

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 030-10749/90001(DRSS)

License No. 48-16296-01

Docket No. 030-10749

Licensee: Midwest Inspection Services, Ltd.
P.O. Box 28023
Green Bay, WI 54304

Inspection At: 3171 Gross Street
Green Bay, WI 54304

Inspection Conducted: July 24 through August 13, 1990

D. R. Gibbons
Inspectors: D. R. Gibbons
Radiation Specialist

September 11, 1990
Date

James L. Cameron
James L. Cameron
Radiation Specialist

September 11, 1990
Date

John A. Grobe
for Cynthia G. Jones, Acting Chief
Materials Licensing Section

9-11-90
Date

Wayne M. McCann
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Section 1

9-11-90
Date

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9-11-90
Date

Inspection Summary

Inspection on July 24 Through August 13, 1990 (Report No. 030-10749/90001[DRSS])
Areas Inspected: Licensed program and enforcement history; training; internal audits; utilization logs; field locations; survey meters; personnel monitoring; leak tests; receipt and transfer of materials.

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An allegation received by the Region III office during the inspection was also reviewed. In addition to the routine inspection and allegation review, an incident was discovered while reviewing personnel monitoring records. The incident involved an exposure to an individual in excess of the limits specified in 10 CFR 20.101(a). NRC findings regarding the incident report (Section 5) follows the discussion of the allegation review findings (Section 4). Additional information was obtained from the licensee by telephone on August 13, 1990.

Results: Of the areas inspected, 11 apparent violations of NRC requirements were identified: (1) failure to audit radiography personnel at the proper intervals, License Condition No. 20 (Section 7); (2) exposure of an individual in excess of 1.25 rem in a calendar quarter, 10 CFR 20.101(a) (Section 5); (3) failure to report an exposure in excess of the limits, 10 CFR 20.405 (Section 5); (4) failure to complete the required training for an individual working as a radiographer's assistant, License Condition No. 20 (Section 4); (5) failure to lock a sealed source assembly after completing a radiographic operation, License Condition No. 20 (Section 5); (6) failure to calibrate a survey instrument at the proper intervals, 10 CFR 34.24 (Section 11); (7) failure to record pocket dosimeter readings daily, 10 CFR 34.33(b) (Section 12); (8) failure to check pocket dosimeters at the proper intervals, 10 CFR 34.33(c) (Section 12); (9) failure to properly label a package containing radioactive material during transport, 10 CFR 71.5/49 CFR 172.403(a)(b)(c) (Section 14); (10) failure to mark the outer shipping container with the proper information when transporting radioactive material, 49 CFR 172.301(a) and 49 CFR 173.25 (Section 14); and (11) failure to maintain current utilization logs, 10 CFR 34.27 (Section 8). The licensee's past performance and the numerous apparent violations identified during this inspection indicate that the licensee's Radiation Safety Officer (RSO) is inattentive to licensed activities and that effective management control is lacking.

DETAILS

1. Persons Contacted

*Donald Paschen, President and Radiation Safety Officer
Gordon Lederhaus, Manager, Radiographer
Tim Maurina, Radiographer's Assistant
Kathy Belanger, Secretary
Arlene Paschen, Secretary/Treasurer

*Denotes those present during the close-out meeting.

2. Purpose of Inspection

This was an unannounced, routine safety inspection conducted at the licensee's facility located in Green Bay, Wisconsin and at a temporary job site located in Oshkosh, Wisconsin. The inspection included a review of the licensee's overall radiation safety program to determine compliance with the Commission's rules, regulations, and License conditions. The inspection also included the review of an allegation received by Region III that an unqualified individual was performing radiography at the licensee's facility in Green Bay, Wisconsin. The allegation was received by Region I during the inspection period.

3. Licensed Program and Enforcement History

Midwest Inspection Services, Ltd. (MIS) is authorized by NRC License No. 48-16296-01 to use iridium-192 in the conduct of industrial radiography and cesium-137 for survey instrument calibration. Licensed material may be stored at 3171 Gross Street, Green Bay, Wisconsin and used only at temporary job sites anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction.

The licensee currently (June 29, 1990 inventory) possesses six iridium-192 sources, eight Gamma Industries cameras and one Gamma Industries source changer.

