ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION REGION IV

Inspection Report: 150-00042/95-01

- License: General License pursuant to 150.20 Texas License L00065
- Licensee: Cardinal Surveys Company P.O. Box 729 Odessa, Texas 79760-0729

Facility Name: Cardinal Surveys Company

Inspection At: Cardinal Surveys Company Odessa, Texas

> Halliburton Energy Services Rock Springs, Wyoming

Schlumberger Technology Corporation Evanston, Wyoming

Union Pacific Resources Company Bradbury B-1 well site, Evanston, Wyoming

Inspection Conducted: November 6, 1995, through May 9, 1996

Inspector: Mark R. Shaffer Senior Radiation Specialist

> Robert A. Brown Senior Radiation Specialist

Approved: ma thda L. Howell, Chie

Date 0/96

Nuclear Materials Inspection and Fuel Cycle/Decommissioning Branch

Inspection Summary

Areas Inspected: This was a reactive, announced inspection of licensed activities involving use of byproduct material for tracer operations in oil/gas wells. The inspection focused on an event involving radioactive contamination of a well site located near Evanston, Wyoming.

Results:

- As a result of the licensee's tracer operations at the Bradbury B-1 well site, several items were contaminated with antimony-124 (Sb-124). Contaminated items included logging equipment and associated work items (gloves, rags, absorbent pads, etc), return grease from logging operations, and the inner surface of the well head.
- The direct cause of the contamination was the use of a tagging material which had not been thoroughly evaluated for use in a high pressure nitrogen injection procedure.
- A contributing cause appeared to be related to the adequacy of a radiation survey performed after the subsurface tracer study to confirm absence of contamination.
- The root cause of the well head contamination was not identified during this inspection.

Summary of Inspection Findings:

 Violation 150-00042/9501-01 was opened: Failure to notify NRC at least 3 days prior to engaging in licensed activities in the state of Wyoming, an area of NRC jurisdiction.

Attachment:

Persons Contacted and Exit Meeting

DETAILS

1 PROGRAM OVERVIEW

Cardinal Surveys Company (Cardinal) holds a Radioactive Materials License (Texas L00065) issued by the state of Texas which authorizes Cardinal to perform tracer operations in oil/gas wells at temporary job site locations throughout Texas. By letter dated September 12, 1995, Cardinal submitted an NRC Form 241 to report proposed activities involving use of byproduct material in the state of Oklahoma under the authority of a general license pursuant to 10 CFR 150.20. By letter dated October 6, 1995, the NRC acknowledged receipt of the Form 241 and noted that a revision to the licensee's submittal, as defined in the NRC's letter, must be reported to the NRC Region IV office in accordance with 10 CFR 150.20(b)(1).

2 BACKGROUND (83822, 87100, 87103)

On October 27, 1995, Cardinal was contracted to perform a tracer procedure at a well located near Evanston, Wyoming. The purpose of the procedure was to identify a production zone through use of high pressure nitrogen injection. Tracer material, namely Sb-124, was to be introduced with the nitrogen stream. The well was identified as Bradbury B-1 well in Uinta County, Wyoming. The well was owned by Union Pacific Resources Company (UPRC).

The procedure called for injection of 230,000 standard cubic feet (SCF) of nitrogen with the first 90,000 SCF to be "tagged" with tracer material. Following the tagging procedure, an additional 140,000 SCF of nitrogen was used to "flush" the well bore. The total volume of nitrogen specified in the job plan was believed to be sufficient to remove any contamination from the well bore. (The nitrogen flush was intended to ensure that the tracer material was displaced into the production zone.)

Halliburton Energy Services (Halliburton) was contracted by UPRC to pump the nitrogen. Due to its relatively short half-life, Sb-124 was chosen as the radionuclide to be used for the procedure. The tracer material was produced by Cardinal by baking (approximately 400-500 degrees F) antimony with fine grain ceramic beads, followed by a coating process to ensure the antimony would adhere to the beads. The beads were then sent to Texas A&M University and were irradiated at the Nuclear Science Center for 9.683 hours at 1-megawatt power level. This process produced Sb-124 coated beads with an activity of approximately 36 millicuries per container. One container of tagging material was transported by Cardinal to the Bradbury B-1 well site.

