UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

July 28, 2011

EA-11-043

Charles Brignac, President
Accurate NDE & Inspection, LLC
209 Industrial Trace
Broussard, Louisiana 70518

SUBJECT: NRC INSPECTION REPORT 150-00017/2010-002 AND INVESTIGATION REPORT 4-2010-062

Dear Mr. Brignac:

This letter refers to the inspection which began on May 26, 2010, with continued in-office review of an event that occurred on the Merit Energy platform in East Cameron Block 33-CF, located in offshore Federal waters. The event involved the loss of a sealed source of iridium-192, which became disconnected from an industrial radiographic exposure device on March 15, 2010. This event was reported to NRC by your radiation safety officer telephonically on March 17, 2010 (EN 45773), and was documented in a 30-day written report dated April 9, 2010.

The inspection was an examination of licensed activities conducted under the provisions of a General License pursuant to 10 CFR 150.20 as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of Accurate NDE & Inspection, LLC's Agreement State license (Louisiana License LA-10207-L01). Within these areas, the inspection consisted of interviews with licensee personnel, examination of procedures and representative records, and a re-enactment of the lost source event chronology. Additionally, the NRC's Office of Investigations conducted an investigation into the circumstances surrounding the event. The preliminary inspection findings were discussed with your radiation safety officer at the conclusion of the onsite portion of the inspection in Broussard, Louisiana, on August 5, 2010. A final exit meeting was conducted telephonically with you and your radiation safety officer on June 23, 2011.

Based on the results of this inspection and investigation, five apparent violations of NRC requirements were identified and are being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html. The apparent violations included the failures to: (1) comply with the terms of an Agreement State license that requires the licensee to follow its operating procedures, which prohibit radiographers from attempting to retrieve a disconnected source; (2) maintain accurate information concerning personnel monitoring; (3) wear personnel dosimeters at all times while performing radiographic operations; (4) conduct a radiation survey when a radiographic exposure device is placed into storage; and (5) immediately report the loss of a sealed source of radiation. In addition, the NRC is concerned that willfulness may be associated with the

apparent failure to follow the operating procedure that prohibits a radiographer from attempting to retrieve a disconnected radiography source, and the apparent failure to maintain accurate personnel monitoring information.

Before the NRC makes its enforcement decision, we are providing you an opportunity to request: (1) a Predecisional Enforcement Conference (PEC), or (2) Alternative Dispute Resolution (ADR). If a PEC is held, the NRC may issue a press release to announce the time and date of the conference; however, it will be closed to public observation since information related to an Office of Investigation report will be discussed. If you decide to request a PEC or pursue ADR, please contact Mr. Michael Vasquez at 817-860-8130 within 10 days of the date of this letter. A PEC should be held within 30 days and an ADR session within 45 days of the date of this letter.

A PEC will afford you the opportunity to provide your perspective on the apparent violations and any other information that you believe the NRC should take into consideration before making an enforcement decision. The topics discussed during the conference may include the following: information to determine whether a violation occurred, information to determine the significance of a violation, information related to the identification of a violation, and information related to any corrective actions taken or planned to be taken. In presenting your corrective actions, you should be aware that the promptness and comprehensiveness of your actions will be considered in assessing any civil penalty for the apparent violations. The guidance in the enclosed NRC Information Notice 96-28, “Suggested Guidance Relating to Development and Implementation of Corrective Action,” may be helpful. Please note that, in addition to the corrective actions for the apparent violations, we are interested in any corrective actions taken or planned to address the potential willfulness, including the effectiveness of the actions you took as a result of the Confirmatory Order (EA-06-281; EA-07-289) dated February 20, 2008.

In lieu of a PEC, you may also request ADR with the NRC in an attempt to resolve this issue. ADR is a general term encompassing various techniques for resolving conflicts using a third-party neutral. The technique that the NRC has decided to employ is mediation. Mediation is a voluntary, informal process in which a trained neutral (the “mediator”) works with parties to help them reach resolution. If the parties agree to use ADR, they select a mutually agreeable neutral mediator who has no stake in the outcome and no power to make decisions. Mediation gives parties an opportunity to discuss issues, clear up misunderstandings, be creative, find areas of agreement, and reach a final resolution of the issues. Additional information concerning the NRC's program can be obtained at http://www.nrc.gov/about-rc/regulatory/enforcement/adr.html. The Institute on Conflict Resolution at Cornell University has agreed to facilitate the NRC's program as a neutral third party. Please contact the Institute on Conflict Resolution at 877-733-9415 within 10 days of the date of this letter if you are interested in pursuing resolution of this issue through ADR.

