12-19-19 PHMSA-2018-0025 (HM-264): Chart comments to NPRM on LNG by rail

Chart commends PHMSA and the FRA for the NPRM on LNG by rail and fully supports the transportation of LNG by rail in the same manner that other cryogenic liquids have been transported by rail for over fifty years.

We have manufactured such cars for flammable and non-flammable cryogenic liquids throughout those 50 years. The existing regulations provide for a practical and safe package for transporting cryogenic liquids by rail.

We support the existing design and use of the DOT-113C120W for LNG just as it has been used for Liquid Ethylene for 50 years. As an aside, we also support its use for liquid ethane – should a commercial market develop.

We have just a few comments to the NPRM:

1. Filling density
    a. Based on the premise in the NPRM that LNG be allowed to ship in DOT-113 cryogenic tank cars in the same manner as other cryogenic liquids, we note that the fill density should be 38.1% for a safety relief valve set at 75 psig. This corresponds to the 51.1% tabulated value for liquid ethylene. The premise in the CFR for cryogenic liquids is that tank cars have a 0.5 percent outage below the inlet of the pressure relief or pressure control valve at the start-to-discharge pressure setting of the valve, with the tank car in a level attitude… 49 CFR 173.319(b)(1). And similarly for highway cargo tanks in 49 CFR 173.318(d): (d) Outage. Except for a cargo tank containing helium, cryogenic liquid, a cargo tank offered for transportation must have an outage of at least two percent below the inlet of the pressure relief device or pressure control valve, under conditions of incipient opening, with the tank in a level attitude.
    b. Reducing the fill density requirement from 38.1% to 32.5% will reduce the payload of the railcar from ~30,681 gallons to 26,171 gallons; a reduction of 4,510 gallons per car load (~15% lower payload).
    c. We don't believe that this was the intent of NPRM and that it will harm the economics of LNG By Rail; will require more car loads to move the same amount of product; and will require more fuel to move the same amount of product and will not offer an improvement in safety.

2. "Mylar" Insulation. The NPRM makes reference to "several inches of aluminized Mylar super-insulation surrounding the inner tank." Mylar is a plastic material that is not compatible with the potential flammable gas being in the annular space. The common wrapped insulation used in such tanks is often referred to as Multi-Layer Insulation (MLI), Super Insulation (SI) or Multi Layer Super Insulation. This consists of alternating layers of aluminum foil and a non-conducting spacer material. Fiberglass may be used as well – in place of or in addition to the MLI or SI. Perlite powder has been used and while commercially out of favor, is not unsafe and is not prohibited.

3. 286,000 lbs. GRL: Currently 49 CRF §179.13 allows a tank car to be loaded to a gross weight on rail of up to 286,000 pounds (129,727 kg) upon approval by the Associate Administrator for Safety, Federal Railroad Administration (FRA). On January 25, 2011 the FRA provided notice in the Federal Register of approval of the operation of certain tank cars in hazardous materials service up to 286,000 pounds GRL. This approval does not address cryogenic tank cars. Because of the relative low density of LNG (and ethylene), they are limited by allowable tank volume (34,500 WG), not weight.

    The addition of language in §179.13 specifically authorizing a gross rail weight limitation of up to 286,000 pounds will remove the current impeding approval requirement and will allow for heavier inner or outer tanks if and when they are desired in the future.