

**APPENDIX J**

**WATERWAY SUITABILITY REPORT AND  
ADDITIONAL RECOMMENDED MITIGATION MEASURES**

U.S. Department of  
Homeland Security

United States  
Coast Guard



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Mr. Mark Robinson  
Director of Energy Projects  
Director of Gas-Environment and Engineering, PJ 11  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426

## WATERWAY SUITABILITY REPORT FOR AES SPARROWS POINT LNG

Dear Mr. Robinson:

The Coast Guard completed a review of the Waterway Suitability Assessment (WSA) for the proposed Liquefied Natural Gas (LNG) facility at Sparrows Point, MD, that was prepared by Halcrow HPA (HPA) on June 12, 2007. Following the guidance contained in U.S. Coast Guard Navigation and Vessel Inspection Circular (NVIC) 05-05 of June 14, 2005, the review focused on the maritime safety and security risks to LNG marine transportation on the Chesapeake Bay, from Cape Henry, VA to Sparrows Point, MD, and the measures and resources needed to responsibly manage these risks.

This Waterway Suitability Report (WSR) fulfills the Coast Guard's commitment under the Interagency Agreement among the Federal Energy Regulatory Commission (FERC), the Research and Special Programs Administration (RSPA), and the Coast Guard for the Safety and Security Review of Waterfront Import/Export Liquefied Natural Gas Facilities that was signed in February 2004. Under this agreement, these agencies work together to ensure that both land and maritime safety and security risks are addressed in a coordinated and comprehensive manner. In particular, the Coast Guard serves as a subject matter expert for FERC on maritime safety and security issues.

This WSR summarizes the Coast Guard's conditions (required safety and security measures) and the port community's current and required capability to implement these measures in generic terms. This input is intended to assist FERC in making an informed decision as to whether the proposed LNG facility is in the public interest. Additionally, this input is provided so FERC can include the Coast Guard's conditions and proposed action (namely the issuance of a Letter of Recommendation (LOR) under 33 C.F.R. § 127.009) as part of its Environmental Impact Statement (EIS). The inclusion of these conditions and proposed action would then allow the Coast Guard, as a cooperating agency, to subsequently review and adopt FERC's EIS to satisfy its own responsibilities under the National Environmental Policy Act (NEPA), 42 U.S.C § 4321 et seq.

The WSA prepared by HPA for the potential facility owner, AES Sparrows Point LNG, LLC (AES), was completed with assistance from members of the Baltimore and Hampton Roads Area Maritime Security Committees. These members represented: law enforcement, emergency management, environmental, and transportation agencies within the State of Maryland and

Commonwealth of Virginia; the U.S. Department of Justice; Coast Guard Sectors Baltimore and Hampton Roads; Maryland State Pilots; and local towing and maritime industry personnel. FERC and the Maritime Institute of Training and Advanced Graduate Studies (MITAGS) also provided assistance. The WSA is available upon request.

The WSA used three concentric hazard zones or “zones of concern” to assess the maritime safety and security risks of LNG marine transportation on the Chesapeake Bay. These hazard zones were developed by the Sandia National Laboratories and were based on the capacity of LNG vessels in operation in 2004 which had a cargo carrying capacity up to 148,000 m<sup>3</sup>. AES intends, however, to receive newer LNG vessels which have a cargo-carrying capacity up to 217,000 m<sup>3</sup>. It is not clear whether the size of the hazard zones used in the WSA is applicable to LNG vessels with a cargo-carrying capacity greater than 148,000 m<sup>3</sup>.

In its letter of April 4, 2007, the Coast Guard requested AES to identify a source agency (Federal, State, local or private agency) for each risk mitigating measure (RMM) it proposed, and to determine the agency’s current availability and capability, as well as its willingness to perform the proposed RMM. The results of AES’ efforts to identify a source agency overwhelmingly indicate that the port community currently does not have the resources to implement the RMMs necessary to responsibly manage the maritime safety and security risks of the proposed LNG facility.

