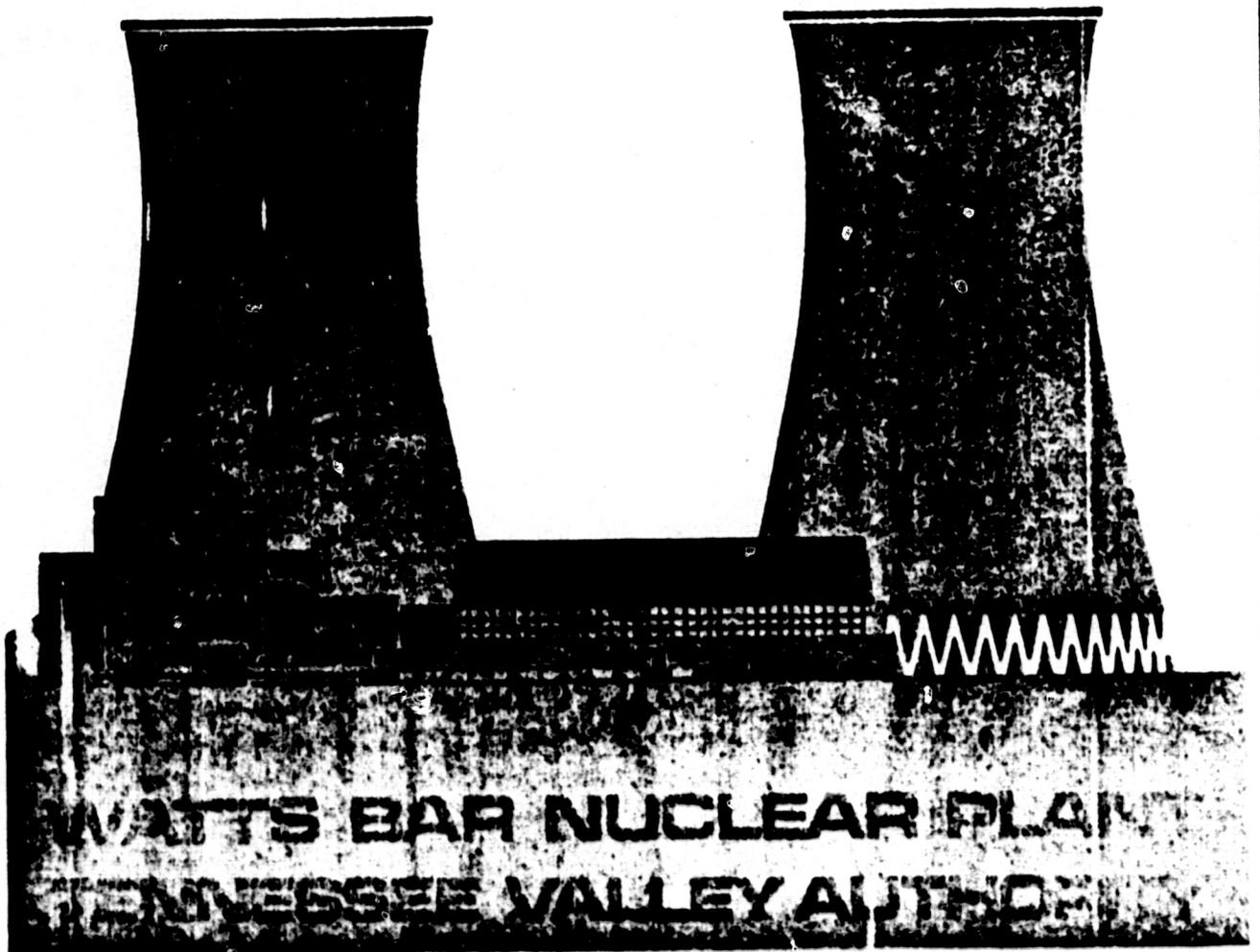


WBN '83 0224 902



# CONSTRUCTION PROGRESS

**DURING:** February 1983

8504150011 840606  
PDR FOIA  
KILLEFEB4-367 PDR

**PROJECT MANAGER:** Guenter Wadewitz

TABLE OF CONTENTS

February 1983

<u>SUBJECT</u>	<u>PAGE</u>
Quantitative Summary . . . . .	1
Narrative Summary . . . . .	2
Narrative . . . . .	3
Force Report . . . . .	5
Expenditures . . . . .	6
Hanger and Support Summary . . . . .	7
Mechanical Features . . . . .	8
Piping	
Valves	
Equipment	
Ductwork	
Welding . . . . .	8
Civil	
Concrete . . . . .	9
Excavation and Fill . . . . .	10
Pipe Rupture Restraints . . . . .	10
Structural Steel . . . . .	10
Protective Coating . . . . .	10
Electrical . . . . .	11
Cable	
Conduit	
Cable Trays	
Equipment	
Instrumentation . . . . .	11
Instruments	
Instrumentation Tubing	
Field Change Request . . . . .	12
Engineering Change Notices . . . . .	12
Audits . . . . .	13
NRC Items	
Audit Summary	
Nonconformances	
Transfers to NUC PR . . . . .	13
Prop Test Status . . . . .	14

PERIOD January 24, 1983 TO February 18, 1983 INCLUSIVE

WEATHER	TEMP OF DATE	PRECIPITATION: 4.18 inches rain						
	MAX. <u>67</u> <u>2-18</u>	INCHES <u>.30</u>	<u>2.05</u>	<u>.08</u>	<u>.65</u>	<u>.10</u>	<u>1.00</u>	_____
	MIN. <u>21</u> <u>2-7</u>	DATES <u>1-29</u>	<u>2-1</u>	<u>2-3</u>	<u>2-4</u>	<u>2-9</u>	<u>2-10</u>	_____

RIVER STAGE	MAX ELEV <u>681.2</u>	DATE <u>2-11</u>	MIN ELEV <u>679.4</u>	DATE <u>1-26</u>
-------------	-----------------------	------------------	-----------------------	------------------

EMPLOYEES THIS PERIOD	NO. HIRED <u>104</u>	NO. RELEASED <u>30</u>	NO. ON PAYROLL <u>3,459</u>
-----------------------	----------------------	------------------------	-----------------------------

PAYROLL TOTALS	THIS PERIOD <u>---</u>	TO DATE <u>---</u>
----------------	------------------------	--------------------

Lost Work Day Cases	NO. THIS PERIOD <u>21</u>	NO. TO DATE <u>1,168</u>	TIME LOST THIS PERIOD <u>3,960</u> HRS	TIME LOST TO DATE <u>425,358</u> HRS
---------------------	---------------------------	--------------------------	--	--------------------------------------

