

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 85-09

Docket No. 70-371

License No. SNM-368

Priority 1

Category UHFF

Licensee: UNC Naval Products Division, UNC Resources, Inc.

67 Sandy Desert Road

Uncasville, Connecticut 06382

Facility Name: UNC Naval Products

Inspection At: Montville, Connecticut

Inspection Conducted: June 3-7, 1985

Inspector:

W. J. Bicehouse, Radiation Specialist

6/27/85

Approved by:

W. Paschak, Chief
BWR Radiological Protection Section

6/27/85

Inspection Summary: Inspection on June 3-7, 1985 (Report No. 70-371/85-09)

Areas Inspected: Routine, unannounced inspection of the licensee's radiation protection program including: Previously Identified Items; Management Controls; Instruments and Equipment; Surveys; External Exposure Control; Internal Exposure Control; Bioassay; and Respiratory Protection. The inspection involved 34 hours onsite by one regionally-based inspector.

Results: Of the areas inspected, one violation was identified, i.e. failure to make suitable measurements of airborne activity, Detail 8.2. However, the violation met the tests for a licensee identified item under 10 CFR 2, Appendix C, Section IV.A. No Notice of Violation is issued.

DETAILS

1. Persons Contacted

During the course of this routine inspection, the following personnel were contacted or interviewed:

- * Mr. G. O. Amy, President and General Manager
- * Mr. R. J. Gregg, Director, Technical Services
- * Mr. W. Kirk, Manager, Nuclear and Industrial Safety
- * Mr. D. Luster, Health Physics Specialist

* Denotes those present at the exit interview on June 7, 1985

Other licensee personnel were also contacted or interviewed during this inspection.

2. Purpose

The purpose of this routine inspection was to review the licensee's ongoing radiation protection program with respect to the following elements:

- Previously Identified Items
- Management Controls
- Instruments and Equipment
- Survey Program
- External Exposure Control
- Internal Exposure Control
- Bioassay Program
- Respiratory Protection Program

3. Previously Identified Items

- 3.1 (Open) Inspector Followup Item (70-371/82-08-01) Obtain information on the quantity of special nuclear materials (SNM) released from the septic tank system into the leach field. The licensee has set up 10 meter grids in both leach fields. Each grid will be surveyed with a gamma scintillation survey meter to select locations for soil sampling. Soil sampling is expected to be completed by mid-July 1985. Soil samples will be submitted for laboratory analysis of special nuclear material (SNM) content at that time.
- 3.2 (Open) Inspector Followup Item (70-371/83-04-03) Removal of Dog Pen 2 from East End of Building M. The facility was approximately 50% empty. Further removal of stored drums was suspended pending licensee efforts to upgrade the shipping program. Drums are examined for contamination whenever entries are made into the area. However, no routine contamination measurements are made at other times.

- 3.3 (Open) Inspector Followup Item (70-371/83-04-05) Issue of approved internal HP procedures to techs. Approved internal health physics procedures have not been issued to the health physics technicians. The licensee has deferred action on this item pending completion of actions considered to be higher priority.
- 3.4 (Open) Violation (70-371/84-08-01) Licensee review of corrective action program regarding contamination surveys to assure that personnel are surveying when and as required. The licensee's contamination monitoring work stations were on schedule to meet a mid-July 1985 commitment. The June 1985 Monthly Awareness Session, (i.e. in-house training session), discussed the new system. The licensee completed re-indoctrination of all employees in May 1985.

4. Management Controls

The following aspects of the licensee's management controls in radiation protection were reviewed against conditions and specifications in the licensee's application for SNM License Number 368 (SNM-368) and criteria in 10 CFR Parts 19 and 20.

4.1 Audits and Inspections

The licensee's program for daily checks, monthly inspections and periodic audits of radiation protection activities was reviewed against criteria provided in Section 2.7, ("Inspections and Audits"), of the licensee's application for SNM-368. The licensee's performance relative to these criteria was determined by:

- discussions and interviews of the Health Physics Specialist and members of his staff;
- review of monthly inspection reports by the Health Physics Specialist from January 1984 through April 1985; and
- review of an audit report by American Nuclear Insurers (Revision dated 1/7/85)

Within the scope of this review, no deviations from commitments made in the licensee's application were noted.

4.2 Health Physics Procedures

Task Instructions, (i.e. health physics procedures) for various radiation protection activities were reviewed against criteria provided in 10 CFR 20 and commitments contained in Chapter 4, ("Health Physics Standards") and Subsection 2.5.2.4, ("Radiation Protection Instruction") of the licensee's application. The licensee's performance relative to these criteria and commitments

was determined by interviews and discussions with health physics technicians and review of the Health Physics Manual (containing task instructions for various radiation protection activities).

Within the scope of this review, no violations or deviations were noted. The inspector noted that the health physics technicians were knowledgeable in the task instructions although they did not have a controlled copy of the Health Physics Manual available for ready reference in their work area.

