INSPECTION PROCEDURE 87121

INDUSTRIAL RADIOGRAPHY PROGRAMS

PROGRAM APPLICABILITY: 2800

87121-01 INSPECTION OBJECTIVES

01.01 To determine if licensed activities are being conducted in a manner that will protect the health and safety of workers and the general public.

01.02 To determine if licensed programs are being conducted in accordance with U.S. Nuclear Regulatory Commission (NRC) regulations and requirements.

87121-02 INSPECTION REQUIREMENTS

This inspection procedure (IP) contains the standard requirements and guidance for inspections of licensees authorized to possess and use licensed material involved in industrial radiographic programs. The review of the licensed activities will be commensurate with the scope of the licensee's program. The inspector's evaluation of a licensee's program will be based on direct observation of work activities, interviews with workers, demonstrations by workers performing tasks regulated by NRC, and independent measurements of radiation conditions at the facility, rather than exclusive reliance on a review of records. If the main office is located in an Agreement State jurisdiction, the NRC inspection may include the main office location if needed to inspect its oversight of field office activities; and the inspection should be limited to the NRC license scope. However, if the inspector notices an apparent violation of Agreement State licensed activities when conducting the inspection, the inspector should immediately inform the licensee and the Agreement State. The inspector should use discretion in determining if a site visit to the main office (Agreement State jurisdiction) is necessary to complete the inspection.

Inspection Manual Chapter (IMC) 2800 provides the number of licensee locations that should be inspected based on the total number of licensee field stations. For licensees that use multiple locations for field stations (e.g. main office, field office), the inspector should consider the following criteria for selecting inspection locations: (1) risk significance of the operations performed at the location, (2) work location of the RSO in order to assess the RSO's oversight of the radiation safety program, and (3) field office locations that have not been inspected within the last five inspections using risk

significance of operations at a field office, in order to assess the licensee's entire program over several inspection cycles. The inspector should coordinate and interface with the licensee's primary RSO as part of every inspection. Furthermore, the inspector should take additional steps (e.g. request the temporary job sites schedule prior to the inspection, hold an inspection open until a temporary job site is available) to arrange an inspection at a temporary job site for licensees whose primary operations are conducted at temporary job sites and have not had a temporary job site inspection for the last three consecutive routine inspections.

The inspector should identify any ongoing radiography activities that the licensee may be conducting or planning to conduct in off-shore waters and identify the location and expected duration of the job(s). If any radiography activity off-shore is identified, an attempt should be made to conduct/schedule off-shore inspections. For inspections in off-shore waters, the staff should coordinate in advance with the Bureau of Safety and Environmental Enforcement (BSEE), who will arrange transportation to off-shore facilities based on availability.

The structure and the emphasis of the inspection will be on the following Focus Elements (FE) that ~~describe~~describes the outcomes of an effective industrial radiography radiation safety program:

02.01 ~~FE 1:~~ The licensee should control access to and prevent loss of licensed material so as to limit radiation exposure to workers and members of the public to values below 10 CFR Part 20 limits.

02.02 ~~FE 2:~~ The licensee should maintain shielding of licensed materials in a manner consistent with operating procedures and design and performance criteria for devices and equipment.

02.03 ~~FE 3:~~ The licensee should implement comprehensive safety measures to limit other hazards from compromising the safe use and storage of licensed material.

02.04 ~~FE 4:~~ The licensee should implement a radiation dosimetry program to accurately measure and record radiation doses received by workers or members of the public as a result of licensed operations.

02.05 ~~FE 5:~~ The licensee should provide radiation instrumentation in sufficient number, condition, and location to accurately monitor radiation levels in areas where licensed material is used and stored.

02.06 ~~FE 6:~~ The licensee should ensure that workers are:

a. knowledgeable of radiation uses and safety practices;
b. skilled in radiation safety practices under normal and accident conditions; and,
c. empowered to implement the radiation safety program.