On October 30, 1995, the tagging procedure was completed with no apparent complications. The tracer material was introduced into the well with 90,000 SCF of nitrogen over a period of approximately 50 minutes, followed by injection of 150,000 SCF of nitrogen to "flush" the well. Approximately 2-5 millicuries of Sb-124 was introduced into the well in approximately 5 grams of solid tracer material. The tracer was mixed with approximately 1 gallon of window wash fluid (alcohol/glycol mixture) as the carrier.

Immediately following the procedure, Cardinal's operator performed a radiation survey of the well head which revealed only background radiation levels, or approximately 0.03 milliroentgens per hour (mR/hr).

The following day, Schlumberger Technology Corporation (Schlumberger) performed a "post-stimulation" gamma-ray/temperature log of the well. The procedure was intended to identify placement of the nitrogen and tracer material, indicating the production zone. Upon entering the well, the logging engineer noted from his instrument panel that gamma-ray readings were considerably higher than what he had expected (the engineer had performed a gamma-ray log of the well earlier in the month). The logging engineer subsequently requested that a second Schlumberger operator perform a radiation survey of the well head. The survey identified radiation levels of approximately 4.0 mR/hr at the well head. As the crew continued to log the well, radiation measurements were obtained from the pressure seal grease return barrel and other areas where grease had accumulated. These measurements revealed radiation levels of approximately 3-6 mR/hr, indicating the presence of radioactive contamination. Surveys performed as the logging tool was removed from the well indicated that the cable and logging tool were also contaminated. Measurements taken on the inside of the wellhead, after the logging tool was removed, indicated approximately 22 mR/hr. At the conclusion of the logging procedure, the Schlumberger crew isolated all items believed to be contaminated, placed what items they could in plastic bags, and returned to Schlumberger's facility in Evanston, Wyoming. After the logging crew arrived at Schlumberger's facility, Schlumberger's radiation safety officer (RSO) was notified of the contamination and the logging crew was instructed to shower thoroughly and to isolate their clothing. The following afternoon, stool and urine samples were obtained from the Schlumberger personnel for bioassay analysis. Bioassay samples were forwarded to Controls for Environmental Pollution, Inc., Santa Fe, New Mexico.

NOTE: The radiation readings described above were taken at surface contact with the well head and at areas which were restricted to access by only those individuals directly involved with the logging procedure. Additionally, it appeared unlikely that any individual working around the well head would have received a radiation dose exceeding 0.002 rem in an hour. The inspectors noted that the immediate area surrounding the well head was fenced and secured to prevent access, and the entire well site location was adequately secured by UPRC and not accessible to members of the public. It should also be noted that Schlumberger possesses a Byproduct Materials License issued by the NRC and that the Schlumberger personnel who performed the logging procedures were experienced in handling radioactive materials.

3 SEQUENCE OF EVENTS (87103)

Based upon interviews with licensee personnel and a review of records related to this contamination incident, the following sequence of events was established:

