

Holes in LNG study

In correspondence, Quest study author tells federal agencies that findings should not be used to judge safety of new gas terminals

12/04/03

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The author of a study used by federal officials to demonstrate that liquefied natural gas facilities pose few hazards for cities like Mobile has now written those officials to warn that his study cannot be used in that way.

Last week, a top Federal Energy Regulatory Commission official said at a Mobile public meeting that the study of LNG fire dangers, produced by the Oklahoma-based Quest Consultants Inc., had been used in other cities, and would be used again to evaluate whether LNG terminals are appropriate for populated areas.

But in a recent exchange of letters with the U.S. Department of Energy, Quest's John Cornwell warned that the study "should not be applied" to locations other than the outer areas of Boston Harbor in Massachusetts. Doing so "would yield significantly different results."

The letters, and an accompanying analysis of LNG threats in Boston Harbor also written by Cornwell, reveal for the first time why the Quest study predicts that accidental LNG fires would be much smaller than the fires predicted in studies conducted by a number of federal agencies. One prominent scientist who reviewed the letters and analysis this week said they indicate that one of the key assumptions in the Quest study "has no scientific basis."

"The Quest report has seriously misled the Coast Guard and public safety authorities in Boston into believing that the hazards from LNG tanker spills would be much smaller than sound science predicts," said James Fay, professor emeritus at the Massachusetts Institute of Technology, and one of the fathers of LNG hazard evaluation. After reviewing the correspondence, Fay said that Quest should withdraw its study until it can withstand the scrutiny of a formal scientific review.

The Mobile Register obtained copies of the correspondence, which includes the Quest letterhead and is directed to DOE official Clifford Tomaszewski, from a source who requested anonymity. Officials with the DOE and Quest Consultants did not respond to Register inquiries concerning the documents.

Used by federal officials:

Federal officials have used the Quest study in public hearings, federal documents and in letters to members of Congress to suggest that fires stemming from an LNG tanker accident would endanger only a small area around the ship. Other studies have indicated that such a fire could be a half-mile or more wide, and produce searing heat a mile or more away.

J. Mark Robinson, the FERC official who spoke in Mobile last week, said that FERC officials stood behind the Quest study and they would continue to use it to determine whether LNG terminals can safely locate in cities like Mobile.

ExxonMobil Corp. has proposed a \$600 million project to build an LNG terminal at the old Navy homeport two miles south of the Mobile city limits. The site sits adjacent to a residential neighborhood.

Tanker ships carrying 33 million gallons of highly concentrated LNG would unload their shipments at the Mobile terminal, where the fuel would be converted to the conventional vaporous form of natural gas for commercial and residential consumption.

Commissioned after 11:

The DOE commissioned the Quest study in the days after the Sept. 11, 2001, terrorist attacks to help determine if they could safely reopen Boston's decades-old LNG facility in the face of new terror threats.

In the correspondence obtained by the Register, Cornwell defended his study as it applies to specific conditions outlined for Boston's outer harbor. But he made clear that his study could not be appropriately used to determine the hazards posed by LNG tankers in other places.

The letters, dated Nov. 17 and 21, came about a month after a Mobile Register article which quoted Cornwell as saying that federal officials were misusing his study. When Cornwell was informed in October that his study had turned up in federal documents justifying the location of an LNG terminal near Lake Charles, La., he told the Register, "Oh, brother. That's part of the problem."

The Quest study has already been questioned by a number of scientists within the federal government and in the academic world.

Its estimate of the fire that might result if terrorists blasted a 5-meter-wide -- or 16-foot-wide -- hole in the side of a tanker are four to five times smaller than the fires predicted in studies conducted by FERC, the U.S. Coast Guard, the U.S. Department of Transportation, the National Oceanic and Atmospheric Administration and scientists from the DOE's Lawrence Livermore National Laboratory.

All of those studies suggest that a fire associated with a burning tanker would be roughly a half-mile wide. The Quest study predicts a fire 470 feet wide.

"I have reviewed the work performed in the last 25 years on this question. With few exceptions, the scientific consensus on the scope of a fire involving an entire tank of LNG is that it would be at least a half-mile in diameter," said Jerry Havens, a University of Arkansas professor and former Army officer expert in both fires and weapons of mass destruction. Federal officials are required to use programs that Havens designed when establishing safety zones for new LNG terminals.

Previously, Quest officials refused to divulge how they had arrived at the smaller fire computations. Cornwell told the Register that the differences in his study and the published scientific studies occurred because the other studies assumed that the LNG was released "instantaneously" during an accident, which he described as impossible.

Several scientists noted that Cornwell apparently reversed himself in the new documents. Fay said that Cornwell acknowledged in correspondence with the Department of Energy that a hole 5 meters wide in the side of a ship would release so much LNG so quickly that it would constitute the equivalent of an instantaneous spill.

The new letters detail how Quest arrived at the smaller fire predictions, and indicate that Quest did not actually examine the same accident scenario that the other studies examined. Federal officials have stated in public documents that Quest had examined the same scenario.

Cornwell made clear in the letters that he departed from the typical accident analysis by assuming that a 5-meter hole in the outer hull of a double-hulled LNG tanker would not necessarily result in a hole that large in the inner hull. As a result, his estimate of the amount of liquid gas flowing out of the ship was much smaller than the amounts estimated by other studies. Cornwell did not state how large he assumed this hole in the inner hull would be.

Critical scenario:

Many scientists feel that the scenario involving a 5-meter hole through both hulls of an LNG tanker is critical to understanding the dangers posed by a terrorist strike on such a ship. In October 2002, terrorists in Yemen blew a hole 26 feet wide -- and penetrating 20 feet deep -- in the side of a double-hulled French oil tanker named the Limburg. In October of 2000, terrorists blew a hole 20 feet high and 40 feet wide in the side of the USS Cole, a heavily armored destroyer.

Cornwell pointed out in his recent correspondence with the DOE that he performed his analysis on short notice, a year prior to the Limburg attack. He acknowledged that he had no information indicating that the hole in the inner hull of the Limburg was significantly smaller than the hole in the outer hull.

Cornwell stated that if a 5-meter hole were punched in both the inner and outer hulls of an LNG tanker, Quest's predictions of the resulting fire would generally agree with the published scientific studies. Those studies predict a fire a half-mile wide.

In the letters, Cornwell also wrote that he assumed that wave action in Boston's outer harbor would prevent the liquid gas from spreading very far from the ship, which would limit the size of a fire.

No scientific support:

Fay said there is absolutely no scientific support for this Quest assumption.

"If this effect were real, the Exxon Valdez would not have spread oil all over (Alaska's) Prince William Sound, where much bigger waves are to be found than in Boston," Fay said Wednesday.

U.S. Rep. Ed Markey, D-Mass., who has been closely involved with legislation regulating the locations of LNG terminals, said he would be deeply disturbed if federal officials and public safety authorities had been misled by the Quest studies.

"If that's true, the Department of Energy, the Department of Transportation and the FERC have a lot of explaining to do," Markey wrote to the Register on Wednesday. "I am still awaiting responses from both DOE and DOT to the questions I posed about the Quest study of the situation at the LNG facility in Everett, Massachusetts. I will be reviewing those responses very, very carefully. The people of Everett, Massachusetts and similarly situated communities have a right to expect that emergency planning decisions for LNG facilities are based on sound science."