



# STATE OF NEW YORK DEPARTMENT OF HEALTH

Flanigan Square 547 River Street Troy, New York 12180-2216

Richard F. Daines, M.D.  
*Commissioner*

James W. Clyne, Jr.  
*Executive Deputy Commissioner*

January 8, 2010

Terrence Reis, Deputy Director  
Division Materials Safety and State Agreements  
Office of Federal and State Materials and  
Environmental Management Programs  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Dear Mr. Reis:

Enclosed is a license condition that contains the new and revised changes in Part 39 for well logging.

<u>RATS ID</u>	<u>Title</u>
2000-1	Energy Compensation Sources for Well Logging and other Regulatory Clarifications Part 39.

We believe that the legally binding requirements in the license condition satisfies the compatibility and health and safety categories established in the Office of Federal and State Materials and Environmental Programs (FSME) Procedure SA-200.

If you have any questions, please feel free to contact me at 518-402-7550 or Robert Dansereau at 518-402-7550 or red07@health.state.ny.us.

Sincerely,

Stephen M. Gavitt, CHP, Director  
Bureau of Environmental Radiation Protection  
New York State Department of Health

Enclosures: As stated

XX. A New License Condition No. XX is Added to Read:

The specific requirements in 12 NYCRR 38.33(b) for each person conducting well-logging operations to comply with the provisions of Part 39 of Title 10 of the Code of Federal Regulations (10 CFR 39), Licenses and Radiation Safety Requirements for Well-logging”, July 1, 1993 edition, are amended to add definitions of an energy compensation source and a tritium neutron generator, and replace 39.15, 39.35, 39.41, 39.49. 39.53 and 39.77 with the current requirements in 10 CFR 39, as follows:

A. (1) An energy compensation source (ECS) means a small sealed source, with an activity not exceeding 3.7 MBq [100 microcuries], used within a logging tool, or other tool components, to provide a reference standard to maintain the tool's calibration when in use.

(2) A Tritium neutron generator target source means a tritium source used within a neutron generator tube to produce neutrons for use in well logging applications.

B. Revised 39.15, Agreement with well owner or operator.

(a) 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 must identify who will meet the following requirements:

(1) If a sealed source becomes lodged in the well, a reasonable effort will 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.

(3) The radiation monitoring required in § 39.69(a) will be performed.

(4) If the environment, any equipment, or personnel are contaminated with licensed material, they must be decontaminated before release from the site or release for unrestricted use; and

(5) If the sealed source is classified as irretrievable after reasonable efforts at recovery have been expended, the following requirements must be implemented within 30 days:

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

(ii) A means to prevent inadvertent intrusion on the source, unless the source is not accessible to any subsequent drilling operations; and

(iii) A permanent identification plaque, constructed of long lasting material such as stainless steel, brass, bronze, or monel, must be mounted at the surface of the well, unless the mounting of the plaque is not practical. The size of the plaque must be at least

17 cm [7 inches] square and 3 mm [ $\frac{1}{8}$ -inch] thick. The plaque must contain--

(A) The word "CAUTION";

(B) The radiation symbol (the color requirement in § 20.1901(a) 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."

(b) The licensee shall retain a copy of the written agreement for 3 years after the completion of the well logging operation.

(c) A licensee may apply, pursuant to § 39.91, 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 paragraph (a)(5) of this section.

(d) 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 in paragraphs (a)(1) through (a)(5).

C. Revised 39.35, Leak testing of sealed sources.

(a) *Testing and recordkeeping requirements.* Each licensee who uses a sealed source shall have the source tested for leakage periodically. The licensee shall keep a record of leak test results in units of microcuries and retain the record for inspection by the Department 3 years after the leak test is performed.

(b) *Method of testing.* The wipe of a sealed source must be performed using a leak test kit or method approved by the Commission or an Agreement State. The wipe sample must be taken from the nearest accessible point to the sealed source where contamination might accumulate. The wipe sample must be analyzed for radioactive contamination. The analysis must be capable of detecting the presence of 185 Bq [0.005 microcuries] of radioactive material on the test sample and must be performed by a person approved by the US Nuclear Regulatory Commission or an Agreement State to perform the

analysis.