You should be aware that Section 2.3.4 of the NRC Enforcement Policy states that, for violations involving the loss, abandonment, or improper transfer or disposal of a sealed source or device, the NRC will normally impose at least a base civil penalty. The base civil penalty amounts are based on approximately three times the expected average cost of authorized disposal and are listed in Tables 1 and 2 of the Enforcement Policy; however, the NRC may consider adjusting the civil penalty amount if a licensee can demonstrate that three times the actual cost of disposal would be significantly less than the base amount. Therefore, you may

provide the NRC with information regarding the actual expected costs of authorized disposal for its consideration in making a final enforcement decision. However, the NRC will not normally decrease the civil penalty to an amount below the lowest base civil penalty for such cases, i.e., $3,500.

Since the NRC has not made a final determination in this matter, no Notice of Violation is being issued for the five apparent violations at this time. In addition, please be advised that the number and characterization of apparent violations described in the enclosed inspection report may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agency wide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection or the enclosed report, please contact Mr. Michael Vasquez at (817) 860-8130.

Sincerely,

/RA/ by VHCampbell for

Roy J. Caniano, Director
Division of Nuclear Materials Safety

Docket: 150-00017
License: 10 CFR 150.20

Enclosures:
1. NRC Inspection Report 150-00017/2010-002
2. Factual Summary - Office of Investigations Report 4-2010-062
3. NRC Information Notice 96-28

cc w/ Enclosure 1:
Louisiana Radiation Control Program Director

DISTRIBUTION:
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JLThompson;dlf	GMVasquez	MJSimon	RLKellar	NDHilton
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VHCampbell for				
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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	150-00017
License:	General License Pursuant to 10 CFR 150.20
Report:	2010-002
EA:	EA-11-043
Licensee:	Accurate NDE & Inspection, LLC
Facility:	Main Office
Location:	Broussard, Louisiana
Dates:	May 26, 2010, through June 23, 2011
Inspector:	James L. Thompson, Senior Health Physicist Nuclear Materials Safety Branch A
Approved By:	G. Michael Vasquez, Chief Nuclear Materials Safety Branch A
Attachment:	Supplemental Inspection Information

EXECUTIVE SUMMARY

Accurate NDE & Inspection, LLC
NRC Inspection Report 150-00017/2010-002

This was a special inspection of licensed activities involving the use of byproduct material for industrial radiography conducted under a general license pursuant to the provisions of 10 CFR 150.20. The inspection was conducted in response to an event that occurred on March 15, 2010, involving the loss of a sealed source of iridium-192 while performing licensed activities onboard a platform owned by Merit Energy in offshore Federal waters. The scope of the inspection included a review of selected representative records pertaining to this event, a review of the licensee's procedures, and interviews with licensee personnel by the NRC inspector. In addition, an investigation was performed by NRC's Office of Investigations (OI), Region IV Field Office, during which additional interviews were conducted. This report describes the findings of the inspection and investigation.

Program Overview

Accurate NDE & Inspection, LLC (Accurate) is a medium-sized nondestructive testing company with its corporate office located in Broussard, Louisiana. Accurate is authorized to conduct industrial radiographic operations under their State of Louisiana radioactive materials license (LA-10207-L01). Accurate is also authorized to conduct industrial radiographic operations in offshore Federal waters in NRC jurisdiction under the authority of a general license pursuant to the provisions of 10 CFR 150.20. (Section 1)

Inspection Findings

- The licensee failed to maintain information that was required by the Commission's regulations to be complete and accurate in all material respects, as required by 10 CFR 30.9. Specifically, information maintained by the licensee regarding documented personnel exposures, as required by 10 CFR 34.47 and 34.83, was inaccurate for radiographic operations and source retrieval activities performed on March 15, 2010. (Section 4)

- A radiographer performed radiographic operations without wearing a personnel dosimeter, as required by 10 CFR 34.47, on March 15, 2010. (Section 4)