- On October 27, 1995, Cardinal was contacted by Halliburton to perform a tagging procedure on the UPRC Bradbury B-1 well near Evanston, Wyoming.
- On October 29, 1995, a Cardinal operator arrived in Evanston, Wyoming.
- On October 30, 1995, at approximately 8:00 a.m., the wellhead was prepared for the tracer injection. A wellhead flange was placed on the well, above the service valve, at the top of the tree. A 3 X 2 inch changeover connection was attached to the flange. The Cardinal 2-inch injection tee was then connected, followed by the Halliburton treatment line which was connected to the nitrogen pump truck.
- At 9:18 a.m., pumping began at 1000 SCF/minute (SCF/min).
- At 9:20 a.m., the pump rate was increased to 2500 SCF/min and the tagging procedure began.
- At 9:57 a.m., the tagging procedure was completed. Approximately 2-5 millicuries of Sb-124 was injected.
- At 10:56 a.m., the nitrogen injection was discontinued.
- Immediately following the procedure, the Cardinal operator performed a radiation survey of the wellhead which indicated only background levels of radiation (0.03 mR/hr). The operator used a Ludlum Model 5 survey instrument (Serial No. 36963). The instrument had last been calibrated on September 5, 1995.
- At 2 p.m., the Cardinal operator left the well site.
- October 31, 1995, at approximately 5:00 p.m., Schlumberger performed a gamma-ray/temperature log of the Bradbury B-1 well. While performing the procedure, the Schlumberger operators noted that gamma-ray measurements were higher than expected. (One of the Schlumberger operators had performed a similar logging procedure of the well earlier in the month and used previous readings as a reference.) In response to this finding, the operators used their radiation detection survey instrument to measure radiation levels at the well head. The operators measured approximately 4.0 mR/hr at the surface of the well head.
- The crew continued to log the well, but began to measure radiation levels at the pressure seal grease return barrel and other areas where grease had accumulated. These measurements revealed levels of radiation above background, indicating potential radioactive contamination.

- Additional surveys identified contamination of the well logging equipment and other items used during the procedure. Schlumberger operators isolated contaminated articles (gloves, rags, absorbent pads, etc.) in plastic bags and returned to Schlumberger's Evanston, Wyoming facility.
- At 11:30 p.m., Schlumberger's corporate RSO was contacted and the logging operators were instructed to shower thoroughly and to isolate their clothing.
- On November 1, 1995, at approximately 2:30 p.m., urine and stool samples were obtained from the Schlumberger operators. Wipe samples of the well logging equipment were also obtained and sent to Houston, Texas, for analysis.
- At 6 p.m. on November 1, Schlumberger's RSO provided telephonic notification of the contamination event to the NRC Headquarters Operations Center.
- On November 6, 1995, two NRC Region IV inspectors were dispatched to the well site to perform a reactive inspection. The inspectors were accompanied during the inspection by a representative of the Wyoming Emergency Management Agency.

4 DECONTAMINATION ACTIVITIES (83822, 86740, 87100, 87103)

Decontamination activities were conducted in four stages: (1) immediate decontamination of workers with a potential for external skin contamination; (2) decontamination of logging equipment possessed by Halliburton and Schlumberger; (3) decontamination of the Bradbury B-1 well head; and (4) packaging and shipment of contaminated articles.

As noted in Section 3, after Schlumberger operators identified contamination on their gloves and other items on October 31, 1995, the workers segregated contaminated articles in plastic bags and returned to Schlumberger's Evanston field office. Prior to leaving the well site, Schlumberger operators informed UPRC representatives of probable contamination of the well head, and measures were initiated to secure the site. At this time UPRC informed Halliburton representatives of the incident, and suggested that they contact workers who had been at the well site during the previous day to survey their clothing and equipment. Two Halliburton employees who worked with the Cardinal operator on October 30 were subsequently surveyed and found to be free of external contamination. Based on interviews with the workers, Halliburton's RSO determined that bioassays of the workers were not necessary. However, surveys of Halliburton equipment used at the well site (well head flange and changeover connector) revealed that three items were contaminated. These items were placed in plastic bags and locked in a bunker at Halliburton's Rock Springs, Wyoming, field office.

Upon arrival at the Evanston field office, the Schlumberger operators were instructed by their RSO to shower thoroughly and put on clean clothes. Their clothing was also suspected to be contaminated and was placed in plastic bags. Following showers, the workers were surveyed with a GM type radiation detection instrument which revealed no detectable activity above background. (Contamination was not identified on the operators' clothing during subsequent surveys.)

