speed is too high. Appears fully aware and makes concentrated adjustments while communicating to tugboat and QM. Feels like the tugboat isn't helping too much. Relatively speaking, level of concern and concentration appeared to be moderately high throughout the simulation. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration was required my attention at all times and also great amount of effort was required.
43	Completed the objective, 1=not at all concerned if come in on this angle would just barely pass barge on stern it, should probably ease up a bit, just cleared work tug, Got the wind behind us, on bow looking will inch aft a little bit; "think we're okay, now we're just sailing in and letting the wind do the work" Tugs had control of the bow and stern during the approach. The North Extension effects the maneuver. Strongly disagree 1; The North Extension increased your level of concern when performing the maneuver. Strongly disagree 1.
51	Completed the objective, 2 = Slightly concerned, the wind had a major impact on the stern, but he didn't use extra tug. Tugs provided larger horsepower and more control of the ship, the third tug was standing by for safety, and other pilots might have used the third tug to assist on the stern due to wind effect. The North Extension effects the maneuver. Moderately agree 3; The North Extension increased your level of concern when performing the maneuver. Moderately Agree 3
58	Failed to complete the objective, 5 = Extremely concerned. Captain misjudged distance to the bow and is unhappy with the results. Ship eventually makes contact with Matson ship. Perform the maneuver any differently from what was completed? Yes, he would have avoided hitting the ship. The simulation represented realistic attributes and maneuverability of the vessel. 5 Strongly Agree. The North Extension effects the maneuver. Moderately agree 3; The North Extension increased your level of concern when performing the maneuver. Moderately Agree 3.

Sim#	Docking Construction 2.4 Wind 335 / 25 Knots Current Large Flood in Ice
18	Completed the objective, 4 = Moderately concerned, Because the rate of turn stopped and reversed so instead of coming to the right we went to the left and it took "extreme action to fix that", attribute that to combination of lacking tug and effect of ice on the turn. I wouldn't have decreased power as we got close to dock which resulted in the ship to stop turning, but I would have kept the power through the turn. Anticipate being much easier that docking at terminal 3 because the distance allows the ship to "make a run from the north", and there's much "more space" to work with. "A lot closer to the dock at the turning angle than would like to be."

44	Completed the objective, 2=Slightly concerned due to the barge behind the ship. The North Extension effects the maneuver. 2 The North Extension increased your level of concern when performing the maneuver. 2. Benefit provided by the tugboats was Safety, control, and maneuverability.
47	Completed the objective, 3 = Somewhat concerned, was constantly watching the North Extension and monitoring impact on the ship. Tugs provided plenty of power to help with maneuver. The North Extension effects the maneuver. Strongly agree 5; The North Extension increased your level of concern when performing the maneuver. Strongly Agree 5; Free water and safe space.
61	Completed the objective, 2 = Slightly concerned due to ice and wind effects upon the ship. The North Extension effects the maneuver. 2 The North Extension increased your level of concern when performing the maneuver. 2. Higher horsepower tugs enabled better maneuverability and safety of the vessel.

These comments represent the two TOTE mariners' perspective concerning whether they can safely maneuver a TOTE ship during PAMP. Providing two 5,000 horsepower assist tugboats does not reduce the amount of risk associated with construction Phase 2, Step 2.3 during the re-phasing the North End Extension stabilization.

"I learned a lot about what is possible and what is not within the distinct phases of construction of the Port. I believe the conclusions will reveal the real-life problems and benefits associated with ship handling within the new port throughout the construction phases. I believe this was a very professional and thorough study into the ship handling within the Port of Alaska."

"My experience (3 sessions) with the SGM simulations was world class. The most recent session solidified my grave concerns with the political decision regarding the North End Extension. Simulations showed the enhanced risk of vessel damage and/or berth closure during Phase 2, Step 2.3."

Appendix 5. Selected comments by SWAPA Pilots after simulations about why the level of concern safety is high

What is your level of concern for the completed simulation?
Scale: 1 = Not at all concerned, 2 = Slightly concerned, 3 = Somewhat concerned, 4 = Moderately concerned, 5 = Extremely concerned

Sim#	Docking Construction Phase 3.0 Wind 335 / 25 Knots Current Large Flood
2	Failed to achieve the objective 5 = Extremely concerned. Appeared extra vigilant going into the dock after clearing TOTE, watching many things, seems disbelieving of where the ship is throughout the maneuver; visibly stressed backing in/parallel parking between the two ships with not a lot of room. Got into a hole and had to dig out, did not want to be that far north on the turn and "was ugly", would have been aground on the turn. It was very intense and stressful., Used extensive mental effort with a great amount of concentration and attention at all times.
33	Failed to achieve the objective 5 = Extremely concerned. Notes that the barge and flood current are obstacles that have to maneuver around; high level of concentration; once the revolution has been made and we begin our landing, he is hyperaware of proximity to barge and construction; there is a communication breakdown between tugs and captain, and captain gets visibly upset and frustrated. It was very intense and stressful. Used extensive mental effort with a great amount of concentration and attention at all times.
57	Completed Objective 2 = Slightly concerned, comments on the conditions and says the big task is going to not hit the ships on either end; expecting turn to not happen as fast because of the wind; don't want to get too far to the north, personal preference to close into TOTE's berth and drive into Matson's berth as opposed to going sideways into Matson berth. We would have done this maneuver, but it was not walk in the park with that wind and current; having the higher horsepower tugs made the level of concern a 2 when it would have been a 3 without them. With the NNW wind at 25 knots the larger horsepower tug on the stern effectively mitigates the risk of the maneuver. Extensive mental effort with a great amount of concentration and attention at all times was required and great amount of effort was required.
67	Completed the objective, 3 = Somewhat concerned. If we were being honest and this was a real-life situation this would be a 3 level of concern, even on the turn alone trying to control it in the wind and the speed. Didn't get through the current as had hoping on the initial approach, seems frustrated by that; has current on port bow; more tense, more commands, bow swinging in fast on approach, visibly stressed to slow speed as coming in alongside dock. The wind with that velocity, you're going to need some high-powered tugs, or you'll go through the dock. I was determined not to use the tugs, but you need them. Extensive mental effort with a great amount of concentration and attention at all times was required and great amount of effort was required.

