

Implementing IWA-5244 for the Underground Diesel Fuel Oil Tanks

A lot of discussion has circulated around the industry regarding buried portions of the Nuclear Service Water system containing butterfly valves and the IWA-5244 requirements. I would like to know how those in the industry are meeting the IWA-5244 requirements for the underground Diesel Fuel Oil Storage tanks. If included in the ISI program, these systems are generally classified as ISI Class 3. I would appreciate any information regarding utility experience such as:

Question 1: ISI classification or omission from ISI based on Regulatory Guide 1.26.

Question 2: Does anyone use American Petroleum Institute (API) standards for testing?

Question 3: Does the candy cane vent, which is open to the atmosphere, constitute a nonisolable configuration?

Question 4: Does anyone use a customized test configuration such as a low pressure hose connected to the candy cane vent?

Mike Blew:

Due to the vintage of RNP, we utilize the optional upgrade of IWA-1320(e) and follow Code as guidance. The test is performed in conjunction with OST (Operational Surveillance Testing) and the use of a flow measuring device. The candy cane vent would be considered nonisolable and not required to be pressurized.

Bob Browning:

For our underground class 3 piping (spray pond) we use plant flow meter comparison in and out. For our underground class 3 diesel fuel storage tanks, I wrote an IWA-2240 to use a 5 day level drop test. The level drop would include the underground fuel piping.

Jerry Crider:

Question 1: ISI classification or omission from ISI based on Regulatory Guide 1.26.

The Diesel Fuel Oil Storage tanks are not within our ISI boundary. Their omission is based on our original design requirements and SER.

Question 2: Does anyone use American Petroleum Institute (API) standards for testing?

No

Question 3: Does the candy cane vent, which is open to the atmosphere, constitute a nonisolable configuration?

N/A

Question 4: Does anyone use a customized test configuration such as a low pressure hose connected to the candy cane vent?

N/A

Ric Deopere:

These items are not included in the ISI Program at Monticello. MNGP does not have a commitment to RG 1.26.

George Fechter:

Question 1: ISI classification or omission from ISI based on Regulatory Guide 1.26.

The Owner can always optionally classify something to a higher system classification, but then the testing requirements for that higher class are incurred. For the diesel fuel piping, I can understand why an Owner may classify it as Class 3 since it's important to the EDG. But at Plant Hatch, this piping is not classified as Class 3.

Question 2: Does anyone use American Petroleum Institute (API) standards for testing?

Not sure on this point. I've never heard anyone discuss that.

Question 3: Does the candy cane vent, which is open to the atmosphere, constitute a nonisolable configuration?

I would likely not consider that an a non-isolable configuration for piping. For a storage tank, yes, and we have that type of vent for our SBLC storage tanks. If there's such a vent in piping, and while it would be an open to the atmosphere, I would consider isolating it for a test. But I'm having a difficult time understanding why a pressurized piping system would have such a vent.

Question 4: Does anyone use a customized test configuration such as a low pressure hose connected to the candy cane vent?

This would go along with my answer above.

Richard Gimple:

Question 1: ISI classification or omission from ISI based on Regulatory Guide 1.26.

The underground Emergency Fuel Oil Storage Tanks are in our ISI boundary.

Question 2: Does anyone use American Petroleum Institute (API) standards for testing?

No

Question 3: Does the candy cane vent, which is open to the atmosphere, constitute a nonisolable configuration?

We don't have a "candy cane vent" configuration, but we do have a vent line and it is excluded from the Class 3 pressure test boundary by IWD-5240(b) (open ended discharge piping).

Question 4: Does anyone use a customized test configuration such as a low pressure hose connected to the candy cane vent?

No

Roy Hall:

The requirements of IWA-5244 must be used in conjunction with the applicable IWX-5000 for the appropriate classification (Class 2 or 3). There is not enough information provided to give targeted answers. For instance; can you put your eyes on the tanks surface or a portion of the tank's surface, is there an annulus; is the concern with the tank or the tank and the piping? How is it currently being tested? Etc.

Question 1: ISI classification or omission from ISI based on Regulatory Guide 1.26.

This is based on commitments by the Owner; generally, the older the plant, the more likely that this component is non-class.

Question 2: Does anyone use American Petroleum Institute (API) standards for testing?

We do not.

Question 3: Does the candy cane vent, which is open to the atmosphere, constitute a nonisolable configuration?

The Owner determines what constitutes isolability and must be able to provide the bases. In my mind this is an atmospheric storage tank (IWC-5230 or IWD-5222).

Question 4: Does anyone use a customized test configuration such as a low pressure hose connected to the candy cane vent?

We do not.

Dixon Kerr:

At Diablo Canyon the diesel fuel oil storage tanks and piping are not part of the ISI boundary because this is not a water system. The tanks do come under state laws for leakage (double walled vessel), must be inspected for leakage and this is a safety related system. I do not think they are periodically pressure tested but the corrosion protection system is monitored.

