TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 3 RADIATION PROTECTION
PART 12 LICENSES AND RADIATION SAFETY REQUIREMENTS FOR WELL LOGGING

20.3.12.1 ISSUING AGENCY: Environmental Improvement Board.
[20.3.12.1 NMAC - Rp, 20.3.12.1 NMAC, 6/30/2011]

20.3.12.2 SCOPE: The regulations in this part apply to all licensees who use sources of radiation for well logging service operations, radioactive markers or subsurface tracer studies in oil, gas, mineral, groundwater or geological exploration.
[20.3.12.2 NMAC - Rp, 20.3.12.2 NMAC, 6/30/2011]

20.3.12.3 STATUTORY AUTHORITY: Sections 74-1-9, 74-3-5, and 74-3-9 NMSA 1978.
[20.3.12.3 NMAC - Rp, 20.3.12.3 NMAC, 6/30/2011]

20.3.12.4 DURATION: Permanent.
[20.3.12.4 NMAC - Rp, 20.3.12.4 NMAC, 6/30/2011]

20.3.12.5 EFFECTIVE DATE: June 30, 2011, unless a later date is cited at the end of a section.
[20.3.12.5 NMAC - Rp, 20.3.12.5 NMAC, 6/30/2011]

20.3.12.6 OBJECTIVE:

A. This part prescribes requirements for the issuance of a license authorizing the use of licensed materials including sealed sources, radioactive tracers, radioactive markers and uranium sinker bars in well logging in a single well. This part also prescribes radiation safety requirements for persons using licensed materials in these operations. The provisions and requirements of this part are in addition to, and not in substitution for, other requirements of this chapter. In particular, the provisions of 20.3.1 NMAC, 20.3.3 NMAC, 20.3.4 NMAC and 20.3.10 NMAC apply to applicants and licensees subject to this part.

B. The requirements set out in this part do not apply to the issuance of a license authorizing the use of licensed material in tracer studies involving multiple wells, such as field flooding studies, or to the use of sealed sources auxiliary to well logging but not lowered into wells.
[20.3.12.6 NMAC- Rp, 20.3.12.6 NMAC, 6/30/2011]

20.3.12.7 DEFINITIONS: As used in this part, the following definitions apply.

A. "Energy compensation source" (ECS) means a small sealed source, with an activity not exceeding 100 microcuries (3.7 megabecquerels), used within a logging tool, or other tool components, to provide a reference standard to maintain the tool's calibration when in use.

B. "Field station" means a facility where radioactive sources may be stored or used and from which equipment is dispatched to temporary job sites.

C. "Fresh water aquifer" means a geologic formation that is capable of yielding fresh water to a well or spring.

D. "Injection tool" means a device used for controlled subsurface injection of radioactive tracer material.

E. "Irretrievable well logging source" means any sealed source containing licensed material that is pulled off or not connected to the wireline that suspends the source in the well and for which all reasonable effort at recovery has been expended.

F. "Licensed material" means byproduct, source, or special nuclear material received, processed, used or transferred under a license issued by the department under this chapter.

G. "Logging assistant" means any individual who, under the personal supervision of a logging supervisor, handles sealed sources or tracers that are not in logging tools or shipping containers or who performs surveys required by 20.3.12.14 NMAC.

H. "Logging supervisor" means the individual who uses licensed material or provides personal supervision in the use of licensed material at a temporary jobsite and who is responsible to the licensee for assuring compliance with the requirements of the department's regulations and the conditions of the license.

I. "Logging tool" means a device used subsurface to perform well logging.

J. **"Personal supervision"** means guidance and instruction by a logging supervisor, who is physically present at a temporary job site, who is in personal contact with logging assistants and who can give immediate assistance.

K. **"Radioactive marker"** means licensed material used for depth determination or direction orientation. For the purposes of this part, this term includes radioactive collar markers and radioactive iron nails.

L. **"Safety review"** means a periodic review provided by the licensee for its employees on radiation safety aspects of well logging. The review may include, as appropriate, the results of internal inspections, new procedures or equipment, accidents or errors that have been observed and opportunities for employees to ask safety questions.

M. **"Sealed source"** means any licensed material that is encased in a capsule designed to present leakage or escape of the licensed material.

N. **"Source holder"** means a housing or assembly into which a sealed source is placed for the purpose of facilitating the handling and use of the source in well logging operations.

O. **"Subsurface tracer study"** means the release of unsealed licensed material or a substance labeled with licensed material in a single well for the purpose of tracing the movement or position of the material or substance in the well or adjacent formation.

P. **"Surface casing for protecting fresh water aquifers"** means a pipe or tube used as a lining in a well to isolate fresh water aquifers from the well.

Q. **"Temporary job site"** means a location where licensed materials are present for the purpose of performing well logging or subsurface tracer studies.

R. **"Tritium neutron generator target source"** means a tritium source used within a neutron generator tube to produce neutrons for use in well logging applications.

S. **"Uranium sinker bar"** means a weight containing depleted uranium used to pull a logging tool toward the bottom of a well.

