

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 30-06432/89-01 License: 42-11649-01

Docket: 30-06432

Licensee: Associated Wireline Service, Inc.
P.O. Box 1187
Wichita Falls, Texas 76307

Inspection At: Healdton, Oklahoma, and a temporary job site northwest of
Healdton

Inspector:

G. Michael Vasquez
G. Michael Vasquez, Radiation Specialist
Nuclear Materials Inspection Section

11/20/89
Date

Approved:

Charles L. Cain
Charles L. Cain, Chief, Nuclear Materials
Inspection Section

11/21/89
Date

Inspection Summary

Inspection Conducted August 21 and September 11, 1989, (Report 30-06432/89-01)

Areas Inspected: A routine, unannounced radiation safety inspection was conducted at the licensee's field office in Healdton, Oklahoma, on August 21, 1989, of material use in oil and gas tracer studies. The inspection included a review of organization and management, training records, materials and equipment, radiation exposures, and transportation. Subsequently, an inspection was conducted on September 11, 1989, at a temporary job site located northwest of Healdton. The inspection included a review of radiation safety while using licensed materials, of radiation exposure controls, and of transportation of licensed materials.

Results: Overall, the licensee appeared to have strong management oversight, and personnel appeared adequately trained. This may be due to the fact that the licensee has provided tracer services exclusively and the licensee had low turnover of authorized users. During observation of actual field activities, the inspector observed material handled in a safe manner.

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The major weakness identified in the licensee's program was an unfamiliarity with transportation requirements. Within the areas inspected, four violations were identified, all relating to transportation regulations:

1. Failure to prepare shipping papers when transporting licensed material outside the confines of their facility (Section 3).
2. Failure to demonstrate compliance with Type A package tests (Section 3).
3. Failure to properly mark each shipping package (Section 3).
4. Failure to properly label each shipping package (Section 3).

DETAILS

1. Persons Contacted

*Robert Johnstook, President and Radiation Safety Officer (RSO)
Phillip Stearns, Logging Engineer
Don Ellis, Helper

*Denotes those present at pre-exit and exit briefing.

2. Licensee Actions on Previous Inspection Findings

(Closed) (30-06432/86-02) Violation of License Condition 18 - Failure to survey and decontaminate equipment and areas. Based on interviews with workers, the inspector's radiation surveys of the shop and vehicles, and a records review, it appeared that workers are surveying equipment and not working on contaminated tools.

(Closed) (30-06432/86-02) Violation of License Condition 18 - Failure to properly store licensed material, when not in use. Based on interviews with workers and observations of the shop area, it appeared that licensed materials are promptly placed in storage when not in use.

(Closed) (30-06432/86-02) Violation of License Condition 18 - Failure to maintain receipt records for licensed materials. Based on a records review, receipt records for licensed materials received in the Healdton, Oklahoma, facility appeared complete.

3. Inspection at Licensee Field Office

a. Organization, Management, and Training

Associated Wireline Service, Inc., has maintained a field office in Healdton, Oklahoma, for several years. The licensee has also maintained a field office in Wichita Falls, Texas, but that facility has been licensed by the agreement state.

The licensee's facility in Healdton consisted of a small office building and a garage. The garage had three to four large truck bays. The garage has also been used as the licensee's tool shop where several types of hand tools and tracer equipment are stored, along with the trucks. The licensee stated that all bay doors and personnel doors are locked at the end of each day.

Associated Wireline has been authorized to possess and use an Am-241 sealed source for well logging and I-131 for well tracer studies. During the period inspected, the licensee provided I-131 well tracer studies exclusively and did not possess an Am-241 source.

The company had four authorized users, all of whom reported directly to the RSO. All authorized users have been employed by the licensee

since the last inspection. The company also had "helpers" who assisted the authorized users. The number of helpers has varied with the state of the business.

The RSO stated that approximately once a month he has audited employees in the field. His audits have included safe handling of material, equipment checks, and overall quality assurance of the work performed. The audits have been informal and not documented.

