Portland General Electric Company

David W. Cockfield Vice President, Nuclear

March 18, 1988

Trojan Nuclear Plant
Docket 50-344
License NPF-1

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington DC 20555

Dear Sir:

Trojan Nuclear Plant 1988 Refueling and Maintenance Outage

The 1988 refueling and maintenance outage is scheduled to begin April 13, 1988 and last 49 days. The scheduled date for returning to power operation is May 31, 1988. In order to complete post-maintenance and physics testing to support the return to power, May 21, 1988 has been scheduled as the work completion date. Extensive preplanning has taken place to ensure this schedule can be achieved. A list of the major activities scheduled for the outage is provided as Attachment 1, with key dates included where appropriate. A critical path schedule and refueling work schedule are provided as Attachment 2.

Sincerely,

Attachment

c: Mr. John B. Martin
Regional Administrator, Region V
U.S. Nuclear Regulatory Commission

Mr. William Dixon
State of Oregon
Department of Energy

Mr. R. C. Barr
NRC Resident Inspector
Trojan Nuclear Plant

A001
1/1

121 S.W. Salmon Street, Portland, Oregon 97204

MAJOR 1988 REFUELING AND MAINTENANCE OUTAGE ACTIVITIES

Refueling (April 23-May 9):

- Full core off-load to support fuel pellet retrieval.

Fuel Pellet Retrieval (April 27-May 4):

- Remove reactor vessel lower internals.
- Vacuum reactor vessel.
- Vacuum fuel transfer path.

Reactor Coolant Pump Motor Oil Cooler Inspections (Start April 18).

Steam Generators:

- Sludge lancing (April 18-23).
- Eddy-current examination of steam generator tubes (May 12-21).
- J-tube inspection (Start April 22).
- Replacement of two J-tubes per steam generator (Start April 22).
- Secondary side manway inspections (Start April 22).

Inservice Inspection (Start April 18):

- 463 Class 1 inspections to be performed.

"B" Reactor Coolant Loop Hot Leg Elbow Ultrasonic Examination (April 23-May 1).

Snubber Inspections (Start April 15).

Condenser Tube Inspection:

- "C" condenser.
- Tube cleaning, if needed.

Containment Local Leak Rate Testing (Start April 13):

- 74 tests.

Moisture Separator Reheater and Heater Drain System Inspection.

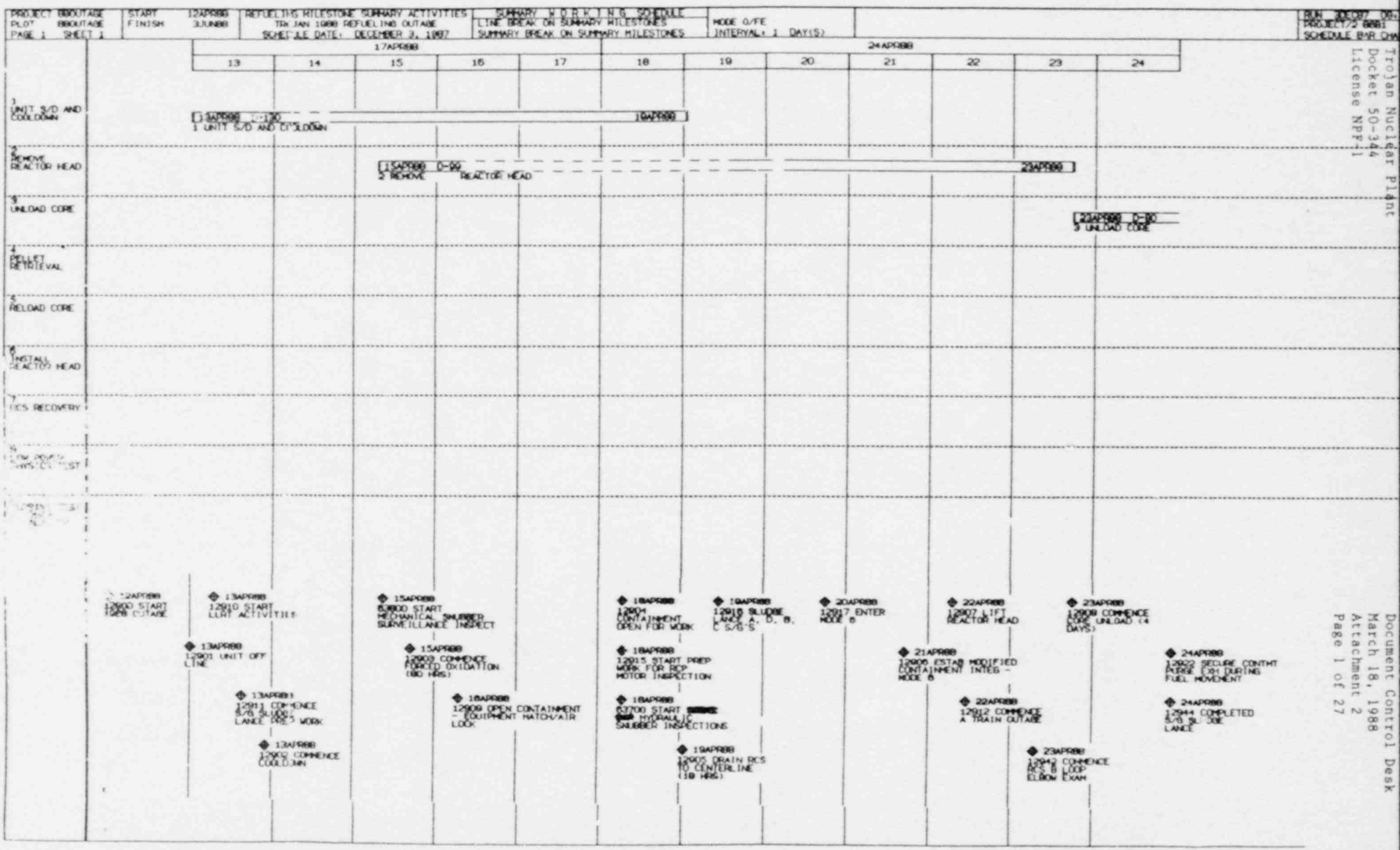
Motor-Operated Valve Maintenance.

Routine Valve Repairs and Repacking.

Routine Pump Inspections.