T. **"Well"** means a drilled hole, in which well logging may be performed. As used in this part, "well" includes drilled holes for the purpose of oil, gas, mineral, groundwater or geological exploration.

U. **"Well logging"** means all operations involving the lowering and raising of measuring devices or tools which may contain licensed material or are used to detect licensed materials in wells for the purpose of obtaining information about the well or adjacent formations which may be used in oil, gas, mineral, groundwater or geological exploration.

[20.3.12.7 NMAC - Rp, 20.3.12.7 NMAC, 6/30/2011]

20.3.12.8 **APPLICATION FOR A SPECIAL LICENSE:** A person, as defined in 20.3.1.7 NMAC, shall file an application in duplicate for a specific license authorizing the use of licensed material in well logging on a department prescribed form pursuant to 20.3.3.307 NMAC. The application must be sent to the department for review and approval.

[20.3.12.8 NMAC - N, 6/30/2011]

20.3.12.9 **SPECIFIC LICENSES FOR WELL LOGGING:** The department will approve an application for a specific license for the use of licensed material in well logging if the applicant meets the following requirements.

A. The applicant shall satisfy the general requirements specified in 10 CFR 30.33 for byproduct material, 10 CFR 40.32 for source material and in 10 CFR 70.23 for special nuclear material and in 20.3.3.308 NMAC and any special requirements contained in this part.

B. An application for a specific license of category 1 and category 2 quantities of radioactive material shall comply with 10 CFR 37. The licensee shall comply with 10 CFR 37 except as follows:

(1) any reference to the commission or NRC shall be deemed a reference to the department;

(2) 10 CFR 37.5 definitions of agreement state, byproduct material, commission and person shall not be applicable;

(3) 10 CFR 37.7, 10 CFR 37.9, 37.11(a) and (b), 10 CFR 37.13, 10 CFR 37.71, 10 CFR 37.105, and 10 CFR 37.107 shall not be applicable;

(4) for any reporting or notification requirements that the licensee must follow in 10 CFR 37.45, 10 CFR 37.57, 10 CFR 37.77(a) through (d), and 10 CFR 37.81, the licensee shall use the following address when applicable: New Mexico Environment Department/RCB, P.O. Box 5469, Santa Fe, NM 87502-5469 address information.

C. The applicant shall develop a program for training logging supervisors and logging assistants and submit to the department a description of this program which specifies the:

(1) initial training;

(2) on-the-job training;

(3) annual safety reviews provided by the licensee;

(4) means the applicant will use to demonstrate the logging supervisor's knowledge and understanding of and ability to comply with the department's regulations and licensing requirements and the applicant's operating and emergency procedures; and

(5) means the applicant will use to demonstrate the logging assistant's knowledge and understanding of and ability to comply with the applicant's operating and emergency procedures.

D. The applicant shall submit to the department written operating and emergency procedures as described in 20.3.12.12 NMAC or an outline or summary of the procedures that includes the important radiation safety aspects of the procedures.

E. The applicant shall establish and submit to the department its program for annual inspections of the job performance of each logging supervisor to ensure that the department's regulations, license requirements and the applicant's operating and emergency procedures are followed. Inspection records must be retained for three years after each internal inspection.

F. The applicant shall submit a description of its overall organizational structure as it applies to the radiation safety responsibilities in well logging, including specified delegations of authority and responsibility.

G. If an applicant wants to perform leak testing of sealed sources, the applicant shall identify the manufacturers and the model numbers of the leak test kits to be used. If the applicant wants to analyze its own wipe samples, the applicant shall establish procedures to be followed and submit a description of these procedures to the department. The description must include the:

(1) instruments to be used;

(2) methods of performing the analysis; and

(3) pertinent experience of the person who will analyze the wipe samples.

[20.3.12.9 NMAC- N, 6/30/2011; A, 06/13/2017; A, 02/14/2023]

20.3.12.10 RETRIEVAL OR ABANDONMENT OF SEALED SOURCES:

A. Agreement with well owner or operator.

(1) A licensee may perform well logging with a sealed source only after the licensee has a written agreement with the employing well owner or operator. This written agreement shall identify who will meet the requirements of Subsections B and C of this section and who will meet the following requirements:

(a) the radiation monitoring requirements of Subsection A of 20.3.12.15 NMAC shall be performed; and

(b) if the environment, any equipment or personnel are contaminated with licensed material, they shall be decontaminated before release from the site or release for unrestricted use.

(2) Recordkeeping. The licensee shall retain a copy of the written agreement for three[3] years after the completion of the well logging operation.

(3) A written agreement between the licensee and the well owner or operator is not required if the licensee and the well owner or operator are part of the same corporate structure or otherwise similarly affiliated. However, the licensee shall still otherwise meet the requirements of Subsections B and C of this section.

B. Retrieval of lodged sealed sources.

(1) If a sealed source becomes lodged in the well, a reasonable effort shall be made to recover it.

(2) A person may not attempt to recover a sealed source in a manner which, in the licensee's opinion, could result in its rupture.

