Docket No.: 50-341

DEC 1 6 1982

APPLICANT: Detroit Edison Company

FACILITY: Fermi 2

SUBJECT: SUMMARY OF CASELOAD FORECAST PANEL SITE VISIT ON AUGUST 24-26, 1982

Introduction

The NRC Caseload Forecast Panel for Fermi 2 met with Detroit Edison Company representatives at the Fermi 2 Plant to hear applicant's basis for Fermi 2 currently scheduled completion date and to observe the status of construction, Participants in the meeting are listed in Enclosure 1. Selected Detroit Edison Company summary sheets showing Fermi 2 construction status and projected completion are provided in Enclosure 2.

Summary

The applicant presented information in accordance with the agenda attached to the July 27, 1982 meeting notice. On August 25, 1982, applicant conducted a tour of major buildings, equipment, and systems.

In an overview of project construction, applicant said that it recognizes the official Fermi 2 target fuel load date of November 1982 cannot be met, and that it plans to officially revise this target date by letter to the NRC. Based on March 1982 projections, the target fuel load date is June 13, 1983. Currently there are 5200 people on site of which 2500 are craft personnel, 1100 are nuclear operations personnel and 180 are engineering personnel. In April 1982, the main turbine was put on turning gear and Division I diesel generators were test operated. In July 1982 the reactor pressure vessel hydrostatic test was completed. Division II diesel generator sets will be tested by the end of the year. The major construction effort is completion of the radwaste building addition and radwaste system modifications; therefore, 3 shifts are being used for this work. Preoperational tests are being run with 2 shifts. The critical path preoperational test is the Flow - Induced Vibration Test (See Enclosure 2, sheet 9.) Installation of reactor internals must be completed by October 9 to meet the target fuel load date; therefore, reactor internals work is being expedited. The overall project is 90.8% completed (Enclosure 2, sheets 1-6).

Engineering activities peaked in mid-1982. Of a total of 17,575 project engineering documents that have been identified (drawings, specifications, reports), 17,385 have been completed. During the past 12 months, the engineering work required by the new issues resulting from the TMI accident, NRC operating license review, and DECo safety reviews has been 70% completed. Original engineering work is 87% completed. Critical path engineering tasks needed to support fuel loading are; modifications required for automatic isolation of RCIC and HPCI (January 2, 1983), and as-built pipe stress analyses (April 6, 1983.)

Procurement activities are performed and managed by about 85 on-site personnel. These activities include purchasing, receipt inspection, expediting, material control, and warehouse operations. Most activities are related to startup, replacement parts, and building an inventory of stock items to support operation. All material for radwaste systems has been ordered and all but a few items have been delivered. Procurement of spare parts is well underway with more than 59% of the total on order. In response to the staff's question, applicant said there are no procurement problems to meet the estimated June 1983 fuel load date.

Craft worker availability is good except for welders who have a high rate of failure to pass qualification tests. Currently there are about 2500 craft workers employed. In June of this year, several contracts expired, resulting in withholding of services for about two weeks. Most contracts have now been reviewed with a new expiration date of June 1984, except for electricians who have a contract expiration date of June 1983. Boilermakers, glaziers ironworkers and painters are working while negotiating contracts.

Most of the pipe stress analysis of as-build pipe hangers and snubbers has been completed and installation changes made. This program has been extensive over the last two years. Remaining effort includes work on small bore pipe systems and reassessment of the requirement for snubbers in accordance with Fermi 2 Inspection Report No. 50-341/82-08. No major problems are seen in completing this effort prior to the target fuel load date.

The percentage completion of bulk qualities is shown on sheet 6 of Enclosure 2. Remaining work is principally in the electrical area; cable, terminations, and conduit.

There are a total of 143 preoperational and acceptance tests. Of these, two have been completed by the Systems Completion Organization and are ready for turnover to Nuclear Operations as soon as adminstrative procedures are completed. Four other tests are expected to be completed shortly. A network of tasks needed to complete the tests has been computerized. Sheets 7 and 8 of Enclosure 2 show 16 tasks that are near the critical path to fuel load date. The most limiting task is called Control Rod Drive Drive Hydraulic System and Reactor Internals, and it includes the Flow Induced Vibration Test, as discussed above. The projected fuel load date through this path is 5 weeks later than the June 13, 1983 target date. Projected fuel load dates for the other 15 tasks near the critical path extended from 9 weeks earlier to 7 weeks later than the target date.

