

STATE OF NEW HAMPSHIRE DEPARTMENT OF SAFETY

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INFORMATIONAL BULLETIN

\*\*SUPERSEDED\*\*

Table with 5 columns: BULLETIN #, TITLE, DATE ISSUED, SUPERSEDES, RELEASED BY, APPROVED BY, SOURCE, SUPERSEDED BY. Row 1: 2013-08, 'Virtual Pipeline' Compressed Natural Gas Facilities, 10/18/13. Row 2: SUPERSEDES, RDA, JWD, NFPA 1, 52, 55, 2013-09.

Purpose/History

Natural gas, compressed or distributed via pipeline, is not a new product, nor is it foreign to the fire service. In the last year compressed natural gas (CNG) has been distributed via a "virtual pipeline." The process consists of natural gas being compressed and loaded into trailers at a pressure of approximately 4000 psi. The trailer is transported to the end user, connected to the heating plant of the facility and left unmanned at the site. The virtual pipeline uses a "just in time" management philosophy. Just before the trailer is empty it is replaced. Consequently these facilities are receiving 3 or 4 deliveries a day. This new type of fuel supply represents very large savings to the end user and has become very popular. Unfortunately this technology is so new that there are no specific guidelines for its installation or use. This bulletin is intended to provide a basic guide for proposed CNG installations.

Based on the current State Fire Code the following shall be required

Performance Based Design,

NFPA 1, 1.14 authorizes the authority having jurisdiction to require design plans for review of any new construction, modification etc. As stated above, at present there are no codes or standards that are specific to the design, construction and testing of CNG installations where it is used as a fuel source operating at these pressures and where the DOT trailer is used as the storage vessel. NFPA 1, chapter 5, authorizes performance based designs. All CNG installations of this type should be treated as a performance based design. The design should begin at the rear of the DOT trailer and terminate at the point in the system where the prescriptive requirements of NFPA 54 can be enforced. The following NFPA standards should be helpful in designing the system and for plans reviewing by the AHJ.

From NFPA 55, 2013 edition, the following sections: Chapter 3, Chapter 4, sections 4.2., 4.5 thru and including 4.12, Chapter 7, If the facility is going to be enclosed in any type of structure chapter 6 should be used as well.

From NFPA 52, 2013 edition, the following sections: Chapter 3, Chapter 7 sections 7.1 thru and including 7.11.7, sections 7.12 thru and including 7.16.3

In addition to the above, the following shall also be required:

- A thermally activated automatic valve at the discharge points of the trailer that will stop the flow of product should the trailer be come involved in fire. This valve is in addition to the thermally activated relief venting protection.
- Computer model analysis of a worst case scenario consisting of a product release (total venting, multiple trailers) without ignition and a worst case scenario of the product with fire conditions involving the trailer and product.
- A comprehensive fire protection and response plan.
- A comprehensive testing criteria for hydrostatically testing the entire installation which shall include, but not be limited to, test pressures, testing duration and the method of testing. The test pressure shall be no less than one and one-half times the operating pressure.
- A comprehensive testing criterion for the testing of 100% of all of the welds on the system.
- The fire protection and response plan, pressure testing and weld testing criteria must be approved by the fire department or state fire marshal's office.

With a performance based design the options to use methods of construction and testing that we may not have experienced are possible. We have engaged engineering professionals to assist us with review of proposals that may be outside of what we have seen to date.

Also the local building official should be consulted as the may have requirements from the State Building Code.

Subsequent bulletins will be issued as more information about the virtual pipeline CNG installations becomes available.