- The licensee failed to perform an adequate radiation survey of a radiographic exposure device when the device was placed into storage on March 15, 2010, to ensure that the sealed source was in its fully shielded position, as required by 10 CFR 34.49. (Section 4)

- The licensee failed to report the loss of a sealed source of iridium-192 immediately after the licensee discovered that the source was lost or missing, as required by 10 CFR 20.2201. (Section 4)

- A radiographer attempted to retrieve a sealed source of iridium-192 after it became disconnected from the drive cable, even though the licensee's operating procedures stated that radiographers were not to attempt to retrieve a disconnected source on their own. Because the licensee's Agreement State license requires the licensee to follow its operating procedures, the licensee failed to comply with the terms of its Agreement State license as required by 10 CFR 150.20(b)(5). (Section 4)

Corrective Actions

- Short-term corrective actions for these apparent violations included training provided to the radiography staff by the Radiation Safety Officer (RSO) on operating procedures specific to source disconnect events. (Section 5)

- The licensee posted the platform with a warning plaque stating that a radioactive source was lost below the platform. (Section 5)

- Long-term corrective actions for these apparent violations are not known at this time. (Section 5)

REPORT DETAILS

1 Program Overview (87121)

1.1 Inspection Scope

The inspector reviewed Accurate's NRC Form 241 application, supporting documents, and records maintained by the licensee pertaining to the lost source event that occurred onboard the Merit Energy platform on March 15, 2010. Collectively, these documents described the licensee's radiation safety program as it pertained to industrial radiography activities in offshore Federal waters. Interviews with licensee personnel involved in the lost source event were also conducted by the inspector, and additional interviews were conducted as part of the OI investigation.

1.2 Observations and Findings

Accurate is a medium-sized nondestructive testing company with its main office located in Broussard, Louisiana. Accurate is authorized to conduct industrial radiography operations under their State of Louisiana Radioactive Materials License LA-10207-L01. Accurate is also authorized to conduct radiographic operations in offshore Federal waters under the authority of a general license authorized pursuant to the provisions of 10 CFR 150.20.

2 Event Chronology (87103, 1301, 87121)

2.1 Inspection Scope

The NRC inspector conducted interviews with licensee personnel, reviewed procedures and representative records, and inspected equipment used on the day of the lost source event. These inspection activities were conducted in an effort to reconstruct the events surrounding the loss of a sealed source of iridium-192 that occurred on the Merit Energy platform in the Gulf of Mexico on March 15, 2010. Additional interviews were conducted by OI. This chronology is based on facts obtained during both the inspection and the OI investigation.

2.2 Observations and Findings

The following is a sequence of events that led up to the loss of a 7-curie sealed source of iridium-192 on the Merit Energy platform on March 15, 2010. All times documented are central daylight time (CDT).

- March 14, 2010, at approximately 6 a.m.: Exposure device (SPEC 150, SN 814) was removed from storage at main office in Broussard, Louisiana, to transport it to the work location.

- March 14, 2010, at approximately 11 a.m.: Accurate's crew, consisting of two radiographers, arrived with exposure device at the Merit Energy platform and placed the

device in the storage room on the platform. Radiographers worked with ultrasonic testing (a type of nondestructive testing without the use of a source of radiation) until approximately 11 p.m.

- March 14, 2010, just before midnight: Radiographers removed the exposure device from storage and began setting up for industrial radiographic operations. During this time, Radiographer 1 stated that a misconnect test was performed satisfactorily when the drive cable was connected to the sealed source assembly (also known as a "pigtail").

- March 15, 2010, just after midnight: Radiographer 1 cranked out the sealed source for a test shot, and the pigtail became disconnected from the drive cable. Radiographer 1 stated that he realized the source was disconnected when he approached the shot location and his survey instrument was off scale high. Radiographer 1 then attempted to crank the drive assembly back out and in, to see if the source would retract, with no success. Radiographer 1 stated during interviews that the guide tube was straight out from the exposure device and was not bent or kinked. This was corroborated by a physical inspection of the guide tube by the inspector during a site visit to the licensee's main office on May 26, 2010.