02.07 ~~FE 7:~~ The licensee's management system should be appropriate for the scope of use and should ensure:

a. awareness of the radiation protection program;
b. that audits for ALARA practices are performed; and ,
c. that assessments of past performance, present conditions and future needs are performed and that appropriate action is taken when needed.

In reviewing the licensee's performance, the inspector should cover the period from the previous to current inspection. ~~Usually the inspector's evaluation will examine licensee activities back to the date of the previous inspection.~~ However, issues preceding the last inspection should be reviewed, if warranted by circumstances, such as incidents, repetitive violations, or high radiation exposures.

87121-03 INSPECTION GUIDANCE

General Guidance

The following inspection guidance is designed to assist the inspector in evaluating the performance of the licensee's radiation safety program. The guidance is organized by the individual focus elements described above. The timing and sequence of inspection activities are left to the inspector's discretion based on the circumstances and conditions at the time of the actual inspection. Furthermore, inspectors should not feel constrained by the guidance in this procedure. If an inspector obtains information that indicates that a problem may exist in an area within the NRC's jurisdiction that is not specifically addressed in this procedure, the inspector should redirect, or otherwise expend, inspection effort to address that problem.

Some of the requirement and guidance sections of this procedure instruct the inspector to "verify" the adequacy of certain aspects of the licensee's program. Whenever possible, verification should be accomplished through discussions, observations, and demonstrations.

An examination of the licensee's records should not be considered the primary part of the inspection program. Rather, observations of activities in progress, equipment, facilities and use areas, etc., will be a better indicator of the licensee's overall radiation safety program than a review of records. Records such as surveys, receipt and transfer of licensed materials, radiation surveys, quarterly inventory, leak tests, training, utilization logs, inspection and maintenance of the equipment, etc., should be examined randomly for compliance until the inspector is satisfied that the required records are being maintained and are complete. Other records that are more closely related to health and safety (such as personnel dose monitoring records and incident reports) should be examined in detail.

Common elements to all inspections include entrance and exit meetings with appropriate licensee management, including the radiation safety officer (RSO), observations of facilities and work in progress, independent confirmatory surveys, and the evaluation of program scope and any special license conditions. Specific guidance regarding these common elements can be found in IMC 2800.

Each of the following areas should be reviewed during each inspection of all industrial radiography licensees.

Specific Guidance

03.01 FE-1:The licensee should control access to and prevent loss of licensed material so as to limit radiation exposure to workers and members of the public to values below 10 CFR Part 20 limits.

a. Security. If the licensee is in possession of aggregated category 1 or category 2 quantities of radioactive material, verify that the licensees are effectively implementing the security requirements in 10 CFR Part 37. IP 87137 contains the requirements and guidance for security inspections for licensees possessing category 1 and 2 quantities of radioactive material. If the licensee possesses quantities below the aggregated category 2 quantities of radioactive material, ~~T~~through direct observation and licensee staff interviews, determine that all entrances to radiographic facilities are normally closed, locked or otherwise secured to prevent unauthorized entry. This should include main facility gates, main building entrances, doors to radiographic storage facilities, etc.

1. If any entrance or area are found to be unsecured, determine, through questioning of licensee staff, the reason for the area or entrance being unsecured. Determine if the licensee failed to follow established procedures in securing the area or if additional training of staff is needed. Determine if the licensee's facility is configured to separate working areas from unrestricted areas.

2. If entrances or other areas are found to be unsecured, examine areas where radioactive materials are used and stored. Storage areas should be locked and have limited and controlled access. Radioactive material use areas should be under constant surveillance or physically secured.

b. Facilities. Through direct observation and licensee staff interviews, verify that any permanent radiographic installation is configured in accordance with the design and performance requirements found in 10 CFR Part 34. Specifically, verify that the facility has an operable independent entrance control or visible-audible alarm system pursuant to 10 CFR 34.33. Observe staff tests of the entrance controls and/or radiation warning signals, to confirm operability during the inspection.