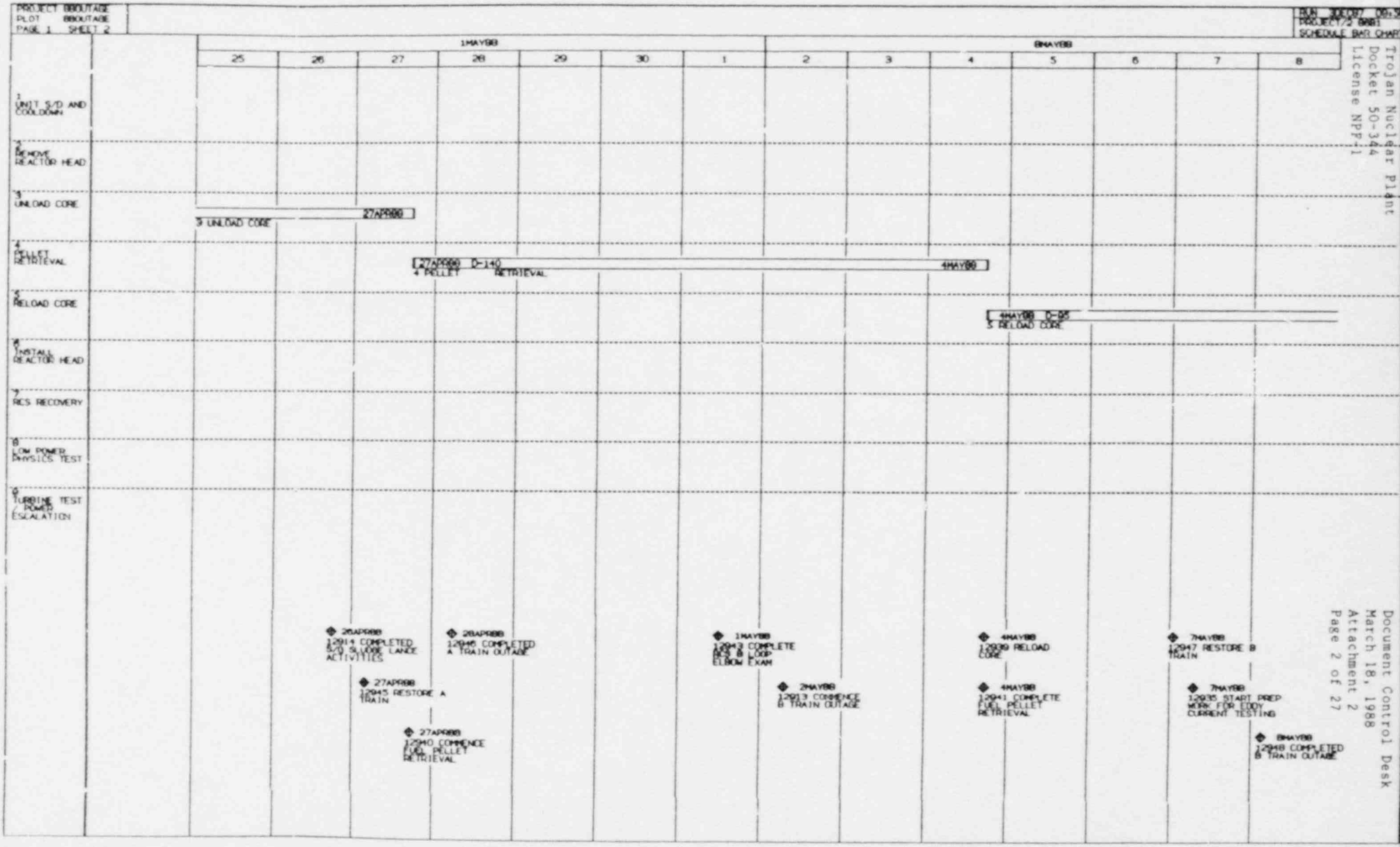
Significant Plant Modifications:

- Remote shutdown panel installation.
- Pipe supports.
- Replacement of steam generator blowdown system.
- Control room habitability modifications.
- Feedwater piping replacements.
- Replacement of both station batteries.
- Replacement of Barton pressure transmitters.



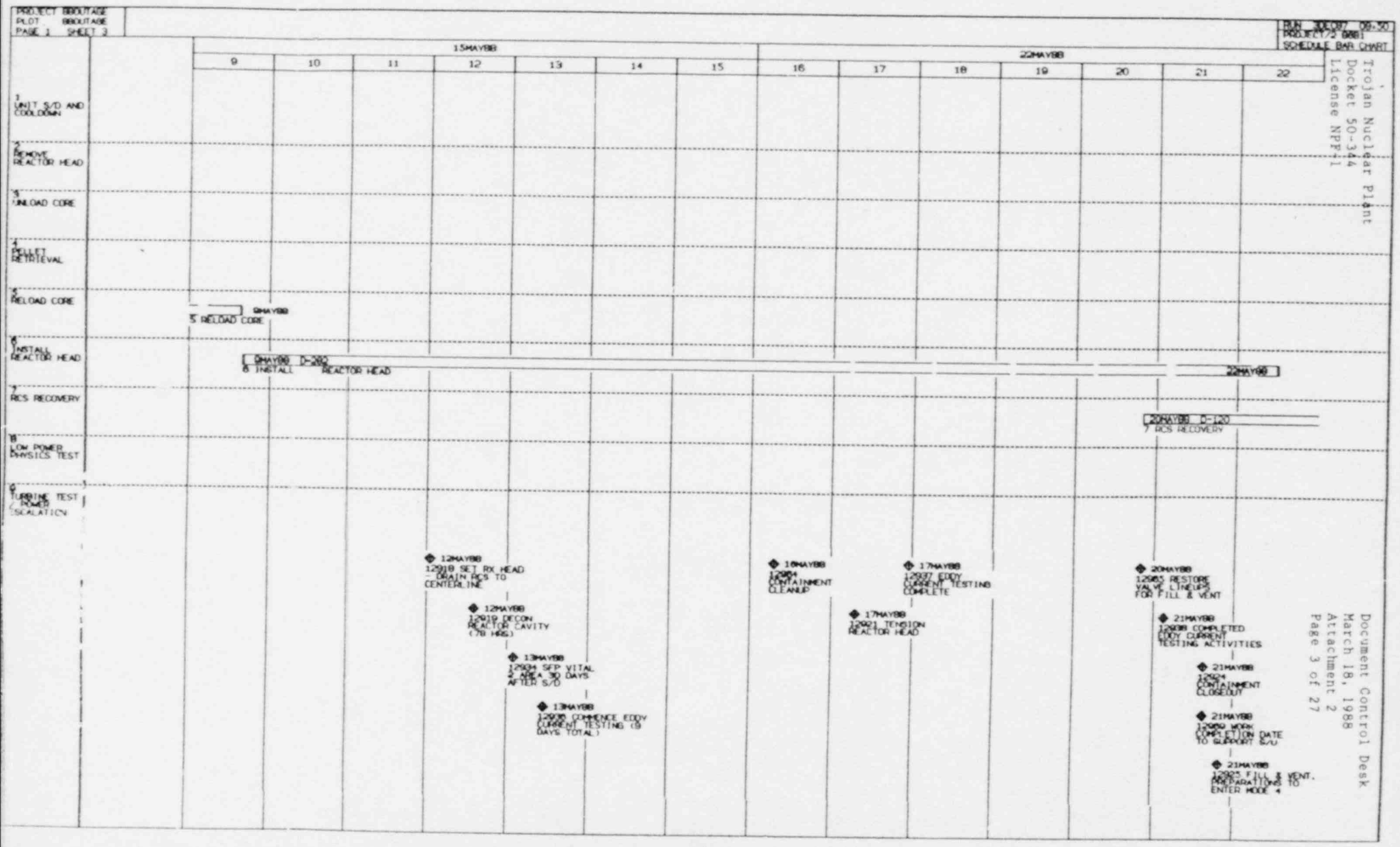
Trojan Nuclear Plant
Docket 50-344
License NPF-1

