



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION 21
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

MAY 9 1990

Report No.: 150-00023/90-001

Licensee: Mississippi X-Ray Service, Inc.
P. O. Box 127
Wesson, Mississippi 39191

Docket No.: 150-00023

License No.: General License
(10 CFR 150.20)

Inspection Conducted: April 26, 1990 at field location at Richmond, Virginia.

Inspector: for CBassett
David J. Collins, Radiation Specialist

5/8/90
Date Signed

Approved by: for CBassett
Edward J. McAlpine, Chief
Radiation Safety Projects Section
Nuclear Materials Safety and Safeguards Branch
Division of Radiation Safety and Safeguards

5/8/90
Date Signed

SUMMARY

Scope:

This special unannounced safety inspection was conducted in response to allegations of improper conduct of radiography at a temporary jobsite in Richmond, Virginia. The licensee is authorized by a General License granted by 10 CFR 150.20 to conduct radiography operations at temporary jobsites where NRC maintains jurisdiction. The radiography operations are the same as those authorized by Mississippi License No. MS-292-01

Results:

Four apparent violations were identified: Failure to survey a radiographic device after each exposure (paragraph 4); Failure to observe a radiation area to preclude intrusion by unauthorized individuals (paragraph 4); Failure to post radiation and high radiation areas while performing radiographic operations (paragraph 4); and, Failure to notify NRC of operations in NRC jurisdiction by an Agreement State Licensee (paragraph 4).

REPORT DETAILS

1. Persons Contacted

H. K. Russell, President and Radiation Safety Officer
C. Smith, Radiographer
W. J. Smith, Radiographer

2. Follow-up of Allegation No. RII 90-A-0053

In response to an April 19, 1990 allegation, an NRC Region II inspector performed an unannounced inspection of construction site radiography activities in the southern area of Richmond, Virginia on April 26, 1990.

3. Inspector Observations of Radiography

The inspector observed radiography operations in progress at four areas of the pipeline construction. Observations of radiography activities near noontime on the western side of I-95 between the railroad right-of-way and a truck body fabrication yard were made by the inspector without the radiographer's knowledge.

The pipeline welds being examined were on the temporarily elevated pipe about six feet from the edge of the right-of-way and about 25 feet from the entrance to a material storage frame area within the truck body fabrication yard. Also, within 50 feet of the welds were various truck and van bodies. The inspector noted that no signs were posted within the truck fabrication yard, alongside the pipeline right-of-way, or lengthwise along the pipeline. The inspector observed the licensee radiograph two welds, the first with three exposures, the second with one. Between exposures the radiographer did not survey the exposure device and guide tube as required. During the first exposure on the second weld, an individual drove a forklift into the material storage frame area, preparing to transfer material to a waiting vehicle. The radiographer, whose view of the materials area was not obstructed, spent the entire time of the exposures facing away from the pipeline and the truck body area towards the railroad tracks and I-95. The inspector located himself during the first set of exposures about 75 feet from the weld and behind a truck body. The inspector's micro-R meter showed more than 5 millirem/hr during the crankout and crankin periods and 5 millirem/hr during the film exposure time of about 45 seconds, resulting in about 0.25 millirem total

exposure at 75 feet. The inspector moved back to maintain the same distance during the examination of the second weld. The inspector estimated the exposure of the forklift operator to have been 5 millirem, based on the 25-foot distance from the source to the forklift operator, the 55 curie iridium-192 source strength, and the three-quarter minute time of exposure. At the conclusion of the fourth exposure the inspector identified himself to the radiographer.

4. Radiography Documents Reviewed

The inspector reviewed these documents:

- a. Mississippi State Department of Health Radioactive Material License No. MS-292-01, Amendment No. 52, dated November 6, 1989.
- b. Mississippi X-Ray Service Operations and Emergency Procedures Manual.
- c. Daily operations utilization log sheets for the week of April 23, 1990, including April 26, 1990, log.
- d. Source inventory and decay chart for SPEC-2-T radiography camera SN-74, source 07B02, 108 curies on February 28, 1990, decayed to 55 curies April 26, 1990.
- e. Calibration sheets for NDS Model 2000 survey meters.