Sim #	Docking Construction Phase 2.1 Wind 045 / 20 Knots Current Late Large Ebb (Cow Turn)
13	Failed to achieve the objective, 5 = Extremely concerned. Captain notes that the barge and flood current are obstacles that he has to maneuver around, high level of

	concentration; once the revolution has been made and we begin our landing, he is hyperaware of proximity to barge and construction. There is a communication breakdown between tugs and captain, and captain gets visibly upset and frustrated; the miscommunication seems to have an impact on the maneuver and the decisions he makes. Source of stress coupled with the minimal amount of space between both the barge on the stern and the dock, was unhappy with results as the bow touched down on the construction. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times and it was moderately intense and stressful.
45	Completed the objective, 5 = Extremely concerned. The tug made the job possible, without them, it couldn't have been done. The extra horsepower with the bigger tug made it safer. Completed turn successfully but realizes that he is dangerously close to the tug; immediately begins commanding tugs to help correct; appears somewhat concerned and commands sound urgent; stern begins moving toward the dock at high speed and captain looks very uncomfortable, tugs correct motion. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times and it was moderately intense and stressful.
58	Completed the objective, 4 = Moderately concerned. This maneuver is really hard, have to come in toward the dock, turn away from it to take advantage of current then go into pocket, and the wind is off the dock, which is significant. I can see why we're rerunning it. "This is a diabolical little set up with the wind and construction tugs". Location of construction tug greatly increased the difficulty of the maneuver. North end extension effects the velocity of the back eddy and between the construction area and the north extension there's a smaller pocket of safe water. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times and it was very intense and stressful.
66	Completed the objective, 3 = Somewhat concerned. Tugboats are large and able to control the ship, however there's a minimal amount of room between TOTE and constructions makes it a 3. Two large tugs were able to handle the ship in a tight area and prevent the ship from colliding. Biggest variable seems to be avoidance of the construction obstacles, especially in the current. Constantly watching forward (construction obstacles) and aft (position of stern), making sure stern is getting through the current while avoiding construction tug; higher horsepower tug is responding almost immediately which is "really good"; more relaxed as bow clears tug, seems confident in position, but still highly alert and many commands; Moderate amount of concentration with a considerable amount of attention was required.

Sim#	Docking Construction Phase 2.1 Wind 045 / 20 Knots Current Large Ebb
15	Completed the objective, 4 = Moderately concerned. Commands are deliberate and confident-sounding; communicates with tugs to identify clearing and appears more stressed and makes more agitated body movements as we push in given the tight squeeze and minimal amount of space in the hole. Once we've determined that it's ok to push in, he appears more at ease; as we hold steady in the hole and make progress

	toward dock. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort was required with a great amount of concentration and attention at all times.
47	Completed the objective, 3 = Somewhat concerned. His main concern was the tug on the stern and he decided to come in wider than he would have under normal circumstances. It was a fairly straightforward maneuver that he performs often. When we were within very close proximity to tug at stern he appeared alert and looking aft, appeared confident when making final micro movements towards the dock. Required moderate amount of concentration with a considerable amount of attention at all times.
59	Completed the objective, 3 = Somewhat concerned. Problems due to wind and the construction barge, no way to drive into that hole, so the only thing we can do is to come in straight sideways. "An error in piloting where you anticipate conditions and make a plan based on those assumptions and if you're wrong, like I was, it will take a lot to correct it". More stressed when plan didn't work, out of position and comments that it will take a lot to correct it. Required extensive mental effort with a great amount of concentration and attention at all times.
69	Completed the objective, 3 = Somewhat concerned. It's a tight hole with no room for error. Can usually drive ships in without tugs but you just can't do it alone in that kind of hole. Going need be pretty deep into the hole to get in because of the new dock, barge, and tug. Tried using the wind to keep away from the tug and the current to set the ship in. These two tugs are the kind of horsepower you need for going into that hole.

Sim#	**Construction Phase 2.1 Wind 335 / 25 Knots Current Large Flood in Ice**
16	Extremely concerned; Tolerance for error is very low (only 75ft on both ends) and ice is jammed in, so flushing is going to take forever, and you'll have to hold your position perfectly that whole time. Tolerance of error is to low and you need a third tug for flushing ice, really need those tugs. Would prefer a bigger tug on the stern, 20 ft. is too close. I don't think you could drive it in any differently, maybe come a little more into the north but "you're just kind of screwed due to no room". Extensive mental effort with great amount of concentration and attention at all times, it was very intense and stressful.
48	Completed the objective, 4 = Moderately concerned. Was in regular communication with mates to get distance fore and aft; mate notes that bow is coming in really tight to the construction tug; adjusts, but then stern is really close/tight; radios that, soon as the bow passes the construction tug then he'll push a little bit to make space for the stern. Just a really tight situation; clearly focused and tense adjusting to the space between the bow and stern; hands sweaty, stressed; "it would have made a whole lot of difference to have more power forward, but I needed power on the back because of the wind, just really needed more power." I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times and it was very intense and stressful.

60	Completed the objective, 3 = Somewhat concerned because of the extreme ice, wind and tight quarters for maneuvering. The ice was helpful because of the resistance, it kept us from accelerating out of control. It was tough to find a balance when closing with so little room in stern and bow. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times and it was very intense and stressful.

Sim#	Construction Phase 2.2 Wind 335 / 25 Knots Current Large Flood
22	Completed the objective, 5 = Extremely concerned. Once the ship levels out and we near the dock, the captain appears fully concentrated; the ship takes a dive to the far right and captain appears agitated and concerned while attempting to correct. Wind is relatively strong, and he realizes that he must work with it, adjusts accordingly using tugs; slows down speed and takes precautionary measures with commands keeping the conditions in mind. Appears somewhat flustered trying to maneuver the ship towards the dock as we push it in; hyperaware of positioning and moves steadily and consciously in while intently focusing on the maneuver. Tugs made the ship more maneuverable and created a more "doable" situation. I should have made use of the tugs more effectively and monitored speed more closely. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times and it was very intense and stressful and great amount of effort was required.
34	Completed the objective, 5 = Extremely concerned. With the wind coming in at that speed you're at the limits of where you can recover if anything goes wrong. Tugs were "absolutely necessary" for controlling the heading of the ship and sideways movement coming into the port. The thrusters would never be able to do it on their own. Stellar Wind on the starboard quarter was barely able to manage and if the wind was any stronger would not have been successful. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times and I was under moderate stress that I could accommodate.
61	Completed the objective, 5 = Extremely concerned. Extreme wind creates a high speed, high risk maneuver. As stern was coming in and approaching the dock "we've got everything *we have* using everything to not wipe out that construction barge and the dock, this is ugly". "Nicki, is scared one of the debrief emotions?"; tense throughout entire maneuver, with everything working at its maximum to mitigate potential collision. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times and it was very intense and stressful.
70	Completed the objective, 3 = Somewhat concerned. Nothing to do with the dock construction, it's just the extreme wind, which we have encountered. We have to use the tugs because of the wind, there's no way to do it without them because the wind just blows the house down"; some stress making the turn, reliant on tugs to get ship into position coming alongside the dock; no chatting or joking during commands coming alongside, not too stressed but very focused on controlling tugs in "a hell of a

	lot of wind." Without the tugs probably wouldn't have been able to stop. Great amount of effort was required to complete the objective.

