

PMLevyCOLPEm Resource

From: Habib, Donald
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To: PMLevyCOLPEm Resource
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Audit Plan

Levy Nuclear Plant Units 1 and 2 Combined License Application

Hydrogen Vent ITAAC

Purpose and Scope

The purpose of this audit is to review Westinghouse(WEC) documents pertaining to an emerging issue generic to the AP1000 design which is being addressed on combined license (COL) application for the Levy Nuclear Plant (LNP), Units 1 and 2. The issue includes the design of the passive core cooling (PXS) and the chemical volume and control (CVS) compartments in containment, which allows for venting of hydrogen through the floor at 107'-2" into the core makeup tank (CMT) room above for beyond design basis and severe accidents. Acceptance Criteria in Tier 1 Table 2.3.9-3 require the "primary openings" from these compartments, comprising 98% of the flow area, must be a minimum of 19 feet away from the containment shell and all other openings must be at least 3 feet away. WEC determined that one major hydrogen vent in the PXS-A compartment would not meet the inspections, tests, analyses, and acceptance criteria (ITAAC) for minimum distance between the vents and the containment shell. Potential hydrogen-rich, steam-lean plumes released through vents and burning in the CMT compartment could result in diffusion flames and challenging thermal loads on the containment shell. This is a combustible gas control issue, recognized when an ITAAC for the location of hydrogen igniters was evaluated.

WEC proposes to demonstrate that the current vent location and size is acceptable and to revise the ITAAC accordingly. The LNP COL applicant, Duke Energy Florida (DEF), intends to submit a departure from the AP1000 certified design and an exemption request from the AP1000 certified Tier 1 information, as discussed above.

DEF will make documents available at the WEC office in Rockville, Maryland. NRC staff may make several scheduled visits to complete the audit and may request additional documents to those identified below.

Audit Agenda

The audit will be conducted at the WEC offices in Rockville, MD. The date of the audit has been coordinated with WEC and DEF, and will begin on February 24, 2015. Additional document review times will be scheduled with WEC staff at their Rockville facility.

Background

By letter dated September 24, 2014, DEF issued a Request for Additional Information (RAI) Letter No. 121 (see ADAMS Accession No. ML14259A094). This RAI, No. 7667, requested an explanation as to how WEC intended to satisfy the existing ITAAC. The NRC staff will perform an audit of the WEC calculation packages used by DEF to formulate its RAI response.

Audit Team

The audit team will include the following NRC staff members:

- Anne-Marie Grady, NRO/DSRA/SCVB (technical reviewer)
- Don Habib, NRO/DNRL/LB4 (project manager for logistics coordination)

Location

Westinghouse Electric Company, LLC
11333 Woodglen Drive, Suite 203
Rockville, MD 20852
Telephone: 301-881-7040

Bases for Audit

- 10 CFR 52.79, "Contents of applications; technical information in final safety analysis report."
- 10 CFR 52.63, "Finality of standard design certifications."
- 10 CFR 50.12, "Specific exemptions."

Required Documentation

The staff will require access to WEC calculation packages for the hydrogen burning in the CMT compartment which could result in diffusion flames and challenging thermal loads on the containment shell. These are expected to include the following:

- CAPAL Issue ID 100079130 "Hydrogen Vent Opening Analysis"
- CAPAL Issue ID 100001197, Suggestion for Improvement, Containment Hydrogen Venting, room 11206, 19 ft. minimum requirement, ITAAC Table 2.3.09-03
- CAPAL Issue ID 100079130 "Hydrogen Vent Opening Analysis"
- APP-GW-GL-082, Revision 0, AP1000 Severe Accident Phenomenology Roadmap, September 2012, Information Only Status
- APP-SSAR-GSC-117, Revision 0, AP1000 Revised MAAP4 Parameter File and Hydrogen Mixing/Combustion Analysis, 9 Aug 2010
- APP-VLS-M3-001, Revision 4, Containment Hydrogen Control System: System Specification, 2014
- APP-VLS-M3C-007, Revision 0, draft, Thermal Analysis for Hydrogen Venting and Burning from PXS-A Compartment, 2015
- APP-GW-GEE-4786, Design Change Proposal, Re-institution of vent path removed from room 11206
- WCAP-13388, AP600 Phenomenological Evaluations Summaries, (AP600 Doc. # GW GL 025), August 7, 1992
- PRA-GSR-004, rev 1, Assessment of the Potential Impact of Diffusions Flames on the AP600 Containment Wall and Penetrations, 1997

Audit Products

Within 90 days of completing the audit, the NRC staff will generate an audit summary documenting findings from its review of the WEC calculations, including any new or remaining questions or areas requiring clarification for the Hydrogen Vent ITAAC.