February 25, 2004

Mr. R. T. Ridenoure
Division Manager - Nuclear Operations
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
Post Office Box 550
Fort Calhoun, NE 68023-0550

SUBJECT: FORT CALHOUN STATION, UNIT NO. 1 - 2003 STEAM GENERATOR INSPECTION CONFERENCE CALL SUMMARY (TAC NO. MC0266)

Dear Mr. Ridenoure:

By letter dated September 17, 2003, the staff requested that a teleconference be scheduled when approximately 75 percent of the 2003 steam generator tube inservice inspection is completed. The enclosure to this letter was a list of 17 questions to be used as discussion points for this call. On August 29, 2003, and October 2, 2003, the NRC staff participated in conference calls with Omaha Public Power District (OPPD) representatives regarding the 2003 steam generator (SG) tube inspection activities at the Fort Calhoun Station, Unit 1 (FCS). Enclosed are (1) the staff's summary of these two calls, (2) the written material provided by OPPD in support of these calls, and (3) information provided by OPPD in response to the October 2, 2003, telecon.

If you have any questions or comments regarding this summary, please call me at (301) 415-1445.

Sincerely,

/RA/

Alan B. Wang, Project Manager, Section 2
Project Directorate
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosures: 1. Summary
2. Information Provided by OPPD
3. Information Provided by OPPD in Response to 10/2/03 Telecon

cc w/encls: See next page

February 25, 2004

Mr. R. T. Ridenoure
Division Manager - Nuclear Operations
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
Post Office Box 550
Fort Calhoun, NE 68023-0550

SUBJECT: FORT CALHOUN STATION, UNIT NO. 1 - 2003 STEAM GENERATOR INSPECTION CONFERENCE CALL SUMMARY (TAC NO. MC0266)

Dear Mr. Ridenoure:

By letter dated September 17, 2003, the staff requested that a teleconference be scheduled when approximately 75 percent of the 2003 steam generator tube inservice inspection is completed. The enclosure to this letter was a list of 17 questions to be used as discussion points for this call. On August 29, 2003, and October 2, 2003, the NRC staff participated in conference calls with Omaha Public Power District (OPPD) representatives regarding the 2003 steam generator (SG) tube inspection activities at the Fort Calhoun Station, Unit 1 (FCS). Enclosed are (1) the staff's summary of these two calls, (2) the written material provided by OPPD in support of these calls, and (3) information provided by OPPD in response to the October 2, 2003, telecon.

If you have any questions or comments regarding this summary, please call me at (301) 415-1445.

Sincerely,
/RA/
Alan B. Wang, Project Manager, Section 2
Project Directorate
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosures:
1. Summary
2. Information Provided by OPPD
3. Information Provided by OPPD in Response to 10/2/03 Telecon

cc w/encls: See next page

<u>DISTRIBUTION</u>:
PUBLIC
PDIV-2 Reading
RidsNrrDlpmLpdiv (HBerkow)
RidsNrrPMAWang
RidsNrrLAEPeyton
RidsOgcRp
RidsAcrsAcnwMailCenter
RidsRegionIVMailCenter (CMarschall, KKennedy)
MMurphy
KKarwoski

ACCESSION NO.: ML040580502

OFFICE	PDIV-2/PM	PDIV-2/LA	PDIV-2/SC
NAME	AWang	EPeyton	SDembek
DATE	2/20/04	2/19/04	2/20/04

OFFICIAL RECORD COPY

cc:
Winston & Strawn
ATTN: James R. Curtiss, Esq.
1400 L Street, N.W.
Washington, DC 20005-3502

Chairman
Washington County Board
of Supervisors
P.O. Box 466
Blair, NE 68008

Mr. John Kramer, Resident Inspector
U.S. Nuclear Regulatory Commission
Post Office Box 310
Fort Calhoun, NE 68023

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

Ms. Sue Semerera, Section Administrator
Nebraska Health and Human Services
Systems
Division of Public Health Assurance
Consumer Services Section
301 Cententiall Mall, South
P. O. Box 95007
Lincoln, Nebraska 68509-5007

Mr. David J. Bannister
Manager - Fort Calhoun Station
Omaha Public Power District
Fort Calhoun Station FC-1-1 Plant
Post Office Box 550
Fort Calhoun, NE 68023-0550

Mr. John B. Herman
Manager - Nuclear Licensing
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
Post Office Box 550
Fort Calhoun, NE 68023-0550

Mr. Richard P. Clemens
Division Manager - Nuclear Assessments
Omaha Public Power District
Fort Calhoun Station
P.O. Box 550
Fort Calhoun, Nebraska 68023-0550

Mr. Daniel K. McGhee
Bureau of Radiological Health
Iowa Department of Public Health
401 SW 7th Street
Suite D
Des Moines, IA 50309

AUGUST 29, 2003 AND OCTOBER 2, 2003 CONFERENCE CALLS SUMMARY

2003 STEAM GENERATOR TUBE INSPECTIONS

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION, UNIT 1

DOCKET NO. 50-285

As discussed in the NRC staff's review of the Fort Calhoun Station, Unit 1's (FCS) 2002 steam generator tube inspection reports, the NRC staff elected to discuss several questions arising from its review of the 2002 inspection results with the Omaha Public Power District (OPPD/the licensee) in the context of their 2003 inspections. By letter dated September 17, 2003, the staff requested that a teleconference be scheduled when approximately 75 percent of the 2003 steam generator tube inservice inspection is completed. The enclosure to this letter was a list of 17 questions to be used as discussion points for this call. As a result, on August 29, 2003, and October 2, 2003, the NRC staff participated in conference calls with representatives from OPPD to discuss the plans and results of the steam generator tube inspections. The following is a summary of these calls.

In support of the August 29, 2003, conference call, OPPD provided written material in response to the seventeen questions/issues raised by the NRC staff. This material is Enclosure 2. In addition to this written material, the following clarifying information was provided verbally by OPPD.

- The manufacturing process employed for bending the tubes at FCS is different than that used in Westinghouse designed steam generators. As a result, the plan for 2003 included a 100 percent inspection of the row 1 and row 2 U-bends with a high frequency +Point^{TM} coil (since primary water stress corrosion cracking is a concern in the U-bend region in these rows) and a 20 percent inspection of the rows 1 through row 4 U-bends with a mid-frequency +Point^{TM} coil (since outside diameter stress corrosion cracking is a concern in the U-bend region in these rows).

- With respect to NRC question 2.a (see attached material supplied by licensee [Enclosure 2]), the NRC staff asked what indications were missed during the qualification tests. OPPD indicated that in sample tube 12-4, a 26 percent through-wall flaw was missed. In sample 2-1, a 33 percent through-wall flaw was missed. In addition, a 21.5 percent through-wall flaw and a 35.5 percent through-wall flaw were missed. The dent sizes associated with these flaws was not listed in the paperwork that the licensee had available during the call. The sizes of these flaws were determined using average depths over a 0.1-inch increment.

