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January 30, 2010

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2010 FEB -4 A 10: 04

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REGULATORY COMMISSIONJohn C. Keppel
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Fall River, MA 02720Michael L. Miozza
84 Holland Street
Fall River, MA 02720Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426RE: 2005 FERC Approval of Weaver's Cove Energy Land Based Facility
Docket Number CP04-36-000

Dear Ms. Bose:

This letter is written to request reconsideration of the 2005 approval of the Weaver's Cove facility in Fall River, based on 1) a **conflict of interest** within the NFPA 59A committee for establishing thermal radiation standards and 2) FERC use of **scientifically disproven** models for establishing vapor exclusion zones. The 2005 approval was based on inappropriately high thermal radiation standards when compared to other national and international organizations, minimizing the footprint of the facility. Those higher than generally accepted standards, appear to be the result of a conflict of interest within the NFPA 59A standards setting committee, which is primarily made up of LNG/natural gas companies (including Weaver's Cove Energy) and their support industries. A table will be found in the body of this letter comparing the NFPA 59A standards, which FERC uses, with other organizations. The higher NFPA standard allows an artificially small thermal exclusion zone, jeopardizing public safety.

The 2005 Weaver's Cove approval also included the use of scientifically disproven models for calculating vapor exclusion zones. This letter will identify the models FERC used, which were disproven in the 1980s, and the subsequent models accepted by the scientific community for use on applications such as Weaver's Cove. The use of disproven models also created an artificially small vapor exclusion zone.

The accuracy of standards for delineating thermal radiation exclusion zones and use of scientifically accepted models for vapor exclusion zones is critical to ensure public safety since the DOT **never** adopted the remote siting standards recommended in the Pipeline Safety Act of 1979, reiterated in the Energy Policy Act of 2005. In 1979, the Government Accountability Office (GAO) disagreed with the DOT use of exclusion zones and in testimony to Congress supported remote siting stating: *“We believe remote siting is the primary factor in safety.”*

The difference between remote siting and exclusion zones is more than academic, because the size of exclusion zones can be manipulated based on the information used. If that information is flawed, or intentionally manipulated to minimize the footprint of a facility, public safety is jeopardized. That appears to be the case with Fall River, only the second approved urban siting of such a facility in the country.

Manipulation of information creating smaller exclusion zones in Fall River: Thermal Radiation

The accepted FERC standard (based on the NFPA) for public exposure to thermal radiation from an event at an LNG facility is 1600 Btu/hr/ ft². That is the amount of thermal radiation which causes 2nd degree burns to bare skin in 30 seconds. 1600 Btu/hr/ ft² is an **unreasonably high** level of exposure compared to standards set in other industries both domestically and internationally, as identified in the table below. However, it is not surprising given Congressman Edward Markey’s testimony before the Subcommittee on Energy Policy, Natural Resources and Regulatory Affairs on Tuesday, June 22, 2004. Quoting Boston Deputy Fire Chief Flemming, Markey testified:

Deputy Chief Flemming notes, for example, that the NFPA standards call for *preventing “thermal radiation flux from a fire from exceeding”* certain limits. One of these limits is 1600 Btu’s per hour. He notes that *“this level of heat flux will cause 2nd degree burns in 30-40 seconds,”* that it *“will cause severe pain in 13 seconds,”* and that it will *“be fatal to 1% of the affected population in 50 seconds.”* Deputy Chief Flemming notes that the Society of Fire Protection Engineers Handbook recommends a level ½ of that allowable under the NFPA standard. Finally, he notes that the NFPA Committee that made up these standards is largely comprised of representatives of the LNG industry or energy industry consultants, and that public officials – including firefighters who may have to deal with an LNG fire, are not routinely brought into discussion about what the appropriate standards should be utilized. A quick check of the NFPA website reveals that the NFPA LNG Committee has representatives from BP Amoco, Distrigas, ExxonMobil, Weaver’s Cove Energy, Keyspan, the American Gas Association, the

American Petroleum Institute, the American Concrete Institute, and the Steel Plate Fabricators Association.