C. Irretrievable sealed sources. If the sealed source is classified as irretrievable after reasonable efforts at recovery have been expended, the licensee shall implement the requirements of this subsection within 30 days.

(1) Each irretrievable well logging source shall be immobilized and sealed in place with a cement plug.

(2) The licensee shall implement means to prevent inadvertent intrusion on the source, unless the source is not accessible to any subsequent drilling operations.

(3) The licensee shall install a permanent identification plaque, constructed of long lasting material such as stainless steel, brass, bronze or monel, shall be mounted at the surface of the well, unless the

mounting of the plaque is not practical. The size of the plaque shall be at least 17 centimeters (seven inches) square and three millimeters (one-eighth inch) thick. The plaque shall contain:

(a) the word "caution";

(b) the radiation symbol (the color requirement in Subsection A of 20.3.4.427 NMAC need not be met);

(c) the date the source was abandoned;

(d) the name of the well owner or well operator, as appropriate;

(e) the well name and well identification number(s) or other designation;

(f) an identification of the sealed source(s) by radionuclide and quantity;

(g) the depth of the source and depth to the top of the plug; and

(h) an appropriate warning, such as, "do not re-enter this well."

D. A licensee may apply, pursuant to Subsection A of 20.3.1.107 NMAC, for department approval, on a case-by-case basis, of proposed procedures to abandon an irretrievable well logging source in a manner not otherwise authorized in this subsection.

[20.3.12.10 NMAC - Rp, 20.3.12.1203 NMAC, 6/30/2011]

20.3.12.11 TRAINING:

A. Logging supervisor. The licensee may not permit an individual to act as a logging supervisor until that person has met all of the following requirements:

(1) the person has completed training in the subjects outlined in Subsection E of this section;

(2) the person has received copies of, and instruction in:

(a) the department rules contained in the applicable sections of 20.3.4 NMAC, 20.3.10 NMAC and 20.3.12 NMAC;

(b) the department license under which the logging supervisor will perform well logging; and

(c) the licensee's operating and emergency procedures required by 20.3.12.12 NMAC;

(3) the person has completed on-the-job training and demonstrated competence in the use of licensed materials, remote handling tools and radiation survey instruments by a field evaluation; and

(4) the person has demonstrated understanding of the requirements in Paragraphs (1) and (2) of this subsection by successfully completing a written test.

B. Logging assistant. The licensee may not permit an individual to act as a logging assistant until that person has met the following requirements:

(1) the person has received instruction in applicable sections of 20.3.4 NMAC, 20.3.10 NMAC and 20.3.12 NMAC;

(2) the person has received copies of, and instruction in, the licensee's operating and emergency procedures required by 20.3.12.12 NMAC;

(3) the person has demonstrated understanding of the materials listed in Paragraphs (1) and (2) of this subsection by successfully completing a written or oral test; and

(4) the person has received instruction in the use of licensed materials, remote handling tools and radiation survey instruments, as appropriate for the logging assistant's intended job responsibilities.

C. The licensee shall provide safety reviews for logging supervisors and logging assistants at least once during each calendar year.

D. Recordkeeping. The licensee shall maintain a record on each logging supervisor's and logging assistant's training and annual safety review. The training records must include copies of written tests and dates of oral tests. The training records must be retained until three years following the termination of employment. Records of annual safety reviews must list the topics discussed and be retained for 3 years.

E. The licensee shall include the following subjects in the training required in Paragraph (1) of Subsection A of this section.

(1) Fundamentals of radiation safety including:

(a) characteristics of radiation;

(b) units of radiation dose and quantity of radioactivity;

(c) hazards of exposure to radiation;

(d) levels of radiation from licensed material;

(e) methods of controlling radiation dose (time, distance, and shielding); and

(f) radiation safety practices, including prevention of contamination, and methods of decontamination.

(2) Radiation detection instruments including:

(a) use, operation, calibration and limitations of radiation survey instruments;

(b) survey techniques; and

(c) use of personnel monitoring equipment.

(3) Equipment to be used including:

(a) operation of equipment, including source handling equipment and remote handling tools;

(b) storage, control and disposal of licensed material; and

(c) maintenance of equipment.

(4) The requirements of pertinent department regulations.

(5) Case histories of accidents in well logging.

[20.3.12.11 NMAC - Rp, 20.3.12.1214 and 20.3.12.1225 NMAC, 6/30/2011]

20.3.12.12 OPERATING AND EMERGENCY PROCEDURES: Each licensee shall develop and follow written operating and emergency procedures that cover the following topics:

A. the handling and use of licensed materials including the use of sealed sources in wells without surface casing for protecting fresh water aquifers, if appropriate;

B. the use of remote handling tools for handling sealed sources and radioactive tracer material except low-activity calibration sources;

C. methods and occasions for conducting radiation surveys, including surveys for detecting contamination, as required by Subsections C through E of 20.3.12.14 NMAC;

