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February 28, 2007

Richard R. Hoffmann
Director of Gas – Environmental & Engineering, PJ-11
Federal Energy Regulatory Commission
888 First Street, N.E., Room 62-45
Washington, DC 20426

WATERWAY SUITABILITY REPORT FOR BRADWOOD LANDING LNG

Dear Mr. Hoffmann:

On February 28, 2007, the Coast Guard completed a review of the Waterway Suitability Assessment for the Bradwood Landing LNG Terminal project submitted by Northern Star Natural Gas, LLC in May of 2006. This review was conducted following the guidance provided in Navigation and Vessel Inspection Circular (NVIC) 05-05 of June 14, 2005. The review focused on the navigation safety and maritime security risks posed by LNG marine traffic, and the measures needed to responsibly manage these risks. During the review, the Coast Guard consulted a variety of stakeholders including state and local emergency responders, Marine Pilots, towing industry representatives, members of the Port Waterway Safety Committee, and the Area Maritime Security Committee.

Based upon this review, I have determined that to make the Columbia River suitable for the type and frequency of LNG marine traffic associated with this project, additional measures will be necessary to responsibly manage the navigation, safety and security risks. The specific measures, and the resources needed to implement them where applicable, are described below and in a separate supplementary report which is being provided to you under the terms and conditions established for handling Sensitive Security Information. This supplemental report also includes a copy of the Bradwood Landing LNG Waterway Suitability Assessment. This determination is preliminary because the required NEPA analysis has not yet been completed.

The following is a list of specific risk mitigation measures that must be put into place to responsibly manage the safety and security risks of this project. Details of each measure, including adequate support infrastructure, will need to be further developed through the creation of an Emergency Response Plan as well as a Transit Management Plan that clearly spell out the roles, responsibilities, and specific procedures for the LNG vessel and all agencies responsible for security and safety during the operation.

Navigational Measures:

- Safety/Security Zone A moving safety/security zone shall be established around the LNG vessel extending 500-yards around the vessel but ending at the shoreline. No vessel may enter the safety/security zone without first obtaining permission from the Coast Guard Captain of the Port (COTP). (The expectation is that the COTP's Representative will work with the Pilots and patrol assets to control traffic, and will routinely allow vessels to transit the Safety/Security zone based on a case-by-case assessment conducted on scene. Escort resources will be used to contact and control vessel movements such that the LNG Carrier is protected.)

While the vessel is moored at the facility there shall be a 200 yard-security zone around the vessel. In addition, there will be a 50 yard security zone around the LNG Terminal when there is not a vessel at the dock.

Resource Gap: Resources required to enforce the safety/security zone are discussed under Security Measures in the supplemental report.

- Vessel Traffic Management Due to a narrow shipping channel, numerous navigational hazards, and the proximity to populated areas, LNG vessels will be required to meet the following additional traffic management measures:
    - A Transit Management Plan will be developed in coordination with River Pilots, Bar Pilots, Escort Tug Operators, Security Assets and the Coast Guard prior to the first transit.
    - This plan will be reviewed within six months of the initial arrival, and followed by an annual review to ensure that it reflects the most current conditions and procedures.
    - For at least the first six months, there will be at least 2 Pilots throughout the transit.
    - For at least the first six months, all transits will be daylight only, unless approved in advance by the COTP.
    - The LNG Vessel must board Pilots at least 5 miles before the CR Buoy.
    - Overtaking by or of the LNG Vessel is prohibited without COTP approval.
    - Meetings situations of commercial vessels will be closely controlled. All meetings must be pre-arranged via Channel 13 VHF Bridge-to-Bridge and will be limited to the following areas:
        - From the CR buoy to Tongue Point, with the exception that commercial vessels shall avoid meeting in all turns, and between buoys 22 and 29, and buoy 33 and 42,
        - Vessels may arrange meetings from Tongue Point to Rice Island between buoy 42 and 54,
        - Altoona to Pillar Rock Miller Sands Light #11 to Light # 17,
        - Price Island to Puget Island between buoy 32 and Bradwood.
    - 24 hours prior to arrival, the Coast Guard, FBI, Bar Pilots and River Pilots, Escort Tug Masters, and other Escort assets will meet to coordinate inbound and outbound transit details
    - Vessel transits and bar crossings will be coordinated so as to minimize conflicts with other deep draft vessels, recreational boaters, seasonal fisheries, and other Marine Events

Resource Gaps: The Vessel Transit Management Plan must be approved by the COTP at least 30 days prior to the first arrival.