- With respect to NRC question 2.b, OPPD indicated that the changes in the site eddy current guidelines were only for the bent region of the tube since bobbin and +Point^{TM} exams performed in a 400 tube zone do not indicate that a similar issue exists in the straight leg portion of the tubes.

- With respect to NRC question 2.c, the following clarifying information was provided. No circumferential cracks have ever been observed at eggcrate supports in Combustion Engineering steam generators (i.e., they have been located at drilled hole tube supports). Of the 23 circumferential indications observed at drilled hole tube supports in the past four outages at FCS, 7 were at "non-dented" intersections based on a review of both bobbin and +Point^{TM} data. No profilometry has been done to verify the presence of a dent at these intersections. When asked about the possible driving force for these 7 circumferential indications (given that no dent has been confirmed at these locations), OPPD speculated that the tubes may have been bent during installation of the patch plates (i.e., during the fabrication process).

- With respect to NRC question 6, OPPD indicated that the dent size was trended in approximately 110 tubes per steam generator from 1985 until 1996. The tubes selected for this sample would not pass a 0.560-inch bobbin probe.

- With respect to NRC question 7, OPPD indicated that they are using the best available technology to inspect 3 to 5 volt dents, consistent with the industry guidelines when no specific qualified technique is available. Given the lack of relationship between bobbin voltage and through-wall extent for the various probe sizes (0.540-inch and 0.600-inch), rotating probe data is used to assess when an in-situ pressure test is needed for outside diameter stress corrosion cracking indications.

In support of the October 2, 2003, conference call, which was in response to an NRC letter dated September 17, 2003 (Accession No. ML032680771), OPPD provided written material in response to the questions provided by the NRC staff (Enclosure 2). In addition to this written material, the following clarifying information was provided verbally by the OPPD representatives.

- No tubes were inspected with a 0.540-inch diameter probe. All tubes were inspected using a 0.560-inch diameter probe.

- No flaws were detected in the 90-degree bends (as of October 2, 2003).

- No flaw-like indications were detected in the U-bend region of the row 1 through row 4 tubes (as of October 2, 2003).

- DBH is "dispositioned by history." Data from these tubes were still being evaluated.

- Depending on the location of a tube within the steam generator, the tube may be supported by a drilled hole tube support (which is 1-inch thick), an eggcrate tube support (which is 2-inches thick), or both types of support (3-inches thick).

- Several non-flaw-like indications were reported at cold leg tube support C8. These indications were attributed to a residual component from the carbon steel tube support plate and were identified at the upper and lower edge of the support. These indications had eddy current phase angles in the outside diameter phase plane and exhibited deposit-like, rather than flaw-like phase rotation, as the eddy current frequency changed. That is, at high frequencies, they had a phase angle near 160 degrees while at low frequencies they had a phase angle near 60 degrees.

- During the call, the NRC staff observed that very few indications were detected with the bobbin coil probe; therefore, the effectiveness of the inspection appears to depend on the rotating probe examinations. OPPD indicated that the majority of the indications are in the critical area or at dented regions, and given the growth rate of the indications, their approach has been effective at maintaining tube integrity.

- All crack-like indications are plugged on detection.

- No tube wear other than that attributed to loose parts was identified. All tubes with wear indications associated with loose parts are plugged on detection.

- Bobbin examination results led the licensee to develop the hot-leg critical area associated with the patch plates in the 1999 timeframe. No bobbin indications were detected below hot leg tube support H5 in the critical area. As a result, any indications below H5 are probably not that large.

- In response to a staff question regarding the fact that many indications can be detected with hindsight, it was indicated that the prior outage primary and secondary data analyst calls are not reviewed to see if the resolution process is inadvertently screening defects.

- Several of the circumferential indications associated with the tube supports exhibited an axial displacement nearly equal to the support thickness (i.e., the indications were above (or below) the tube supports). The maximum axial displacement observed this outage was approximately 0.7-inch. Historically, the axial displacement of these indications has been 0.3 to 0.4-inches; therefore, the axial displacement of the indications during 2003 is larger than observed in the past at FCS (and also elsewhere in the industry). No tubes with these types of indications have been removed for destructive examination from Combustion Engineering steam generators. The integrity of these tubes is being assessed through the measured arc length of the indication and the amplitude of the signal. Plans (as of October 2, 2003) were to in-situ pressure test one of these indications.

- One tube in steam generator B (Row 84 Line 73) had a small circumferential indication located immediately adjacent to a small volumetric indication. Reviewing the prior history for this location, there is a dent at the tube support (4.5 to 5.5 volts) and a small distortion in the bobbin data near the location of the volumetric indication. There was a marginal response in the +Point™ data in 1999, but there has been a change in the data from 1999 to today indicating some slight growth of the indication.

- The acronym "LPI" stands for "loose parts indication."

- At the time of the call, there were no plans to expand the inspection scope.

- Ultrasonic inspections are planned to be performed on 7 tubes (9 locations). The ultrasonic examinations are intended to confirm the degradation mechanism, profile the tube at the location of the defect (to help in determining the nature of the dent, if any), and size the flaw (for comparison to phase angle measurements from eddy current testing). Ultrasonic inspections are planned for tubes in Row 94 Line 61 where the circumferential flaw is coincident with the top edge of the tube support. No ultrasonic inspection is planned for the circumferential flaw in the tube at Row 95 Line 64.

During the October 2, 2003, conference call, the OPPD representatives agreed to respond to several NRC questions. OPPD’s responses to these questions are Enclosure 3.

As a result of the information provided by OPPD, the NRC staff did not identify any issues within the scope or results of the steam generator tube inspections that warranted follow-up during the outage. The NRC staff will review the steam generator tube inspection summary reports that the licensee submits according to their technical specification requirements.

Material Supplied in Support of August 29, 2003 Conference Call

Response to NRC Request for Additional Information Regarding the 2003 Ft. Calhoun Station Steam Generator Inspection Program

NRC Question 1:

Detailed understanding of the planned scope of inspection of dents during the 2003 outage (with both bobbin and a rotating probe). Broken down into scope of inspection in freespan dents, dents at drilled TSPs, dents at eggcrates, dents at non-horizontal supports, and dents in the cold leg.

OPPD Response:

The following portion of the total examination scope encompasses the inspection of dents

Freespan
- 100% of > 5 volt hot leg dents with MRPC
- Bobbin screening at < 5 volt dents

Drilled TSPs
- 100% of hot leg intersections, dented and non-dented with MRPC

Eggcrates
- 100% of ≥ 3 volt hot leg dents with MRPC
- Bobbin screening at < 3 volt dents

Non-Horizontal Supports
- 100% of ≥ 3 volt dents at DBH, V1, V2, V3, and DBC with MRPC
- Bobbin screening at < 3 volt dents

Cold Leg
- Bobbin screening at all < 5 volt dents
- 100% of > 3 volt dents at DBC with MRPC

NRC Question 2:
Detailed understanding of the planned scope of inspection of all drilled tube-to-tube support intersections (dented and non-dented).