- When Radiographers 1 and 2 realized that they could not get the sealed source back into the shielded position within the exposure device, Radiographer 2 began attempts to retrieve the source and, at some point during the event, Radiographer 1 contacted the main office. The details of the attempted source retrieval are not known, because there were conflicting stories of how it was performed. Radiographer 2 stated during an OI interview that he used a rope to lift the collimator to get the source back to the exposure device, then unscrewed the collimator from the guide tube and inserted a piece of tubing of smaller diameter into the guide tube, shoving the sealed source back into the fully-shielded position within the exposure device. At this point, the radiographers believed that the source had been returned to the fully shielded position because the survey meter was no longer reading off scale high. In an OI interview, Radiographer 1 stated that he also saw Radiographer 2 remove the guide tube from the camera and strike the exposure device on the deck at some point during the retrieval process.

- Radiographer 1 contacted the manager on duty back at the main office in Broussard, Louisiana, and informed him of the disconnected source and the source retrieval. The manager instructed the radiographers to ensure that the source was inside of the exposure device, then place it into storage until another exposure device could be sent out to them. The time was approximately 12:30 a.m. on March 15, 2010.

- The radiographers called back to the main office half an hour later to inform him that the exposure device was successfully placed into storage, as requested.

- The next morning, around 8 a.m., March 15, 2010, Accurate personnel delivered a replacement exposure device to the Merit Energy platform. Radiographer 2 and a third radiographer (Radiographer 3) finished the job with the new exposure device and the old crank-out assembly and guide tube and experienced no further problems. Radiographer 1 left the platform upon arrival of the new exposure device. After the job was finished, Radiographers 2 and 3 flew back to Intercoastal City, Louisiana, with both the replacement exposure device and the defective exposure device which had experienced

the source disconnect. They then drove to the main office and placed both exposure devices in the storage vault in Broussard, Louisiana. The time the exposure devices were placed into storage in the licensee's facility was approximately 8 p.m. on March 15, 2010.

- The next morning, on March 16, 2010, around 7 a.m., Accurate's RSO arrived at the main office. The RSO and one of the managers removed the defective exposure device from the storage vault. After a visual inspection of the exposure device, the RSO realized that the source was not in the device, as previously believed. The RSO then called the two radiographers involved with the source disconnect event and requested that they return to the main office with all of the equipment that they had used the night of the source disconnect. The radiographers arrived at the main office in about 30 minutes, after which the RSO performed radiation surveys of the equipment and the radiographer's vehicles in an attempt to locate the missing source. The source was not found.

- The RSO called Merit Energy and arranged to have a helicopter pick them up at the Merit Energy heliport in Intercoastal City, Louisiana. The RSO, Radiographer 1 and Radiographer 2 then drove to the heliport and performed radiation surveys around the heliport in an attempt to find the source, but did not find the source. The three Accurate employees boarded the helicopter at around 4 p.m., and flew to the Merit Energy platform, arriving at approximately 5:15 p.m.

- All three individuals (the RSO and Radiographers 1 and 2) performed radiation surveys on all three levels of the platform, including the helideck, dark room, work areas, and lift boat. The surveys were performed until 6:30 p.m., when the crew went to dinner and attended a safety meeting. The three Accurate employees resumed radiation surveys at 8:30 p.m., and did not find the source.

- On the morning of March 17, 2010, between 6 a.m. and 7:30 a.m., the entire platform was re-surveyed, still with no success. Accurate's personnel explained the situation to the platform workers and asked if they had seen the source. With no success at finding the lost source, Accurate's crew departed the platform at 9 a.m. As a result of the extensive surveys that had been conducted, Accurate's RSO came to the conclusion that the source had fallen through the deck grating and into the Gulf of Mexico during the source retrieval process. The crew did not observe the source fall through the grating, most likely because it was dark.

- The crew flew back to shore and returned to the main office in Broussard, Louisiana. At 1:35 pm on March 17, 2010, the RSO made a telephone notification to the NRC Headquarters Operations Center to report the lost radiography source.

3 Reenactment of the Lost Source Scenario (87103)

3.1 Inspection Scope

The inspector obtained training equipment and performed a reenactment of the event based on discussions with the licensee.

3.2 Observations and Findings

On May 27, 2010, the inspector visited a licensee's facility that had mock-up training devices similar to the one used during this lost source incident. The licensee had a SPEC-150 exposure device, complete with associated equipment, and a dummy sealed source assembly ("pigtail").