Document Control Desk
March 18, 1988
Attachment 2
Page 1 of 27



Trojan Nuclear Plant
Docket 50-344
License NPF-1

Document Control Desk
March 18, 1988
Attachment 2
Page 2 of 27



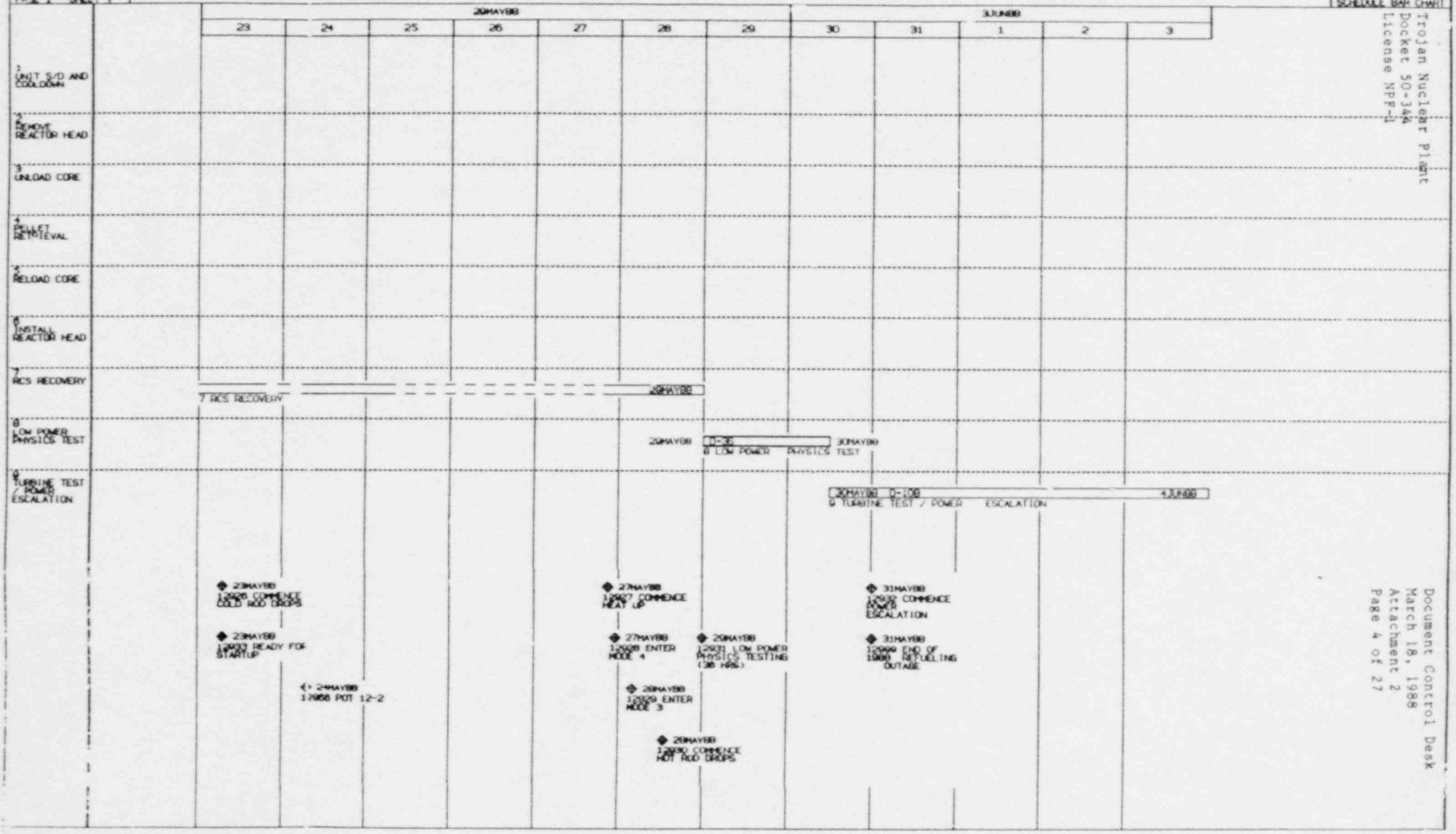
Trojan Nuclear Plant
Docket 50-344
License NPF-1

Document Control Desk
March 18, 1988
Attachment 2
Page 3 of 27

PROJECT SGOUTAGE
PLOT BBOUTAGE
PAGE 1 SHEET 1

RUN 30CCT87 09:50
PROJECT/2 BASE
SCHEDULE BAR CHART

Trojan Nuclear Plant
Docket 50-344
License NPF-1



Document Control Desk
March 18, 1988
Attachment 2
Page 4 of 27

ODE=O/FE ACTIVITY	D E S C R I P T I O N	DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D
12ØØ	START 1988 OUTAGE	Ø	EVENT		12APR88 Ø:ØØ	
1291	UNIT OFF LINE	Ø	EVENT		13APR88 Ø:ØØ	
1291Ø	START LLPT ACTIVITIES	Ø	EVENT		13APR88 7:ØØ	
	ALARA: 1. ALARA SCOPE REQUIRED COMMENTS: 1. THE NEXT ILRT MUST BE COMPLETED PRIOR TO APRIL 3Ø, 199Ø.					
1291I	COMMENCE S/G SLUDGE LANCE PREP WORK	Ø	EVENT		13APR88 15:ØØ	
1292	COMMENCE COOLDOWN	Ø	EVENT		13APR88 22:ØØ	
638ØØ	START MECHANICAL SNUBBER SURVEILLANCE INSPECT	Ø	EVENT		15APR88 9:ØØ	
1293	COMMENCE FORCED OXIDATION (8Ø HRS)	Ø	EVENT		15APR88 17:ØØ	
1299	OPEN CONTAINMENT - EQUIPMENT HATCH/AIR LOCK	Ø	EVENT		16APR88 7:ØØ	
1294	CONTAINMENT OPEN FOR WORK	Ø	EVENT		18APR88 7:ØØ	
1291S	START PREP WORK FOR RCP MOTOR INSPECTION	Ø	EVENT		18APR88 7:ØØ	
637ØØ	START S/G & B-P HYDRAULIC SNUBBER INSPECTIONS	Ø	EVENT		18APR88 7:ØØ	
	ALARA: 1. ALARA SCOPE REQUIRED COMMENTS:					

)E 1 REFUELING MILESTONES SORT BREAKS E START NODES PAGE 2

)E=O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
	1. IN 1986, B S/G SNUBBER RESERVOIR WAS FOUND EMPTY, ENGINEERING EVALUATED; IMMEDIATE ACTION TAKEN TO DECLARE B RCS LOOP IN-OPERABLE					
12905	DRAIN RCS TO CENTERLINE (18 HRS)	Ø	EVENT		19APR88 1:ØØ	
12916	SLUDGE LANCE A, D, B, C S/G'S	Ø	EVENT		19APR88 11:ØØ	
12917	ENTER MODE 6	Ø	EVENT		20APR88 18:ØØ	
	CONSTRAINTS: 1. ENTER MODE 6 AT BEGINNING OF THE 2ND PASS, STEP 19 FHP 5-2. 2. MUST COMPLETE GOI-11. 3. NEED TO BORATE TO REFUELING CONCENTRATION PRIOR TO ENTERING MODE 6. 4. REQUIRES RCS TO BE BORATED TO 2ØØØ PPM.					
12906	ESTAB MODIFIED CONTAINMENT INTEG - MODE 6	Ø	EVENT		21APR88 17:ØØ	
12907	LIFT REACTOR HEAD	Ø	EVENT		22APR88 7:ØØ	
12912	COMMENCE A TRAIN OUTAGE	Ø	EVENT		22APR88 11:ØØ	
12942	COMMENCE RCS B LOOP ELBOW EXAM	Ø	EVENT		23APR88 7:ØØ	
12908	COMMENCE CORE UNLOAD (4 DAYS)	Ø	EVENT		23APR88 18:ØØ	
12922	SECURE CONTMT PURGE EXH DURING FUEL MOVEMENT	Ø	EVENT		24APR88 23:ØØ	
12944	COMPLETED S/G SLUDGE LANCE	Ø	EVENT		24APR88 23:ØØ	
12914	COMPLETED S/G SLUDGE LANCE ACTIVITIES	Ø	EVENT		26APR88 18:ØØ	
12945	RESTORE A TRAIN	Ø	EVENT		27APR88 4:ØØ	