MIS currently employs two radiographers and one individual reported to have acted in the capacity of a radiographer's assistant. Additionally, three radiographers and one radiographer's assistant have periodically worked for MIS, but are on temporary lay off due to a lack of work in Ohio and Oklahoma. Mr. Donald Paschen is the owner, President and Radiation Safety Officer (RSO). Mr. Paschen has sole responsibility for maintaining the radiation safety program.

Ten routine inspections have been conducted since the inception of this license. The last inspection was performed on October 11, 1989 and identified two violations:

- a. Failure to maintain documentation of experienced radiographer's training. (Open)

- b. Failure of the RSO to field audit a radiographer in the third quarter of 1989. (Open)

An inspection conducted between August 2 and September 7, 1988 identified the following seven violations:

- a. Failure to have proper shipping papers when transporting radioactive material. (Closed)
- b. Failure to check pocket dosimeters annually as required. (Open)
- c. Failure to record pocket dosimeter readings daily as required. (Open)
- d. Failure to leak test sealed sources at the proper intervals. (Closed)
- e. Failure to perform a field audit of a radiographer at quarterly intervals as required. (Open)
- f. Failure to have personnel complete field tests on the use of the licensee's exposure devices, related handling tools, and survey instruments. (Closed)
- g. Failure to maintain radiography personnel's written tests for three years. (Closed)

4. Allegation Review

On August 2, 1990, Region III received an allegation by telephone regarding the licensee's radiography program (AMS-RIII-90-A-0082). The allogger indicated that an unauthorized and untrained individual was performing radiography that day at the licensee's facility located in Green Bay, Wisconsin. Region III personnel already in the Green Bay area were dispatched to the site to determine if the allegation could be substantiated. The allegation was also reviewed during a routine inspection conducted on August 7 and 8, 1990.

Discussion

The licensee's letter dated May 1, 1991 states in Attachment 6(f) that an individual shall complete certain criteria before being allowed to work as a radiographer's assistant. Part E of that attachment requires that an individual pass a written examination of 25 questions with a grade of at least 80 percent.

Findings

Interviews regarding this allegation revealed that an individual who had not successfully completed the required training, including a written test, had apparently performed the duties of a radiographer's assistant, as defined in 10 CFR 34.2 (i.e., use of radiographic equipment and radiation survey instruments in radiography under the personal supervision

of a radiographer). Statements made by the licensee's President indicated that the individual in question had been working as a radiographer's assistant since May 1990. Training records reviewed on August 2, and again during the August 7-8 inspection, revealed that the individual had attempted the required test on April 17, 1990 and on two unspecified dates, each time scoring below the 80 percent mark required for successful completion.

The allegation was substantiated and one apparent violation of NRC requirements was identified. (See Section 6)

5. Incident Review

While reviewing personnel monitoring results, a monthly exposure of 1290 mrem was discovered for December 1989 by the inspectors. The individual exposed works at the licensee's temporary jobsites in the State of Ohio. The licensee's documentation of the incident indicated that the individual was radiographing pipe at a refinery near Canton, Ohio on December 18, 1989, when welders working approximately 120 feet away on the same pipeline rotated the pipe. This caused the radiographer to terminate the radiographing of the weld. After retracting the source, performing the required survey, and setting the survey instrument beside the camera, the radiographer walked to where the welders were located to secure the pipe. While attempting to secure the pipe, it was rotated, hitting the camera crank handle. Unknown to the radiographer, this caused the source to move out of the safe and shielded position. Section 9.2.2.(18) of the licensee's Operating and Emergency Procedures, submitted with the May 1, 1981 letter, requires that the radiographic source be locked in the safe and shielded position following each exposure.

Failure to lock the radiographic source in the safe and shielded position following an exposure constitutes an apparent violation of License Condition No. 20.

After securing the pipe to prevent rotation, the radiographer returned to the exposure device (with the source in a partially unshielded position) and proceeded to set up for the next radiograph. While preparing for the next radiograph, the radiographer noticed that the survey meter near the camera was "pegged" on the X10 scale (0 - 100 mR/hr). The radiographer picked up the survey meter, walked to the crank handle and returned the source to the safe and shielded position (approximately one turn of the crank). The radiographer checked his pocket dosimeter (0 - 200 mR) and found it fully discharged. He then ceased operations and contacted his RSO. His film badge was sent immediately to the processor for emergency processing. The film badge results (1290 mrem) were received from the vendor on December 19, 1989. The RSO completed a Form NRC-4 on December 19, 1989 for the individual. The RSO discussed safety procedures with the radiographer and performed a field audit of him on December 20, 1989 and he was returned to work for the remainder of the quarter. No further evaluation was conducted by the RSO. The radiographer's total exposure for the fourth quarter of 1989 was 1390 mrem. 10 CFR 20.101(a) limits the exposure an individual may receive in a calendar quarter to 1250 mrem unless the licensee first evaluates the individual's prior exposure on a Form NRC-4.