Sim#	Construction Phase 2.2 Wind 045 / 20 Knots Current Small Flood in Ice
23	Completed the objective, 4 = Moderately concerned. Was worried about positioning as we get closer to the dock; proactively positions tugs to better prepare for approach. Body movements are more vigilant; walks around the room to determine distance; the ice appears to be an obstacle, constantly maneuvering and appears slightly agitated with the ship's response. Pushing the ship in toward the dock is sluggish, makes the final push toward the dock fully alert, calm, and hyperaware of positioning and speed. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times. I was under moderate stress that I could accommodate with moderate amount of effort required.
38	Completed the objective, 4 = Moderately concerned. Turning the ship with the ice and the wind in opposition, trying to hit a very small funnel of an approach is challenging. Tugs make the maneuver possible, wouldn't be prudent maneuver without them however forward tug is underpowered for this maneuver. I was constantly working, without spare time, and multiple activities were always occurring. Moderate amount of concentration was required with a considerable amount of attention. I was under moderate stress that I could accommodate Great amount of effort was required.
62	Completed Objective 2 = Slightly concerned. Tricky part is not having very much current. Higher horsepower tugs mitigated strong winds and ice. Required moderate amount of concentration with a considerable amount of attention and I was under moderate stress that I could accommodate.

Sim#	Construction Phase 2.1 Wind 335 / 25 Knots Current Late Large Ebb (Cow Turn)
30	Completed the objective, 4 = Moderately concerned. Limited room fore and aft of the vessel. Was focused more on the fore/aft position and a little less on coming alongside; it's hard in this wind and speed to focus on both the alongside and fore/aft positioning at the same time perfectly. These were extreme conditions, but certainly reasonable. Needed extra power on the stern especially and needed two tugboats to turn the ship in the cow turn. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration was required and my attention at all times and I was under moderate stress that I could accommodate.
44	Completed the objective, 4 = Moderately concerned. The simulation malfunction was realistic and added to concern, but I would still be concerned without the malfunction. Situations like this simulation glitch happen in our work, "This is a simulation error, but it's not totally unrealistic to have a situation like this"; clearly a little stressed, saying "okay, let's see what we can salvage from this position" (not angry or frustrated, just realizing the situation and clearly making plans and calculations in his head). Regular commands on approach to dock, getting ready to wiggle in; during approach was very focused and attentive throughout, making adjustments to tugs and engine power to accommodate wind, current, and position in tight quarters; not outwardly stressed, but could see slight signs of stress/concern in attentiveness. Made

	it possible, would not have been prudent without them. I was constantly working, without spare time, and multiple activities were always occurring. Moderate amount of mental effort was required with a great amount of concentration and attention at all times and it was very intense and stressful.
63	Completed the objective, 4 = Moderately concerned. Counter current, strong wind, and no room. Concerned about keeping stern in on the approach and backing towards dock. I ended up too far to the south coming out of turn and blowing down on the boats, "we can fix it…it's nice to have big tugboats, tug backing full to pull us against the wind "there's a lot going on here, oh this is sucky." Using the stronger tug at full power was barely enough to achieve the desired result. "Big tugboats keep everything nice and in control." I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention was required at all times and it was very intense and stressful.

Sim#	Construction Phase 2.1 Wind 045 / 20 Knots Current Small Flood
31	Completed the objective, 4 = Moderately concerned. 75ft on each end took complete focus, which left the sideways movement to be a second priority. Felt that he maintained what he needed to, but it was not easy and took A LOT of effort. When combine that space with wind and current, felt really out of control, much more out of control than would ever want to be. Needed more tug power with wind from that direction. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention at all times. I was under moderate stress that I could accommodate, and moderate amount of effort was required.
46	Completed the objective, 4 = Moderately concerned. It's challenge to balance tugs with uneven power (tugs have varying degrees of power and balancing that is a constant balance; tight space. Tugs were required and necessary for moving the ship sideways safely. I was constantly working, without spare time, and multiple activities were always occurring. Extensive mental effort with a great amount of concentration and attention at all times. I was under moderate stress that I could accommodate.
64	Completed Objective 2 = Slightly concerned. Higher horsepower tugboat effectively mitigated strong winds and tight maneuvering area. Concerned about distance to new dock ahead, seemed to be a little more frustrated with position of ship, made quite a few minor adjustments to sure up the position. Moderate amount of concentration was required with a considerable amount of attention. I was under moderate stress that I could accommodate with a great amount of effort.

Following comments represent the six Matson SWAPA pilots' perspectives concerning whether they can safely maneuver their ship during PAMP. Providing two 5,000 horsepower assist tugboats does not reduce the amount of risk associated with construction Phase 2, Step 2.1 during the re-phasing the North End Extension stabilization.

"Simulations were very eye-opening for me. Certain stages of the POA modernization project (with regards to ship handling) were very doable but there were some stages that were very concerning. I've spent my career minimizing risk and when we are docking ships in current, ice and wind with only 75 feet on each end I believe the risk is to great. We need to come up with an

alternative plan. Perhaps bring TOTE and Matson in on different days? Stuffing two large ships into a port which is already congested with dock expansions, barges and equipment doesn't make sense. It's an accident waiting to happen. There are options to minimizing the risk and I believe it is our duty to the city and state to do so."

"I thought the POA design simulation was a valuable exercise to test parameters for the port design prior to construction – allowing practical feedback for all stakeholders. Hopefully, the feedback is utilized to reduce risk to as low as reasonably practicable for the construction phases."

"The simulations of the port, ships, and conditions were very accurate and realistic. The proposed construction phases will definitely increase difficulty, and the likelihood of accidents, by a very large margin."

"Thank you for the opportunity to participate in the study and appreciate the extended efforts to understand the challenges and risks involved in the project. Even on a "good day," the challenges are difficult, and the risk are high. It will be our job to mitigate the risks and there may be times during the construction phases, given the environmental conditions, that we will all have to accept that ships will not be moving. Continuous communication and teamwork will be key. In the end, we all want the same outcome – a modern, safe and efficient Port of Alaska."