)E-O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
12940	COMMENCE FUEL PELLET RETRIEVAL	Ø	EVENT		27APR88 17:3Ø	
12946	COMPLETED A TRAIN OUTAGE	Ø	EVENT		28APR88 6:ØØ	
12943	COMPLETE RCS B LOOP ELBOW EXAM	Ø	EVENT		1MAY88 12:ØØ	
12913	COMMENCE B TRAIN OUTAGE	Ø	EVENT		2MAY88 7:ØØ	
12939	RELOAD CORE	Ø	EVENT		4MAY88 17:3Ø	
12941	COMPLETE FUEL PELLET RETRIEVAL	Ø	EVENT		4MAY88 17:3Ø	
12947	RESTORE B TRAIN	Ø	EVENT		7MAY88 1:ØØ	
12935	START PREP WORK FOR EDDY CURRENT TESTING	Ø	EVENT		7MAY88 7:ØØ	
12948	COMPLETED B TRAIN OUTAGE	Ø	EVENT		8MAY88 3:ØØ	
12918	SET RX HEAD - DRAIN RCS TO CENTERLINE	Ø	EVENT		12MAY88 1:ØØ	
12919	DECON REACTOR CAVITY (78 HRS)	Ø	EVENT		12MAY88 14:ØØ	
12934	SFP VITAL 2 AREA 3Ø DAYS AFTER S/D	Ø	EVENT		13MAY88 2:ØØ	
12936	COMMENCE EDDY CURRENT TESTING (9 DAYS TOTAL)	Ø	EVENT		13MAY88 11:ØØ	
12964	CONTAINMENT CLEANUP	Ø	EVENT		16MAY88 7:ØØ	
12921	TENSION REACTOR HEAD	Ø	EVENT		17MAY88 7:ØØ	
12937	EDDY CURRENT TESTING COMPLETE	Ø	EVENT		17MAY88 23:ØØ	

E=O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
12965	RESTORE VALVE LINEUPS FOR FILL & VENT	0	EVENT		20MAY88 20:00	
12938	COMPLETED EDDY CURRENT TESTING ACTIVITIES	0	EVENT		21MAY88 3:00	
12924	CONTAINMENT CLOSEOUT	0	EVENT		21MAY88 15:00	
12969	WORK COMPLETION DATE TO SUPPORT S/U	0	EVENT		21MAY88 15:00	
12925	FILL & VENT, PREPARATIONS TO ENTER MODE 4	0	EVENT		21MAY88 20:00	
12926	COMMENCE COLD ROD DROPS	0	EVENT		23MAY88 7:00	
12933	READY FOR STARTUP	0	EVENT		23MAY88 7:00	
12966	POT 12-2	0	EVENT		24MAY88 7:00	
12927	COMMENCE HEAT UP	0	EVENT		27MAY88 21:00	
12928	ENTER MODE 4	0	EVENT		27MAY88 23:00	
12929	ENTER MODE 3	0	EVENT		28MAY88 4:00	
12930	COMMENCE HOT ROD DROPS	0	EVENT		28MAY88 13:00	
12931	LOW POWER PHYSICS TESTING (36 HRS)	0	EVENT		29MAY88 0:00	
12932	COMMENCE POWER ESCALATION	0	EVENT		31MAY88 0:00	
12999	END OF 1988 REFUELING OUTAGE	0	EVENT		31MAY88 0:00	
	1 REFUELING MILESTONES		EVENT		31MAY88 0:00	

TROJAN 1988 REFUELING OUTAGE

N DATE Ø3DEC87 Ø95ØHRS

W O R K I N G S C H E D U L E

PGE - TROJAN

OJECT 88OUTAGE

PROJECT START 12APR88

ORIGINAL COMPL. 4JUN88

DE 1 UNIT S/D AND COOLDOWN

SORT BREAKS E START NODES

PAGE 1

DE=O/FE ACTIVITY	D E S C R I P T I O N	DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D
S/D REACTOR 12005		2	13APR88 Ø:ØØ		13APR88 2:ØØ	
COOLDOWN RCS TO MAINTAIN S/G PRESS @ 1ØØØ PSIG 12008		9	13APR88 5:ØØ		13APR88 14:ØØ	
	CONSTRAINTS: 1. MUST MAINTAIN CONSTANT TEMPERATURE DURING LIFT TEST. COMMENTS: 1. INSTALL S/G TEMPERATURE MONITOR IN C-44Ø (INSIDE CONTAINMENT) - I&C ACTION. 2. NEED S/G @ 1ØØØ FOR S/G SAFETY TESTING. 3. MP-7-1 (1ØØØ# +/- 1Ø#)					
MAINTAIN PRIMARY PRESSURE (18ØØ-21ØØ PSIG) 12006		8	13APR88 14:ØØ		13APR88 22:ØØ	
	COMMENTS: 1. NEED PRESS BETWEEN 18ØØ-21ØØ FOR PRZR SAFETY TESTING. 2. RUN AS MANY RCP'S AS POSSIBLE TO MAXIMIZE S/G BLOWDOWN.					
COOLDOWN RCS TO 325 DEG F +/- 2Ø DEG F 12010		8	13APR88 22:ØØ		14APR88 6:ØØ	
	CONSTRAINTS: 1. S/G SAFETY TESTING. 2. PICT 22-2 (HOT TESTING). 3. DEGAS - VERIFY THE LINE IS PURGED AND OPERABLE. (1984, DEGAS WAS DELAYED DUE TO PLUGGED LINE.) 4. VERIFY ADEQUATE WASTE GAS CAPACITY IS MAINTAINED. 5. BE AWARE THAT FILLING THE HUTS WILL REQUIRE WASTE GAS STORAGE. 6. HAVE RAD CON & CHEMISTRY START WORKING ON DISCHARGE PERMIT FOR CONTAINMENT PURGE. COMMENTS: 1. OVERPRESSURE MITIGATION SYSTEM PICT'S. 2. PERFORM POT 2-4-DI @ RCS PRESSURE					

