From: Douglas Pickett NRR
To: DB Daily Call; DB0350
Date: 5/28/02 7:53AM
Subject: Davis-Besse Tele-Conference 2:00 p.m. Today

We will be having a telecon with the Davis-Besse licensee at 2:00 p.m. EST today. I have reserved room 9B4 for headquarters personnel. We will use the usual conference bridge number of either 301-231-5539 or 800-638-8081 with passcode [redacted]

Ex 2

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First Energy
D. Pickett, NRR

From: <mkleisure@firstenergycorp.com>
To: <dvp1@nrc.gov>
Date: 5/24/02 11:59AM
Subject: Sample Plan Phase 3

Doug-
Attached is Sample Plan Phase 3, revised to incorporate the NRR comments emailed on May 14. Also attached is an updated copy of the quarantine list. We plan to include a discussion of the sample plan on the agenda for the 2pm conference call on May 28.
(See attached file: Sample Phase 3.doc)(See attached file: Quarantine List 052302.doc)

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Davis-Besse Reactor Head Sample Characterization

Phase 3

Sample Analyses

Analyses are proposed to be performed on the following Sample IDs. See the attached inventory for further details on each of the samples.

Sample ID
Nozzle 3
Nozzle 2
Nozzle 3 corrosion area

The following analyses will be performed for characterization of these three Sample IDs:

1. Visual/Stereovisual Inspections and Dimensional Measurements

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NOTE

Either a visible dye penetrant test or a fluorescent penetrant test may be performed on selected areas on some pieces (e.g., Nozzle 3, weld, cladding, low alloy steel), either before sectioning or after sectioning, if the stereovisual inspections are not successful in locating cracks in the samples. If performed, the results of the applied penetrant test will serve as the basis for the section plan to obtain specimens for metallurgical examination.

(a) For all three Sample IDs, color digital photographs will be taken at low magnifications to document the as-received condition. Detailed visual inspections will then be performed under the stereomicroscope at magnifications up to 50X to characterize any salient features. Representative color digital photographs will be taken at magnification to document significant findings.

HOLD POINT

Prior to proceeding with sectioning or other destructive testing, the current status will be discussed with the NRC staff.

(b) After sectioning to expose the corroded area, dimensional measurements will be taken of the Nozzle 3 corrosion area sample to determine the remaining stainless steel cladding thickness. A detailed map of the cladding thickness will be made using two opposing

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dial indicators, with measurements taken in a 0.5" grid pattern (approximately 175 total readings).

(c) A non-shrink molding compound will be used to create an impression of the Nozzle 3 corrosion area. The resulting mold will be used to obtain accurate dimensional measurements and other characteristics of the corroded area, including the footprint of the exposed stainless steel cladding and the elevation profile of the cladding in the corroded area.

2. Optical Metallography

HOLD POINT

Sample selections will be based on the results of Step 1. Prior to proceeding with sample sectioning, the current status will be discussed with the NRC staff.

Samples from Nozzles 2 and 3 will be removed for metallurgical analysis and to characterize crack morphology (if any cracks are identified), material microstructure, grain size, grain boundary carbide precipitation, and evidence of cold work (surface or interior). Samples from the low alloy steel and cladding of the Nozzle 3 corrosion area will be removed for metallurgical analysis and to characterize crack morphology (if any cracks are identified), pitting, and cladding thickness. Approximately 12 metallographic mounts are planned for analyses.

3. Scanning Electron Microscopy and Energy Dispersive Spectroscopy

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HOLD POINT

Sample selections will be based on the results of Step 1. Prior to proceeding with sample sectioning, the current status will be discussed with the NRC staff.

Samples from the low alloy steel and cladding of the Nozzle 3 corrosion area will be removed for Scanning Electron Microscopy (SEM) to characterize the corrosion surface due to boric acid attack. Samples from the Nozzles, J-groove welds, and opened crack surface (if any cracks are identified) will be removed for SEM to characterize microstructural features (carbide distribution) and crack surface morphology. The Energy Dispersive Spectroscopy (EDS) attachment on the SEM will be used to semi-quantitatively determine the base metal chemistry of the various samples. Approximately 12 samples are planned for analyses.

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4. Microhardness Tests

Knoop microhardness tests will be performed on mounted and polished samples. These tests will be performed in accordance with ASTM E 384. Ten readings per metallographic mount are planned.

Control of Samples

Nozzle 3 has been previously removed from the reactor head and is currently in the custody of Framatome-ANP (F-ANP) in Lynchburg, VA. Nozzle 2 has also been removed from the reactor head and is currently located in the maintenance hot shop at Davis-Besse. The Nozzle 3 corrosion area sample has also been removed from the reactor head and is currently located in the maintenance hot shop at Davis-Besse. Nozzle 2 and the Nozzle 3 corrosion area will be sent to F-ANP. F-ANP will then be responsible for transportation of the samples to the vendor laboratory in Lynchburg, Virginia.

Traceability of the Sample IDs, and any samples removed from these Sample IDs, will be maintained. Each sample will be identified either by a sample identification on the sample itself or a sample identification on a container or a plastic bag. Only one sample will be allowed in a container or in a plastic bag. The inventory of the samples and the specific location of each sample will be documented in a project logbook maintained by the vendor test facility.

HOLD POINT

Prior to proceeding with the disposal of samples, the current status will be discussed with the NRC staff.

No samples or materials will be disposed of without FENOC authorization. Samples will be retained until released from quarantine.

Schedule

It is estimated that the base work scope can be completed within approximately two weeks of receipt of the samples at the vendor laboratory. A final report will be provided to FENOC approximately four weeks following completion of the laboratory work. This report will provide a detailed description of the material samples , a detailed description of the analytical techniques utilized, and the results.