During its review of the WSA, the Coast Guard consulted many of the same agencies and stakeholders providing assistance to HPA. Additionally, the Coast Guard conducted an independent risk assessment with assistance from ABS Consulting. This risk assessment is also available upon request.

Collectively, the WSA and the independent Coast Guard risk assessment covered the accidental and intentional release (i.e., terrorist attack) scenarios identified in the Sandia National Laboratories Report SAND2004-6258, “*Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water*” dated December 2004 and in the Coast Guard’s Maritime Security Risk Assessment Model (MSRAM). The MSRAM provided a more accurate prioritization of risk at the port and national levels than provided by the WSA. It also:

- Improved the threat component of the risk calculation by applying threat data from the Coast Guard’s Intelligence Coordination Center as to the intent and capability of the adversary;
- Assessed the capability of owners/operators of critical infrastructure, local law enforcement, and Coast Guard security assets to protect targets and deter and interdict attacks;
- Estimated the secondary economic impacts associated with the loss of the target, considering recoverability and redundancy of the target;
- Addressed response capability as a primary consequence mitigation factor for owner/operators, local first responders, and the Coast Guard;

- Incorporated revised attack scenarios which included aerial, surface and subsurface attack vectors to ensure alignment of the Coast Guard's port, waterways, and coastal security missions with Department of Homeland Security efforts; and
- Resulted in the Coast Guard informing AES that it did not concur with several of its risk calculations (i.e., finding them too low), and requiring AES to propose additional RMMs beyond those listed in the WSA.<sup>1</sup>

Based upon its review of the WSA and the aforementioned independent risk assessment, the Coast Guard has determined that the Chesapeake Bay is not currently suitable, but can be made suitable, for the type and frequency of LNG marine traffic associated with the proposed LNG facility, provided additional measures necessary to responsibly manage the maritime safety and security risks are in place. Any final determination of waterway suitability is contingent upon the following:

- AES proposing additional RMMs, beyond those listed in the WSA, that are acceptable to the Coast Guard for the scenarios where the Coast Guard did not concur with AES' risk calculations;
- The port community and the various agencies involved having sufficient resources (including support infrastructure) with the authorities, capabilities, competencies, capacities, and partnerships (ACCCP) necessary to implement the RMMs required to responsibly manage the risks of LNG marine traffic associated with the anticipated frequency of vessel arrivals;
- AES developing a Transit Management Plan (TMP), in consultation with the Coast Guard and participating agencies, that clearly spells out the roles, responsibilities, and specific procedures for the LNG vessel, the LNG facility, and the various agencies involved in responsibly managing the risks of LNG marine traffic;
- The hazard zones or "zones of concern" used in the WSA being confirmed by AES through independent site-specific modeling, or by the Sandia National Laboratories or another laboratory contracted by the U.S. government, as applicable to LNG vessels with a cargo carrying capacity greater than 148,000 m<sup>3</sup> and up to 217,000 m<sup>3</sup>; and
- The environmental impacts of the Coast Guard's conditions (maritime safety and security measures) being fully understood and considered, and all required Coast Guard NEPA analysis and documentation being completed.

In the absence of a confirmation of the applicability of the WSA's zones of concern, the Coast Guard will limit vessel arrivals to those with a cargo capacity no greater than 148,000 m<sup>3</sup>. With these preconditions clear, set forth below is an overall summary of the specific RMMs required to responsibly manage the maritime safety and security risks of the proposed LNG facility. This

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<sup>1</sup> AES has not had the opportunity to respond.

summary includes the RMMs currently proposed by AES in its WSA, and the additional RMMs the Coast Guard has determined necessary.<sup>2</sup>