Verify that permanent radiographic facilities are shielded so that the radiation levels in adjacent areas, including the roof, do not exceed 0.02 millisievert (mSv) (2 millirem [mrem]) in any 1 hour. This evaluation should consider the maximum allowable source quantity and any other limitations on positioning within the facility.

c. Receipt and Transfer of Licensed Material. Through observation and interviews, verify that the licensee receives packages and makes transfers of licensed material in accordance with NRC and applicable U.S. Department of Transportation (DOT) regulations and license conditions. Verify that the receipt and transfer of aggregated category 1 and category 2 quantities of radioactive material are made in accordance with applicable 10 CFR Part 37 requirements. Through discussions with licensee personnel, determine how the licensee ensures that transfers are made to authorized recipients. Focus on how the licensee receives packages, opens packages, and how and when package radiation surveys are performed (including wipe tests). Also determine what actions the licensee takes (or should take) when surveys reveal packages that are contaminated in excess of specified limits, and/or radiation levels that are higher than expected. If packages arrive during the course of an inspection, the inspector should, when practical, observe personnel performing the package receipt surveys.

d. Physical Inventory. Through interviews and review of records, verify that, as required by 10 CFR 34.29(a), the licensee conducts quarterly physical inventories to account for all licensed material received and possessed under the license. Verify that inventory records are maintained in accordance with 10 CFR 34.69. Verify that sealed sources, and radiographic exposure devices used by the licensee are in accordance with sealed source and device (SS&D) registrations sheets issued by NRC or an Agreement State. In order to make an assessment in this area, the inspector may ask the licensee how they ensure that they only use registered sources and devices. If practical, the inspector should verify that the inventory includes all radiographic exposure devices and storage containers containing depleted uranium and calibrators used for calibrating survey instruments.

e. Material Security and Control. If the licensee is in possession of aggregated category 1 and 2 quantities of radioactive material, verify that the licensees are effectively implementing the security requirements in 10 CFR 37. IP 87137 contains the requirements and guidance for security inspections for licensees possessing category 1 and 2 quantities of radioactive material. If the licensee possesses quantities below the aggregated category 2 quantities of radioactive material, e~~E~~xamine areas where radioactive materials are stored. Storage areas should be locked and have limited and controlled access. Radiographic exposure devices and storage containers must be physically secured to prevent access or removal by unauthorized personnel. Transport packages (including overpacks) containing licensed material must be locked and physically secure in the transport vehicle.

The inspector should make every reasonable effort to perform a "field inspection" at a temporary job site of the licensee (e.g. request the temporary job sites schedule prior to the inspection, hold an inspection open until a temporary job site is available). This inspection should be unannounced. If possible, make some of the observations of the licensee's operations before

announcing your presence. During the field inspection, verify that the boundaries of the restricted area are controlled and posted; the radiation levels at the boundary of the restricted area do not exceed 0.02 mSv (2 mrem) in any 1 hour; and that the operations are conducted by at least two qualified individuals. Ask the licensee how they ensure that the radiation level limits (2 mrem in any 1 hour) are complied with, and make an assessment of the adequacy of the methods. Verify that the high radiation area is under constant surveillance, as required by 10 CFR 34.51.

At job sites where other workers are present, interview them to determine their understanding of the licensee's access control. Although these workers may not have or need any knowledge of the licensee's operations, if they were informed of the licensee's operations, this would be an indication of the licensee's good safety practices. Inspectors should keep in mind that, as non-licensees, such persons have no obligation to cooperate with the NRC.

f. Area Surveys. The inspector should verify that radiation levels at the boundary of the restricted area do not exceed 0.02 mSv (2 mrem) in any one hour. This will require the inspector to determine the instantaneous exposure rate and the number of radiographic exposures performed by the licensee. The inspector may ask the licensee to spot-check radiation levels in selected areas, using the licensee's own instrumentation. However, the inspector should use NRC's instruments for independent verification of the licensee's measurements. The inspector should use a survey instrument that has been calibrated within the last 6 months. This will enhance the credibility of the inspector's survey results if there is any disagreement between the readings obtained from the licensee's instruments and the inspector's (NRC's). Ensure that the licensee's survey meters are operational and have been calibrated within the last 6 months.

