

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-187/85-01

Docket No. 50-187

License No. P-90

Licensee: Northrop Research & Technology Center
One Research Park
Palos Verdes Peninsula, California 90274

Facility Name: Northrop NOR Reactor (TRIGA Mark F)

Inspection at: Hawthorne, California

Inspection conducted: April 8-9, 1985 and the subsequent telephone
discussion on April 23, 1985

Inspector: M. Cillis
M. Cillis, Radiation Specialist

5/2/85
Date Signed

Approved by: G. P. Yuhos
G. P. Yuhos, Chief
Facilities Radiological Protection Section

5/2/85
Date Signed

Summary:

Inspection on April 8-9, 1985 and the subsequent telephone discussion of
April 23, 1985 (Report No. 50-187/85-01)

Areas Inspected: Special unannounced inspection to observe loading of irradiated fuel from the NOR TRIGA Mark F reactor facility for shipment to NRC licensed users. The inspection included an examination of the licensee's decommissioning organization, procedures, radiation and contamination survey records, instrument calibrations, ALARA work practices, general employee training records, resumes, personnel exposure records, radioactive material transportation records, and a tour of the facility. The inspection involved 22 hours of onsite time by one regionally based NRC inspector.

Results: Of the twelve areas inspected, no violations or deviations were identified.

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DETAILS

1). Persons Contacted

A). Northrop Corporation Personnel

- *J. Benveniste, Decommissioning Supervisor
- *H. Wgo, Decommissioning Manager
- *G. Cozens, Decommissioning Health Physicist/Reactor Supervisor
- *J. Woods, Health Physics Technician
- D. Wood, Electronic Technician
- *W. Crandall, Decommissioning Committee Member

B). Chem-Nuclear Systems, Inc. (CNSI)

- *F. Gardner, Superintendent
- P. Pearson, Radiological Control Supervisor
- M. Manning, Senior Radiological Control Technician
- T. Davis, Decontamination Supervisor

*Denotes attendance at the exit interview conducted on April 9, 1985.

In addition to the individuals identified above, the inspector met with and held discussions with other members of the licensee's and contractor's staff.

2). Status of the TRIGA Mark F Reactor

The licensee submitted their decommissioning proposal to NRR on January 14, 1985. They also submitted to NRR their decommissioning quality assurance program and on January 22, 1985 their environmental report.

The reactor had been shut down since December 31, 1984. The status, as of April 23, 1985, is as follows:

- a). The core shroud and support structure have been removed.
- b). The control rods and control rod drive assemblies and mechanisms were removed.
- c). The reactor core assembly was removed.
- d). The reactor instrumentation for steady state and pulsing operations was deactivated.
- e). All of the irradiated fuel has been removed and shipped to NRC approved users.
- f). Removal of the exposure room shielding was underway at the time of this inspection.
- g). Follower plugs in certain beam ports have been removed.

- h). Preparations for pumping down and sampling of the reactor pool water were in progress at the time of this inspection.

The inspector determined from personal observations and discussions with the licensee's staff that no further operation of the reactor can be accomplished.

No violations or deviations were identified.

3). Organization

The licensee's organization, as it relates to their decommissioning proposal, was examined. The examination disclosed the following:

- a). Northrop has contracted the services of Chem-Nuclear Systems, Inc. to perform the decommissioning.
- b). The Northrop decommissioning organization, as identified in Figure 11 of the Decommissioning Plan, has been implemented. This organization, which includes the Decommissioning Committee and Reactor Operations Committee, are responsible for providing a quality assurance and overview function of the decommissioning efforts.

The inspector reviewed the resumes of the contractor's staff for the purpose of determining their qualifications. The inspector also interviewed contractor personnel.

The examination of the contractor's staff disclosed the following:

- ° The Superintendent is also a certified health physicist.
- ° The staff consists of four managers and six workers. Additional technical support is available from the Chem-Nuclear Systems, Inc. corporate office.

The staff's qualifications appeared to be consistent with ANSI/ANS-15.4-1977, "Standard for Selection and Training of Personnel for Research Reactors" and ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel."

No violations or deviations were identified.

4). General Employee's Training (GET) Program

Training lesson plans, attendance records, and test results were reviewed. The review disclosed that the training programs appeared to be consistent with 10 CFR Part 19.12 "Instructions to Worker".

No violations or deviations were identified.

5). Surveys

Both the licensee and the contractor have established radiation, air, and contamination survey programs for the decommissioning that appear to be consistent with 10 CFR Part 20.201, "Surveys". Records of surveys were reviewed by the inspector. The records were being maintained in accordance with the provisions prescribed in 10 CFR Part 20.401.