- Safety/Security Zones
  - During Transit or at Anchor: The security zone of 33 C.F.R. § 165.503 and the safety/security zone of 33 C.F.R. § 165.500 apply to LNG vessels operating on the Chesapeake Bay. No vessel may enter the safety and/or security zone without first obtaining permission from the cognizant Captain of the Port (COTP).
  - Facility Site: A fixed safety/security zone will be established at the LNG facility site. In order to avoid impeding recreational traffic going in and out of Bear Creek, the zone will extend 300 yards around the facility site to match existing markers. The Coast Guard will modify 33 C.F.R. §165.500, as necessary, to ensure that when a LNG vessel is moored at the facility site, the size of its safety/security zone does not conflict with the size of the safety/security zone around the facility. No vessel may enter the safety/security zone without first obtaining permission from the COTP Baltimore.
- Safety/Security Zone Enforcement
  - During Transit or at Anchor: An armed, multi-vessel escort will be required to enforce the federal safety/security zones around any loaded LNG vessel navigating within specified areas of the Chesapeake Bay. The escort may be comprised of vessels provided by the Coast Guard; other Federal, State, or local agencies; and/or private entities. The escort required will range from one to four vessels. The escort procedures must be specified and included in the TMP. The availability of Coast Guard vessels for escorts will be subject to the Coast Guard's daily mission prioritization and resource allocation that is based on many variables outside AES's control. Should Coast Guard vessels not be available, any assisting agency must have the required ACCCP to enforce a federal safety/security zone, or the Coast Guard will require the vessel to remain offshore until adequate law enforcement resources for the transit are available.
  - Facility Site: Whenever an LNG vessel is moored at the facility site, the safety/security zone must be continuously enforced by at least one armed non-Coast Guard vessel that has the required ACCCP to enforce the safety/security zone. This law enforcement boat must be underway and on patrol in the vicinity of the moored LNG vessel at all times. Additional armed law enforcement boats may be required during periods of heightened risk (e.g., during Maritime Security Levels 2 or 3). Alternate equivalent security measures, namely using an anti-boat barrier in combination with law enforcement boats, either on patrol or in immediate standby, may be considered.

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<sup>2</sup> Should AES propose, and the Coast Guard subsequently accept, alternative RMMs that are not included within the WSR, the Coast Guard will submit a supplement.

- Communications Interoperability The LNG vessel and all participating agencies involved in the maritime safety and security regime must have interoperable communications. Additionally, procedures must be specified and incorporated into the TMP for notification and communication with owners/operators of certain critical infrastructure located along the transit route.
- Towing Vessel Escort and Docking Assist LNG vessels with a significant amount (i.e., beyond the heel) of cargo shall have towing vessels available for harbor-assistance and emergency response as noted below.
  - During Transit: One towing vessel of at least 50-ton bollard pull shall be present in the vicinity of the William Preston Lane Jr. Memorial Bridge (Bay Bridge) prior to the LNG vessel passing underneath. Three towing vessels of the same capability shall escort the LNG vessel while it transits the approaches to the Port of Baltimore.
  - During Docking Maneuvers: A minimum of three towing vessels of at least 50-ton bollard pull each shall be available to the LNG vessel during maneuvers to dock, undock, moor, or unmoor. In the event that only two towing vessels of at least 50-ton bollard pull each are available, the third towing vessel to be used will be mutually agreed upon, at least 96 hours in advance, by the Association of Maryland Pilots and the LNG shipping company. Any disputes over the third towing vessel to be used will be resolved by the COTP Baltimore.
  - While Moored at the Facility: While the LNG vessel is moored at the LNG facility, one towing vessel shall remain on scene in immediate standby (capable of getting underway in less than one minute) and two additional towing vessels shall be available in 10-minute standby.
- Security Code Words Procedures will be established for the LNG vessel's crew to exchange security code words with the pilots before boarding the LNG vessel, and for the pilots to inform the various agencies involved should they be under duress during the transit.
- Shoreline Surveillance and Monitoring The monitoring of shoreline and adjacent waterways shall be accomplished using a blend of electronic and crewed shore-side, waterborne, and aerial assets, provided as noted below. These assets must have the ability to communicate with the Coast Guard Sector Hampton Roads and Baltimore Command Centers. Appropriate Memoranda of Agreement (MOAs) between the Coast Guard and cooperating agencies may have to be developed.
  - Surveillance Patrols: Federal, State, local and private agencies will need to provide landside security patrols for surveillance along the facility's waterfront and portions of the transit route prior to and during an LNG vessel's transit and during the LNG off-load operations.

