



U.S. House of Representatives
Committee on Transportation and Infrastructure

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SUMMARY OF SUBJECT MATTER

TO: Members of the Subcommittee on Coast Guard and Maritime Transportation

FROM: Staff, Subcommittee on Coast Guard and Maritime Transportation

SUBJECT: Field hearing on safety and security of Liquefied Natural Gas (LNG) terminals and their impact on port operations in Baltimore

Purpose of the Hearing

On April 23, 2007 at 10:00 a.m. the Subcommittee will meet in _____ to conduct a hearing on the safety and security of Liquefied Natural Gas (LNG) terminals and their impact on port operations. The hearing will also examine the proposed AES Sparrows Point LNG terminal at Sparrows Point in the Port of Baltimore to assess its potential impact on the safety and security of the City of Baltimore as well as on the operations of the Port of Baltimore.

Background

Shipping Liquid Natural Gas (LNG)

When natural gas is cooled to a temperature of less than 260 degrees Fahrenheit, it becomes a liquid. As a liquid, natural gas occupies only 1/600th of the volume it occupies as a gas – so a larger quantity can be stored in a smaller space.

LNG is shipped as a liquid. LNG shipping began in 1959. Historically, less than 1 percent of the total amount of natural gas utilized in the United States was imported – because domestic production capacities yielded cheap gas in large quantities. However, as the use of natural gas in the United States has increased (due to low prices in the 1980s and 1990s), domestic production capacity has not kept pace with demand and prices have risen – making imported gas competitive with domestically produced gas.

On-Shore Facilities

By definition, a facility is considered to be on-shore if it is located within 3 miles of shore (that is, in the waters controlled by coastal states), except off Texas and the west coast of Florida where a facility is considered on-shore if it is within 3 leagues (approximately 9 miles).

At the present time, there are only 5 active, on-shore LNG import facilities in the United States:

- Everett, Massachusetts
- Cove Point, Maryland
- Lake Charles, Louisiana
- Elba Island, Georgia
- Penuelas, Puerto Rico

In some cases, these LNG terminals are not physically on land (as at Cove Point, where the pier at which ships actually dock is 1 ¼ miles from shore).

The process governing the siting of off-shore facilities involves different agencies from the process pertaining to on-shore facilities. The remainder of this memo will examine the siting of on-shore facilities.

Agencies and Entities Regulating LNG Terminal Sitings and Operations

A new on-shore LNG facility needs to obtain approximately 100 permits and approvals from a variety of federal, state, and local agencies before the project can begin construction. A brief overview of some of the main regulatory requirements governing the siting of on-shore LNG facilities is provided below.

In general terms, the Department of Transportation (DOT) is responsible for setting safety standards for on-shore LNG terminals (due to its regulatory authority over pipelines) – including the siting, construction, and operation of these facilities. DOT does not, however, approve or deny specific siting applications – that authority resides with the Federal Energy Regulatory Commission (FERC).

Federal regulations do not contain requirements for remote siting of LNG terminals. However, the Pipeline Safety Act requires DOT to consider the need to encourage the remote siting of LNG terminals. The Governmental Accountability Office (GAO) testified to Congress in 1979 that the public could best be protected by placing LNG terminals away from population centers.

FERC enforces the standards set by DOT – but also has the authority (recognized through a memorandum of understanding between FERC and DOT) to set more stringent standards for facilities when these are warranted.

The Coast Guard participates in reviewing applications as a cooperating agency. Its specific role is to conduct a Waterway Suitability Assessment (WSA), which assesses the potential impact of an LNG terminal on existing maritime operations in the vicinity of the proposed terminal as well as the security risks that the proposed siting may pose. The WSA also evaluates the potential thermal effects of a pool fire that could occur at a terminal site.

The development of the WSA runs concomitantly with the assessments conducted by FERC (including the Environmental Impact Statement). Upon receipt of a WSA, the Coast Guard submits it to review by a committee of stakeholders from the port at which the terminal is proposed to be located and may even conduct public meetings to solicit public comments on the WSA. Upon conclusion of the review, the Coast Guard reaches a preliminary determination about the results of the WSA and communicates its findings to FERC in a document called the Waterway Suitability Report (WSR).

The Army Corps of Engineers maintains its responsibility for any dredging required to provide suitable access channels needed by the terminal.

Other agencies are involved in specific aspects of the regulation of issues associated with terminal siting, including the Department of Commerce/National Oceanic and Atmospheric Administration (review and consultation under Endangered Species Act), Department of the Interior (review/consultation under Endangered Species Act), and the Environmental Protection Agency (permitting under the Clean Air Act and process waste water permits etc.).

