

**UNITED STATES DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE (MMS)
GULF OF MEXICO REGION**

NTL No. 96-03

Effective Date: 5/8/96

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES ON THE
OUTER CONTINENTAL SHELF, GULF OF MEXICO OCS REGION

**Guidelines for the Offshore Storage and Sub-Seabed Disposal of Wastes Resulting
from the Development and Production of Oil and Gas on the Outer Continental Shelf**

Operators on the Federal Outer Continental Shelf (OCS) must obtain approval from the Minerals Management Service (MMS) for the storage or sub-seabed disposal of wastes generated from oil and gas development on the OCS. (30 CFR 250 Subpart G). This Notice to Lessees (NTL) provides standardized guidelines for all applications for the offshore storage and sub-seabed disposal of solid wastes generated from oil and gas development on the OCS in the Gulf of Mexico Region. This NTL applies only to OCS oil and gas wastes which are exempt exploration and production wastes under the Resource Conservation and Recovery Act (RCRA). Additionally it outlines specific guidelines for wastes which contain naturally occurring radioactive materials (NORM) above background levels.

Public concern over NORM in oilfield wastes led the MMS, Gulf of Mexico Region to issue several letters to lessees (LTL'S) requiring the lessees to obtain MMS approval for the discharge or disposal of solid wastes offshore. Radioactive elements and their daughter products, primarily radium 226 (^{226}Ra) and radium 228 (^{228}Ra), can be leached from geologic formations by reservoir fluids and transported to the surface with produced water, oil and gas. Radioactive material in the process stream can precipitate out as scale in tubing and processing equipment through which the production stream passes. The sludge that accumulates in the bottoms of tanks and vessels may also contain elevated levels of radioactivity.

The MMS considers applications for the sub-seabed disposal of solid wastes resulting from the production of oil and gas on the Outer Continental Shelf (OCS). Approvals were issued under authority of the OCS Lands Act, 43 U.S.C. 1334, and implementing regulations at 30 CFR 250.40(b)(2), which grant the District Supervisor authority to approve the method of disposal of drill cuttings, sand and other well solids. Under this authority the MMS, Gulf of Mexico Region, issued a Letter to Lessees (LTL) dated November 20, 1990, directing lessees to submit a full description of the method to be used in the removal and disposal of all produced well solids, and requiring prior approval of the regional office before discharging or disposing of any such materials. A second LTL dated December 11, 1991, outlined interim guidelines for the reporting, disposal and transportation of well solids containing NORM, and also provided for approval of other methods of disposal such as encapsulation

in abandoned wellbores and injection into depleted reservoirs on a case-by-case basis.

In March, 1993, the Environmental Protection Agency's (EPA) Effluent Guidelines set a zero discharge limit for produced sand. The new zero discharge limit was implemented in the Gulf of Mexico by modifying the National Pollutant Discharge Elimination System General Permit GMG290000 for EPA's Region 6 (the OCS area west of the Mississippi River outflow), and became effective on January 3, 1994. As a result of this modification, the Gulf of Mexico Region sent out a third LTL dated January 28, 1994 indicating that MMS will no longer approve applications for overboard discharge of produced well solids which includes well solids containing NORM. This NTL remains currently in effect.

The guidance contained in this NTL supersedes all specifications contained in the LTL dated December 11, 1991. MMS is no longer requiring industry to report onshore disposal of solid waste materials generated during OCS oil and gas production. The following guidelines do not supersede, but are supplemental to, those procedures for abandonment of wells as specified in 30 CFR, Chapter II, Subpart G.

I. TYPES OF WASTES

A. All applications for disposal of wastes covered by this NTL should, at a minimum:

1. be generated from OCS oil and gas development and production activities (a slurry will be considered solid wastes); and
2. be exempt exploration and production wastes under the Resource Conservation and Recovery Act (RCRA).

B. When NORM is present above background levels the operator should provide additional radiation information as outlined below.

II. DISPOSAL CRITERIA

A. Encapsulation Criteria

1. As a general rule, the MMS will not approve applications for abandoned wells as disposal locations if any of the following conditions exist:
 - a. The top of the waste is less than 3,000 feet below the seafloor, and a fault intersects the wellbore within this zone;
 - b. A fault intersects the wellbore and extends to the seafloor;
 - c. The abandoned well is in an area of sediment instability such as mudflows, slumps, and slides.