EXPEND.	ITEM	UNIT	TOTAL THIS PERIOD	TOTAL TO DATE	TOTAL ESTIMATED	PERCENT COMPLETE
		LABOR (MONTH OF <u>January</u> )	MAN-HOURS	617,017	55,475,684	71,711,800
	COST (MONTH OF <u>January</u> )	DOLLARS	12,561,655	1,282,570,050	1,727,018,000	74
QUANTITIES	CONCRETE	yd <sup>3</sup>	369	389,808	399,700	97
	STRUCTURAL STEEL	ton	0	7,418	7,581	97
	EXCAVATION & FILL (a)	yd <sup>3</sup>	300	3,450,151	3,545,231	97
	PIPE (b)	lin ft	2,848	728,802	825,696	88
	HANGERS (c)	ea	965	42,838	60,568	70
	VALVES (> 2")	ea	2	3,955	4,793	82
	WELDING (> 2")	dia inch	139	301,659	339,264	89
	CABLE	lin ft	82,181	15,102,173	17,256,083	87
	TERMINATIONS	ea	1,543	280,976	347,725	80
	CONDUIT (d)	lin ft	4,694	1,458,515	1,677,264	87
	CABLE TRAY	lin ft	0	205,126	207,055	99
	PROTECTIVE COATING	sq ft	3,246	525,446	593,987	88
	MECHANICAL EQUIPMENT	ea	1	2,834	3,127	90
	INSTRUMENTS	ea	172	27,143	33,019	82
LOOP CALIBRATION	ea	21	946	1,175	80	

**SPECIAL REMARKS:** (a) Includes Task Codes BA, EA, EX, BR, and NO  
**NOTE:** All quantities are for both units. (b) Includes Task Codes FP, SP, XX-L.F., XX-Feet, and 2U  
(c) Includes Task Codes HR, 2U, DU  
(d) Includes Task Codes CD, EC, and UC

MONTHLY PROGRESS REPORT  
FOR  
FEBRUARY 1983

Narrative

POWERHOUSE AREA

Overall project completion was 77.70 percent. Unit 1 was 94.20 percent complete, with unit 2 and balance of plant at 54.20 and 15.80 percent, respectively.

Preoperational and noncritical systems testing was continued in several areas. Three more tests were started, and six were completed. Those tests begun were TVA-7 (control rod drive mechanism cooling), TVA-38 (main feedwater system), and W-10.3 (liquid waste receiving and storage).

Tests finished were TVA-6 (air return fans), TVA-15 (120-volt AC vital power), TVA-34 (nitrogen supply system), TVA-44A (liquid waste drains, collection, and transfer), TVA-44B (station drainage water level detection), and NCS-29B (containment instrument room cooling). Thus far, 81 of the 196 tests required for unit 1 fuel loading have been completed, with 43 other tests having been started or in progress.

Installing instrumentation panels was nearing completion in post accident sampling rooms for both units. Work was continued on fire-protection piping and heating/ventilating equipment for these rooms. More fire-protection piping was installed in the technical support center at elevation 755 on the east side of the control building.

Retubing of unit 2 main feed pump turbine condensers was started in midmonth. The A-condenser has been finished, and retubing of B-condenser was nearly finished at month's end. Removing tube bundles for unit 2 feedwater heaters numbers 5, 6, and 7 was started February 16, with removal beginning with heater number 6B. Preparations for removing feedwater heaters numbers 1-4 were continued. Necessary rework for replacement feedwater heaters numbers 1-4 for unit 1 was continued at elevation 708 and 729. In addition, revisions to temporary security fences and equipment were underway at all four elevations in the turbine building.

Equipment installation was continued in the condensate demineralizer waste evaporator building. Further progress was made on safety-related piping system installation for both units. Determining pipe location for various systems, installing pipe hanger, and documenting new and previously installed hangers were continued in various locations. More identification and resolving of outstanding work items were also done.

Cable pulled in all areas was about 82,180 feet this month. The cumulative total of 15,102,170 feet pulled to date represents 87 percent of the current estimated project requirement of about 17-1/2 million feet. Of the cumulative total, some 11,117,800 feet is for unit 1, about 94 percent of the estimated requirement.

WATTS BAR NUCLEAR PLANT

FORCE REPORT - FEBRUARY 18, 1983

Annual and T&L Hourly Hired 01/24/83 - 02/18/83	30
Annual and T&L Hourly Released 01/24/83 - 02/18/83	104

Engineering and Construction

Annual Employees	972
Trades and Labor Employees	<u>2,487</u>
Total	3,459

Service Organizations

Medical	17
Personnel	8
Public Safety Service	29
QA (CONST)	<u>10</u>
Total	64

Contractors

North Brothers	62
Plasteel Products	<u>4</u>
Total	66

Total Personnel on Project 02/18/83	3,589
-------------------------------------	-------

MECHANICALPeriod: January 21, 1983 through February 17, 1983

## HANGER AND SUPPORT SUMMARY

		Pipe Hangers > 2 in. (ea)	Pipe Hanger ≤ 2 in typ (ea)	Ductwork Hangers (ea)
Number Required	Unit 1 & 0	16,331	24,934	4,612
	Unit 2	8,013	5,678	1,000
Total Installed To Date	Unit 1 & 0	13,733	22,780	4,398
	Unit 2	926	633	368
*Currently Req. EN DES Change	Unit 1 & 0	285	459	N/A
	Unit 2	0	0	N/A
*Submitted to EN DES to Date	Unit 1 & 0	10,029	4,410	N/A
	Unit 2	0	0	N/A
*Received From EN DES to Date	Unit 1 & 0	9,744	3,951	N/A
	Unit 2	0	0	N/A
*Submitted to EN DES this Period	Unit 1 & 0	233	517	N/A
	Unit 2	0	0	N/A
Received From EN DES This Period	Unit 1 & 0	185	244	N/A
	Unit 2	0	0	N/A
Installed This Period	Unit 1 & 0	351	519	11
	Unit 2	84	0	0
Percent Complete	Unit 1 & 0	84	91	95
	Unit 2	11	11	36

\* W.B. EN DES full-time site Reps.

CIVILPeriod: January 24, 1983 through February 18, 1983CONCRETE(yd<sup>3</sup>)

FEATURE	Total Placed This Period	Total Placed To Date	Estimated Total Required	Percent Complete
Overall Concrete Placed	360	389,808	399,700	97
Reactor Buildings	0	58,188	58,188	100
Auxiliary Building	18	79,784	79,784	100
Control Building	0	18,359	18,359	100
Turbine Building	0	94,326	94,326	100
Other Buildings*	246	26,960	27,935	96
Service and Office Building	0	6,502	6,502	100
Low Level Radwaste Facility	0	2,042	9,623	21
500-kV Switchyard and Transformer Yard	0	12,351	12,351	100
CCW Structures	0	21,350	21,350	100
Systems	0	5,674	5,674	100
General Yard **	92	46,530	47,908	97
Construction Plant & Other***	13	17,542	17,700	99

\*Includes IPS, DGB, Office/Storage Building, etc.

\*\*Includes Conduit Encasement, Sidewalk, Drainage Items, Fence Posts, WHEP, etc.

\*\*\*Includes Temporary Facilities, WESP Items, CSB Maintenance Shop, NLDF, etc.