According to Flemming's testimony, the industry is setting its own standard through the National Fire Protection Association and FERC uses that standard which is **significantly less rigorous** than comparable industries.

THERMAL RADIATION STANDARDS

Organization	Standard	Criteria
FERC	1600 Btu/hr/ft ²	FERC using NFPA standards for LNG exclusion zones
American Petroleum Institute	1500 Btu/hr/ft ²	Areas where emergency actions lasting several minutes may be required by personnel with appropriate clothing
	500 Btu/hr/ft ²	Locations where personnel are continuously exposed.
Dept. of Housing and Urban Dev.	450 Btu/hr/ft ²	Playgrounds, parks, school grounds, etc. relative to potential fire locations.
European Standards	1600 Btu/hr/ft ²	For LNG at property boundary, but only for areas that are easily evacuated.
	480 Btu/hr/ft ²	Areas not easily evacuated
Society of Fire Protection Engineers*	800 Btu/hr/ft ²	Public tolerance limit
Opinion of Engineers	450-500 Btu/hr/ft ²	Many engineers believe this range is more appropriate for LNG exclusion zones.

Source: Extrapolated from LNG, A Level Headed Look at the Liquefied Natural Gas Controversy, pages 167-168. *Source: Society of Fire Protection Engineers Handbook 3rd Ed.

When questioned about the arbitrarily weak standard used by FERC because it allows 2nd degree burns in 30 seconds, a former head of the FERC LNG program said, "*You'd simply walk in another direction. Your skin ain't burnin' or anything like that. And that 1,600 assumes you're nude. You have a layer that's helping you already.*" (LNG, A Level Headed Look at the Liquefied Natural Gas Controversy, page 168)

The outrage of such a response only continued in a White Paper on LNG inside the NFPA in 2005, when a fire safety professional asked for a review of the 1600 Btu/hr/ft² standard by the LNG Standards Committee (again, made up of LNG companies, natural gas companies, and the contracting industries that serve them). The report recognized that bare skin develops 2nd degree burns in 30 seconds with and exposure to 1600 Btu/hr/ft² and then justified the standard for LNG

facilities by stating *“a person can safely run away to a distance of 100 m at which distance the radiant intensity will be far less and thus avoid suffering a second degree burn.”* It also quoted one fire department that stated a 30 second exposure to 1600 Btu/hr/ft² was acceptable *“since a second degree burn is reversible if attended to promptly.”*

(<http://www.nfpa.org/assets/files/PDF/ROP/59A-A2005-ROC.pdf>)

That is an outrageous response! The high thermal radiation level used by FERC does not take into account sensitive populations, such as the elderly, the handicapped or children. It does not take into account the confusion if an event occurs in the middle of the night. It does not take into account an area such as Fall River, in which there are dead end streets and there are massive hills that abut the property of the proposed facility. It does not take into account problems that startled people may encounter in the rush to escape to a safe and protected area. The high FERC standard of 1,600 Btu/hour/ft² is ONLY safe provided the potential exposed population will have BOTH the opportunity and the capability to quickly take cover. Finally, in a major event, the concept of 2nd degree burns being *“reversible if attended to promptly”* is anything but responsible coming from an organization charged with setting safe standards.

The Massachusetts Executive Office of Public Safety and Security wrote to FERC in February 2009 stating that after consulting with fire chiefs in the area: *“It is feared that any evacuation would result in mass chaos and create traffic jams that would bring most vehicles to a standstill. Not only would this interfere with evacuation, it would severely impair any kind of emergency response to the area of the proposed facility.”* They also stated, *“It may not be possible to overcome all the safety and security implications regardless of the resources.”* This would hardly provide the scenario for reversing 2nd degree burns *“if attended to promptly”* as described by the NFPA!

