

Answers to follow-up questions from the
Comanche Peak (CPSES) SG ISI conference call

From the 70% SG ISI conference call held on 10/20/05, CPSES had 3 outstanding questions to which we agreed to provide further information. These 3 questions were:

1. Discuss the results from +Pr expansion of u-bend region,
2. Provide further information concerning any in situ test(s) and discuss the results, and
3. Discuss performance of Primary and Secondary Analysts with respect to freespan axial indications.

Answers to these questions are provided on the following pages.

#1 Expanded +Pt in u-bend region

No further indications were observed after +Pt inspection expansion to Row 25 in SG4.

#2 In Situ Pressure Testing Results Discussion

During the Comanche Peak 1RF11 outage, two tubes were selected for in situ pressure testing even though these locations were not required test locations per the EPRI In Situ Pressure Testing Guideline, Revision 2. The locations tested were SG1 R32 C99 and SG4 R24 C22. Both tubes were tested in a full tube mode. R32 C99 includes the longest flaw length reports for this mechanism; R24 C22 includes the largest +Pt amplitude responses for this mechanism.

R32 C99:

This tube contained freespan axial ODSCC indications similar to the type of indications observed at Comanche Peak Unit 1 since the 1RF09 (2002) outage. This tube differed in that the crack density per support to support span was higher than observed on past tubes. In addition, the tube span from C9 to C10 contained a continuous length ODSCC flaw approaching 36 inches. Due to the observation of this length, which was previously unobserved at Comanche Peak, it was decided to conservatively pressure test the tube. The temperature adjusted 3 times normal operating pressure differential proof test pressure for Comanche Peak 1 is 4266 psi. A conservative proof test pressure of 4350 psi was selected based on a conservative estimate of the limiting burst pressure for R32 C99. The pressure test cycle included hold times at 1430, 2250, 2841, 3350, 3850, and 4350 psi, with the proof test pressure held for 5 minutes. In addition, the tube was pressure tested to an overpressure condition of 4650 psi, or 300 psi above the proof test pressure. No leakage or burst was reported.

The post in situ RPC examination of this tube indicates that the +Pt flaw amplitudes were relatively unchanged from the pre test condition. The largest amplitude change of 0.11 volt occurred for the largest pre test signal. This change is consistent with past in situ pressure tests of freespan ODSCC signals, including tubes pulled for this mechanism during the 1RF09 outage. Flaw lengths were not changed by the pressure test. The results of this test confirm the results of the pulled tube sizing methodology. The limited flaw change due to pressure testing indicates that the flaw was not plastically deformed, and that imminent burst was not realized.

R24 C22:

This tube also contained freespan axial ODSCC, however the reported flaw lengths and flaw density per span length were significantly less than those observed for R32 C99. No leakage or burst at 4350 psi was observed. The test cycle for this tube did not include overpressure. The post test RPC data indicates similar results as R32 C99; limited flaw amplitude change and no flaw length change post in situ pressure test.

In conclusion the in situ pressure test results and observations of limited change post test indicate that substantial margins against the performance criteria are provided for these indications.

**#3 Tertiary Review of Bobbin Coil Data Using Automated Data Screening
(includes discussion of Primary and Secondary Analyst performance)**

On October 17th, 2005 during a special interest MRPC examination of Row 32 Column 99 in SG 1 axial flaws were detected immediately above and below the support spans scheduled for test. The bobbin coil analysis had reported two distorted freespan indications (DFI) at elevation C7 + 33.29" and C8 + 10.07". The scheduled test extent was C7 to C9. In order to ensure that the entire span is tested with MRPC the scheduled test extent includes approximately two inches above the upper support plate and two inches below the lower support plate. The MRPC test confirmed single axial indications (SAI) at the location of the two bobbin coil DFI signals, however no distorted bobbin signals had been reported at the location of the two additional flaws adjacent to the tube supports. Another special interest MRPC examination was subsequently scheduled on October 19th with a programmed test extent of C6 to C10. This data showed an SAI signal response extending for an estimated 33.53" along the span of tubing between C9 and C10. The maximum signal amplitude along the length of the flaw is 0.25 volts. A review of the bobbin coil data showed low level signal responses along this area which had not been reported by either of the evaluators performing manual data analysis. As manual analysis of such low level signals can be challenging it was decided to run the bobbin data through the Westinghouse Automated Data Screening (ADS) computer software to determine whether the signals in question could be reported without excessive false positives. The bobbin data for the other six tubes with freespan axial ODSCC were also processed and the sorting parameters were adjusted such that the previously reported DFI signals were identified as well as the low level signals above C9 in Row 32 Column 99. Additional DFI signals were reported in two of these tubes that had not been reported by the manual analysts.

The freespan flaws in the Comanche Peak Unit 1 site specific performance demonstration were also successfully detected. The optimum ADS signal extraction voltage was determined to be 0.15 volts on a filtered 300 KHz channel.

Starting on October 21st, the bobbin data from all four steam generators was processed through ADS. All additional freespan signals were evaluated by two independent resolution analysts including a review of the first ISI data to determine change. This resulted in a total of 167 additional DFI calls between the four steam generators. All of the tube locations with the DFI calls were tested with MRPC to determine whether a flaw was present. Of the 167 DFI signals, one was confirmed as a low level flaw with an amplitude of 0.08 volts on the plus point coil (SG 1 Row 35 Column 37).