The inspector placed a disconnected pigtail inside the guide tube near the collimator end to replicate the source disconnect event. The inspector then raised the collimator upward in an attempt to move the pigtail into the exposure device, as Radiographer 2 stated he did. The inspector found that the pigtail stopped at the surface of the exposure device's outlet port, with only a small portion of the source assembly inside of the exposure device's internal S-tube configuration. As the guide tube was removed, the inspector observed that approximately 6 inches of the source assembly remained outside of the exposure device and in the guide tube. Even with repeated jarring, the majority of the source assembly remained outside of the exposure device within the guide tube.

During another reenactment, the inspector attempted to replicate the scenario described by Radiographer 2, where he stated that the pigtail fell out of the device when the device was tilted upward to remove the drive assembly from the back of the exposure device. During the reenactment, the inspector pushed the dummy pigtail into the front of the exposure device far enough to where it could not be seen from the front of the device's guide tube connection port, with the guide tube disconnected. With the guide tube disconnected, the inspector then tilted the exposure device upward from the back; the pigtail did not move out of the fully shielded position within the exposure device. The inspector then repeatedly jarred the exposure device against the floor, and the pigtail moved out of the fully shielded position within the exposure device, but failed to come completely out of the device. It moved a few inches toward the outlet port within the S-tube, but did not fall out of the device.

3.3 Conclusions

The inspector concluded that the sealed source could not have been returned to the fully shielded position within the exposure device by the force of gravity alone, as Radiographer 2 stated. (He stated that he used a rope to pick up the collimator and allow the source to return to the radiography exposure device by gravity.) Also, the inspector concluded that the sealed source could not have come out of the fully shielded position within the exposure device through the force of gravity alone, as described by Accurate in its 30-day written report to the NRC dated April 9, 2010.

The inspector concluded that the most likely scenario was that the sealed source assembly (pigtail) was never returned to the fully shielded position inside the exposure device, but remained in the guide tube, falling out of the guide tube when the guide tube was disconnected from the exposure device.

4 Inspection Findings (87103, 1301, 87121)

4.1 Inspection Scope

The inspector reviewed licensee documents related to the lost source event that occurred on the Merit Energy platform in offshore Federal waters on March 15, 2010. This documentation included daily radiation reports, records of personal dosimeter reports, and the licensee's 30-day written report describing the event. The inspector also interviewed Accurate's RSO, as well as the radiographers that were involved in the lost source event. The NRC's Office of Investigations conducted additional interviews of the RSO, the radiographers, and other persons directly involved in this event.

4.2 Observations and Findings

- 10 CFR 30.9(a) requires, in part, that information required by Commission regulation to be maintained by a licensee shall be complete and accurate in all material respects. 10 CFR 34.47(b) requires, in part, that direct reading dosimeters such as pocket dosimeters must be read and the exposures recorded at the beginning and end of each shift.

  The licensee requires that the pocket dosimeter readings at the beginning and end of each shift be recorded on the Daily Radiation Report. Radiographer 2 recorded a value of 30 millirem for the end of shift reading of Radiographer 1's pocket dosimeter on the Daily Radiation Report dated March 14, 2010 (which was the reading for the shift in which the source disconnect occurred). Radiographer 2 stated during OI interviews that he guessed at the pocket dosimeter exposure of Radiographer 1, instead of recording the actual dose because he (Radiographer 1) was not available to provide the actual dose from his pocket dosimeter on the day of the event. Radiographer 1 stated that he provided the value to Radiographer 2, but the 30 millirem value that Radiographer 2 recorded was incorrect. Therefore, Radiographer 2 recorded inaccurate information on the Daily Radiation Report dated March 14, 2010, by listing that Radiographer 1's end of shift pocket dosimeter reading was 30 millirem.

  This information, which was required by 10 CFR 34.83 to be maintained by the licensee, was not accurate. The licensee's failure to maintain accurate information as required by the regulation was identified as an apparent violation of 10 CFR 30.9(a). (150-00017/10-001)

- 10 CFR 34.47(a) states, in part, that the licensee may not permit an individual to act as a radiographer unless, at all times during radiographic operations, each individual wears, on the trunk of the body, a direct reading dosimeter, an operating alarm ratemeter, and a personnel dosimeter.