- Aerial Reconnaissance: Aircraft will need to be used to periodically monitor the shoreline ahead of the vessel's transit, with the capability of transmitting near real-time images directly to the Sector Hampton Roads and Baltimore Command Centers.
- Pre-staging of Law Enforcement Assets: Sufficient landside and waterborne law enforcement assets that are capable of being dispatched to investigate anomalies reported during aerial reconnaissance of the transit route will need to be pre-staged in and around the LNG facility.
- Navigational and Cargo Safety Checks Prior to transiting in the vicinity of the William Preston Lane, Jr., Memorial Bridge (Bay Bridge), LNG vessels will conduct navigational and cargo safety checks to the satisfaction of Sector Baltimore.
- Video Surveillance System The TMP must include integration of an electronic surveillance of the fixed waterside safety/security zone.
- Anchorage Management LNG vessels are expected not to anchor during transit. Once the Chesapeake Bay is entered there is only one designated anchorage available, Anchorage Q, in the vicinity of York Spit Channel (33 C.F.R. § 110.168). Any request for an LNG vessel to anchor, except during an emergency, shall be authorized by the cognizant COTP.
- Divers for Pier Security Sweeps On a case-by-case basis, divers may be required to conduct underwater security sweeps of the LNG pier. If deemed necessary by the COTP Baltimore, divers shall be arranged for and provided by the facility owner.
- Measures for Non-Empty Outbound Transits If for any reason the LNG vessel must carry a significant amount (beyond the heel) of cargo during its outbound transit, all security measures recommended during inbound transit shall also be undertaken during the vessel's loaded outbound transit.
- Additional Measures While High Capacity Passenger Vessels (HPCVs) are in Port Within the COTP Baltimore zone, loaded LNG vessels will not be permitted to overtake, cross, meet in a head-on situation, or otherwise operate in close proximity to high capacity passenger vessels.
- Additional Measures While Other LNG Vessels are in Port If for any reason, two LNG vessels are moored at the facility at the same time, each vessel shall have dedicated to it all of the required safety and security measures. For example, if two vessels are moored and off-loading, each will have at least one small boat enforcing the fixed security zone and each will have one tug on immediate standby. The specific roles, responsibilities, and procedures for each LNG vessel, the LNG facility, and the various agencies involved must be adequately addressed in the TMP. During transit, two loaded LNG ships will be required to maintain a one nautical-mile separation while navigating.

- Vessel and Facility Inspections The LNG facility and LNG vessels serving the facility will be subject to (at a minimum) annual Coast Guard inspections to ensure compliance with federal and international safety, security and pollution regulations. In addition, the LNG vessels and facility are typically required to undergo a pre-arrival inspection and transfer monitor.
- 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 drills and training are required. Education programs must be tailored to meet the various needs of all users of the waterway, including commercial and recreational boaters, local businesses, local residents, and tourists.

The RMMs required primarily address scenarios involving surface attack vectors for two reasons. First, the risk assessments indicate that the vulnerabilities and/or consequences from scenarios involving aerial and subsurface attack vectors are appreciably lower than those involving surface attack vectors. Second, the range of available RMMs to effectively address marine transit and offloading scenarios involving aerial or subsurface attack vectors is comparatively limited.

In closing, this determination is a preliminary assessment of waterway suitability and does not constitute final agency action, in part because analysis required by NEPA has not been completed. The Coast Guard's final determination, as well as any requirements or conditions thereto, will be in a LOR pursuant to 33 C.F.R. § 127.009.