ELECTRICALPeriod: January 21, 1983, through February 17, 1983

	Total This Period		Total To Date		Estimated Total Required		Percent Complete	
	Unit 1 and 0	Unit 2	Unit 1 and 0	Unit 2	Unit 1 and 0	Unit 2	Unit 1 and 0	Unit 2
Cable (lin ft)	60,668	12,513	11,117,830	3,984,343	11,764,376	5,491,707	94	72
*Conduit (lin ft)	4,491	203	1,218,621	239,894	1,280,328	396,936	95	60
Cable Tray (lin ft)	0	0	198,876	6,250	199,011	8,044	99	77
Equipment (ea)	34	0	1,305	304	1,624	536	80	57

\* Includes EC, CD, and UC

INSTRUMENTATIONPeriod: January 21, 1983 through February 17, 1983

	Total This Period		Total To Date		Estimated Total Required		Percent Complete	
	Unit 1 and 0	Unit 2	Unit 1 and 0	Unit 2	Unit 1 and 0	Unit 2	Unit 1 and 0	Unit 2
Instrument (ea)	172	0	19,272	7,871	20,741	12,278	93	64
Tubing (lin ft)	12,086	0	192,208	82,700	209,694	234,501	91	35

AUDITSPeriod: January 21, 1983 through February 17, 1983

	Total Reported	Opened This Period	Closed This Period	Remaining Open
<u>NRC Items</u>				
Noncompliance	103	0	1	36
Unresolved, Open Followup	225	0	4	74
<u>Audit Summary</u>				
CONST	494	7	8	75
<u>Nonconformances</u>				
NCR	4,660	81	82	384

TRANSFERS TO POWER PRODUCTIONPeriod: January 21, 1983 through February 17, 1983

	Units 0 and 1	Unit 2
Total Transfers	571	250
Transfers This Reporting Period	19	0
Transfers To Date	424	1
Final Transfers	1	0

TOTAL PREOPERATIONAL AND NONCRITICAL SYSTEM TEST  
STATUS SUMMARY FOR UNIT 1 HOT FUNCTIONAL TESTING AND FUEL LOADING  
COMPLETED THROUGH FEBRUARY 18, 1983

Preoperational Tests			Noncritical Systems Tests		
TVA-2B**	TVA-26A	W-1.4**	NCS-1A	NCS-19**	
2C**	26B**	3.1A1	1B	20**	
4**	27A	3.1B**	1C	21	
5**	30	3.1C	2	22**	
6***	31A**	3.1D	3	23A	
7*	31D	3.1E	4A	24	
8	32A**	4.1**	4B	25A	
9B	32B	6.1**	4C	26	
10**	33	6.2B	5**	27A	
11A	34***	7.1A**	10	27B1	
11B**	35A**	7.4	11A	27B2	
12A	35B	8.3**	11B	28B**	
12B	36	9.8	11C	29A	
12C	37	9.9**	11D	29B***	
13A	38*	9.10**	11E	30	
13B	40**	10.1A	11F	31	
14A	41**	10.1B	11G	32H	
14B**	42	10.1C	12	33B**	
14C	43A	10.3*	13	34	
14D	43B**	10.6**	14	35**	
14E**	44A***	10.7A	15		
15***	44B***	10.7B**	16		
16A	45A	10.8**	18A		
16B**	45B1	10.9**	18B**		
18A**	45B2		18C		
20A	45C				
24**	46**				
25A**	54				

*44 Completed*

\* Begun this period  
\*\* In progress  
\*\*\* Completed this period

PREOP/NCS TEST ACTIVITIES \*

	TOTAL NO.	COMPLETED	IN PROGRESS
TVA for HFT	62	25	21
W for HFT	28	9	9
NCS for HFT	50	36	7
Subtotal (reqd for HFT)	140	70	37
Additional TVA, W, NCS (reqd for FL)	56	11	6
Total for FL	196	81	43

\*Totals acquired from NUC PR preop. test unit

FIELD CHANGE REQUESTSPeriod: January 21, 1983, through February 17, 1983

	Total FCR's	Opened This Period	Closed This Period	Remaining Open
Electrical	3,584	51	108	169
Mechanical - A	7,346	36	82	671
Mechanical - B	758	22	40	142
Mechanical - Unit 2	17	0	0	0
Instrumentation	1,126	110	56	228
Welding	4	0	0	0
M&A	480	25	40	146
Civil	2,658	67	136	223
Hangers	8,323	138	157	1,459
Hangers Mechanical	1,396	88	143	937
Total	25,692	537	762	3,975

ENGINEERING CHANGE NOTICESPeriod: January 21, 1983 through February 17, 1983

	Received	Total Closed	Total Open ECN's
CONST	76	77	748
EN DES	N/A	37	265

## CIVIL

Period: January 21, 1983 through February 17, 1983EXCAVATION AND FILL  
(Cubic Yards)

	Total This Period	Total To Date	Estimated Total Required	Percent Complete
*Earth	300	2,902,072	2,981,227	97
**Rock	0	548,079	564,004	97

\* Includes BA, EA, and EX.

\*\* Includes BR and RO

PIPE RUPTURE RESTRAINTS  
(Tons)

	Total This Period	Total To Date	Estimated Total Required	Percent Complete
Unit 0 & 1	0	541	553	97
Unit 2	0	498	507	98

STRUCTURAL STEEL (INCLUDING SWITCHYARD STEEL)  
(Tons)

Total This Period	Total To Date	Estimated Total Required	Percent Complete
0	7,418	7,581	97

PROTECTIVE COATING  
(Square Feet)

	Total This Period	Total To Date	Estimated Total Required	Percent Complete
Unit 0 & 1	3,246	449,433	508,378	88
Unit 2	0	76,013	85,609	88

## MECHANICAL

Period: January 21, 1983 through February 17, 1983SYSTEMS AND EQUIPMENT

FEATURES	Total This Period		Total To Date		Estimated Total Required		Percent Complete	
	Unit 1 and 0	Unit 2	Unit 1 and 0	Unit 2	Unit 1 and 0	Unit 2	Unit 1 and 0	Unit 2
Piping $> 2$ in. (lin ft) - FP	880	237	260,564	60,818	267,222	97,444	97	62
Piping $\leq 2$ in. (lin ft) - 2U	1,645	86	181,761	30,354	188,274	77,151	96	39
Piping (Other)* (lin ft)	0	0	185,202	9,803	185,502	9,803	100	100
Valves $\geq 2\frac{1}{2}$ in (ea) - VA	2	0	3,035	920	3,220	1,573	94	58
Equipment (ea) ER	1	0	2,254	580	2,300	826	98	70
Duct (lb) - DU	1,700	0	874,555	180,091	924,960	263,962	94	68

\*Includes Service Piping, Turbine Accessory Piping, and Underground Piping.

WELDING

(dia in.)

	Total This Period	Total to Date	Estimated Total Required	Percent Complete
Unit 1 and 0	98	251,030	258,810	97
Unit 2	41	50,629	80,454	63

CONSTRUCTION EXPENDITURES**DOLLARS EXPENDED**

<b>SALARIES AND BENEFITS</b>	<b>January 1983</b>	<b>FY To Date</b>	<b>Total To Date</b>	<b>Estimated Project Total</b>
Annual Employees	\$ 2,716,378	\$10,948,225	\$132,981,529	\$ 215,640,000
T & L Hourly Employees	7,547,939	29,261,943	554,766,840	800,673,000
<b>Subtotal - Salaries &amp; Benefits</b>	<b>10,264,317</b>	<b>40,210,168</b>	<b>687,748,369</b>	<b>1,016,313,000</b>
<b>OTHER EXPENDITUES</b>				
Contract Payments	3,206,269	10,649,322	538,155,727	616,463,000
Pool Equipment Rental	96,117	433,608	22,208,097	24,302,000
All Other	-1,005,048	5,033,675	34,457,857	24,903,000
Contingency	---	---	---	45,037,000
<b>Subtotal - Other Expenditures</b>	<b>2,297,338</b>	<b>16,116,605</b>	<b>594,821,681</b>	<b>710,705,000</b>
<b>PROJECT TOTAL</b>	<b>12,561,655</b>	<b>56,326,773</b>	<b>1,282,570,050</b>	<b>1,727,018,000</b>