D. minimizing personnel exposure including exposures from inhalation and ingestion of licensed tracer materials;

E. methods and occasions for locking and securing stored licensed materials;

F. personnel monitoring and the use of personnel monitoring equipment;

G. transportation of licensed materials to field stations or temporary jobsites, packaging of licensed materials for transport in vehicles, placarding of vehicles when needed, and physically securing licensed materials in transport vehicles during transportation to prevent accidental loss, tampering or unauthorized removal;

H. picking up, receiving and opening packages containing licensed materials, in accordance with 20.3.4.432 NMAC;

I. for the use of tracers, decontamination of the environment, equipment, and personnel;

J. maintenance of records generated by logging personnel at temporary jobsites;

K. the inspection and maintenance of sealed sources, source holders, logging tools, injection tools, source handling tools, storage containers, transport containers and uranium sinker bars as required by 20.3.12.22 NMAC;

L. actions to be taken if a sealed source is lodged in a well;

M. notifying proper persons in the event of an accident; and

N. actions to be taken if a sealed source is ruptured including actions to prevent the spread of contamination and minimize inhalation and ingestion of licensed materials and actions to obtain suitable radiation survey instruments as required by Subsection B of 20.3.12.17 NMAC.

[20.3.12.12 NMAC - Rp, 20.3.12.1215 and 20.3.12.1218 NMAC, 6/30/2011]

20.3.12.13 PERSONNEL MONITORING:

A. The licensee may not permit an individual to act as a logging supervisor or logging assistant unless that person wears, at all times during the handling of licensed radioactive materials, a personnel dosimeter that is processed and evaluated by an accredited national voluntary laboratory accreditation program (NVLAP) processor. Each personnel dosimeter shall be assigned to and worn by only one individual. Film badges shall be replaced at least monthly and other personnel dosimeters replaced at least quarterly. After replacement, each personnel dosimeter shall be promptly processed.

B. The licensee shall provide bioassay services to individuals using licensed radioactive materials in subsurface tracer studies if required by the license.

C. Recordkeeping. The licensee shall retain records of personnel dosimeters required by Subsection A of this section and bioassay results for inspection until the department authorizes disposition of the records.

[20.3.12.13 NMAC - Rp, 20.3.12.1216 NMAC, 6/30/2011]

20.3.12.14 RADIATION SURVEYS:

A. The licensee shall make radiation surveys, including but not limited to the surveys required under Subsections B through E of this section, of each area where licensed materials are used and stored.

B. Before transporting licensed materials, the licensee shall make a radiation survey of the position occupied by each individual in the vehicle and of the exterior of each vehicle used to transport the licensed materials.

C. If the sealed source assembly is removed from the logging tool before departure from the temporary jobsite, the licensee shall confirm that the logging tool is free of contamination by energizing the logging tool detector or by using a survey meter.

D. If the licensee has reason to believe that, as a result of any operation involving a sealed source, the encapsulation of the sealed source could be damaged by the operation, the licensee shall conduct a radiation survey, including a contamination survey, during and after the operation.

E. The licensee shall make a radiation survey at the temporary jobsite before and after each subsurface tracer study to confirm the absence of contamination.

F. Recordkeeping. The results of surveys required under Subsections A through E of this section must be recorded and must include the date of the survey, the name of the individual making the survey, the identification of the survey instrument used, and the location of the survey. The licensee shall retain records of surveys for inspection by the department for 3 years after they are made.

[20.3.12.14 NMAC - Rp, 20.3.12.1221 NMAC, 6/30/2011]

20.3.12.15 RADIOACTIVE CONTAMINATION CONTROL:

A. If the licensee detects evidence that a sealed source has ruptured or licensed materials have caused contamination, the licensee shall initiate immediately the emergency procedures required by 20.3.12.12 NMAC.

B. If contamination results from the use of licensed material in well logging, the licensee shall decontaminate all work areas, equipment and unrestricted areas.

C. During efforts to recover a sealed source lodged in the well, the licensee shall continuously monitor, with an appropriate radiation detection instrument or a logging tool with a radiation detector, the circulating fluids from the well, if any, to check for contamination resulting from damage to the sealed source.

[20.3.12.15 NMAC - N, 6/30/2011]

20.3.12.16 LABELS, SECURITY AND TRANSPORT PRECAUTIONS:

A. Labels.

(1) The licensee may not use a source, source holder or logging tool that contains licensed material unless the smallest component that is transported as a separate piece of equipment with the licensed material inside bears a durable, legible and clearly visible marking or label. The marking or label must contain the radiation symbol specified in 20.3.4.427 NMAC, without the conventional color requirements, and the wording "Danger (or Caution) radioactive material."

(2) The licensee may not use a container to store licensed material unless the container has securely attached to it a durable, legible and clearly visible label. The label must contain the radiation symbol specified in 20.3.4.427 NMAC and the wording "Danger (or Caution), radioactive material, notify civil authorities (or name of company)."

(3) The licensee may not transport licensed material unless the material is packaged, labeled, marked and accompanied with appropriate shipping papers in accordance with regulations set out in 20.3.3.306 NMAC, incorporating 10 CFR Part 71.

