

GALVESTON COUNTY THE DAILY NEWS

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Editor's note: This is the second in an occasional series about plans by The Woodlands-based Next Decade to develop a liquefied natural gas plant on Pelican Island.

GALVESTON — When people fight development of liquefied natural gas plants in their communities, they inevitably point to the “Cleveland Disaster,” which occurred in 1944 when a holding tank failed, releasing 1.1 million gallons of its contents into streets and sewers.

A cloud of warming natural gas soon ignited. Fire engulfed nearby homes and businesses.

That catastrophe killed 128 people, injured 225, and destroyed 79 homes and two factories, according to the U.S. Bureau of Mines.

Opponents typically also cite a 2004 disaster in Algeria, where an explosion flattened a large part of the Port of Skikda, killing 27 people and injuring 70, according to reports.

That’s all many need to hear to make up their minds about whether a liquefied natural gas plant should be developed on Pelican Island.

But stakeholders and energy industry observers say there’s much more to the story. They argue those examples are either outdated or just don’t apply in the United States, where the industry is heavily regulated and overseen by a long list of federal agencies.

Bad steel

The disaster at East Ohio Gas Co.’s plant 70 years ago simply wouldn’t happen today, they say.

The tank that caused the Cleveland Disaster failed because it was made of 3.5 percent nickel steel, the best available during World War II, when stainless steel was scarce, according to a 2005 white paper by ioMosaic, a safety and risk management firm. The

low-nickel steel became brittle in contact with the supercooled liquefied natural gas and cracked. Now, 9 percent nickel steel, which doesn't embrittle at low temperatures, is used. Also, today's U.S. regulations require secondary containment for each liquefied natural gas container to keep any spills onsite.

Standards, materials and safety measures have dramatically changed since the industry's infancy in the 1940s.

The National Association of State Fire Marshals concluded in a May 2005 report: "Had the Cleveland tank been built to current codes, this accident would not have happened."

Bad information

The Skikda explosion was linked to high-pressure steam boilers that powered refrigeration compressors at the Algerian plant. Such boilers aren't used at any liquefied natural gas facilities under Federal Energy Regulatory Commission jurisdiction, according to ioMosaic.

U.S. regulations of liquefied natural gas plants are extremely stringent, said Margaret Doyle, vice president of LNG solutions at the United States Maritime Resource Center, a Middletown, R.I., organization that describes itself as an independent nonprofit focusing on navigation safety and maritime risk mitigation, among other things.

"You're not in Algeria; you're in the United States, where it's monitored from every level," Doyle said.

But opponents of liquefied natural gas terminals often cite old or faulty information, Doyle said.

"There's a lot of misinformation and a lot of old information out there," she said.

Although the Cleveland disaster occurred decades ago and the Skikda incident was on another continent, they'll likely be the center of some discussions in Galveston in coming months, as The Woodlands-based Next Decade studies developing a land-based LNG export terminal on 185 acres on the northeast corner of Pelican Island. The plant is proposed for a site on Port of Galveston land where BP had planned to build an LNG import facility. Some residents fought hard against that plan for fear the BP plant would be ripe for accidents and be an attractive terrorist target.

Job one

Natural gas would arrive at the Pelican Island liquefaction plant via high-pressure pipelines and be supercooled to -261 F. At that temperature, natural gas liquefies and

condenses to 1/600th its volume, making it easier to ship. The liquefied gas is then shipped overseas in very large tankers.

Next Decade is among companies angling to become significant natural gas exporters. A shale drilling boom has increased U.S. gas production while demand is rising in other markets, including Asia, where prices are nearly quadruple those in the United States. While there's debate about safety, there's none about whether demand for natural gas will rise, industry observers say.

But changing perceptions about the safety risks is among the first, and perhaps the most difficult, task facing the export-minded firms.

In coastal cities in other states where similar facilities have been proposed, arguments over safety have reached a high pitch.

"People often fear what they don't know, or what they aren't familiar with," Kathleen Eisbrenner, founder and CEO of Next Decade, said.

"To many, LNG is still a mystery, and when the industry fails to educate people about it, it's understandable that there is some healthy skepticism."

Next Decade plans in the months ahead to engage with island residents through public meetings about its proposed facility.

Eisbrenner will have a tough time changing some minds.

'Chernobyl was safe'

The nearest house is 1.89 miles from the proposed facility; Texas A&M University's Pelican Island campus is about 2 miles away; and the University of Texas Medical Branch is 2.37 miles from the plant site, according to Next Decade.

Kathy Matteson, an East End resident, said it would be better to build the plant offshore, far from homes.

"The plant proposed for Galveston would be just across the Intracoastal Waterway from Fish Village, UTMB and the East End," Matteson said.

Matteson said she's heard all the industry assurances.

"Oh they say: 'It's so safe; it's so safe, it's so safe,'" Matteson said. "Everybody thought Chernobyl was safe. It doesn't take much for there to be one incident — if it blew up, it could close our port; then where would be?"