OPPD Response:

The 2003 inspection will include 100% of the hot leg drilled support intersections with the rotating plus point coil irrespective of whether a dent is present. This is the same examination scope as that performed in 2002.

NRC Question 2.a:
Related factors which we would specifically like to address as part of questions 1 & 2 above are;

- 2 - 3 volt dents, given the inspection technique for detection of PWSCC is not qualified for dents >2 volts,

OPPD Response:

The EPRI technique (ETSS 96012.1) contains the following statement: "The <2 volt criteria was a consensus value determined by the peer review team based on the number of data points in the area of interest." A review of the tubes in this data set show that there are numerous samples in which the flaw is the dominant signal response and it is not possible to obtain that voltage which is attributable to the dent only. Thus the 2 volt criteria represents a qualitative judgement rather than an empirically derived limit. The samples listed below demonstrate detection of axial PWSCC in dents greater than 2 volts.

ID	Dent Voltage	Met Depth	Type
1-3H	2.8	47%	Lab Sample
7-1H	4.6	30%	Lab Sample
7-3H	3.7	34%	Lab Sample
10-22	2.3	38%	Diablo Canyon Pulled Tube
42-117*	3.16	71%	Maine Yankee Pulled Tube

* Not contained in the EPRI ETSS data set

In addition to the industry data, Argonne National Laboratory assessed bobbin coil analyst performance for this mechanism as part of the NRC sponsored steam generator mock-up program. NUREG/CR-6791 "Eddy Current Reliability Results from the Steam Generator Mock-up Analysis Round-Robin" was published in November 2002. Section 2.6.1.4.1 Dented TSP with LIDSCC makes the following observations:
"Figure 2.71 shows the results for the 11 teams using the bobbin coil data only. This graph shows the detection rate increasing with depth. The overall success in detecting LIDSCC in a dented TSP location is somewhat less than for LIDSCC in TSP locations without data (sic). Nevertheless, success with a bobbin coil in detecting LIDSCC in a dent is generally high for

depths greater than 40% TW. Detection as a function of BC voltage is presented in Fig. 2.72. The dent signal can mask the presence of a SCC, but for the 2.5-4.5 volt range the detection rate was generally good."

In summary, there is no data from industry operating experience, the EPRI ETSS, or the ANL report which would indicate that the bobbin coil may miss significant PWSCC flaws in the 2 to 3 volt range.

NRC Question 2.b:

- Potential impact of noise (e.g., probe wobble) on the reliability of the inspection technique,

OPPD Response:

Recent experience from Comanche Peak (CP) Unit 1 has shown that probe wobble in the u-bend area of tubing can influence the phase angle of a defect response such that the indication appears to be outside of the flaw plane. The Fort Calhoun Station (FCS) data analysis procedure has been revised for the upcoming inspection and the reporting requirement for flaw-like signals in the u-bend or 90 degree bend area do not require that the indication measure greater than zero percent.

NRC Question 2.c:

Considering the detection of a circumferential flaw at a non-dented intersection in 2002,

OPPD Response:

The presence or absence of a bobbin coil dent response is not a factor in the examination plan for this damage mechanism. All hot leg drilled support locations will be tested with the plus point coil.

NRC Question 2.d:

- and considering the detection of a circumferential flaw at an intersection with a <3 volt dent when dents are not called unless >= 3 volts.)

OPPD Response:

The presence or absence of a bobbin coil dent response is not a factor in the examination plan for this damage mechanism. All hot leg drilled support locations will be tested with the plus point coil.

NRC Question 3:

Provide additional details on the one PWSCC flaw identified during the 2002 inspection. Specifically, what size dent was the flaw detected in, what size was the flaw estimated to be, was the flaw axial or circumferential in nature, what TSP was the flaw detected in, and was the scope of dents expanded based on the identification of this flaw?

OPPD Response:

The PWSCC flaw is located at the number two hot leg eggcrate support in SG B Row 31 Line 116. The 2002 bobbin coil data from this location shows a 31.48 volt dent response with no flaw-like signal characteristics. This intersection was tested with the plus point coil as part of the initial 20% sample of dented eggcrate locations. The flaw is axially oriented with a 300 KHz amplitude of 2.26 volts, a depth of 36% by phase analysis, and a length of 0.34 inches. This eggcrate location was also tested by plus point coil four years earlier in the 1998 dent sample. A review of this data shows that the indication was present at this time although the dent itself is the dominant signal response. The scope of the 2002 dent inspections was expanded to 100% of the hot leg dented eggcrates at elevations 1 and 2 in both steam generators. Since the detection of this indication occurred in the same timeframe that axial ODSCC was detected at these locations the scope expansion was based on both damage mechanisms.

NRC Question 4:

Various questions (clarifications) on the Tables provided in the July 30, 2003 RAI response.

OPPD Response:

We will address your questions during the conference call.

NRC Question 5:

The July 30, 2003 RAI response states that Comanche Peak experience was being considered in the plans for the Fall 2003 outage. Discuss how this has been factored in.

OPPD Response:

An EPRI SGMP Interim Guidance letter on Comanche Peak was released on April 22, 2003 and listed two problem statements.

A) The requirement to only go back to the previous cycle when reviewing historical data was not sufficient to identify slow-growing ODSCC.

There are significant differences in the practice at FCS compared to the approach initially used at CP. In the case of CP, the sole criterion to determine whether a suspect bobbin signal received a

supplemental plus point examination was whether the signal exhibited change from the previous inspection. The bobbin coil reviews that are conducted at FCS for suspect bobbin signals use inspection data from 1996. This is the first 100% full length bobbin exam at FCS that was recorded on optic disk storage media. All suspect bobbin signals at FCS receive a supplemental plus point examination unless they have been previously tested with this technique.
20% of these previously MRPC tested indications which show no change by the bobbin coil will be re-tested with MRPC during the 2003 examination to further validate the analysis methodology.

Additional information on this subject is contained in OPPD's response to question number 6 in the NRC RAIs dated July 30, 2003.

B) The leaking tube in the previous outage data was an indication measuring zero percent yet exhibiting flaw characteristics.

The OPPD response to question 2B above addresses this issue.

The Interim Guidance letter also recommends that when history review is being used to determine when additional diagnostic testing shall be performed, then the utility shall define in their site-specific data analysis guidelines what constitutes change.

The FCS data analysis procedure defines quantitative criteria for change. In previous examinations that has been a phase change of 10 degrees or an amplitude change of 0.5 volts. Based on the CP experience this amplitude criteria for change has been reduced to 0.3 volts for the 2003 examination.

Lessons learned from the CP experience include analyst orientation to process errors. ECT graphics from CP will be presented during the FCS data analyst indoctrination which illustrate the errors made during the CP inspection. In addition, raw ECT data will be available for further review.

NRC Question 6:

The response to Question 8 in the July 30, 2003 RAI response indicates that there is no apparent growth in dent levels for a large population of indications. Does there seem to be a progression (increase) of dent size in some of the dents? Were the dents in the two tubes preventively plugged in 2002 experiencing an increase in dent size?