B. Security precautions during storage and transportation.

(1) The licensee shall store each source containing licensed material in a storage container or transportation package. The container or package must be locked and physically secured to prevent tampering or removal of licensed material from storage by unauthorized personnel. The licensee shall store licensed material in a manner which will minimize danger from explosion or fire.

(2) The licensee shall lock and physically secure the transport package containing licensed material in the transporting vehicle to prevent accidental loss, tampering or unauthorized removal of the licensed material from the vehicle.

[20.3.12.16 NMAC - Rp, 20.3.12.1205, 20.3.12.1206, and 20.3.12.1212 NMAC, 6/30/2011]

20.3.12.17 RADIATION SURVEY INSTRUMENTS:

A. The licensee shall keep a calibrated and operable radiation survey instrument capable of detecting beta and gamma radiation at each field station and temporary jobsite to make the radiation surveys required by this part and by 20.3.4 NMAC. To satisfy this requirement, the radiation survey instrument must be capable of measuring 0.001 millisievert (0.1 millirem) per hour through at least 0.5 millisievert (50 millirems) per hour.

B. The licensee shall have available additional calibrated and operable radiation detection instruments sensitive enough to detect the low radiation and contamination levels that could be encountered if a sealed source ruptured. The licensee may own the instruments or may have a procedure to obtain them quickly from a second party.

C. The licensee shall have each radiation survey instrument required under this section calibrated:

(1) at intervals not to exceed six months and after each instrument servicing;

(2) for linear scale instruments, at two points located approximately one-third and two-third of full-scale on each scale; for logarithmic scale instruments, and mid-range of each decade, and at two points of at least one decade; and for digital instruments, at appropriate points; and

(3) so that an accuracy within plus or minus 20 percent of the calibration standard can be demonstrated on each scale.

D. Recordkeeping. The licensee shall retain calibration records for a period of three years after the date of calibration for inspection by the department.

[20.3.12.17 NMAC - Rp, 20.3.12.1207 NMAC, 6/30/2011]

20.3.12.18 LEAK TESTING OF SEALED SOURCES:

A. Testing and recordkeeping requirements. Each licensee who uses a sealed source of radioactive material shall have the source tested for leakage periodically. Records of leak tests results shall be kept in units of microcuries and maintained for inspection by the department for three years after the leak test is performed.

B. Method of testing. The wipe of a sealed source shall be performed using a leak test kit or method approved by the department, NRC or an agreement state. The wipe sample shall be taken from the nearest accessible point to the sealed source where contamination might accumulate. The wipe sample shall be analyzed for radioactive contamination. The analysis shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample and shall be performed by a person approved by the department, NRC or an agreement state to perform the analysis.

C. Test frequency.

(1) Each sealed source (except an energy compensation source (ECS)) shall be tested at intervals not to exceed six months. In the absence of a certificate from a transferor that a test has been made within the 6 months before the transfer, the sealed source may not be used until tested.

(2) Each energy compensation source (ECS) that is not exempt from testing in accordance with Subsection E of this section shall be tested at intervals not to exceed three[3] years. In the absence of a certificate from a transferor that a test has been made within the three years before the transfer, the energy compensation source (ECS) may not be used until tested.

D. Removal of leaking source from service.

(1) If the test conducted pursuant to Subsections A and B of this section reveals the presence of 0.005 microcurie (185 becquerels) or more of removable radioactive material, the licensee shall remove the sealed source from service immediately and have it decontaminated, repaired or disposed of by a department, NRC or an agreement state licensee that is authorized to perform these functions. The licensee shall check the equipment associated with the leaking source for radioactive contamination and, if contaminated, have it decontaminated or disposed of by a department, NRC or an agreement state licensee that is authorized to perform these functions.

(2) The licensee shall submit a report to the department within five days of receiving the test result. The report must describe the equipment involved in the leak, the test results, any contamination which resulted from the leaking source and the corrective actions taken up to the time the report was made.

E. Exemptions. The following sealed sources are exempt from the periodic leak test requirements set out in Subsections A through D of this section:

(1) hydrogen-3 (tritium) sources;

(2) sources containing licensed material with a half-life of 30 days or less;

(3) sealed sources containing licensed material in gaseous form;

(4) sources of beta- or gamma-emitting radioactive material with an activity of 100 microcuries (3.7 megabecquerels) or less; and

(5) sources of alpha- or neutron-emitting radioactive material with an activity of 10 microcuries (0.370 megabecquerel) or less.

[20.3.12.18 NMAC - Rp, 20.3.12.1208 NMAC, 6/30/2011]

20.3.12.19 PHYSICAL INVENTORY: Each licensee shall conduct a semi-annual physical inventory to account for all licensed material received and possessed under the license. The licensee shall retain records of the inventory for 3 years from the date of the inventory for inspection by the department. The inventory must indicate the quantity and kind of licensed material, the location of the licensed material, the date of the inventory and the name of the individual conducting the inventory. Physical inventory records may be combined with leak test records.
[20.3.12.19 NMAC - Rp, 20.3.12.1209 NMAC, 6/30/2011]

20.3.12.20 RECORDS OF MATERIAL USE:

A. Each licensee shall maintain records for each use of licensed material showing:

(1) the make, model number and serial number or a description of each sealed source used;

(2) in the case of unsealed licensed material used for subsurface tracer studies, the radionuclide and quantity of activity used in a particular well and the disposition of any unused tracer materials;

(3) the identity of the logging supervisor who is responsible for the licensed material and the identity of logging assistants present; and

(4) the location and date of use of the licensed material.