On November 1, 1995, the operators submitted stool and urine samples which were forwarded to a vendor (Controls for Environmental Pollution, Inc.) for analysis. Additionally, wipe samples of all equipment suspected to be contaminated were obtained and forwarded to Nuclear Sources and Services, Inc. (NSSI), a consultant for Schlumberger, for analysis. The following afternoon, NSSI contacted Schlumberger's RSO to confirm that the equipment was contaminated with Sb-124, as determined by gamma spectrum analysis, at levels greater than 1,000 disintegrations per minute (dpm).

On November 5, 1996, Cardinal arrived at Halliburton's facility in Rock Springs, Wyoming, to begin decontamination procedures. Upon arrival at the Halliburton field office, three items were identified to the Cardinal representative as being contaminated: (1) a 3 X 2 inch changeover connection, (2) a 3-inch well head flange, and (3) a 1 X 4 X 18-inch wooden board. A rag used to handle the equipment was also presented to Cardinal for disposal. The contaminated items were cleaned with rags and solvent cleaning solution until removable contamination was less than 200 dpm per 100 centimeters squared.

On November 6, 1995, Cardinal arrived at Schlumberger's facility in Evanston, Wyoming. A meeting was conducted with Schlumberger and UPRC representatives to discuss decontamination procedures. The first priority established through this discussion was to survey contaminated items that Schlumberger operators had returned to the office from the well site on October 31, 1996. Three large plastic bags containing items suspected to be contaminated were surveyed. The workers' uniforms and clothing were found to be free of contamination. Contaminated articles identified during the surveys included gloves, rags, and absorbent pads. These items were segregated, labeled, and packaged for transport to Cardinal's facility in Odessa, Texas. Subsequently, a detailed written procedure was developed by Schlumberger outlining decontamination procedures for the well head, Schlumberger's wireline equipment and the logging truck. UPRC was to supply a second well, identified as No. 25-1, for down-hole decontamination of the lubricator and wireline. Following decontamination of the equipment down-hole, a plug-setting and cementing procedure was to be performed.

Later in the afternoon Cardinal proceeded to the Bradbury B-1 well site location. A survey of the well head and ground surrounding the site was performed. The ground within the fenced area surrounding the well head was found to be free of contamination. Readings taken at the surface of the well head revealed a maximum radiation level of approximately 3.0 mR/hr in an area located at the master shut-off valve. (As noted in Section 2 of this report, this area was not accessible to members of the public.) Wipe samples taken near the master shut-off valve identified removable contamination which appeared to be contained in wireline lubricant that had deposited on valve. However, detectable radiation levels present were also attributed to probable contamination of the inner surfaces of the well head. At this time, the area was again secured to prevent access and Cardinal returned to Schlumberger's facility to begin decontaminating the equipment and vehicle.

Using absorbent materials and solvent solution, the lubricator grease head, hose connections, logging tools, and other equipment was cleaned, surveyed, and wipe tested. Excess grease was captured and absorbent pads and gloves were collected and stored. The lubricator was cleaned externally at the joint that would be handled by workers during the next phase of the decontamination procedure (down-hole). Following confirmation by wipe test analysis that the equipment was free of contamination, the items were released for unrestricted use.

On November 7, 1996, 20 individuals, including representatives from Cardinal, Schlumberger, UPRC, the state of Wyoming, and a hydrogen sulfide (H_2S) safety specialist arrived at the UPRC 25-1 well site. The H₂S specialist was on hand to assist with respiratory protection and to monitor the operation due to the high concentration (approximately 20 percent) of H_S (under pressure) present at the well site. After rigging up and pressure testing the equipment, internal areas of the greasehead, riser and the logging cable were decontaminated, followed by injection of a non-hazardous and biodegradable solvent through the blow-out preventor. Wipe tests on the wireline cable were performed every 1000 feet while lowering the cable into the well (prior to decontamination). As the cable was brought out of the well, the solvent/water mixture was injected into the well to flush contamination from the cable. Another series of wipes were performed every 1000 feet as the cable was brought out of the well. Return grease, gloves, and absorbent pads contaminated during this operation were then packaged and returned to Schlumberger's facility. On November 8-9, 1995, the plug setting and cementing procedure was performed.