In the absence of the RMMs described in this letter and the resources necessary to implement them, or any changes in Coast Guard policy upon which the necessary resources are based, the Chesapeake Bay, from Cape Henry, VA to Sparrows Point, MD, would be considered unsuitable for the LNG marine traffic associated with the proposed LNG facility at Sparrows Point, MD.

For further information, please contact the project officer at Sector Baltimore, Lieutenant Commander Amy Beach at (410) 576-2519, or email: Amy.M.Beach@uscg.mil.

Sincerely,



B. K. Kelley  
Captain, U.S. Coast Guard  
Captain of the Port  
Baltimore, Maryland



P. B. Trapp  
Captain, U.S. Coast Guard  
Captain of the Port  
Hampton Roads, Virginia

Copy: Maryland Department of Natural Resources  
Virginia Department of Environmental Quality  
AES Sparrows Point LNG, LLC

U.S. Department of  
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OCT 24 2008

Mr. Christopher H. Diez  
AES Sparrows Point LNG, LLC  
140 Professional Parkway, Suite A  
Lockport, New York 14094

Dear Mr. Diez:

On February 25, 2008, the Coast Guard stated in its Waterway Suitability Report (WSR) to the Federal Energy Regulatory Commission (FERC) and in our letter to AES Sparrows Point LNG, LLC (AES) that any final determination by the Coast Guard that the Chesapeake Bay is suitable for the Liquefied Natural Gas (LNG) marine transportation associated with the proposed LNG facility at Sparrows Point, MD is contingent on several preconditions. One of these preconditions is for AES to propose additional risk mitigation measures (RMMs) acceptable to the Coast Guard, where necessary, based on the Coast Guard's review of the Waterway Suitability Assessment (WSA). On July 22, 2008, AES proposed additional RMMs, enclosures (1) through (8), and requested formal acknowledgement that they are acceptable and satisfy this precondition.<sup>1</sup>

The Coast Guard has reviewed the additional RMMs recommended by AES's letter of July 22. Based upon our review, we have determined the additional RMMs would, if properly implemented, offer the necessary levels of protection to responsibly manage the maritime safety and security risks to LNG marine traffic associated with the proposed LNG facility. Accordingly, we consider this precondition satisfied.

The other preconditions described in the WSR remain outstanding and must be satisfied before any final determination by the Coast Guard that the Chesapeake Bay is suitable for LNG marine transportation can be made. These include, most notably: the satisfactory development of a Transit Management Plan (TMP); the completion of the required environmental analysis; and the identification and availability of sufficient resources to effectively implement the RMMs. Should these remaining preconditions not be satisfied we would consider the Chesapeake Bay, from Cape Henry, VA to Sparrows Point, MD, unsuitable for the LNG marine traffic associated with the proposed LNG facility at Sparrows Point, MD.

By copy of this letter, the Coast Guard is informing FERC that the additional RMMs may require the Coast Guard to establish a regulated navigation area(s) for effective implementation and enforcement. Therefore, the establishment of regulated navigation area(s) should be considered Coast Guard condition(s) when drafting the Environmental Impact Statement (EIS).

<sup>1</sup> Enclosures (3) through (8) contain Sensitive Security Information (SSI) that is controlled under 49 CFR part 1520. No part of these enclosures may be disclosed to persons without a "need to know," as defined in 49 CFR 1520, except with the written permission of the Administrator of the Transportation Security Administration. Unauthorized release may result in civil penalty or other action. For U.S. Government agencies, public disclosure is governed by 45 U.S.C. 522 and 49 CFR 1520.

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In closing, please be advised that AES must annually review and update its WSA as necessary to reflect changing conditions, such as changes to the project itself and/or changes within the port and along the waterway from the territorial sea to the LNG facility. These annual reviews should take place until the LNG facility goes into operation. If the annual review identifies changes to the project and/or port that may invalidate portions of the WSA, then AES must update the WSA and the Coast Guard will need to review and validate the changes. The date of the required annual review should coincide with the date of the WSR. If the project is ultimately approved by FERC, AES should provide a statement of final review prior to operation certifying whether the most recent submission of its WSA remains valid. After start-up, annual review of the WSA will no longer be necessary since the Transit Management Plan will become the primary means for implementing and updating the appropriate operational safety and security measures.

