

<http://www.nrc.gov/NRC/ADAMS/index.html>. Any questions with respect to this action should be referred to Tom McLaughlin, Decommissioning Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

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Dated at Rockville, Maryland, this 21st day of October 2003.

For the Nuclear Regulatory Commission.

**Tom McLaughlin,**

*Project Manager, Facilities Decommissioning Section, Decommissioning Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards.*

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## NUCLEAR REGULATORY COMMISSION

[Docket No. 030-30249]

### Environmental Assessment and Finding of No Significant Impact Related to Materials License No. 42-26928-01, Core Laboratories, Inc. (dba Protechnics) of Houston, TX, License Amendment Request for Approval of an Alternate Disposal Method

#### I. Introduction

The U.S. Nuclear Regulatory Commission (NRC) is issuing a license amendment for a proposal made by Core Laboratories, Inc. (dba ProTechnics) of Houston, Texas. Core Laboratories requested an amendment to Materials License No. 42-26928-01 to allow an additional disposal alternative pursuant to 10 CFR 20.2002 to inject well returns containing radioactive tracer material into Class II disposal wells that have been approved to accept non-hazardous oil and gas waste by State agencies. An Environmental Assessment (EA) was performed by the NRC staff in support of its review of the license amendment request, in accordance with the requirements of 10 CFR part 51. The conclusion of the EA is a Finding of No Significant Impact (FONSI).

#### II. Environmental Assessment

Related to the Core Laboratories, Inc. Request for an Alternate Disposal Method to Inject Well-Logging Waste into Class II Disposal Wells.

*Summary:* The NRC considered a license amendment request for approval for an alternate disposal method for well-logging waste produced under NRC Byproduct Materials License No. 42-26928-01. Core Laboratories, Inc. (dba

ProTechnics) requested NRC approval to allow fracturing sand well returns containing residual material to be injected into Class II disposal wells. These Class II wells would have been approved under permits to accept non-hazardous oil and gas waste by State agencies. Approval of this license amendment request is based upon the NRC's review and evaluation of the merits of the licensee's proposal, current alternatives, and waste disposal regulations in 10 CFR part 20. The NRC staff has evaluated the licensee's proposal and has developed an EA in accordance with the requirements of 10 CFR part 51.

#### 1.0 Introduction

Core Laboratories, Inc., is based in Houston, Texas, and conducts well-logging operations with radioactive materials in oil and natural gas fields worldwide. Core Laboratories is licensed to conduct tracer operations where the NRC has jurisdiction and in Agreement States including Louisiana, Texas, Colorado, Utah, California, Oklahoma, and New Mexico. Core Laboratories performs over 3,000 well-logging fracturing jobs a year in the United States using various radioactive tracer materials with half-lives of less than 120 days. In general, Core Laboratories injects three radioactive materials during its tracer operations: Iridium-192, scandium-46, and antimony-124. The longest half-life of these materials is 84 days. Core Laboratories procedures require that 1,000 pounds of sand be mixed with every 0.4 millicuries of tracer material prior to injection into a well.

Core Laboratories is authorized to use only well-logging beads patented as a Zero-Wash product. Zero-Wash is a well-logging bead that is insoluble (*i.e.*, the radioactivity will not migrate or leach into groundwater). These waste materials are not classified as hazardous or mixed waste by the U.S. Environmental Protection Agency (EPA) regulations. The purpose of the tracer material is to enhance the performance of the oil well fracturing procedures. Using the information provided by the tracer material, the well operator can maximize the production from the well. Approximately 10 percent of the fracturing jobs result in the backflow of injected tracer material to the surface. This phenomena is called sandout or well-logging returns. The amount of the well-logging returns can range from a few gallons (20 pounds) to a tanker truck load (50,000 pounds). The concentration of radioactive material in the well-logging returns is low because the tracer material is mixed into

fracturing sand prior to being injected into the well.

Currently, Core Laboratories is allowed to hold radioactive material with a half-life of less than 120 days for decay-in-storage before unrestricted disposal. Under this authorization, the well-logging returns are transported by truck to a storage facility that is distant (sometimes 30 miles or more) from the original tracer injection point. Additionally, the sandout waste may be shipped to an approved waste site for burial. On December 18, 1995, the NRC approved Core Laboratories' generic 10 CFR 20.2002 onsite disposal request for burying radioactive wastes from well-logging sandouts, flowbacks, or any other form into shallow earthen pits at the well site pursuant to 10 CFR 20.2002.