  The radiographer that attempted to perform the source retrieval (Radiographer 2) had a documented exposure of 1 millirem on his personnel dosimeter report for the month of March 2010. This radiographer not only performed the source retrieval on March 15, 2010, but continued to perform radiography later that day with the new exposure device brought out to the platform to replace the defective device. These activities would normally result in exposures greater than 1 millirem, and his documented pocket

dosimeter reading on the Daily Radiation Report stated 50 millirem. Further, Radiographer 2 stated in his OI interview that his rate alarm had been ringing when he was around the disconnected source, which means that he was in a 500+ millirem field during the time that he was attempting to retrieve the source. It is highly unlikely that the radiographer received an exposure of only 1 millirem (it should have been much higher). As a result, it appears that Radiographer 2 was not wearing his personnel dosimeter at all times during radiographic operations during that monitoring period.

This failure to wear a personnel dosimeter during the performance of radiographic operations on March 15, 2010, was identified as an apparent violation of 10 CFR 34.47(a). (150-00017/10-002)

- 10 CFR 34.49(c) states, in part, that the licensee shall conduct a survey of the radiographic exposure device with a calibrated radiation survey instrument whenever a radiographic exposure device is placed in a storage area, to ensure that the sealed source is in its shielded position.

  As indicated in their OI interviews, during the lost source incident, the radiographers thought they had returned the source to the fully shielded position because they surveyed the device and obtained an exposure reading about the same as they did before they started radiography activities (when the source was in the fully shielded position). However, as stated earlier, the source had actually fallen through the grating and into the Gulf of Mexico. In order to replicate the conditions, the inspector requested that the RSO perform a radiation survey of the same manufacturer and model number of the exposure device that was used during the lost source incident (SPEC-150) that contained a source as close to the same activity as possible. Using the same type of radiation survey instrument that was used the night of the lost source (NDS ND-2000), the RSO performed a survey of a SPEC-150 device with an 11-curie iridium-192 radiography source in the fully shielded position. The RSO determined the dose rate was approximately 8 millirem/hour, and the inspector confirmed this with his radiation survey instrument, which read approximately 9 millirem/hour.

  During their OI interviews, Radiographers 1 and 2 each stated that they had performed a survey of the exposure device, and that the survey showed a reading of approximately 2 millirem/hour. However, during the interview with Radiographer 2, he stated that his survey meter was likely set on the x10 scale instead of the x1 scale. He stated that the survey meter kept “pegging out” on the x1 scale, so he put it on the x10 scale. On the x10 scale, a reading of either 2 or 9 millirem per hour would have been at the low end of the scale and may not have been distinguishable at night. On the other hand, if the radiographers had placed their survey instrument on the x1 scale, then they likely would have been able to tell that the source was not inside the exposure device after the disconnect and attempted source retrieval. As a result, it appears that the radiographers did not perform an adequate survey to ensure that the sealed source was in its shielded position before placing the device in storage.

  This failure to perform an adequate survey of the radiographic exposure device when the device was placed in storage (immediately after the source was lost) was identified as an apparent violation of 10 CFR 34.49(c). (150-00017/10-003)

- 10 CFR 20.2201(a)(1)(i) requires, in part, that immediately after its occurrence becomes known, the licensee shall report by telephone any lost or missing licensed material in an aggregate quantity equal to or greater than 1,000 times the quantity specified in Appendix C to Part 20 under such circumstances that it appears to the licensee that an exposure could result to persons in unrestricted areas.

  As stated previously in the event chronology (Section 2.2), the licensee became aware that the source was lost or missing when the RSO performed a visual inspection of the exposure device at around 7 a.m. on the morning of March 16, 2010. The licensee then began a search for the missing source, which lasted until the next day; the RSO reported the source as lost to the NRC at 1:35 p.m. CDT on the afternoon of March 17, 2010, which was about a day and a half after discovering that the source was lost or missing.