For further information related to this letter, please contact the project officer at Sector Baltimore, Lieutenant Commander Amy M. Beach, at (410) 576-2519, or email: Amy.M.Beach@uscg.mil.

Sincerely,



B. D. Kelley  
Captain, U.S. Coast Guard  
Captain of the Port  
Baltimore, Maryland



P. B. Trapp  
Captain, U.S. Coast Guard  
Captain of the Port  
Hampton Roads, Virginia

- Encl:
- (1) AES Sparrow's Point Project Additional Risk Mitigation Measures for the Allision with the Bay Bridge Scenario, Revised June 19, 2008
  - (2) AES Sparrow's Point Project Additional Risk Mitigation Measures for the Cargo Handling Mishap Under the Bay Bridge Scenario, Revised June 19, 2008
  - (3) AES Sparrow's Point Project Additional Risk Mitigation Measures for the Cargo Handling Mishap Dockside Scenario, Revised June 19, 2008
  - (4) AES Sparrow's Point Project Additional Risk Mitigation Measures for the "Hijack an LNG Ship and Ram a Cruise Ship in the Chesapeake Bay or its Approaches" Scenario, Revised June 19, 2008
  - (5) AES Sparrow's Point Project Additional Risk Mitigation Measures for the "Hijack an LNG Ship and Ram into Another LNG Ship in the Chesapeake Bay or its Approaches" Scenario, Revised June 19, 2008
  - (6) AES Sparrow's Point Project Additional Risk Mitigation Measures for the "Hijack and Ram a Commercial Vessel into a Loaded (Arriving) LNG Vessel" Scenario, Revised June 19, 2008
  - (7) AES Sparrow's Point Project Additional Risk Mitigation Measures for the "Sabotage/Bomb Scenario on an LNG Ship", Revised June 19, 2008
  - (8) AES Sparrow's Point Project Additional Risk Mitigation Measures for the "Small Boat Attack" Scenario, Revised June 19, 2008

Copy: Federal Energy Regulatory Commission  
Maryland Department of Natural Resources  
Virginia Department of Environmental Quality

**AES Sparrow's Point Project  
Additional Risk Mitigation Measures  
for the  
Allision with Bay Bridge Scenario  
Revised 19 June 2008**

**1. Background:**

- a. Allision with the William Preston Lane, Jr., Memorial Bridge (Bay Bridge) Scenario. This scenario deals with a loaded (not in heel) LNG vessel accidentally alliding with the Bay Bridge resulting in the penetration of the vessel's double hull tanks and the release of LNG cargo. The Bay Bridge was identified as critical infrastructure by the COTP Baltimore.
- b. The Waterway Suitability Assessment (WSA) recommends Level 3 Protection for the "Allision with the Bay Bridge" scenario. Level 3 protection requires "Asset(s) on standby for immediate initial response if unsafe conditions develop."
- c. Section 7.3, recommendation #6 of the WSA proposes the following Risk Mitigation Measures (RMMs) to meet the Level 3 protection standard:

"It is recommended that AES be required to contract with a commercial tug with firefighting capability to proceed to the vicinity of the bay Bridge for each inbound LNG transit in the summer. The tug is to be available for immediate response should an incident occur while a ship is transiting through areas of heavy boating concentration and under the Bay Bridge. The tug would follow the ship north to assist with the tug escort along Brewerton Channel."
- d. The Coast Guard is requiring Level 4 protection for this scenario. Level 4 protection requires "Asset(s) on-scene to deter safety lapses, unsafe acts, and correct safety violations. Response assets standing-by to control ship if necessary."