OPPD Response:

We have not conducted a dent trend analysis on a tube to tube basis due to the ECT voltage variability on large amplitude dents. Based on comparing data from the last five inspections it does not appear that the dents in the two tubes which were preventively plugged are increasing.

Both tubes are located in SG A and Row 80 Line 65 had a 2002 dent response of 143.9 volts at vertical strap V1. In 2001, 1999, 1998, and 1996 the dent magnitudes were 116.3, 130.5, 132.4, and 142.2, respectively. The variance in these measurements is slightly more than ± 25 volts. Row 88 Line 77 had a 2002 dent response of 172.3 volts at the same vertical strap. In 2001, 1999, 1998, and 1996 the dent magnitudes were 157.2, 158.0, 161.0, and 152.7, respectively. Both of these tubes have been restricted to the passage of a 0.560 inch diameter bobbin probe since 1987 and have been tested with a 0.540 inch diameter probe since that time, including the 2002 examination.

Trending of a specific population of dents was conducted from 1985 until 1996. No dent size progression was observed in the defined population. This validated the chemistry changes instituted to arrest the denting progression. The dent arresting chemistry has been maintained.

If it were practical to trend denting on a tube specific basis and if we were to assume that a pattern was observed, the likely action would be to perform MRPC exams on those dents exhibiting the largest growth rates. Since OPPD is conducting MRPC on 100% of the hot leg dents this probable action is already included in our exam scope.

NRC Question 7:

Further discussion on the RAI response to Questions 9 and 10.

OPPD Response:

We will further discuss our responses during the conference call.

Material Supplied in Support of October 2, 2003 Conference Call

STEAM GENERTOR TUBE INSPECTION DISCUSSION POINTS

OMAHA PUBLIC POWER DISTRICT
FORT CALHOUN STATION, UNIT 1
DOCKET NO. 50-285

1. **Discuss whether any primary to secondary leakage existed in this unit prior to shutdown.**

   Fort Calhoun Station had no measurable primary to secondary leakage prior to shutdown.

2. **Discuss the results of secondary side pressure tests.**

   Have not performed any pressure tests.

3. **For each SG, a general description of areas examined, including the expansion criteria utilized and type of probe used in each area. Also, be prepared to discuss your inspection of the tube within the tubesheet, particularly the portion of the tube below the expansion/transition region.**

Bobbin Probe

- 100% Full Length
  - All with a 0.560" diameter probe
  - Restricted supports tested with MRPC

Plus Point RPC

- 100% HTS from 7 Inches Below the Tubesheet to 3 Inches Above
- 100% of All Hot Leg Drilled Supports
- 100% of All Tubes in Hot Leg Critical Area from H5 to Hot Leg Batwing
- 100% of Square Bends Above Hot Leg Critical Area
- 100% of the Dents at Vertical Support Straps & Diagonal Bars
- 100% of the Dents at Hot Leg Eggcrates
- 100% of the Hot Leg Dings > 5 Volts
- 20% of the U-Bends in Rows 1 to 4 (Mid- Range Coil)
- 100% of the U-bends in Rows 1 & 2 (High Frequency Coil)
- 20% Bobbin DBH Codes
- MRPC Diagnostics From Bobbin Program as Required (323 in A, 365 in B)

Expansion Criteria

- EPRI Guidelines
- Engineering Judgement

The hot leg critical area and buffer zone was redefined in SG A after finding one tube with freespan axial ODSCC on a tube in the buffer zone. A total of 25 additional exams were conducted with the plus point coil from H5 to the hot leg batwing. No additional flaws were detected in this sample.

Based on the unusual axial displacement of several circumferential indications, the inspection of drilled tube support plates in SG B was expanded to include a 20% sample of the C8 elevation. No flaws were detected in this population.

4. Discuss any exceptions taken to the industry guidelines.

a) Senior analyst does not perform site specific SSPD
b) MRPC calibration standards differ from guidelines

5. Provide a summary of the number of indications identified to-date of each degradation mode and steam generator tube location (e.g., tube support plate, top of tubesheet, etc.). Also provide information such as voltages, and estimated depths and lengths of the most significant indications.

Tables A & B provide this information.

6. Describe repair/plugging plans for the tubes that meet the repair/plugging criteria.

All tubes found to be defective will be plugged with mechanical rolled plugs. In addition, all tubes with circumferential indications will be stabilized.

7. Discuss the previous history of SG tube inspection results, including any "look backs" performed. Specifically, for significant indications or indications where look backs are used in support of dispositioning (e.g. manufacturing burnish marks).

Prior cycle ECT data is re-analyzed for all "I" codes identified in the current inspection to determine whether the indication was present in the 2002 examination data. Tables A & B provide a listing of these results. In general, the large majority of flaws were visible in the 2002 data with the benefit of hindsight. Where possible the indications present in the 2002 data will be sized to develop a flaw profile. This growth rate information will be input into the Operational Assessment for the next cycle.

8. Discuss, in general, new inspection findings (e.g., degradation mode or location of degradation new to this unit).

a) Circumferential Indications at Hot Leg Drilled Supports
Prior to the 2003 inspection a total of 23 circumferential indications had been detected between the two steam generators. This mechanism was initially identified during the 1998 examination. Of the 23 indications, 18 were located at hot leg tube support 7 & 8. Insitu pressure tests of tubes with this indication type were performed on 3 tubes in 2001. The current inspection results show a total of 19 indications at hot leg drilled support intersections. The axial distribution is similar to that observed previously, with 13 of the 19 indications located at H7 & H8. Several of the indications detected in SG B have an axial displacement nearly equal to the support thickness (1 inch).

b) Circumferential Indication in Freespan Tubing
The hot leg CA test program in SG B identified a small circumferential indication located below H7. The indication is approximately 25 degrees in circumference with a 300 KHz plus point amplitude of 0.19 volts. The indication is O.D. and is located immediately adjacent to a very small volumetric indication.

9. Discuss your use or reliance on inspection probes (eddy current or ultrasonic) other than bobbin and typical rotating probes, if applicable.

The delta coil MRPC test has been used to assist in the confirmation and characterization of the circumferential indication discussed above. The delta probe head has a conventional pancake coil and two directional coils. A comparison of the directional coil terrain maps can be used to determine the orientation of the flaw. The results from these tests have confirmed the circumferential orientation of the flaws in the drilled support plate and also indicates that there are multiple peaks present in the data which would indicate axially spaced layers of circumferential ODSCC. The low frequency data shows an area where the carbon steel support is missing and the flaw indication is on the opposite side of the tube.

The UTEC ultrasonic test will be used to obtain additional information on the nature of these indications. The UTEC has three transducers; a straight beam used for wall thickness measurements, profilometry measurements, and detection of volumetric flaws; and two shear wave oriented for axial and circumferential flaw detection.