E=O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
	BETWEEN 500 & 1000 PSIG.					
12012	COOLDOWN RCS TO 140 DEG F	15	14APR88 18:00		15APR88 9:00	
	CONSTRAINTS: 1. CHEMISTRY - SULPHATE HIDEOUT. 2. RCS THERMAL EXPANSION READINGS - TPT-175. 3. ADDITION OF WET LAYUP CHEMICALS.					
12015	TAKE RCS SOLID	8	15APR88 9:00		15APR88 17:00	
	CONSTRAINTS: 1. H2 MUST BE <4 CC/KG. 2. I&C NEEDS TO HOOK UP RECORDER PRIOR TO GOING SOLID. 3. REQUIRED POT'S COMPLETED PRIOR TO GOING SOLID.					
	COMMENTS: 1. SUPPORT REQUIRED: A. I&C HOOK UP INSTRUMENTATION.					
12013	FORCED OXIDATION OF THE RCS, TEMP <120 DEG F	80	15APR88 17:00		19APR88 1:00	
	CONSTRAINTS: 1. START WITH THE B RCP, AFTER 6 HRS SHIFT TO THE A RCP, AFTER 6 HRS SHIFT TO THE C RCP, AFTER 6 HRS SHIFT TO THE D RCP AND LEAVE IN OPERATION UNTIL THE END OF FORCED OXIDATION.					
	COMMENTS: 1. IN 1984, USED 7 GALLONS OF H20[illegible]. 2. IN 1986, COBALT 58 PEAK WAS 1.[illegible] MICRO CURIES/CC. 3. SHIFT S/U TRANSFORMER TAPS (VR-5) AFTER C RCP IS RUNNING & BEFORE STARTING D RCP, AFTER D RCP IS RUNNING SHIFT TAPS (VR-4). 4. 1987 - COBALT 58 PEAK WAS .7 MICROCURIES PER CC.					
	1 UNIT S/D AND COOLDOWN		13APR88 0:00		19APR88 1:00	

)E=O/FE ACTIVITY	D E S C R I P T I O N	DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D
SETUP HANDRAILS 12039		20	15APR88 7:00		16APR88 4:00	
	COMMENTS: 1. AROUND CAVITY. 2. ON UPPER CAVITY FLOOR. 3. AROUND HEAD. 4. MANIP FESTON BOOM EXTENSION. 5. SCAFFOLD FOR CRDM DUCTING LAYDOWN. 6. INTERFERENCE PROBLEMS IN 1987 WITH B RCP MOTOR INSPECTION ACCESS.					
DISCONNECT T/C CONOSEALS 12068		5	19APR88 14:30		19APR88 19:30	
	ALARA: 1. ALARA SCOPE REQUIRED. COMMENTS: 1. PUT POLY SLEEVING AROUND CONOSEAL THIMBLE PRIOR TO INSTALLING PROTECTIVE SLEEVE.					
REMOVE HEAD INSULATION 12069		4	19APR88 19:30		20APR88 0:00	
	ALARA: 1. ALARA SCOPE REQUIRED. COMMENTS: 1. REQUIRES I&C SUPPORT TO DISCONNECT VIBRATION MONITOR. 2. UNTIE TEMP HEAD SHIELDING.					
DETENSION RX HEAD 12076		10	20APR88 7:00		20APR88 17:30	
	CONSTRA NTS: 1. ENTER MODE 6 AT BEGINNING OF THE 2ND PASS, STEP 19 FHP 5-2. 2. MUST COMPLETE GOI-11. 3. NEED TO BORATE TO REFUELING CONCENTRATION PRIOR TO ENTERING MODE 6. 4. REQUIRES RCS TO BE BORATED TO 2000 PPM.					

)E-O/FE ACTIVITY	D E S C R I P T I O N	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
	ALARA: 1. ALARA SCOPE REQUIRED. COMMENTS: 1. CAUTION OPERATORS ON WHICH HOIST TO USE TO LIFT EITHER THE STUDS OR TENSIONERS. 2. NOTE RAD CON REQUIREMENTS DUE TO POTENTIAL RADIATION LEVELS. 3. ENSURE PROPER INDOCTRINATION ON THE USE AND HAZARDS DURING THIS EVOLUTION. (PERSONNEL INJURY IN 1984.)					
12081	REMOVE RX HEAD STUDS	10	20APR88 17:30		21APR88 4:00	
	ALARA: 1. ALARA SCOPE REQUIRED. COMMENTS: 1. IN 1987 THIS EVOLUTION EXPOSED A FUEL PELLET LODGED BETWEEN THE RX VESSEL FLANGES AND CAUSED APPROX. A TWO WEEK DELAY. 2. IN 1987 STUD HOISTS AND STUD TENSIONER HOISTS REMOVED FOR DECON, SENT TO QUADREX.					
12080	CLEAN STUD HOLES & INSERT PLUGS	4	21APR88 7:00		21APR88 11:00	
	ALARA: 1. ALARA SCOPE REQUIRED. COMMENTS: 1. ONLY GUIDE STUD HOLES WERE CLEANED, NEOLUBE AND INSERTS INSTALLED. 2. IN 1987, ONE STUD PLUG LEAKED AND FLOATED TO SURFACE.					
12084	SET GUIDE STUDS	5	21APR88 11:00		21APR88 16:30	
	COMMENTS: 1. IN 1986, DIFFICULTY WAS EXPERIENCED IN SETTING TWO STUDS, #28 & #44. THE STUDS WERE TAKEN TO THE MACHINE SHOP TO BE MACHINED DOWN. STUD #28 WAS FOUND TO BE UNDERSIZED. STUD #44 WAS MACHINED AND INSTALLED AND A DEVIATION WAS WRITTEN TO LIFT THE HEAD WITH TWO STUDS. 2. IN 1987, MINOR DIFFICULTY IN SETTING GUIDE STUDS - NEEDED TO JAR TOP OF STUD.					

ODE=O/FE ACTIVITY DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
INSTALL BOOT SEAL 12058	4	21APR88 16:30		21APR88 20:30	
ALARA: 1. ALARA SCOPE REQUIRED.					
COMMENTS: 1. IN 1987, HAD TO RTV BOOT SEAL TO PREVENT POSSIBLE IRRADIATION PROBLEM TO BOOT SEAL.					
FOLD RAILS 12086	2	21APR88 20:30		21APR88 22:30	
COMMENTS: 1. RAILS MUST BE MOVED TO ALLOW HEAD TO BE PLACED IN HEAD STAND.					
SET UP DILLON LOAD CELL 12089	3	21APR88 23:00		22APR88 2:00	
COMMENTS: 1. NEED TO WARM UP IN ADVANCE.					
SET HEAD LIFT RIG 12088	2	22APR88 2:00		22APR88 4:00	
COMMENTS: 1. HEAD AREA IS CLEAR.					
LIFT HEAD (FLOOD CAVITY) 12090	10	22APR88 7:00		22APR88 17:30	
CONSTRAINTS: 1. SECURE REFUELING POOL SUPPLY FANS AND POLAR COOLERS PRIOR TO LIFTING HEAD TO REDUCE BLOWING CONTAMINATION OUT OF REFUELING CAVITY.					
ALARA: 1. ALARA SCOPE REQUIRED.					
COMMENTS: 1. CRANE OPERATOR NEEDS TO BE RESPIRATOR QUALIFIED. 2. I-131, SHARP INCREASE AT THE 93' & ABOVE WHEN FILLING THE CAVITY. 3. FLOODING CAVITY, LEAKS AT THE INCORE SEAL TABLE, NEED TO ENSURE PERSONNEL ARE AWARE OF & EXPECT LEAKS; KNOW HOW TO FIX THEM &					