B. Recordkeeping. The licensee shall make the records required by Subsection A of this section available for inspection by the department. The licensee shall retain the records for 3 years from the date of the recorded event.
[20.3.12.20 NMAC - Rp, 20.3.12.1210 NMAC, 6/30/2011]

20.3.12.21 DESIGN AND PERFORMANCE CRITERIA FOR SEALED SOURCES:

A. A licensee may use a sealed source for use in well logging applications if:

(1) the sealed source is doubly encapsulated;

(2) the sealed source contains licensed material whose chemical and physical forms are as insoluble and nondispersible as practical; and

(3) meets the requirements of Subsections B, C and D of this section.

B. For a sealed source manufactured on or before July 14, 1989, a licensee may use the sealed source, for use in well logging applications if it meets the requirements of USASI N5.10-1968, classification of sealed radioactive sources, or the requirements in Subsections C and D of this section.

C. For a sealed source manufactured after July 14, 1989, a licensee may use the sealed source, for use in well logging applications if it meets the oil well logging requirements of ANSI/HPS N43.6-1997, sealed radioactive sources - classification.

D. For a sealed source manufactured after July 14, 1989, a licensee may use the sealed source, for use in well logging applications, if the sealed source's prototype has been tested and found to maintain its integrity after each of the tests in Paragraphs (1) through (5) of this subsection.

(1) Temperature. The test source shall be held at -40 degrees celsius for 20 minutes, 600 degrees celsius for 1 hour, and then be subject to a thermal shock test with a temperature drop from 600 degrees celsius to 20 degrees celsius within 15 seconds.

(2) Impact test. A 5-kilogram steel hammer, 2.5 centimeters in diameter, shall be dropped from a height of 1 meter onto the test source.

(3) Vibration test. The test source shall be subject to a vibration from 25 hertz to 500 hertz at 5 g (g meaning the acceleration due to gravity) amplitude for 30 minutes.

(4) Puncture test. A 1 gram hammer and pin, 0.3 centimeter pin diameter, shall be dropped from a height of 1 meter onto the test source.

(5) Pressure test. The test source shall be subject to an external pressure of 1.695x107 pascals (24,600 pounds per square inch absolute).

E. The requirements in Subsections A, B, C and D of this section do not apply to sealed sources that contain licensed material in gaseous form.

F. The requirements in Subsections A, B, C and D of this section do not apply to energy compensation sources (ECS). ECSs shall be registered with the sealed source and device registry (see definition in 20.3.1.7 NMAC) upon an approval by the NRC under 10 CFR 32.210 or an agreement state equivalent regulations.
[20.3.12.21 NMAC - Rp, 20.3.12.1211 NMAC, 6/30/2011]

20.3.12.22 INSPECTION, MAINTENANCE AND OPENING OF A SOURCE OR SOURCE HOLDER:

A. Each licensee shall visually check source holders, logging tools and source handling tools, for defects before each use to ensure that the equipment is in good working condition and that required labeling is present. If defects are found, the equipment must be removed from service until repaired, and a record must be made listing: the date of check, name of inspector, equipment involved, defects found and repairs made. These records must be retained for three years after the defect is found.

B. Each licensee shall have a program for semiannual visual inspection and routine maintenance of source holders, logging tools, injection tools, source handling tools, storage containers, transport containers and uranium sinker bars to ensure that the required labeling is legible and that no physical damage is visible. If defects are found, the equipment must be removed from service until repaired, and a record must be made listing: date, equipment involved, inspection and maintenance operations performed, any defects found and any actions taken to correct the defects. These records must be retained for three years after the defect is found.

C. Removal of a sealed source from a source holder or logging tool, and maintenance on sealed sources or holders in which sealed sources are contained may not be performed by the licensee unless a written operating procedure is developed and has been approved either by the department, NRC or an agreement state.

D. If a sealed source is stuck in the source holder, the licensee may not perform any operation, such as drilling, cutting or chiseling, on the source holder unless the licensee is specifically approved by the department, NRC or an agreement state to perform this operation.

E. The opening, repair or modification of any sealed source must be performed by persons specifically approved to do so by the department, NRC or an agreement state.

[20.3.12.22 NMAC - Rp, 20.3.12.1213 NMAC, 6/30/2011]

20.3.12.23 SUBSURFACE TRACER STUDIES:

A. The licensee shall require all personnel handling radioactive tracer material to use protective gloves and, if required by the license, other protective clothing and equipment. The licensee shall take precautions to avoid ingestion or inhalation of radioactive tracer material and to avoid contamination of field stations and temporary jobsites.