On August 23, 2000, Core Laboratories requested a license amendment to allow fracturing sand well returns to be injected in Class II disposal wells. All the sandout well-logging returns containing tracer radioactive materials would be recovered and contained in Class II disposal wells that met the State's and EPA's regulations. Core Laboratories proposes to dispose of material into Class II wells with radioactivity concentrations that are less than 30 percent of the levels in 10 CFR part 20, appendix B, table 2, column 2. These radioactive concentrations are not radioactive waste as defined in the EPA regulation 40 CFR 144.3. Class II disposal wells are described in part in EPA regulations under 40 CFR 144.6 as "Wells which inject fluids which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production." Some of the EPA requirements imposed on Class II disposal well operators are found in 40 CFR 144.28 and address compliance with the Safe Drinking Water Act, 24-hour reporting of noncompliance, well plugging and abandonment planning, financial assurance, well casing and cementing, operating and monitoring requirements, records retention, and change of ownership and operational control.

#### 2.0 Proposed Action

The proposed action is to issue a license amendment to Byproduct Materials License No. 42-26928-01 for approval of an alternate disposal method for well-logging waste produced as a result of fracturing sand well-logging operations. The licensee seeks approval to allow fracturing sand well returns to be injected into Class II disposal wells that have been approved

under permits to accept non-hazardous oil and gas waste by State agencies. These wells have been approved for the disposal of non-hazardous oil field waste materials including naturally occurring radioactive material (NORM). This method of disposal would be used as an alternative to existing methods of disposal authorized by the NRC in the current license.

### 3.0 Purpose and Need for the Proposed Action

The purpose of the proposed action is to allow the licensee an additional disposal alternative due to the fact that some locations where the tracer operations are conducted do not allow shallow pits to be used for well waste disposals. This proposed action would allow the continued use of tracer materials in those areas and allow the efficient production of oil and gas, thereby reducing the cost of recovery to the well operators. The NRC is fulfilling its responsibility under the Atomic Energy Act to make a decision for the proposed action that ensures protection of the public health and safety and the environment.

### 4.0 Alternative to the Proposed Action

The only alternative to the proposed action of allowing the alternative disposal in Class II disposal wells is no action. The no-action alternative would be to allow the licensee to maintain waste as discussed above as authorized in the current NRC license.

### 5.0 The Affected Environment and Environmental Impacts

The NRC staff has reviewed the proposed action and the alternatives and examined their impacts.

#### 5.1 Proposed Action

The proposed action would authorize the use of state approved Class II disposal wells already permitted and in operation where materials are injected below the water table. The depth of Class II disposal wells range from 5,000 to 15,000 feet which is well below usable groundwater. Because this disposal method would use existing approved structures, there would be no significant impact to historic and cultural resources, ecological resources, land use or visual resources. In addition, due to the design of the patented Zero-Wash product (no wash off of radioactive material), the crush strength of the Zero-Wash product (*i.e.*, greater than 10,000 psi), and the design of these Class II wells, the waste would not contaminate groundwater and would not migrate from the formation where injected. Because the proposed

action will only use pre-existing Class II disposal wells, there would be no increased air emissions or noise, and there would be no significant impacts on local or regional business conditions, populations or demographics. During the permitting process for Class II disposal wells, potential socioeconomic and environmental impacts are investigated as part of the National Environmental Policy Act process. In general, Class II disposal wells are not located in populated or business areas.

If approved, Core Laboratories' generic 10 CFR 20.2002 waste disposal authorization would contain the following provisions: (1) A requirement to assure that the radioactive concentration of waste would be less than 1,000 picocuries/gram (pCi/g); (2) the half-life of the radioactive material being disposed would be less than 120 days and include only the following tracers: Sodium-24, chromium-51, rubidium-86, iodine-131, xenon-133, scandium-46, zirconium-95, antimony-124, and iridium-192; and (3) Core Laboratories would maintain a written agreement with the Class II disposal well owner or operator to control access to the well until the radioactivity has decayed to unrestricted release levels.

