



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Docket Nos.: 50-440/441

MEMORANDUM FOR: B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing

FROM: John J. Stefano, Project Manager
Licensing Branch No. 1
Division of Licensing

SUBJECT: REPORT OF CASELOAD FORECAST TEAM VISIT TO THE PERRY
NUCLEAR PLANT SITE ON MARCH 6-8, 1984

1. Background Information

In January 1983, the Caseload Forecast Team (the Team) met with the Cleveland Electric Illuminating Company (CEI) and performed an on-site tour of the Perry plant to ascertain the attainability of a November 1983 fuel load date for Unit 1. As a result of that visit (reported in my memo to you dated March 17, 1983), the Team concluded that (a) assuming completion of all essential construction work by March 1984, and (b) a 9-month preoperational (preop) test program, Unit 1 could load fuel as early as December 1984. The Team stressed, however, that this date was predicated on a problem-free preop test program, and the optimistic (non-contingency) schedule provided by CEI at that time, and that a more realistically attainable fuel load date was estimated to be June 1985. In a letter dated March 23, 1983 (M. R. Edelman to H. R. Denton), CEI reported that Unit 1 fuel load was being slipped to December 1984 (the current Beville Schedule date being followed by the NRC staff). ✓

In January 1984, the Region III Perry Resident Inspector advised me of delays in the completion of essential construction work in the Unit 1 reactor building, and that preop testing of safety-related reactor systems had not been actively initiated. It was decided that another site visit by the Team was in order to determine if the applicant could continue to support a December 1984 fuel load date for Unit 1. Accordingly, by memo dated January 21, 1984, a notice was publicly issued announcing a site visit by the Team on March 6-8, 1984.

On February 22, 1984, CEI issued a press release indicating that completion of Unit 1 had further slipped to late 1985, further affirming the Team's decision to conduct the March 1984 site visit.

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2. Introduction

The Team met with CEI on March 6, 1984. At that meeting, attended by members of the public, CEI briefed the Team with a two hour slide presentation of information requested in the agenda issued with the visit notice. Attachment A lists those NRC, CEI and public representatives who attended the two hour CEI briefing of the Team. Attachment B contains a copy of the agenda followed. Copies of the slide presentation material, which were distributed to all meeting attendees, may be found in Attachment C.

The information contained in Attachment C addresses some, but not all, of the agenda items, and reflects CEI's plan to fuel load Unit 1 in June 1985. At the completion of CEI's presentation, the Team initiated its review of the details generally addressed in the Attachment C material, as well as information not addressed therein. On March 7, 1984, the Team toured the plant, concentrating its inspection on plant construction activities identified as construction critical path items. This included inspection of construction activities in the following plant areas:

- o Unit 1 reactor building (CRD area; suppression pool area; penetrations; piping; the drywell from suppression pool up to the top of containment)
- o Cable spreading room
- o Battery and other electrical equipment areas for Units 1 and 2
- o Diesel generator rooms for Units 1 and 2
- o Remote shutdown panel rooms for Units 1 and 2
- o Unit 1 control room
- o Steam tunnel

CEI did not discuss or provide any data or schedules for Unit 2. Therefore, the Team did not assess progress regarding Unit 2, except in those plant areas containing equipment common to Units 1 and 2 and necessary for the operation of Unit 1.

The above listed plant areas were selected by the Team since they included equipment completions on the schedule critical path required to support turnovers for preop testing; e.g., construction activities involving pipe support installation; electrical cable installation; electrical cable pulling and termination; and instrumentation. [A summary of the Team's findings and conclusions from the data reviewed and the plant tour conducted are discussed in the sections which immediately follow.]

3. Summary of Findings and Determinations

a. Master Plan Schedule -- CEI's Master Plan has been updated to reflect construction still being performed which they believe accurately depicts work remaining to support a June 1985 fuel load date for Unit 1, and schedules essential construction activities required for preop testing of safety-related reactor systems being completed by mid-1984. The Team considers this updated schedule

overly optimistic, absent of contingencies, and not fully tracking on-going activities observed during the plant tour. CEI admitted that certain key activities (e.g., pipe hanger installations) are experiencing delays of from 2-8 weeks. This delay appeared evident during the Team's tour, where it was also found that many electrical cable trays are empty, and cable terminations have not been completed in the reactor building, control room, diesel generator rooms and other areas. Instrumentation in many areas has not yet been installed in the conduit piping. Delays being experienced with pipe hanger installation appear to be due to mismatches between the physical plant and related design drawings, a common occurrence in plant construction at this stage of construction. According to CEI, the mismatches are necessitating a concurrent design change/installation operation in order to maintain the updated schedule. Installation of instrumentation and the re-routing of instrumentation piping in particular is being paced by the final positioning and timely resolution of this concurrent operation. In some instances, and where deemed safe to do so, CEI proposes to make up lost time by initiating preop testing without fully completing pipe hanger installation; i.e., before hangers and clamps are final configured to reflect the design drawings. The Team cautioned CEI in pursuing this approach at regaining schedule milestones.