The inspector should verify that the radiographer or radiographer's assistant performs a survey of the exposure device and guide tube after each exposure of the source. The survey must be sufficient to confirm that the source has returned to its shielded position. If practical, observe how licensee conducts surveys, to determine the adequacy of surveys. (See Section 03.05~~FE 5~~)

g. Leak Tests. Through interviews with licensee staff and review of records, verify that required leak tests are performed at the required interval. Determine if the licensee exchanges or returns their iridium-192 sources to the vendor less than six months from the date that they were received, negating the need to perform periodic (six months) leak tests.

1. If the licensee performs leak tests, verify that the wipe of a sealed source is taken from the nearest accessible surface to the sealed source where contamination might accumulate (i.e., the point on the camera or source exchanger where the guide tube or transfer tube connects) and at intervals not to exceed 6 months.

2. Verify that devices containing depleted uranium are leak tested annually, to verify the integrity of the "s" tube.

3. The licensee should verify that the licensee's leak test analyses (or that of it's leak test services vendor) has sufficient sensitivity to measure 1853 Becquerels (0.005 microcurie) for each type of isotope present on its license. Through discussions with licensee personnel and/or review of pertinent records, determine if the licensee had a leaking source or indication that the integrity of any "s" tubes was compromised. If leak test results show contamination in excess of the regulatory limits, verify that the licensee made appropriate notifications, evaluations, and removed the source and/or device from service.

h. Waste Storage and Disposal. Determine if the licensee possesses any industrial radiographic sources or other licensed sources that have been removed from service. Verify that the sources are stored and controlled in a secure and safe manner, and that radiation levels in unrestricted areas surrounding the storage area do not exceed the limits of 10 CFR 20.1301, "Dose Limits for Individual Members of the Public."

In the rare case where a licensee may have transferred a source to a burial site for offsite disposal, review the licensee's procedures and records to verify that each shipment is accompanied by a shipment manifest that includes all the required information. Also review the licensee's procedures and records to verify that each package intended for shipment to a licensed land disposal facility is labeled, as appropriate, to identify it as Class A, B, or C waste in accordance with the classification criteria of 10 CFR 61.55 [Subsection III.A.2 of Appendix G to Part 20].

i. Incidents and Unusual Occurrences. Review and evaluate any incident or unusual occurrence that took place since the last inspection. Verify if incidents were required to be reported, and, if so, that proper reporting procedures were followed. For incidents or unusual occurrences not required to be reported, determine that the licensee performed sufficient investigation to identify the cause of the incident, and took appropriate corrections to prevent recurrence of the situation leading to the incident or unusual occurrence.

03.02 FE-2: The licensee should maintain shielding of licensed materials in a manner consistent with operating procedures and design and performance criteria for devices and equipment.

a. Equipment. Through interviews with key licensee personnel, verify that the types and quantities possessed by the licensee are within any applicable license limits (including SS&D registry limits) and that the licensee is using approved combinations of sources and devices. Verify that all sealed sources (source assemblies), radiography devices (cameras), and source changers used by the licensee (unless specifically exempted) meet 10 CFR 34.20 requirements. Confirm that licensees are aware that associated equipment needs to comply

with 10 CFR 34.20. Refer to Regulatory Issue Summary 2005-10, "Performance-Based Approach for Associated Equipment in 10 CFR 34.20," (ML051590049) for additional information about acceptable methods to demonstrate that associated equipment complies with 10 CFR 34.20.

