NEI 13-02 FAQ Review and Industry Overall Integrated Plan Template for NRC Order EA-13-109

NRC Public Meeting

January 29, 2014

BWR OWNERS' GROUP

NEI

NUCLEAR ENERGY INSTITUTE

Agenda

- Meeting Objectives
- FAQ Reviews
  - FAQ List of Topics
  - HCVS-04: Release Point
  - HCVS-07: Source Term From SFP
  - HCVS-05: Boundary Valves
- Pilot Plant Project – Update
- Template Development Information and Key Dates
- Template Elements
- Example Template
- Open Discussion
- Follow-up

Meeting Objectives

- Feedback of the following:
  - Presented FAQ Resolution on 3 topics presented
  - Revision B3 of the OIP Template
    - Part 1, 2, 4 and 5 details and Attachment 2
  - Affirmation of OIP Template Schedule

FAQ Reviews

FAQ Number	NEI 13-02 Section	Subject
HCVS-01	4.2.2, 4.2.3	HCVS Primary Controls and Alternate Controls and Monitoring Locations
HCVS-02	4.2.3	HCVS Dedicated Equipment
HCVS-03	4.2.2, 4.2.3	HCVS Alternate Control Operating Mechanisms
HCVS-04	4.1.5	HCVS Release Point
HCVS-05	4.1.4, 4.1.6, 6.2	HCVS Functional Boundary Valves
HCVS-06	TBD	FLEX Assumptions/HCVS Generic Assumptions
HCVS-07	4.2.5	Consideration of Release from Spent Fuel Pool Anomalies
HCVS-08	TBD	HCVS Instrument Qualifications

FAQ Reviews

- HCVS-04: HCVS Release Point

  Q: What is the meaning of "release point above main plant structures" in order element 1.2. ?

  Order Reference: 1.2.2 – The HCVS shall discharge the effluent to a release point above main plant structures."

  - Buildings outside of the site's main power block should not be considered relative to the above. Administrative buildings, warehouses, and other support buildings would typically not be staffed during a BDBE unless they house an accident mitigation type emergency facility (in which case the aforementioned information should be used as stated).
  - Cooling towers, by nature of their location requirements, are situated well away from the power block such that they are not able to detrimentally affect HCVS effluent flow.
  - The Plant Stack provides an acceptable release point
  - Sites may take exception to this guidance with reasonable basis

  – Guidance addresses plants that have a single independent release pipe/vent per unit. (typically mounted onto (or emanating from) the Reactor Building, the Turbine Building, or other adjacent building convenient for the HCVS routing)

FAQ Reviews

- HCVS-04: HCVS Release Point (Cont'd)
  1. Release Point Height
     - The elevated release point should be at least 3' above the roof and related structures of the building that it emanates from. Related structures, in this case, is intended to be any appurtenances associated with the building proper (e.g., parapet walls, etc.). This is considered as reasonable based on the minimal frequency at which this system is considered to be used along with the relative buoyancy, relative temperature and potentially high flowrate of the released effluent (would tend to be minimally affected by building and structure effects). The pipe above the building is required to be seismically rugged using good engineering judgment for missile protection, such as crediting elevations greater than 30' from the nominal ground elevation.
  2. Distance from Release Point to Nearest Structure
     - Typical points of vent exit from the power block are the reactor building or turbine building. As such, this topic is intended to address distances from adjacent buildings and/or structures associated with the building the vent is emanating from (e.g., equipment housings such as for elevator equipment, tanks, etc.). The distance from the vent release point to such a structure should be at least 25' (horizontal distance). This value agrees with accepted industry practice for roof vents. The same additional basis as stated above (for Topic 1), relative to effluent release, are considered to apply in this case.

FAQ Reviews

- HCVS-04: HCVS Release Point (Cont'd)
  3. Distance and Elevation Relative to Emergency Filtration Intakes -
     - This topic is written relative to intakes for systems which may be powered up from emergency power associated with facilities used in accident mitigation (e.g., EOF/TSC filter trains, CBEAF). It should not be considered applicable to normal building (such as reactor building HVAC) intakes. A general "rule of thumb" of 1:5 zone of influence (5' of horizontal travel versus 1' of vertical drop) of the effluent from the release point. This value agrees with accepted industry practice for roof vents. For example, if a subject intake is 100' away from the release point, it should be situated such that it is at least 20' below the tip of the release point. Good engineering judgment should be applied (relative to this ratio) for such intakes located away from the power block. There is adequate assurance (considering good engineering judgment) that no appreciable intake of HCVS effluent will occur for intakes outside 100' of the vent release point that are 20' below the tip of the release point.

FAQ Reviews

- HCVS-07: Source Term From SFP

  Q: What impact of the SFP source term is required in the environmental sensitive actions for HCVS operation?

  – SFP Level is maintained above EA-12-051 Level 2 with either on-site or off-site resources such that no contribution to analyzed source term need be considered

FAQ Reviews

- HCVS-05: HCVS Functional Boundary Valves

  Q: Which valves are considered as control valves and which are boundary valves, and why?

  Q: What are the testing criteria for the various valves cited?

  – HCVS Functional Boundary Valve– Any valve which serves to isolate the HCVS from another system. Depending on the application these valves may be safety related or (potentially in limited cases) non-safety related. This category also applies to valves which isolate the vent system of one plant from that of another.
    - The most typical instance of a boundary valve such as this would be to isolate the Standby Gas Treatment System (SGTS) from the HCVS vent path (in which case such valves would be safety related).
  – HCVS Functional Control Valve– Any valve used to open the containment to the HCVS vent path such that venting may commence. This valve will also have the function of closing thereby effectively halting the venting process.