"The recent simulator exercises at AVTEC gave a very good representation of conditions frequently encountered at Port of Alaska. The handling characteristics of the vessel model used were spot on. After a few minutes in the simulator getting mentally synched with the scenario, the sense of realism was intense. Simulation is the best possible way to set operational guidelines and safety parameters without putting life, property and the marine environment in danger. I enjoyed being there and am grateful for having had the opportunity to practice and improve my piloting skills."

"I think the POA simulations show that there will be some difficult maneuvers during different phases and at different berths. The simulations also showed that using two dolphin class tugs seems to mitigate some of the difficult maneuvers. Even with two dolphins, there may be maneuvers that will require extra timing to help with weather and current parameters."

7 August 2013

SIMPSON GUMPERTZ & HEGER
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Mayor Dan Sullivan
Municipality of Anchorage
632 West 6th Avenue, Suite 840
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Project 130356 – Peer Review of Global Stability Analyses of Open Cell Sheet Pile Structures, Port of Anchorage Intermodal Expansion Project, Anchorage, AK

Dear Mayor Sullivan:

At your request, we prepared this Executive Summary of our peer review of the CH2MHILL Suitability Study of the Open Cell Sheet Pile (OCSP) structures at the Port of Anchorage (POA). The intent of this Executive Summary is to provide our opinions on specific portions of our peer review to date. We intend to perform further review of the CH2MHILL study and will provide additional opinions at the appropriate time.

Our fundamental findings are as follows: (1) that the method of analysis used by PND Engineers, Inc. (PND) is insufficient since it failed to adequately consider the shape of the potential failure slip surface; (2) that the method used by PND to estimate the shear strength of the soil needed to verify global stability is insufficient since it failed to adequately consider the full extent of the directional dependence of the shear strength of the Bootlegger Cove Formation clay stratum; and (3) in each of these aforementioned instances, CH2MHILL used an approach consistent with the standard of practice.

PND and CH2MHILL used, among other design parameters, different values for superimposed live load, groundwater elevation on the land side, presence of estuarine deposits, elevation of top of Bootlegger Cove Formation clay stratum, and peak ground acceleration. The differences in these respective values do not materially affect our conclusions because we reach the conclusions discussed in this Executive Summary regardless of whether we use the values by PND or by CH2MHILL.

Based on these findings, and without considering construction defects related to the installation of the steel sheeting, we conclude that the existing OCSP structures at the North Extension 1 and 2 have factors of safety for long-term static global stability and for pseudo-static seismic global stability that do not satisfy the design criteria set for the project. Qualifications for, and extensions of, this statement are given in the body and the Conclusions of this Executive Summary. We have not yet performed a peer review of the Wet Barge Berth.

1. INTRODUCTION

1.1 Background

The design and construction work performed to date on the Port of Anchorage Intermodal Expansion Project (PIEP) includes the Dry Barge Berth (DBB), Wet Barge Berth (WBB), North Extension 1 (NE1), and North Extension 2 (NE2). The WBB and NE1 are designated as Essential Facilities.

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CH2MHILL, an independent consultant retained by the US Army Corps of Engineers, Alaska District, to perform a Suitability Study of the PIEP[1], concluded, among other findings, that as-designed OCSP structures of the NE1, NE2, and WBB portions of the PIEP are inadequate with respect to static global stability and seismic global stability. PND, the designer of the OCSP structures, disagreed with these conclusions by CH2MHILL.

Simpson Gumpertz & Heger Inc. (SGH) was retained to perform a peer review to opine on the reasonableness of the conclusions regarding global stability of the OCSP structures as reported in the CH2MHILL Suitability Study.

1.2 Objective

The objective of this portion of our work is to determine if the minimum factors of safety for global stability of the OCSP structures at the Port of Anchorage meet the design criteria set for the PIEP project, without considering construction defects related to the installation of the steel sheeting.

1.3 Scope of Work

Our peer review to date consists of the following tasks:

- Independently assess the site subsurface conditions based on available geotechnical explorations and soil testing data.
- Perform global stability analyses of representative sections of OCSP structures for the NE1 and NE2 under the following conditions:
    - A critical static condition of long-term undrained loading at minimum low-level water elevation.
    - A pseudo-static seismic condition considering the Maximum Considered Earthquake (MCE) for NE1 and the Contingency Level Earthquake (CLE) for NE2.
- Evaluate the impact of certain design parameters used by PND in its original global stability analysis[2] and as highlighted in its response to the CH2MHILL Suitability Study.

We have not yet analyzed the global stability of the OCSP structures for the DBB and WBB. The DBB, according to CH2MHILL, meets the minimum-required factor of safety; therefore, we will not perform a peer review of the DBB. The WBB, according to CH2MHILL, does not meet the design criteria set for the PIEP project; therefore, our next task will be to perform a peer review of the WBB.

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[1] Port of Anchorage Intermodal Expansion Project Suitability Study, Final Summary Report prepared by CH2MHILL for Port of Anchorage, US Maritime Administration, and US Army Corps of Engineers, dated 14 February 2013.

[2] Port of Anchorage Marine Terminal Redevelopment Geotechnical Analysis Report, prepared by PND Engineers, Inc. and GeoEngineers for Integrated Concepts & Research Corporation (ICRC), March 2008.

2. GLOBAL STABILITY ANALYSES

2.1 Subsurface Conditions

We correlated the soil stratification and soil types noted in the available soil boring logs and other subsurface exploration reports into generalized subsurface conditions used to prepare simplified cross-sections for use in global stability analyses. Our simplified cross-sections compare well to those used by CH2MHILL in its Section 3-3[3] for NE1 and Section 2-2[4] for NE2. We noted that the sections used by PND for design of the OCSP structures (Section G for NE1 and Section F for NE2) contain Bootlegger Cove Formation (BCF) clay stratum at elevations inconsistent with the soil boring logs. In addition, the PND analysis sections do not include the estuarine deposit below the OCSP granular fill and land-side common fill, which was not completely removed as originally planned. Our slope stability analyses consider both the presence and the absence of the estuarine deposit and both the CH2MHILL and the PND elevations for the top of the BCF clay stratum.