If the associated equipment appears to be modified or defective (defective equipment may be an indication of a modification), the inspector should verify whether or not the licensee had developed and implemented a testing program to demonstrate that modified components meet the performance criteria in 10 CFR 34.20. The inspector should alert the inspection supervisor who may extend the inspection and request an SS&D reviewer to evaluate the licensee's modification of the equipment. The expectation is that the design safety features of the industrial radiography system were not compromised by a replacement component of associated equipment that was modified by the licensee. Before using a modified system, the licensee is required to demonstrate that the replacement component meets the performance criteria in 10 CFR 34.20(a)(1) and (2), (b)(3), (c)(5) and (8), and (e).

b. Routine and Non-Routine Maintenance. The examination of the equipment must be conducted with the licensee personnel present. Through direct examination, assess the condition of licensee equipment, i.e. cameras, drive cables, source changers, etc. The examination should be sufficiently thorough to detect any of the following conditions: excessive or uneven wearing, fraying, unraveling, nicks, kinks or bends, loss of flexibility (abnormal stiffness), excessive grit or dirt, and stretching. The inspector may refer to Appendix O, "Daily Maintenance Check of Radiographic Equipment," NUREG-1556, Volume~~.~~ 2, "Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Industrial Radiography Licenses~~" (August, 1998)~~."

1. Should a defect, such as a damaged cable, be found in use, notify an appropriate licensee representative and then expand the scope of the examination. Monitor actions, if any, taken by the licensee in response to this discovery. Should the licensee elect to not take action, the inspector should consult with regional management.

2. Verify that the licensee has an inspection and maintenance program that complies with 10 CFR 34.31(a) and provides for visual and operability checks of radiographic equipment, survey meters, transport containers, associated equipment, and source changers before use and quarterly to ensure that the equipment is in good working condition.

3. Verify that the licensee's inspection and maintenance program ensures that the sources are adequately shielded, and that the required labeling is present.

The inspector should verify that the licensee is aware of the requirements contained in 10 CFR Part 21 and 10 CFR 34.101(a), and has procedures in place for reporting defects and certain equipment failures.

03.03 FE-3: The licensee should implement comprehensive safety measures to limit other hazards from compromising the safe use and storage of licensed material.

The inspector should be attentive to potential industrial safety hazards, for referral to the U.S. Department of Labor's Occupational Safety and Health Administration (see Inspection Manual Chapter 1007). The focus should be on potential non-radiological hazards personally observed or brought to the inspector's attention by licensee staff.

a. Operational Limits. Verify that industrial radiography devices (and sources) are used in accordance with any operational limits described in the applicable SS&D sheet. Through observation and discussions with the licensee, assess that: (1) storage conditions for the devices that should be protected from fire and the elements, (2) package integrity is appropriately maintained, and that (3) controls are in effect to minimize the risk from other hazardous materials.

b. Temporary Job Site Hazards. During inspections of licensed activities at temporary job sites, verify that licensee personnel ensure that devices are protected from heavy construction equipment, welding equipment, high voltage lines, and other industrial hazards.

c. Fire Protection. Materials licensees are not required by NRC regulations to implement a fire protection program. However, in many cases, the risk posed to radiological safety by fires is comparable to or exceeds the risk from other events involving licensed activities. Determine if licensees have a plan in place for preventing fires and combating fires that might occur. Any perceived problems/deficiencies (i.e., improper storage of combustible or flammable material, fire extinguishers out of service, lack of fire alarm or detection system, lack of fire suppression system) noted by the inspector should be brought to the licensee's attention and discussed with regional management. Proper fire protection systems can be evidenced by the licensee's involvement with the local fire department.

d. Transportation. Through direct observation, verify that the licensee properly transports radiographic devices. Examine packages (including overpacks) for proper labeling, review associated certification documentation. Examine vehicles for proper blocking and bracing of shipping containers. Verify that shipping papers are complete and available. Survey packages and vehicles to verify compliance with 10 CFR Part 71 and U. S. Department of Transportation (DOT) regulations for transportation of radioactive materials.

e. Through interviews of licensee staff, determine if there were any incidents required to be reported to the DOT. For further inspection guidance, refer to IP 86740, "Inspection of Transportation Activities." Inspectors should also refer to "Hazard Communications for Class 7 (Radioactive) Materials." These field reference charts, related to hazard communications for transportation of radioactive materials, are useful field references for determining compliance with

the transportation rules on labeling, placarding, shipping papers, and package markings. They also contain references to the DOT regulatory requirements.