**MANHO'UR EXPENDED**

Annual Employees	185,076	752,757	11,391,203	15,364,960
T & L Hourly Employees	431,941	1,690,003	44,084,481	56,346,840
<b>PROJECT TOTAL</b>	<b>617,017</b>	<b>2,442,760</b>	<b>55,475,684</b>	<b>71,711,800</b>

Elsewhere, continued work and areas involved included preparation for testing of piping and equipment in the unit 1 reactor and auxiliary buildings; installing instrumentation cable, tubing, and equipment in all buildings; wiring, testing, and calibrating instruments and equipment on boards and panels in main and auxiliary control rooms; pulling and terminating cable in all buildings; installing electrical conduit, permanent lighting, and other electrical items in reactor and auxiliary buildings; installing heating and ventilating duct and equipment in auxiliary and reactor buildings; placing the protective coating on surfaces and some equipment in various areas; and cleanup in all areas.

#### OTHER

Forming, placing reinforcing steel, and installing embedments were continued for the elevation 759 slab in the 5th diesel generator building. Some 246 cubic yards of concrete was placed for this building and for the interface room just south of the existing diesel generator building.

The general yard temporary access portal was transferred to NUC PR, as is, on February 11. More conduit, piping, and heating/ventilating equipment was installed in the field services building.

In the 161-KV yard, additional common station service transformers C and D were filled with oil this period. Testing and adjusting of motor-operated disconnect switches was begun, and more cable was pulled. Modifications to existing reactor coolant pump boards were completed, and boards were transferred to NUC PR.

Excavation for the water treatment plant was started near the southwest corner of the 500-KV switchyard on February 14. Earth removal was about 50 percent complete as the month ended.

#### CONTRACTORS

North Brothers Company, insulation contractor, worked on chemical volume and control, component cooling, and waste disposal systems, on cable and cable tray penetrations, and on rework items.

Plasteel Products Corporation, metal siding contractor, worked intermittently on the field services building, with contract siding about 48 percent complete.

### SUMMARY

Overall project completion is 77.70 percent as of February 18. Three more preoperational tests were started, and six tests were completed. Thus far, 81 of the 196 tests required for unit 1 fuel loading have been completed, and 43 tests are in progress. Instrumentation panel installation was near completion in post accident sampling rooms for both units. Fire-protection piping was being installed in the technical support center in the control building.

2  
c - Revisions to temporary security were underway in the turbine building.

Retubing of unit 2 main feed pump turbine condensers was begun, as was removal of tube bundles from feedwater heaters numbers 5, 6, and 7. Preparations for removing feedwater heaters numbers 1-4 were continued. More equipment was installed in the condensate demineralizer waste evaporator building.

Over 82,000 feet of cable was pulled this month. To date, 15,102,100 feet (87 percent) has been pulled, with 11,117,800 feet (94 percent) being for unit 1. Additional common station service transformers C and D were filled with oil. Forming was in progress for the elevation 759 slab in the 5th diesel generator building. Equipment installation was continued in the field services building.

The general yard temporary access portal was transferred to NUC PR. Excavation was begun for the water treatment plant near the southwest corner of the 500-KV switchyard. The insulation contractor worked on safety-related piping systems and cable.

FOR	NAME	DATE
	NRC -	3/3/87
ADDRESS		<input type="checkbox"/> Cents <input type="checkbox"/> U.S. <input type="checkbox"/> Rate <input type="checkbox"/> Per

fold here for return

FROM	NAME	EXTENSION
	DONALD KNIGHT Project Controls	363
ADDRESS		<input type="checkbox"/> Cents <input type="checkbox"/> U.S. <input type="checkbox"/> Rate <input type="checkbox"/> Per

Hydrogen Igniter Cabling

1277 feet remaining with  
an original estimate of  
32,564 feet total.

CASELOAD FORECAST PANEL REVIEW  
WATTS BAR NUCLEAR PLANT

MARCH 2, 3, 4, 1983

<u>NAME</u>	<u>ORGANIZATION</u>	<u>ADDRESS</u>
V.A. BIANCO	TVA - EN DES	W10B74C-K
D.P. ORASBY	TVA - POWER	460 CST2-C
GUENTER WADEWITZ	TVA CONST	104 ESTA-
Ralph Pierce	TVA-OEDC	
Jim Standifer	TVA-EN DES	204 GB-K
WT COTTLE	TVA-NUC PR	WBNP
Bob Seay	TVA - CONST	WBNP
Shelton Johnson	TVA - CONST	WBNP
Robert L. Lewis	TVA - NUC PR	WBNP
HERB FISCHER	TVA - CONST	WBNP
Ken Jones	TVA - NUC PR	WBNP
Wes Byrd	TVA - NUC PR	WBNP
J.D. Collins	TVA - EN DES	W3A7C-K
R.G. Pratt	TVA - EN DES	323 GB
D. B. Ellis	TVA - POWER	460 CST2-C
T.L. HEATHERLY	NRC - SRD WBNP	
W.H. LUCERNE	NRC - RM/RS	
TJ Kuyper	NRC - Project Manager	
W B SWAN	NRC - Sen Res. Insp. Const	

WATTS BAR NUCLEAR PLANT

NRC CASELOAD FORECAST PANEL REVIEW

MARCH 2, 3, AND 4, 1983

ATTACHMENT  
CASELOAD FORECAST PANEL SITE VISIT  
MEETING AGENDA

- CONST 1. Overview of project construction schedule including progress and major milestones completed, current problems and any anticipated problem areas that may impact the current projected fuel load date.
- SWP 2. Detailed review and current status of design and engineering effort (by major discipline) including any potential problems that may arise from necessary rework.
- SWP 3. Detailed review and current status of procurement activities including valves, pipe, instruments, cable, major components, etc.
- CONST 4. Actual and proposed craft work force (by major craft), craft availability, productivity, potential labor negotiations, and problems.
- SWP and CONST 5. Detailed review and current status of all large and small bore pipe hangers, restraints, snubbers, etc., including design rework, procurement, fabrication, delivery, and installation.
- CONST 6. Detailed review of project schedule identifying critical path items, near critical items, amount of float for various activities, the current critical path to fuel loading, methods of implementation of corrective action for any activities with negative float, and provisions of contingencies. The estimated project percent complete as of January 31, 1983.
- CONST 7. Detailed review and current status of bulk quantities including current estimated quantities, quantities installed to date, quantities scheduled to date, current percent complete for each, actual versus forecast installation rates, in cubic yards/mo., linear feet/mo. or number/mo., and basis for figure.
- (a) Concrete (CY)
  - (b) Process Pipe (LF)
    - Large Bore Pipe (2-1/2" and larger)
    - Small Bore Pipe (2" and smaller)
  - (c) Yard Pipe (LF)
  - (d) Large Bore Pipe Hangers, Restraints, Snubbers (ea)
  - (e) Small Bore Pipe Hangers, Restraints (ea)
  - (f) Cable Tray (LF)
  - (g) Total Conduit (LF)
  - (h) Total Exposed Metal Conduit (LD)