)E=O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
	WHAT THE ACCEPTABLE LEAK RATE IS. 4. FOUR HOURS BEFORE LIFTING THE HEAD, THE VALVE LINEUP SHOULD BE COMPLETE. 5. INSPECT INNER O-RING TO DETERMINE IF A LEAKAGE PROBLEM EXISTS. 6. IN 1986 HAD A BALANCING ERROR PROBLEM. 7. IN 1986 THE HEAD WAS PREVENTED FROM ENTERING THE STAND FOR TWO REASONS: A. THE WEST STUD HOIST INTERFERED WITH THE VENTILATION DUCT WORK. IT WAS NECESSARY TO ROTATE THE HOIST TO THE MOST SOUTHERN POSITION. B. THE EQUIPMENT RAILS WERE NOT STORED FAR ENOUGH FROM THE PATH OF THE VESSEL HEAD AND IT BECAME NECESSARY TO RAISE THE HEAD HIGHER THAN 2'8" TO CLEAR RAILS (APPROX 3'). 8. HOLD HEAD AT 3' LEVEL UNTIL CAVITY FLOODING STARTS. 9. DUE TO HIGH CONTAMINATION PROBLEMS IN 1987, A TENT WAS BUILT AROUND THE HEAD IN THE STAND. THE HEAD WAS DECONNED WITH VACUUM AND WIPE DOWN. A SPECIAL RP PROCEDURE WAS USED. 10. 1987 - STUD HOISTS AND STUD TENSIONER HOIST HAD TO BE REINSTALLED., MINOR PROBLEMS WITH ONE AFTER INSTALLATION.					
UNLATCH CRDM'S 12091		10	22APR88 17:30		23APR88 4:00	
	ALARA: 1. ALARA SCOPE REQUIRED. COMMENTS: 1. TOOL NEEDS TO BE OPERATIONALLY CHECKED PRIOR TO THIS POINT TO PREVENT DELAYS. 2. IN 1987 DELAYED DUE TO SOURCE RANGE PICT & N-31 INTERFERENCE PROBLEMS (SPIKING). 3. IN 1987 LOST 4 HOURS DUE TO I&C SWAPPING N-CHANNEL TO SPARE SOURCE RANGE DETECTOR.					
SET UPPER INTERNALS LIFT RIG 12092		6	23APR88 7:00		23APR88 13:30	
	COMMENTS: 1. LIFT RIG WILL PROBABLY BE REQUIRED TO BE FLOATED.					

DE	2 REMOVE	REACTOR HEAD	SORT	BREAKS	E START NODES				PAGE 5
DE-O/FE ACTIVITY	D E S C R I P T I O N		DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D		
PULL UPPER INTERNALS 12093			4	23APR88 13:30		23APR88 17:30			
ALARA: 1. ALARA SCOPE REQUIRED.									
2 REMOVE	REACTOR HEAD			15APR88 7:00		23APR88 17:30			

TROJAN 1988 REFUELING OUTAGE

PGE - TROJAN

DATE 03DEC87 0950HRS

W O R K I N G S C H E D U L E

PROJECT START 12APR88

JECT 88OUTAGE

ORIGINAL COMPL. 4JUN88

3 UNLOAD CORE

SORT BREAKS E START NODES

E=O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
UEL UNLOAD 12095		80	23APR88 17:30		27APR88 17:30	

CONSTRAINTS:
1. DURING FUEL MOVEMENT, CNTMT PURGE EXHAUST MUST BE SECURED IF S/D <285 HOURS.

ALARA:
1. ALARA SCOPE REQUIRED.

COMMENTS:
1. IN 1984, HAD TO PUT BOTH SFP COOLING PUMPS AND BOTH SFP HX IN SERVICE TO MAINTAIN SFP TEMP <120 DEG F DUE TO LENGTH OF TIME FROM S/D TO FUEL MOVEMENT (13 DAYS).

3 UNLOAD CORE			23APR88 17:30		27APR88 17:30	

TROJAN 1988 REFUELING OUTAGE

PGE - TROJAN

IN DATE 03DEC87 0950HRS

W O R K I N G S C H E D U L E

PROJECT START 12APR88

OJECT 88OUTAGE

ORIGINAL COMPL. 4JUN88

DE 4 PELLET RETRIEVAL SORT BREAKS E START NODES

DE=O/FE ACTIVITY	D E S C R I P T I O N	DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D
FUEL PELLET RETRIEVAL 12021		14Ø	27APR88 17:3Ø		4MAY88 17:3Ø	

CONSTRAINTS:
1. POTENTIAL JOBS THAT WILL DELAY DRAINING THE RCS TO CENTERLINE ARE:
   A. ADDITION OF AN RCP SEAL INSPECTION. PRESENTLY ONLY "B & D" RCP'S ARE TO BE INSPECTED, WITH THE POSSIBILITY OF ADDING "A" RCP.

COMMENTS:
1. THIS EVOLUTION WILL ENTAIL VACUUMING OF THE CORE BARREL, BOTTOM OF THE REACTOR VESSEL, DISLODGE/REMOVAL OF FUEL PELLETS (LOWER CORE BARREL) AND REMOVAL/ RE-INSTALLATION OF THE CORE BARREL.

4 PELLET RETRIEVAL			27APR88 17:3Ø		4MAY88 17:3Ø	

Trojan Nuclear Plant
Docket 50-344
License NPF-1

Document Control Desk
March 18, 1988
Attachment 2
Page 17 of 27

TROJAN 1988 REFUELING OUTAGE

N DATE Ø3DEC87 Ø95ØHRS

W O R K I N G S C H E D U L E

PGE - TROJAN

PROJECT START 12APR88

ORIGINAL COMPL. 4JUN88

)JECT 88OUTAGE

)E 5 RELOAD CORE

SORT BREAKS E START NODES

)E=O/FE ACTIVITY	D E S C R I P T I O N	DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D
RELOAD FUEL 12097		8Ø	4MAY88 17:3Ø		8MAY88 17:3Ø	
TV MAP OF NEWLY LOADED FUEL 12101		4	8MAY88 17:3Ø		8MAY88 21:3Ø	
INSTALL UPPER INTERNALS 12102		3	8MAY88 21:3Ø		9MAY88 1:ØØ	
	ALARA: 1. ALARA SCOPE REQUIRED.					
	COMMENTS: 1. 1987 - HAD TO WAIT FOR QA SIGNOFF.					
LATCH AND DRAG TEST RCCA'S 12103		8	9MAY88 7:ØØ		9MAY88 15:3Ø	
	ALARA: 1. ALARA SCOPE REQUIRED.					
	COMMENTS: 1. PERFORM VALVE LINEUP FOR LOWERING CAVITY WATER LEVEL.					
5 RELOAD CORE			4MAY88 17:3Ø		9MAY88 15:3Ø	

DE=O/FE ACTIVITY	D E S C R I P T I O N	DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D
12159	VACUUM RX FLANGE & FUEL PATH	48	9MAY88 16:00		11MAY88 16:00	
12107	DRAIN REFUELING CAVITY	12	11MAY88 16:30		12MAY88 8:00	

CONSTRAINTS:
1. PRIOR TO DRAIN DOWN, NEED HOSES STAGED TO BLOW OUT SFP CAVITY PURIF RETURN LINE & CAVITY SKIMMER LINES TO SUPPORT LLRT TEST.