The authority to approve the siting of a facility rests solely with the Federal Government. However, before any LNG facility can be constructed it must have any appropriate state issued Clean Water Act Section 401 certification of compliance with states water quality programs, and Clean Air Act Section 502 permits to operate a source of air pollution. In addition, any federal actions affecting a state's coastal zone, including the issuance of federal permits, must be consistent with the state's Federal coastal zone management plan if the state has such a plan. Maryland has an approved state coastal zone management plan.

Safety Concerns Surrounding On-Shore LNG Terminals

Several safety concerns regarding on-shore LNG terminals are discussed below.

Safety Exclusion Zones: Federal safety regulations require LNG terminals to be surrounded by "exclusion zones" designed to protect neighboring sites from fires and/or flammable cloud vapors. Critics argue that current regulations produce exclusion zones that are too small – and that siting plans may not adequately anticipate the results of terrorist acts or other accidents. A report recently released by the Governmental Accountability Office examined six studies on the potential effect of a fire resulting from an LNG spill and found that they produced varying results – in large part because there is a lack of data on large spills from actual events and because the various studies utilized different modeling assumptions.

Safety Hazards in the Marine Environment: There are several concerns pertaining to potential LNG spills in water. First, if a spill occurs near a source of ignition, the LNG will

burn, even if the spill is on water. As the LNG spreads across the water, the LNG will continue to burn creating what is known as a “pool fire.” Pool fires cannot be contained and will burn until all LNG is consumed in the fire. Further, such fires burn hotter than regular gas fires – and may emit thermal radiation that could burn people nearby. Second, LNG spilled on water is theoretically capable of re-gasifying almost instantly – creating a vapor cloud that may also explode if it finds a source of ignition. Importantly, however, unlike gas, LNG dissipates completely and leaves no residue – so environmental damage will result only from the fires associated with LNG emissions.

Role of the Coast Guard in Securing LNG Tankers

LNG tankers in use today are double-hulled. The Coast Guard indicates that LNG tankers have carried more than 40,000 LNG shipments since international shipping began in 1959 and there has never been a breach of a ship’s cargo tanks or a major LNG spill. The Coast Guard further reports that there have been approximately 30 LNG tanker safety incidents (including leaks as well as groundings and collisions) through the year 2002. Of these incidents, 12 involved small spills but none ignited.

Currently, there are more than 200 LNG tankers in operation and approximately 100 additional tankers are under construction. None fly the flag of the United States.

LNG tankers calling on the United States are required to submit detailed vessel plans to the Coast Guard’s Marine Safety Center (MSC) before they may enter United States waters. MSC conducts on-site verifications to ensure that the tankers meet applicable construction standards and then issues a Certificate of Compliance valid for two years.

Like all ships calling on the United States, LNG tankers are required to provide notice of their impending arrival 96 hours before reaching a U.S. port. When an LNG tanker is transiting a port or the approaches to a port, the Coast Guard escorts the tanker and enforces special safety zones around the vessel to prevent other vessels from approaching it. The Coast Guard also reports that it will board LNG vessels at-sea prior to their arrival.

Safety History of Existing LNG Terminals

In 1944 a storage tank that was not outfitted with an impoundment dike failed at an LNG facility in Cleveland, Ohio, resulting in a spill and a subsequent explosion that killed 128 people. In January 2004, an accident at a terminal in Algeria killed more than 100 people.

In 1979, an accident at the Cove Point LNG facility in Maryland resulted in several fatalities and the terminal ceased operations until recent years. Cove Point is a unique terminal because ships dock to a pier located 1 ¼ mile off-shore. The terminal is then connected to shore by a tunnel constructed using rectangular blocks sunk directly into the water. These tunnels include electrical conduits. The accident occurred when gas leaked on the site and was ignited by a spark. Regulatory changes have since been made to ensure the safety of facilities of similar design.

Increased Interest in Developing LNG Terminals

There are approximately 40 LNG terminal projects that are in some phase of seeking permits from FERC (for on-shore sitings) or from the Coast Guard and the Maritime Administration (for off-shore sitings). The majority of the applications are for on-shore facilities. Recent interest in building LNG terminals springs not only from the rising cost of natural gas but also from recent legal/regulatory changes intended to streamline the permitting process.