2.2 Soil Shear Strength Design Parameters

Based on our review of the available laboratory and field test data and the design shear strength properties developed by both CH2MHILL and PND, we determined that the soil strength properties used by CH2MHILL for each of the soil strata at the site adequately represent the soil conditions at the site, and we adopted them for our analyses. In general, the soil shear strength parameters used by CH2MHILL for the granular and common fill materials are higher than those used by PND. For the BCF clay stratum, we determined that CH2MHILL's use of three zones with different shear conditions and different shear strengths for global stability analyses is necessary to properly account for the shear strength anisotropy[5] of the BCF clay. PND's analyses for NE1 and NE2 considered only two zones with different shear conditions and different shear strengths within the BCF clay stratum. Similarly, CH2MHILL appropriately considered the unloading conditions due to dredging on the seaside of the OCSP, leading to reduced shear strength values in this area compared to the values used by PND.

For pseudo-static seismic global stability analyses[6], we included a reduction of 20% in the undrained shear strength of the BCF clay stratum, estuarine deposits, and common fill, to account for strength reductions that can occur during seismic cyclic loading in these strata. This is consistent with the CH2MHILL analyses and recommendations contained in the published literature[7]. We did not apply a reduction factor to the undrained shear strength of the granular fill consistent with CH2MHILL and PND assumptions for this material.

2.3 Global Stability – Critical Static Condition

Our global stability analysis focuses on the as-designed conditions of the OCSP structure and does not consider any impacts from potential construction defects related to the installation of

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[3] Figure 5.1.6 in the CH2MHILL Suitability Study.
[4] Figure 5.1.5 in the CH2MHILL Suitability Study.
[5] Anisotropy is to have material properties that are directionally dependent.
[6] In a pseudo-static seismic stability analysis, the peak ground acceleration is converted into a pseudo-static inertia force and applied horizontally.
[7] Stark, T.D. and Contreras, I.A., "Fourth Avenue Landslide During 1964 Alaskan Earthquake", ASCE Journal of Geotechnical and GeoEnvironmental Engineering, February 1998, p. 109.

the steel sheeting. We performed our static global stability analyses for sections of NE1 and NE2 using the computer program SLIDE v. 6.022. Our analyses included three zones with different shear conditions and different shear strengths to account for the anisotropic properties of the BCF clay stratum and included searches for both circular and noncircular failure surfaces, consistent with the standard of practice. PND did not perform searches for noncircular failure surfaces for their static global stability analysis for the OCSP structures at NE1 or NE2.

The design criteria adopted for the original design required a factor of safety of 1.5.

Given that differences in certain design parameters exist between CH2MHILL and PND[8] and that our current assignment did not include determining the correctness of these respective design parameters, we performed our global stability analyses using both the CH2MHILL and the PND values for these design parameters. Regardless of the differences in some of the design parameters between CH2MHILL and PND, our results show that the factor of safety for global stability for the OCSP structures is controlled by a noncircular failure surface. PND did not perform a search for noncircular failure surfaces in its evaluation of global stability.

We obtained factors of safety of 1.2 at NE1 and 1.3 at NE2 for the critical static condition of long-term undrained loading at minimum low-water elevation when using the PND design parameters for superimposed live load (a surcharge live load of 200 psf within 200 ft of the face of the OCSP structure, increasing to 1,000 psf beyond), no estuarine deposits present, top of BCF clay stratum elevation (El. -25 ft at NE1 and El. -50 ft at NE2) and groundwater elevation on the land side (El. 18 ft).

We obtained factors of safety of 1.1 at NE1 and 1.1 at NE2 for the critical static condition of long-term undrained loading at minimum low-water elevation when using the CH2MHill design parameters for superimposed live load (a surcharge live load of 1,000 psf immediately behind the face of the OCSP structure), estuarine deposits present, and groundwater elevation on the land side (El. 20 ft).

Therefore, even when adopting the PND design parameters, our work substantiates the conclusions of CH2MHILL that the as-designed OCSP structures of NE1 and NE2 do not satisfy the design criteria set for the PIEP project with respect to static global stability. As stated above, the factors of safety are higher for the design parameters used by PND than for those used by CH2MHILL; however, they still are lower than the factors of safety in the design criteria.

2.4 Global Stability – Pseudo-static Seismic Conditions

Our global stability analysis focuses on the as-designed conditions of the OCSP structure, and does not consider any impacts from potential construction defects related to the installation of the steel sheeting. Our independent pseudo-static analyses of the critical seismic conditions for the representative sections of NE1 and NE2 (MCE for NE1 and CLE for NE2) included three zones with different shear conditions and different shear strengths to account for the anisotropic properties of the BCF clay stratum, and included searches for both circular and noncircular failure surfaces consistent with the standard of practice[9]. PND did not perform searches for

[8] Including superimposed live load, groundwater elevation on the land side, presence of estuarine deposit, and elevation of top of BCF clay stratum.
[9] USACOE EM 1110-2-10-2, 31 October 2003, p. C8.

noncircular failure surfaces for their pseudo-static seismic global stability analysis for the OCSP structures at NE1 and NE2.

Our independent pseudo-static seismic global stability analyses were also performed with the computer program Slide v. 6.022. Given that differences in certain design parameters exist between CH2MHILL and PND[10] and that our current assignment did not include an independent assessment of these design parameters, we performed our global stability analyses using both the CH2MHILL and the PND values for these design parameters. Regardless of the differences in some of the design parameters between CH2MHILL and PND, our results show that the factor of safety for global stability for the OCSP structures is controlled by a noncircular failure surface. PND did not perform a search for noncircular failure surfaces in its evaluation of global stability.

We adopted a lateral seismic coefficient of 50% of peak ground acceleration (PGA) for pseudo-static seismic global stability analyses, consistent with CH2MHILL, PND, and other published recommendations[11]. We have not independently verified this lateral seismic coefficient.

The design criteria adopted for the project required a factor of safety of 1.0 for the Essential Facilities during MCE loading at NE1 and a factor of safety of 1.1 for the CLE loading at NE2.

We obtained factors of safety of 0.9 at NE1 for the MCE, and 1.0 at NE2 for the CLE when using the PND design parameters for PGA (0.26 g for the MCE and 0.18 g for the CLE), no superimposed live load, groundwater elevation on the land side (El. 16.5 ft), tide level (El. 16.5 ft), no hydrodynamic loading on the front face of the OCSP structure, no estuarine deposit present, and top of BCF clay stratum elevation (El. -25 ft at NE1 and El. -50 ft at NE2).

We obtained factors of safety of 0.6 at NE1 for the MCE and 0.7 at NE2 for the CLE when using the CH2MHill design parameters for PGA (0.4 g for the MCE and 0.3 g for the CLE), superimposed live load (a surcharge live load of 200 psf immediately behind the face of the OCSP structure), groundwater elevation on the land side (El. 20 ft), tide level (El. 7.5 ft), inclusion of a hydrodynamic loading on the front face of the OCSP structure, and estuarine deposit present.

