

# Mark I and Mark II BWRs Containment Venting Systems

Guidance for Order EA-13-109  
February 19, 2014



# Agenda

- Introductions
- Opening remarks
- Schedules
- NRC presentation
- Industry presentation
- Public questions and comments
  
- Toll free number: **888-390-5220** and pass code: **95881**



## Schedule

- ISG endorsing NEI 13-02 – November 15, 2013
- Public meetings – Dec. 5, 2013, Jan. 15, and Jan. 29, 2014
- Next public meeting – March 5, 2014
- Overall Integrated plan (OIP) – June 30, 2014



# Review Process

- OIP submittals – June 30, 2014
- Pilot Plants OIP submittals-March/April 2014
- NRC staff feedback – April/May 2014
- NRC staff review and interim staff evaluations (ISEs) – December, 2014



# NRC Presentation



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Japan Lessons Learned

- HCVS-04: HCVS Release Point

The clarifications in the discussion in the slides of the previous meeting are acceptable, provided:

- the plant stack referenced is the single highest release point currently existing at the site
- appropriate references (e.g. ASHRAE, NRC documents such Reg Guides and SRPs) are included to support the discussion in the FAQ
- address the recognition that a mixing zone at the vent discharge exists where an inerted flow will mix with air, resulting in a flammable or detonable mixture and there needs to be enough free (as in not contained) area around that zone that an ignition/detonation there would not result in damage affecting the vent or to the surrounding structures.



# Staff Comments - FAQs

- HCVS-05: HCVS Functional Boundary Valves

The categorization of the valves as described in the industry slides of the previous meeting is generally acceptable. However, further clarification is needed regarding on allowable leakage criteria. For instance, if the PCIVs are open and the control valve is closed, what would be the acceptable leakage criteria for all the boundary valves and the control valve combined? Will it be the Appendix J test acceptance criteria for the PCIVs alone or is it more?



## Staff Comments - FAQs

- HCVS-07: Source Term from SFP

Item requires further information and clarification. Staff believes that if any HCVS equipment is located in an area that could be impacted by source term from either SFP or reactor severe accident, the governing source term should be the higher of the two.





# OIP Template

- Page 3 of 49:

First section starting with Extent to which: When NEI 13-02 provides for alternative methods (e.g. option to design for detonation or for maintaining inert conditions), the plan should describe the alternative being implemented. This would not be an alternative to the guidance, but needs to be clear elsewhere in the plan content.



# OIP Template

- Page 4 of 29:

Denote that applicable EA-13-109 generic assumptions only apply to Phase1

Bullet starting “Routinely performed ---. Might be better stated something like “a limited number of quickly and easily performed.” There are significant duration and complicated operator actions performed routinely. The concept is minimal operator burden, high likelihood of successful performance in short time span to support a conclusion of “reliable” hardened venting capability. When would the operators perform the load stripping and control switch manipulation, etc.? Who would perform these actions, the operators stationed at the site or responders under EA-12-049? This discussion, along with the time line to complete these actions should be included in FAQ HCVS-02.

Bullet starting with “Use of—: What is meant by “plant conditions”, is it same as “environmental conditions” mentioned in the following sentence.



# OIP Template

- Page 5 of 29, Discussion of time constraints:

First bullet: Sentence starting with “Critical HCVS controls”, it should be all HCVS controls, not just critical controls. All instruments associated with HCVS should have 24 hour capability within the constraints of the discussion in this section regarding DC battery.

Second bullet: Significant overlap between nitrogen bottles, nitrogen tank, and the accumulators referenced in the first bullet. Please ensure consistency.



# OIP Template

- Page 6 of 29, Primary Action 2:

The “remote panel” containing PCIV interlocks, is it the remote panel for HCVS or some other panel? If it is some other panel, where is it located? Essentially, primary actions 1 and 2 never came up during the guidance development. Staff believed that the vent system can be started (opened) straight from the HCVS panel with no other operator actions required. The need for installing the electrical jumpers in the MCR panels was discussed in the last meeting. If jumpers are required at other places, include a discussion on where they are, who performs these tasks and include it under the justification for FAQ HCVS-02.



# OIP Template

- Page 9 of 29

Items 4, 6, and 2<sup>nd</sup> paragraph under Unintended Cross Flow of

Vented Fluids:

The discussion should provide clarity on which vent valves in the HCVS will be provided with redundant SOVs and that the initial 24 hour power requirement is same for both the SOVs.



# General Comment

A significant number of places throughout the OIP template, NEI 13-02 is referenced as a strategy. Order EA-13-109 requires implementation of a severe accident capable vent. The interim staff guidance (JLD-ISG-2103-02) endorses the compliance approach in NEI 13-02, with clarifications. HCVS is a tool that can be used in strategies such as Order EA-12-049 and future severe accident strategies that are yet to be determined. Staff has maintained many a times that EA-13-109 and the ISG is not a strategy and that they represent clearly defined requirements for severe accident venting capability, while acknowledging the vent can be used during pre-core melt (as a mitigation strategy) and during severe accidents (potentially as a filtration strategy that is yet to be determined under the rulemaking). The vent can be used under the current EPGs/SAGs and any future revisions of the EPGs/SAGs. The staff believes that this distinction should be made clear in the OIP template.



# Staff Comments - I&C

- Page 7 of 29 - **Monitoring of HCVS (Order Elements 1.1.4, 1.2.8, 1.2.9/ISG 4.1.3, 4.2.2, 4.2.4, and Appendix F/G)**: Order elements states 4.2.4 for I&C monitoring HCVS operation and effluence. Would it be prudent to mention 4.2.4 as part of the “Power and Pneumatic Supply Sources” for the section above? Power for an instrument will require the intrinsically safe equipment installed as part of the power sourcing.
- In general: Do we want missile impact as per Order EA-12-51, “To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation?”



# Staff Comments - I&C

- Page 8 of 29 - **Power and Pneumatic Supply Sources (#1)**
  - Is it AC or DC powered SOVs for the valve control?
  - **(#1 Cont.)** How much are we crediting for the 24 hour Flex supply?
  - **(#1 Cont.)** *“The AOVs do not require torque switches or **limit switches**.” Don’t we need *limit switches for valve position feedback? What about the DC SOVs?* Note that on page 10 of 29 - **Monitoring of HCVS** talks to monitoring valve position indication, thus using limit switches.*
- Page 9 of 29 - **Location of Control Panels**: Should be concerned with mounting for seismic?





# Staff Comments - I&C

- Page 9 of 29 (Con't) - **Unintended Cross Flow of Vented Fluids:** The second bullet under {Response if “shared” containment isolation valves are used} sounds similar to the option above called {Response if “shared” containment isolation valves are used} where the dedicated containment isolation valves are used. Can we get further breakdown of the difference with a better description?
- Page 10 of 29 - **Monitoring of HCVS** : “\* The specific qualification method used for each required HCVS instrument will be reported in future 6 month status reports.”  
Is the monitoring specifically set for 6 months?
  - Does this include accuracy monitoring and testing? How is this coupled with Page 20 of 29 for the “Procedures” for the bullet item on instrumentation availability?
  - Should not the selection of the instrumentation include history so there is a way to ensure reliability?



# Staff Comments - I&C

- Page 21 of 29 - **Describe maintenance plan:** Should calibration of instruments be included in this section?



# Industry Presentation



# Questions & Discussion