Completion of NRC-required modifications was also described. Of the new issues (TMI or other recent NRC requirements), the fire protection modifications are still under development, safety relief valve in-plant test instrumentation has not been purchased, and the contract for installation of supports for piping attached to the torus has not been made. The completion of corrective actions for design deficiencies (as defined in 10 CFR 50.55(e)) is planned

to support a June 13, 1983 fuel load date. Some items that may impact that date are; procurement of Fisher control valves, procurement of new actuator parts for Powell Valves if analysis indicates they are needed, and repair or replacement of torque switches on Limitorque motor operators for valves, if analysis concludes they are needed. During the meeting, the applicant said that some of the welds on jet pumps (inside the reactor) will have to be reworked and this may impact the target fuel load date by 6 to 8 weeks.

Conclusion

The Detroit Edison Company has provided the necessary information for the NRC Caseload Forecast Panel to estimate the Fermi 2 fuel load date. Data provided in the previous panel visit of September 29, 30 and October 1, 1981 was also considered in the panel's current estimate.

The panel believes that the change in the organization to include the Systems Completion Organization for preoperational testing is an improvement over the previous organization and may improve the rate of completion of tests. However there are only a few tests completed to date, so efficiency of the new organization has not been demonstrated.

The panel notes that a major milestone, reactor pressure vessel hydrostatic test, was completed under the new organization at the end of July 1982. In its previous visit, the panel estimated this would be completed in April 1982. Five other tests have been completed or nearly completed out of 143 total preoperational tests. The applicant is using a critical path network method to control priorities for construction completion and preoperational testing and to point out problem areas and take corrective action.

The NRC Caseload Forecast Panel concludes that February 1984 is the earliest date the plant will be completed sufficiently for fuel loading. This is the same date estimated by the panel last year, which indicates the applicant is providing manpower and funds at a rate anticipated last year.

The following observations result from information and data provided during the panel's current visit.

- The electrical work appears to require a major effort if it is to be consistent with completion of other craftwork. This is based on the large amount of electrical and instrument cable to be installed, terminations to be completed, conduit and hangers to be installed, and the rate at which electrical work is currently being done.

- New work also appears to require a major effort. The radwaste building modifications and security system modifications arose as new work not considered in last years estimate. During this review, rework of drywell structural steel was identified as potential new work. The panel expects other new work may arise before completion of the plant for fuel loading.

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- The numbers of preoperational tests completed to date results in a rate of completion less than that required to meet a June 1983 fuel load date.

- Another factor that makes a June 1983 fuel load date appear overly optimistic is the large number of punch list items that must be completed after test completion.

Mr. Harry Tauber, DECo Vice President of Engineering and Construction, stated that he disagrees with the panel's estimate. He stated that personnel in the preoperational testing organization will increase. While only a few tests are completed, many are near completion. He also said that most of the engineering analyses are completed so that he believes major construction modifications due to NRC new requirements have been identified and included in their projected fuel load date. Further, punch list items, such as reanalysis of drywell structural steel, may result in no further work, instead of the modifications as assumed in the panel's estimate.

By letter dated October 1, 1982, Detroit Edison said the current projected fuel load date for Fermi 2 is seven weeks later than the target date of June 13, 1982, resulting in a current fuel load date projection of August 1, 1983. Detroit Edison is taking steps to try to reduce the current negativity in the schedule.

Original Signed By:
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L. L. Kintner, Project Manager
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Enclosures:
As stated

cc: See next page

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ENCLOSURE 1

Participants in the
NRC Caseload Forecast Panel Site Visit
August 24-26, 1982
Fermit 2 Plant

NRC

Bruce Little
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L. Kintner
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Detroit Edison Company

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ENCLOSURE 2

Summary Sheets
of Fermi 2 Construction
Status and Projected Fuel Load Date
Selected from those Presented by Detroit Edison Company
during the
NRC Caseload Forecast Panel Site Visit
August 24-26, 1982

FERMI 2

PHYSICAL PERCENT COMPLETE

The method used to determine the project's completion status makes use of quantities to determine percentage with manhours providing the weighting factor. The four encompassing work areas used to calculate the percent complete were Civil, Piping, Mechanical, Electrical. Using the following equation, each area was calculated.