Therefore, even when adopting the PND design parameters, including a PGA for MCE conditions that is 65% of the value used by CH2MHILL and for the CLE conditions that is 60% of the value used by CH2MHILL (we have not yet independently verified the PGA), our work substantiates the conclusions of CH2MHILL that the as-designed OCSP structures of NE1 and NE2 do not satisfy the required design criteria with respect to pseudo-static seismic global stability. As stated above, the factors of safety are higher for the design parameters used by PND than for those used by CH2MHILL; however, they still are lower than the factors of safety in the design criteria.

---

[10] Including peak ground acceleration (PGA), superimposed live load, groundwater elevation on the land side, tide level, and hydrodynamic loading on the front face of the structure.

[11] National Cooperative Highway Research Program (NCHRP) Report 611 – Seismic Analysis and Design of Retaining Walls, Buried Structures, Slopes, and Embankments, Transportation Research Board, 2008.

3. CONCLUSIONS

This portion of our peer review concludes as follows[12]:

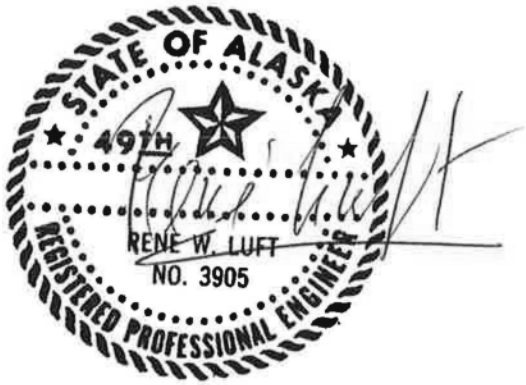
- The existing OCSP structures at NE1 and NE2 have factors of safety for static global stability under long-term undrained loading conditions at minimum low-water level that do not satisfy the design criteria set for this project with respect to static global stability, without considering the impact of potential construction defects related to the installation of the steel sheeting.

- The existing OCSP structures at NE1 and NE2 have factors of safety for pseudo-static seismic global stability under MCE (at NE1) and CLE (at NE2) conditions, that do not satisfy the design criteria set for this project with respect to pseudo-static seismic global stability, without considering the impact of potential construction defects related to the installation of the steel sheeting.

- The conclusions of CH2MHILL regarding long-term undrained static and pseudo-static seismic global stability are reasonable. The inadequate global stability of the OCSP structures at NE1 and NE2 results from PND's failure in two respects:

    - PND considered only two shear strength zones rather than three shear strength zones, which are necessary to fully consider anisotropic properties for the BCF clay stratum.
    - PND considered only circular failure surfaces rather than both circular and noncircular failure surfaces in their global stability analyses, which are necessary to obtain the minimum factor of safety.

Sincerely yours,



William P. Konicki

Rene W. Luft, P.E.
Senior Principal
AK License No. C 3905

William P. Konicki
Senior Principal

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[12] Refer to the body of this Executive Summary which contains several qualifications related to work we have not yet performed.

Michael Baker
INTERNATIONAL

Wharf Evaluation

182343-MBI-CL-EVL-001
Revision 1

Risk Identification and Assessment

Prepared for:



Municipality of Anchorage
Port of Alaska
2000 Anchorage Port Road
Anchorage, Alaska 99501

WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR parts 15 and 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR parts 15 and 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C. 552 and 49 CFR parts 15 and 1520.

Prepared by:

Michael Baker International
3900 C Street Suite 900
Anchorage, AK 99503
907-273-1600

October 18, 2021

EXECUTIVE SUMMARY

Michael Baker International was requested to perform a review of original design documents, loading, codes and standards and to perform an analysis of the existing port waterfront structures under original design criteria and then a second analysis using current design codes and standards. This information was to be used to help screen and identify areas of potential risk or functional obsolescence for more rigorous follow up analysis.

The Port of Alaska (POA) – Anchorage Wharf was constructed in multiple phases beginning with Terminal 1 in 1958 and ending with Trestle 3C in 2000 (see Table 2.1). Multiple structures are past the typical design service life of 50 years.

This report highlights element and component weakness to limit functional usage or de-rate existing loading limits. Finite element analysis has been performed under both original design criteria and current design standards to identify weaknesses in the current gravity and lateral load carrying systems. Michael Baker International has performed the analysis and subjectively compared the data with correlating pile damage documented in the 2020 Underwater Pile Inspections report dated January 8, 2021. The aggregate capacity estimate reflects the pile system capacity remaining in the corroded condition and is based on a weighted average of the percent wall remaining. Traffic and loading patterns were provided by the POA to help focus the review in areas of potential concern associated with continued use by both Tote and Matson.

Under standard daily functional use and vertical loading combinations, the Wharf provides current capability and capacity for transfer of fuel and freight to the state of Alaska, with limited remaining service life. Vertical pile damage ratings indicate a reduction in the gravity capacity from original design. The analysis indicates that the lateral resisting system generally met the design standards of the era constructed but does not meet current design codes and standards. Batter pile damage ratings indicate further reduction in capacity from original seismic criteria.

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REVISION HISTORY

Rev #	Originator	Reviewed By	Approved By	Date	Description
A	TL	TL/NP/CLD	CLD	9/7/2021	Internal Review
0	TL	TL/NP/CLD	CLD	9/8/2021	Issued for Information
1	TL/CLD	TL/CLD	CLD	10/18/2021	Issued for Information with resolved client comments

Licensed Professional Engineer's Stamp:



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ACRONYMS AND ABBREVIATIONS

Acronyms	Definition
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
AISC	American Institute of Steel Construction
ASCE	American Society of Civil Engineers
ASD	Allowable Strength Design
DWT	Dead Weight Tonnage
ft	feet
fpm	feet per minute
IBC	International Building Code
kips	1000 pounds
lbs	pounds
LRFD	Load and Resistance Factor Design
N/A	not applicable
o.c.	on center
pcf	pounds per cubic feet
POA	Port of Anchorage
psf	pounds per square feet
UBC	Uniform Building Code
UFC	Unified Facilities Criteria

1. Introduction

This report provides a high-level structural screening assessment of existing wharf structures at the Port of Alaska - Anchorage (POA), as shown in Figure 1.1. This preliminary review includes a summary of existing design documents and inspection reports for the wharf structure and trestles, assessing the performance of wharf structure per the original design standards and then reviewing according to current design standards. This initial analysis provides an overview of system performance and identifies areas that require further consideration for load derating, targeted repairs, or other mitigations. Localized detailed analysis would support a prioritized effort to repair damage and/or retrofit existing components based upon code requirements. This is the first phase to establish guidance in managing loading capacities on the wharf until end of functional life.