- (i) Cable (LF)
  - Power
  - Control
  - Security
  - Instrumentation
  - Plant Lighting
- (j) Terminations (ea)
  - Power
  - Control
  - Security
  - Instrumentation
  - Plant Lighting
- (k) Electrical Circuits (ea)
  - Power
  - Control
  - Security
- (l) Instrumentation (ea)

- NUC PR 8. Detailed review and current status of preparation of preop and acceptance test procedures, integration of preop and acceptance test activities with construction schedule, system turnover schedule, preop and acceptance tests schedule, current and proposed preop and acceptance test program manpower.
- (a) Total number of procedures required for fuel load.
  - (b) Number of draft procedures not started.
  - (c) Number of draft procedures being written.
  - (d) Number of procedures approved.
  - (e) Number of procedures in review.
  - (f) Total number of preop and acceptance test required for fuel load.
  - (g) Number of preop and acceptance tests completed.
  - (h) Number of preop and acceptance tests currently in progress.
  - (i) Number of systems turned over to start-up
- NEB-NLS 9. Detailed discussion of potential scheduler influence due to changes attributed to NUREG-0737 and other recent licensing requirements.
- NEB-NLS 10. Discussion of scheduler impact, if any, regarding potential deficiencies reported in accordance with 10CFR50.55(e).
- OEDC PM (RMP) 11. Overview of current construction and startup management organization showing interfaces between the two.
- OEDC PM (RMP) 12. Discussion of scheduler impact, if any, regarding modifications to the Model D-3 steam generators.
- OEDC 13. Site tour and observation of construction activities.

NRC SCHEDULE REVIEW  
(Data Through January 31, 1983)

I. Overview of the Project

A. Project Status

In January a joint study by NUC PR and OKDC resulted in moving unit 1 fuel load to January 1, 1984, and unit 2 fuel load to January 1, 1985. All data within this report is reflective of those new dates.

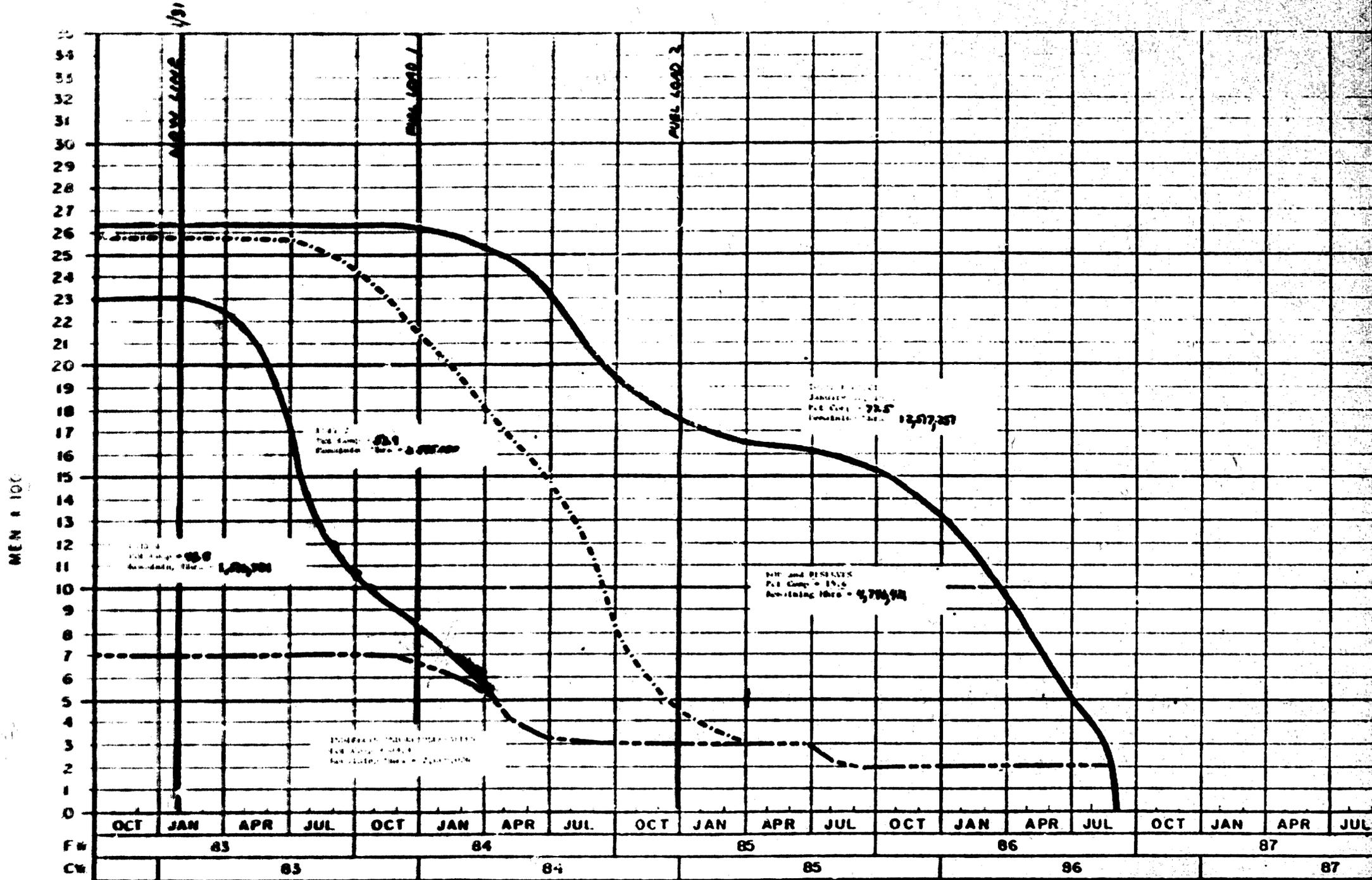
As of January 31, total project was 77.5 percent complete with unit one and unit two 94.2 percent and 53.9 percent, respectively. Productivity rates have been increasing from an October low of 72 percent to a current rate of 95 percent. (Productivity is calculated by dividing estimated unit rates by actuals.)

During the January study, CONST, NUC PR, and Design reviewed remaining unit 1 transfers and identified approximately 61 transfers required to support hot functional testing. Forty-one of the 61 have been punchlisted with the remaining 20 to complete in early March. Between hot functional and fuel load there are approximately 80 system transfers with their walkdowns to complete by May 1 along with all unit 2 systems.

Since scheduling the transfers to hot functional, CONST has made 26 transfers which supports the required average of 3 per week.

With unit 1 work on the decline more effort is now being directed towards unit 2. The following page depicts our current forecast for manpower loading of unit 1, unit 2, and the balance of the plant.

# MANPOWER FORECAST



**NRC SCHEDULE REVIEW**  
(Data Through January 31, 1983)

**I. Overview of the Project (Cont.)**

**B. Milestone Dates**

Based on the new fuel loading dates the following major milestones have been set.