On November 10, 1995, a final survey of the 25-1 well site was conducted. The survey revealed that the well head and surrounding areas were free of contamination. Following surveys at the 25-1 well site, Cardinal proceeded to the Bradbury B-1 location to decontaminate the well head. Using approximately 250 barrels of hot water, the well head was flushed. The exterior surface of the well head was also cleaned with hot water. The well head was then filled with mothanol and flushed with hot water a second time. Following this proclaure, the licensee noted that the highest level of detectable radiation (1.0 mR/hr) appeared to be fixed on the inner surface of the well head near the automatic shut-off valve.

On November 11, 1995, Cardinal packaged all contaminated items for transport to Odessa, Texas. Packages prepared for transport included three Department of Transportation SPEC 17H Steel drums (55 gallon) containing fluids returned from the lubricator grease injection system and one 55 gallon drum containing sold waste (gloves, absorbent pads, etc). Each of these drums was placed into a 85 gallon drum overpack. The drums were surveyed and labeled, and shipping papers were prepared for transport. The drums were then transported in a rented trailer-type truck to Cardinal's facility in Odessa, Texas.

Instruments used to perform the radiation surveys and to count wipe samples described above included: (1) a Ludlum Model 3 with scintillation probe (micro-R meter), (2) a Ludlum Model 14-3 with GM probe, and (3) a Ludlum Model 2600 scaler counter.

5 DIRECT CAUSE (87103)

The inspection revealed that the probable direct cause of contamination was use of a tagging material (fine grain ceramic beads) that was apparently unsuitable for the 100 percent nitrogen gas injection procedure. Specifically, although Cardinal had previously used similar tagging material on "fluid-only" tagging procedures, an adequate evaluation of use of the material during a 100 percent nitrogen gas injection had not been performed.

The nitrogen was pumped by Halliburton in the same manner as is typically done with fluid injections and with flush volumes which were thought to be sufficient. However, it appeared that the fine grain ceramic beads were not carried into the well bore by the nitrogen gas and instead plated out on the inner surface of the well head as the tracer was injected into the stream of gas. The inspectors and Cardinal representatives concluded that the high pressure nitrogen injection was not suitable to carry the solid tracer material mixed with a small fluid volume (approximately one gallon) into the well bore. In addition, Cardinal representatives suspected that the high pressure nitrogen may have shattered the ceramic beads into tiny fragments which adhered to the residue buildup (heavy hydrocarbons) on the inner surface of the well head. Thus, as equipment entered the well head and as return grease flowed back through the well nead, radioactive contamination occurred. Additionally, as noted in Section 3 above, Halliburton had attached two pieces of equipment to the top of the well head to facilitate the nitrogen injection. These items were also found to be contaminated on the inner surfaces where grease had been deposited.

The inspectors concluded that based on information provided by the well owner, Cardinal, and other logging service companies involved with this procedure, that the most likely explanation for the presence of contamination at the well head was as described above. However, Cardinal later identified a second possible explanation for why the tracer material was located at the well head in its written evaluation dated February 9, 1996. Specifically, Cardinal noted that the tracer material could have been carried back to the well head with return fluids that may have back-flowed into the well head after the procedure was completed. This was not supported by any direct evidence, but was instead offered as an explanation as to why surveys performed immediately after the tagging procedure failed to detect any elevated radiation levels. Although the specific process which resulted in contamination of the well head could not be verified by physical evidence, both Cardinal's and the inspectors' conclusions were consistent in that use of the ceramic beads under a full, high pressure nitrogen injection appeared to have resulted in a failure to carry the tracer material fully through the well bore.