Increased radiation exposure to the general public from transporting waste containing residual tracer material to the disposal site would be negligible. There are two routes of exposure possible, external and internal. The internal exposure would be from ingestion of the material. The particle size is such that it is not respirable. The material is not soluble in the body thereby reducing the resident time in the body. At the concentrations expected, an individual would need to ingest 200 pounds of the material to receive one-tenth of the regulatory annual limit of intake specified in 10 CFR part 20, appendix B. The maximum radiation exposure level, at a distance of 1-foot from a vehicle transporting this waste, would be on the order of 0.1 mR/hr. The radiation level in the cab of the transport vehicle would be on the order of 0.004 mR/hr. Using an average transport time of 1-hour and assuming the same driver was used for all of the expected disposals (10 per year), the exposure to the driver of the vehicle would be 0.04 mR. Due to its low radiation level and radioactive concentration, an accident causing the release of the waste returns from the transport vehicle would result in little exposure to workers or members of the public during the subsequent cleanup efforts.

Tracer injection operations at the disposal wells are automated to

minimize the time required for personnel to be in the immediate area of the injected material. Assuming an injection time of 4 hours per disposal, and an individual within 1-foot of the radioactive material during the injection operation, the total exposure per year would not be expected to exceed 4 mR from this operation. The disposal site would be surveyed to meet the NRC criteria for unrestricted use in accordance with 10 CFR part 20 after the sandout material is injected into a Class II disposal well.

Radioactive material as defined by Department of Transportation regulation 49 CFR 173.403 is material that exceeds a concentration of 2,000 pCi/g. The residual radioactive material concentrations being shipped are below this limit. There would be no increase in the number of transport vehicles on the highways due to this proposed aspect of well-logging operations. The current practice of transporting well-logging returns to a decay-in-storage facility or shallow disposal pit requires that at least one transport vehicle be used. Procedures would be in place to handle any emergency situation arising from any incident involving the handling or transportation of this material.

Overall, the environmental impacts resulting from the release of this material into Class II disposal wells are expected to be insignificant. The NRC staff concluded that the State's and EPA's requirements for permitting the operation of Class II disposal wells were stringent and thoroughly covered any radiological or non-radiological environmental concern. There are no additional activities which would result in cumulative impacts to the environment.

#### 5.2 Alternative

When compared to the Class II disposal well proposal, the no-action alternative would result in increased risk of exposing occupational workers and the members of the public to radioactive material. Core Laboratories' use of shallow earthen pits and decay-in-storage facilities requires additional handling of the radioactive material and increases the potential for individuals to access radioactive material. Core Laboratories would continue use of shallow earthen pits, transporting the sandout material to the new pits, covering the disposal pits with at least 2 feet of soil, and marking the disposal sites in order to control access to the public. Additionally, Core Laboratories would continue to maintain sandout material in leased decay-in-storage facilities. In addition to radiological

impacts, non-radiological impacts to land use, soils, visual resources, transportation, water resources, noise, air quality, cultural resources, threatened and endangered species could occur because Core Laboratories would continue decay-in-storage before unrestricted disposal or burial in shallow earthen pits. Additionally, the cost of storage facilities and the cost for burial at an approved disposal site are not economical considering the fact that there are no costs associated with disposals at Class II wells.

#### 6.0 Agencies and Persons Consulted

The NRC staff has prepared this EA with input from the Alaska Oil & Gas Conservation Commission (AOGCC) and the Texas Bureau of Radiation Control (TBRC) regarding permitting of Class II disposal wells and Zero-Wash product.

Because the proposed action is entirely within existing Class II wells, the NRC has concluded that there is no potential to affect threatened or endangered species or historic resources. Therefore, consultation with the U.S. Fish & Wildlife Service and State Historic Preservation Officers is not necessary.

The NRC staff provided a draft of this EA to the following states for review and comment: Alaska (ML031540273), California (ML031540246), Colorado (ML031540327), Louisiana (ML031540301), New Mexico (ML031540339), Oklahoma (ML031540221), Texas (ML031540332), Utah (ML031540352), and Wyoming (ML031540355). This EA has been revised to reflect the States' input where appropriate.

