U.S. ATOMIC ENERGY COMMISSION

DIRECTORATE OF REGULATORY OPERATIONS

REGION I

RO Inspection Report No: 70-903/74-01
50-101/74-02
50-290/74-02

Docket No: 70-903
50-101
50-290
SNM 871

Licensee: Gulf Nuclear Fuels Corporation

License No: R-49
CX-25

Grassland Road

Priority: 1

Elmsford, New York 10523

Category: (A 1) G

Location: Pawling, New York

Type of Licensee: Fuel Fabrication and Research and Test Reactor Operation

Type of Inspection: Announced Close Out Inspection

Dates of Inspection: April 9-11 and 15-16, 1974

Dates of Previous Inspection: November 26-28, 1973

Reporting Inspector: [signature] 4-24-74
Phillip C. Jerman, Radiation Specialist — Date

Accompanying Inspectors: [signature] 4-24-74
April 15 & 16, 1974 P. J. Knapp, Senior, Facilities Radiological Protection Branch — Date

Date

Date

Date

Other Accompanying Personnel: None — Date

Reviewed By: [signature] 4-24-74
P.J. Knapp, Senior
Facilities Radiological Protection Section — Date

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SUMMARY OF FINDINGS

Enforcement Action

A. Violations

None

B. Safety Items

None

License Action on Previously Identified Enforcement Items

Not applicable

Unusual Occurrences

None

Other Significant Findings

A. Current Findings

Atcor, Incorporated, Peekskill, N.Y. under contract with the licensee, surveyed the licensee's entire Pawling, N.Y. plant and carried out all work necessary to reduce contamination levels to below those specified in the, "Guidelines for Decontamination of Facilities and Equipment Prior To Release For Unrestricted Use or Termination of License for Byproduct, Source or Special Nuclear Material," issued by the Directorate of Licensing. Atcor, Inc. holds AEC Byproduct Material License No. 31-11640-01 under which the work was done. The inspection consisted of a radiation survey to verify contamination levels at the plant facilities as reported by the licensee to the AEC in letters dated March 11 and 13, 1974.

The existing contamination levels appeared to meet the Directorate of Licensing guidelines for termination of License Nos. SNM-871, R-49 and CX-25.

B. Status of Previously Reported Unresolved Items

None

Management Interview

The following individuals attended the management interview at the conclusion of the inspection on April 16, 1974.

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Gulf

J. E. Anderson, Plant Manager

Atcor

J. Swiger, President
R. Levesque, Radiation Protection Officer

AEC

P. J. Knapp
P. C. Jerman

The inspectors informed the Gulf and Atcor representatives that all instrument surveys and resurveys following necessary decontamination indicated that contamination levels met the Directorate of Licensing guidelines for release of the facilities and that wipes taken would have to be counted at RO:I. On April 17, 1974, P. C. Jerman informed J. E. Anderson that two wipes taken inside small diameter pipes which penetrated the wall between two rooms, showed excessive alpha contamination. Later that day, J. E. Anderson informed RO:I that the contaminated items had been removed for disposal.

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REPORT DETAILS

1. Persons Contacted

J. E. Anderson, Gulf, Plant Manager
P. Loysen, Gulf, Manager, Regulatory Administration
E. C. Holman, Atcor, Vice President, Operations
O. Sullivan, Atcor, Project Manager
R. Levesque, Atcor, Radiation Protection Officer

2. Material Possessed and Processed under the Licenses

a. The Pawling Plutonium Facility operated from 1961 to 1965 under AEC contract. Since 1965, under AEC license the facility had used Pu and U for fuel development work. Early in the period, the facility included a Gamma Laboratory for studying irradiated fuel material. In December, 1972, an explosion occurred in a Pu glove box which caused significant contamination within the facility. The facility did not resume the manufacture of fuel following the explosion.

b. The Critical Facility had housed the Pawling Lattice Test Rig since 1960 and the Proof Test Facility since 1967. At the time of this inspection the reactors had been completely dismantled and removed from the facility.

3. Instrumentation

a. Survey meters

1) For the alpha surveys, an Eberline PAC1SA, (Serial No. 720) was used. It was calibrated by Brookhaven National Laboratory on March 23, 1974. An Eberline Pu source (Serial No. 6786) which is certified to be 1285 cpm, 2Pi, was used to check the instrument.

2) For beta-gamma surveys two Eberline Model E-120 GM Meters, with end window probes containing about 2 milligrams/cm^2 of absorber, were used. The serial numbers were 1269 and 3174. The two meters were calibrated against Co-60 gamma radiation by Brookhaven National Laboratory on January 22, 1974. This calibration would be accurate for most beta-gamma measurements, but would not be accurate for measuring beta radiation from uranium. An instrument of the same model was calibrated with beta radiation from natural uranium. In this case it was found that the mR/hr reading had to be multiplied by a factor of six or slightly more to obtain true mrad/hr readings from uranium.

Surveys made with the E-120 s during this inspection showed no more than 0.05 mR/hr.

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b. Counting Instruments

Wipes taken over 100cm^2 surface area were counted for alpha in an Eberline Model SAC-4. Calibration was accomplished through the use of a certified Pu-239 source. The wipes were also counted in an Eberline Model LCS-1 with an RD-14 Beta Detector. The instrument was calibrated through the use of a certified Sr-90 source.