Lease option

The Wharves Board of Trustees, which governs the port, voted 6-0 in September to allow Pelican Island LNG, a Next Decade subsidiary, to hold the Pelican Island land for six months, with the option to extend the agreement twice for a total of three years.

The option fee for the initial term is \$100,000. If Pelican Island LNG exercises its six-month renewal option, it will pay the port another \$200,000. If it exercises the second renewal term for two years, it will pay the port \$675,000.

“They think about what’s good for the port, but they don’t think about what is good for Galveston,” Matteson said. “But Galveston owns the port.”

Port Director Michael Mierzwa said he and others on the staff have been criticized by the current city council for not having enough business diversity. The landlord port has increasingly relied on revenues from the cruise industry, which can be fickle.

“We’re trying to make best use of the property we have available,” Mierzwa said. “That particular property is ideally suited for this particular type of business.”

The project won’t generate revenues only for the port, but also for the city, school and college districts, Mierzwa said. The plant, which could cost more than \$6 billion to build, would employ about 200 people and double the size of Galveston’s tax base.

“I would like people to keep an open mind and hear what the LNG folks have to say about safety,” Mierzwa said.

Accident history

Proponents argue that assessments of spills over the past 66 years show large escapes are very rare, and when they do happen, the material — liquid while it’s cold, gas as it warms — seldom leaves the immediate area. The reviews also show that ignition is very rare even when large volumes make it into the atmosphere, which means fires, when they do happen, are contained to small areas and cause few deaths and injuries.

A study by CH-IV International, published in 2002 and revised in 2014, for example, found only 10 incidents worldwide between 1944 and 2010 that caused death or injury. Some of those, including an often-cited 1973 accident at Staten Island, New York, where 40 workers died, didn’t involve LNG at all, but simply occurred at LNG plants.

The study argues that even when things go badly wrong at LNG plants, the havoc is typically contained to the plant and mitigated by modern techniques and devices, resulting in little effect on the surrounding area. CH-IV International provides consulting

services to liquefied natural gas asset developers, regulators, facility owners, operators and lenders.

A good case study, the report notes, is the Minato LNG Import Terminal in Sendai City, Japan, which was rocked in March 2011 by the Great East Japan Earthquake. Despite sudden catastrophic failures of both main and emergency power, and epic flooding, the plant was safely shut down and back in operation about a month later.

“There was no loss of life at the LNG facility and there was no LNG released,” the report states.

Low potential

One of the biggest hazards is cryogenic burns of people who work in the plants, Doyle, of the Maritime Resource Center, said. But the potential for large disasters affecting the public is very low, Doyle said. Ships and terminals are extremely expensive to build and aren’t developed by fly-by-night operators, Doyle said. Developers must answer to the U.S. Coast Guard and Federal Energy Regulatory Commission, among many, many others, she said.

Island resident and attorney John Campbell, who opposed the BP terminal, said he isn’t sure he can be persuaded the Next Decade facility would be safe or good for Galveston.

“It may well be LNG has a pretty good record,” he said. “It may well be these guys who want to do this are totally professional. One of the problems was that BP did not have a culture of safety and professionalism, so that definitely shaped my concern.

“I would have to say I’m in the negative camp right now,” Campbell said. “I’m always willing to listen to an intelligent argument and discussion about what the project might bring.”

But Campbell said he worries about the effects the terminal might have on tourism and that the facility might attract terrorism.

Terrorism is a recurring theme in discussions about liquefied natural gas facilities. The notion is, the gigantic quantity of energy stored in the huge cryogenic tanks makes them desirable terrorist targets. Federal officials have required increased security and surveillance of liquefied natural gas facilities and ships.

‘Misleading and erroneous’

Proponents counter that common assessments of both the stored energy and susceptibility to terrorist attack are overblown.

A common myth, proponents say, is that a liquefied natural gas tanker holding 33 million gallons of LNG has the energy equivalent of 55 Hiroshima bombs.

“The estimation of hazard based on energy content is very misleading and erroneous,” according to ioMosaic’s report.

Using the same reasoning, one would have to conclude that “three hours of sunshine over 10 square feet equals 3.2 pounds of TNT explosive or a 24-gallon automobile gasoline tank equals 1,225 pounds of TNT explosive,” the report argues.

Likewise, the plants are less the terror trap than some would claim, authors of the report say.

“Available data and a good understanding of explosion dynamics indicate that it’s not possible to detonate LNG vapors, even with the use of an explosive charge on a storage tank, unless the LNG vapors contain high fractions of ethane and propane — more than 20 percent,” according to the report.

The likelihood of the scenario was equivalent to each of the authors of the ioMosaic report “winning the power-ball or megabucks lottery several times, simultaneously.”

Liquefied natural gas is a safe product when handled correctly, Eisbrenner said. The Pelican Island facility would be safe, she said.

“First of all, our plans for LNG facilities on Pelican Island will adhere to the strictest of governing U.S. and international codes and guidelines for safety and environmental impact,” Eisbrenner said. “These standards have evolved over the last 50 years ... and are considered quite mature.

“Furthermore, Next Decade plans to only use proven technology that is safe and productive for our terminal.”

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