5. Radiographer's Statements

The radiographers stated that the required surveys had not been made, and that the areas had not been posted as required. The radiographer also stated that he had not observed the intrusion of the forklift operator into the radiography controlled area. The radiographers stated that they had yielded to construction management pressures for increased speed. The radiographers stated that it was their impression that NRC Form 241, "Report of Proposed Activities in Non-Agreement States," had been submitted to the NRC by their home office in Wesson, Mississippi.

6. Other Radiography Observations

Observations of radiography at the tie-in site on the east side of I-95 at the northern end of the rail siding switch were partially blocked from the inspector's view and were inconclusive. Observations of radiography on the west side of I-95 just north of the high-tension electricity towers were brief and inconclusive. Operations at the tie-in location just south of the highway underpass conducted after the inspector identified himself were conducted properly.

7. Inspection Findings

10 CFR 150.20(a) grants a general license to any person holding a specific license from an Agreement State (Mississippi is an Agreement State) subject to certain provisions. 10 CFR 150.20 (b) states that such general licenses are subject to the requirements of 10 CFR Part 34, Subpart B (Radiation Safety Requirements). Subpart B includes 10 CFR 34.21 through 10 CFR 34.51. The inspector determined that Mississippi X-Ray Service, Inc. operations within a non-Agreement State (Virginia is a non-Agreement State) are subject to NRC jurisdiction.

- a. 10 CFR 34.41 requires the licensee's radiographer or radiographer's assistant to maintain a direct surveillance of the operation to protect against unauthorized entry into a high radiation area. Mississippi X-Ray Service, Inc. operating procedure, Operations and Emergency Procedures Manual, also requires in Step 15, that the radiographer or assistant maintain direct surveillance of the operation. Failure of the radiographer and/or assistant to maintain direct observation of the radiographic operation to protect against unauthorized entry into high radiation areas is an apparent violation of 10 CFR 34.41 and Step 15 of Specific Instructions contained in the Operations and Emergency Procedures Manual of Mississippi X-Ray Service, Inc.
- b. 10 CFR 34.42 requires that areas in which radiography is being performed shall be conspicuously posted. Failure to post radiation areas and high radiation areas where radiography was being performed is an apparent violation of 10 CFR 34.42.
- c. 10 CFR 34.43 (b) requires the licensee to ensure that a survey with a calibrated and operable radiation survey instrument is made after each exposure to determine that the sealed source has been returned to its shielded position. Such survey is to include the entire circumference of the radiographic exposure device, including the source guide tube. Failure to survey the radiography exposure device and guide tube after each exposure is an apparent violation of 10 CFR 34.43(b).

10 CFR 150.20(b)(1) requires that any person engaging in activities in non-Agreement States under a general license shall, at least three days before engaging in each such activity, file four copies of Form-241 (revised), "Report of Proposed Activities in Non-Agreement States," and four copies of its Agreement State specific license with the Regional Administrator for the Region in which the Agreement State that issued the license is located.

As stated previously, during the inspection in Richmond, Virginia, the inspector asked the licensee representatives whether a Form 241 had been filed as required. They indicated that such a form had been filed before the job started, to the best of their knowledge. During a telephone conversation with the president of Mississippi X-Ray Service, Inc., he was asked whether or not a Form 241 had been filed. The licensee indicated that a form had been filed with Region IV in Arlington, Texas but not with Region II in Atlanta, Georgia. A search of the records in the Region II and Region IV offices revealed that no record of filing of Form 241 could be located. Since Form 241 is required to be filed with the Regional Office in which the principal office and radiation safety records of the licensee are located and since Mississippi X-Ray Service, Inc. offices are located in Mississippi, a state within NRC Region II, failure to file Form 241 with NRC Region II is an apparent violation of 10 CFR 150.20(b)(1).

8. Conclusion

Through review of licensee documents, discussions with licensee representatives, and observations of radiographic activities, the allegations were substantiated. Apparent violations were noted for failure to survey the radiographic device after each exposure, failure to observe and maintain control of the area, and failure to post the radiation and high radiation areas while performing radiographic operations. Another apparent violation was subsequently noted for failure to file Form 241 as required.

9. Exit Interview

The inspector conducted an exit interview with the radiographers on April 26, 1990, at the conclusion of the inspection.

On May 1, 1990, an exit interview was conducted by telephone between Mr. W. Cline of this office and Mr. H. Keith Russell, President and Radiation Safety Officer of Mississippi X-Ray Service, Inc. The inspector summarized the scope and the findings of the inspection.