B. A licensee shall not knowingly inject licensed material into fresh water aquifers unless specifically authorized to do so by the department.

[20.3.12.23 NMAC - Rp, 20.3.12.1219 NMAC, 6/30/2011]

20.3.12.24 RADIOACTIVE MARKERS: The licensee may use radioactive markers in wells only if the individual markers contain quantities of licensed material not exceeding the exempt quantities specified in 20.3.3.330 NMAC. The use of markers is subject only to the requirements of physical inventory in 20.3.12.19 NMAC.

[20.3.12.24 NMAC - N, 6/30/2011]

20.3.12.25 URANIUM SINKER BARS: The licensee may use a uranium sinker bar in well logging applications only if it is legibly impressed with the words ”Caution - radioactive - depleted uranium” and “Notify civil authorities (or name of company) if found.”

[20.3.12.25 NMAC - Rp, 20.3.12.1200 NMAC, 6/30/2011]

20.3.12.26 USE OF A SEALED SOURCE IN A WELL WITHOUT A SURFACE CASING: The licensee may use a sealed source in a well without a surface casing for protecting fresh water aquifers only if the licensee follows a procedure for reducing the probability of the source becoming lodged in the well. The procedure must be approved by the department pursuant to Subsection C of 20.3.12.9 NMAC, the NRC or an agreement state.

[20.3.12.26 NMAC - N, 6/30/2011]

20.3.12.27 ENERGY COMPENSATION SOURCE:

A. The licensee may use an energy compensation source (ECS) which is contained within a logging tool or other tool components, only if the ECS contains quantities of licensed material not exceeding 100 microcuries (3.7 megabecquerels).

B. For well logging applications with a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of 20.3.12.18 NMAC, 20.3.12.19 NMAC and 20.3.12.20 NMAC.

C. For well logging applications without a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of 20.3.12.10 NMAC, 20.3.12.18 NMAC, 20.3.12.19 NMAC, 20.3.12.20 NMAC, 20.3.12.26 NMAC and 20.3.12.32 NMAC.
[20.3.12.27 NMAC - Rp, 20.3.12.1201 NMAC, 6/30/2011]

20.3.12.28 TRITIUM NEUTRON GENERATOR TARGET SOURCE:

A. Use of a tritium neutron generator target source, containing quantities not exceeding 30 curies (1,110 megabecquerels) and in a well with a surface casing to protect fresh water aquifers, is subject to the requirements of this part except 20.3.12.10 NMAC, 20.3.12.21 NMAC and 20.3.12.32 NMAC.

B. Use of a tritium neutron generator target source, containing quantities exceeding 30 curies (1,110 megabecquerels) or in a well without a surface casing to protect fresh water aquifers, is subject to the requirements of this part except 20.3.12.21 NMAC.
[20.3.12.28 NMAC - Rp, 20.3.12.1202 NMAC, 6/30/2011]

20.3.12.29 SECURITY DURING USE OF LICENSED MATERIAL:

A. A logging supervisor must be physically present at a temporary jobsite whenever licensed materials are being handled or are not stored and locked in a vehicle or storage place. The logging supervisor may leave the jobsite in order to obtain assistance if a source becomes lodged in a well.

B. During well logging, except when radiation sources are below ground or in shipping or storage containers, the logging supervisor or other individual designated by the logging supervisor shall maintain direct surveillance of the operation to prevent unauthorized entry into a restricted area, as defined in 20.3.4.7 NMAC.
[20.3.12.29 NMAC - Rp, 20.3.12.1217 NMAC, 6/30/2011]

20.3.12.30 DOCUMENTS AND RECORDS REQUIRED AT FIELD STATIONS: Each licensee shall maintain the following documents and records at the field station:

A. a copy of 20.3.4 NMAC, 20.3.10 NMAC and 20.3.12 NMAC;

B. the license authorizing the use of licensed material;

C. operating and emergency procedures required by 20.3.12.12 NMAC;

D. the record of radiation survey instrument calibrations required by 20.3.12.17 NMAC;

E. the record of leak test results required by 20.3.12.18 NMAC;

F. physical inventory records required by 20.3.12.19 NMAC;

G. utilization records required by 20.3.12.20 NMAC;

H. records of inspection and maintenance required by 20.3.12.22 NMAC;

I. training records required by 20.3.12.11 NMAC; and

J. survey records required by 20.3.12.14 NMAC.
[20.3.12.30 NMAC - Rp, 20.3.12.1222 NMAC, 6/30/2011]

20.3.12.31 DOCUMENTS AND RECORDS REQUIRED AT TEMPORARY JOBSITES: Each licensee conducting operations at a temporary jobsite shall maintain the following documents and records at the temporary jobsite until the well logging operation is completed:

A. operating and emergency procedures required by 20.3.12.12 NMAC;

B. evidence of latest calibration of the radiation survey instruments in use at the site required by 20.3.12.17 NMAC;

C. latest survey records required by 20.3.12.14 NMAC;

D. the shipping papers for the transportation of radioactive materials required by 20.3.3.306 NMAC, incorporating 10 CFR 71.5; and