The exposure of an individual in excess of 1250 mrem in a calendar quarter without first evaluating that individual's prior exposure on a Form NRC-4 constitutes an apparent violation of 10 CFR 20.101(a).

10 CFR 20.405(a) requires that each licensee shall make a report in writing to the Commission within 30 days following each exposure of an individual to radiation in excess of the limits in 10 CFR 20.101. The licensee's RSO assumed that since he had completed a Form NRC-4 after the exposure he was not required to file the thirty day report. The inspectors advised the RSO that in order to use the exemption provided for in 10 CFR 20.101(b), the Form NRC-4 must be completed prior to the exposure.

Failure to file a written report to the Commission within thirty days following an exposure to an individual in excess of 1250 mrem in a calendar quarter constitutes an apparent violation of 10 CFR 20.405(a).

On December 20, 1989, the licensee's RSO met with the exposed individual to discuss and evaluate the incident of December 18, 1989. The RSO's final assessment of the incident indicated that "it would have happened, whether" the individual had "stayed by the weld or not." He then discussed safety procedures with, and performed a field audit of, the individual. A finding that this incident could not have been avoided constitutes an unacceptable evaluation. If the radiographer had locked the radiographic source after completing the exposure, as required by the license conditions, the incident would not have occurred.

Three apparent violations of NRC requirements were identified.

6. Training

The licensee's training program, as described in Attachment 6(f) submitted with its May 1, 1981 letter and referenced in License Condition No. 20, requires that radiographers and radiographers' assistants pass a written examination on the subjects outlined in Appendix A of 10 CFR 34 and the licensee's own training course. A radiographer must also pass a practical examination covering the handling of exposure devices, use and techniques of survey instruments, radiographic techniques, film processing and film interpretation. A radiographer's assistant must pass a written examination covering the licensee's operating and emergency procedures and the fundamentals of radiation safety. The assistant must also pass a practical examination demonstrating competence in the use of radiographic exposure devices and sealed sources, survey instruments, and related equipment, including a field examination. Furthermore, each individual must complete the following training prior to performing the duties of a radiographer's assistant:

- a. Three hours in the fundamentals of radiation safety.
- b. Three hours indoctrination in Midwest Inspection Service's operating and emergency procedures.
- c. Two hours in radiation detection instrumentation and personnel monitoring equipment.

- d. One hour reviewing demonstration of equipment.
- e. One hour examination.

Review of training records by the inspectors revealed that one individual working as a radiographer's assistant had not passed the required examinations and appeared to have not completed the required number of hours of training or experience as required by the licensee's training program, and 10 CFR Part 34 training requirements. Records were unavailable to indicate that the individual had completed the requirements specified in Items a. through d. above. Written records of three previous exams were available; however, all exams were below the 80 percent mark required for successful completion (See Section 4). The RSO stated that the three hours training in the fundamentals of radiation safety (item a.) was included in a course attended by the individual at Northeastern Wisconsin Technical College. An outline of that training course, or a certificate of completion, was unavailable during the inspection, and the RSO has not submitted a copy of either document to Region III as requested during the inspection.

The RSO informed the inspectors on August 7 and 8, 1990 that, on occasion, the above individual performed the duties of a radiographer's assistant. The RSO informed the inspectors that the individual had operated radiographic equipment and had performed the required surveys after each exposure to ensure that the source had returned to the shielded position since May 1990.

The failure of the licensee to complete the required training before permitting an individual to act as a radiographer's assistant constitutes an apparent violation of License Condition No. 20.

7. Internal Audits

License Condition No. 20, which references the letter dated May 1, 1981, requires in Attachment 6(g) that the Radiation Safety Officer conduct quarterly field audits of all radiographic personnel. A review of field audit records indicated that a radiographer's assistant was not audited during the second quarter of 1990. The assistant was working with a radiographer at a temporary jobsite in Oklahoma between January and April, 1990. The assistant performed radiography on five occasions during the second quarter of 1990, but had not been audited for that period.