As part of his duties, the RSO has provided continuing training to the authorized users by reviewing IE Notices, NRC Newsletters, and information received from the state of Texas. The RSO has also provided basic radiation safety training to the helpers. The inspector verified this training by a brief review of records and interviews with personnel. Due to the small number of authorized users, the RSO appeared to have strong control over their activities and appeared to be aware of each person's strengths and weaknesses.

The organization appeared to be effective with respect to radiation safety.

No violations or deviations were identified.

b. Authorized Material, Storage, and Use

The inspector reviewed receipt records and was informed that the only licensed material in the licensee's possession was I-131. The RSO stated that normally three 20 mCi vials of I-131 in liquid form are received every 1-2 weeks. The material has been stored in a locked floor vault that penetrates the (cement) foundation of the shop. The inspector measured radiation levels 18 inches from the vault that were below that allowed by 10 CFR Part 20 (< 0.5 mR/h).

Posting and labeling at the field office were also found to be adequate.

To verify the implementation of the radiation safety program, the inspector surveyed the shop area and vehicles for any residual contamination. None was found.

The licensee had an appropriate number of portable survey instruments. One was in each truck, with two extras in the office. All instruments, except one in the office, were calibrated. The inspector also battery-checked each instrument and all appeared functional. A brief records review indicated that they were calibrated within the required 6-month frequency when used for surveying.

The inspector reviewed dosimetry reports from June 1986 through June 1989. These reports indicated that monthly exposures have been "Minimal" for the workers.

As for disposal of licensed material, the licensee stated that no material had been disposed. All liquid tracers have been used. Any contaminated equipment, such as gloves, has been held for decay, then reused.

No bioassay program was implemented and none was required.

In general, storage and use of licensed material appeared effective with respect to radiation safety objectives.

No violations or deviations were identified.

c. Transportation

The inspector reviewed records of shipments, package information, and package marking and discussed transportation activities with the licensee. The licensee indicated that they had not prepared shipping papers when transporting I-131 to field sites. Failure to prepare the required shipping papers for the transport of radioactive materials was identified as a violation of 10 CFR 71.5 (49 CFR 172.200(a)).

The inspector requested a copy of the results of tests or engineering evaluations of the Type A package used to transport the radioactive tracer materials. The licensee has used a lead-lined steel container that is welded to the floor of each truck; however, they had not demonstrated compliance with the Type A package performance criteria. Failure to demonstrate compliance with the Type A packaging tests was identified as a violation of 10 CFR 71.5 (49 CFR 173.461).

Package containers were also inspected for proper labeling and marking. The radioactive iodine has been packaged in a plastic vial inside a lead pig. When transported, the lead pigs were labeled "Radioactive" and placed in the licensee's lead-lined steel container that is welded to the truck. The outside of the steel container was also labeled "Radioactive." None of the required labeling and marking were affixed to the package. Failure to properly label and mark packages were identified as violations of 10 CFR 71.5 (49 CFR 172.300(a) and 49 CFR 172.400(a), respectively).

The licensee informed the inspector that they were unfamiliar with transportation regulations and had tried to contact the Department of Transportation for assistance. The RSO stated that he was unable to obtain assistance but that he had assumed compliance by having such a well shielded, sturdy package that was welded to the floor of the truck.

Four violations were identified.

d. Exit Briefing

On August 21, the inspector met with the company president and RSO to review the scope of the inspection and to discuss the findings. Transportation requirements were discussed. At this time, the inspector requested that the licensee notify the inspector of any tracer work in the Healdton area so that the inspector might directly observe the use of tracer materials. The licensee agreed to do so.

4. Inspection at Temporary Job Site

On September 6, 1989, the RSO notified the inspector that they were in the process of finalizing a contract to perform tracer services at a well near Healdton on Monday, September 11, 1989. The next day, the licensee again contacted the inspector and stated that all the details had been finalized and that the inspector should arrive at the licensee's facility in Healdton by 7:30 a.m. on Monday, September 11, 1989.

