

Request #22, NRC SIT Question#16 Information

16 Have removed tendons been inspected and were there any significant findings?

Enclosed in this folder in response to the above question:

There was no requested/required inspections performed of the removed tendons. Various questions were asked of the SGR Tendon Field Engineer and PSC Lead Individual, responses documented in the enclosed.

{Containment Opening - Tendon Removal Timeline.xlsx}

{10 28 interview Cliff Peters Gary Goetsch.pdf}

{Interview with Gary Goetsch.pdf}

10/28/2009 Interview Gary Goetsch and Clifford Peters

Present: Gary Goetsch (PSC), Clifford Peters (Bechtel), Craig Miller, Chong Chiu, Patrick Berbon

1- Assymetry lift-off values

PB: The data show an asymmetry in the lift-off values when measured at different buttresses on the same cable. Is that usual?

GG: We (PSC) do surveillance testing on many plants..It is usual to measure differences in lift-off values. The difference is typically less pronounced than at CR3.

CP: The difference at CR3 is more than usually observed.

2- Operator discrepancy

PB: When you do the lift-off test, is there possibility of operator discrepancy?

CP: The force increment is only about 20psi. There will be a different reaction time but it cannot account for the large force difference observed at CR3.

3- Have you observed de-tensioning at other plants?

GG: De-tensioning is occasionally found during routine maintenance. However, "runs" of de-tensioned tendons, such as the ones observed at CR3, are rare.

CP: Has been involved in 25 surveillance tests together with PSC and can only recall re-tensioning at Calvert Cliff.

GG: In the case of VC summer, re-tensioning was done on the vertical tendons at the time of life extension analysis to go beyond 40 years because de-tensioning was progressing faster than expected.

4- When you pulled out the tendons, did you observe any corrosion?

CP: It is all in the documentation on the tendon removal package. Did not observe loss of grease in any tendon. Some corrosion was observed on tendon cap, where water migrated in gap. No corrosion on gasket surfaces or on tendons.

R16 Shutdown	Mode 3	Mode 4	Mode 5	Mode 6
	09/26/09	09/26/09	09/26/09	10/01/09
	0:00	9:00	17:00	18:00

	Notes / Remarks	Date	Time	Plant Mode	Photos	Reports	Log entries in W.O.
Layout of Cut lines on RB face							
QC visual inspection of the cut area (2 foot VT insp. Adjacent to the cut)	No QC visual examinations performed on the containment surface in the area of the lay-out / saw cut. (Source: Richard Griffith - SGR QC Lead 10/16/09)	N/A					
Opening initial cut.	Initial layout cut saw cut was performed 9/21/09 - 9/22/09. The cut was 1/2" deep. (Source: Richard Ionelli - SGR Civil F.E. 10/16/09)	9/21/09 - 9/22/09					
Detensioning of 2 Tendons	See Cliff Peters E-Mail 10/16/09 14:52 (PDF (R16 Tendon Detensioning sequence.pdf) in L:\Shared\CR3 Containment\Containment Root Cause Files\Root Cause\Tendon Surv Info Folder) Except below	9/26/09					
Did they take a lift-off force measurement? (Reports)	No lift-off force measurement were taken, tendon forces were only monitored for overstress when removing the shims. (Source: Cliff Peters - SGR Tendon F.E. 10/16/09)	N/A	N/A	N/A			
Any abnormalities noted during the detension?	No abnormalities were noted when detensioning of the tendons. All activities went as expected. (Source: Cliff Peters - SGR Tendon F.E. 10/16/09)	N/A	N/A	N/A			
Tendon cutting, date/time of each, Plant Mode at time of each. (sequence needed here, Reports)	See Cliff Peters E-Mail 10/16/09 14:52 (PDF (R16 Tendon Detensioning sequence.pdf) in L:\Shared\CR3 Containment\Containment Root Cause Files\Root Cause\Tendon Surv Info Folder) Except below	9/26/09 - 10/1/09					
Any abnormalities noted during the cutting (any appear/sound less tensioned or not energized as much as the others)?	No abnormalities were noted when cutting of the tendons. All activities went as expected. (Source: Cliff Peters - SGR Tendon F.E. 10/16/09)	N/A	N/A	N/A			
Removal of tendons, any abnormalities (broken tendon wires) noted?	No broken wires, water, excessive corrosion or other abnormalities noted during Tendon removal. (Source: Cliff Peters - SGR Tendon F.E. 10/16/09)	N/A	N/A	N/A			

