



Portland General Electric Company

Donald J. Broehl, Assistant Vice President

July 9, 1980

Trojan Nuclear Plant
Docket 50-344
License NPF-1

Director of Nuclear Reactor Regulation
ATTN: Mr. Robert A. Clark, Chief
Operating Reactors Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

In accordance with Section 4.2.1.4.3 of the Trojan Final Safety Analysis Report regarding onsite inspection of fuel assemblies, control rods, etc., attached is a report titled, "Preliminary Report on Trojan EOC-2 Fuel Examination". The attached report documents the results of the End-of-Cycle 2 (EOC-2) fuel inspection which were discussed with C. M. Trammell and M. Tokar of the NRC Staff by phone on May 30, 1980.

If you have questions or comments regarding this attached report, please do not hesitate to contact us.

Sincerely,

Attachment

c: Mr. Lynn Frank, Director w/attach
State of Oregon
Department of Energy

A001
S
1/1

8007160661

PRELIMINARY REPORT ON TROJAN EOC-2 FUEL EXAMINATION

A preliminary report on the Trojan EOC-2 Fuel Examination.

1. Examinations Performed

1.1 Binocular Visual Examinations

One hundred and sixty (160) of the 193 total fuel assemblies in the core were examined during the core unloading (4 - Region 1, 56 - Region 2, 60 - Region 3, and 40 - Region 4).

1.2 TV Visual Examinations

1.2.1 Baffle Fuel Assemblies(examined for suspected baffle-gap jetting)

Forty-eight (48) fuel assemblies occupying interior or exterior baffle positions in Cycle 1 or 2 were examined (24 - Region 4 and 24 - Region 3). See Table 1 attached for specific assemblies.

1.2.2 EPRI Program Fuel Assemblies

Thirty-six (36) fuel assemblies were examined (8 - Region 2, 13 - Region 3 and 5 - Region 4) at high and/or low magnification and pre- and post-crud sampling (see Table 1 attached for specific assembled).

1.2.3 Other Fuel Assemblies

Eight (8) other assemblies (3 - Region 2, 4 - Region 3, and 1 - Region 4) were examined for various reasons as given in Table 1.

1.3 Crud Sampling

Twelve (12) fuel assemblies (5 - Region 2, 5 - Region 3 and 2 - Region 4) were sampled. See Table 1 attached for specific assemblies.

2. Examination Results

Preliminary results of the examinations based upon onsite observations are as follows:

2.1 Two of the 48 baffle assemblies each had one failed rod. Specific rods are as follows:

F/A No.	Core Position		Face No.	Rod No.
	Cycle 1	Cycle 2		
D38	-	M-2*	1	3
C18	B12*	F-8	2	15

* Exterior baffle positions

Assembly C32 which was in core baffle position M-2 in Cycle 1 was examined and found undamaged as was assembly D40 which was in core baffle position B-12 in Cycle 2. Assembly C47 which was adjacent to the damaged face of C18 in cycle 2 was also examined and found undamaged. Baffle plate gap water jetting caused fuel rod failures.

- 2.2 Two spots were found on rods in assembly B27, core position M-14, Rod 16, Face 1, between Grids 5 and 6, and Rod 5, Face 1, between Grids 4 and 5. The spot on Rod 16 appeared to be a hole but could also be a crud patch. The two spots were examined, crud scrapped and then examined again. The appearance of the spots changed after scrapping indicating a possible redistribution of the crud although this will require further study. The crud samples collected were relatively clear and low in activity indicating the absence of high concentrations of fission products.
- 2.3 Rod bow on all of the assemblies examined was generally minor. Most channel closures observed were less than 50% of nominal and no two rods were touching.
- 2.4 Except for Grid No. 1, Face 2 of the damaged baffle assembly C18 and the known minor damage on Face 4, Grid 8 of assembly B39, no Grid damage was observed.
- 2.5 A qualitative assessment of crud deposition is as follows:
 - Region 4 F/As: Uniformly light over the assemblies.
 - Region 3 F/As: Light below Grid 6, light to moderate above Grid 6.
 - Region 2 F/As: Light to moderate below Grid 6, moderate to heavy above Grid 6.
- 2.6 Fuel assembly structural integrity was excellent for all assemblies except as noted in 2.4. There was no evidence of fuel assembly bow or twist, grid, thimble tube or nozzle damage and no depressed nozzle hold-down springs.
- 2.7 Rod to nozzle gaps (top and bottom) were generally uniform although some rods had slipped up or down. No rod was observed to be touching either nozzle.
- 2.8 As noted in Table 1, two fuel assemblies registered high loads upon removal from the core (C39 and B10) and one assembly (C64) was bumped slightly during transfer to the spent fuel pit. Examination of these and adjacent assemblies (C33, C24) revealed no damage.
- 2.9 A piece of foreign material was reported present on F/A B46, Face 3, Grid Span 2/3, between rods 8/9 during the binocular inspection. However, none was found during the subsequent TV inspection. A small piece was found, however, on the bottom nozzle of Face 2 under Rods 12 and 13 of F/A C-44. The object appeared metallic, was about 1" long x 1/8" wide x 1/16", and appeared somewhat circular at one end. It has not been determined yet what the object is. The object was not readily removable and may have been returned to the vessel when C44 was reloaded. Westinghouse has determined that no safety problem arises from such a foreign object.