03.04 FE-4: The licensee should implement a radiation dosimetry program to accurately measure and record radiation doses received by workers or members of the public as a result of licensed operations.

A radiation dosimetry program includes all of the licensee's activities that measure the radiation dose to workers and members of the public as the result of licensed activities. These activities would include for example, the measurement of quantities of licensed materials present, radiation and contamination levels, and the concentration of licensed materials in effluent streams.

a. Through observation, verify that personnel dosimetry devices (film badges, TLDs, or OSDs) are worn by appropriate licensee personnel, including all radiographers and radiographer's assistants. Also verify that direct reading dosimeters and alarm ratemeters are also worn by appropriate personnel. Note that alarm ratemeters are not required to be worn when radiography is being performed at permanent radiographic installations. Dosimetry devices appropriate to the type, energy of emitted radiation, and the anticipated radiation fields, must be issued to licensee personnel. Verify that any dosimeters, that require processing to determine the radiation dose, are processed by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited processor.

b. Verify that, pursuant to 10 CFR 19.13(b), the licensee advises each worker annually of the worker's dose as shown in records maintained by the licensee pursuant to the provisions of 10 CFR 20.2106, "Records of individual monitoring results." Verify that this has been done by asking workers and management if the written report requiring this information has been provided to each of them within the last year. The report must include external doses from routine operations, accidents, and emergencies. The report to the individual must contain all of the information required in 10 CFR 19.13(a).

   Verify that, pursuant to 10 CFR 20.2206(c), the licensee submits annual reports of individual monitoring, on or before April 30 of each year (covering the previous year) to the REIRS Project Manager by an appropriate method listed in 10 CFR 20.1007 or via REIRS Web site at http://www.reirs.com.~~, Office of Nuclear Regulatory Research.~~

c. Verify that an evaluation has been performed that demonstrates that the use and storage of sealed sources will not likely result in exposures to members of the public or radiation levels in unrestricted areas that are in excess of the regulatory limits. For storage areas that are located adjacent to unrestricted areas, licensees must ensure (through measurement or calculation) that doses in the unrestricted areas do not exceed 2 millirem (mrem) in any one hour or 100 mrem in a year to the maximally exposed member of the public.

03.05 FE-5: The licensee should provide radiation instrumentation in sufficient number, condition, and location to accurately monitor radiation levels in areas where licensed material is used and stored.

a. Through observation, verify that survey instrumentation has the appropriate range of use. Also verify that the survey instruments are properly calibrated at 6-month intervals. Verify that all survey instruments, pocket dosimeters, and alarming rate meters, in use, have current calibrations. The technical adequacy of calibration procedures at facilities that perform their own calibrations should be examined. Verify that the licensee performs an appropriate operability check before use on each day the equipment is used.

b. If the licensee is authorized to both collect and analyze leak test samples, determine if the type of counting equipment is appropriate for the samples being analyzed and the sensitivity required. Also determine if the laboratory instrumentation is calibrated for the appropriate geometries of the samples to be analyzed and is routinely checked for proper operation. The licensee should maintain calibration records, control charts, and maintenance and repair records, to demonstrate proper operation of laboratory instrumentation.

03.06 FE-6: The licensee should ensure that workers are knowledgeable of radiation uses and safety practices; skilled in radiation safety practices under normal and accident conditions; and empowered to implement the radiation safety program.

a. Certification. Through review of records, verify that radiographers are certified by a recognized certifying entity. Ask to see the radiographer's certificate, or verify through other appropriate means that all radiographers, observed performing in that role are, in fact, certified.

b. General Training. Interview one or more radiographers and/or radiographers' assistants to determine that they possess the adequate knowledge and understanding of the licensee's operating and emergency procedures. The interviews should include discussions about actual or hypothetical emergency conditions in order to assess the worker's response to such conditions. Whenever practical, observe licensed activities in progress to assess the worker's understanding of the radiation protection requirements associated with their assigned activities.

