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Date: 11/04/2006 6:33:39 PM
Subject: Responses to questions from the 11/3/06 conf call

Please see attached responses to the eight open questions from the 11/3/06 conference call with the state and NRC. Thanks. Jhansi

<<Response to 11-03-06 NRC NJ Questions.doc>> <<Question 3 Attachment - Type A Test.pdf>>

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Subject: Responses to questions from the 11/3/06 conf call
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Response to 11-03-06 NRC NJ Questions.doc	34304	
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OPEN ITEMS
From 11/03/06 Conference Call With NRC and State

The following questions/requests were presented to Exelon on November 3, 2006 during a teleconference with Exelon, The NRC, and the State of New Jersey.

1 Document if groundwater is a potential source of the water in the drywell
2 What enhanced activities are being implemented as a result of the water discovery
3 What are the results and trends from last 2 Type A tests, How will trends be used in next test
4 How much data is available on the interface area around the curb and below
5 Extent of condition related to debris in the concrete. Could an acidic area develop that would cause corrosion of the drywell shell
6 Provide a copy of the 50.59 related to the curb-to-shell caulking
7 What is the impact of the missing curb on DBA conditions? Has the missing curb been analyzed
8 Chemical analysis of sample 2 indicates iron. Is this reflective of past/present corrosion

Response

1. **Document if groundwater is a potential source of the water in the drywell.**

   Answer:
   A review of the design drawings reveals the following:

   The reactor Building Foundation floor is a 10 ft thick reinforced concrete slab. The bottom elevation of the slab is minus 29' – 6" and its top elevation is minus 19'-6". There is a waterproof membrane at the bottom of the mat and extends up the outside of the exterior walls up to an Elevation of 5'-0". The concrete pedestal that supports the Containment shell is located at the center of the mat. The containment shell is a spherical in shape at the base and has a bottom elevation of 2'- 3". The height of this pedestal is 21.75 ft. The torus room completely surrounds this concrete pedestal with a floor elevation of minus 19'6" (top of mat).

   In order for ground water to reach the lowest point of the containment shell it would need to penetrate the waterproof membrane and then permeate through the 10 ft concrete mat then permeate through an the additional 21.75 ft of pedestal concrete. Since there is no waterproofing on this interior concrete pedestal, or other interior walls, any water contained or migrating in the pedestal would seek the path of least resistance and flow into the torus room. This path would be though the concrete itself or along construction joints in the pedestal. If water was able to make its way along the path outlined above, and actually reach the base of the containment shell, the torus room would be flooded.

There are sumps in the basement of the reactor building that collect any water in leakage for processing in the radwaste system. The sumps will keep any ground water in leakage into the building to a level below the water level in the sumps. There has not been any evidence of significant water permeating from the concrete interior structures. Therefore it is reasonable to conclude that groundwater cannot reach the level of the containment shell.

2. **What enhanced activities are being implemented as a result of the water discovery?**

Answer:
Several additional actions will be implemented during 1R22. Specifically:

- UT exams in the trenches in bays 5 and 17, (the current commitment involved only the 1R21 inspection)
- UT exams in the Sand bed region
- Visual inspection of the bay #5 and #17 trenches for water during a mid-cycle outage with drywell access.
- Visual inspection of the curb-to-drywell shell caulking.

Additionally, a supplemental submittal detailing additional aging management activities is being prepared as part of License Renewal. This submittal may contain additional activities required as a result of the 1R21 water discovery. The supplemental submittal will be forwarded to NRR in the next few weeks, which is consistent with their expectations.

3. **What are the results and trends from last 2 Type A tests. How will trends be used in next test?**

Answer:
The ILRT leakage has been tabulated and is attached to this document. This data will be used as in accordance with our docketed commitments in the development of the next scheduled Oyster Creek Integrated Leak Rate Test.

Note: The attached "ILRT Leakage History" document was provided to the NRC in March 2006. The next ILRT is scheduled for 1R23/October 2010.

