

Basis for Order to Perform Adequate Inspection of CRDM Nozzles for SCC

1. Review of the bulletin responses has focused regulatory responses into two areas:

for plants that have detected the degradation but won't do adequate inspections to find flaws before they produce "pressure boundary leakage" - - use enforcement on the basis of 10CFR50 Appendix B Criterion 16 (preventing recurrence)

for plants that do not agree to do an inspection that is sufficient to determine if the degradation mechanism is active at that plant - - use order based on lack of "reasonable assurance of adequate protection"

2. Use procedures in RIS 2001-002 "Guidance on Risk-Informed Decisionmaking in License Amendment Reviews" to initiate "adequate protection" consideration. This process addresses situations with a "special circumstance" that could rebut the presumption that compliance with our regulations provides adequate protection of public health and safety.

3. The current regulation requires inspections to be performed in accordance with ASME Code requirements, which allow visual inspection without removing insulation around the potentially leaking nozzles. This requirement is inadequate to detect the subject degradation because it cannot detect the amount of leakage that is expected to occur before CRDM housing failure and LOCA results. So, a "special circumstance" exists with respect to this issue.

4. RIS 2001-002 process is to assess RG 1.174 safety principles:

- a. meets current regulations - - yes (but "special circumstances make those regulations inadequate)
- b. consistent with "defense-in-depth philosophy" - - no if margin against burst is not maintained (reduces number of barriers)
- c. maintains sufficient margin - - no (allows pressure boundary leakage to remain undetected and minimum wall thickness to be violated)
- d. increase in core damage frequency should be small - - no (Without adequate inspection, increase in CDF *could* reach the CCDP for medium/small LOCA, nominally 5E-3/RY, without detection. This is well above RG 1.174 guidance value of 1E-5/RY for CDF increments that would be considered only when total CDF is shown to be below 1E-4/RY.)
- e. the basis for the risk estimate should be monitored using performance measurement strategies - - no (The basis for any licensee analyses that show risk levels below RG 1.174 numerical guidelines are based on assumptions that cannot be verified without performing the inspections that are the subject of the order being contemplated.)

5. So, the principles are not satisfied, which requires the staff to find a basis for reasonable assurance of adequate protection or [take appropriate steps to achieve it].

6. The GDCs provide the Commission's perspective on the factors that are sufficient to achieve "adequate protection." Three GDCs are relevant to this case. GDC 14 states that "The reactor coolant pressure boundary shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage or rapidly propagating failure, and of gross

rupture." Criterion 30 states that "Means shall be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage." Criterion 32 states that "Components of the reactor coolant pressure boundary shall be designed to permit (1) periodic inspection and testing of important areas and features to assess their structural integrity and leaktight integrity, and (2) an appropriate material surveillance program for the reactor pressure vessel."

7. Clearly, failure to inspect a portion of the reactor vessel in a manner that is sufficient to detect the extent of degradation caused by a mechanism known to be degrading other plants in that portion of the vessel is inconsistent with these GDCs. The level of degradation that has been found in other plants, if left undetected and uncorrected, would result in a gross failure of the reactor coolant pressure boundary. On that basis, the staff does not have reasonable assurance that adequate protection is achieved by plants that do not perform inspections that are sufficient to detect this type of degradation.