POA structures south of Terminal 1 such as the municipal petroleum terminal and Trestles E/W and 1A are not included in the scope of this report.



Figure 1.1: Port of Anchorage Wharf and Trestle Structures Arial Image

Current condition of existing piles for POA structures are taken from the *POA – 2020 Underwater Pile Inspections* Final Report dated January 8, 2021 (referred to here-after as the Pile Inspection Report). The pile inspection report provides damage ratings for the pile systems where the mudline is below mean low water, and a summary of corrosion, pile repairs, inspection methods, recommendations for further inspection, and other background. Damage and condition ratings from the Pile Inspection Report follow the guidelines from the ASCE Manual of Practice No. 130, *Waterfront Facilities Inspection and Assessment.*

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Appendix A. POA Record Document Review

Michael Baker conducted a review of as-built and construction drawings for the existing wharf and trestle structures at the Port of Anchorage. This section presents a summary of the design criteria for the structures and description of the documented as-found condition of the structure. In general, code year and design standards were not listed on the drawings and for purposes of this report it is assumed that the design proceeded according to the best practices at the time, with approximately two years between publishing of the standard codes and adoption by local building code authorities. For a detailed summary of the wharf construction, applicable codes and design loads refer to the table at the end of this appendix.

Note that current Port of Alaska Terminal Tariff 9.0 design load guidance for deck loading matches original design criteria for Terminals 1, 2, and 3. New terminal design requirements are higher, but they are not applicable to these existing facilities.

Terminal 1

The original pier at the Port of Anchorage was constructed in 1958 as part of the Construction of Port Facilities Project, which included railroad and highway approaches, the east and west trestle, the original pier (now known as Terminal 1), and the transit shed. The standards for wharf design at the time were the 1955 Uniform Building Code (UBC) and the 1953 American Association of State Highway Officials Standard Specifications for Highway Bridges (AASHO Standard Specifications).

Repairs to Terminal 1 were completed in 1972 and included the repair of broken piles and concrete patch repair at the northwest corner of the terminal.

Trestle No. 1 for access to Terminal 1 was constructed as part of the Terminal 3 construction in 1973. Trestles No. 1-A and 1-B were added to Terminal 1 as part of the RO-RO Facility Project in 1975. A crane turnout trestle was added to the north end of Terminal 1, along with modifications to the parking area structure in 1986 as part of the Lateral Stability and Crane Turnout Project.

Terminal 2

Terminal 2 was added to the original wharf under two projects: Terminal Number 2 – Phase 1 Project in 1968 and Phase 2 Extension Project in 1969. Phase 1 included the addition of a 271-foot pier north of Terminal 1, and the addition of a turning fillet to Terminal 1 north of the transit shed. Phase 2 extended Terminal 2 an additional 339-feet and constructed a causeway extension and trestle for access to the north end of Terminal 2. Design standards for Terminal 2 include the 1964 UBC and 1965 AASHO Standard Specifications.

Repairs to Terminal 2 were completed in 1972 and included the removal and replacement of damaged pile cap beams as well as the addition of a crane stop at the north face of the terminal. Additional construction at the boundary of Terminal 1 and 2 to repair damages from a hard ship berthing event, and included the removal and replacement of concrete deck, steel crane rails and timber fenders.

Terminal 3

Terminal 3 was constructed under the Terminal 3 Number 3 – Phase 1 Project in 1973, Phase 2 Project in 1975 and Phase 3 in 1977. Phase 1 included the addition of a 366-foot terminal north of Terminal 2 as well as a crane transfer platform to Terminal 1, and the addition of a trestle to access Terminal 1 east of the

transit shed (shown as “by others”). Phase 2 extended Terminal 3 an additional 354-feet and constructed a trestle for access to the north end of Terminal 3. Phase 3 added an additional 179-feet to Terminal 3 north of trestle number 3. Design standards for Terminal 3 include the 1970 UBC and 1969 AASHO Standard Specifications.

Trestle 3A and 3B, in addition to a mooring dolphin, were added to Terminal 3 in 1978 as part of the Terminal No. 3 Dolphins & Trestles Project. Terminal 3C was constructed in 200 as part of the Totem Ocean Trailer Express Trestle 3C Project.

Repairs to Terminal 3 were completed in 1985 and included removal and replacement of fender piles, replacement of damaged 42-inch diameter piles, and concrete repair. Repairs to Trestle 3 and 3B were completed in 2005 and included the addition of new 24-inch diameter piles adjacent to existing piles and enlargement of the existing pile caps.

Table 7.1: Structure Design Loads

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Appendix B. RISA Model Summary

This Appendix presents a summary of structural analysis model.

Appendix C. Other Calculations

This Appendix presents a summary of miscellaneous supporting calculations.

ATTACHMENTS FORM

Instructions: On this form, you will attach the various files that make up your grant application. Please consult with the appropriate Agency Guidelines for more information about each needed file. Please remember that any files you attach must be in the document format and named as specified in the Guidelines.

Important: Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

1) Please attach Attachment 1	1234-05-15-22_POA NES PIDP Na	Add Attachment	Delete Attachment	View Attachment
2) Please attach Attachment 2	1235-05-15-22_POA NES PIDP BC	Add Attachment	Delete Attachment	View Attachment
3) Please attach Attachment 3	1236-POA PIDP 2022_BCA model	Add Attachment	Delete Attachment	View Attachment
4) Please attach Attachment 4	1237-2022_PIDP_fund_committme	Add Attachment	Delete Attachment	View Attachment
5) Please attach Attachment 5	1238-FY2022_Port_of_AK_PIDP_s	Add Attachment	Delete Attachment	View Attachment
6) Please attach Attachment 6	1239-20220512 NES1 PIDP Grant	Add Attachment	Delete Attachment	View Attachment
7) Please attach Attachment 7	1240-Ship Simulation Study.pd	Add Attachment	Delete Attachment	View Attachment
8) Please attach Attachment 8	1241-Peer Review Suitability	Add Attachment	Delete Attachment	View Attachment
9) Please attach Attachment 9	1242-Wharf Evaluation Report	Add Attachment	Delete Attachment	View Attachment
10) Please attach Attachment 10		Add Attachment	Delete Attachment	View Attachment
11) Please attach Attachment 11		Add Attachment	Delete Attachment	View Attachment
12) Please attach Attachment 12		Add Attachment	Delete Attachment	View Attachment
13) Please attach Attachment 13		Add Attachment	Delete Attachment	View Attachment
14) Please attach Attachment 14		Add Attachment	Delete Attachment	View Attachment
15) Please attach Attachment 15		Add Attachment	Delete Attachment	View Attachment