4.3 Instructions To Workers

The licensee's program for instruction of workers in radiation protection was reviewed against criteria in 10 CFR 19.12 and commitments in Section 2.8, ("Training") of the licensee's application. The licensee's performance relative to these criteria and commitments was determined by discussions with workers and review of a training program given on June 4, 1985 to 5 newly hired employees.

Within the scope of this review, no violations or deviations were noted.

4.4 Special Work Permits

The issuance, adherence to and adequacy of the licensee's special work permits (SWPs) were reviewed against commitments provided in Subsection 4.6.3 ("Special Operations") of the licensee's application. The SWP process was reviewed by examination of the SWP Log, selected SWPs and associated radiation protection surveys and during discussions with health physics technicians.

Within the scope of this review, no violations or deviations were noted.

5. Instruments And Equipment

The licensee's radiation protection instruments and equipment were reviewed for operability, proper alarm settings (as appropriate), functional testing and calibration relative to criteria and guidance provided in:

- 10 CFR 70.24, (related to the criticality alarm system);
- Section 4.5, ("Instrumentation"), of the licensee's application;
- ANSI N 323-1978, "American National Standard Radiation Protection Instrumentation Test And Calibration;"
- Regulatory Guide 8.12, "Criticality Accident Alarm Systems;" and
- Regulatory Guide 8.25, "Calibration And Error Limits Of Air Sampling Instruments For Total Volume of Air Sampled."

The licensee's performance relative to these criteria and recommendations was determined by interviews and discussions with cognizant health physics and maintenance personnel, review of testing and calibration procedures and records and direct observations during plant hours.

Within the scope of this review, the following item was noted:

- The licensee used fixed air sampling stations to evaluate airborne radioactivity within the controlled area in Building "B" South. Each station consisted of a filter to collect potential radioactive contaminants and an air flow metering device to determine the total volume of air passing through the filter. Accurate determinations of the quantity of radioactive contaminant collected and the volume of air sampled were needed to evaluate airborne radioactivity within the controlled area. Although the licensee adequately calibrated laboratory counting instruments used to determine the quantity of radioactive contaminant collected on the filter, the licensee failed to calibrate the air flow metering devices used to determine total volume of air sampled. Regulatory Guide 8.25 recommends performance of an acceptable calibration of all air flow metering devices at least once every six months. Special calibrations are recommended whenever there is reason to believe that the operating characteristics of the metering device have changed (such as after repair or alteration or following observation of changes in system performances). The calibration of the air flow metering devices in Building "B" South was discussed with the licensee and will be reviewed in a subsequent inspection. 70-371/85-09-01

6. Surveys

The licensee's program to measure and evaluate potential radiation and contamination hazards during routine and special plant activities was reviewed against criteria established in:

- 10 CFR 20.201, "Surveys;"
- 10 CFR 20.401, "Records of Surveys, Radiation Monitoring, And Disposal;" and
- Section 4.6, ("Plant Surveillance") of the licensee's application.

The licensee's performance relative to these criteria was determined by discussions with health physics personnel, review of selected routine and special surveillance records and leak tests of sealed sources and direct observations and measurements by the inspector.

Within the scope of this review, no violations were noted.

7. External Exposure Control

The licensee's external exposure control program was reviewed against criteria established in:

- 10 CFR 20.101, "Radiation Dose Standards For Individuals In Areas;"
- 10 CFR 20.102, "Determination of Prior Dose;"
- 10 CFR 20.104, "Exposure of Minors;"
- 10 CFR 20.202, "Personnel Monitoring;"
- 10 CFR 20.203, "Caution Signs, Labels, Signals And Controls;"
- 10 CFR 20.401, "Records of Surveys, Radiation Monitoring, And Disposal;"
- 10 CFR 70.24, "Criticality Accident Requirements;" and
- Section 4.2, ("Personnel Monitoring") of the licensee's application.

Performance relative to these criteria was determined by interviews of the Health Physics Specialist and members of his staff, review of external exposure records and direct observations and measurements. Within the scope of this review, no violations were noted.

8. Internal Exposure Control

The licensee's internal exposure control program was reviewed against criteria provided in 10 CFR 20.103 and 10 CFR 20.203 and commitments in the following portions of the licensee's application:

- Subsection 4.1.1, "Surface Contamination;"
- Subsection 4.1.3, "In-Plant Action/Control Concentrations;"
- Subsection 4.2.2, "Maximum Permissible Exposure To Internal Radiation;"
- Subsection 4.4.1, "Zoning;" and
- Subsection 4.4.2, "Ventilation."

8.1 Contamination Control

The following aspects of the licensee's contamination control program were reviewed:

- contamination control work techniques including use of protective clothing, ventilation balancing and prompt correction and cleanup of contamination;
- timely dissemination of survey data on plant conditions for use in work planning and control; and
- evaluation of personal contamination at control points.

The licensee's performance in these areas was determined by interviews of selected workers in the controlled areas of Building "B" South; discussions with health physics technicians, observations at control points and review of selected records.

Within the scope of this review, no violations were noted.

