Licensee: General Electric Company, Morris, Illinois
Midwest Fuel Recovery Plant
Construction Permit CPCSF-3, Docket No. 50-409

Inspection Dates: July 8-9, 1970

Report Date: July 21, 1970

Inspected By: C. F. Coykendall, Fuel Facilities Inspector

SUMMARY

An announced inspection was made of the MFRP construction site on the dates shown above. Facility construction is about 58% complete as of July 9, 1970. Construction progress has slipped an estimated four months behind the original schedule. The latest delay was caused by a strike of construction carpenters which began on June 9 and ended on the first of July.

The inspection was scheduled primarily to review the Quality Assurance Program and procedures in use at the construction site and included an inspection tour of the facility. Some deficiencies had been noted in the inspection records during the previous inspection. Quality assurance, audit reports, construction records and Quality Control inspection records were found to be current and complete at the time of this inspection. The inspection findings indicate that the QA/QC program is being applied in conformance with Supplement 3 to the Design and Analysis Manual entitled "Midwest Fuel Recovery Plant Quality Systems Summary."

Construction problems noted during the inspection include lack of resolution of the fuel storage and high level waste storage vault liner welding defects and evidence of ground water intrusion in the low activity waste vault and canyon entry to the fuel storage vault. The licensee's evaluation and resolution of these problems will be followed on future inspections.

DETAILS

A. Persons Contacted

General Electric Company (GE)

W. H. Mendvil, Manager Plant Engineering and Maintenance
S. G. Foster, Plant Manager
R. W. Lambert, Manager Engineering
Ken Knudsen, Project Engineer (A/E)

Fluor Corporation, Ltd

Dale Ewing, Senior Construction Inspector

B. Scope of Inspection

The purpose of the announced inspection was to review construction progress and the applied Quality Assurance Program. Structural phases of construction were observed and quality control records and mechanical components receipt records were checked on a sampling basis.

C. Project Status

Mr. Cannon stated that the project was about 95% complete. The effect of the four week construction strike is still being felt, as a high percentage of the craftsmen went to other jobs and the crews are being slowly built up to normal size. Mr. Cannon estimated the total effect to be about a seven week delay.

Canyon wall pours have been completed to the 62' level. This is above the top of the interior canyon wall. The control room floor pad and one 24' section of the south wall was being poured on the dates of the inspection. The Fluorine Building and Service Building are 93% complete and would have been released to GE on a conditional acceptance basis in June if it had not been for the strike. Turnover to GE for beneficial occupancy is now estimated for August 15.

D. Organization

The site organization remains as described in Supplement 3, Design and Analysis Manual. Jim Anderson, Fluor Quality Control Engineer, has returned to the Fluor main office in Los Angeles. The Chief Quality Control Engineer onsite is now Mr. Dale Ewing. Mr. Anderson is still the responsible engineer for following the quality control of this project and is expected to return to the site on or about August 1, 1970.

While not a formal change in the organization, inspection findings indicate that Mr. Randall, -DRL and Mr. Knudsen, GE -NSCO are working together on a quality assurance audit team at the site. One apparent result has been a notable decrease in time between the identification of a problem and initiation of corrective action.

POOR ORIGINAL

V. [illegible]

Concrete placement and Quality Control records were reviewed. The basic code is ACI 318-63 but recent pours have had to meet ASTM 605-59 because the mean air temperature has exceeded 90°F.

It was observed that concrete batch plant operation and concrete placement was being monitored by both a Bolton Laboratory representative and a NMCO engineer.

The inspector reviewed the slump, compressive strength and air entrainment results and found them to be in accordance with GE specifications. The 21 day compressive strength tests for cooper wall pours varied from 3600 to 4200 psi. The minimum requirement is 3,000 psi concrete. It was noted that ice is being added to the mix water tank at the batch plant and the mix water temperature is being held at around 40°F. Concrete temperature after discharge from the mixer and immediately after placement has not exceeded 70°F except in one instance. One pour of 15½ yards for pump base construction immediately after placement had the temperature of 74°F and the deviation record was made and approved by Bilar and GE.

Concrete curing procedures are as follows:

1. Spray water over concrete as soon as it is set hard enough to prevent erosion from the water. The concrete is kept wet for at least 72 hours.