Proposed Sparrows Point Project in Baltimore

On January 8, 2007, AES Sparrows Point LNG, LLC, filed a formal application with FERC to construct and operate a new LNG import, storage, and regasification plant at Sparrows Point in Baltimore. The pre-file process for this facility began in March 2006. The project is intended to meet growing demands for natural gas in the mid-Atlantic region, which currently has limited supply networks. The Sparrows Point facility would be located on 80 acres of a 175-acre parcel of land in Baltimore County.

The facility would be comprised of a marine terminal, three on-shore storage tanks (each of which would be 180-feet high and 265-feet in diameter and capable of holding 160,000 cubic of gas), the equipment to convert LNG to a gaseous state (including a closed-loop glycol vaporization system), and associated out-buildings.

The marine terminal intended to serve the site will be located on the Patapsco River off of the Brewerton Channel. The terminal will be designed to serve tankers up to 1,000 feet in length with a carrying capacity ranging from 127,500 cubic meters up to 217,000 cubic meters. The LNG will be unloaded in liquid form through three 16-inch stainless steel unload arms. It takes approximately 12 hours to unload an LNG tanker.

According to documents compiled by the AES firm, the facility is designed to vaporize and store 1.5 billion cubic feet per day and could be expanded to handle up to 2.25 billion cubic feet per day. Gas from this facility will interconnect existing pipelines near Eagle, Pennsylvania – requiring the construction of 85 new miles of pipeline.

The Sparrows Point site is located at the eastern end of the Port of Baltimore in Baltimore County. The site is near residential areas and local and state officials have expressed concerns that this site poses significant safety and security risks to those living not only near the site but throughout the metropolitan area of Baltimore. Additionally, a ship requires approximately 8 to 10 hours to travel from the mouth of the Chesapeake Bay to the Port of Baltimore and must pass under the Chesapeake Bay Bridge to access the terminal. Concerns have also been raised that these ships may not only disrupt port traffic (due to their unique security requirements) but could potentially present a terror target during transit, particularly in the vicinity of the Bay bridge.

Further, access to the facility would require deepening and widening the existing marine channel to a depth of 44 feet and a width of 650 feet. This dredging is estimated to produce as much as 4 million cubic yards of dredged material; 2.6 million cubic yards will be disposed of at sites yet to be determined. The material proposed to be dredged far exceeds the placement capacity of the sites currently operated by the Maryland Port Administration.

State Of Maryland Opposed to Sparrows Point Project

In a document submitted to FERC dated February 7, 2007, and developed in response to the Sparrows Point proposal, the State of Maryland expressed its strong opposition to the proposed LNG terminal – citing safety and security concerns as well as a variety of environmental and economic concerns.

Specifically, the State cites the following safety and security concerns:

- The proposed terminal does not meet the State’s concept of remote siting – and will be located on a compressed site within a highly populated area. Further, the State is concerned about other issues on the site, including equipment orientation and tank containment.
- The terminal will be located one-mile from the second largest blast furnace in the United States, located at the Mittal Steel plant.
- A proposed ethanol facility to be located north of the Sparrows Point terminal and that could be operational in 12 months could provide an additional ignition source.
- Also, the State is very concerned about the strain that dredging needed to accommodate the terminal may cause on current State placement capacity for dredged material – and is concerned that the siting of an LNG terminal may not be the best use of this land within the Port from an economic development perspective.
- Finally, the State has expressed concerns about the security of the pipeline that would be needed to carry gas from the Sparrows Point facility to other pipeline networks.

Next Steps in Development of Sparrows Point Project

The WSA for the Sparrows Point project has been submitted for review and the Coast Guard’s WSR is expected in April 2007.

The Draft Environmental Impact Statement is expected to be completed approximately July 1, 2007. Upon its completion, the public will be given 45 days to respond to its findings.

A final decision on the AES Sparrows Point application is expected from FERC by December 2007.

Witnesses

Panel I

The Honorable Barbara Mikulski
United States Senator
Maryland

The Honorable Martin O'Malley
Governor
Maryland

Mr. James T. Smith, Jr.
County Executive
Baltimore County, Maryland

Panel II

Rear Admiral Brian Salerno
Director of Inspection and Compliance
U.S. Coast Guard

Captain Brian D. Kelley
United States Coast Guard
Baltimore Sector

Mr. Richard Hoffmann
Director
Gas, Environment, and Engineering
Federal Energy Regulatory Commission

Panel III

Mr. Kent Morton
Project Director
AES Corporation

Mr. William Doyle
Deputy General Council
Marine Engineers' Beneficial Association

Mr. Dunbar Brooks
Chairman
Turner Station Development Corporation

Ms. Sharon Beazley
Private Citizen