Failure to perform a quarterly field audit of a radiographer's assistant is an apparent violation of License Condition No. 20.

This is a repeat violation from both the 1988 and 1989 inspections.

One apparent violation of NRC requirements was identified.

8. Utilization logs

As required by 10 CFR Section 34.27, utilization logs must be maintained by the licensee to show (for each sealed source) a description of the radiography exposure device in which the sealed source is located, the identity of the radiographer to whom the source is assigned, the site where the equipment is used and dates of use. In addition, the licensee also incorporates transportation data, survey results, survey instrument information (i.e., serial number), and daily dosimeter results into the radiographer's utilization log. The log is to be completed each day that a radiography source is used. However, the log records for source serial number EI-18 from July 24 through August 2, 1990 (date of Ms. Jones' inspection), did not contain any of the required information as noted above. The RSO stated that this source had been used on July 23, 24, 30, 31, August 1 and 2, 1990. The inspector and RSO searched for the missing information for the dates the source was used, but it could not be found. The inspector asked the RSO if this data was maintained in any other location. The RSO stated that the radiographers were aware that the utilization logs were to be filled out on an as-used basis and kept in the transport vehicle and the RSO was unaware of any other location or form which the radiographers may have recorded the data.

The failure of the licensee to maintain current utilization logs constitutes an apparent violation of 10 CFR 34.27.

One apparent violation of NRC requirements was identified.

9. Inventories

10 CFR 34.26 requires that the licensee conduct a quarterly physical inventory to account for all sealed sources received and possessed under the license. Inventory records maintained by the licensee include the quantities and kinds of by-product material, the location of all sealed sources, and the date of the inventory. The NRC inspectors' review of the last inventory conducted on June 29, 1990, showed the following byproduct material in the licensee's possession:

<u>Isotope</u>	<u>Activity</u>	<u>Camera Serial No.</u>	<u>Source S/N</u>
Iridium-192	9.5 curies	1973	BB80
Iridium-192	9.6 curies	2043	E118
Iridium-192	20 curies	2082	EE79
Iridium-192	10 curies	2182	CS85
Iridium-192	36 curies	2256	EG91
Iridium-192	3.1 curies	2278	W65

A review of records indicated that the inventories were performed for the fourth quarter of 1989 and the first and second quarters of 1990 as required.

No apparent violations of NRC requirements were identified.

10. Field Locations

The licensee is authorized to perform radiographic operations anywhere in the United States where the NRC maintains jurisdiction. A field inspection was performed at Oshkosh, Wisconsin on July 24 and 25, 1990. One of the licensee's radiographers was performing radiography at the Rockwell International Heavy Duty Axle Plant located in Oshkosh, Wisconsin. The inspector observed the radiography procedures from a building located near the radiography site. The inspector was able to observe 7 exposures during the day. The radiographer properly posted the area, performed the required surveys, wore a film badge, charged the pocket dosimeter, locked the source in the shielded position after each exposure, and disconnected the guide tubes and crank assembly after the final exposure of each axle. The plugs were put in the camera and the camera placed back inside the truck until the next axle assembly was ready to be radiographed. The radiographer had the proper shipping papers with all the required information in the front seat of the vehicle. Two Department of Transportation (DOT) violations were identified during that inspection (see Section 14).

Licensee personnel have performed radiography for Conoco Refinery near Ponca City, Oklahoma. The radiography is performed by a radiographer who resides in that area. According to the RSO, radiography at the Oklahoma site ceased sometime in July 1990 and the radiography equipment will be returned to the Green Bay, Wisconsin facility soon. At the time of the inspection, the radiography source was in storage in Henryetta, Oklahoma.

Two DOT violations were identified and are documented in Section 14.

11. Survey Meters

The licensee possesses at least twelve Gamma Industries Model No. 250B survey instruments. The licensee is authorized to perform "in-house" instrument calibration, however, the licensee has opted to have their meters calibrated by Amersham Corp. The licensee uses a rotation method calibrating six meters every three months. The meters are capable of measuring radiation levels between 2 milliroentgens per hour and 1 roentgen per hour as required by 10 CFR 34.24. The licensee periodically uses survey instruments on loan from other suppliers. Instrument calibration records and daily logs indicated that (with one exception) survey instruments used for radiography are in calibration.

