

HCVS Guidance Inquiry Form

A. TOPIC: HCVS Primary and Alternate Controls and Monitoring locations Inq. No.: HCVS-01

Source document: NEI 13-02 Sections: Order EA-13-109, Element 1.2.4, 1.2.5, 1.2.6, NEI 13-02 Section 4.2.2 and 4.2.3

B. DESCRIPTION:

What radiological and thermal conditions have to be considered in the design and location of the Primary (1.2.4) and Alternate (1.2.5) Controls locations?

Order Element 1.2.4 states, "The HCVS shall be designed to be manually operated during sustained operations from a control panel located in the main control room or a remote but readily accessible location."

Order Element 1.2.5 states, "The HCVS shall, in addition to meeting the requirements of 1.2.4, be capable of manual operation (e.g., reach-rod with hand wheel or manual operation of pneumatic supply valves from a shielded location), which is accessible to plant operators during sustained operations."

C. PROPOSED ANSWER (Include additional pages if necessary. Total pages: 2)

Primary and/or Alternate Control locations located in the Main Control Room are readily accessible locations with no further evaluation required since only radiation dose is a concern for this order. Hot contamination. Not having power for MCR ventilation is not a factor. Thus no evaluation is required for use of the MCR as the preferred location because the MCR is designed to conform to GDC 19/Alternate Source Term (AST) for radiation shielding considerations. In addition, adequate protective clothing is available near the MCR if required to address contamination issues.

Primary and/or Alternate Control locations located outside the main control room must be determined to be readily accessible locations by performing an evaluation that includes:

- Accessibility
- Habitability
- Staffing sufficiency
- Communication capability with vent use decision makers

When evaluating accessibility and habitability of control locations outside the Control Room, consider the following:

Environmental Conditions:

Thermal Considerations: (Response support Order Elements 1.1.2 and 1.1.4):

- Temperature and heat load that exist from operation of the HCVS system
- Temperature and heat load that exist due to proximity to the undercooled containment including under severe accident conditions.
- Temperature and heat load that exists due to the ELAP condition (loss of ventilation) provided that no means of ventilation is provided by the FLEX mitigating measures after the first 24 hours
- Thermal impact to the Spent Fuel Pool Area caused by the ELAP condition

Radiological Considerations: (Response support Order Elements 1.1.3)

- Radiological conditions that exist from operation of the HCVS system

The specific event progression that leads to the Severe Accident is NOT specified and does not have to include source

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terms from loss of Spent Fuel Pool Cooling as this would presume that the event progression that leads to the Severe Accident also prevents or causes the mitigating measures for loss of Spent Fuel Pool Cooling to fail. Order element 1.1.3 does discuss the requirement to consider the dose and radiological conditions caused by operation of the HCVS system but not failure of Mitigating systems related to Spent Fuel Pool Cooling.

Operator conditions: This would be governed by the above environmental conditions. Temperature conditions should be such that occupancy stay times consistent with the time to conduct HCVS operation and monitoring (instrumentation controls and displays) functions from the primary and/or alternate locations.

Communication capability does not necessarily have to be direct between the operator performing the HCVS operations and the decision maker but must be reliable and accessible while HCVS operation is required.

Time frame:

Time frames are typically associated with pre and post 24 hour actions as illustrated in Order element 1.2.6, which states: "The HCVS shall be capable of operating with dedicated and permanently installed equipment for at least 24 hours following the loss of normal power or loss of normal pneumatic supplies to air operated components during an extended loss of AC power."

This means that with minimal operator action the equipment should be capable of operating in the thermal and radiological environment for at least 24 hours. Other provisions of NEI-13-02 such as the definition of "Sustained Operations" extend this time but do NOT preclude mitigating measures from FLEX or offsite support for reduction of thermal impacts (e.g. portable fans, AC power for ventilation, possible cooling water supplies to the area coolers if part of the FLEX mitigating measures). The restriction on permanently installed equipment only exists for the 24 hour period to ensure HCVS functionality for at least a 24 hour mission time without significant operator action to maintain functionality. See FAQ HCVS-02 on Order Element 1.2.6 use of "dedicated equipment". This time frame concept may be applied to operator accessibility and habitability for primary control locations outside of the control room. The HCVS OIP should include the actions relied upon for HCVS initiation and if the actions are coming from some other guidance such as FLEX, provide a cross reference to where the information can be found.

Radiological conditions will also vary with the source term over time and could either drop or rise depending on deposition of source term in the HCVS system and vent system use. This will have to be accounted for over the time frame during which the HCVS system is being used. The definition of "sustained operation" prescribes this time frame based on when other containment cooling measures are put in place and when HCVS system operation ceases.

D. RESOLUTION: (Include additional pages if necessary. Total pages: _____)

Revision: 0 Date: _____

E. NRC Review:

Not Necessary _____ Interpretation X Agency Position _____
Explanation: _____

F. Industry Approval:

Documentation Method: _____ FAQ _____ Date: _____

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