

From: Allen Hiser *NRR*
To: CRDM Reviewers
Date: Tue, Sep 18, 2001 7:53 AM
Subject: SUMMARY OF STAFF REVIEW OF BULLETIN RESPONSES

The attached file summarizes staff preliminary evaluation of Bulletin 2001-01 responses for high susceptibility, along with detailed summaries of the responses for all plants.

This will come in handy at 9 AM.

Allen

CC: Farouk Eltawila; Jack Strosnider

E-9

PRELIMINARY EVALUATION OF BULLETIN 2001-01 RESPONSES FOR HIGH SUSCEPTIBILITY PLANTS (9/18)

Staff's Technical Assumptions Used in the Evaluation

1. It is assumed that the critical crack size is 330° for nozzle failure (tensile overload of the remaining cross-section).
2. The initial flaw size assumed is a 165° through-wall flaw, with no visible evidence of leakage found at the previous visual examination (with 1 gallon per year leak rate as found at Oconee).
3. The crack growth rate is assumed to be 165° in 1 year, a conservative interpretation of the Oconee Unit 3 findings and not considering either stress relaxation or redistribution.

Therefore, the critical crack size can be reached within 1 year of operation.

Staff's Preliminary Evaluation of Bulletin Responses

Oconee Unit 3 has proposed performance of a qualified visual in November 2001, not a more appropriate volumetric examination. A qualified visual examination may not be sufficient since cracks have already been identified at this site and the purpose of this inspection is to monitor the extent of the cracking for this known degradation mechanism and not to identify the existence of the mechanism.

Oconee Units 1 and 2 and **ANO Unit 1** have proposed the performance of qualified visual examinations in 2002, spring for Oconee Unit 1 and fall for the other two units. Delaying performance of inspections until 2002 may not be acceptable, as described under assumptions. In addition, a qualified visual examination may not be sufficient, as described above for Oconee Unit 3.

D.C. Cook Unit 2 and **North Anna Unit 1** have committed to perform eddy current testing of 100% of CRDM nozzles on the J-groove welds, and both the inner and outer diameters (below the weld) of the nozzle base material. They have also committed to performing visual examinations of the RPV heads (effective visual for North Anna Unit 1 and remote visual for D.C. Cook Unit 2). The staff has determined that the licensees' commitments to perform eddy current testing are acceptable alternatives to the qualified visual examination described in the bulletin (the licensees could undertake qualification of their visual examinations after completion of the inspections).

H. B. Robinson Unit 2 and **Davis Besse** have committed to perform qualified visual examinations of the CRDM nozzles in 2002. Delaying performance of inspections until 2002 may not be acceptable, as described under assumptions.

North Anna Unit 2 and **Surry Units 1 and 2** have committed to perform effective visual examinations in lieu of the qualified visual examination described in the bulletin. However, an effective visual examination is not an acceptable alternative since no previous inspections of any type have been performed on the reactor vessel head penetrations of these plants. In addition, North Anna Unit 2 and Surry Unit 2 propose to delay their examinations until 2002. Delaying performance of inspections until 2002 may not be acceptable, as described under assumptions.

TMI Unit 1 has proposed to perform a qualified visual examination in October 2001. This is consistent with the Bulletin and, therefore, is acceptable.

PRELIMINARY SUMMARY OF BULLETIN RESPONSES FOR HIGH SUSCEPTIBILITY PLANTS (9/13)