FAQ Reviews

- HCVS-05: HCVS Functional Boundary Valves (Cont'd)
  - The valves should be purchased or modified such that they are or can be qualified to operate and/or remain closed (depending on their function, either control or purely isolation) at HCVS design temperature and pressure.
    - It is understood that this may require evaluation and possible modification of existing site systems besides the HCVS itself (including Boundary Valves associated with those systems). System modifications such as flanged connections (for temporary blind flange installation) or maintenance valves may be required to facilitate leak testing.
  - PCIVs – Testing criteria for PCIVs will not change.
    - Appendix J testing requirements are based on a site-specific calculation for L_a (or Allowable Leakage) based on a number of site specific factors which include leakage of the other PCIVs associated with the containment atmosphere.
  - Isolation Valves and Control Valves (which are not listed as PCIVs) identified as HCVS Functional Boundary Valves – Testing criteria for these valves will be based on the individual site's Appendix J test criteria for PCIVs associated with the HCVS.

Template Discussion

Pilot Plant Project

Objectives and Goals

- Promote consistency of industry responses
- Identify problem areas and resolutions early in process
- Minimize quantity and scope of RAIs after OIP submittal
- Identify possible variations in plant specific implementation details
- Identify alternatives to implementation guidance

Develop OIPs that meet order requirements at reasonable cost in consideration of the expected safety benefit.

Pilot Plant Project

Plant Selection Criteria

- Select plants with expected variability for implementation details, but NOT opposite ends of the spectrum
  - BWR Mark I – Hatch identified as pilot plant
  - BWR Mark II – Nine Mile Unit 2 identified as pilot plant

Template Development Information and Key Dates

- Template Development
  - Pilot plant(s) identified – Hatch as MK I & NMP2 as MK II
  - Draft template by January 20, 2014 – Presented on Jan 15
  - Final Draft template March 15, 2014 – After Pilots
  - NEI 13-02 Revision to include template by April 15, 2014
- NRC-NEI Joint Template Meetings
  - January 15, 2014 – Complete (Draft Template & 3 FAQ)
  - January 29, 2014 – (Template Elements & FAQs)
  - February 19, 2014 (Pilot Plant Portion 1)
  - March 5, 2014 (Pilot Plant Portion 2)
- Industry Template Workshop, Tentative April 8

Template Elements

Template alternate considerations:

- Use Hybrid 050/049 Template with Order and ISG (NEI 13-02) Cross Reference
- Directly align to the ISG
  - Describe the phased approach to implementation
  - Big picture schedule statement
  - Wetwell performance objectives
    - Discuss the section 1.1 objectives of attachment 2 in order
    - Discuss the requirements in sections 4.1, 4.2 and 6.1 and appendix's F and G of NEI 13-02
  - Drywell performance objectives
  - Quality standards
  - Programmatic requirements
  - Linkage to ISE or SER

Template Items Updated

- Introduction and Cross Reference
- Grouping of Assumptions as FLEX, Generic and Site Specific.
  - Considering making an FAQ on FLEX assumptions and one on Generic to use as a reference in the template.
- Time and Environmental (Rad & Temperature) Sensitive Actions
  - Limited actions are time sensitive and all are not required in the early time frame of the event
  - Radiological and Temperature sensitive actions are after the core is uncovered and the majority are after 24 hours
- First 24 Hour Coping Detail for BDBEE Venting limited HCVS Operator Actions
- Added drills and maintenance to Part 4

Sequence of Events

Seq 1 T=	Seq 2 T=	Seq 3 T=	Action	Time Constraint Y/N	Rad/Temp Constraint Y/N	Remarks / Applicability
0 m	0 m	0 m	Extended Loss of AC Power (ELAP) occurs, drywell and wetwell hardened vents are assumed to be unavailable	N	N	Plant @100% power
<1 m	<1 m	<1 m	Reactor scrams, SRVs open and initiate low-low set, main steam line isolation valves (MSIVs) close	N	N	

Operator action constraints timeline is determined based on the following sequences:

- Sequence 1 is a FLEX run with Venting in a BDBEE without core damage.
- Sequence 2 is based on SOARCA results for a prolonged SBO (ELAP) with the loss of RCIC case without black start.
- Sequence 3 is based on SOARCA results for a prolonged SBO (ELAP) with failure of RCIC after a black start where failure occurs because of over injection.

Example Templates

Template Elements

Proposed Template with Order and ISG (NEI 13-02) Cross Reference:

- Part 1: General Integrated Plan Elements and Assumptions
- Part 2: Boundary Conditions for WW Vent with specifics about the compliance actions relative to the ISG and NEI 13-02 section 2
- Part 3: Boundary Conditions for DW Vent with specifics about the compliance actions relative to the ISG and NEI 13-02 section 3
- Part 4: Programmatic controls, Training, Drills and Maintenance elements
- Part 5: Milestone table elements
- Attachment 1: Portable Equipment
- Attachment 2: Sequence of Events Timeline
- Attachment 3: Conceptual Sketches
- Attachment 4: Failure Evaluation Table
- Attachment 5: References
- Attachment 6: Changes/Updates to this OIP

Open Discussion

Meeting Follow-up

- Industry incorporate meeting comments into next Template revision by Feb 17 to support Feb 19 meeting
- NRC to provide feedback or acceptance of the following by Feb 8 to support Feb 19 meeting:
  - FAQ Resolution on topics presented
  - Revision B3 of the OIP Template