Manipulation of information creating smaller exclusion zones: Vapor Dispersion

FERC and Weaver’s Cove LNG use a 1980s, scientifically disproven combination of consequence models, DEGADIS in combination with SOURCE5, for determining vapor dispersion zones for LNG. The Dense Gas Dispersion Model [DEGADIS] simulates the atmospheric dispersion at ground-level, area source dense gas (or aerosol) clouds released with zero momentum into the atmospheric boundary layer over flat, level terrain. The model describes the dispersion processes which accompany the ensuing gravity-driven flow and entrainment of the gas into the boundary layer (<http://gcmd.nasa.gov/records/DEGADIS-Model.html>). DEGADIS works on flat areas, ground or water. In 1987, DEGADIS was proven not work in areas with uneven terrain, or with obstructions such as buildings, dikes, fences, berms, etc. by the FALCON tests. The FALCON tests also disproved the key assumption of SOURCE5, which was that gas fills diked in areas without mixing with air. This disproven

combination of models has been used by Hess LNG in their calculations for the vapor exclusion zone at Weaver's Cove.

In 2000, the DOT, reacting to the scientific community **rejection** of SOURCE5/DEGADIS, **accepted** the FEM3A or a combination of FEM3A with DEGADIS as the standard for determining vapor dispersion zone because it determines the "reach" of a flammable LNG vapor cloud for uneven terrain, dikes, berms, etc. and complex areas the DEGADIS/SOURCE5 could not accurately address.

It is important to note that a study released by the Fire Protection Research Foundation in March 2009, again confirmed the 1987 findings. The study was funded by the energy industry and concluded that the SOURCE5 scientific basis for pool spreading *"is quite unphysical"*. Quoting the last paragraph from the study: *"Furthermore the prescription of SOURCE5 that the cloud formed in a dike should not disperse or dilute at all until pure vapor has accumulated in the dike to the level top of the wall is unphysical and is likely to lead to optimistic (non-conservative) hazard predictions."*

Professor Jerry Havens and Thomas Spicer of the Ralph E. Martin Department of Chemical Engineering at the University of Arkansas have written a paper entitled Vapor Cloud Exclusion Zone Issues for Spills into Impoundments. In that paper, the two professors identify the most accurate methodology and combination of scientific models for determining vapor cloud exclusion zones. That methodology uses FEM3A for the impoundment areas in combination with DEGADIS outside the impoundment area. In addition, the paper describes proposed changes to NFPA 59A, which require vapor cloud dispersion exclusion zones to be determined at the wind speed at which the maximum distance would occur, just as is done for thermal exclusion zones. The conclusion of the paper is that if the recommendations in the study are adopted, *"there will be important ramifications of such changes in the regulations, as the methods currently in practice can result in vapor cloud exclusion zones that are insufficient to protect the public, while increases in the required exclusion zones can be a determining factor in siting LNG facilities."*

What needs to be done:

The credibility of FERC as a regulatory body of critical energy infrastructure is at stake with its approval of only the second urban siting of an LNG import regasification facility in the country. Approval of a 200,000 m³ LNG tank on a small, 73 acre industrial parcel located in an urban area, only 1,200 feet from the nearest homes, using scientifically discredited models and industry manipulated safety criteria to determine safety zones is not only **an egregious violation of the public trust**, but a potential litigious nightmare for a federal agency.

Standards determining thermal radiation zones should be consistent with other federal agencies, national organizations, fire safety professionals and at the very least, the American Society for Fire Prevention Engineers. Using the criteria from any of these organizations, the thermal radiation exclusion zone around the Weaver's Cove facility would be significantly larger, thereby ensuring public safety. The "*run in the other direction*" comments by a former FERC supervisor and the NFPA are completely irresponsible for agencies entrusted with public safety.

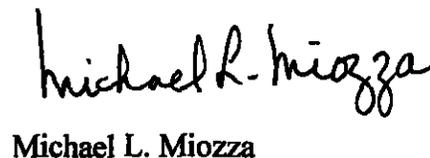
LNG models that are scientifically validated for determining vapor exclusion zones should be legally required to calculate any such zones and are even more critical for a facility in a residential area!

There are many controversial issues surrounding the 2005 FERC approval for Weaver's Cove. These are just two that need to be addressed by FERC. The approval of the Fall River siting of the land based Weaver's Cove facility needs to be reviewed and reversed in the light of the creditable information provided in this letter.

Sincerely,



John C. Keppel



Michael L. Miozza