10. Describe in-situ pressure test plans and results, if applicable and available; include tube selection criteria.

All indications which exceed the screening criteria will be pressure tested. At the present time we have one test candidate in SG B. Row 94 Line 65 has a circumferential indication which will be tested for leakage integrity based on it’s amplitude of 1.07 volts.

11. Describe tube pull plans and preliminary results, if applicable and available; include tube selection criteria.

There are no plans to remove tubes during this outage.

12. Discuss the assessment of tube integrity for previous operating cycle (i.e., condition monitoring).

- Eighty-nine (89)*** OD Axial indications have been detected.
- No ID Axial or Circ indications have been detected.
- Twenty- two (22) OD Circ Indications have been detected. There is uncertainty about the nature of some of the OD Circ indications and UT is being used to investigate further.
- One (1) small Volumetric Indication has been detected.
- Two (2) loose parts indications show wear less than 40% TW. These have been confirmed as previously existing by history.

*** Co-linear axial ECT indications are combined to make one enveloping indication.

All axial indications have been sized with a quantified sizing technique and are below the condition monitoring limit.

All circumferential indications are sized at less than 20% PDA which is well below the condition monitoring limit. The circumferential extent of all circ indications is less than 140 degrees.

The predictions for this outage were 117 OD axial indications and 14 OD circ indications. The number of freespan axial indications is somewhat higher than predicted, but that is offset by a lower number at HTS. The freespan indications are generally smaller than the indications at the supports. The number of circ indications is eight (8) indications higher than predicted, but the indications are small in circumferential extent.

13. Provide the schedule for steam generator related activities during remainder of current outage.

10/03 - Complete ECT in SG A
10/04 - Perform ISPT in SG B
10/04 - Complete ECT in SG B
10/06 - Complete Repairs

14. Discuss the following regarding loose parts:

- **what inspections are performed to detect loose parts**

  All ECT data is screened for the presence of possible loose parts (PLPs). The ECT responds to a magnetic permeability change which can occur if a loose part is in contact with the tube. A similar response can occur from the presence of a sludge rock which is why the ECT results are categorized as possible loose parts.

  In addition to the ECT, a visual inspection is conducted in the annulus area at the top of the tubesheet. The results are these two examinations are subsequently compared and differences are evaluated.

- **a description of any loose parts detected and their location within the SG**

  A total of 28 PLPs have been reported by ECT. All of the PLP indications were present in the 2002 examination.

- **if the loose parts were removed from the SG**

  Flexitallic gasket material has been removed from SG A. The gasket material came from the secondary manway closure and judging by it's appearance (shiny) it came from opening the manway for the current inspection of the upper internals. Additional smaller amounts of gasket material were removed from the annulus area of SG B.

- **indications of tube damage associated with the loose parts**

  Two tubes near the periphery in SG A have shallow wear indications at approximately 2.7 and 3.8 inches above the hot leg tubesheet. The depth of the indications are estimated at 19% and 26% respectively.

- **the source or nature of the loose parts if known**

  A FOSAR examination has been completed and flexitallic gasket material has been observed at the location of the wear indications (Row 94 Line 41 and Row 95 Line 42). The material is firmly lodged between the tubes and cannot be removed. These two tubes will be removed from service.

15. Once Through Steam Generators - if you have Babcock and Wilcox (B&W) welded plugs installed in the steam generators, be prepared to discuss the actions taken in response to Framatome's notification of the effect of tubesheet hole dilation on the service like of B&W welded plugs.

Not applicable

16. Once Through Steam Generators - describe your inspection/plugging plans with respect to the industry identified severed tube issue (NRC Information Notice (IN) 2002-02 and IN 2002-02, Supplement 1).

Not applicable

17. If steam generators contain thermally treated tubing (Alloy 600 or 690), discuss actions taken (if any) based on Seabrook's recent findings (Reference Information Notice (IN) 2002-21)?

Not applicable

Ft. Calhoun 2003 RFO
Steam Generator Eddy Current Inspection Summary

Steam Generator A

Test Type	Tests Planned	Latest Tested	Total Tested	Retests	Final	% Complete
HL .560 Bobbin	234	0	197	0	197	84.19%
HL .560/.540 RST Bobbin	94	0	91	0	91	96.81%
HL TTS +PT	4743	0	4742	1	4742	99.98%
HL Drilled TSP +PT	2998	1	2996	2	2996	99.93%
HL Vertical Dent +PT	2539	2	2528	11	2528	99.57%
HL Vertical Ding +PT	18	6	15	0	9	50.00%
HL Square Bend +PT	434	9	424	9	424	97.70%
HL DBH/V1 Dents +PT	243	1	235	7	235	96.71%
HL H5-DBH/V1 +PT	434	9	424	9	424	97.70%
CL .560 Bobbin	4652	0	4652	0	4652	100.00%
CL .560/.540 RST Bobbin	86	0	86	0	86	100.00%
CL U-Bend MR +PT	59	0	58	1	58	98.31%
CL U-Bend HF +PT	113	0	108	5	108	95.58%
CL Horizontal Ding +PT	22	0	22	0	22	100.00%
CL V2/V3/DBC Dent +PT	686	0	686	0	686	100.00%
.560/.540 +PT For Bobbin RRT	47	0	47	0	47	100.00%
20% History Review +PT	37	0	9	0	9	24.32%
HL SI & PID +PT	198	49	136	5	94	47.47%
CL SI & PID +PT	67	0	67	0	67	100.00%
Total HL Tests	11935	77	11788	44	11740	98.4%
Total CL Tests	5769	0	5735	6	5735	99.4%
TOTAL	17704	77	17523	50	17475	98.7%
A - Pluggable Tubes	39					

Steam Generator B

Test Type	Tests Planned	Latest Tested	Total Tested	Retests	Final	% Complete
HL .560 Bobbin	237	0	237	0	237	100.00%
HL .560/.540 RST Bobbin	104	0	104	0	104	100.00%
HL TTS +PT	4734	0	4277	5	4277	90.35%
HL Drilled TSP +PT	2915	0	2912	3	2912	99.90%
HL Vertical Dent +PT	4673	0	4658	15	4658	99.68%
HL Vertical Ding +PT	19	4	5	1	5	26.32%
HL Square Bend +PT	388	0	343	42	343	88.40%
HL DBH/V1 Dents +PT	247	0	238	29	210	85.02%
HL H5-DBH/V1 +PT	388	0	343	33	343	88.40%
CL .560 Bobbin	4630	0	4630	0	4630	100.00%
CL .560/.540 RST Bobbin	75	0	75	0	75	100.00%
CL U-Bend MR +PT	66	0	65	6	60	90.91%
CL U-Bend HF +PT	113	0	109	4	109	96.46%
CL Horizontal Ding +PT	62	0	62	0	62	100.00%
CL V2/V3/DBC Dent +PT	676	0	676	0	676	100.00%
.560/.540 +PT For Bobbin RRT	53	1	49	1	49	92.45%
CL 20% C8 +PT	164	0	164	0	164	100.00%
20% History Review +PT	38	12	22	0	22	57.89%
HL SI & PID +PT	283	113	158	15	131	46.29%
CL SI & PID +PT	77	0	77	0	77	100.00%
Total HL Tests	13988	4	13117	128	13089	93.6%
Total CL Tests	5954	13	5852	11	5847	98.2%
TOTAL	19942	17	18969	139	18936	95.0%
B - Pluggable Tubes	62					