<u>Unit 1</u>	<u>Early Start</u>	<u>Early Finish</u>
1. Containment Leak Rate Test	05/02/83	05/31/83
2. Hot Functional Testing	05/31/83	06/28/83
3. Complete Steam Generator Modification (SGM)	09/06/83	10/04/83
4. Complete Pipe Restoration for (SGM)	09/22/83	12/16/83
5. Begin Ice Loading	09/28/83	12/16/83
6. Complete RPV Lower Alignment	--	11/10/83
7. Complete Security Systems	--	12/02/83
8. Fuel Load	01/01/84	--
9. System Operation	04/30/84	--
10. Commercial Operation	07/01/84	--
 <u>Unit 2</u>		
1. Component Cooling Checkout	02/06/84	03/06/84
2. Cold Hydro Testing	03/06/84	03/20/84
3. Containment Leak Rate Test	07/12/84	08/09/84
4. Hot Functional Testing	08/09/84	09/07/84
5. Fuel Load	01/01/85	--
6. System Operation	04/30/85	--
7. Commercial Operation	07/01/85	--

**NRC SCHEDULE REVIEW**  
(Data Through January 31, 1983)

**I. Overview of the Project (Cont.)**

**C. Current Problems**

Listed are key items focused on by CONST and Design to avoid any further schedule delays.

7 1. **ERCW System**

ECNs have identified approximately 906 additional hangers for this system. *Large & Small*

**Action Taken**

A joint review of the hangers shows that only 405 are required for preop test TVA-18C, vibration testing. With our current effort we now feel we can meet the required schedule.

2. **Alternately Analyzed Pipe Systems**

Re-evaluation of the alternate analysis resulted in the identification of approximately 1,100 hangers that had to be modified or installed.

**Action Taken**

A review of the schedule now shows that only approximately 40 of the hangers must be worked prior to hot functional with the remainder required for fuel load. This rate will be met.

3. **Rigorously Analyzed Pipe Systems**

As a result of CEB's rigorous analysis, approximately 372 hangers on ten ECNs have been identified by EN DES as requiring modification by hot functional.

**Action Taken**

The rigorous analysis required to support hot functional testing has been given top priority and will be completed without affecting the present schedule.

4. **Implementation of 79-14**

Presently there are 297 isometrics for rigorous and alternately analyzed piping systems. Walkdown packages which include hanger drawings, physical piping drawings, valve drawings, analysis drawings, and piping minimum clearance envelope data is approximately 40 percent complete. As of February 28, nine percent of the required isometrics have been completed. Projected schedule for completion of 79-14 walkdowns is as follows:

**NRC SCHEDULE REVIEW**  
(Data Through January 31, 1983)

**I. Overview of the Project (Cont.)**

**C. Current Problems**

Listed are key items focused on by CONST and Design to avoid any further schedule delays.

**1. ERCW System**

ECNs have identified approximately 906 additional hangers for this system.

**Action Taken**

A joint review of the hangers shows that only 405 are required for preop test TVA-18C, vibration testing. With our current effort we now feel we can meet the required schedule.

**2. Alternately Analyzed Pipe Systems**

Re-evaluation of the alternate analysis resulted in the identification of approximately 1,100 hangers that had to be modified or installed.

**Action Taken**

A review of the schedule now shows that only approximately 40 of the hangers must be worked prior to hot functional with the remainder required for fuel load. This rate will be met.

**3. Rigorously Analyzed Pipe Systems**

As a result of CEB's rigorous analysis, approximately 372 hangers on ten ECNs have been identified by EN DES as requiring modification by hot functional.

**Action Taken**

The rigorous analysis required to support hot functional testing has been given top priority and will be completed without affecting the present schedule.

**4. Implementation of 79-14**

Presently there are 297 isometrics for rigorous and alternately analysed piping systems. Walkdown packages which include hanger drawings, physical piping drawings, valve drawings, analysis drawings, and piping minimum clearance envelope data is approximately 40 percent complete. As of February 28, nine percent of the required isometrics have been completed. Projected schedule for completion of 79-14 walkdowns is as follows:

**NRC SCHEDULE REVIEW**  
(Data Through January 31, 1983)

**I. Overview of the Project (Cont.)**

**C. Current Problems (Cont.)**

- |  |       |
|--|-------|
| A. Walkdown of piping systems for minimum clearance to support hot functional.                                     | 05/83 |
| B. Walkdown completion inside containment of remaining hangers and piping systems not required for hot functional. | 08/83 |
| C. Completion of remaining unit 1.   | 10/83 |

**Unit 2**

CONST is scheduled to complete system walkdowns of unit 2 by May 1. Currently we are working 307 men in unit 2 with 300 scheduled. By May 1 this will increase to 600 men with a scheduled peak of approximately 1,300 beginning October 1.

Unit 2 schedule is basically being worked on a late start manpower forecast. Several system paths are fluctuating from plus two or three weeks to minus four to five weeks float, however, the transition of unit 1 forces to unit 2 will be the critical factor in maintaining the January 1985 fuel loading date.

ITEM 11

**NRC SCHEDULE REVIEW**  
 (Data Through January 31, 1983)

**II. Detailed Review and Current Status of Design and Engineering Effort (by Major Discipline) Including Any Potential Problems That May Arise From Necessary Rework**

**A. Design effort as of January 22, 1983**

**Man-Hour Summary**

	<u>Expended</u>	<u>Remaining</u>
Design	5,470,860	1,914,494
Procurement	42,294	3,886
<b>TOTAL</b>	<b>5,513,154</b>	<b>1,918,380</b>

Current WBN Expenditure =  $\frac{5,513,154}{7,431,534} = 74.2\%$

Man-hours Sched to U1 FL -  $\frac{6,398,000}{7,432,000} = 86.1\%$   
 Total Sched Man-hours - 7,432,000

Man-hours Sched to U2 FL -  $\frac{6,988,000}{7,432,000} = 94.0\%$   
 Total Sched Man-hours - 7,432,000

**B. Remaining Design effort as of January 22, 1983**

<u>ORG</u>	<u>Design Man-hours</u>	<u>Procurement Man-hours</u>	<u>Total (% of Rem Work)</u>
MEBS	45,881	--	45,881 (2.4%)
ESB	52,804	--	52,804 (2.7%)
PBB	11,325	--	11,325 (0.6%)
NEK	228,006	--	228,006 (11.9%)
SYP	1,114,242	--	1,114,242 (58.1%)
MES	79,835	2,278	82,113 (4.3%)
CEB	85,439	47	98,486 (5.1%)
EE	78,329	794	79,123 (4.1%)
ASB	29,207	767	29,974 (1.6%)
SDP	58,738	--	58,738 (3.1%)
CONTR WORK	116,611	--	116,611 (6.1%)
MGR'S OFC	1,077	--	1,077 (0.1%)
<b>TOTAL</b>	<b>1,914,494</b>	<b>3,886</b>	<b>1,918,380 (100%)</b>

**C. Potential Problem Areas by Major Discipline**

**Mechanical**

**Pipe Supports** - This item will be discussed in detail under agenda item No. 5.

**NRC SCHEDULE REVIEW**  
(Data Through January 31, 1983)

**II. Detailed Review and Current Status of Design and Engineering Effort (by Major Discipline) Including Any Potential Problems That May Arise From Necessary Rework (Cont.)**

**C. Potential Problem Areas by Major Discipline (Cont.)**

**Electrical**

1. **Security Power Block Concept** - Overall design is presently approximately 25 percent complete. All conceptual design is basically complete. Design is scheduled to be complete by May 1, 1983.
2. **NUREG 0588** - TVA is continuing its qualification program for NUREG 0588. All equipment required to be replaced, relocated, or modified before fuel loading will be replaced or its existence will be justified to the new rule 10CFR50.49.
3. **Iodine Radiation Monitoring** - Equipment has been purchased. Design is in progress and scheduled for completion by April 1, 1983.
4. **Aux Power System** - Some fairly extensive modifications may be required as a result of the SER where NRC requested TVA to periodically test circuit breakers, etc., for nonClass IE circuits considered as associated per RG 1.75. TVA, EN DES, is studying this to determine if it is possible to add redundant protective devices (i.e., fuses) in series to negate this need for testing. TVA will temporarily implement a periodic test program in lieu of physical modifications if necessary to avoid fuel load schedule impact.