The licensee and contractor had copies of the below listed documents. The licensee and contractor are using the documents as guidelines for performing the decommissioning surveys:

- ° Regulatory Guide (R.G.) 1.86, June 1974, "Termination of Operating Licenses for Nuclear Reactors"
- ° NUREG/CR-2082
ORNL/HASRD-95, "Monitoring for Compliance with Decommissioning Termination Survey Criteria"
- ° IE Circular 81-07, "Control of Radioactively Contaminated Material"

The inspector informed the licensee representative that although the surveys observed were being performed consistent with 10 CFR 20 the number, frequency, methodology, and acceptance criteria will not be evaluated until the decommissioning plan is approved.

No violations or deviations were identified.

6). Personnel Monitoring Program and ALARA Practices

The licensee's personnel monitoring programs were examined and were found to be consistent with 10 CFR Parts 20.101, 20.102, 20.104 and 20.202. Personnel exposure records were reviewed as part of the examination. Personnel whole body and extremity exposures for decommissioning work completed to date were well below 10 CFR Part 20.101(a) limits.

The inspector observed that both the licensee and contractor hold pre-job briefings and conducted mock up training prior to commencing major tasks.

The inspector observed mock up training involving the transfer of dummy fuel elements from the reactor pool to the fuel shipping cask. Problems with the crane and rigging equipment were identified during the mock up trial runs. These problems were subsequently corrected prior to transferring the irradiated fuel, thereby minimizing personnel exposures. The fuel transfer was subsequently completed on April 19 at one fourth of the man-rem exposures that were originally estimated for the job.

The inspector also noted that both the licensee and contractor have implemented the use of a Radiological Work Permit (RWP) as a means for controlling the work and assuring that personnel exposures are maintained ALARA.

No violations or deviations were identified.

7). Procedures

The inspector verified that detailed work procedures were written, reviewed, and approved for significant operations as described in Section 2.3 of the decommissioning plan. The following procedures were reviewed during the inspection:

<u>PROCEDURE NAME</u>	<u>CHEM-NUCLEAR SYSTEM, INC. (CNSI) DOCUMENT NUMBER</u>
PROCEDURE FOR FUEL CASK LOADING	FS-OP-002-485
PROCEDURE FOR REMOVAL OF THE CORE SUSPENSION ASSEMBLY	FS-OP-003-485
PROCEDURE FOR ERECTION OF CONTAINMENT/ VENTILATION SYSTEM REACTOR CAVITY AND EXPOSURE ROOM	FS-OP-005-485
RADIOLOGICAL WORK PERMIT PROCEDURE	FS-OP-007-485
NORTHROP DOSIMETRY PROCEDURE	FS-OP-009-485
REMOVAL OF EXPOSURE ROOM WOOD, CONCRETE WALL AND ALUMINUM WALL SECTIONS	FS-OP-011-485

The inspector noted that both the individual procedures and the RWP's (discussed in paragraph 6, herein) include the radiological control requirements for performing the work prescribed in the procedure. All procedures must be jointly approved by the licensee and CNSI prior to issuance for implementation.

No violations or deviations were identified.

8). Fuel Shipment

An examination was conducted for the purpose of verifying that the shipments of irradiated fuel from the Northrop facility were consistent with the applicable regulatory requirements prescribed in 10 CFR Parts 20, 71, and 73, and in accordance with the Department of Transportation (DOT) requirements prescribed in 49 CFR Parts 0-199. The inspector also verified that the transfer and shipments were consistent with the Technical Specifications and the licensee's NRC approved Quality Assurance program of February 26, 1985.

The examination included a review of applicable procedures and shipping records. Conformance with the Certificate of Compliance (C of C) No. 5957, Revision 11, for the Battelle fuel shipping container was verified during the inspection. Compliance with 10 CFR Part 20.205 "Procedures for picking up, receiving, and opening packages" was also verified.

No violations or deviations were identified.

9). Facility Tour

The inspector toured the facility and held discussions with workers and supervisory personnel. Confirmatory radiation surveys of the facility and the fuel shipping container and contamination surveys of the facility were performed. The radiation surveys of the facility and empty fuel shipping container were taken with an Eberline, Model E520, geiger counter, Serial No. 1702, survey meter due for calibration on June 14, 1985. The contamination (swipes) surveys were analyzed with a Tennelec gas flow proportional counter, Serial No. 57514. The swipes were also analyzed by the licensee with a similar instrument.

The radiation measurements obtained by the inspector were consistent with those obtained by the licensee. Contamination measurements obtained by the inspector were also consistent with those reported by the licensee. Beta-gamma levels did not exceed 18 dpm/100 cm² and alpha activity levels were less than 3 dpm/100 cm².

Work practices observed during the tour appeared to be consistent with the RWP and ALARA concept.

No violations or deviations were identified.

10). Exit Interview

The inspector met with the individuals (denoted in paragraph 1) at the conclusion of the inspection on April 9, 1985. The scope and findings of the inspection were summarized. The licensee was informed that no violations or deviations were identified.