- Vessel Traffic Information System / Vessel Traffic System The current Vessel Traffic Information System on the Columbia River is limited to AIS receivers and a handful of cameras. In order to ensure vessel safety and security, this capability will need to be augmented with a robust camera system capable of monitoring the entire transit route. Due to weather concerns, these cameras must be equipped with detectors capable of monitoring vessel traffic in wind, rain and fog conditions common on the river. In addition this capability may need to be augmented in the future with additional command and control capability and the establishment of a full Columbia River VTS.

Resource Gaps: Camera system with complete coverage of the entire transit route, capable of detecting vessel traffic in wind, rain, fog, and dark conditions. An additional AIS repeater

located in Astoria is also required to provide complete coverage of the Lower Columbia. If implemented, a fully staffed VTS would require at least 2 watch standers and a supervisor or 20 personnel to maintain round-the-clock coverage.

- Tug Escort and Docking Assist Due to the confined channel and high wind conditions, each LNG Carrier must be escorted by two tugs; at least one of which must be a tractor tug, which will join the vessel as soon as safe to do so. The primary tug will be tethered at the direction of the pilot. A third tug will be required to assist with turning and mooring.

  All three tugs will be at least 60 Ton Astern Bollard Pull or larger and equipped with Class 1 Fire Fighting equipment. Based on the Maneuvering Simulation Study of November 4, 2005, vessels over 140,000 m^3 will be limited to transiting during periods of 25 knots of wind or less. Additionally, extreme wind and weather conditions may require a third tug escort tug for any LNG vessel. While unloading, all three tugs will remain on standby to assist with emergency departure procedures.

  Resource Gaps: Three 60 Bollard Ton Tractor Tugs with Class 1 Fire Fighting capability.

- Navigational Aids Buoys or Daymarks will be required:
  - Three Aids at Bradwood, outlined in Figure 3, on p. 8 of the Vessel Maneuvering Simulation Study of November 4, 2005.
  - Range on Upper and Lower Desdemona Reach
  - PORTS (Physical Oceanographic Real-Time System) station at Bradwood contracted with NOAA to provide real time river level, current and WX data
  - Doppler docking station similar to the one found in Savannah River

- LNG Carrier familiarization training for Pilots and Tug Operators Prior to the arrival of the first vessel, simulator training will be required for Pilots and Tug Operators identified as having responsibility for LNG traffic.

- Dynamic Under Keel Clearance System Installation of a real time system for data collection on bar conditions is strongly recommended as increasing the ability to safely navigate the Columbia River Bar during marginal conditions. The lack of accurate data, will limit the conditions under which a vessel may safely transit the bar. An immersion study of deep draft LNG vessels transiting the bar during summer and winter conditions is required within the first 12 months.

  Resource Gap: Actual data on LNG tanker immersion.

Safety Measures:

- Vessel and Facility Inspections LNG tankers and facilities are subject to (at a minimum) annual Coast Guard inspections to ensure compliance with federal and international safety, security and pollution regulations. In addition, LNG vessels and facilities are typically required to undergo a pre-arrival inspection, and transfer monitor.

  Resource Gap: Additional Coast Guard Facility and Vessel Inspectors.

- Shore-Side Fire-Fighting Firefighting capability is extremely limited along the entire transit route. Shore side firefighting resources and training will need to be augmented in order to provide basic protection services to the facility as well as the communities along the transit route.

  Resource Gap: To be determined in conjunction with local and regional response agencies through the Emergency Response Planning process. Prior to the approval of the Emergency Response Plan, adequate cost sharing arrangements for project related training, equipment, maintenance, and staffing will need to be addressed for all of the communities impacted by the project.

- In-Transit Fire-Fighting Significant resource and jurisdictional issues exist in any marine fire incident on an underway vessel in the Columbia River. Current planning and preparedness efforts focus on a shore based response to a vessel moored at a facility.