E. when operating under reciprocity pursuant to 20.3.3.324 NMAC, a copy of the NRC or agreement state license authorizing use of licensed materials.
[20.3.12.31 NMAC - Rp, 20.3.12.1223 NMAC, 6/30/2011]

20.3.12.32 NOTIFICATION OF INCIDENTS AND LOST SOURCES; ABANDONMENT PROCEDURES FOR IRRETRIEVABLE SOURCES:

A. The licensee shall immediately notify the department by telephone and subsequently, within 30 days, by confirmation in writing, if the licensee knows or has reason to believe that a sealed source has been ruptured. The written confirmation must designate the well or other location, describe the magnitude and extent of

the escape of licensed materials, assess the consequences of the rupture, and explain efforts planned or being taken to mitigate these consequences.

B. The licensee shall notify the department of the theft or loss of radioactive materials, radiation overexposures, excessive levels and concentrations of radiation and certain other accidents as required by 20.3.4.451 NMAC, 20.3.4.452 NMAC, 20.3.4.453 NMAC and 20.3.3.325 NMAC.

C. If a sealed source becomes lodged in a well, and when it becomes apparent that efforts to recover the sealed source will not be successful, the licensee shall:

(1) notify the department by telephone of the circumstances that resulted in the inability to retrieve the source; and

(a) obtain department approval to implement abandonment procedures; or

(b) that the licensee implemented abandonment before department approval because the licensee believed there was an immediate threat to public health and safety; and

(2) advise the well owner or operator, as appropriate, of the abandonment procedures under Subsection A or D of 20.3.12.10 NMAC; and

(3) either ensure that abandonment procedures are implemented within 30 days after the sealed source has been classified as irretrievable or request an extension of time if unable to complete the abandonment procedures.

D. The licensee shall, within 30 days after a sealed source has been classified as irretrievable, make a report in writing to the department. The licensee shall send a copy of the report to each appropriate local, state or federal agency that issued permits or otherwise approved of the drilling operation. The report must contain the following information:

(1) date of occurrence;

(2) a description of the irretrievable well logging source involved including the radionuclide and its quantity, chemical and physical form;

(3) surface location and identification of the well;

(4) results of efforts to immobilize and seal the source in place;

(5) a brief description of the attempted recovery effort;

(6) depth of the source;

(7) depth of the top of the cement plug;

(8) depth of the well;

(9) the immediate threat to public health and safety justification for implementing abandonment if prior department approval was not obtained in accordance with Subparagraph (b) of Paragraph (1) of Subsection C of this section;

(10) any other information, such as a warning statement, contained on the permanent identification plaque; and

(11) local, state and federal agencies receiving copy of this report.

[20.3.12.32 NMAC - Rp, 20.3.12.1224 NMAC, 6/30/2011]

HISTORY OF 20.3.12 NMAC:

Pre-NMAC History: The material in this part was derived from that previously filed as follows:
EIB 73-2, Regulations for Governing the Health and Environmental Aspects of Radiation filed on 7/9/1973;
EIB 73-2, Amendment 1, Regulations for Governing the Health and Environmental Aspects of Radiation filed on 4-17-78;
EIB RPR-1, Radiation Protection Regulations filed on 4/21/1980;
EIB RPR-1, Amendment 1, Radiation Protection Regulations filed on 10/13/1981;
EIB RPR-1, Amendment 2, Radiation Protection Regulations filed on 12/15/1982; and
EIB RPR-1, Radiation Protection Regulations filed on 3/10/1989.

History of Repealed Material: 20.3.12 NMAC, Radiation Safety Requirements for Wireline Service Operations and Subsurface Tracer Studies, filed 3/15/2004 is repealed effective 6/30/2011 and replaced by 20.3.12 NMAC, Licenses and Radiation Safety Requirements for Well Logging, effective 6/30/2011.

Other History: EIB RPR 1, Radiation Protection Regulations, filed 3/10/1989 renumbered and reformatted to 20 NMAC 3.1; Radioactive Materials and Radiation Machines, effective 5/3/1995;
20 NMAC 3.1; Radioactive Materials and Radiation Machines (filed 4/3/1995) internally renumbered, reformatted and replaced by 20 NMAC 3.1, Radioactive Materials and Radiation Machines, effective 7/30/1999.

20 NMAC 3.1.Subpart 12, Radiation Safety Requirements For Wireline Service Operations And Subsurface Tracer Studies (filed 6/17/1999) reformatted, amended and replaced by 20.3.12 NMAC, Radiation Safety Requirements for Wireline Service Operations and Subsurface Tracer Studies, effective 4/15/2004.
20.3.12 NMAC, Radiation Safety Requirements for Wireline Service Operations and Subsurface Tracer Studies, filed 3/15/2004 is repealed effective 6/30/2011 and replaced by 20.3.12 NMAC, Licenses and Radiation Safety Requirements for Well Logging, effective 6/30/2011.