

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 030-17304/90001(DRSS)

Docket No. 030-17304

License No. 34-18882-01

Category (E)

Priority (IV)

Licensee: H. C. Nutting Company
4120 Airport Road
Cincinnati, OH 45226

Inspection Conducted: September 18, 1990

Inspector: K. J. Lambert
K. J. Lambert
Radiation Specialist

10/26/90
Date

Reviewed By: W. H. Schultz
W. H. Schultz, Chief
Nuclear Materials Safety
Section 1

10-26-90
Date

Inspection Summary

Inspection conducted on September 18, 1990 (Report No. 030-17304/90001(DRSS))

Areas Inspected: This was a special unannounced inspection to review the circumstances associated with an April 3, 1989 accident involving a moisture density gauge and the theft of a gauge on April 8, 1990, with its subsequent recovery on April 11, 1990. The inspection included a review of the licensee's organization; materials and facilities; personnel monitoring, leak tests and transportation.

Results: The inspection conducted at the licensee's Cincinnati, Ohio facility in response to the theft of a gauge and an accident involving a gauge determined there were no apparent violations involved with the incidents. However, the inspection identified two apparent violations: (1) the failure to maintain complete exposure records on personnel and (2) the failure to block and brace moisture/density gauges to prevent movement during transport.

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DETAILS

1. Persons Contacted

*J. L. Lindsey, Vice President/Field Services Manager
W. W. Becker, Chief, Radiation Protection Officer
W. Duermit, Technician

*Indicates the individual present at the exit meeting on September 18, 1990.

2. Purpose of Inspection

This was a special unannounced inspection to review the circumstances associated with (1) an April 3, 1989 accident, resulting in a damaged moisture/density gauge; (2) theft of a gauge on April 8, 1990, with its subsequent recovery on April 11, 1990.

3. Inspection History

The last routine inspection of the licensee's moisture/density gauge program at the Cincinnati, Ohio facility was on February 9, 1989 at which time a clear 591 was issued. Additionally, a clear 591 was issued for an inspection conducted at the licensee's West Virginia facility on March 5, 1990.

4. Organization and Summary of Program

The moisture/density gauge program which is authorized by NRC Byproduct Material License No. 13-18882-01 is currently the responsibility of the Field Services Manager. The responsibility of the Radiation Protection Officer is to advise the Field Services Manager on the safety aspects of the gauge program, review the personnel exposure records and respond to any incidents involving the moisture/density gauges.

The licensee performs tests for moisture and/or density of soils and construction materials in the states of Ohio, Kentucky and West Virginia on a daily basis during the construction season, with the gauges being used infrequently during the winter months.

No apparent violations were identified.

5. Materials and Facilities

The licensee is authorized to store moisture/density gauges at their Cincinnati, Ohio and Charleston, West Virginia facilities, as well as at temporary job sites. The licensee possesses 28 moisture/density gauges at its Cincinnati, Ohio facility, which are stored in a locked store room when not in use.

No apparent violations were identified.

6. Gauge Accident

In a letter dated April 3, 1989, the licensee reported to the NRC, Region III, that on March 17, 1989 a moisture/density gauge was struck by the blade of a bulldozer or the soil being pushed, bending the index rod at approximately a 60 degree angle. The gauge was in use at the time of the accident with the source rod fully extended in the ground 12 inches. The gauge operator, 12-15 feet away from the gauge setting up for the next test, unsuccessfully attempted to get the attention of the dozer operator prior to the accident. The gauge operator immediately established a controlled area, 10 feet in diameter, around the gauge and called his supervisor using a job site telephone in accordance with their emergency procedures. The Radiation Protection Officer was notified of the accident and immediately left for the job site. Upon arriving at the job site, the RPO assessed the situation determining the source rod remained intact and extending into the ground. The RPO surveyed the area using a Victoreen portable survey meter, model 692, serial number 495, last calibrated on October 19, 1988. The survey revealed that radiation levels were within permissible levels for radiation in unrestricted areas. The index rod was cut off below the bend to allow the source rod to be drawn back into the gauge. The gauge was placed into its storage case and transported to the licensee's facility, where it was placed into storage until the index rod was replaced and the results of the leak test conducted on April 6, 1989 were received.