4. Facilities Surveyed

Figure 1 shows the location of the buildings at the Pawling site. Detailed surveys were conducted in the Critical Facility which housed the test reactors, the Plutonium Facility where uranium and plutonium fuels were manufactured and the waste pit which reportedly was never used. The two facilities had contained AEC licensed material. Cursory surveys were conducted in the Remote Assembly Building, Storage Building, Lodge Engineering Building, Mock-up Building and Multiple Failure Building. A license representative stated that these buildings normally did not contain AEC licensed material. However, the Mock-up Building was used for storage of drums containing contaminated waste resulting from the clean-up of the Plutonium Facility. Also, the employee whose person was contaminated with plutonium during the December, 1973 explosion was decontaminated in the Remote Assembly Building.

5. Survey Results

a. The Directorate of Licensing guidelines for release of licensed facilities specify that plutonium total contamination levels may not exceed an average of 500dpm or a maximum of 2500dpm alpha/100 cm^2. They also specify that total beta-gamma contamination may not exceed 0.4 mrad/hr at 1cm and removable beta-gamma contamination may not exceed 1000dpm/100cm^2.

b. All surveys conducted by the AEC inspectors showed no contamination levels exceeding the guidelines except as follows:

1) One section of the upper level of the east wall in the Gas House of the Plutonium Facility showed an average of about 800dpm/100cm^2 over 10 square meters. The maximum was 2000dpm. The wall was cleaned by the licensee's contractor personnel to an average of less than 500dpm alpha and a maximum of about 1000dpm as measured by the AEC inspectors.

2) Wipes taken inside five sections of 1.5 inch conduit in the wall between the Pilot Area and the Weld and Load Area in the Plutonium Facility showed 200 to 235dpm alpha/100cm^2. On April 15, 1974 the inspectors observed that three sections had been removed from the wall. A licensee representative informed RO:I by phone on April 17, 1974 that the other two sections had been removed for disposal.

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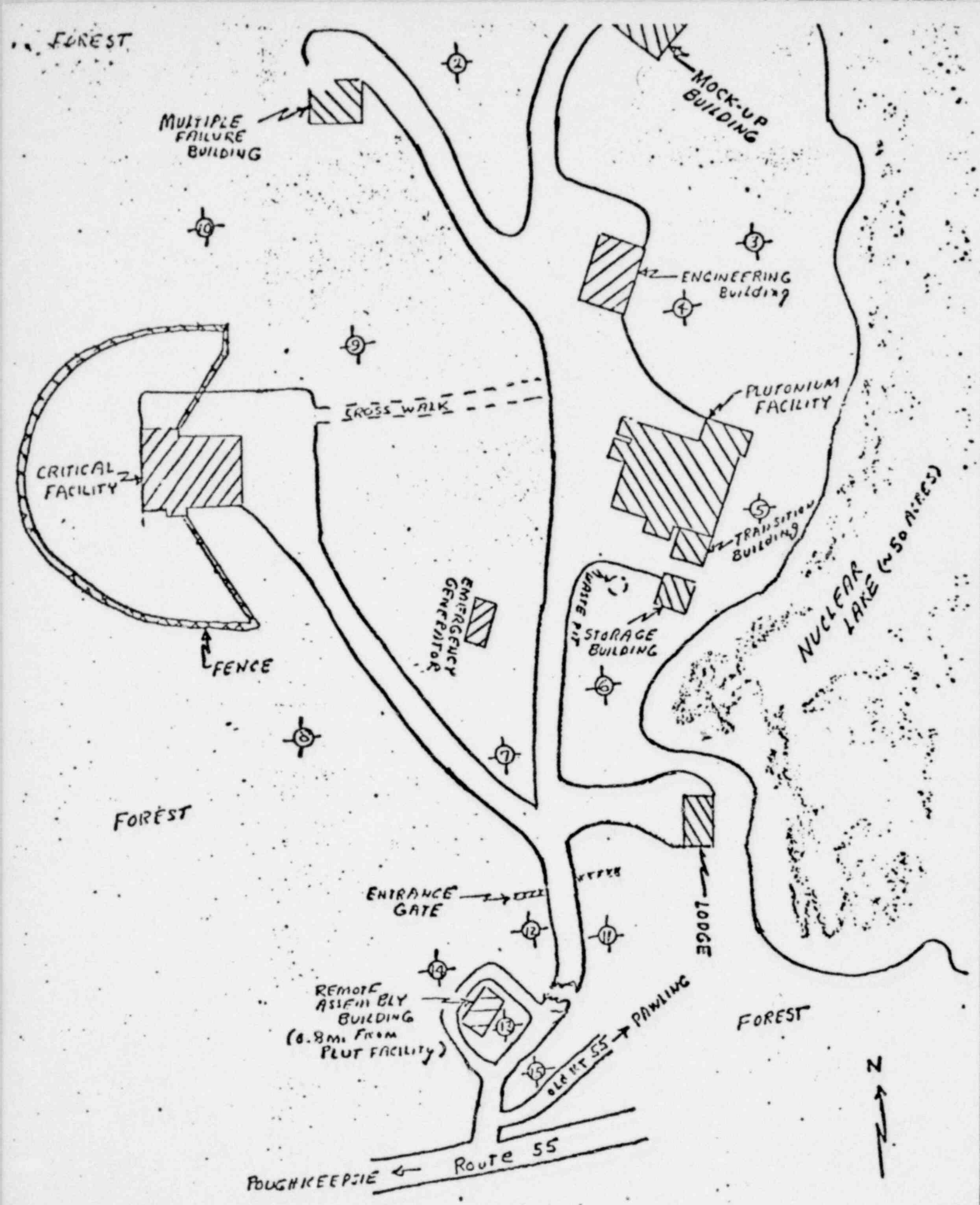

Figure 1

Sketch of Pawling Plant Layout.

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