8.2 Air Sampling

The following aspects of the licensee's air sampling program were reviewed:

- placement, representativeness and adequacy of the licensee's fixed air sampling locations;
- adequacy of procedures for collection and analysis of air samples;
- provisions for review and evaluation of air sampling data including investigation of abnormal results and the determination of trends; and
- maintenance of reports and records of airborne activity.

The licensee's performance in these areas was determined by:

- interviews and discussions with Health Physics and Nuclear Materials Control personnel;
- review of selected procedures and air sampling data for selected areas in Building "B" South; and
- observations of air sampling locations and equipment during plant tours.

Within the scope of this review, the following violation was noted:

10 CFR 20.103 (a)(3) requires, in part, that the licensee use suitable measurements of the concentrations of radioactive materials in air for detecting and evaluating airborne radioactivity in restricted areas.

Contrary to this requirement, the licensee failed to make suitable measurements of the concentration of enriched uranium in air in the Scrap Retention Vault in Building "B" South on December 12-14, 1984, January 16-18, 1985, January 29-30, 1985 and February 8-11, 1985. The licensee used a fixed air sampler (No. I-84B) to determine concentrations of enriched uranium in air in the work area within the vault. The air sampler operated at a nominal flow rate of 20 liters per minute for 24 or more hours to sample the air in the work area. However, work activities in the area were 12 or less hours per day. The air samples taken did not constitute suitable measurements of the concentrations of enriched uranium in air since the samples averaged air concentrations during periods of inactivity as well as work activity and thus did not record peak concentrations during work activities. Calculations made by the inspector indicated that those peak concentrations were potentially in excess of the concentrations in 10 CFR 20, Appendix B, Table 1, Column 1. In calculating concentrations of airborne enriched uranium, the licensee used the entire sampling volume and, thus underestimated the concentrations during actual work activities.

Prior to the inspection, the licensee had identified that concentrations of enriched uranium were potentially above 25% of concentrations in 10 CFR 20, Appendix B, Table 1, Column 1 during scrap sample sorting and

packaging in the Scrap Retention Vault. The licensee instituted an investigation and corrective action program to determine the causes of the increased activity noted on Air Sampler No. I-84B and to provide appropriate controls to minimize airborne exposures to workers. The inspector noted that:

- the apparent violation had been identified by the licensee prior to the inspection;
- the apparent violation did not result in exposures to airborne enriched uranium in excess of 10 CFR 20.103 (a)(1);
- the apparent violation did not require reporting under NRC requirements;
- corrective actions including investigation, examination of engineering and procedural controls and administrative actions were underway; and
- the apparent violation was not a violation that could reasonably be expected to have been prevented by the licensee's corrective action for a previous violation.

At the exit interview on June 7, 1985, the licensee stated that actions to identify and correct the causes for the increased airborne activity during scrap sample sorting and packaging would be completed by August 15, 1985. The inspector stated that those actions would be reviewed during a subsequent inspection. 70-371/85-09-02

9. Bioassay Program

The licensee's bioassay program was reviewed relative to criteria, commitments and guidance provided in:

- 10 CFR 20.103, "Exposure Of Individuals To Concentrations Of Radioactive Materials In Air In Restricted Areas;"
- 10 CFR 20.401, "Records Of Surveys, Radiation Monitoring, And Disposal:"
- Subsection 4.2.3, ("Bioassay Program"), of the licensee's application;
- Regulatory Guide 8.11, "Applications of Bioassay For Uranium;" and
- WASH-1251, "Applications of Bioassay For Uranium."

The following aspects of the licensee's bioassay program were reviewed:

- the extent of the bioassay program performed;
- the frequency and type of bioassay employed;
- the selection of participants;
- the action levels for positive bioassay results exceeding administrative action levels; and
- the maintenance of records relating to the bioassay.

The licensee's performance relative to the criteria, commitments and guidance in the areas examined was determined by interviews of the Health Physics Specialist and members of his staff and examination of bioassay records for selected, potentially-exposed workers in Building "B" South.

Within the scope of this review, no violations or deviations were noted.

10. Respiratory Protection

The licensee's respiratory protection program was reviewed against criteria, commitments and guidance provided in:

- 10CFR 20.103, "Exposure Of Individuals To Concentrations Of Radioactive Materials In Air In Restricted Areas;"
- Section 4.3, ("Respiratory Protection Program"), of the licensee's application; and
- Regulatory Guide 8.15, "Acceptable Programs For Respiratory Protection."

The licensee's performance relative to the criteria, commitments and guidance above was determined by discussions with health physics technicians, review of procedures and Special Work Permits, examination of respiratory protective equipment and review of air sample survey data. The inspector noted that the licensee had not made allowance for the use of respiratory protective equipment in estimating exposures to airborne radioactivity during any of the work activities examined.

Within the scope of this review, no violations or deviations were noted.

11. Exit Interview

The inspector met with the licensee's representatives (denoted in Paragraph 1) at the conclusion of the inspection on June 7, 1985. The inspector summarized the purpose and scope of the inspection and findings as described in this report.

At no time during this inspection was written material provided to the licensee by the inspector. No information exempt from disclosure under 10 CFR 2.790 was discussed in this report.