**2. Discussion**

- a. Additional RMMS must be developed to meet the level 4 standard. The key difference between Level 3 and Level 4 protection is that under Level 3 assets are on standby for immediate response while under Level 4 the assets must be on-scene. In addition level 4 is a more proactive safety level in that the assets must be able to deter safety lapses rather than waiting for the unsafe condition to show itself.

- b. Additional RMMS for this scenario could include both additional safety procedures and expanded on-scene availability of a capable tug as an LNG vessel transits under the Bay Bridge.
- c. The WSA recommended that a commercial tug be available for immediate response during the summer months based on the increased boating levels during the summer months. To meet the level 4 standard a commercial tug should meet all arriving LNG vessels at the Bay Bridge. This would provide response assets standing-by to control the ship if necessary. The participants of the Risk Assessment workshop conducted for the WSA discussed at length the advantages and disadvantages of tethering the tug to the inbound LNG vessel. The consensus of the working group, particularly Captain Eric Nielsen was that the tug should not normally be tethered.
- d. A safety procedure which would lower or eliminate the risk of an accident would be for each arriving LNG vessel to conduct safety checks of their steering and propulsion prior to transiting under the Bay Bridge. The intent would be to reduce the likelihood of the vessel experiencing a steering or power failure as it approached and transited under the bridge. The vessel would be required to report completion of these safety checks to the Escort Commander prior to transiting under the bridge. The Escort Commander would thus serve as an additional on-scene asset deterring safety lapses, unsafe acts and correcting safety violations.
- e. Another safety procedure which would lower or eliminate the risk of an accident would be for each arriving LNG vessel to confirm with the Escort Commander that the on-scene weather conditions (wind & visibility) meet the standards established in the Transit Management Plan.

### **3. Recommended additional RMMs**

- a. The following additional RMMs are recommended to meet the Coast Guard required Level 4 protection standard:
  - (1) AES shall provide a 70 ton bollard pull commercial tractor tug, with ABS Class 1 firefighting capability, to proceed to the vicinity of the Bay Bridge for all loaded (not in heel) LNG vessel transits. The tug shall be standing by to assist the LNG vessel if an incident occurs while the ship is approaching and transiting under the Bay Bridge. The tug will normally tether to the LNG vessel although the final decision will be left to the Maryland Pilot on scene. All loaded LNG vessels intending to transit under the Bay Bridge shall complete the steering and propulsion tests identified in 33 CFR 164.25. Upon completion of the tests, the ship's Captain or the Pilot shall inform the Escort Commander via radio of the

successful tests. The results of the tests shall also be entered in the ship's official logbook prior to approaching the Bridge.

- (2) The Pilot or ship's Captain shall confirm via direct radio communication with the Escort Commander that the on-scene weather conditions (wind and visibility) are within the limits defined in the Transit Management Plan.
- b. The MTA's video surveillance system should be monitored for problems.
  - c. Reduce vessel speed while approaching/transiting under the Bay Bridge.

#### **4. Regulated Navigation Area**

- a. AES understands that some of the recommended traffic management recommendations, including the requirement that loaded LNG ships must complete the steering and propulsion tests identified in 33 CFR 164.25 and report the results of the tests to the Escort Commander before passing under the bay Bridge, may require Sector Baltimore to develop a Regulated Navigation Area (RNA) covering the impacted waters.

**AES Sparrow's Point Project**  
**Additional Risk Mitigation Measures**  
**for the**  
**Cargo Handling Mishap Under the Bay Bridge Scenario**  
**Revised 19 June 2008**

**1. Background:**

- a. Cargo Handling Mishap Under the Bay Bridge. This scenario deals with a loaded (not in heel) LNG vessel venting LNG gas while transiting under the Bay Bridge. The Bay Bridge is identified as critical infrastructure by the COTP Baltimore. The concern is for the structural integrity of the bridge and the safety of persons crossing the bridge at the time of the cargo release.
- b. The Waterway Suitability Assessment (WSA) recommends Level 1 Protection for the "Cargo Handling Mishap Under the Bay Bridge" scenario. Level 1 protection requires "General waterway management policies/procedures to reduce the risk of an accident."
- c. The Coast Guard is requiring Level 4 protection for this scenario. Level 4 Protection requires "Asset(s) on-scene to deter safety lapses, unsafe acts, and correct safety violations. Response assets standing-by to control ship if necessary."