Plant Name	Next RFO	Bin #	Inspection Plans	Licensee's Basis for Plans	Staff Comments on Licensee Plans and Basis
Oconee 1	3/02	1	Qualified visual - 3/02	Volumetric examination by 1/02 not necessary due to prior efforts - PRA justification	Staff questions/issues regarding the technical basis and no volumetric examination. Also, timing issues.
Oconee 2	[REDACTED]	1	Qualified visual - [REDACTED]	Volumetric examination by 1/02 not necessary due to prior efforts - PRA justification	Staff questions/issues regarding the technical basis and no volumetric examination. Also, timing issues.
Oconee 3	11/01	1	Qualified visual - 11/01	No qualified volumetric method available - PRA justification	Staff questions/issues regarding the technical basis and no volumetric examination.
ANO 1	[REDACTED]	1	Qualified visual - [REDACTED]	No circ. cracks expected based on experience, limited PRA justification - investigating mitigation method (weld overlay to wetted surface)	Staff questions/issues regarding the technical basis and no volumetric examination. Also, timing issues.
DC Cook 2	11/01	1	Eddy current & remote visual - 11/01	(Consistent with the Bulletin)	Proposed eddy current testing appears acceptable. Visual examination is not qualified per bulletin.
North Anna 1	9/01	2	Eddy current & effective visual - 9/01	(Consistent with the Bulletin)	Proposed eddy current testing appears acceptable. Visual examination is not qualified per bulletin.
Robinson 2	[REDACTED]	2	Qualified visual - [REDACTED]	Prior effective visual examinations provides assurance of continuing integrity during current cycle	Issues with inspection timing. Limited technical basis provided. Employed a regulatory argument.
Davis-Besse	4/02	2	Qualified visual - 4/02	Plant is "at least 3.1 EPFY" from ONS-3, which was ~4 years from a critical flaw size.	Issues with inspection timing. Technical basis is inadequate. Employed a regulatory argument.
Surry 1	10/01	2	Effective visual - 11/01	Will remain in compliance - action could be supplemented by North Anna 1 results	Effective visual examination not adequate. No technical basis provided. Employed a regulatory argument.
North Anna 2	[REDACTED]	2	Effective visual - [REDACTED]	Will remain in compliance - action could be supplemented by North Anna 1 results	Effective visual examination not adequate. Timing issues. No technical basis provided. Employed a regulatory argument.
Surry 2	3/02	2	Effective visual - 3/02	Will remain in compliance - action could be supplemented by North Anna 1 results	Effective visual examination not adequate. Timing issues. No technical basis provided. Employed a regulatory argument.
TMI 1	10/01	2	Qualified visual - 10/01	(Consistent with the Bulletin)	Proposed examination appears acceptable. Discussion of VT-3 inconsistent with other licensees VT-2.

PLANTS HAVING MODERATE SUSCEPTIBILITY TO PWSCC
(Susceptibility Ranking Between 5 and 30 EPFY from the ONS3 Condition)

[Bulletin Suggests Effective Visual Examination at Next RFO]

Plant	Proposed Future Inspections
Arkansas Nuclear One, Unit 2	Surface w/NDE
Beaver Valley, Units 1 & 2	Effective Visual
Calvert Cliffs, Units 1 & 2	Effective Visual or Qual. Volumetric or Wetted Surface
Crystal River 3	Effective Visual
Diablo Canyon, Units 1 & 2	Effective Visual
Fort Calhoun	Not Specified
Ginna	Not Specified
Indian Point 2	Not Specified
Indian Point 3	IAW GL 88-05/97-01 + enhancements
J.M. Farley, Units 1 & 2	Unit 1 - Eff. Visual Unit 2 - NDE (TBD)
Kewaunee	Effective Visual
Millstone, Unit 2	Visual
Palo Verde, Units 1, 2, & 3	Volumetric (delayed schedule)
Point Beach, Units 1 & 2	Effective Visual
Prairie Island Units 1 & 2	Effective Visual
Salem, Units 1 & 2	Effective Visual
San Onofre, Units 2 & 3	Effective Visual or Qual. Volumetric or Wetted Surface
St. Lucie, Units 1 & 2	Effective Visual
Turkey Point, Units 3 & 4	Effective Visual
Waterford 3	Effective Visual

PLANTS HAVING LOW SUSCEPTIBILITY TO PWSCC
(Susceptibility Ranking Greater than 30 EFPY from the ONS3 Condition)

Plant	Proposed Future Inspections
Braidwood, Units 1 & 2	IAW GL 88-05
Byron, Units 1 & 2	IAW GL 88-05
Callaway	Not Specified
Catawba, Units 1 & 2	Not Specified
Comanche Peak, Unit 1 & 2	Not Specified
D.C. Cook, Unit 1	Remote Visual
McGuire, Units 1 & 2	Not Specified
Millstone, Unit 3	Visual
Palisades	IAW GL 88-05
Seabrook	Not Specified
Sequoyah, Units 1 & 2	Visual
Shearon Harris 1	IAW GL 88-05
South Texas Project, Units 1 & 2	Not Specified
V.C. Summer	Not Specified
Vogtle, Units 1 & 2	Visual
Watts Bar, Unit 1	Not Specified
Wolf Creek 1	Not Specified