Citizens Exhibits 44

RAS 14361

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October 1, 2007 (10:45am)

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U.S. NUCLEAR REGULATORY COMMISSION
In the Matter of American Energy Co. LLC
Docket No. 52-0219-LR Official Exhibit No. Citizens Exh. 44
OFFERED by: Applicant/Licensee Intervenor
NRC Staff
IDENTIFIED on 9/20/07 WITHDRAWN N/A
Action taken: ADMITTED REJECTED WITHDRAWN
Reporter/Clerk DW

GPU Nuclear

Memorandum

Subject: INSPECTION OF DRYWELL SAND BED REGION AND ACCESS HOLES

Date: January 28, 1993

From: K. L. Whitmore - Civil/Structural Mgr.

Location: Morris Corp. Center 5320-93-020

To: J. C. Flynn - Manager, Special Projects, Engineering Projects

As requested by you, I conducted two visual inspections of the drywell sand bed region and several of the access holes. On December 22, 1992, I entered Bays 3, 5 and 17. From inside these bays, I could see all or portions of 1, 3, 5, 7, 15, 17 and 19. On January 21, 1993, I entered Bays 13, 15 and 17. From inside these bays, I could see all or portions of Bays 11, 13, 15, 17 and 19. At the time of the first inspection, bays 1, 3, 5, 17 and 19 had been cleaned of sand and corrosion material. No concrete repair or drywell coating had begun. At the time of the second inspection, Bays 11, 13 and 15 had been cleaned of sand and corrosion material. Primer had been placed on the floor in preparation of epoxy placement. However, no concrete repairs or drywell coating had begun in those bays. Bays 17 and 19 had been completed. The epoxy floor had been installed and the drywell had been coated. Following is a summary of my observations during these two inspections:

1. Drywell Shell
The drywell shell is sound metal with no loose material, rust or laminations. There are no apparent cracks or discontinuities. The shell is characterized by a rough surface full of dimples similar to the outside surface of a golf ball. The dimples are of varying sizes, but most are less than 1/2" in diameter. The shell appears to be relatively uniform in thickness except as noted below:

(a) Above the elevation of the bottom of the holes through the concrete shield wall for the vent pipe (approximately 6" below the vent pipe reinforcement ring to drywell shell weld), corrosion is much less than below that elevation. Therefore, there is an obvious change in thickness at this elevation.

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(b) There are two strips around the vessel just below the vent pipe holes described in (a) above which are slightly thinner than the general area of the shell. These strips have been described as "bathtub rings."

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(c) In addition to the dimples, there are spots that appear to be thinner than the general area. The dimples in the surface occur in these thin spots to the same degree as in the rest of the corroded portion of the shell. The "thin" spots are typically a foot to 18" in diameter and probably comprise about 20% of the corroded area. In general, except in Bay 13, the thin spots are not readily apparent. Therefore, a more detailed characterization is difficult for the other Bays (see (d) below). I could not determine visually which of the thin spots are the thinnest. However, due to the small differences between the "thick" areas and the "thin" areas, and the amount of metal removed in preparation for the UT measurements, it is highly likely that the thickness readings reported in the UT measurements encompass the thinnest spots in the shell.

(d) Due to the results of the thickness measurements, a more detailed visual inspection was conducted of the drywell shell in Bay 13. The conditions observed during the inspection of Bay 13 are summarized below:

- The variation in thickness is greater in Bay 13 than in the other bays.
- The "thin" spots are about a foot to 18" in diameter and are at least 1 ft. apart (edge to edge, or 2 to 2-1/2 ft. center to center). Some spots are thinner than others. Again, I could not determine precisely which spots are the thinnest. However, due to the amount of metal removed to perform the UT measurements, the reported thicknesses in all likelihood envelop the smallest thicknesses in the shell.
- The thin spots comprise abut 20% of the total area of the corroded portion of the shell. They are spread throughout the bay but are closer together (about 1 ft. apart) in the vicinity of the vent pipe and further apart toward the frames.

All of the observations discussed above apply in general to all portions of the drywell shell in the sandbed area. However, Bay 13 has a greater variation between the "thick" and "thin" areas than any of the other observed bays. In addition, the abrupt change in thickness at the elevation described in (a) above is more pronounced in Bay 13 than in other bays which were inspected. In fact, in the other bays the thin spots are not apparent unless a concerted effort is made to locate them. Due to this, a more detailed characterization is not drawn for the other bays.

After cleaning and coating, the drywell shell is sound metal with no apparent cracks, laminations, scale or rust. The surface is dimpled, but does not have severe changes in thickness which would result in significant stress risers.

2. Concrete Floor in the Sand Bed
The floor of the sand bed was found to be uneven and unfinished. A number of small and some large voids were found in the floor of the sand bed. In many places, the reinforcing bars placed to form the drainage channel in the floor are exposed. The deepest void observed in the floor is about 20" deep and about 3'-4' long. This void is located adjacent to the drywell shell. A number of smaller voids were also observed. A more complete and accurate recording of voids and exposed reinforcing is contained in MNCRs 92-188 and 93-062. The exposed reinforcing is generally sound with very little evident corrosion. The concrete in the floor is sound and no cracks are apparent.

After repair, the floor is sound, smooth and resilient. The configuration will lead to rapid draining of the sand bed should water enter the area. In addition, the slope provided will prevent water from standing adjacent to the drywell shell.

3. Concrete in Shield Wall, Frames and Access Holes
A number of small fissures, cracks and voids were observed in the drywell sand bed access holes. In addition, a number of voids and areas of exposed reinforcement were observed in the shield wall in the sand bed region. The voids in the sand bed area and access holes are documented in MNCR 93-062. The voids observed in the concrete comprise an insignificant percentage of the area of the shield walls. All voids are localized and isolated, and do not appear to be associated with any concrete cracking or spalling. All exposed concrete is sound and free of signs of degradation. Exposed bars appear to be sound and generally free of corrosion. In the areas where reinforcing is exposed, the reinforcing appears to be consistent with the reinforced concrete design drawings. No areas were observed which caused any concern with regard to structural adequacy of the shield wall, concrete frames or the Reactor Building.

This completes the record of observations from my inspection of the drywell sand bed region. If you have any questions or need additional information, please let me know.

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/rw

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