



Texas Department of Health

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Commissioner of Health

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Executive Deputy Commissioner

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May 24, 2000

Ms. Tracy Kime
Source Containment and Devices Branch
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Document Control Desk
P1-37
Washington, D. C. 20555

Dear Ms. Kime:

Enclosed is the device sheet TX1088D101S for a Sodern Corporation Model Sodilog neutron generator tube. It is a "custom device" manufactured for Computalog Wireline Products, Inc. at 500 Winscott Road in FortWorth, Texas. This device is to be used in research and development of logging tools for use in the well logging industry. We would appreciate you distributing copies of this sheet to the other State Programs and NRC Regions, as appropriate.

Thank you for your cooperation and efforts.

Sincerely,

Floyd K. Hamiter, Project Leader
Advanced Technology Licensing
Division of Licensing, Registration
and Standards
Bureau of Radiation Control

Enclosure

*NMS502
non-public*

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: TX1088D101S

DATE: May 22, 2000

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DEVICE TYPE: Neutron Generator Tube

MODEL: Sodilog

MANUFACTURER: Sodern Corporation
20, Avenue Descartes-B.P. 23
94451 Limeil-Brevannes
Cedex, France

SEALED SOURCE MODEL DESIGNATION: N/A

ISOTOPE: H-3

MAXIMUM ACTIVITY: 5 Ci (185 GBq)

LEAK TEST FREQUENCY: N/A

PRINCIPAL USE: General neutron source applications (H)

CUSTOM DEVICE: YES NO

CUSTOM USER: Computalog Wireline Products, Inc.
500 Winscott Road
Fort Worth, Texas 76126

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DEVICE TYPE: Neutron Generator Tube

DESCRIPTION: The Sodilog neutron generator is 1.024" (26 mm) O.D. X 7.64" (194 mm) in length and weighs approximately 0.55 pounds (250 grams) and is designed to be used downhole in pulsed neutron logging tools. The generator tube is pressurized to 5 atmospheres (75 psi) with sulphur hexafluoride (SF₆) to provide electrical insulation.

The Sodilog tube is secured in the logging tool by threaded connections at both ends of the tube to the logging tool accelerator head manufactured by Computalog. This combination, made of stainless steel, produces a pressure housing that provides protection in the downhole environment.

LABELING: The labels below are attached to the lower housing of the accelerator tube (below the field generator output) with adhesives.

CAUTION	
RADIOACTIVE	
MATERIAL	
ISOTOPE _____	
AMOUNT _____	
DATE _____	

Label Identifying the Radioactive Material

- CAUTION -
THIS UNIT MUST BE PRESSURIZED TO _____ PSI SF-6 BEFORE OPERATIONAL USE.
UNIT MUST BE DEPRESSURIZED TO 5 PSI OR LESS PRIOR TO SHIPMENT OR DISASSEMBLY.

Label Identifying the SF₆ Hazard

The metallic label identifying the accelerator tube is fixed to the electronic section of the accelerator by small screws. That label is shown below.

⊕	Sodern Corporation	⊕
Model No. _____		
Part No. _____		
Serial No. _____		
⊕		⊕

One additional label is attached to the control panel for the accelerator and is seen below.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

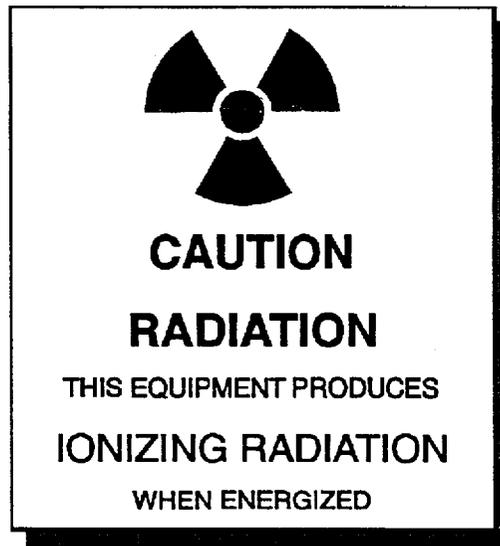
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DEVICE TYPE: Neutron Generator Tube

LABELING (Cont'd):



The pressure housing will be etched with:

CAUTION
RADIOACTIVE — DO NOT HANDLE
NOTIFY CIVIL AUTHORITIES or COMPUTALOG USA

and the trefoil symbol.

DIAGRAM: See Attachments.

CONDITIONS OF NORMAL USE: The Sodilog is designed for use in the oil/gas well environment. Normal operating temperature and pressure are 148°C (300°F) and 15,000 PSI. The accelerator tube is designed to produce 14 MeV neutrons with an average output of 1.33×10^8 neutrons/second to make temporary changes in the formations surrounding the wellbore which is analyzed to determine the presence and volumetric percentages of oil, gas and water in those formations. Because of the limited quantity of tritium in the accelerator tube, an average lifetime of 150 to 300 hours of operation is expected before replenishment/maintenance.

PROTOTYPE TESTING: The Sodilog has a long history of use in Europe and other parts of the world. Computalog is performing research and development with the devices to mate them up with their logging tool and electronics.

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DEVICE TYPE: Neutron Generator Tube

EXTERNAL RADIATION LEVELS: Because the radionuclide being used is tritium there are no direct radiation fields produced by the decay of the radionuclide. When energized, however, exposure rates of 167 Rem/hr (1.67 Sv/hr) @ 5 cm, 4.65 Rem/hr (0.05 Sv/hr) @ 30 cm and 0.42 Rem/hr (4.2 mSv/hr) @ 100 cm are produced by a 14.4 MeV neutron flux of 7×10^7 neutrons/second.

QUALITY ASSURANCE AND CONTROL: The manufacturer has an ISO 9000 certification. Each accelerator tube provided to Computalog will be checked against design criteria and performance standards.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- Accelerator tubes shall not be energized above ground except according to written procedures and when installed inside a specially designed water tank to prevent neutrons from escaping the tank.
- The Sodilog accelerator tube shall be authorized only for use under the Texas license issued to Computalog Wireline Products, Inc., Fort Worth, Texas.

SAFETY ANALYSIS SUMMARY: Although when energized the Sodilog accelerator tube produces a high exposure rate, it will not cause hazardous exposure conditions if operated within approved guidelines by properly trained personnel.

REFERENCES:

The following supporting documents for Computalog Wireline Products, Inc. are hereby incorporated by reference and are made a part of this registry document.

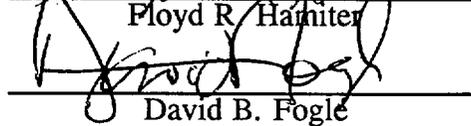
- letter dated September 1, 1999 and associated drawings and attachments,
- letter dated December 13, 1999 and associated drawings and attachments, and
- letter dated April 17, 2000 and associated drawings and attachments.

ISSUING AGENCY: Texas Department of Health
Bureau of Radiation Control

Date: May 22, 2000

Reviewer: 
Floyd R. Hamiter

Date: May 22, 2000

Concurrence: 
David B. Fogle

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

Amended in Entirety

NO.: TX0261D101S

DATE: May 22, 2000

ATTACHMENT 1

