



Safe, Secure, Efficient and Environmentally Responsible Maritime Operations
1000 Harbor Way, Juneau, Alaska 99801
Ph: (907) 463-2607

June 26, 2009

Mr. John Stone
Port Director
City of Juneau
155 S. Seward St.
Juneau, AK 99801

Dear Mr. Stone,

The Marine Exchange of Alaska has completed the final component of the navigation evaluation of the various cruise ship dock and pier alternatives being considered for the Port of Juneau. This final phase involved simulated vessel dockings and departures using the Pacific Maritime Institute (PMI) ship simulator model modified for the Port of Juneau.

This navigation evaluation that was initiated in the fall of 2008 and continued through the spring of 2009 entailed the following;

- Development, dissemination, review and analysis of questionnaires to the potentially impacted maritime stakeholders and regulatory agencies regarding the proposed cruise ship docks and piers and their potential navigational impacts.
- Analysis of historical cruise ship approaches and departures from existing Juneau mooring facilities obtained by AIS (Automatic Identification System) data received of vessel transits in the Port (cruise ships, tugs and other vessels) the last several years.
- Presentation of preliminary findings in a report to the Port of Juneau and public posting and presentation of the data and findings to the public in December 2008.
- Conduct of simulated cruise ship arrivals and departures under various environmental and physical factors to and from existing and potential new facilities by pilots and cruise ship masters on a ship simulator configured for the proposed docks and piers.

Upon completion of the above as well as conducting extensive discussions with the Southeast Alaska Pilots the Marine Exchange of Alaska finds the following;

1. All proposed dock and pier alternatives present both positive and negative impacts to maritime navigation in the Port. The positive impacts are all dock options will reduce to varying extents, the need to anchor vessels in the port which limits maneuvering room for vessels. The negative impacts are each option provides some reduction of navigable

waters and sea room. although the Gold Creek proposal is the least restrictive to navigation in the harbor.

2. The currently available tugs in the Port are not of sufficient size and capability to adequately address some of the more challenging cruise ship arrival and departure maneuvering complications that may develop at times due to partially disabled vessels, heavy winds and strong currents, exacerbated by the maneuvering challenges the new proposed docks and piers will present.
3. The limited weather and current data for the Port area under consideration makes it difficult to clearly understand all environmental impacts on vessels' navigation. The historical wind strength and direction is valuable for determining the challenges of making approaches and departures to present and proposed facilities, however, the closest National Weather Station sensor at the Juneau Airport reports similar but different conditions than experienced in the Port.
4. The Gold Creek dock is the option most affected by both winds and currents that will likely prevent some departures and arrivals of cruise ships under the strongest of wind (greater than 25 knots) conditions. The scheduling of the most maneuverable ships, i.e. azipods, at this facility would minimize scheduling disruptions. The Merchant's Wharf option also poses some challenges in strong southeasterly winds.
5. Due to the large sail area of cruise ships, sustained winds in excess of 25 knots complicate maneuvering requiring additional caution and increased power demands on the main propulsion and thrusters when making approaches and departures.
6. Sequencing of vessels' arrivals and departures can reduce some of the navigational challenges presented by docks and piers when stronger winds and or currents are encountered.
7. It is estimated less than 5% of cruise ship ports calls and departures will be complicated by the weather and current conditions, sustained winds of more than 25 knots, combined with the physical obstruction the new proposed docks or piers will present.
8. The installation of a current and wind sensor in the Port with the information broadcast via AIS to incoming vessels should be explored with NOAA and the Port stakeholders to provide accurate, real time environmental information to cruise ship masters and pilots to assist determining how to safely approach, depart or abort maneuvers until conditions improve.

Summary: The simulator evaluation revealed the navigational challenges of making approaches and departures to the Port of Juneau presented by the dock and pier options being considered can be safely addressed under most weather conditions encountered in the Port by cruise ships with properly operating propulsion systems under the command of experienced mariners. However, the proposed facilities if developed, will present varying levels of added navigational challenges for vessels arrivals and departures when strong winds are encountered. The specific navigational factors presented by each of the proposed mooring options under consideration identified by this study are as follows:

- Port of Juneau Steamship and Cruise Ship Terminal Docks: The proposed floating docks will extend further off the shore line and more south towards the Franklin Dock reducing maneuvering room for vessels making approaches and departures to the Franklin Dock thus requiring some modification of the present maneuvers made for arrivals and departures. The ship simulator runs and past AIS transit reports show the reduced sea room can be safely addressed by skilled mariners navigating properly operating vessels in calmer weather conditions encountered in the Port, however, will complicate maneuvers when a vessel is at anchor and during higher wind conditions.
- The Merchant's Wharf Pier: This mooring proposal presents navigational challenges in mooring of vessels at the adjacent Port Steamship Dock, the adjacent Coast Guard/NOAA facility and to anchored vessels. Present cruise ship approaches to the Port's cruise ship terminal with the bow south will be prevented if this pier option is developed. Receiving permit approval from the Army Corps of Engineers for this facility will likely be difficult due to the Coast Guard's concerns over the pier extending into navigable waters as the service prefers vessel moorage options lay parallel along the shore thus minimizing incursions and obstructions into navigable waters. As noted in the previous report, this option prevents current float plane operations from continuing.
- The Gold Creek Dock: The position of this dock presents a challenging navigational situation during higher wind conditions which occur approximately 5% of the time, in which cases vessels' beams will be exposed to the prevailing winds during approaches and departures. In most cases these challenges may be adequately addressed by scheduling the most maneuverable vessels to this facility (i.e. azipod vessels), using tugs to assist or by delaying arrival or departures until the winds abate. Approaches and departures may be further complicated by the tidal currents that are strongest in this area of the harbor. While this dock option presents some navigational challenges, it has the least impact on other existing docks and on the anchorage area of all the options under consideration. Should this dock be built the engineers should explore how far the dock may be angled to reduce the affects of the wind on vessels' hulls. Additionally, as noted above, on site current and wind sensors should be installed and the data broadcast to vessels' masters and pilots real time via AIS or other means to assist them in assessing the environmental factors that need to be compensated when making approaches and departures.

Sincerely,



Captain Edward E Page
U.S. Coast Guard (Retired)

Enclosure: (1) Ship Simulator Results