TXU 1RF11 NRR S/G Conference Call

Specific Questions

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

   - None detectable

2. Discuss the results of secondary side pressure tests.

   - Secondary Side pressure tests are not scheduled to be performed in 1RF11.

3. For each SG, provide 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.

   - The following is the base scope inspection plan for the 1RF11 outage in October 2005. Expansion of the inspection will be based on Tech Spec and EPRI guideline criteria. Inspection will be performed in all four SGs and the inspection scope is the same in all four:

     1) 100% full bobbin examination of non-sleeved tubes in Rows 5 and greater and 100% bobbin inspection in the hot and cold leg straight sections of Rows 1 through 4 using a 0.610" diameter probe *.
     2) 100% bobbin examination of tubes with sleeves in rows 5 and above from the cold leg to the top of the sleeve in the hot leg using a 0.610" diameter probe.
     3) 100% +Pt examination of hard rolled tubes at the hot leg top of tubesheet (TTS +/- 3")
     4) 100% +Pt inspection of WEXTEX tubes at the hot leg tubesheet (TTS +3" thru tube end hot)
     5) 100% +Pt inspection of U-bends in rows 1 through 16
     6) 25% +Pt examination of tubes expanded at cold leg baffles B (C2) and D (C3)
     7) 100% +Pt examination of dents , regardless of voltage, within $\pm$ 1" from AVB locations
     8) 100% + Pt examination of AVB wear scars and 20% of baffle wear scars
     9) 100% +Pt examination of mix residual indications (> 1.5 volts as measured by bobbin) and hot leg dented intersections $\geq$ 5 volts (as measured by bobbin) according to the requirements of GL 95-05
     10) 100% +Pt examination of all bobbin coil "I" codes (except DSI < 1.0 volt at hot leg supports) for flaw confirmation and characterization.
     11) 100% +Pt inspection of all dented TSP intersections at the H3 TSP $\geq$ 2 volts
     12) 20% +Pt inspection of freespan dings > 2 volts and $\leq$ 5 volts between TSH and H3
     13) 100% +Pt inspection of freespan dings > 5 volts
     14) 20% +Pt freespan paired ding inspection between the top 2 TSPs (hot & cold legs)

* 540 wide groove bobbin used for HL low row straight sections above TIG sleeves and 520 wide groove bobbin used for HL low row straight sections above Alloy 800 sleeves.

15) 20% +Pt full length inspection of TIG sleeves installed in 1RF09. inspection extent is +/- 3" from sleeve ends (SGs 2,3,&4)
16) 80% part length inspection of TIG sleeves +/- 3 " from top of sleeve end (SGs 2,3,& 4)
17) 100% full length inspection of the TIG sleeves installed in 1RF09 using 0.54 inch diameter bobbin probe to look for restriction (collapse or partial collapse) in the sleeve (SGs 2,3,&4)
18) 100% +Point full length inspection of Alloy 800 sleeves installed in 1RF-10, inspection extent is ± 3" from sleeve ends
19) 100% tube plug video inspection
20) Tube bundle secondary side video inspection including a limited scope TTS in-bundle inspection and FOSAR at TTS and cold leg baffle plate B

4. Discuss any exceptions taken to industry guidelines.

- No exceptions to industry guidelines have been taken and none are planned.

5. Provide a summary of the number of indications identified to-date of each degradation mode and SG 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.

Indication Summary Table

SG	HTS Circ OD	HTS Circ ID	HTS Axial ID	HTS Vol	Free-Span Axial OD	Free-Span Vol	TSP Vol	Pre-heater Wear ≥ 40%	U-bend Circ ID	U-bend Axial ID	Total Repairs	TSP DSIs
1	6	1			5	1	2		1		16	32
2	9	1			4	1			2		17	30
3	23	1		2					1		27	35
4	57		1	2	2			1		1	64	263
Total	95	3	1	4	11	2	2	1	4	1	124	360

HTS Circ OD – Largest Voltage = 0.27
HTS Circ OD - Longest Extent = 303°

HTS Circ ID – Largest Voltage = 0.63
HTS Circ ID – Longest Extent = 100°

HTS Axial OD – Largest Voltage = 0.12
HTS Axial OD – Longest Extent = 0.28"

Freespan Axial OD – Largest Voltage = 0.45
Freespan Axial OD – Longest Extent = 33.53"

Freespan Volumetric – Largest Voltage = 0.09

Freespan Volumetric – Largest Extent = 0.25" x 0.44"

Tube Support Volumetric – Largest Voltage = 0.41
Tube Support Volumetric – Longest Extent = 0.17" x 0.41"

Pre-heater Wear – Deepest Flaw = 45%

U-Bend Circ ID – Largest Voltage = 0.65
U-Bend Circ ID – Longest Extent = 42°

Tube Support Axial OD – Largest Voltage = 0.95, Repair Limit = $\geq$ 1.0 Volt

- In addition to the flaws identified by ECT there are 7 tubes on the repair list due to partially collapsed TIG welded sleeves.