	Inventory of Root Cause Investigation Samples Quarantine List					Revision Date: 5/23/2002
Sample ID	**Sample Description**	**Date Taken**	**Present Location**	**Responsible Persons**	**Analysis Requested**	**Results or Present Status**
			No External Analysis Required			
Dental impression Nozzle 2	Dental impression of Nozzle 2 RPV head penetration area	4/3/2002	Davis-Besse maintenance hot shop	Mark McLaughlin, DB; Todd Pleune, DB	Visual Measurement	Visual Measurements incorporated into Root Cause Report
			Phase 1 Samples			
N2 to N1 (Sample #1)	3.1 g of Rusty Boric Acid - Between nozzles 2 and 1	3/14/2002	Kinectrics, Ontario, CA	Beverly Cyrus, FANP; Todd Pleune, DB	Elemental analysis by ICP, X-ray diffraction, Ion Chromotography	Testing complete, report being prepared
N1 to N3 (Sample #2)	0.55 g of Rusty Boric Acid - Between nozzles 1 and 3	3/14/2002	Kinectrics, Ontario, CA	Beverly Cyrus, FANP; Todd Pleune, DB	Elemental analysis by ICP, X-ray diffraction, Ion Chromotography	Testing complete, report being prepared
N7 (Sample #3)	3.7 g of Rusty Boric Acid - Near nozzle 7	3/14/2002	Kinectrics, Ontario, CA	Beverly Cyrus, FANP; Todd Pleune, DB	Elemental analysis by ICP, X-ray diffraction, Ion Chromotography	Testing complete, report being prepared
N2 (Sample #4)	12.3 g of Rusty Boric Acid - Near nozzle 2	3/14/2002	Kinectrics, Ontario, CA	Beverly Cyrus, FANP; Todd Pleune, DB	Elemental analysis by ICP, X-ray diffraction, Ion Chromotography	Testing complete, report being prepared
Nozzle 3 Deposits	Rusty deposits scraped from the top of nozzle 3; very light and porous; easily removed from the nozzle surface with a metal spatula	4/2/2002	Kinectrics, Ontario, CA	Beverly Cyrus, FANP; Todd Pleune, DB	Elemental analysis by ICP, X-ray diffraction, Ion Chromotography	Testing complete, report being prepared
			Phase 2 Samples			
Step 2 nozzle 2	2.1g Material that fell into the collection cup during removal of nozzle two	4/2/2002	Framatome ANP Special Equipment Refurbishment Facility -4 (SERF-4)	Beverly Cyrus, FANP; Todd Pleune, DB	Elemental analysis by ICP, X-ray diffraction, Ion Chromotography	Testing ongoing at Kinectrics in Ontario

Step 5 nozzle 2	0.35 g Loose deposits from the RV head penetration area	4/3/2002	Framatome ANP Special Equipment Refurbishment Facility -4 (SERF-4)	Beverly Cyrus, FANP; Todd Pleune, DB	Elemental analysis by ICP, X-ray diffraction, Ion Chromotography	Testing ongoing at Kinectrics in Ontario
Step 6 nozzle 2	0.5 g Tightly adherent deposits in the RV head penetration area	4/3/2002	Framatome ANP Special Equipment Refurbishment Facility -4 (SERF-4)	Beverly Cyrus, FANP; Todd Pleune, DB	Elemental analysis by ICP, X-ray diffraction, Ion Chromotography	Testing ongoing at Kinectrics in Ontario
Step 7 nozzle 2	0.23 g Deposits from RPV head penetration cleaning with nylon brushes	4/3/2002	Framatome ANP Special Equipment Refurbishment Facility -4 (SERF-4)	Beverly Cyrus, FANP; Todd Pleune, DB	Elemental analysis by ICP, X-ray diffraction, Ion Chromotography	Testing ongoing at Kinectrics in Ontario
Samples for Future Phases						
Nozzle 3	Nozzle 3 from the CRDM flange to the top of the j-groove weld	3/9/2002	Framatome ANP Special Equipment Refurbishment Facility -4 (SERF-4)	Hongqing Xu, FANP; Todd Pleune, DB	Visual-Stereo Inspection & Measurement, Metallography, SEM-EDS, and others	Analysis will begin after when other two (below) samples arrive
Nozzle 2	Nozzle 2 from the CRDM flange to the top of the j-groove weld	4/2/2002	Davis-Besse maintenance hot shop	Hongqing Xu, FANP; Todd Pleune, DB	Visual-Stereo Inspection & Measurement, Metallography, SEM-EDS, and others	Preparations for shipping (next week) to Framatome ANP are ongoing
Nozzle 3 corrosion area	Cutout of corrosion area adjacent to nozzle 3	5/13/02	Davis-Besse maintenance hot shop	Hongqing Xu, FANP; Todd Pleune, DB	Many anlysis including Visual Inspection & Measurement and Metallography	Preparations for shipping (next week) to Framatome ANP are ongoing
For tracking purposes only – Samples that are not part of Confirmatory Action Letter 3-02-001 Quarantine List for root cause but will be stored and maintained in the quarantine area for possible future analysis						
Nozzle 11	Nozzle 11 from the CRDM flange to the top of the j-groove weld	4/6/2002	Davis-Besse maintenance hot shop	Mark McLaughlin, DB	None planned	Stored in the event that EPRI or the NRC would like to analyze properties in the future
Nozzle 46	Nozzle 46 from the CRDM flange to the top of the j-groove weld	Not Planned to be removed	Davis-Besse RPV head in CTMT	Mark McLaughlin, DB	None planned	Awaiting repair