#### 7.0 Conclusions

The NRC staff concluded that the proposed action complies with 10 CFR part 20 and 10 CFR part 30. Pursuant to 10 CFR part 51, the NRC staff has prepared this EA in support of the proposed license amendment for approval to allow fracturing sand well returns to be injected in Class II disposal wells that have been approved under permits to accept non-hazardous oil and gas waste by State agencies. On the basis of this EA, the NRC has concluded that the environmental impacts from the proposed action would not have any significant effect on the quality of the human environment; therefore, an environmental impact statement for the proposed action is not warranted.

#### 8.0 List of Preparers

This EA was prepared by Louis C. Carson II, Senior Health Physicist, Nuclear Materials Licensing Branch, Division of Nuclear Materials Safety,

Region IV, and reviewed by Jack E. Whitten, Chief, Materials Licensing Branch, Division of Nuclear Materials Safety.

#### 9.0 List of References

1. NRC, "Radiological Criteria for License Termination," 10 CFR part 20, subpart E, 62FR39088, July 21, 1997.
2. NRC, "Waste Disposal," 10 CFR part 20, subpart K, 56FR23403, May 21, 1991.
3. NRC, "Consolidated NMSS Decommissioning Guidance," NUREG-1757, Volume 1, September 2002.
4. NRC, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," NUREG-1748, September 2003.
5. Alaska Oil & Gas Conservation Commission (AOGCC) and the letter dated January 11, 2002, from the AOGCC to Marathon Oil Company.
6. ProTechnics Division of Core Laboratories Texas Bureau of Radiation Control License No. L03835, Amendment No. 37, expiration date August 31, 2005.
7. Utah Department of Environmental Quality letter to the NRC dated June 30, 2003 (ML032660184).
8. Colorado Department of Health letter to the NRC dated July 1, 2003 (ML031900577).
9. Texas Department of Health letter to the NRC dated July 17, 2003 (ML032060480).

### III. Finding of No Significant Impact

Pursuant to the National Environmental Policy Act of 1969 (NEPA) and the Commission's regulations in 10 CFR part 51, the Commission has determined that there will not be a significant effect on the quality of the environment resulting from the approval of Core Laboratories' requested amendment for an additional disposal alternative pursuant to 10 CFR 20.2002 to inject well returns containing radioactive tracer material into Class II disposal wells that have been approved to accept non-hazardous oil and gas waste by State agencies. Accordingly, the preparation of an Environmental Impact Statement is not required for the proposed amendment to Materials License No. 42-26928-01, which would add the alternative disposal method to the license. This determination is based on the foregoing EA performed in accordance with the procedures and criteria in 10 CFR part 51.

### IV. Further Information

The licensee's request for the proposed action (ADAMS Accession No. ML003758270) and the NRC's complete Environmental Assessment (ADAMS

Accession No.: ML032680636), and other related documents to this proposed action are available for public inspection and copying for a fee at NRC's Public Document Room at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852. These documents, along with most others referenced in the EA, are available electronically for public review in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Any questions with respect to this action should be referred to Louis C. Carson II, Nuclear Materials Licensing Branch, Division of Nuclear Materials Safety, U.S. Nuclear Regulatory Commission, Region IV, Arlington, Texas 76011-4005. Telephone: (817) 860-8221.

Dated at Arlington, Texas, this 20th day of October 2003.

For the Nuclear Regulatory Commission.

**Jack E. Whitten,**

*Chief, Nuclear Materials Licensing Branch, Division of Nuclear Materials Safety, Region IV.*

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## NUCLEAR REGULATORY COMMISSION

[Docket No. 030-33944]

### Notice of Finding of No Significant Impact and Availability of Environmental Assessment for License Amendment of Materials License No. 37-30247-01, White Eagle Toxicology Laboratories, Inc.

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Notice of availability of environmental assessment and finding of no significant impact.

**FOR FURTHER INFORMATION CONTACT:** Kathy Dolce Modes, Nuclear Materials Safety Branch 2, Division of Nuclear Materials Safety, Region I, 475 Allendale Road, King of Prussia, Pennsylvania, 19406; telephone (610) 337-5251; fax (610) 337-5269; or by e-mail: [KAD@nrc.gov](mailto:KAD@nrc.gov).

#### SUPPLEMENTARY INFORMATION:

#### I. Introduction

The U.S. Nuclear Regulatory Commission (NRC) is considering the issuance of a license amendment to