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

- All crack-like indications, sizable wear greater than 40% at AVBs and baffle plates will be plugged. Leak tight sleeves and leak limiting sleeves with detectable degradation will be plugged. Also, sizable loose part wear greater than 40% or loose part wear less than the repair limit where the loose part can not be removed will be plugged.

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).

- There have been no significant indications reported to date. Prior cycle ECT data will be reviewed following the inspection to provide growth rate information in support of the operational assessment. Historical data is also used to identify bobbin signals which exhibit change may therefore be indicative of cracking. Bobbin signals which are present in the first ISI and exhibit no change relative to the current data are recorded in the database with a tracking flag. Those signals which show change are tested with a +Point coil to determine whether the bobbin indication is indicative of a flaw. At CPSES both Resolution analysts must independently review the historical data and concur that the indication has not changed. Otherwise, the indication is tested with the +Point coil. The list of bobbin I codes subject to review for change is listed below.

  - DEI – Distorted Expansion Indication
  - DFI – Differential Freespan Indication
  - DNI – Freespan Ding Indication
  - DTI – Distorted Tubesheet Indication
  - FSD – Freespan Differential Signal
  - LPI – Loose Part with Indication
  - MBM- Manufacturing Burnish Mark
  - NQI – Non-Quantifiable Indication

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

- One axial ID indication has been detected in the U-bend of Row 13 Column 4 of SG 4. The indication is 0.33 volts and is 0.43 inches long. The phase angle of the signal is 14 degrees which would indicate a depth of less than 40% TW. Review of the 1RF10 ECT data shows a small signal present at the same location but with a lower phase angle. The 1RF11 data may represent shallow PWSCC or alternately, an ID surface scratch. The indication has been conservatively treated as though it is PWSCC. The tube is on the repair list and the +Point examination program has been expanded (in accordance with a Westinghouse Owners Group report on this subject) to include all u-bends through Row 25 in SG 4.

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

- No probes other than bobbin and typical rotating probes are being used.

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

- Tube selection for in situ testing will follow the methodology prescribed by the EPRI guideline. To date, no indications meet the initial screening criteria.

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

- No tube pulls are planned.

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

- Assessment of tube integrity for the current operating cycle (cycle 11) will follow a methodology consistent with the EPRI tube integrity guideline. To date, no indications have been detected that challenge leakage or tube integrity.

13. Provide the schedule for SG-related activities during the remainder of the current outage.

- ECT inspection completion – October 23rd
- Plugging completion – October 25th
- Manway installation – October 30th

14. Discuss the following regarding loose parts:

a) What inspections are performed to detect loose parts,

- Video inspection of the annulus, tubelane, and T-slot at the TTS of all 4 SGs
- Video inspection of the T-Slot and annulus region of B Baffle Plate (C2) for all 4 SGs
- In-bundle of TTS in response to +Pt inspection
- As applicable response to +Pt inspection of B Baffle Plate

b) Describe if any loose parts were detected and their location within the SG.

- ECT has detected a total of 52 tubes with PLP (possible loose part) indications. The majority are located on top of the hot leg tubesheet and have been reported in previous examinations. Video inspection has also identified small foreign objects on top of the cold leg tubesheet. No loose parts were observed over baffle plate B where feedwater flow enters the tube bundle during normal operation. This represents a significant improvement from prior cycles and reflects success in preventing loose parts ingress into the SGs. Video inspection has been completed in all four SGs.

c) If loose parts were removed from the SG.

- Observed parts are retrieved if feasible. A total of 10 small loose parts have been removed between the four SGs. All other visually verified loose parts that were not retrieved have been evaluated and can safely remain in the SG without any adverse impact on cycle 12 operation.

d) Indications of damage associated with loose parts, and

- ECT and visual inspection data does not indicate any tube damage from PLP (possible loose part) indications

e) The source or nature of the loose parts if known.

- Video inspection data shows that many of the PLP indications are actually pieces of hardened sludge or scale which broke apart during retrieval attempts. Others are small bits of wire, weld slag, etc., whose origin is unknown.

15. Discuss any changes to data analysis guidelines that will be implemented during the outage.

- No significant changes have been made to the data analysis methodology used in the previous 1RF10 examination. Minor changes were made to the document at the beginning of the inspection to clarify personnel responsibilities, update training requirements, and add reporting acronyms.