$$\text{Total Project PPC} = \left(\left(\sum \left(\frac{\text{Actual Quantities}}{\text{Current Estimated Quantities}} \times \text{Current Estimated Manhours} \right) \right) \div \text{Total Direct Current Estimated Manhours} \right) \times 100$$

Area	Percent Physical Complete
Civil	95.2
Piping	85.3
Mechanical	97.4
Electrical	82.1
Total	90.8

CIVIL-PERCENT COMPLETE*

Component	Unit	Installed To Date	Estimate To Go	Current Est To Install	Manhours To Date	Estimate To Go	Current Estimate	Percent Complete
Concrete	CY	321,850	12,501	334,351	67,573	21,427	89,000	95.3%
Structural Steel	TON	12,309	391	12,700	57,000	41,000	98,000	96.9%
Doors, Sac Shield	EACH	0	21	21	1,-00	24,000	25,000	0%
Penetration Seals	EACH	841	7,159	8,000	14,179	235,821	250,000	10.5%
Shield Planks & Blocks	EACH	8,925	23,788	32,713	7,757	20,243	28,000	27.3%
TSC/OBA	NU	99	1	100	8,076	7,924	16,000	99.0%
Hanger Fab Shop	NU	98	2	100	320,231	769	321,000	99.8%
Misc. Work Items (CC 27, 28, 33)	NU	99	1	100	209,958	42	210,000	99.9%
Plant Painting	NU	61	39	100	94,177	61,303	155,480	60.6%
Other	NU	99	1	100	7,273,043	10,000	7,283,043	99.9%
On Site Storage	NU	3	97	100	2,400	93,600	96,000	2.6%
Total Weighted Pecentage					8,019,153	516,129	8,535,282	95.2%

*The unit NU is defined as the work effort normalized to 100

PIPING-PERCENT COMPLETE*

Component	Unit	Installed To Date	Estimate To Go	Current Est To Install	Manhours To Date	Estimate To Go	Current Estimate	Percent Complete
LB Pipe	FT	211,065	6,669	217,734	396,956	49,708	446,664	96.9%
LB Welds	EACH	18,454	1,098	19,552	918,810	33,208	952,018	94.4%
LB Hangers	EACH	13,393	2,120	15,513	794,700	318,696	1,080,188	86.3%
LB Valves	EACH	2,357	319	2,676	62,244	19,116	81,360	88.1%
LB Trim	EACH	2,822	262	3,084	39,292	5,001	44,293	91.5%
SB Pipe	FT	96,749	14,774	111,523	517,389	87,569	604,958	86.8%
SB Hangers	EACH	9,486	3,774	12,900	160,137	155,220	315,357	73.5%
Tubing	FT	253,074	34,175	287,249	511,567	121,657	633,224	88.1%
I&C Pipe	FT	15,657	2,981	18,638	82,501	11,319	93,820	84.0%
I&C Hangers	EACH	1,209	805	2,014	41,553	58,203	99,756	60.0%
Insulation	FT	31,977	123,465	155,442	54,310	63,053	117,363	20.6%
Whip Restraints	EACH	36	121	157	62,291	8,470	70,761	29.8%
Other Direct	NU*	88	12	100	857,604	118,304	975m908	87.9%
Torus Modifications	NU	66	24	100	102,143	51,600	153,743	66.4%
Total Weighted Percentage					4,601,497	1,067,916	5,669,413	85.3%

*The unit NV is defined as then work effort normalized to 100

MECHANICAL-PECENTAGE COMPLETE*

Component	Unit	Installed To Date	Estimate To Go	Current Est To Install	Manhours To Date	Estimate To Go	Current Estimate	Percent Complete
Turbine Generator								
T&B	NU	100	0	100	58,874	0	58,874	100%
Aycock	NU	100	0	100	297,014	-	297,014	100%
HVAC								
Irsay	NU	100	0	100	142,171	-	142,171	100%
CRDH/Internals	NU	90	10	100	161,325	72,730	234,055	89.5%
Closed Orders	NU	100	0	100	244,957	-	244,957	100%
Total Weighted Percentage					884,341	72,730	957,071	97.4%