4. **How much drywell shell UT data is available at the concrete curb-to-drywell shell interface and below?**

Answer:
During the 1R21 outage Oyster Creek performed 106 spot drywell shell UT readings at locations previously measured in 1992. These readings were located at various elevation of the drywell including: areas below the internal concrete floor at elevation 10'-3"; areas between the floor (elev. 10'-3") and the top of the curb (elev. varies from 11'-3" and 12'-3"); and areas above the curb (elev. varies from elevation 11'-3" and 12'-3").

The readings were taken from outside the drywell (in the sandbed region). Since the top elevation of the inside curb varies between 11'-3" and 12'-3", it is difficult to precisely determine the location of each point with respect to the top of the drywell internal concrete curb.

Review of the relative locations of the 106 inspection points shows approximately 26 of the inspection points lie within plus or minus 3" from the interface. Comparison of the: mean, minimum, maximum, and the difference between the 2006 and 1992 readings of 26 locations show no significant differences when accounting for the uncertainties associated with the UT measurement methods.

The complete evaluation of all of the 1R21 drywell shell UT examination points is contained in Technical Evaluation No. IR 00546049-07.

5. **Extent of condition related to debris in the concrete. Could an acidic area develop that would cause corrosion of the drywell shell?**

Answer:
During the initial evaluation of the sand bed corrosion issue in 1986, inquiries were made to the various contractors as to where and how the sand was stored plus if there were any unusual events/incidents during construction. While the location and storage method for the sand for the sand bed were identified, no unusual events were recalled.

If any acidic item was inadvertently placed in the concrete, the acidity of the item would most likely be neutralized and overwhelmed by the massive amounts of pH 12-13 concrete pore water during the mixing of the concrete. Acids and bases combine to form a neutral compound "salt" and water. There would be no corrosion concern after the concrete dried due to a lack of an electrolyte and any subsequent rewetting on the concrete would again release high pH pore water that would again most likely overwhelm any localized acidic conditions.

6. **Provide a copy of the 50.59 related to the curb-to-shell caulking.**

   Answer:
   50.59 Screening No. OC-2006-S-0379 was prepared as part of ECR 06-00879. A copy of the Screening has been forwarded to the NRC Resident by Howie Ray on 11/04/06

7. **What is the impact of the missing curb on DBA conditions? Has the missing curb been analyzed?**

   Answer:
   The removed curb was originally evaluated in 1986 when the Bay #5 and Bay #17 trenches were installed. The impact of the curb removal on the Oyster Creek design bases and analyses was again evaluated and addressed in ECR 06-00879, and the associated 50.59 Screening No. OC-2006-S-0379. These reviews concluded that the missing curb sections at the Bay #5 and Bay #17 trenches have no adverse impact.

8. **Chemical analysis of sample 2 indicates iron. Is this reflective of past/present corrosion?**

   Answer:
   The concentrations of iron (41.5 ppm Fe) and other metals (0.426 ppm Cu, 7.35 ppm Zn and 0.231 ppm Ni) in the trough water is likely due to years of concentration of typical metal corrosion products that is likely from other carbon steel sources some related and some not related to the drywell. For example, the drywell equipment drain tank this outage has deposited water, perhaps continuously, into the troughs. If this tank has any corrosion products inside, which it likely has, then it will be reflected in any sample for iron measured from the troughs. Also, in years past at Oyster Creek there have been other events in which metal products could have been transported to the troughs. The containment spray systems have been sprayed into the drywell on one or two occasions. The water from those piping systems could contain corrosion products. Other systems such as RBCCW, which run through the drywell to the chillers, also may have been leaking, carrying iron and other metal corrosion products to the drywell basement.

These troughs have not been specifically identified for cleaning during outages. Thus, it is expected that with time the concentration of iron and other metals will have increased, producing the values identified in sample #2.

Finally, it should be noted that the metal concentration in the Bay 5 trench is significantly lower (e.g., 1.60 - 1.72 ppm Fe, 0.0432 – 0.0493 ppm Cu, 136 – 235 ppm Zn, 0.0123 - 0.0132 ppm Ni) than the metal concentration in the trough water. This suggests that corrosion products are neither being transported from the trough or being significantly created in the trench water.