(c) *Test frequency.*

(1) Each sealed source (except an energy compensation source (ECS)) must be tested at intervals not to exceed 6 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 ECS that is not exempt from testing in accordance with paragraph (e) of this section must be tested at intervals not to exceed 3 years. In the absence of a certificate from a transferor that a test has been made within the 3 years before the transfer, the ECS may not be used until tested.

(d) *Removal of leaking source from service.*

(1) If the test conducted pursuant to paragraphs (a) and (b) of this section reveals the presence of 185 Bq [0.005 microcuries] 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 US Nuclear Regulatory Commission or 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 an NRC or Agreement State licensee that is authorized to perform these functions.

(2) The licensee shall submit a report to the Department within 5 days of receiving the test results. 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 is made.

(e) *Exemptions from testing requirements.* The following sealed sources are exempt from the periodic leak test requirements set out in paragraphs (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 3.7 MBq [100 microcuries] or less; and
- (5) Sources of alpha- or neutron-emitting radioactive material with an activity of 0.37 MBq [10 microcuries] or less.

D Revised 39.41, Design and performance criteria for 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 paragraph (b), (c), or (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 paragraph (c) or (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--

- (1) The sealed source's prototype has been tested and found to maintain its integrity after each of the following tests:
  - (i) *Temperature.* The test source must be held at  $-40^{\circ}\text{C}$  for 20 minutes,  $600^{\circ}\text{C}$  for 1 hour, and then be subject to a thermal shock test with a temperature drop from  $600^{\circ}\text{C}$  to  $20^{\circ}\text{C}$  within 15 seconds.
  - (ii) *Impact Test.* A 5 kg steel hammer, 2.5 cm in diameter, must be dropped from a height of 1 m onto the test source.
  - (iii) *Vibration test.* The test source must be subject to a vibration from 25 Hz to 500 Hz at 5 g amplitude for 30 minutes.
  - (iv) *Puncture test.* A 1 gram hammer and pin, 0.3 cm pin diameter, must be dropped from a height of 1 m onto the test source.
  - (v) *Pressure test.* The test source must be subject to an external pressure of  $1.695 \times 10^7$  pascals [24,600 pounds per square inch absolute].

(e) The requirements in paragraph (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 paragraphs (a), (b), (c), and (d) of this section do not apply to energy compensation sources (ECS). Secs must be registered with the Commission under § 32.210 of this chapter or with an Agreement State.

D. Revised, 39.49 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 COMPANY NAME) IF FOUND."

E. Revised, 39.53 Energy compensation source.

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 3.7 MBq [100 microcuries].

(a) For well logging applications with a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of §§ 39.35, 39.37 and 39.39.

(b) For well logging applications without a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of §§ 39.15, 39.35, 39.37, 39.39, 39.51, and 39.77.

F. 39.55 Tritium neutron generator target source.

(a) Use of a tritium neutron generator target source, containing quantities not exceeding 1,110 GBq [30 curies] and in a well with a surface casing to protect fresh water aquifers, is subject to the requirements of this part except §§ 39.15, 39.41, and 39.77.

(b) Use of a tritium neutron generator target source, containing quantities exceeding 1,110 GBq [30 curies] or in a well without a surface casing to protect fresh water aquifers, is subject to the requirements of this part except § 39.41.

G. Notification of incidents and lost sources: abandonment procedures for irretrievable sources (Revised 39.77).

(a) The licensee shall immediately notify the Department by telephone and subsequently, within 30 days, by confirmation in writing, using an appropriate method listed in § 30.6(a) of this chapter, 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 §§ 20.2201 - 20.2202, § 20.2203 and § 30.50 of this chapter.

(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--

(i) Obtain Department approval to implement abandonment procedures; or

(ii) That the licensee implemented abandonment before receiving 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 § 39.15 (a) or (c); 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 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 paragraph (c)(1)(ii) of this section;
- (10) Any other information, such as a warning statement, contained on the permanent identification plaque; and
- (11) State and Federal agencies receiving copy of this report.