2. Loosen forms after 24 hours and allow water to get to walls.

3. Burlap is used on all out-exposed areas and the burlap is kept wet.

V. Construction Problems

The extent of the site water saturation problem became evident during the strike shutdown. Ground and sub-surface water has collected in the RAD, cladding, and fuel receiving storage vaults up to a depth of 30'.

GE has retained the consulting geologist firm of Dames & Moore to evaluate the problem and make recommendations for corrections. The geologists' opinion is that the extensive blasting that occurred during

site preparation has caused the entire area to become a local sub-surface water sink. They have recommended sub-floor pressure grouting in areas where known leaks occur through the base slab as a corrective measure, and the drilling of wells so that they can be used to lower the local water level as a preventive measure. RHO is negotiating a contract with a local well drilling organization and the first well will be started next week. The licensee's evaluation and corrective action relating to this problem will be reviewed on future inspections.

C. Welding and Piping

Welding and piping quality control records were reviewed and shop and field welding operations were observed. Welder qualification records are up-to-date and the basic QC record entitled "Machinery and Equipment Installation Check List" indicates that weld procedures and pipe installation procedures are followed and are audited.

The SA-CS column piping was selected for a spot check audit for material control, welder qualification, welding procedures, and NDE techniques in addition to a review of the QC records. No deviations in work performance and record keeping requirements were noted.

QA field audit records show that one problem area was detected in the last two months. Field welds on 1/8" diameter sample lines were found to have excessive weld penetration resulting in partial blockage. All 1/8" welds were reinspected and repaired per a Fluor repair procedure approved by GE - NFRD.

The acceptability of the fuel vault and high-level waste storage vault cladding is still a point of contention between Fluor and GE. Fluor inspectors accepted the repaired welds on May 9. GE refused to accept the cladding and retained J. Bland, Manager, GE Hanford Joining Operation as Consultant. RHO is to obtain an independent welding consultant and is acting as negotiator in the dispute.

Inspection findings indicate that canyon cell liner installation is being performed in compliance with the revised cladding specifications and is closely audited by Fluor and GE inspectors. For example, all subcontractor welders are qualified by Fluor with test coupons being submitted to Magnaflux for examination.

M-2d record totals as of May 21, 1970, showed the following:

Shop welds - 2435	Rejected - 102
Field welds - 957	Repaired - 102
NDE (subtotals) - 1245	Repaired - 6
Radiographed - 137	

Recent radiograph records indicate that Fluor is sampling small diameter piping on a more representative basis in meeting the 10% radiograph requirements.

n. Receiving and Storage

Materials receiving areas were checked and storage areas inspected. Deviation requests generated in the last two month period were found to involve above specification corrosion for the first of the series of six corrosion tests or the absence of critical weld detail drawings.

A loss of inert atmosphere on a primary and secondary cold trap was noted during the previous inspection. QA reviewed inspection sequences and evaluated the safety significance of the apparent loss of inert atmosphere. QA informed the inspector that they do not have an inert atmosphere requirement for the cold traps and that the cold traps were obtained charged with nitrogen as a convenience rather than a requirement.

x. QA Program Audits

Audit and inspection records available for review include Fluor and QA inspection log books, quality control records, machinery and equipment installation checklists, Nalco laboratory concrete test records, NRC trip reports, and deviation requests. Special audits were made by H. Hubbel, NRC Auditor and Consultant, in May and by L. S. Moody, General Manager, MEMD, on July 7.

The licensee's inspection and safety audit records indicate compliance with the program described in Supplement 3 of the Midwest Fuel Recovery Plant Design and Analysis Report.

Fluor Construction Site Management and Quality Control Inspectors attended QA training sessions during the stroke period. Mr. Shelton stated that Fluor personnel indicated an increased understanding of the need for strict quality control procedures on the MFRP project.

5. Maintenance Management

Inspection findings were discussed with Mr. Stelzer and Mr. Kendall at the conclusion of the inspection. The primary discussion item was the water intrusion problem and GE's plans for evaluation and correction. This will be followed on future inspections. The current status of vault cladding repairs and acceptance criteria was discussed as noted in Section 6 of this report.

The improved quality and availability of Quality Control and Quality Assurance audit records was commented on favorably.