U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 30-14088/84-01(DRMSP)

License No. 21-18724-01 Category K Priority VII

Docket No. 03014088

Licensee: McDowell and Associates
10659 Galaxie
Ferndale, MI 48220

Inspection At: 10659 Galaxie
Ferndale, MI

Inspection Conducted: November 8 and 16, 1983, and January 3, 1984.

S. R. Lasuk

Inspector: S. R. Lasuk 1-18-84
Date

D. J. Sreniawski

Approved By: D. J. Sreniawski, Chief 1/21/84
Materials Radiation Protection Date
Section 2

Inspection Summary

Inspection on November 8, 16, 1983 and January 3, 1984 (Report No. 30-14088/84-01(DRMSP)

Areas Inspected: Special, announced safety inspection of the licensee's organization; materials and facilities; radiological protection procedures; and personnel radiation protection.

Results: Of the four areas inspected, no items of noncompliance were identified in three areas; one apparent item of noncompliance (failure to leak test sealed source at six month intervals as required by License Condition No. 13 - Section 6) was identified in one area.

## DETAILS

1. Persons Contacted

William Bronson - Vice President and Radiation Safety Officer
John Kalisz III - Moisture/Density Gauge User

2. Receipt of Information

The licensee reported a film badge worn by one of their employees, John Kalisz III, showed an exposure of 68.58 rem for the month of July 1983. This matter was reported by William Bronson in a telephone call to Region III on October 13, 1983, and in a letter dated October 17, 1983. The film badge processor (Landauer) notified Mr. Bronson of the exposure on October 13, 1983.

The licensee questioned Mr. Kalisz, who operates a moisture/density gauge containing cesium-137 and americium-241 sealed sources, on October 13 and learned that (1) no problems were noted with the equipment, (2) no repairs were made to the equipment, (3) there was no leakage during a May 1983 test, (4) the source was not unnecessarily exposed during field tests, and (5) when not in use, the film badge was left on the dashboard of Mr. Kalisz's truck for two to three weeks of the badge period.

Landauer informed Mr. Bronson that the film exhibited uniform exposure with no filter pattern which suggests the possibility of exposure to the badge out of its holder or exposure to heat. He was further informed that the film is not affected by heat until subjected to temperatures exceeding 50° centigrade. Also, progressively higher temperatures and/or prolonged exposure to these high temperatures will change the density to appear like a radiation exposure.

Region III contacted Mr. Bronson on October 31, 1983, to request that he make arrangements to have a chromosome study done on Mr. Kalisz as soon as possible. The following day, Mr. Bronson called to say an appointment was made for the chromosome study with Dr. Lester Weiss at the Henry Ford Hospital in Detroit, Michigan on November 8, 1983.

This special inspection was initiated at the licensee's facility in Ferndale, MI on November 8, 1983, and concluded upon receipt and evaluation of the chromosome study results on January 3, 1984.

3. Licensed Program

NRC Materials License No. 21-18724-01 is an industrial, Category K, Priority VII license which was issued on May 18, 1979. The material authorized under this license is cesium-137 sealed sources (no single source to exceed 9 millicuries) and americium-241 sealed sources (no single source to exceed 40 millicuries) for use in Troxler Model 3400 series surface moisture/density gauges. The licensed material can be used only at 10659 Galaxie in Ferndale, Michigan and at temporary job sites throughout the State of Michigan.

4. Inspection History

There have been no previous inspections of the program conducted under this license.

5. Organization

Robert McDowell - President
William Bronson - Vice President and RSO

Mike McComas and Mr. Kalisz are currently the two individuals who use the licensee's moisture/density gauges.

No apparent violation was identified.

6. Materials and Facilities

a. Materials

The licensee currently owns two Troxler, Model 3411B, gauges, Serial Nos. 6232 and 9743. The 6232 unit contains 7.6 millicuries of Cs-137 and 40 millicuries of Am-241 as sealed sources; the 9743 unit has 8.4 millicuries of Cs-137 and 40 millicuries of Am-241 as sealed sources. Both gauges were at a temporary job site in Saginaw, MI on November 8, 1983.

Gauge 6232 was purchased in June 1979 and gauge 9743 was procured in June 1983. Mr. Bronson stated that from May to October of each year, the gauge(s) are used almost daily. During the remaining months of the year, the gauge(s) are stored in a locked cabinet at their facility in Ferndale, MI.

Leak test records show that the sources in gauge 6232 were not tested for leakage and/or contamination during the following intervals: April 21, 1980 to March 23, 1981; April 3, 1981 to March 16, 1982; March 16, 1982 to May 4, 1983. This is an item of noncompliance with License Condition No. 13 which requires sealed sources to be tested for leakage and/or contamination at intervals not to exceed six months.

b. Facilities

Pickup trucks with cap (covered back area) are used by Messrs. Kalisz and McComas for storage and/or transporting the gauges when not in use at temporary job sites.

One apparent violation was identified.

7. Radiological Protection Procedures

The licensee's radiation protection program is described in their May 2, 1979 application which is referenced in License Condition No. 17. It includes comments on training, handling and security of gauges, plus monitoring of authorized personnel.