  Resource Gap: Development of a concrete plan for managing underway firefighting, including provisions for command and control of tactical fire fighting decisions as well as financial arrangements for provision of mutual aid and identification of suitable locations for conducting fire fighting operations is critical to ensuring the safety of the port and securing the waterway.

- Public Notification System and Procedures Adequate means to notify the public along the transit route, including ongoing public education campaigns, emergency notification systems (such as reverse 911 and siren systems), and adequate drills and training are required. Education programs must be tailored to meet the various needs of all river users, including commercial and recreational boaters, local businesses, local residents, and tourists.

  Resource Gap: Current public notification capabilities vary greatly, and as part of the Emergency Response Planning process, a comprehensive notification system, including the deployment of associate equipment and training, will need to be developed.

- Gas Detection Capability With the exception of the HAZMAT team in Astoria, gas detection capability is not resident and may not be available to initial responders along the transit route and at the facility. Emergency response personnel (both Police and Fire) require appropriate gas detection equipment, maintenance, and training.

  Resource Gap: Gas Detectors, appropriate training, and maintenance infrastructure.

- Communication Systems and Protocols Inter-agency communication pose a significant obstacle to joint operations. Deployment of a Regional Communication Plan and associated equipment is required to ensure that the facility, associated command centers, emergency responders, Coast Guard, Tug Operators, Escort Vessels, and Pilots can communicate in an effective manner. The system must provide for monitoring and communicating on both secure and unsecure (eg Ch. 16, 13, 22), as well as sending and receiving both speech and data.

  Resource Gap: Operation specific and contingency communications plans and appropriate (intrinsically safe) equipment to coordinate both routine escorts and emergency operations. Equipment to transmit and receive both voice and data in a secure and unsecure environment.

Security Measures:

- Security Boardings, Waterway Monitoring, Shoreline Patrols, and Vessel Escorts Extensive security measures will be required to provide adequate protection for LNG vessel while transiting the Columbia River and moored at the facility. The details of these measures are Sensitive Security Information, and are outlined in a separate supplementary report.

- Additional Measure While A Cruise Ship is in Port While cruise ships are moored or anchored at the Port of Astoria, LNG vessels will be restricted to transiting in good visibility (6 miles or more). In addition, any cruise ship will also require separate waterside security, during the LNG Transit. Finally a Cruise Ship and LNG Carrier shall not be placed in a meeting situation.

  Resource gap: Sufficient Coast Guard or local law enforcement assets to provide adequate and independent security for both vessels.

- Facility Security Measures LNG facilities are subject to the security regulations outlined in 33 CFR 105, and are required to submit a Facility Security Plan (FSP) for Coast Guard approval, and undergo (at a minimum) an annual Coast Guard security inspection. The facility shall also develop a plan to provide for appropriate security measures from the start of construction through implementation of the Coast Guard approved FSP.

- Sandia Study The WSA proposes to receive vessels with up to 200,000 m^3 cargo capacity. The Sandia Report is based on consequences of LNG breaches, spills and hazards associated with LNG vessels having a cargo capacity no greater than 148,000 m^3 and spill volumes of 12,500 m^3. There remains some question as to the size of hazard zones for accidental and intentional discharges and the potential increased risk to public safety from LNG spills on water for larger vessels. Based on these existing uncertainties, Northern Star must either complete a site-specific analysis for the largest sized LNG vessel or limit arrivals to vessels with a cargo capacity no greater than 148,000 m^3 until additional analysis addressing vessels with higher cargo capacities is completed.

In the absence of the measures described in this letter and the resources necessary to implement them, or in the absence of any changes to existing Coast Guard policy or guidance to lessen safety and security requirements, the Columbia River would be considered unsuitable for the LNG marine traffic associated with the Bradwood LNG terminal. Due to the dynamic nature of the Columbia River, the applicant shall be required to submit an annual update to the Waterway Suitability Assessment to the Coast Guard which shall be revalidated by the COTP and AMSC. For further information, please contact LT Shadrack Scheirman of Coast Guard Sector Portland at (503) 240-9307.

Sincerely,

Patrick G. Gerrity
Captain, U.S. Coast Guard
Captain of the Port
Federal Maritime Security Coordinator

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