Verify that all industrial radiography personnel understand the mechanism for raising safety concerns and the proper response to warnings made in the event of any unusual occurrence or malfunction that may involve exposure to radiation and radioactive material. The workers should also be informed of the pertinent provisions of NRC regulations and the license, and the requirement to notify management of conditions observed that may, if not corrected, result in a violation of NRC requirements.

1. If the licensee provides their own training, determine that instructors who provide classroom training to individuals in the principles of radiation and

radiation safety have knowledge and understanding of the principles beyond those obtainable in a course similar to the one given to prospective radiographers.

2. Individuals who provide instruction in the hands-on use of radiography equipment should be qualified radiographers with at least 1 year of experience in performing radiography or possess a thorough understanding of the operation of radiographic equipment (e.g., manufacturers' service representatives).

Observe related activities (i.e., transportation of licensed materials, surveys and equipment checks, and maintenance activities) and interview personnel to assure that appropriate training was actually received by these individuals. Note that if a radiographer or radiographer's assistant has not participated in an industrial radiographic operation for more than 6 months, they must demonstrate knowledge of training requirements by a practical examination, before these individuals can participate in a radiographic operation. Verify that radiographers understand that they must directly supervise radiographic operations and that radiographers' assistants are aware that they can operate radiographic equipment only under the direct supervision (direct observation) of radiographers.

Verify that licensees are performing refresher training, for radiographers and radiographers' assistants, at least every 12 months.

c. Operating and Emergency Procedures. Verify that licensee personnel are knowledgeable of the operational procedures by observing the performance of tasks at selected work stations and by a comparison of their performance with established procedures. Also examine the licensee's emergency procedures to determine that these procedures are as approved by or described to NRC. Through discussions with workers, verify that licensee personnel understand and implement the established procedures and are aware of procedural revisions.

Some licensees may have agreements with other agencies (i.e., fire, law enforcement, and medical organizations) regarding response to emergencies. Discuss with the licensee's representatives what has been done to ensure that agencies (involved in such agreements) understand their roles in emergency responses.

d. Posting and Labeling. Verify that proper caution signs are being used at access points to areas containing licensed materials, radiation areas, and high radiation areas. (Note: The exemptions under 10 CFR 20.1903 do not apply to radiographic operations.) Also spot-check labeling on packages or other containers to determine that proper information (e.g., radionuclide, quantity, and date of measurement) is recorded.

Verify that storage areas, radiation areas, and high radiation areas at temporary job sites are conspicuously posted as required. Depending on the associated hazard and licensing requirements, controls may include tape, rope, or structural barriers to prevent access into the restricted area.

Examine locations where notices to workers are posted. Applicable documents, notices, or forms should be posted in a sufficient number of places to permit individuals engaged in licensed activities to observe them on the way to or from any particular licensed activity location to which the postings would apply.

03.07 FE-7: The licensee's management system should be appropriate for the scope of use and should ensure awareness of the radiation protection program; that audits for ALARA practices are performed; and that assessments of past performance, present conditions, and future needs are performed, and that appropriate action is taken when needed.

The NRC holds the licensee responsible for the radiation protection program; therefore, it is essential that strong management controls and oversight exist to ensure that licensed activities are conducted properly. Management responsibility and liability are sometimes under emphasized or not addressed in applications and are often poorly understood by licensee employees and managers. Senior management should delegate to the RSO sufficient authority, organizational freedom, and management prerogative to communicate with and direct personnel regarding NRC regulations and license provisions and to terminate unsafe activities involving byproduct material.

Through observations, interviews and the review of selected records, determine that senior licensee management is fulfilling its responsibility of ensuring the effective operation of the radiation safety program. Specific areas of management focus should include:

- Maintaining awareness of significant events such as the loss or theft of licensed materials.
- Maintaining radiation safety, security and control of radioactive materials, and compliance with regulations. (including 10 CFR Part 37)
- Committing adequate resources (including space, equipment, personnel, time, and, if needed, contractors) to the radiation protection program to ensure that members of the public and workers are adequately protected from radiation hazards and that compliance with regulations is maintained.
- Obtaining the NRC's prior written consent before transferring control of the license;
- Notifying the appropriate NRC regional administrator in writing, immediately following filing of petition for voluntary or involuntary bankruptcy (10 CFR 30.34(h)).
- Assuring the appropriate response, when applicable, to generic communications from the NRC.
- Assuring that adequate provisions have been made to fund the safe and effective decommissioning of licensee facilities. (10 CFR 30.35)