**2. Discussion**

- a. Each shipboard LNG cargo tank must be fitted with at least two pressure relief valves as a safety measure to ensure that the pressure within the tank does not exceed a design limit.
- b. LNG vessels must also have at least one high pressure alarm that:
  - (1) Actuates before the pressure in any cargo tank exceeds the maximum pressure specially approved by the Commandant (CG-5222); and
  - (2) Actuates an audible and visual alarm at the cargo control station, and a remote group alarm in the wheelhouse.
- c. The "Chesapeake Bay Liquefied Natural Gas (LNG) Operations Management Plan" requires that, "Under normal operating conditions, a vessel in U.S. territorial waters shall not vent cargo vapors to the atmosphere as a means of pressure or temperature control. Should emergency venting become necessary, the Master of an LNG vessel shall immediately notify the cognizant COTP. This notification shall include their location, the amount vented, the reason for emergency venting, and the wind velocity and direction at the time of venting."<sup>1</sup>

- d. Because venting of LNG cargo vapors is already forbidden within U.S. territorial waters, additional Risk Mitigation Measures are needed to ensure that :
  - (1) The prohibition of venting is acknowledged by each arriving LNG vessel, and
  - (2) Procedures are established to ensure that the vapor pressures in each cargo tank are checked prior to the vessel approaching the Bay Bridge to ensure they are within normal operating range.
  
- e. The Escort Commander could serve as the “on-scene asset” to deter safety lapses, unsafe acts and correct safety violations as required under Level 4 Protection by requiring the ship’s Master or the Maryland Pilot onboard to report to the Escort Commander:
  - (1) The highest pressure in the vessel’s cargo tanks,
  - (2) The normal operating pressure range for the tanks, and
  - (3) The pressure settings on the safety valves,

prior to transiting under the bridge.
  
- f. The opening of an LNG vessel cargo tank safety valve has no impact on the operation or control of the vessel; therefore, there is no need for “specific response assets to be standing by to control the ship” as outlined under Level 4 Protection.

### **3. Recommended additional RMMs**

- a. The following additional RMMs are recommended to meet the Coast Guard required Level 4 protection standard:
  - (1) All loaded LNG vessels intending to transit under the Bay Bridge shall confirm that the pressure in each of the cargo tanks is within normal operating range and that there is no reason to suspect that one of the cargo tank pressure relief valves may open while the vessel is approaching or transiting under the Bay Bridge.
  - (2) The ship’s Captain or the Maryland Pilot onboard the vessel shall inform the Escort Commander via radio that all cargo tank pressures are within normal operating range and the pressure settings of the safety valves. The pressures shall also be entered in the ship’s official logbook prior to approaching the Bridge.
  - (3) The vessel may not approach the Bay Bridge until permission is granted by the Escort patrol Commander.

#### **4. Regulated Navigation Area**

- a. AES understands that some of the recommendations, including the requirement that all loaded LNG vessels intending to transit under the Bay Bridge shall confirm that the pressure in each of the cargo tanks is within normal operating range prior to transiting under the Bay Bridge, may require Sector Baltimore to develop a Regulated Navigation Area (RNA) covering the impacted waters

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<sup>1</sup> Chesapeake Bay Liquefied Natural Gas (LNG) Operations Management Plan. Page 6.

Enclosures (3) through (8) contain *Sensitive Security Information* controlled under Title 49, Code of Federal Regulations, Part 1520. Parties that that can demonstrate a “need to know,” as defined in 49 CFR 1520, should contact the cognizant Captain of the Port to request these materials.

Document Content(s)

2008-10-24 USCG to AES Letter.PDF.....1-9