Steam Generators A & B

Grand Totals	Tests Planned	Latest Tested	Total Tested	Retests	Final	% Complete
Total HL Tests	25923	81	24905	172	24829	95.8%
Total CL Tests	11723	13	11587	17	11582	98.8%
Grand Total Tests	37646	94	36492	189	36411	96.7%

As of 0400 On 10/02/2003

TABLE A FORT CALHOUN SG A PRELIMINARY INDICATION SUMMARY

	OPPD Ft Calhoun Station			10/02/2003								
	Fall 2003 Outage											
	S/G A Preliminary Repair List											
	Row	Line	2003 Bobbin	2003 MRPC	Volts	Deg	%	CircDeg	Axial	Location	Bobbin Dent'	2002 Review
1	**9**	**94**	NDD	SCI **HTS + 0.18**	0.16	87	63	20		HTS	TS Exp	Present
2	**11**	**30**	NDD	SCI **HTS + 0.09**	0.14	90	77	76		HTS	TS Exp	Present
3	**16**	**63**	NDD	**SAI HTS + 0.28**	0.17	83	25		0.14	HTS	TS Exp	Present
4	**23**	**58**	NDD	**SAI HTS + 0.49**	0.2	101	30		0.32	HTS	None	Present
5	**25**	**56**	NDD	**SAI HTS + 0.81**	0.16	111	24		0.2	HTS	None	Present
6	**30**	**73**	NDD	**SAI HTS + 1.70**	0.22	102	28		0.26	HTS	None	Present
7	**33**	**74**	NDD	**SAI HTS + 1.55**	0.23	132	31		0.26	HTS	None	Present
8	**35**	**74**	NDD	**SAI HTS + 1.73**	0.15	127	26		0.19	HTS	None	Present
9	**56**	**81**	NDD	**SAI H6 + 0.32**	0.42	119	39		0.42	EC	3.95 Volt	No Data
10	**61**	**50**	NDD	**SAI H7 + 0.10**	0.39	87	40		0.2	EC	8.49 Volt	No Data
11	**81**	**62**	NDD	**SAI H1 - 0.59**	0.23	109	31		0.61	EC	53.59 Volt	Present
12	**85**	**68**	NDD	**SAI H5 + 37.97**	0.17	85	21		0.17	FS	None	Present
13	**86**	**47**	NDD	**SAI H7 + 10.18**	0.19	121	28		0.29	FS	None	Present
			NDD	**SAI H7 + 11.05**	0.16	114	26		2.25	FS	None	Present
14	**87**	**56**	NDD	**SAI H5 + 36.24**	0.11	106	24		0.26	FS	None	Present
15	**87**	**60**	NDD	**SAI H5 + 37.22**	0.14	92	25		0.22	FS	None	Present
16	**90**	**55**	NDD	**SAI H7 + 1.61**	0.13	124	16		0.51	FS	None	Present
			DBH	**SAI H7 + 3.52**	0.15	127	17		0.4	FS	None	Present
			NDD	**SAI H7 + 9.91**	0.55	113	42		0.46	FS	None	Present
			NDD	**SAI H7 + 10.81**	0.26	106	26		1.27	FS	None	Present
			NDD	**SAI H7 + 11.54**	0.16	125	29		0.58	FS	None	Present
			NDD	**SAI H7 + 14.57**	0.27	94	36		0.88	FS	None	Present
17	**90**	**59**	NDD	**SAI H6 - 0.92**	0.28	121	34		0.35	FS	37.01 Volt	NDD
			NDD	**SAI H6 - 0.23**	0.68	119	52		0.41	TSP	37.01 Volt	Present
18	**90**	**63**	NDD	**SAI H7 + 12.76**	0.15	90	28		0.9	FS	26.22 Volt	Present
19	**90**	**71**	NDD	**SAI H7 + 9.18**	0.21	138	30		0.21	FS	56.86 Volt	Present
20	**90**	**77**	NDD	SCI **H1 - 0.15**	0.32	100	49	66		TSP	36.47 Volt	Present
21	**91**	**58**	NDD	**SAI H6 + 0.1**	0.76	116	54		0.72	TSP	56.86 Volt	Present
22	**91**	**64**	NDD	**SAI H5 +35.59**	0.28	112	34		0.74	FS	None	Present
23	**93**	**58**	DSI	SCI **H8 - 0.24**	0.24	105	53	33		TSP	6.12	Present
24	**93**	**76**	NDD	**SAI H7 - 0.22**	0.21	89	28		0.22	TSP	None	Present
25	**93**	**82**	NDD	**SAI H1 +1.42**	0.16	79	24		0.43	TSP	Present	Present
26	**94**	**41**	NDD	**LPI HTS + 3.12**	0.32	108	26	34	0.56	FS	None	Present
27	**94**	**61**	NDD	**SAI H6 + 18.74**	0.15	93	25		0.33	FS	None	Present
			NDD	**SAI H6 + 21.43**	0.12	111	23		0.79	FS	None	Present
			NDD	**SAI H7 + 2.65**	0.34	123	43		4.06	FS	None	Present
28	**94**	**83**	NDD	**SAI H1 + 1.42**	0.26	117	27		0.51	TSP	None	Present
29	**95**	**42**	DFI	**LPI HTS + 2.51**	0.19	132	19	32	0.39	FS	None	Present
30	**96**	**41**	NDD	**SVI H5 + 32.07**	0.25	121	22	33	0.59	FS	None	Present
			NDD	**SVI H5 + 32.01**	0.12	132	16	29	0.19	FS	None	Present
31	**96**	**55**	NDD	**SAI H7 + 9.99**	0.07	97	26		0.18	FS	None	Present

32	**96**	**67**	NDD	**SAI H5 + 0.26**	0.25	114	33		0.22	TSP	13.58 Volt	Present
33	**96**	**71**	NDD	**SAI H7 + 13.92**	0.1	119	23		0.15	FS	None	Present
			NDD	**SAI H7 +13.94**	0.17	111	28		0.33	FS	None	Present
			NDD	**SAI H7 + 15.37**	0.18	104	29		0.36	FS	None	Present
			NDD	**SAI H7 + 16.34**	0.18	107	29		0.27	FS	None	Present
34	**97**	**46**	NDD	**SAI H7 + 0.01**	0.28	113	33		0.17	TSP	4.25 Volt	Present
35	**97**	**50**	NDD	**SAI H7 + 0.01**	0.53	130	46		0.43	TSP	7.18 Volt	Present
36	**97**	**68**	NDD	**SAI H6 + 13.51**	0.19	113	31		0.34	FS	None	Present
37	**98**	**59**	NDD	**SCI H1 + 0.27**	0.36	110	47	59		TSP	12.37 Volt	Present
38	**100**	**69**	NDD	**SAI H1 + 0.03**	0.23	112	36		0.52	TSP	None	Present
39	**101**	**70**	DSI	**SAI H1 +0.00**	0.16	103	26		0.52	TSP	None	Present
40	**102**	**55**	NDD	**SCI H7 + 0.12**	0.3	115	28	32		TSP	5.78 Volt	Present
			NDD	**SAI H8 + 11.18**	0.13	116	18		0.23	FS	None	Present
			DFI	**SAI H8 + 15.61**	0.15	81	25		0.19	FS	None	Present
41	**103**	**64**	NDD	**SCI H1 + 0.00**	0.21	102	50	68		TSP	14.83 Volt	Present