Mr. Bronson stated that gauges used at temporary job sites are stored in the user's locked truck at the end of the workday. The inspector said this appears to contradict the storage procedure described in the referenced application. However, Mr. Bronson disagreed and gave his interpretation of the procedure as presented in his application. The misunderstanding is primarily in his use of the words "when not in use" (regarding the gauges). He claims that this refers to the winter months (October to May) rather than the end of a workday at a temporary job site.

The inspector said this matter would be discussed upon his return to the Region III office and Mr. Bronson will probably be contacted regarding a written clarification. (The resolution of this matter is covered in Section 11 of this report.

The inspector was informed that Messrs. Kalisz and McComas both attended the Device Manufacturer's Training Course for gauge users as did Mr. Bronson and other members of the licensee's organization.

No apparent violation was identified.

8. Personnel Radiation Protection

The film badge services of R.S. Landauer, Jr. and Company are utilized by the licensee on a monthly basis. Body badges are issued to Messrs. Kalisz and McComas, the only users of licensed material as of November 8, 1983.

Exposure records were reviewed for the period July 10, 1979 to October 9, 1983. There were no unusual exposures for Mr. McComas or other individuals who had terminated their employment with the licensee.

The reported 68.58 rem for Mr. Kalisz was for the badge period July 10 to August 9, 1983. Positive exposures for Mr. Kalisz for other badge periods were as follows:

| Badge Period | mrem |
|---|---|
| 4/10/80 - 5/9/80 | 20 |
| 6/10/80 - 7/9/80 | 40 |
| 9/10/80 - 10/9/80 | 10 |
| 1/10/81 - 2/9/81 | 10 |
| 5/10/81 - 6/9/81 | 200* |
| 8/10/81 - 9/9/81 | 20 |
| 9/10/81 - 10/9/81 | 40 |
| 2/10/82 - 3/9/82 | 10 |
| 6/10/82 - 7/9/82 | 10 |
| 10/10/82 - 11/9/82 | 10 |

*The code symbol provided with this entry indicated the film may not have been in its holder properly.

Mr. Bronson stated that during August and September 1983, he was on vacation for three weeks and then went on a business trip for two weeks. Therefore, the July badges were not sent to Landauer for processing until the last week in September. During his absence, the gauge users exchanged the film in their badges for August and September. The film for July and August were kept in Mr. Bronson's desk drawer until being submitted for processing.

No apparent violation was identified.

9. John Kalisz, III Interview

The inspector met with Mr. Kalisz on November 8, 1983, to discuss his use of moisture/density gauges and his film badges. Mr. Kalisz said he used Troxler gauges while employed by Halpert and Associates in Southfield, MI (no longer in business, according to the licensee) in 1978-79 and, he attended the manufacturer's training course for gauge users in March or April of 1979. Additional information provided by Mr. Kalisz was as follows:

He currently uses the licensee's Troxler gauge (primarily S/N 6232) about 1 to 15 times a day; each use is for a maximum time of approximately 45 seconds. He has had no problems in operating the gauge. For leak tests, he wipes the source rod with paper from Troxler's No. 3880 leak test kit using forceps. Leak tests are conducted whenever Mr. Bronson informs him that they are due.

Mr. Kalisz wears his film badge in his shirt pocket and, when not in use, stores it in a coffee cup on the dashboard of his truck or, occasionally, in a box on the floor of the cab. He never stored the film badge with the gauge. He does not recall ever noting that his film badge holder was open during or after use.

Mr. Kalisz could offer no reason for the high film badge reading other than heat from the sunlight on his dashboard. He confirmed that he had an appointment for the chromosome study at 4:00 p.m. this day.

10. Exit Interview

The inspection findings were summarized in a meeting with Mr. Bronson during the afternoon of November 8, 1983. The one apparent item of noncompliance was discussed, as well as the possibility that their gauge storage practice following use at temporary job sites may result in another item of noncompliance. Also, the results of the chromosome study may indicate a violation of regulatory exposure limits.

Mr. Bronson stated that Mr. Kalisz has not used their Troxler gauges since he (Bronson) was informed of the high film badge reading and, will not use a gauge again until the results of the chromosome study are known. In the meantime, Mr. Kalisz will be doing other inspection tests conducted by the licensee which do not require licensed material.

11. Inspection Followup

In a telephone conference call on November 16, 1983, the Chief of Region III's Material Licensing Section informed Mr. Bronson that the storage of moisture/density gauges in a vehicle has been authorized for licensee's who requested, and described security measures for, this means of storage; however, Mr. Bronson's May 2, 1979 application indicates his gauges will be stored only at a permanent site.

Mr. Bronson agreed to submit, by November 18, 1983, a written request for an amendment to his license to utilize storage procedures other than that specified in the referenced application. In the interim, the licensee will store their Troxler gauges in their locked truck when not in use at a temporary job site.

The written request dated November 17, 1983 was received in Region III on November 23, 1983. The license amendment will be issued upon receipt of the amendment fee.

During the conference call, Mr. Bronson stated the results of the chromosome study would be available in about three weeks, according to Dr. Weiss.

The results of the chromosome study, which Region III received on January 3, 1984, indicated that the "chromosomal aberrations observed were within normal limits."