*The unit NV is defined as the work effort normalized to 100

ELECTRICAL-PERCENTAGE COMPLETE

Component	Unit	Installed To Date	Estimate To Go	Current Est To Install	Manhours To Date	Estimate To Go	Current Estimate	Percent Complete
Conduit	FT	672,592	111,358	783,950	614,127	99,970	714,097	85.8%
Cable	FT	7,192,550	1,610,911	8,803,461	468,496	82,060	550,556	81.7%
Terms	EACH	213,255	94,621	307,876	138,561	48,165	186,726	69.3%
Total Weighted Percentage					1,221,184	230,195	1,451,379	82.1%

SUMMARY OF SELECTED
SIGNIFICANT PROJECT QUANTITIES

AUGUST, 1982

Includes Radwaste Modifications

	UNITS	TOTAL INSTALLED TO DATE	CURRENT ESTIMATE	REMAINING TO-GO	PERCENT COMPLETE
Civil					
Concrete	CY	321,850	333,933	12,083	96.4%
Piping					
Process Pipe (LB)	LF	163,026	168,641	5,615	96.7%
Process Pipe (SB)	LF	95,377	109,990	14,613	86.7%
Yard Piping (LB)	LF	48,039	49,093	1,054	97.9%
Yard Piping (SB)	LF	1,372	1,533	161	89.5%
Large Bore Hgrs.	EACH	13,393	15,147	1,754	88.4%
Small Bore Hgrs.	EACH	9,486	12,900	3,414	73.5%
Electrical					
Cable Tray	LF	70,885	71,195	310	99.6%
Conduit	LF	672,592	783,950	111,358	85.8%
Cable					
A) Power	LF	943,204	1,117,314	174,110	84.4%
B) Control	LF	1,984,531	2,351,233	366,702	84.4%
C) Security	LF	185,098	618,767	433,669	29.9%
D) Instrumentation	LF	3,447,573	4,083,973	636,400	84.4%
E) Lighting	LF	630,144	630,144	0	100%
Terminations					
A) Power	EACH	20,760	28,219	7,459	73.6%
B) Control	EACH	62,031	84,319	22,288	73.6%
C) Security	EACH	717	20,369	19,652	3.5%
D) Instrumentation	EACH	125,857	171,079	45,222	73.6%
E) Lighting	EACH	3,890	3,890	0	100%
Circuits					
A) Power	EACH	2,904	3,480	576	83.4%
B) Control	EACH	16,733	20,050	3,317	83.4%
C) Security	EACH	645	1,842	1,197	35%
D) Lighting	EACH	1,945	1,945	0	100%

INTEGRATED PROJECT SUMMARY SCHEDULE

IPSS#	DESCRIPTION	CRITICAL PATH	REMAINING DURATION AS OF JULY 26, 1982 (WEEKS)	TOTAL FLOAT TO JUNE 13, 1983 PROJECTED FUEL LOAD DATE	CURRENT FUEL LOAD DATE
1	Nuclear Operations	Instrument Work Unit	52	-6	07-25-83
2	Radiological Emergency Response	See IPSS #1, Nuclear Operations	N/A (1)	N/A (1)	N/A (1)
3	Security Systems	Multiplexers, A70-005	48	-2	06-27-83
4	Radwaste Systems	Floor and Drain Collectors, G11-25	51	-5	07-18-1283
5	Reactor Pressure Vessel Hydro System	Reactor Recirculation System, B31-00	50	-4	07-11-83
6	Reactor Pressure Vessel Hydro Milestone	Milestone	0	0	06-13-83
7	Startup Test Phase * *	Milestone	26	-7	01-16-84 * *
8	Control Rod Drive Hydraulics System/ Reactor Internals *	Reactor Internals, B21-INT	51	-5	07-18-83
9	Emergency Core Cooling System & Cold Functional Test	Milestone	6	-6	08-01-83
10	Turbine Systems	Reheat & Moist. Extract. System N30-18	37	+9	04-11-82
11	Residual Heat Removal System	Emergency Diesel Generators Div. II, R30-00	44	+2	05-30-83
12	Balance of Plant System	Primary Containment Pressure Control, Inerting, and Purge Systems, T48-01, 02, 03	52	-6	08-01-83
13	New Issues	Sump Pump Control With Additional Level Indication NIPO #13	51	-5	07-18-83