TABLE B FORT CALHOUN SG B PRELIMINARY INDICATION SUMMARY

	OPPD Ft Calhoun Station			10/02/2003								
	Fall 2003 Outage											
	S/G B Preliminary Repair List											
	Row	Line	2003 Bobbin	2003 MRPC	Volts	Deg	%	CircDeg	Axial	Location	Bobbin Dent?	2002 Review
1	**16**	**73**	NDD	**SAI H5 + 1.68**	0.18	103	23		0.24	FS	None	No Data
2	**20**	**55**	NDD	**SAI H5 - 0.45**	0.27	107	34		0.25	EC	3.96 V	No Data
3	**23**	**22**	NDD	**SAI H1 + 0.40**	0.57	114	46		0.47	EC	13.53 V	Present
4	**23**	**44**	NDD	**SAI H6 + 0.43**	0.63	109	45		0.31	EC	19.35 V	Present
5	**23**	**62**	NDD	**SAI H5 + 2.69**	0.32	123	34		0.48	FS	4.91 V	NDD
6	**23**	**112**	NDD	**SAI H5 - 0.34**	0.28	125	36		0.21	EC	5.98 V	No Data
7	**25**	**70**	NDD	**SAI H6 + 0.58**	0.59	112	49		0.23	EC	19.04 V	No Data
8	**27**	**114**	NDD	**SAI H5 +1.24**	0.27	111	30		0.54	FS	None	No Data
9	**28**	**33**	NDD	**SAI H4 - 0.08**	0.4	112	39		0.4	EC	3.34 V	No Data
10	**31**	**46**	NDD	**SAI H5 + 0.25**	0.49	105	44		0.2	EC	9.10 V	Present
11	**36**	**33**	NDD	**SAI H2 + 0.64**	0.55	112	41		0.12	EC	13.14 V	Present
12	**47**	**116**	NDD	**SAI V2 + 4.75**	0.39	119	39		0.28	FS	None	No Data
13	**48**	**39**	NDD	**SAI H4 + 5.22**	0.29	125	33		0.44	FS	None	No Data
14	**54**	**51**	NDD	**SAI H6 + 1.15**	0.69	86	51		0.17	FS	5.73 V	No Data
15	**55**	**70**	NDD	**SAI V2 + 3.92**	0.25	121	29		0.32	FS	None	No Data
16	**55**	**74**	NDD	**SAI V2 - 3.62**	0.27	127	30		1.24	FS	None	No Data
17	**56**	**79**	NDD	**SAI H6 - 0.34**	0.45	128	36		0.64	EC	5.55 V	No Data
18	**63**	**60**	DFI	**SAI V2 +10.90**	0.53	143	44		0.68	FS	None	No Data
			DFI	**SAI V2 + 12.74**	0.39	145	42		0.85	FS	None	No Data
19	**68**	**69**	NDD	SCI **H2 + 0.28**	0.46	112	38	112		TSP	123.6	Present
20	**70**	**59**	NDD	**SAI H6 - 0.40**	0.3	97	31		0.48	EC	6.78 V	No Data
21	**71**	**26**	NDD	**SAI H5 - 1.40**	0.38	79	30		0.19	EC	9.54 V	No Data
22	**71**	**76**	NDD	**SAI H5 + 0.81**	0.7	132	55		0.7	EC	4.29 V	No Data
23	**76**	**43**	NDD	**SAI H8 - 0.02**	0.28	92	32		0.35	TSP	None	Present
24	**76**	**39**	NDD	**SAI H8 + 0.16**	0.23	108	29		0.27	TSP	None	Present
25	**76**	**81**	NDD	**SAI H2 + 0.22**	0.57	117	41		0.57	EC	12.21 V	No Data
26	**78**	**61**	NDD	**SAI H1 -0.57**	0.31	116	35		0.63	FS	None	Present
27	**79**	**68**	NDD	**SAI H2 + 0.00**	0.22	100	29		0.51	TSP	None	Present
28	**80**	**59**	NDD	**SAI H6 + 20.60**	0.22	76	30		0.44	FS	None	Present
			NDD	**SAI H6 + 21.57**	0.21	117	29		0.22	FS	None	Present
29	**81**	**84**	NDD	**SAI HTS + 2.89**	0.11	113	21		0.41	FS	None	Present
30	**83**	**58**	NDD	**SAI H4 + 2.89**	0.23	121	33		0.25	FS	None	Present
31	**84**	**37**	NDD	SCI **H8 + 0.17**	0.17	99	56	90		TSP	32.65 V	Present
32	**84**	**57**	NDD	**SAI H5 + 34.69**	0.43	92	41		0.78	FS	None	Present
33	**84**	**73**	NDD	SCI **H7 - 4.61**	0.19	105	33	48		FS	None	Present
			NDD	SCI **H7 -1.61**	0.37	92	39	75		EC	4.46 V	Present
34	**84**	**75**	NDD	**SAI H4 - 1.40**	0.78	110	51		0.56	EC	7.78 V	Present
35	**86**	**67**	NDD	**SAI H8 +0.00**	0.39	73	40		0.34	TSP	15.48 V	Present
36	**87**	**52**	NDD	SCI **H4 - 1.10**	0.27	109	33	21		EC	8.13 V	Present
37	**87**	**62**	NDD	**SAI H7 + 2.85**	0.22	97	28		0.4	FS	18.45 V	No Data
38	**89**	**70**	NDD	**SAI H8 + 1.26**	0.35	128	38		0.81	FS	None	Present
			NDD	**SAI H8 + 3.46**	0.2	128	32		0.51	FS	None	Present