- Notifying the NRC of the decision to discontinue licensed activities or to decommission a facility in which licensed activities took place. (10 CFR 30.36)
- Notifying the NRC of defects or other radiation safety equipment malfunctions in accordance with the requirements of 10 CFR, Part 21.
- Maintaining awareness of issues and measures to ensure worker performance and safety are not being compromised due to safety significant human performance issues.

a. RSC (where required or used). Through the review of records, and interviews of the RSO and RSC members, determine that the committee is made up of a representative from each type of program area, the RSO, and a representative from management. If practical, attend and observe the conduct of an RSC meeting. Review meeting minutes (and interview selected committee members when practical) to determine the committee's effectiveness. Determine that the RSC meets at the required frequency as specified in the license application, other commitment documents, or in a specific license condition. Topics of discussion during committee meetings should include ALARA reviews, incidents, generic communications, authorized users and uses, waste issues, audits, etc.

Determine if the committee has been assertive in seeking out areas needing improvement, rather than just responding to events and information from outside sources. Determine whether the RSC has recommended any specific actions and assess the implementation of those recommendations. The inspector's review should be of sufficient depth and detail to provide an overall assessment of the committee's ability to identify, assess, and resolve issues. Also consider the effectiveness of the RSC to communicate the results of audits and trend analyses to appropriate personnel performing licensed activities.

b. RSO. Through the review of records, and interviews of the RSO and authorized users, verify that the RSO has been appointed by licensee management, identified on the license, and is responsible for implementing the radiation safety program. Determine, through interviews, that this individual is knowledgeable about the program, and ensures that activities are being performed in accordance with approved procedures and the regulations. Determine that, when deficiencies are identified, the RSO has sufficient authority, without prior approval of the RSC or licensee management, to implement corrective actions, including termination of operations that pose a threat to health and safety.

Determine that the knowledge and training of any radiation safety staff are commensurate with their assigned duties. Verify that the radiation safety staff levels, including numbers and types of positions, are as described in the license application.

1. If the inspector identifies high staff turnover or prolonged shortfalls in staffing levels, through interviews and observation determine if these shortfalls have had a negative impact on licensee performance.

2. If so, discuss these findings with the RSO and senior licensee management to determine the source of the staffing issues and the licensee's plans to address the deficiency. The issue should also be brought to the attention of regional management.

c. Audits. ~~–~~Through reviews of audit records and interviews, verify that the radiation safety program content and implementation is reviewed at least annually. The results of all audits must be documented in accordance with 10 CFR 20.2102(a)(2). Examine these records with particular attention to deficiencies identified by the licensee's auditors, and note any corrective actions taken as a result of deficiencies found.

1. If no corrective actions were taken, determine why the licensee disregarded deficiencies identified during audits.

2. Determine if the lack of corrective actions caused the licensee to be in non-compliance with regulatory requirements.

87121-04 REFERENCES

~~A listing of IMCs and IPs, applicable to the inspection program for materials licensees, can be found in IMC 2800. These documents are to be used as guidelines for inspectors in determining the inspection requirements for operational and radiological safety aspects of various types of licensee activities.~~

IMC 2800 – "Materials Inspection Program"

IMC 1220 – "Processing of NRC Form 241, "Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, and Offshore Waters," And Inspection of Agreement State Licensees Operating Under 10 CFR 150.2"

IMC 1007 – "Interfacing Activities Between Regional Offices of NRC and OSHA"

IP 86740 – "Inspection of Transportation Activities"

IP 87137– "10 CFR Part 37 Materials Security Programs"

NUREG 1556, Volume 2 – "Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Industrial Radiography Licenses," Revision 1

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END