COMMENTS:
1. DRAIN RCS TO CENTERLINE IN PREPARATION FOR S/G EDDY CURRENT ACTIVITIES.
2. WASH DOWN WALLS AS LEVEL IS LOWERED.
3. MONITOR SFP DOOR FOR LEAKAGE AS LEVEL IS LOWERED.
4. REDUCE SFP/CAVITY TO MINIMUM PRIOR TO CLOSING DOOR.
5. DIVERT LETDOWN TO RWST WHILE PUMPING DOWN UPPER CAVITY & DRAINING TO CENTERLINE.
6. DRAIN LOWER CAVITY.
7. IF ACTIVITY IS HIGH, PUMP LOWER CAVITY TO HUTS VIA RHR & DEMINS THEN TRANSFER HUT TO RWST.
8. DRAIN TRANSFER CANAL.
9. LINE UP SFP PURIF TO DRAIN LOWER CAVITY, NEED LEVEL ~1' BELOW UPPER CAVITY FLOOR TO SET REACTOR HEAD.
10. DRAIN CAVITY TO RX VESSEL FLANGE - 4 HRS.
11. DRAIN RX VESSEL FROM FLANGE TO CL - _ HRS.

12108	REMOVE & STORE HEAD LIFT RIG	4	12MAY88 8:00		12MAY88 12:00	

COMMENTS:
1. REMOVE SPARE O-RINGS PRIOR TO STORING LIFT RIG.

12109	INSTALL RX HEAD TENT	2	12MAY88 12:00		12MAY88 14:00	

ALARA:
1. ALARA SCOPE REQUIRED.

)DE=O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
CAVITY DECON 12110		78	12MAY88 14:00		15MAY88 20:00	
	ALARA: 1. ALARA SCOPE REQUIRED.					
	COMMENTS: 1. WHEN DECONNING LOWER CAVITY, DECON UPPER INTERNALS LIFT RIG AND VACUUM. 2. MAKE SURE DIESEL FUEL IS AVAILABLE FOR HNS PUMP. 3. NOTIFY SECURITY BEFORE OPENING TOOL PASS. 4. MANIPULATOR CRANE OPERATOR IS REQUIRED INTERMITTENTLY BY THE CAVITY DECON CREW.					
REMOVE RX HEAD TENT 12118		2	15MAY88 20:00		15MAY88 22:00	
REMOVE GUIDE STUDS 12117		2	15MAY88 22:00		16MAY88 0:00	
REMOVE STUD HOLE PLUGS 12119		5	16MAY88 0:00		16MAY88 5:00	
	COMMENTS: 1. IN 1987 PRECAUTIONARY DELAYS DUE TO RADCON MEASURES TO REDUCE PERSONNEL EXPOSURES & CONTAMINATION DURING REMOVAL & SURVEYS OF PLUGS, IT WAS FOUND THAT SOME PLUGS HAD EXTREME CONTAMINATION AND DOSE RATES.					
CLEAN AND LUBE STUD HOLES 12120		5	16MAY88 7:00		16MAY88 12:00	
	ALARA: 1. ALARA SCOPE REQUIRED.					
	COMMENTS: 1. IN 1986, PUMPS DID NOT WORK, WATER IN HOLES REMOVED WITH RAGS THIS TIME; ALSO INCLUDES QC INSPECTION.					
STAGE RX HEAD STUDS 12113		4	16MAY88 12:30		16MAY88 16:30	
SET RX HEAD STUDS 12121		8	16MAY88 16:30		17MAY88 1:00	

)E-O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
RUN IN RX HEAD STUDS	12123	5	16MAY88 18:30		17MAY88 0:00	

ALARA:
1. ALARA SCOPE REQUIRED.

COMMENTS:
1. PRIOR TO TENSIONING, INSPECT FLANGE AREA FOR ANY OBSTRUCTIONS.
2. ACCOUNT FOR ALL METAL PLATES USED FOR HOLDING STUDS.

LOWER STUD TENSIONERS TO FLANGE AREA	12122	4	17MAY88 0:00		17MAY88 4:00	
TENSION RX HEAD STUDS	12125	20	17MAY88 7:00		18MAY88 4:00	

ALARA:
1. ALARA SCOPE REQUIRED.

COMMENTS:
1. ENTER MODE 5 WHEN FIRST PASS IS COMPLETED.
2. DIAL INDICATORS MUST BE ZEROED PROPERLY.
3. IN 1984, HAD PROBLEMS WITH #16 TENSIONER, WAS NOT SQUARE ON FLANGE.
4. IN 1985, #3 TENSIONER HYDRAULIC FITTING WAS LOOSE CAUSING PARTIAL TENSIONING.
5. IN 1986, 1 STUD TENSIONER FAILED, FIRST ON RELIEF & THEN TENSIONER FAILURE.

INSTALL RX HEAD INSULATION	12128	3	18MAY88 7:00		18MAY88 10:00	

ALARA:
1. ALARA SCOPE REQUIRED.

COMMENTS:
1. CONTACT I&C PRIOR TO INSTALLING MIRROR INSULATION.
2. INSTRUMENTATION CONNECTION REQUIRED BY I&C.
3. TIE-UP TEMPORARY HEAD SHIELDING.

INSTALL INSTRUMENT CONOSEALS	12130	6	18MAY88 10:00		18MAY88 16:30	

ALARA:
1. ALARA SCOPE REQUIRED.

E-O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
	COMMENTS: 1. TRAIN REFUELING CREW ON CONOSEALS. 2. IN 1986, IT WAS NECESSARY TO REMOVE SHROUDING TO GET #4 & #6 CLAMPS INSTALLED.					
12133	REMOVE TEMPORARY LEAD SHIELDING	4	18MAY88 16:30		18MAY88 20:30	
	ALARA: 1. ALARA SCOPE REQUIRED.					
	COMMENTS: 1. FOLD TEMP SHIELDING TO REDUCE EXPOSURE DURING CONOSEAL & NEUTRON BASKET INSTALLATION.					
12132	REMOVE SANDBOX & NIS COVERS	6	18MAY88 20:30		19MAY88 3:00	
	ALARA: 1. ALARA SCOPE REQUIRED.					
12131	INSTALL NEUTRON SHIELDING BASKETS	10	19MAY88 7:00		19MAY88 17:30	
	COMMENTS: 1. IN 1987, DID NOT HAVE SUFFICIENT WATER BAGS IN WAREHOUSE - HAD TO PATCH, LONG LEAD TIME					
12137	INSTALL CRDM VENT DUCTING	12	19MAY88 15:30		20MAY88 4:00	
	ALARA: 1. ALARA SCOPE REQUIRED.					
	COMMENTS: 1. IN 1986, HEAD HOIST FAILED TO OPERATE, LOST 6 HOURS.					
12140	CONNECT CRDM CABLES	10	20MAY88 7:00		20MAY88 17:30	
12141	CONNECT T/C CABLES	7	20MAY88 17:30		21MAY88 1:00	
12145	CLOSE OUT CAVITY	7	21MAY88 7:00		21MAY88 14:30	
12139	REMOVE HANDRAILING	4	21MAY88 14:30		21MAY88 18:30	

DE-O/FE ACTIVITY	DESCRIPTION	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
12142	SET OUTER MISSILE SHIELDING	4	21MAY88 18:30		21MAY88 22:30	
12143	SET CENTER MISSILE SHIELD	4	21MAY88 23:00		22MAY88 3:00	
12144	CONNECT CRDM VENT MOTORS	5	22MAY88 7:00		22MAY88 12:00	
	COMMENTS: 1. NEED TO CHECK MOTOR ROTATION.					
	6 INSTALL REACTOR HEAD		9MAY88 16:00		22MAY88 12:00	