* Most limiting

** Through Power Ascension

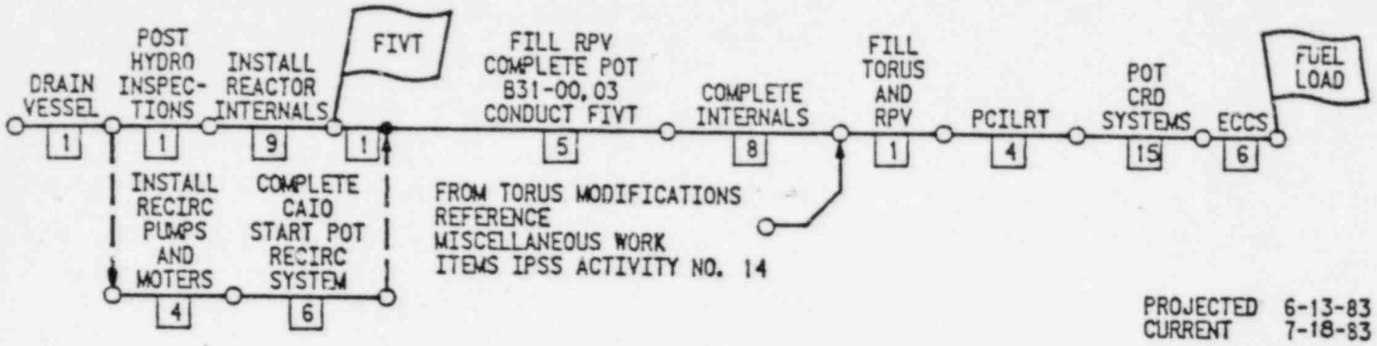
INTEGRATED PROJECT SUMMARY SCHEDULE

IPSS#	DESCRIPTION	CRITICAL PATH	REMAINING DURATION AS OF JULY 26, 1983 (WEEKS)	TOTAL FLOAT TO JUNE 13, 1983 PROJECTED FUEL LOAD DATE	CURRENT FUEL LOAD DATE
14	Miscellaneous Work Items	Torus Modification, T23-021	46	- 2	06-13-83
15	Flow Induced Vibration Test (FIVT)	Milestone	5	-1	06-20-83
16	Fill Reactor Pressure Vessel & Torus & Primary Containment Integrated Leak Rate Test	Milestone	5	-1	06-20-83

(1) Included with IPSS #1, Nuclear Operations
(2) Local Leak Rate Testing Under Investigation

IPSS #8 CRDH Systems and Reactor Internals
B21-INT Reactor Internals

Float as of 7-26-82 -5 weeks
Float as of 3-29-82 +3 weeks



PROJECTED 6-13-83
CURRENT 7-18-83

CRITICAL PATH ANALYSIS

The critical path for Reactor Internals is through the draining of the vessel, the post-hydro inspections, internals installation, filling of the Reactor Pressure Vessel (RPV), Preoperational Testing (POT) of the recirculation system, the Flow Induced Vibration Test (FIVT), the complete internals installation, filling the torus and the RPV, the Primary ContainmentIntegrated Leak Rate Test (PCILRT), the POT of the Control Rod Drive (CRD) Systems, and the Emergency Core Cooling System (ECCS) test to the Fuel Load milestone.

The internals installation is scheduled to occur during a nine (9) week period prior to the FIVT and during a projected eight (8) week period between the FIVT and the PCILRT. The internals scheduled in the first period are those components required for the FIVT such as the feed water spargers, control rod guide tubes, and associated equipment. Most of these installation activities must be worked in sequence. The internals scheduled in the second period between the FIVT and the PCILRT are those components required for completion of the reactor in support of fuel loading.

ACTION ITEMS

Problem	Action	Responsibility
1. The internal installation prior to the FIVT must be completed by October 9, 1982 to remain on the current schedule to the June 13, 1982 projected Fuel Load Date.	Continue to expedite construction to ensure completion of the activity as scheduled.	J. Ard
2. The reactor work associated with post-FIVT and pre-PCILRT Milestones, and Startup activity post-PCILRT must be reduced to meet the projected Fuel Load.	Look for ways to expedite the internals work and gain Contractor concurrence. Review the Startup sequence to Fuel Load.	J. Ard F. Agosti

MEETING SUMMARY

DEC 1 6 1982

Document Control (50-341)
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