SONGS Unit 3
Steam Generator Inspections
3C14

Update with the NRC

November 17, 2006

SONGS Unit 3 Background

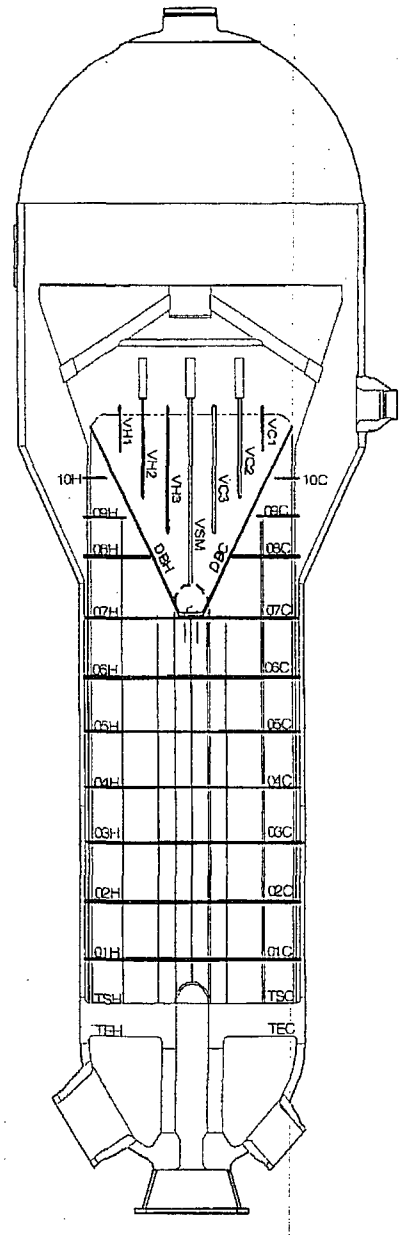
Two (2) steam generators

- Supplied by Combustion Engineering
- High-Temperature Mill Annealed (HTMA) Alloy 600 Tubing
- 9350 tubes per SG when new
- Designated SG 88 & 89
- SG88 - 8646 tubes in service, no sleeves
- SG89 - 8699 tubes in service, no sleeves

Recent Exam Outages

- Current Refueling Outage (3C14) 18.1 EFPY
- Prior Refueling Outage (3C9) 10.1 EFPY
  - Performed chemical cleaning of secondary side, full length of tubes

SONGS Steam Generator



Completion Status as of 11/17/2006

- Bobbin ECT Inspection - Complete
- +Point ECT Inspection – 99% Complete
- Secondary Side Visual Inspection - Complete
- In-situ Testing – No candidate tubes identified
- Plugging – To begin 11/18/2006

Note: Since exams are still in progress, all data and numbers in this presentation should be considered preliminary and subject to change.

Discussion Points (DP)

DP-1) Discuss any trends in the amount of primary-to-secondary leakage observed during the recently completed cycle.

- Unit 3 has some reported extremely low-level primary-to-secondary leakage. It was discovered on June 2, 2006, and has remained stable at an estimated 2×10^{-5} gallons per day. This level of leakage is well below the threshold of detection (~0.1 gal/day) of SONGS Unit 3's normal monitoring instrumentation. The leakage was detected within the SONGS program for monitoring radioactive effluent paths of release to the environment which includes collection and measuring activity in a continuous charcoal filter sample on a weekly basis. Monitoring will resume following SONGS Unit 3 restart.

Discussion Points (DP)

DP-2) Discuss whether any secondary side pressure tests were performed during the outage and the associated results.

- No secondary side pressure tests were performed.

DP-3) Discuss any exceptions taken to the industry guidelines.

- No exceptions to the industry guidelines were taken

Discussion Points (DP)

DP-4) Description of Inspections Performed

Bobbin Exam

- Full Length Exam of In-Service Tubes (100%)

Rotating Exams (+Point)

- Hot Leg top-of-tubesheet locations (100%) (Inspection to TSH-13.00")
- Cold Leg top-of-tubesheet locations (100%) (Inspection to TSC-13.00")
- Rows 1-4 U-Bend Locations (100%)
- Rows 5-10 U-Bend Locations (20%)
- Special Interest Locations ~ 3600 locations
  - Non-quantifiable bobbin indications (I-Codes) ~ 170 locations
  - Dents ≥ 2 volts (100%) ~ 725 locations
  - Dings ≥ 4 volts (100%) ~ 900 locations
  - Tube wear at supports (100%) ~ 1800 locations

DP-5) Inspection Results

	SG88	SG89
TSH Circ, Axial, Volumetric	~5	~2
TSC Circ, Axial, Volumetric	0	0
Freespan Axial	0	0
Tube Support Axial	0	0
Tube Support Wear (>44% TW)	0	0
Tube Support Wear (Preventative)	~23	~8
Total Repairable Tubes	~28	~10

Discussion Points (DP)

DP-5) New Inspection Findings

- During the 3R14 inspection, no damage mechanisms that were new to SONGS-3 were detected
- All mechanisms were previously detected and included in the degradation assessment and the operational assessment.

Discussion Points (DP)

DP-6) Repair/Plugging Plans

- **Repair**
  - All indications exceeding Technical Specification repair criteria (≥44% through wall)
  - All crack-like Indications
  - Quantified (Percent) Wear Indications
    - ≥25% At tube support locations Diagonal Bar Hot and Diagonal Bar Cold
    - ≥30% At all other support locations
  - Circumferentially oriented indications will be stabilized

Discussion Points (DP)

DP-7) In-situ Pressure Test and Tube Pull Plans

- Utilizing latest EPRI and CEOG guidelines for candidate selection and testing
- All tubes meeting criteria will be tested
- No tubes have been selected to date this outage based on EPRI/CEOG screening criteria
- No tube pulls are planned based on inspection results

Discussion Points (DP)

DP-8) Schedule for SG Related Activities during Remainder of Current Outage

- 11/17/06: Complete Eddy Current
- 11/18/06: Complete Any In-Situ Testing
- 11/20/06: Complete Repairs

Discussion Points (DP)

DP-9) Discuss Loose Parts

- **What Inspections are performed to detect loose parts?**
  - Secondary Side Visual Exam
  - 100% Bobbin Probe
  - 100% TSH with rotating +Point
  - 100% TSC with rotating +Point

Discussion Points (DP)

DP-9) Discuss Loose Parts

- A description of any loose parts detected and their location within the SG
  - One loose part, small, non-magnetic, man-made, appears to be plastic. Found during visual inspection. Approximately 0.375 inches by 0.375 inches, 0.06 inch thickness.
  - Location: SG 89, Cold Leg TTS peripheral annulus
- If the loose parts were removed from the SG
  - Yes
- Indications of the tube damage associated with the loose parts
  - None
- Source or nature of the loose parts, if known
  - Unknown