Table 1 provides the examination results for freespan flaws prior to the tertiary review by ADS. Primary and Secondary analysis is compared to Resolution results for the purpose of whether one or both analysis parties reported the DFI signal. The plus point signal amplitude and associated flaw length is also listed to provide perspective on the magnitude of each flaw.

Table 2 provides the same information after the ADS review. Most of the additional indications detected are indicative of low level axial ODSCC.

#3 (continued)

TXU 1RF11 Steam Generator Examination

Table 1

Bobbin Analysis Detection of Freespan ODS/CC – Manual Analysis Only

SG	Row	Col	Call	Location	+Pt Vmax	Length	Primary	Secondary
1	32	99	DFI	H1 + 17.97	0.10	0.34	O	X
			DFI	H7 + 8.88	0.10	0.34	O	X
			DFI	H7 + 30.04	0.22	0.62	O	X
			DFI	C8 + 10.07	0.11	0.30	O	X
			DFI	C7 + 33.29	0.09	0.21	O	X
1	15	25	DFI	C7 + 9.08	0.07	0.15	O	X
1	6	50	DFI	C10 + 4.40	0.11	0.20	X	X
2	30	65	DFI	H3 + 33.77	0.24	1.05	X	O
2	11	91	DFI	H10 + 9.79	0.10	0.55	O	X
4	24	22	DFI	C8 + 34.57	0.11	2.20	X	O
			DFI	C8 + 27.68	0.42	3.40	X	X
			DFI	C8 + 26.58	0.06	Same flaw	X	O
4	9	39	DFI	C8 + 10.25	0.14	0.12	X	X
			DFI	C8 + 12.87	0.14	0.18	X	X
			DFI	C8 + 41.29	0.17	0.19	X	X

X = Detected
 O = Not Detected

- 15 DFI locations that are SAI by +Point
- 5 called by both primary and secondary
- 10 called by either primary or secondary

#3 (continued)

TXU 1RF11 Steam Generator Examination

Table 2

Bobbin Analysis Detection of Freespan ODSCC – With Computer Screening

SG	Row	Col	Call	Location	+Pt Vmax	Length	Pri	Sec	ADS
1	32	99	DFI	H1 + 17.97	0.10	0.34	O	X	X
			DFI	H7 + 8.88	0.10	0.34	O	X	X
			DFI	H7 + 30.04	0.22	0.62	O	X	X
			DFI	C9 + 30.39	same ind	as below	O	O	X
			DFI	C9 + 11.23	0.25	33.53	O	O	X
			DFI	C9 + 8.28	same ind	as above	O	O	X
			DFI	C9 + 1.66	same ind	as above	O	O	X
			DFI	C8 + 23.98	0.09	0.60	O	O	X
			DFI	C8 + 10.07	0.11	0.30	O	X	X
			DFI	C8 + 7.20	0.12	1.76	O	O	X
			DFI	C8 + 2.22	0.08	0.54	O	O	X
			DFI	C7 + 41.01	0.07	0.75	O	O	X
			DFI	C7 + 39.71	0.22	0.81	O	O	X
			DFI	C7 + 38.49	0.15	1.11	O	O	X
			DFI	C7 + 33.29	0.09	0.21	O	X	X
			DFI	C7 + 27.60	0.07	0.24	O	O	X
			DFI	C7 + 12.78	0.10	0.54	O	O	X
			DFI	C7 + 3.54	0.11	0.39	O	O	X
			DFI	C7 + 2.49	0.08	0.54	O	O	X
			DFI	C6 + 10.68	same ind	as below	O	O	X
			DFI	C6 + 5.46	0.24	19.61	O	O	X
			DFI	C6 + 3.19	same ind	as above	O	O	X
			DFI	C6 + 1.25	same ind	as above	O	O	X
			DFI	C5 + 14.25	same ind	as below	O	O	X
			DFI	C5 + 13.20	same ind	as below	O	O	X
			DFI	C5 + 12.82	0.19	4.23	O	O	X
			DFI	C5 + 9.51	0.11	1.54	O	O	X
			DFI	C5 + 8.90	same ind	as above	O	O	X
1	15	25	DFI	C7 + 9.08	0.07	0.15	O	X	O
1	6	50	DFI	C10 + 4.40	0.11	0.20	X	X	X
1	35	37	DFI	C8 + 22.39	0.08	1.28	O	O	X
2	30	65	DFI	H3 + 33.77	0.24	1.05	X	O	X
2	11	91	DFI	H10 + 9.79	0.10	0.55	O	X	X
4	24	22	DFI	C8 + 34.57	0.11	2.20	X	O	X
			DFI	C8 + 27.68	0.42	3.40	X	X	X
			DFI	C8 + 26.58	same ind	as above	X	O	X
4	9	39	DFI	C8 + 41.29	0.17	0.19	X	X	X
			DFI	C8 + 41.23	same ind	as above	O	O	X
			DFI	C8 + 12.87	0.14	0.18	X	X	X
			DFI	C8 + 12.79	same ind	as above	O	O	X
			DFI	C8 + 10.25	0.14	0.12	X	X	X
			DFI	C8 + 10.16	same ind	as above	O	O	X