TROJAN 1988 REFUELING OUTAGE

PGE - TROJAN

(DATE Ø3DEC87 Ø95ØHRS

W O R K I N G S C H E D U L E

PROJECT START 12APR88

)JECT 88OUTAGE

ORIGINAL COMPL. 4JUN88

E 7 RCS RECOVERY

SORT BREAKS E START NODES

PAGE 1

E=O/FE ACTIVITY	D E S C R I P T I O N	DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D
12147	RESTORE VALVE LINEUPS FOR FILL & VENT	24	20MAY88 20:00		21MAY88 20:00	
12148	FILL & VENT RCS	24	21MAY88 20:00		22MAY88 20:00	

CONSTRAINTS:
1. REACTOR HEAD VENT INSTALLED & STANDPIPE ISOLATED.
2. AREAS AROUND RCP'S MUST BE CLEANED.
3. IT TAKES 27,610 GALLONS TO FILL FROM CENTERLINE TO 80% IN PRESSURIZER.
4. MUST HAVE 4 BOLTS ON ALL S/G MANWAYS PRIOR TO STARTING FILL.
5. MUST HAVE ALL BOLTS TORQUED ON ALL PRIMARY MANWAYS PRIOR TO GOING SOLID.
6. SEAL INJECTION & SEAL RETURN MUST BE ESTABLISHED PRIOR TO FILL & VENT OF RCS.
7. CHECKOUT THE S/G T/C INSTRUMENTATION.
8. OI-3-1 APPENDIX A&B L/U'S COMPLETED.
9. NOTIFY RAD CON AND MAINT TO LOOK FOR LEAKS WHEN SOLID.

COMMENTS:
1. PROBLEMS IN 1986:
   A. WHEN PRESSURIZING RCS 8Ø64A (A PRZR SAFETY LOOP SEAL DRAIN VLV) WAS FOUND TO HAVE A LEAKING DIAPHRAGM. (LOST 1Ø HOURS)
   B. D RCP - #3 SEAL WAS NOT SEATED, BUMP STARTED & #3 SEAL LEAKOFF WENT TO Ø. D RCP - UPPER OIL RESERVOIR PIPING, FOUND A CRACK IN PIPE NEAR LIFT PUMP RELIEF VALVE.
   C. LETDOWN MANUAL ISOL VALVE 8Ø85 - HAD TO BACKSEAT & REPACK.

12150	DRAW BUBBLE	1Ø	22MAY88 20:00		23MAY88 6:00	

CONSTRAINTS:
1. BEFORE DRAWING BUBBLE - NEED TO INCREASE RCS TEMPERATURE TO ENSURE DELTA T LIMIT ACROSS PRZR SPRAY NOZZLE OF 32Ø DEG F IS

ODE 7 RCS RECOVERY		SORT BREAKS E START NODES				PAGE 2
ODE-O/FE ACTIVITY	D E S C R I P T I O N	DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D
	NOT EXCEEDED.					
COLD ROD DROPS 12151		10	23MAY88 7:00		23MAY88 17:30	
CONSTRAINTS: 1. VERIFY PRIOR TO THE SCHEDULED START TIME: A. M/G SETS AVAILABLE B. RPI ENERGIZED C. CRDM VENTILATION D. CHILLERS IN SERVICE AND FILLED E. PICT 10-1 F. PICT 16-2 G. PICT 11-2 H. PICT 11-3						
POT 12-2 12152		24	24MAY88 7:00		25MAY88 7:00	
HEATUP TO 340 DEG F FOR TPT-175 12293		7	27MAY88 21:00		28MAY88 4:00	
HEATUP TO 557 DEG F FOR TPT-175 12296		8	28MAY88 4:00		28MAY88 12:00	
POT 1-1 (RCS (INTEGRITY TEST) 12160		12	28MAY88 12:00		29MAY88 0:00	
7 RCS RECOVERY			20MAY88 20:00		29MAY88 0:00	

TROJAN 1988 REFUELING OUTAGE

DATE 03DEC87 0950HRS — W O R K I N G S C H E D U L E — PGE - TROJAN

ECT 88OUTAGE \ — PROJECT START 12APR88

8 LOW POWER PHYSICS TEST — ORIGINAL COMPL. 4JUN88

SORT BREAKS E START NODES — PAGE 1

*O/FE ACTIVITY	D E S C R I P T I O N	DUR	S T A R T SCH'D	S T A R T REP'D	F I N I S H SCH'D	F I N I S H REP'D
OW POWER PHYSICS TESTING 12164		36	29MAY88 0:00		30MAY88 12:00	
	CONSTRAINTS: 1. PHYSICS TESTING NUCLEAR DESIGN DATA. 2. POT 1-1 COMPLETE. 3. HOT ROD DROPS COMPLETE.					
	COMMENTS: 1. IT TAKES APPROX 1 SHIFT TO REDUCE & REVIEW DATA. 2. PERFORM OVERSPEED TEST & COUPLE BOTH MFP'S DURING 3% FLUX MAP. 3. NEED 6,000 GALS OF BORIC ACID AVAILABLE IF ROD WORTHS ARE LOW THIS IS <36 HRS.					
8 LOW POWER PHYSICS TEST			29MAY88 0:00		30MAY88 12:00	

Trojan Nuclear Plant
Docket 50-344
License NPF-1

Document Control Desk
March 18, 1988
Attachment 2
Page 26 of 27

TROJAN 1988 REFUELING OUTAGE

PGE - TROJAN

DATE Ø3DEC87 Ø95ØHRS

W O R K I N G S C H E D U L E

PROJECT START 12APR88

ORIGINAL COMPL. 4JUN88

JECT 88OUTAGE

PAGE 1

9 TURBINE TEST / POWER ESCALATION SORT BREAKS E START NODES

O/FE ACTIVITY	D E S C R I P T I O N	DUR	START SCH'D	START REP'D	FINISH SCH'D	FINISH REP'D
SECURE EMERG BRG OIL PP FOR POT 12187		2	3ØMAY88 12:ØØ		3ØMAY88 14:ØØ	
POT 18-4 MN TURB ANNUAL OPERATING TEST 12288		1Ø	3ØMAY88 14:ØØ		31MAY88 6:ØØ	
END OF 1988 REFUELING OUTAGE 12999		Ø	EVENT		31MAY88 Ø:ØØ	
POWER ESCALATION 12167		96	31MAY88 Ø:ØØ		4JUN88 Ø:ØØ	

CONSTRAINTS:
1. GOI PREREQUISITES MUST BE COMPLETE.

COMMENTS:
1. THE MARGIN BETWEEN P-1Ø & IR TRIP SETPOINT IS REDUCED DUE TO NIS RECALIBRATION FOR LOW LEAKAGE LOADING PATTERN.
2. CLOSELY MONITOR IR HI TRIP SETPOINT DURING INITIAL S/U.

9 TURBINE TEST / POWER ESCALATION		3ØMAY88 12:ØØ	4JUN88 Ø:ØØ

Trojan Nuclear Plant
Docket 50-344
License NPF-1

Document Control Desk
March 18, 1988
Attachment 2
Page 27 of 27