Scott Kulat:

It has been my experience that testing of the diesel fuel oil systems is one of those issues that is addressed as an augmented plan at the site, if it is addressed at all. I don't typically see augmented programs for this system/piping for older plants, but it is not uncommon for the new ASME Section III plants. Regulatory Guide 1.26 does not address this piping. However, fuel oil systems are addressed in Regulatory Guide 1.137. This is what I typically see implemented. I haven't been involved in the testing itself, so I can't give you any insights on details of the testing.

Alex McNeil:

My experience is not very good since we did not classify our diesel fuel oil here in Virginia. I would agree from the inquiry below that if the owner chooses to classify the system that Section XI applies (XI-I-83-44, Question 2). There is a recent inquiry concerning IWA-5244 and buried systems where valves exist, but can't be used to isolate for a pressure drop test that may be helpful (XI-I-07-09).

Interpretation: XI-I-83-44

Subject: Section XI, Division 1, IWA-1320, Classification of systems for Inservice Inspection

Date Issued: July 27, 1984

Question (1): Is it the intent of IWA-1320(d) of the 1980 Edition of Section XI, Division 1, with the Winter 1982 Addenda, that when a Class 3 system (as designated by the Owner) penetrates the containment vessel, the inservice inspection requirements would be based on the overall system classification, including the portion of the system that penetrated the containment?

Reply (1): No. The portion of the system that penetrates the containment is designated Class 2 and must be inspected in accordance with Class 2 rules.

Question (2): Do the rules of Section XI apply to systems or portions of systems that were not constructed to Section III of the Code?

Reply (2): Yes, if the systems are classified Class 1, 2, or 3 in accordance with the requirements of IWA-1320.

Gary Park:

Question 1: ISI classification or omission from ISI based on Regulatory Guide 1.26.

The DAEC classified the Diesel Fuel Oil System as Augmented Class 3. This is based on the Final Safety Analysis Report and the Standard Review Plan 0800 3.2.2 Para. III.

Question 2: Does anyone use American Petroleum Institute (API) standards for testing?

No

Question 3: Does the candy cane vent, which is open to the atmosphere, constitute a nonisolable configuration?

If this is the Vent and Flame Arrestor, it is outside of the DAEC Augmented Classification.

Question 4: Does anyone use a customized test configuration such as a low pressure hose connected to the candy cane vent?

No

Ken Thomas:

Diesel Fuel Oil is not usually an ASME System. We do not include it in our ISI Program. We do include it in our IST Program as an augmented System. See NUREG-1482. I know that some of the newer plants were forced by the NRC to design their fuel systems to ASME III criteria. Then the NRC said, "Since it is designed to ASME III, it must be included in your ISI and IST Programs. The older plants escaped that bit of circular logic.

If there are no isolation valves on the candy cane vent, it would be non-isolable and not subject to a pressure test.

Ernie Throckmorton:

I have very little experience with diesel fuel oil tanks being part of the ISI program. Initially, Va. Power had the tanks in the program but took them out about 20 years ago. If I was going to test the tank I would consider it to be statically pressurized tank and measure the pressure lost as demonstrated by a lost in inventory. Leakage from the valves would need to be handled by the Owner. I would not consider the pipes to be exempt from testing. This could be a flow test. I have no experience with API standards.

Russell Turner:

Question 1: ISI classification or omission from ISI based on Regulatory Guide 1.26.

Harris has the tanks classified as non-class.

Question 2: Does anyone use American Petroleum Institute (API) standards for testing?

Our diesel engineer is not available this week, so not able to answer.

Question 3: Does the candy cane vent, which is open to the atmosphere, constitute a nonisolable configuration?

Yes

Question 4: Does anyone use a customized test configuration such as a low pressure hose connected to the candy cane vent?

N/A

Ray West:

I see Alex McNeill provided you some input on this from the Dominion South perspective. As far as Millstone goes we did not classify Diesel Fuel Oil under our ISI programs. The NRC tried to get utilities to do that many years ago and many gave in and did it, but at the time we were owned by Northeast Utilities and we refused to make Diesel Fuel Oil a Class 3 system. It was my understanding at that time that the NRC never actually required this classification by regulation and so we did not do it. So, I really don't have any experience in addressing the questions you have provided below because they are not applicable to us.

Kevin Whitney:

Seabrook isn't much help with this issue. Our two 75,000 gal. storage tank are located in the diesel building. We are able to perform ISI Class 3 system leakage tests from the storage tanks to the diesels.

Ron Yonekawa:

I don't have any experience in this area. Sorry.

Gary Young/Ted Ivy:

We have not run into any fuel oil storage tanks being ASME Code components that would be subject to ISI requirements. For Indian Point the buried tanks have tightness tests performed in accordance with New York State requirements but not Code. Most nuclear sites are committed to some or all of Regulatory Guide 1.137 which requires periodic 10 year cleaning and inspection of the tanks. The license renewal programs require a UT of the tanks internals.