6 CONTRIBUTING CAUSE (87103)

Inadequate radiation surveys of the well head following the tagging procedure was identified as a possible contributing cause of equipment and personnel contamination. In accordance with 10 CFR 39.67(e), licensees are required to make a radiation survey at a temporary jobsite before and after each subsurface tracer study to confirm the absence of contamination. Interviews conducted by the inspectors revealed that other workers present at the well site on October 30, 1995, observed the Cardinal operator perform a radiation survey of the well head prior to leaving the site. The inspectors noted that although Cardinal's operator performed a radiation survey at the well site, the survey may not have been adequate to detect the presence of radioactive contamination. The operator noted that radiation levels at the well head were consistent with background radiation (measured to be 0.03 mR/hr); however, on the following day Schlumberger logging personnel identified radiation levels at the well head of approximately 4.0 mR/hr. Additionally, the inspectors performed independent radiation measurements at the well site on November 6, 1995, which revealed radiation levels of approximately 3.0 mR/hr at the surface of the well head.

Information gathered during the inspection appeared to indicate that the well head was contaminated during the tracer injection procedure, as described above. Therefore, it was likely that increased radiation levels were present at the well head immediately following the tagging procedure. The survey instrument used by the Cardinal operator was sufficiently sensitive to detect low levels of radiation, but the survey may have only included measurements of the general area of the well head rather than on contact with the well head. The inspectors noted that had an adequate radiation survey been performed to detect the presence of radioactive contamination of the well head, it is likely that equipment and personnel contamination could have been prevented. Subsequent interviews with Cardinal representatives indicated that Cardinal also considered a second possible explanation for the initial survey findings (see Section 5). Specifically, Cardinal representatives noted that the contamination may have occurred as a result of return fluids that back-flowed into the well head after the operator left the site. They further noted that this may have resulted in survey readings which appeared equivalent to background radiation levels immediately following the injection procedure.

Information obtained during this inspection identified a second issue relating to surveys performed before and after tagging procedures. As noted in Section 3 of this report, Schlumberger operators had a radiation detection instrument available at the jobsite on October 31, 1995. Although Schlumberger personnel were not required to perform a survey of the well head prior to starting the logging procedure, the inspectors noted that it would appear to be a good health physics practice to perform a survey of the well head prior to logging operations following a tracer injection. Although not a regulatory requirement, the inspectors noted that had a radiation survey of the well head been performed prior to entering the well, contamination of equipment and personnel could have been prevented.

7 ROOT CAUSE

The inspection did not disclose a probable root cause of the contamination.

8 CONSEQUENCES (83822, 87103)

Bioassay results of those individuals most likely to have been contaminated revealed no measurable uptake of Sb-124. External radiation doses to all individuals involved was also assumed to be minimal. Exposed workers from Halliburton and Schlumberger have reported no untoward effects as a result of this incident.

The well site location, and all equipment identified as contaminated from the tracer operation, was subsequently decontaminated by Cardinal to acceptable surface contamination levels specified in Table 1 of "Guidelines For Decontamination Of Facilities And Equipment Prior To Release For Unrestricted Use Or Termination Of License For Byproduct, Source, Or Special Nuclear Material," published by NRC in August 1987.

9 REGULATORY ISSUES (87100)

On November 29, 1995, an inspection was performed at Cardinal's facility in Odessa, Texas. Interviews with licensee personnel, independent measurements, and a review of records related to licensed activities conducted in NRC jurisdiction during calendar year 1995 were performed. Based on this review, licensed activities appeared to have been performed in accordance with 10 CFR Parts 19, 20, 39, 71, and applicable license conditions. However, one violation of NRC requirements was identified. The violation involved the failure to notify NRC at least 3 days before engaging in licensed activities in the state of Wyoming, an area under NRC jurisdiction.