The serial number for survey instruments used at temporary-job sites and the calibration due dates are part of the licensee's daily utilization log. A review of those records indicated that the licensee's survey instrument, Serial No. 0099, was used to perform required surveys on nine (9) occasions between April 9, 1990 to April 20, 1990; however, the survey instrument was not calibrated during the period from November 30, 1989 to the day of the inspection, August 8, 1990. The daily use log did have a calibration due date of July 3, 1990. Licensee personnel could not explain the reason for using an instrument beyond the due date, or why the due date was listed as July 3, 1990.

The failure to calibrate a survey meter at 3 month intervals is an apparent violation of 10 CFR 34.24.

One apparent violation of NRC requirements was identified.

12. Personnel Monitoring

R. S. Landauer supplies and processes whole body exposure badges for licensee personnel on a monthly basis. The licensee maintains exposure results under the NRC-5 form which limits personnel exposure to 1.25 rem quarterly. A review of exposure results for the period from August, 1989 to May 31, 1990 indicated that the maximum quarterly exposure was 1390 millirem, while the average maximum quarterly exposure was 312 millirem. 10 CFR 20.101(a) limits the whole body radiation dose of an individual in a restricted area to 1250 mrem in one calendar quarter, except as provided by 10 CFR 20.101(b) which allows a whole body radiation dose of three (3) rems in a calendar quarter if the licensee has on file a Form NRC-4 or an equivalent form with all of the required exposure history of the individual. This is discussed in Section 5.

The licensee possesses a number of dosimeters which are capable of measuring between 0 and 200 millirem. These devices are to be checked for response at intervals not to exceed one year. A pocket dosimeter (serial no. 9062095) that was used on September 29, 1989, was not checked as required from January 25, 1988 to January 17, 18 or 19, 1990. In addition, another pocket dosimeter (serial no. 7080642) was used on December 18, 1989 and had not been checked for response to radiation from August 1988 to the day of the inspection August 8, 1990.

The failure to check pocket dosimeters at intervals not to exceed one year is an apparent violation of 10 CFR 34.43(c).

This is a repeat violation.

Licensee personnel are required to record pocket dosimeter readings daily. These are recorded on the daily use log or on the daily time sheet. A pocket dosimeter reading was not recorded as required on either of those records on June 27, 1990, and from July 24 through August 2, 1990.

The failure to record pocket dosimeter readings daily is an apparent violation of 10 CFR 34.33(b).

This is a repeat violation.

Two apparent violations of NRC requirements were identified and were repeat violations.

13. Leak Tests

The licensee performs leak tests on sealed sources at six month intervals as required or the source is withdrawn from service and stored until a leak test is performed. A review of 1989 and 1990 leak test records revealed that results were less than 0.005 microcuries.

No apparent violations of NRC requirements were identified.

14. Receiving, Shipping and Transferring of Radioactive Materials

Records indicate that the licensee surveys incoming containers of radioactive material and properly records the results of the surveys performed at contact with the container and at one (1) meter from the surface of the container.

Appropriate shipping papers accompany the shipments during transport to jobsites. The inspector, on July 25, 1990, observed an overpack used to transport a sealed source and radiography camera to a jobsite in Oshkosh, Wisconsin, and the overpack was not labeled with RADIOACTIVE YELLOW-II labels as required. The shipping papers indicated that the overpack contained Iridium-192 in Special Form NOS, UN 2974, 7.3 Ci with a Transport Index of 0.5, and read 10 mr/hr at contact with the outer container. That data would require RADIOACTIVE YELLOW-II labels when transported in the overpack.

The failure to label the outer container with RADIOACTIVE YELLOW-II labels is an apparent violation of 49 CFR 172.403.

The overpack was not marked with the proper shipping name of the Hazardous Material (Radioactive Material, Special Form, NOS), the proper Identification Number (UN 2974), nor a statement indicating that the inner container complies with specifications.

The failure to properly mark the outer container of radioactive shipping packages with the proper shipping name and Identification Number is an apparent violation of 49 CFR 172.301(a) and the failure to mark the outer surface of an overpack with a statement indicating that the inner container complies with specification is an apparent violation of 49 CFR 173.25(a).

Two violations of NRC requirements were identified.

15. Exit Meeting on August 8, 1990

An exit meeting was held with Mr. Don Paschen on August 3, 1990, to review the apparent violations and potential corrective actions. The inspectors expressed concern about the apparent lack of management control, particularly the training program, incident evaluations, reporting requirements and past performance. The licensee did not identify any documentation or procedures as proprietary.