APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 30-11450/83-01 License: 49-16670-01

Docket: 30-11450

Licensee: Mid-Con Inspection Services, Inc.
P. O. Box 274
658 Antler Drive
Casper, WY 82602

Inspection At: Casper, WY

Inspection Conducted: January 6-7, 1983

Inspector: C A Hooker 1/28/83
C. A. Hooker, Radiation Specialist Date

Reviewed by: R. J. Everett 1/31/83
R. J. Everett, Chief, Materials Radiation Protection Section Date

Inspection Summary

Inspection Conducted on January 6-7, 1983 (Report No. 30-11450/83-01)

Areas Inspected: Inspection included review of utilization logs and time sheets, survey instrument and dosimeter calibration, equipment inspection, maintenance records, mock radiographic exposure, and a review of the radiation exposure records. The inspection included interviews with personnel by the inspector and involved 9 man-hours by one NRC inspector.

Results: Two violations were identified during the inspection: allowing an individual to perform as a radiographer's assistant without the required training, and failure to perform surveys after each radiographic exposure. No overexposure was identified during the inspection.

Reason for Inspection: On December 17, 1982, Region IV received notification by telephone, from the licensee, reporting that a radiographer's assistant had received a radiation dose of 7.664 rems for the month of October 1982, based on a telephonic report from his TLD badge vendor on December 16, 1982. On December 22, 1982, the NRC reviewed a letter dated December 16, 1982, reporting the overexposure.

## Details

1. Persons Contacted:

*Christian R. Olsen, President
*Bill Fraser, Operations Manager
Jana Moore, Secretary-Treasurer
Individual, Radiographer's Assistant

*Denotes those present at the exit briefing.

2. Utilization Logs and Time Sheets

The inspector reviewed the records of utilization logs, specifically, logs when the radiographer's assistant had assisted with radiographic operations during the month of October 1982. The individual had assisted with radiographic operations on 16 days using an exposure device and a nominal 70 curie iridium-192 sealed source, and on 2 days had participated in radiographic operations using a 300 kV and a 200 kV portable x-ray unit. All records contained the required information and indicated no incidents or problems associated with radiographic operations. The individual's direct reading pocket dosimeter readings which were recorded on his daily time sheet for each day he assisted with radiographic operations totaled 201 mR for the month of October 1982.

No violations of NRC requirements were identified.

3. Survey Instrument and Dosimeter Calibration

The inspector reviewed the calibration records for the survey instrument and direct reading pocket dosimeter used by the radiographer's assistant during the month of October 1982. The survey instrument had been calibrated on July 23, 1982, and October 28, 1982, as per the licensee's procedures. The pocket dosimeter had not been checked for response prior to being issued to the individual; however, a response check was conducted by the licensee on December 17, 1982, after being notified of the high TLD badge reading. The results of response test for the pocket dosimeter was within 10 percent of the true radiation exposure by procedures submitted October 4, 1982.

No violations of NRC requirements were identified.

4. Equipment Inspection and Maintenance Records

The inspector reviewed the inspection and maintenance records for the radiographic exposure device and associated equipment used by the individual during the month of October 1982. Daily and monthly inspections indicated that there were no malfunctions or damage to the device or associated equipment.

No violations of NRC requirements were identified.

5. Training Records

The inspector reviewed the training records for the radiographer's assistant and the radiographer he was working with during the month of October 1982. The radiographer's assistant was hired by the licensee on November 23, 1981, without previous experience. He was evaluated and designated as a radiographer's assistant on November 30, 1981, without the training required by the licensee's procedures. He terminated employment with the licensee in April 1982, worked for another radiography firm, was rehired by the licensee on August 5, 1982, and assigned to work as a radiographer's assistant. This individual had not been evaluated by the licensee upon rehire as of January 7, 1983. The radiographer's last written test and evaluation was on January 5, 1982, with a score of 90 percent.

One violation of NRC requirements was identified. Sections E.1.B(a) and (b) of the licensee's Radiation Safety Manual require that before personnel can be designated as a radiographer's assistant, new trainees are to have 3 months of on-the-job training during which time at least 80 radiographic exposures must be conducted; and previously qualified personnel are to have 16 hours of on-the-job training and conduct at least 16 radiographic exposures before being evaluated and given an oral examination by the radiation safety officer. The individual was evaluated and designated as a radiographer's assistant without previous experience within 7 days after being hired and no evaluation or oral examination was given upon rehire by the licensee before being assigned as a radiographer's assistant. This is a violation of License Condition 17.

6. Mock Radiography Exposure

The inspector observed the radiographer's assistant set up and perform a mock radiographic exposure using a radiographic exposure device (licensee's training device) and a dummy source. All operations and surveys were conducted as required.

No violations of NRC requirements were identified.

7. Interview of the Radiographer's Assistant

The individual stated that he had worked for Mid-Con Inspection during the period of November 1981 through April 1982 as a radiographer's assistant, worked as a radiographer's assistant for another licensee, and was rehired by Mid-Con Inspection on August 5, 1982, as a radiographer's assistant.

The individual stated that he could not remember any incidents during the month of October 1982 that could result in his receiving a high dose of radiation. The survey meter used was always operable and at no time had his direct reading pocket dosimeter gone offscale. He always wore an audible alarming device (G. E. Smith Model G-S-15) which was checked daily

for response alongside the radiographic exposure device. He always wore his TLD badge and pocket dosimeter together. He also stated that he had worked with a radiographer on each job.

The individual stated that there were times during the month of October 1982 when he had not conducted a survey after each radiographic exposure, and had relied on his audible alarming device to warn him of any unusual radiation levels.

The individual stated that he did not believe he had received a radiation dose of 7.664 rems and that he believed his pocket dosimeter readings actually represented the radiation dose he received for the month of October 1982.

One violation was identified. Failure to conduct a physical radiation survey after each radiographic exposure to determine that the sealed source had been returned to its shielded position as required by 10 CFR 34.43(b).

8. Radiation Exposure Records

The inspector reviewed the radiation exposure records, Forms NRC-4 and NRC-5, and the vendor TLD badge reports. All records were maintained as required. The vendor's report for the October 1982 TLD badges was dated December 16, 1982, and showed receipt of the TLDs from the licensee on December 6, 1982.

The inspector noted the vendor had indicated on the report that the TLD readings recorded for the radiographer's assistant were abnormal (3101 total TLD net counts and 7664 penetrating net counts). When asked, the licensee was not aware of this notation on the report. The licensee telephoned the vendor to question this notation. After the telephone contact (October 6, 1982) with the vendor, the licensee informed the inspector that the vendor could not explain what had actually caused this abnormal reading and could not provide what would be an accurate assessment of the radiation dose to apply for the TLD badge.

The licensee stated that based on his conversations with the TLD vendor, their investigation, and interviews with the individual, he was going to assign the October 1982 pocket dosimeter readings for that month's radiation dose received by the individual and would submit a report to that fact.

No violations of NRC requirements were identified; however, the inspector expressed concern to the licensee for not performing a more thorough investigation prior to notifying the NRC that there was an overexposure and time lapse returning used badges for processing.

9. Exit Briefing

On January 7, 1983, the inspection findings were reviewed with the licensee representatives denoted in Item 1. The inspector summarized the apparent items of violation and items of concern, and informed the licensee that the NRC would review his letter retracting the December 16, 1982, letter reporting an overexposure.