No apparent violations were identified.

7. Gauge Theft

On April 9, 1990, the licensee reported the theft of a moisture/density gauge which occurred sometime between 9:30 PM on April 8 and 6:00 AM on April 9, 1990 from an employee's locked pickup truck parked at his residence. The locked cap of the pickup truck was forcibly entered by breaking the bar lock of the pickup truck's cap enough to open the tailgate of the truck and then the gauge was removed. The licensee representatives stated the source rod and case were locked at the time of the theft. Upon discovering the theft, the licensee's employee immediately notified his supervisor. The local police department was notified of the theft and were given information on the gauge. Following the notification of the police department, NRC Region III was notified. Region III advised the licensee to issue a press release concerning the theft of the gauge and the potential health hazards if the gauge is improperly handled. Shortly after midnight on April 11, 1990, the Field Services Manager received an anonymous phone call informing him who had the gauge. The local police department was notified and went to the individual's home where the gauge was reported to be located. The individual stated he had found the gauge. The police took the gauge and turned it over to the licensee at a neutral location. Upon receiving the gauge, the licensee's representative examined the case, finding the case lock missing and all the radiation labels removed. After examining the case, the licensee's representative opened the case and found the undamaged gauge with the source rod still locked. The gauge was returned

to the licensee's storage location where a leak test was performed and the gauge was placed into storage until the leak test results were received. After receiving the leak test results, which indicated the gauge was not leaking, the gauge was returned to service.

No apparent violations were identified.

8. Personnel Monitoring

For personnel monitoring, the licensee utilizes the services of Tech Ops/Landauer. Whole body TLD badges are used and are to be exchanged on a monthly basis. Dosimetry reports are reviewed by the Radiation Protection Officer as they are received. A review of the personnel monitoring reports determined personnel involved with the recovery of the damaged gauge on March 17, 1989 and the replacement of the bent index rod did not receive any unwarranted exposure to radiation.

10 CFR 20.401(a) requires exposure records of personnel be maintained. From a review of exposure records, it was determined that records for the period of February 1 to March 1, 1990 were missing for all personnel. Additionally, exposure records for at least one individual were missing for each of the exposure periods November 1 to December 1, 1989; March 1 to April 1, 1990; and April 1 to May 1, 1990. Licensee representatives stated the records are missing because personnel either did not return their assigned film badge for processing or lost the badge. Additionally, evaluations were not performed to determine the individuals estimated exposures. The failure to maintain exposure records of personnel constitutes an apparent violation of 10 CFR 20.401(a).

One apparent violation was identified.

9. Leak Tests

License Condition 13 requires that leak tests be performed on moisture/density gauges at intervals not to exceed six months. Through a review of leak test records for the two gauges involved in incidents described earlier in this report revealed that both gauges had been leak tested within six months prior to the incident. Furthermore, records indicate that both gauges were leak tested prior to returning the gauges to service. The results of the leak tests revealed the presence of removable activity less than 0.005 microcuries.

No apparent violations were identified.

10. Transportation of Materials

Part 71.5(a) of 10 CFR requires that licensed material (moisture/density gauge) be transported in accordance with Department of Transportation (DOT) regulations specified in 49 CFR 170-189. Part 177.842(d) of 49 CFR requires that packages containing radioactive material (moisture/density gauge) must be so blocked and braced that they cannot change position during incidents normal to transportation. From discussions with

licensee personnel, it was determined that moisture/density gauges are transported without blocking and bracing. Additionally, on one occasion during the inspection, a moisture/density gauge was observed being placed into a vehicle for transportation without blocking and bracing. The failure to block and brace packages containing radioactive materials so that they cannot change position during incidents normal to transportation constitutes an apparent violation of DOT 49 CFR 177.842(d).

One apparent violation was identified.

11. Exit Meeting

On September 18, 1990, an exit meeting was held at the licensee's facility. Licensee attendance at the meeting is indicated in the Persons Contacted Section of this report. The licensee's response and handling of the two incidents, the apparent violations and their corrections were discussed, as well as the NRC policy regarding enforcement.