b. Study Curves -- CEI also provided the Team with Study Curves (see Attachment D) which depict the planned preop and acceptance testing phase turnover activities that are integrated in the Master Plan schedule. It shows these activities verses time, and the turnover rates required to attain fuel loading. The activities reflect a 16-18 month period from February 1984 through June 1985. The Team finds this preop activity period reasonable in view of the fact that several non-safety system preop/acceptance tests have been completed, as well as other pre-testing activities (e.g., readying the control room and water systems to support preop/acceptance testing of safety-related systems). However, when viewed in the context of the Team's findings with regard to the Significant Quantities Table (discussed below) as to installations reported being actually completed, with what the Team found during the plant tour, these testing and turnover activities appear to be out-of-phase, timewise, with on-going construction activities and recognized delays in the Master Plan schedule (discussed in a. above).

c. Significant Quantities (SQ) Table -- The Team examined the SQ Table contained in Attachment C and compared progress in the installation of Unit 1 and Common equipment reflected in that Table with the SQ Table provided during the January 1983 visit (Attachment 3 to the Team's report dated March 17, 1983). Emphasis was placed in comparing progress relative to installation of small and large bore pipe hangers, electrical cable, electrical conduit, electrical terminations, electrical circuits and instrumentation, areas on the critical path in support of turnover for preop testing. Some changes were noted in quantities to be installed. However, installation progress made over the last 15 months in these areas is not believed to be significant; and installations which still need to be completed in the areas of electrical cable pulling, termination, and circuits, as well as pipe hangers and instrumentation quantities to be

installed, will not enable CEI to realize the start of safety-related system preop testing by the mid-1984 date reflected in the Study Curves and Master Plan schedule. The Team believes that a more realistic completion of these construction activities, primarily in the reactor building, cannot be accomplished before December 1984. For example, quantities still to be installed, as reflected in the SQ Table, shows that about 550,000 linear feet of electrical cable needs to be installed, 350,000 linear feet in the reactor building alone. Pulling of this cable will involve "short-distance" pulls over conduit bends which is usually a much slower process than would be cable pulling over longer more direct routes and distances. CEI informed the Team that some of the data reflected in the SQ Table were in error and proceeded to provide the Team with a revised SQ Table (see Attachment E). The revised Table shows a greater degree of work completed. [Nonetheless, the revised data does not alter the Team's opinion that all of the essential equipment installation to support preop testing cannot be accomplished before December 1984.]

Although the Team believes CEI to be optimistic in projecting a June 1985 fuel load date for Unit 1, construction work overall is progressing in an expected manner at this stage of construction, and it appears that CEI quality control is doing its job to ensure that the physical plant is being built to approved design drawings.

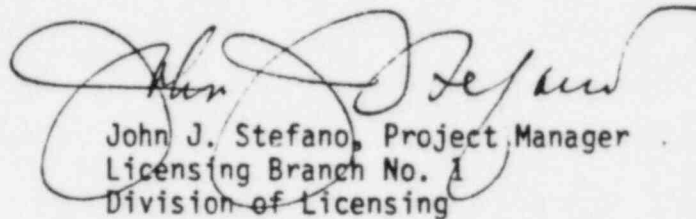
4. Conclusions

In view of the determinations and findings related above, the Team concludes that:

- a. CEI's current Master Plan schedule, in support of a June 1985 fuel load date for Unit 1, is overly optimistic. Significant quantities of work remain to be completed in the installation of pipe supports, electrical cable and instrumentation which the Team believes cannot be realistically completed before December 1984.
- b. CEI's Study Curves, projecting turnovers to the Perry Nuclear Test Section for preop testing, seems to be reasonable, but are out-of-phase with schedules for the installation of essential equipment. Although the Team's experience is that a utility performing a first-time preop test program usually requires 24 months, CEI is given credit for testing already accomplished on non-safety systems, and other pre-test activities accomplished, which could support the 18-month preop program reflected in these Curves.
- c. Since installation of essential equipment cannot be completed before December 1984, and that CEI will require an 18-month preop test program for safety-related systems, the Team concludes that the earliest probable date that fuel can be loaded in Unit 1 appears to be the Second Quarter CY 1986.

d. Since CEI is concentrating its resources in completing Unit 1, and did not provide data or schedules regarding Unit 2, an assessment of Unit 2 construction was not possible. The Team plans to conduct a future visit to the site to determine when Unit 2 can be expected to load fuel.

The determinations, findings and conclusions reported herein have been concurred in by the other members of the Team.



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Attachments:

- A. List of 3/6/84 meeting attendees
- B. 3/6/84 meeting agenda
- C. Copy of slide presentation given at 3/6/84 meeting (including Significant Quantities Table)
- D. Study Curves (preop/acceptance test schedule)
- E. Revised Significant Quantities Table