  This failure to notify the NRC by telephone immediately after discovering that the sealed source was lost or missing was identified as an apparent violation of 10 CFR 20.2201(a)(1)(i). (150-00017/10-004)

- 10 CFR 150.20(a)(1) states, in part, that any person that holds a specific license from an Agreement State is granted a general license to conduct the same activity in offshore Federal waters, provided that the provisions of paragraph (b) of this section have been met. 10 CFR 150.20(b)(5) states, in part, that any person engaging in activities in offshore Federal waters under the general license provided in this section shall comply with all terms and conditions of the specific license issued by an Agreement State. Condition 21 of State of Louisiana Radioactive Materials License LA-10207-L01 requires, in part, that the licensee shall possess and use radioactive material in accordance with the procedures contained in the licensee's application dated February 18, 2009. Section 4.4.6 of the licensee's operating procedures states that radiographers are not to attempt to retrieve a disconnected source.

  As previously stated, during the early morning hours of March 15, 2010, the radiographers working on the Merit Energy platform were unable to crank the source back into the exposure device. After repeating the crank-out/crank-in evolution with no success, Radiographer 2 approached the collimator at the end of the source guide tube and unscrewed the collimator and end-cap from the end of the guide tube. Although there were conflicting stories regarding what happened next, the most likely scenario is that Radiographer 2 raised the collimator end of the guide tube so that the source would move down the guide tube by gravity closer to the exposure device. Radiographer 2 stated he then found a piece of metal tubing and pushed it down into the guide tube in an effort to shove the source into the exposure device. Sometime after this, Radiographer 1 stated that he observed Radiographer 2 remove the guide tube from the camera and strike the radiography exposure device on the deck (possibly to remove the crank-out assembly from the exposure device). Radiographer 2's actions were attempts to perform a source retrieval and, as a result of his actions, the source was lost.

  The radiographer's failure to follow the licensee's operating procedures (by attempting the source retrieval) on March 15, 2010, is a failure to comply with Condition 21 of State of Louisiana Radioactive Materials License LA-10207-L01 and was therefore identified as an apparent violation of 10 CFR 150.20(b)(5). (150-00017/10-005)

4.3 Conclusions

The inspector identified five apparent violations of NRC requirements, which involved the failures to: (1) maintain accurate information regarding personnel monitoring; (2) wear personnel dosimeters at all times while performing radiographic operations; (3) conduct a radiation survey when a radiographic exposure device is placed into storage; (4) immediately report the loss of a sealed source of radiation; and (5) comply with the provision in the licensee's Agreement State license that requires the licensee to follow its operating procedures, which prohibit radiographers from retrieving a disconnected source.

5 Corrective Actions (87103, 1301, 87121)

- Short-term corrective actions for these apparent violations included training provided to the radiography staff by the RSO on operating procedures specific to source disconnect events, as well as the posting of the platform with a warning plaque stating that a radioactive source was lost below the platform.

- Long-term corrective actions for these apparent violations are not known at this time.

6 Exit Meeting Summary

A final telephonic exit briefing was conducted with Accurate's President and RSO on June 23, 2011, to review the inspection findings as presented in this report. The licensee representatives acknowledged the inspector's findings. No proprietary information was identified.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Charles Brignac, President
Edward Stelly, Radiation Safety Officer
Jonathan Johnson, Manager on Call
Ryan Denais, Radiographer
Frank Gilbeau, Radiographer

INSPECTION PROCEDURES USED

87121	Industrial Radiography Programs
87103	Inspection of Materials Licensees Involved in an Incident
MC1301	Response to Radioactive Material Incidents

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

150-00017/10-001	APV	An apparent violation involving the failure to maintain accurate information on personnel monitoring required by NRC regulations
150-00017/10-002	APV	An apparent violation involving the failure to wear a personnel dosimeter while performing industrial radiographic operations
150-00017/10-003	APV	An apparent violation involving the failure to perform a radiation survey prior to placing a radiographic exposure device into storage
150-00017/10-004	APV	An apparent violation involving the failure to immediately report the loss of licensed material
150-00017/10-005	APV	An apparent violation involving the failure to comply with the terms of an Agreement State license that requires the licensee to follow its operating procedures, which prohibit radiographers from attempting to retrieve a disconnected source

Closed

None.

Discussed

None.