**Civil**

No civil items presently identified have potential impact to the fuel load schedule.



**NRC SCHEDULE REVIEW**  
(Data Through January 31, 1983)

**III. Detailed Review and Current Status of Procurement Activities Including Valves, Pipe, Instruments, Cable, Major Components, Etc.**

We presently have no procurement activities which are anticipated to impact the fuel load schedule.

Detailed status on specific procurement activities is provided below as information only.

- a. Security Power Block Concept - All material is available at WBN or other sites and will be transferred in. Bullet proof glass will be the longest lead item and is expected by June 1983.
- b. Iodine Monitoring - All required material will be available to support CONST. Monitors are scheduled for delivery the first week in March with isokinetic probes delivery in 30 days. *(at least) March*
- c. Barton qualified transmitters are a potential problem since the lead time for new deliveries is 6 to 12 months. TVA has recently negotiated a contract with W for 100 of these transmitters to be ordered on an as needed basis. This will help in negating delays. *3 for 4/8  
200 for 5/8*
- d. Cable - TVA has an adequate supply of qualified cable at WBN and at its deferred projects, in particular the Hartsville cable warehouse.
- e. Replacement PORVs (Target Rock) are scheduled for delivery by February 28, 1983. *have been reviewed.*

*mat'l req'd 2-25*

*probes coming 3-21*

ITEM IV

NRC SCHEDULE REVIEW  
(Data Through January 31, 1983)

**IV. Craft Work Force**

During the rescheduling effort the craft work force was a major consideration. We do not expect any significant variation from the totals shown. Currently we anticipate no problems with craft availability or future negotiations. TVA has reached agreement on recent negotiations that extend through the end of this year. Since October, productivity has climbed from a low of 72 percent to a January high of 95 percent. We attribute this to a reorganization of the unit 1 transfer schedule that clearly defines the project's priorities. With the decline in the unit 1 work force and the shift to unit 2 work, we expect to maintain or increase our current productivity rate.

Craft Work Force as of January 27, 1983

<u>Craft</u>	<u>Actual</u>	<u>Estimated</u>	<u>Current Percent</u>
01 - Boilermakers	54	60	90
02 - Carpenters	100	100	100
03 - Millwrights	26	28	93
04 - Electricians	340	355	96
05 - Ironworkers	123	120	102
06 - Steamfitters	1,114	1,140	98
07 - Teamsters	96	96	100
08 - Welders	247	250	99
09 - Operating Engineers	73	78	94
10 - Painters	220	230	96
11 - Sheetmetal Workers	137	140	98
Others - Misc	<u>42</u>	<u>43</u>	<u>94</u>
<b>TOTAL</b>	<b>2,572</b>	<b>2,640</b>	<b>97</b>

As previously discussed, the craft work force was taken into account during the last schedule slip.

ITEM V

7. Design/Analysis Status of All Large and Small Bore Pipe  
Hardware, Control Systems, Etc., Including Design, Rework,  
Procurements, Transportation, Delivery, and Installation

Design/Analysis Status

I. Unit 1

A. Current Analysis

1. Vigorous Analysis

- a. Reanalysis activities are currently in progress on approximately 70 ECNs affecting unit 1 FL.
- b. Estimate of number of support revisions requiring CONST work not expected worth of support drawing issue.

<u>Area of Support</u> <u>Revision Issue</u>	<u>Estimated No. Supports</u> <u>Requiring CONST Work</u>
0183	300
0183	150
0183	150
0183	150

2. Design Analysis

- a. Design analysis review is estimated to identify approximately 100 supports requiring some degree of CONST work. Design work will be completed by May 1983.

- b. Approximately 100 ECNs and FCRs are expected to require 100 supports requiring CONST work. Design work will be completed by July 1983.

3. Design Analysis Requiring CONST Work

1. Department Line RCR (ECN 3069) - approximately 20 potential revisions. We anticipate insignificant CONST work.
2. 19-12 Inspection - Unknown reanalysis and CONST work (based on past experience) but this is factored into the Design and Analysis results. *no people for 19-12*
3. Support 100 (ECN 0006), topping of rigorous analysis and design analysis - approximately 15 potential reanalysis.
4. Reanalysis activities for problems involving H equipment will not exceed allowable and H has not approved.

NRC SCHEDULE REVIEW  
(Data Through January 31, 1983)

V. Detailed Review and Current Status of All Large and Small Bore Pipe Hangers, Restraints, Snubbers, Etc., Including Design, Rework, Procurement, Fabrication, Delivery, and Installation (Cont.)

II. Unit 2

All original analysis and support designs are essentially complete. EN D&S is currently developing a schedule for various reanalysis and support revisions. This schedule will be developed to meet CONST's priorities and to support the schedule.

Based on the above and the information shown in Section I, CONST can meet the required installation rates to meet the schedule.



NRC SCHEDULE REVIEW  
(Data Through January 31, 1983)

**VI. Review of Project Schedule**

**Unit 1**

The project has targeted two primary goals as essential to meeting fuel load: 1) the transfer schedule to support hot functional, and 2) the three primary critical paths between hot functional and fuel load.

Addressing the remaining system transfers to hot functional we must average approximately three per week. The transfers vary in float from 0 to 9.8 weeks but each early start date is treated as a must situation. In establishing the hot functional schedule the most critical transfers were evaluated in detail and their completion dates set at zero float. With two months elapsed and three months to go we are maintaining a May 31 hot functional.