OMB Number: 4040-0004
Expiration Date: 12/31/2022

Application for Federal Assistance SF-424

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received: 05/16/2022

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: Municipality of Anchorage - Port of Alaska

* b. Employer/Taxpayer Identification Number (EIN/TIN): (b)(4)

* c. UEI: (b)(4)

d. Address:

* Street1: 2000 Anchorage Port Road
Street2:
* City: Anchorage
County/Parish:
* State: AK: Alaska
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 99501-1024

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix: Mr.
* First Name: James
Middle Name:
* Last Name: Jager
Suffix:

Title: Director of Business Continuity

Organizational Affiliation:

* Telephone Number: 9075383277
Fax Number:

* Email: jim.jager@anchorageak.gov

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

C: City or Township Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Maritime Administration

11. Catalog of Federal Domestic Assistance Number:

20.823

CFDA Title:

Port Infrastructure Development Program

*** 12. Funding Opportunity Number:**

MA-PID-22-001

* Title:

2022 Port Infrastructure Development Program Grants

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

1243-POA map.jpg | Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

North Extension Stabilization Step 1 Project

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: AK-000 * b. Program/Project: AK-000

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 03/01/2024 * b. End Date: 12/01/2024

18. Estimated Funding ($):

* a. Federal	68,700,000.00
* b. Applicant	45,800,000.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	114,500,000.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: Mr. * First Name: James

Middle Name:

* Last Name: Jager

Suffix:

* Title: Director of Business Continuity

* Telephone Number: 9075383277 Fax Number:

* Email: jim.jager@anchorageak.gov

* Signature of Authorized Representative: Jim E Jager * Date Signed: 05/16/2022

OMB Number: 4040-0008
Expiration Date: 02/28/2025

BUDGET INFORMATION - Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	$ 7,000,000.00	$ 0.00	$ 7,000,000.00
2. Land, structures, rights-of-way, appraisals, etc.	$	$	$
3. Relocation expenses and payments	$	$	$
4. Architectural and engineering fees	$	$	$
5. Other architectural and engineering fees	$ 450,000.00	$ 0.00	$ 450,000.00
6. Project inspection fees	$	$	$
7. Site work	$	$	$
8. Demolition and removal	$	$	$
9. Construction	$ 107,050,000.00	$ 0.00	$ 107,050,000.00
10. Equipment	$	$	$
11. Miscellaneous	$	$	$
12. SUBTOTAL *(sum of lines 1-11)*	$ 114,500,000.00	$ 0.00	$ 114,500,000.00
13. Contingencies	$	$	$
14. SUBTOTAL	$ 114,500,000.00	$ 0.00	$ 114,500,000.00
15. Project (program) income	$	$	$
16. TOTAL PROJECT COSTS *(subtract #15 from #14)*	$ 114,500,000.00	$ 0.00	$ 114,500,000.00

FEDERAL FUNDING

17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter the resulting Federal share.	Enter eligible costs from line 16c Multiply X 60 %	$ 68,700,000.00

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2025

1. * Type of Federal Action:
- [ ] a. contract
- [x] b. grant
- [ ] c. cooperative agreement
- [ ] d. loan
- [ ] e. loan guarantee
- [ ] f. loan insurance

2. * Status of Federal Action:
- [ ] a. bid/offer/application
- [x] b. initial award
- [ ] c. post-award

3. * Report Type:
- [x] a. initial filing
- [ ] b. material change

4. Name and Address of Reporting Entity:

[x] Prime [ ] SubAwardee

* Name: Anchorage, Municipality of

* Street 1: Port of Alaska | Street 2: 2000 Anchorage Port Road

* City: Anchorage | State: AK: Alaska | Zip: 99501

Congressional District, if known:

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency:

Maritime Administration

7. * Federal Program Name/Description:

Port Infrastructure Development Program

CFDA Number, *if applicable:* 20.823

8. Federal Action Number, *if known:*

9. Award Amount, *if known:*

$

10. a. Name and Address of Lobbying Registrant:

Prefix: Mr. | * First Name: C.J. | Middle Name:

* Last Name: Zane | Suffix:

* Street 1: Blank Rome Government Relations LLC | Street 2: 1825 Eye Street NW

* City: Washington | State: DC: District of Columbia | Zip: 20006

b. Individual Performing Services (including address if different from No. 10a)

Prefix: Mr. | * First Name: Donald | Middle Name: J.

* Last Name: Norden | Suffix:

* Street 1: Blank Rome Government Relations LLC | Street 2: 1825 Eye Street NW

* City: Washington | State: DC: District of Columbia | Zip: 20006

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

*** Signature:** Jim E Jager

***Name:** Prefix: Mr. | * First Name: James | Middle Name: E.

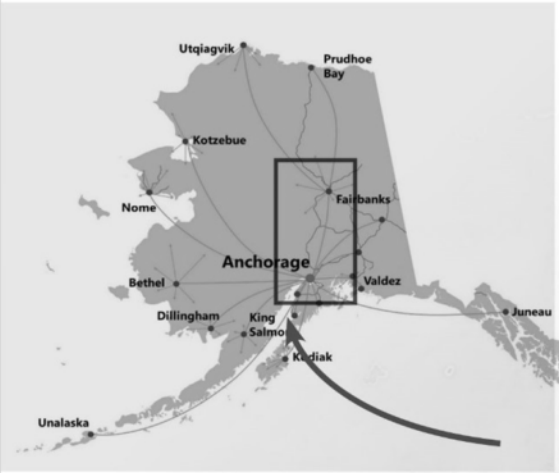
* Last Name: Jager | Suffix:

Title: Director Business Continuity, FSO | **Telephone No.:** 907-343-6205 | **Date:** 05/16/2022

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Standard Form - LLL (Rev. 7-97)

Port of Alaska: Alaska's Containerized Freight Lifeline



PoA Freight Distribution

- Port of Alaska
- Regional Hubs
- Inbound from Puget Sound

to Utqiagvik

to Prudhoe Bay

15% Fairbanks and the Interior

to Kotzebue

to Nome

70%-75% Anchorage and Mat-Su

to Bethel

to Valdez

to Dillingham

to King Salmon

to Juneau

10%-15% Kenai Peninsula

Total 2021 Inbound PoA Container Freight: 1.6 million tons, 80% of All Southcentral Inbound Containers