10 CFR 150.20 requires, in part, that a licensee file an NRC Form 241, "Report of Proposed Activities in Non-Agreement States" at least 3 days before engaging in licensed activities in non-Agreement States. As noted in Section 1 of this report, Cardinal filed a Form 241 in September 1995 to report proposed activities in the state of Oklahoma; however, Cardinal had not notified NRC of activities conducted on October 30, 1995, at the Bradbury B-1 well site as of November 6, 1995. This was identified as a violation of 10 CFR 150.20(b)(1) (Violation 150-00042/9501-01).

This violation was discussed with the licensee on November 6, 1995, and the licensee subsequently filed a revised Form 241 and paid the associated fee on November 8, 1995. The revised Form 241 indicated both the activities performed on October 30, 1995, and proposed activities relating to

decontamination of the equipment and well head. Based on interviews with Cardinal representatives, it appeared that the violation was the result of an oversight since the job had not been scheduled in advance and Cardinal was provided short notice of the proposed work prior to the scheduled procedure.

10 LICENSEE CORRECTIVE ACTIONS (87100)

On February 9, 1996, Cardinal submitted a report to the NRC describing the decontamination activities performed in response to contamination event which occurred at the Bradbury B-1 well site. Information presented in Cardinal's report was reviewed and discussed with Cardinal representatives during subsequent telephone interviews.

The report documented the decontamination procedures used following the event and the results of analyses performed for items found contaminated with Sb-124. Additionally, the report indicated that the combination of using the solid tagging material in the presence of residue build-up inside the well bore under a high pressure nitrogen injection was the probable cause of the residual contamination in the well bore.

The report also indicated that the fact that the contamination was primarily isolated within the wellhead and the operating conditions imposed by the amount of H₂S on site (i.e., respiratory protection requirements and associated controls for time spent in the area) may have resulted in the negative radiation survey findings at the conclusion of the tagging procedure. (This appeared to indicate that Cardinal believed that restrictions imposed for this particular site may have impacted survey procedures.) In addition, Cardinal indicated in its report that it was not clear that well head radiation levels were above background levels immediately following the tracer injection. The licensee noted that it was also possible that the contamination occurred as a result of return fluids that back-flowed into the well head after the operator left the site.

Cardinal noted that this event had been discussed with all personnel and additional training was conducted regarding the level of detail required for well head surveys following tagging operations. Cardinal also indicated that if it is contracted to perform another tracer study with nitrogen, extra care will be taken to inform all participants of the potential for wellhead contamination using this procedure.

ATTACHMENT

1 PERSONS CONTACTED

1.1 Licensee Personnel

Mr. George Newman, Radiation Safety Officer Mr. Charlie Newsom, Division Sales + Mr. James S. Mclaughlin, President

1.2 NRC Personnel

Mr. M. Shaffer, Senior Radiation Specialist
Mr. R. Brown, Senior Radiation Specialist
Ms. L. Howell, Chief, Nuclear Materials Inspection Branch

1.3 Schlumberger Personnel Contacted

- Mr. Kyle Hodenfield
- Mr. Ken Turner
- Mr. Henry Cloud
- Mr. Dave Weber
- Mr. Ross Nold
- Mr. Sam Godfrey

1.4 Halliburton Personnel Contacted

- Mr. Steve Woods
- Mr. Rod Weatherman
- Mr. Jeff Pattinsey
- Mr. Llyod McNeil
- Mr. Mike Houston
- Mr. Dan Sullivan
- Mr. Jim Barker

1.5 Other Individuals Contacted

Mr. Chuck Fraley, Wyoming Emergency Management Agency

- Mr. Pete Straub, Union Pacific Resources Corporation
- Mr. Jim Neuner, Union Pacific Resources Corporation

+Indicates those individuals present during the final exit briefing conducted telephonically on May 9, 1996.

2 EXIT MEETINGS

A preliminary site exit briefing was conducted on November 29, 1995, with those individuals identified in Section 1.1. A final exit briefing was conducted telephonically between the licensee's representatives identified in Section 1 and Mark R. Shaffer of the NRC Region IV office on May 9, 1996, to review the specific findings as presented in this report.