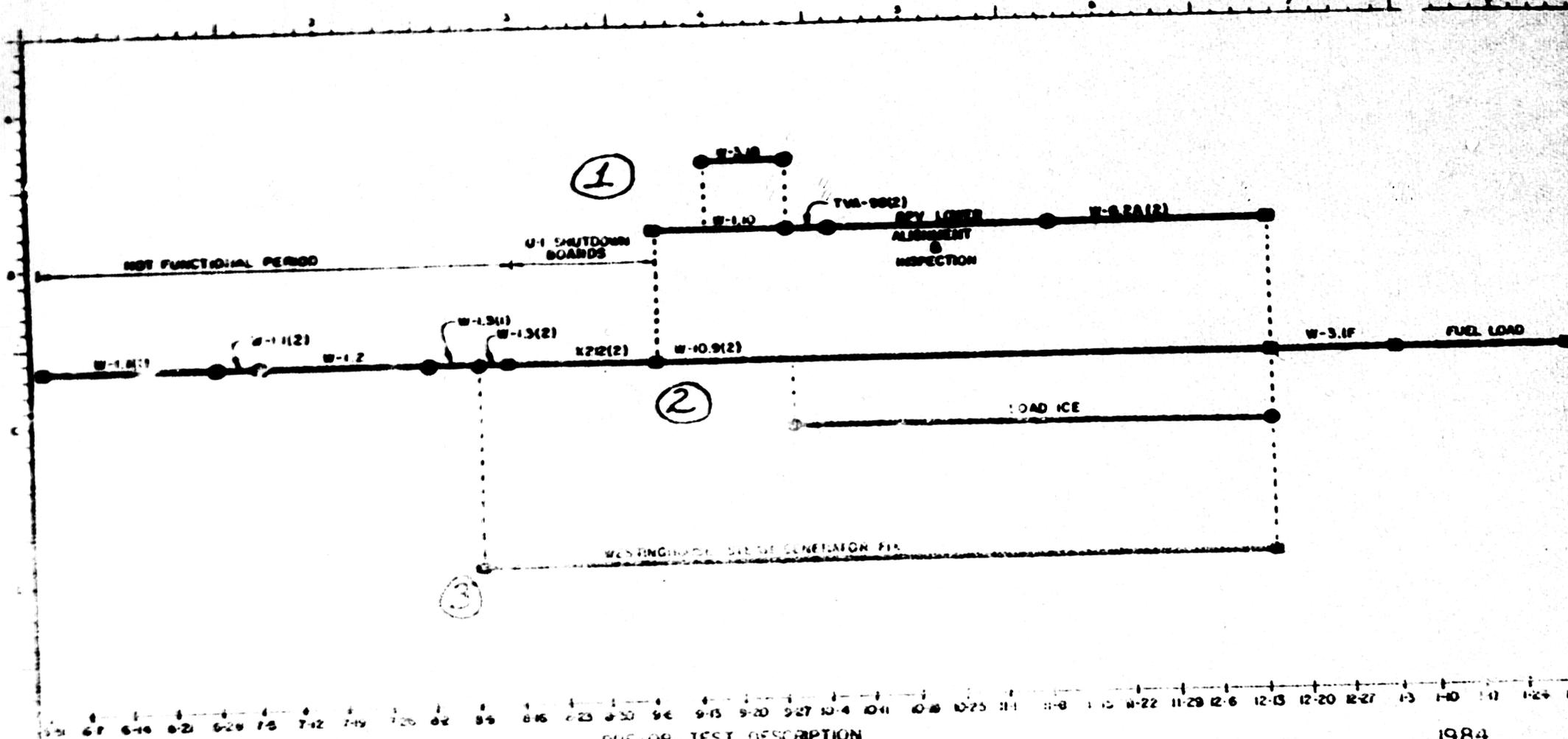
After hot functional, we have three primary paths that are critical to fuel load: 1) post hot functional inspection and RPV alignment, 2) ice condenser testing and ice loading, and 3) the Westinghouse steam generator fix. The following page illustrates a time scale of these three paths.

The January 1, 1984, date was based on the durations and sequencing worked out for these items once the hot functional date was determined.

**Unit Two**

Currently, we are walking down all remaining systems work for unit 2 and expect to complete by May 1. There are four to five systems indicating a negative one week through cold hydro and they are being reviewed for alternatives for possible recapture of the float.

As previously stated, unit 2 is being worked on a late start schedule with system paths leveled to meet projected manpower availability. Based on this we see the key factor to unit 2 being a timely and efficient transition of personnel from unit 1 to unit 2.



PRE-OP TEST DESCRIPTION

1984

1983

- W-1(1) INITIAL RCS HEATUP
- W-1(2) RCS HEATUP TO 525F
- W-1.2 NOT FUNCTIONAL TO 540F
- W-1.3(1) POST MFT COOLDOWN
- W-1.3(2) RCS VENT & DRAIN COOLDOWN
- W-4.9(2) ICE CONDENSER
- W-1.10 POST MFT INSPECTION
- W-3.10 SHUTDOWN SS ACCUMULATOR
- TVM-90(2) REV SAMPLE TEST
- W-6.2A(2) MANIPULATOR CRANE INDEX
- W-3.1F ENGINEERING SAFEGUARD FEATURES

MFT TO FUEL LOAD  
 WATTS BAR  
 NUCLEAR PLANT  
 CRITICAL PATH

WATTS BAR NUCLEAR PLANT  
 TENNESSEE VALLEY AUTHORITY  
 DIVISION OF CONSTRUCTION

DATE	REVISION	BY



MC



**NRC SCHEDULE REVIEW**  
 (Data Through January 31, 1983)

**VII. QTY QUANTITY REVIEW - UNIT 1**

TASK	U/M	EST. QTY	ACT. QTY	REMAINING	ACTUAL % COMP	INSTALLATION RATES (QTY/NO.)		
						PROJECTED	CURRENT ACTUAL	
Concrete	CO	CY	268,082	265,734	2,348	99.1	600	86
Pipe	2U & FP	LF	457,075	446,875	10,200	97.8	927	1,119
Eng Pipe Hgr	HM	EA	15,942	13,421	2,521	84.2	229	306
Typ Pipe Hgr	2H	EA	24,354	22,365	1,989	91.8	181	983
Cable Tray	TC	LF	199,011	198,876	135	99.9	12	123
Conduit	EC	LF	1,085,502	1,053,278	32,224	97.0	2,929	2,714
Cable	CC	LF	11,687,011	11,250,739	436,272	96.2	39,661	98,325
Cable Term.s.	CT	EA	234,173	217,971	16,202	93.1	1,473	1,256
Instruments	IN	EA	21,061	19,106	1,955	90.7	178	22
<b>TUBING</b>	<b>PI</b>	<b>LF</b>	<b>217,240</b>	<b>200,120</b>	<b>17,120</b>	<b>92</b>	<b>1427</b>	<b>5297</b>

Based on our current installation rates for unit 1, we do not foresee any problems concerning the rates themselves.

**NRC SCHEDULE REVIEW**  
(Data Through January 31, 1983)

**VII. QUANTITY REVIEW - UNIT 2**

TASK	U/M	EST. QTY	ACT. QTY	REMAINING	ACTUAL % COMP	INSTALLATION RATES (QTY/MO.)	
						PROJECTED	CURRENT ACTUAL
Concrete	CO : CY	43,977	4,000	3,977	91.0	221	162
Pipe	2U & FP → FP	47,119	6,521	36,595	62	2032	122
	→ DU	175,968	90,849	(85,219)	51.6	4,734	173
Eng Pipe Hgr	HR : EA	8,059	875	1,184	10.9	399	36
Typ Pipe Hgr	2R : EA	5,798	633	5,165	10.9	287	0
Cable Tray	TC : LF	8,044	6,250	1,794	77.7	100	0
Conduit	EC : LF	380,274	226,471	153,803	59.6	8,545	2,436
Cable	CC : LF	5,489,443	4,206,402	1,223,041	77.0	67,947	40
Cable Teras	CT : EA	109,236	61,294	47,942	50.1	2,663	37
Instruments	IN : EA	12,323	7,871	4,452	63.9	247	0
<b>TUBING</b>	<b>PI LF</b>	<b>234,631</b>	<b>108,830</b>	<b>125,801</b>	<b>46</b>	<b>6989</b>	<b>0</b>

The current rates for unit 2 are not indicative of the effort we expect to put forth on unit 2 after the hot functional testing of unit 1. Manpower projections for unit 2 call for 600 craftsmen by May 1, 1983, with a peak of approximately 1,400 working directs by January 1984.