3. Fuel Surveillance Program Conclusions

Based upon the above preliminary results, fuel performance on a generic basis was judged to be excellent and in general similar to fuel performance observed on two cycle 15x15 fuel assemblies. There did not appear to be any significant rod and/or assembly bow or structural anomalies, and crud deposition was generally as expected after the adjustment in coolant pH in the second cycle.

TABLE 1

TROJAN EOC-2 FUEL ASSEMBLY TV
VISUAL EXAMINATIONS AND CRUD SAMPLING

F/A No.	EPRI Exams				Baffle Side TV (4)	Other TV X ⁽¹⁴⁾
	Low Mag TV ⁽¹⁾	High Mag TV ⁽²⁾	Pre/Post Crud TV ⁽³⁾	Crud Sample		
B17						
B30	X		X	X		
B11	X	X	X	X		
B20	X					
B27	X	X	X	X		
B51	X	X				
B59	X					
B33				X		
B44				X		
B39						X ⁽⁹⁾
B46						X ⁽¹⁰⁾
C27	X	X	X	X	X ⁽⁵⁾	
C31	X	X	X	X		
C44	X	X	X	X	X ⁽⁵⁾	X ⁽¹⁰⁾
C47	X				X ⁽⁶⁾	
C57	X				X ⁽⁶⁾	
C10				X		
C55				X		
C53	X				X ⁽⁵⁾	
C06	X				X ⁽⁵⁾	
C26	X				X ⁽⁵⁾	
C49	X				X ⁽⁵⁾	
C29	X				X ⁽⁵⁾	
C45	X				X ⁽⁵⁾	
C56					X ⁽⁵⁾	
C63					X ⁽⁵⁾	
C46					X ⁽⁵⁾	
C16					X ⁽⁵⁾	
C39						X ⁽¹¹⁾
C33						X ⁽¹²⁾
C24						X ⁽¹²⁾
C64						X ⁽¹²⁾ (13)

F/A No.	EPRI Exams				Baffle Side TV (4)	Other TV
	Low Mag TV (1)	High Mag TV (2)	Pre/Post Crud TV (3)	Crud Sample		
C32					X (6)	
C36					X (6)	
C19					X (6)	
C35					X (6)	
C23					X (6)	
C48					X (6)	
C18					X (6)	
C05					X (6)	
C17					X (6)	
C02					X (6)	
D32	X		X			
D33	X					
D41	X		X			
D49	X					
D50	X					
D03					X (7)	
D27					X (7)	
D18					X (7)	
D46					X (7)	
D57					X (7)	
D56					X (7)	
D36					X (7)	
D14					X (7)	
D23					X (7)	
D59					X (7)	
D39					X (7)	
D28					X (7)	
D10						X (11)
D38					X (8)	
D35					X (8)	
D01					X (8)	
D53					X (8)	
D22					X (8)	
D26					X (8)	
D48					X (8)	
D05					X (8)	

F/A No.	EPRI Exams				Baffle Side TV ⁽⁴⁾	Other TV
	Low Mag TV ⁽¹⁾	High Mag TV ⁽²⁾	Pre/Post Crud TV ⁽³⁾	Crud Sample		
D40					X ⁽⁸⁾	
D06					X ⁽⁸⁾	
D47					X ⁽⁸⁾	
D61					X ⁽⁸⁾	

- (1) Two passes per face, nine rods full screen.
- (2) Left to right across each face at and below brids and brid midpoints, three rods full screen.
- (3) One to four rods full screen examined before and after crud sampling.
- (4) Four rods full screen, side next to baffle only.
- (5) F/A next to interior baffle in Cycle 1.
- (6) F/A next to exterior baffle in Cycle 1.
- (7) F/A next to interior baffle in Cycle 2.
- (8) F/A next to exterior baffle in Cycle 2.
- (9) Damaged grid (Face 4, Grid 8, right side in Cycle 1).
- (10) Check for foreign material (Face 3, Grid 2/3, Rods 8/9)- None found; found small piece on bottom nozzle, Face 2, under rods 12 and 13 on C44.
- (11) High load upon removal from core - no damage found.
- (12) Next to C39.
- (13) Bumped on containment side - no damage found.
- (14) Next to Face 1 of B27 which had spots.