LIST OF ACRONYMS AND ABBREVIATIONS USED

Accurate	Accurate NDE & Inspection, LLC
ADR	alternate dispute resolution
CFR	*Code of Federal Regulations*
NRC	Nuclear Regulatory Commission
OI	NRC's Office of Investigations
PEC	predecisional enforcement conference
RSO	Radiation Safety Officer
APV	apparent violation

FACTUAL SUMMARY
OFFICE OF INVESTIGATIONS REPORT 4-2010-062

On March 8, 2011, the U.S. Nuclear Regulatory Commission's (NRC) Office of Investigations (OI), Region IV Field Office, completed an investigation into an event involving the loss of an iridium-192 radiography source during licensed activities conducted by Accurate NDE & Inspection, LLC (Accurate). Accurate holds Radioactive Materials License LA-10207-L01 issued by the Louisiana Department of Environmental Quality. At the time this event occurred, Accurate was conducting radiographic operations in offshore waters under a general NRC license pursuant to 10 CFR 150.20(a)(1)(iii).

During the night of March 14, 2010, and early morning hours of March 15, 2010, two Accurate employees (Radiographer 1 and Radiographer 2) were conducting radiographic operations in Federal waters off the coast of Louisiana. Radiographer 2 is no longer employed by Accurate. During the conduct of these operations, a radiography source became disconnected from the drive cable in the guide tube of the radiographic device being utilized. Section 4.4.6 of Accurate's operating procedures prohibits radiographers from attempting retrieval of a disconnected source. Contrary to Accurate's operating procedures, Radiographer 2 attempted to retrieve the source .

During an interview, Radiographer 2 stated that, when the source would not crank in, he picked up the guide tube and attempted to get the source back into the camera. Radiographer 2 also stated that he removed the collimator from the end of the guide tube and used a thin steel rod to try to push the source back into the camera. During his attempt to retrieve the source, the source fell through the grating on the deck of the platform into the Gulf of Mexico. Radiographer 2 admitted that he tried to get the source back into the camera without first contacting Accurate and that he was aware that he was not supposed to retrieve the source. Radiographer 2 also stated that in 2005, during his previous tenure with Accurate, a similar incident occurred and, during that incident he had called the office immediately and was given instructions on how to recover the source. Even if Radiographer 2 was authorized to attempt a source recovery during a previous event in 2005, he did not contact Accurate or obtain authorization to retrieve the disconnected source on March 15, 2010. Pursuant to 10 CFR 150.20(b)(5), Accurate is required to comply with the terms of its state license. Paragraph 21A of Accurate's Louisiana state license requires Accurate to follow its operating procedures. Therefore, Radiographer 2's actions appear to have placed Accurate in violation of 10 CFR 150.20(b)(5).

Additionally, 10 CFR 34.47(b) requires that direct reading dosimeters must be read and personnel exposures recorded at the beginning and end of each shift. Radiographer 2 was responsible for recording these readings on the Daily Radiation Report. Radiographer 1 stated his recorded dose for March 14, 2010, on the Daily Radiation Report, was not correct. Radiographer 1 stated that he provided his dosimeter reading to Radiographer 2 on March 14, 2010, but that Radiographer 2 must have entered a different number on the Daily Radiation Report. During a subsequent interview, Radiographer 2 admitted he did not know what Radiographer 1's true dose was for March 14, 2010, and estimated a number on the Daily Radiation Report for that shift. Therefore, the recorded value of Radiographer 1's dosimeter reading was not accurate. Because 10 CFR 34.83 requires Accurate to maintain records of the readings required by 10 CFR 34.47(b), Radiographer 2 appears to have caused Accurate to violate 10 CFR 30.9(a), which requires that information required by NRC regulations to be maintained by a licensee be accurate in all material respects.

As a result of the above, there is evidence that Radiographer 2 may have engaged in deliberate misconduct that caused Accurate to be in violation of 10 CFR 150.20(b)(5) and 10 CFR 30.9(a) by attempting to retrieve a radiography source contrary to Accurate's operating procedures and by documenting an inaccurate reading for the self-reading dosimeter on the March 14, 2010, Daily Radiation Report. Radiographer 2's attempted source retrieval may constitute a violation of 10 CFR 30.10(a)(1), which prohibits employees of licensees from engaging in deliberate misconduct that causes a licensee to be in violation of any regulation, and his documentation of an inaccurate dosimeter reading may constitute a violation of 10 CFR 30.10(a)(2), which prohibits an employee of a licensee from deliberately submitting to a licensee information he knows to be inaccurate in some respect material to the NRC.