39	**90**	**61**	NDD	SCI **H8 + 0.36**	0.51	101	71	82		TSP	51.54 V	Present
40	**90**	**77**	NDD	SCI **H1 - 0.03**	0.24	116	24	116		TSP	None	Present
41	**91**	**52**	NDD	**SAI H7 + 0.73**	0.42	100	36		0.84	FS	None	Present
42	**91**	**54**	NDD	**SAI H3 + 0.15**	0.31	122	35		0.25	TSP	None	Present
43	**91**	**56**	NDD	**SAI H1 - 0.18**	0.17	102	26		0.41	TSP	None	Present
44	**91**	**74**	NDD	**SAI H8 - 0.92**	0.53	121	46		0.6	FS	None	Present
45	**92**	**59**	NDD	**SAI H6 + 1.57**	0.2	108	27		0.26	FS	None	Present
			NDD	**SAI H6 + 2.05**	0.26	104	30		0.23	FS	None	Present
			NDD	**SAI H6 + 2.25**	0.29	71	27		0.2	FS	None	Present
			NDD	**SAI H6 + 2.74**	0.3	73	30		0.6	FS	None	Present
46	**92**	**65**	NDD	**SAI H7 + 13.04**	0.16	80	26		0.16	FS	None	Present
			NDD	**SAI H7 + 15.90**	0.23	93	31		0.25	FS	None	Present
47	**92**	**69**	NDD	**SAI H7 + 16.03**	0.17	71	26		0.78	FS	None	Present
48	**92**	**73**	NDD	**SAI H7 + 12.01**	0.25	111	32		0.57	FS	None	Present
			NDD	**MAI H7 + 13.92**	0.13	55	25		0.21	FS	None	Present
			NDD	**SAI H7 + 14.11**	0.23	99	31		0.2	FS	None	Present
			NDD	**SAI H7 + 14.22**	0.22	90	31		0.2	FS	None	Present
			NDD	**MAI H7 + 14.99**	0.2	122	28		0.47	FS	None	Present
49	**93**	**64**	NDD	**SAI H7 + 3.15**	0.2	98	26		0.39	FS	None	Present
			NDD	**SAI H7 + 4.25**	0.16	107	22		0.33	FS	None	Present
50	**93**	**66**	NDD	**SAI H7 + 0.88**	0.28	116	25		0.32	FS	None	Present
			NDD	SCI **H8 + 0.18**	0.45	129	8	69		TSP	8.12	Present
51	**94**	**61**	NDD	SCI **H7 + 0.67**	0.19	105	42	31		FS	2.21	Present
			NDD	**SAI H8 - 0.11**	0.44	132	41		0.46	TSP	14.46 V	Present
			NDD	SCI **H8 + 0.27**	0.57	111	45	98		TSP	14.46 V	Present
52	**94**	**63**	NDD	SCI **H8 + 0.11**	0.63	104	39	96		TSP	17.25 V	Present
53	**94**	**65**	NDD	SCI **H8 + 0.06**	1.07	108	28	69		TSP	6.03 V	Present
54	**95**	**58**	NDD	**SAI H6 + 18.57**	0.14	81	24		0.19	FS	None	Present
			NDD	**SAI H6 + 19.76**	0.14	84	22		0.49	FS	None	Present
			NDD	**SAI H6 + 20.82**	0.22	115	30		0.49	FS	None	Present
55	**95**	**64**	NDD	SCI **H8 - 0.60**	0.29	90	67	31		FS	8.59 V	Present
56	**95**	**66**	NDD	SCI **H8 + 0.14**	0.75	112	15	85		TSP	7.32 V	Present
57	**95**	**70**	NDD	**SAI H6 + 20.67**	0.24	118	28		0.43	FS	None	Present
58	**96**	**65**	NDD	SCI **H8 - 0.32**	0.25	131	8	44		TSP	3.46 V	Present
59	**98**	**83**	NDD	**SAI H6 + 20.00**	0.52	135	46		0.26	FS	17.91 V	Present
60	**99**	**62**	NDD	**SAI H8 + 2.33**	0.15	120	27		0.31	FS	None	Present
61	**100**	**69**	NDD	**SAI H3 + 0.17**	0.51	138	45		0.71	TSP	None	Present
62	**101**	**72**	NDD	**SAI H7 + 0.3**	0.26	113	34		0.29	TSP	16.63 V	Present
63	**102**	**63**	NDD	**SAI H1 - 0.13**	0.23	102	35		0.32	TSP	None	Present

Material Supplied on October 3, 2003 in response to NRC Questions from October 2, 2003

1. Were any flaws detected as a result of the 20% sample of bobbin DBH dispositioned by history) Codes? If so, please describe the indications and expansion plans.

The 20% sample in SGA (37) has been completed with no flaws reported. In SG B the 20% sample is 38 of which 27 had been completed as of 0600 hours. No flaws have been detected in this sample.

2. A circumferential flaw was identified in SG B, Row 87, Column 52 in an eggcrate. Did this location contain a combination of an eggcrate and tube support plate or just an eggcrate?

The ECT data for this intersection was reviewed after yesterday's phone call. The support structure at this elevation consists of an partial eggcrate with a drilled support on top. The indication resides in the eggcrate portion of the support assembly.

3. NRC staff questioned whether OPPD had reviewed historical eddy current data analyst calls if an effort to obtain additional information regarding possible indications. We are interested in knowing whether OPPD decided to review additional information related to the staff's questions. If so, what were they finding and did they modify inspection activities as a result (i.e., calling more indications, additional training of analysts, re-reviewing certain 2003 inspection data, etc.).

Background: The question above came up in two instances. 2003 inspection results indicate that the majority of flaws called this outage were present in the 2002 inspection data (in hindsight). The staff questioned whether OPPD had reviewed the primary, secondary and resolution analyst calls from the 2002 inspection to determine if any of these indications were initially called indications in 2002 (and "thrown out" by more senior analysts). If so, this data may provide OPPD with insights in identifying indications earlier. The same information could further assist OPPD in determining if the signals identified at the C8 TSP (initially called circumferential indications by analysts) are in fact small flaws.

OPPD has continuously updated and improved the analysis process at Fort Calhoun Station. Our analyzed results have consistently met condition monitoring criteria as verified by insitu pressure test results from each outage since 1996. In addition, the operational assessments have provided reasonable predictions in the number and distribution of flaw indications. It has been and remains OPPD's objective to improve the probability of detection; however we view the review of historical ECT data, as a post-outage activity. Since 1996, the data analysis indoctrination, data analysis procedure, and training materials have been updated to include lessons learned from review of prior history as well as missed indications. Since 2001 the data analysis indoctrination also includes relevant industry experience. After the fall outage season OPPD will perform a review of the 2002 ECT results including primary, secondary, and resolution analysis performance. Indications which are judged to have met acceptance criteria will be included in the training and testing materials to be used for the next inspection. Data analysis procedures will be modified as appropriate based on the results of this review.

With regard to the preliminary results which showed indications at the C8 support plate, we are confident that these signals are deposits. The phase angles are similar to those observed in tubes removed from FCS in 1998. There were deposits present on these tubes which were initially reported as flaws however the destructive exam found no degradation present. The indications in the tubes removed in 1998 were axial and the preliminary indications reported at C8 are circumferential. Since the coil windings in the plus point coil are identical, one would expect similar false positive responses on the circumferentially sensitive coil. Similar indications have been observed in the hot leg where historical data from 1999 (first available) show no change.