Vertical

34V12 - 9/26/09 Ram De-tension
34V13 - 9/26/09 Ram De-tension
34V8 - 9/26/09 Plasma cut
34V9 - 9/26/09 Plasma cut
34V10 - 9/27/09 Plasma cut
34V11 - 9/27/09 Plasma cut
34V14 - 9/27/09 Plasma cut
34V15 - 9/27/09 Plasma cut
34V16 - 9/27/09 Plasma cut
34V17 - 9/28/09 Plasma cut

Note: We de-tensioned 34V12 & 34V13 at the same time that the we started at 34V8 & worked counter clockwise to 34V17.

Horizontal

Note: All horizontal tendons were de-tensioned by plasma cutting starting at the bottom working toward the top.

42H27 - 9/26/09
42H28 - 9/27/09
42H29 - 9/28/09
42H30 - 9/28/09
42H31 - 9/29/09
42H32 - 9/29/09
42H33 - 9/29/09
42H34 - 9/30/09
53H27 - 9/27/09
53H28 - 9/28/09
53H29 - 9/29/09
53H30 - 9/29/09
53H31 - 9/30/09
53H32 - 9/30/09

Start of Hydro-Dem. 9/30/09

Per Jon Burchett, Hydro-Dem began at the bottom of the opening with 2 horizontal tendons at the top left to detension.

53H33 - 9/30/09
53H34 - 10/1/09

**Interview with Gary Goetsch, PSC supervisor over tendon detensioning
October 24, 2009
Marci Cooper and Craig Miller**

- What was done and sequence? –
 - De-tensioned 2 vertical top center – night shift performed per plan
 - Absolutely no sequence for the plasma cuts
 - He had asked Mr. Peters (Bechtel) when came on job what sequence to be used – was told no sequence per plan, any sequence was ok to cut
 - Started plasma cutting with 3 crews – 1 on vertical, 1 on B2-4, 1 on B3-5
- What was observed or noted?
 - Was very smooth cut – by that means that are relieving 1.2-1.4 million lbs. each. The cuts and self-relieving very smooth, because shims still in place/tight behind grease cans so unloaded evenly – if not, they would have slipped out.
 - When asked if some tendons did not self-relieve as cutting, he said he didn't recall or know – did not have machine cut effect or wouldn't still have shims tight
 - When asked what he normally sees, he indicated could be either way, i.e., start cutting and subsequent tendons self-relieve as pick up more load, or some don't and cut. Either way can be smooth
- How many jobs like this has he done and what was similar or different in other experiences?
 - This is 11th SGR job
 - This is the first and only one where did this way – no sequence to cutting and not de-tensioning some tendons outside the cut area before cutting concrete
 - Usually, cut within the opening per specified sequence – e.g., cut one, skip two, cut one, skip two, go up and then alternate back down
 - Then after all done in the opening, detension around the opening, e.g., 5 -10 on either side and above/below, before cut containment
 - Knew (the CR-3 plan) was a bad idea
 - S&L did some model that said would take the load
 - He was told the reason for doing this way at CR-3 was to maintain the use of the polar crane
 - His concern would be stress loads around concrete
- What was duration of cutting activity?
 - Cut from one end of platform, pull tendon out other; then start on next. Except for verticals, no platform changes. Cut straight across
 - Roughly 1 to 2 tendons per shift, roughly 4 days to complete – finished around 10/1 (coiled), last cut on 9/30
- Some reports that others detension in opening before cut – how does that match with your experience?
 - Have to cut under tension if plasma cut. Otherwise would relax... would have to probably grind, would take days and days to cut. Just from schedule standpoint would not do
 - Others plasma cut under tension