The inspector arrived at the indicated date and time. The licensee expressed some concern about the condition of the dirt roads leading to the well because of the heavy rainfall during the night. It still had not stopped drizzling at that time. The licensee sent one of the workers to check the roads and ensure the trucks would not get stuck. While waiting for the worker to return, the inspector reviewed shipping paperwork and material packaging. Except for labelings and markings, all appeared satisfactory. The inspector also verified that all workers had dosimetry.

The worker returned about 30 minutes later and reported that the roads were drivable; so, the licensee's crew prepared to leave. Since the contract required tracer studies at several job sites, the licensee dispatched two trucks and told the inspector to follow whichever truck he wanted. The plan was to first go to the oil company's field office where a field engineer would lead each crew to their well. The two trucks, two cars, and the inspector's vehicle convoyed to the oil company's office. The field office was about a mile off the highway on a muddy dirt road that was difficult to drive on without getting stuck.

After a brief wait at the office, the two trucks left, each following a field engineer's 4-wheel drive vehicle to their well site. The inspector followed through a few more miles of dirt roads to the well site.

No people were present at the well site other than the two men in the licensee's crew, the field engineer, and the inspector. The site was an "injection well" that was injecting pressurized water into the well. The water would enter the oil reservoir through perforations in the geological formation and force oil out through an adjacent well. The injection well had several perforations at different depths. The licensee's job was to determine at which depth (which perforations) most of the water was penetrating the formation.

The field engineer returned to his office as the two men in the crew were setting up their equipment. They set up an "adapter" with the water lines into the well. The purpose of the adapter was to allow the tracer tool into the well without disconnecting the water.

The men then prepared the tool for loading the I-131. The tool was several feet long and about 4 inches in diameter. It had a low range radiation detector at each end, with the chamber containing I-131 near the center. They laid it flat on a piece of plastic on the ground. The authorized user unscrewed a mechanism exposing the loading chamber and placed a funnel in it. Then, wearing sturdy rubber gloves, he went back to the truck and took the aqueous I-131, which was still in the lead pig, over to the tool. Kneeling upwind, he held the pig at arms length, uncapped it, and poured the liquid through the funnel into the tool. The user did not accurately measure the amount of I-131 poured into the tool. He later estimated that he poured in "a few milliliters which was about 5 mCi." He capped the pig then poured water through the funnel into the tool, to rinse out the funnel.

The remaining I-131, still in the pig, was returned to the truck. Then the funnel, gloves, and any other potentially contaminated objects were surveyed and secured in the plastic.

The tool was connected by cable to a winch on the truck. It was raised, placed through the adaptor on the well head, and lowered into the well.

Before injecting any I-131, the user had to first calibrate the depth measuring equipment. The tool was moved up and down while background measurements were taken. Variations in background were correlated to the oil company's data. The tool was moved up and down a second time, while a small magnetic field was set up by the tool. A dramatic change in the field indicated a casing.

Once the data matched up and depths were correlated, the user started the tracer studies. Several injections were made during the study, at various depths, and measurements taken looking at flow patterns and clearance rates. All these studies were performed while water was still being added to the formation.

The crew also made other nonradiological measurements to determine efficiency of the injection perforations. When the user indicated that the study was to be completed after some of these measurements, the inspector left the site and returned to the licensee's field office.

The licensee stated that injector tools are normally loaded about one to two times per week. They can use the material from one loading for tracer studies in several wells.

After returning to the NRC's regional office, the inspector noted that the injector tool becomes a package for transporting unused licensed material to and from temporary job sites, and therefore is subject to Type A

package tests. Since the licensee's renewal application had not yet been processed, the inspector wrote a memorandum to the license reviewer so this issue can be addressed during the license renewal.

5. Exit Interview

On September 11, 1989, the inspector concluded the inspection and held an exit interview with the company president. The violations of transportation requirements were discussed in detail. The inspector also thanked the president for his cooperation in notifying the NRC about the field study.