2. All perforations open to the producing formation(s) should be squeezed with cement.
3. All plugs must be pressure tested as per MMS regulations.
4. Sufficient density fluid should be present in the casing to exert hydrostatic pressure exceeding the greatest formation pressure in the intervals between the plugs at the time of abandonment.
5. The top of the wastes should be at least 1,000 feet below the mudline.
6. Encapsulated wastes should be isolated below from any open annulus by placing a 200-foot-long cement plug between the waste and the open annulus.
7. If the top of the waste is less than 3,000 feet below the mudline, there should be cement covering the casing at all depths above 3,000 feet.
8. A cast iron bridge plug and a 200-foot-long cement plug containing a permanent dye solution should be placed at the top of the wastes.

B. Injection Criteria

1. The disposal reservoir should be depleted of commercial hydrocarbons.
2. The disposal reservoir/formation should be isolated by shale barriers above and below and not contain any producing wells.
3. The disposal reservoir/formation should be below the deepest underground source of drinking water.
4. The wellbore, tubular goods, and control devices should demonstrate mechanical integrity (no tubing/casing communication).
5. Surface tubing and the tubing/casing annulus pressure should be continuously monitored with a two-pen chart recorder during injection.
6. A base-line radioactive tracer log should be run prior to injection and a follow-up log should be run after injection to verify proper placement of the slurry.
7. If the well is to be used for future injections, the following procedures should be followed:
 - a. A retrievable plug should be set;
 - b. The well should be marked, clearly indicating the well is being used for the injection of wastes

and whether the wastes contain NORM.

- c. The tubing and casing pressures should be monitored daily on manned structures and weekly on unmanned structures and mechanical integrity (pressure sealing properties) should be checked annually.

III. WORKER SAFETY GUIDELINES

- A. The application should establish to the satisfaction of the District Supervisor the existence of procedures adequate to protect those workers responsible for disposal operations.
- B. Any employer of persons engaged in activities involving wastes containing NORM above background levels (including transportation, storage, sampling, mixing, and disposal operations) should comply with the provisions of 29 CFR 1910.96.
- C. All onsite contractors directly involved with the handling or disposal of NORM wastes should be trained in the handling of NORM and licensed pursuant to a state program acceptable to the District Supervisor.

IV. APPLICATION GUIDELINES

A. Disposal Information

All applications should be submitted to the Regional Supervisor for Field Operations and should address the following aspects of the disposal operation:

- 1. A description of the material to be disposed of including:
 - a. Whether the waste is to be formed into a slurry and a description of the medium to be used to form the slurry (e.g., barite/bentonite, saltwater with HEC viscosifier, cement);
 - b. The number of containers to be disposed of, a description of the contents of each container (example: a half-filled container of oily produced sand), and of the container itself (a 55-gallon drum, a barrel, PVC pipe, etc.);
 - c. A description of any miscellaneous RCRA-exempt material to be disposed of;
 - d. The area(s) and block number(s) where the material originated;
 - e. If the waste contains NORM above background levels:
 - (1) The location(s), if any, where the material had been stored,

(2)The radiation exposure rate for each container and for background conditions in microrems/hr
(see Section VI).

f.A description or listing of any unusual contaminants that may be present, or of any
contaminants having unusually high levels, if known, within the material to be
disposed of; and

g.Any documentation submitted to a State agency prior to the disposal event.

2.The OCS lease number, area, block number, and well number of the disposal well.

3.The distance in feet of the disposal well from the two nearest lease lines and the latitude and
longitude of the disposal well.

4.The disposal technique (i.e., injection, encapsulation, etc.).

5.A description of the procedures for injection or encapsulation (i.e., fracture procedure, plugs to
be set, etc.).

6.A schematic of the wellbore prior to encapsulation/injection and the proposed wellbore
schematic after encapsulation/injection.

7.An assurance that the worker safety guidelines outlined in Section III will be adhered to.

8.Encapsulation Information

If any or all of the oil and gas waste is to be encased in tubulars/casing, the application should
state:

a.The size, grade, and weight per foot of the tubulars/casing;

b.The sub-surface depth of both the top and bottom of the tubulars/casing;

c.Whether the tubulars/casing will be free in the hole or will be secured by cement, a bridge plug,
or a cement retainer.

9.Injection Information

a.A description of any dilution procedures to be used prior to injection.

b.A structure map of the formation that is to receive the injected slurry.

c.A 5-inch open hole log showing the injection zone and the shale above and below this zone.
The log should contain spontaneous potential or gamma ray and resistivity
curves.

- d. The maximum anticipated surface and reservoir injection pressure.
- e. A model simulation of the fracture that will be produced during the injection procedure (i.e., length, height, and width of fracture).
- f. The predicted maximum distance from the wellbore the injected slurry will be placed.
- g. The distance to the nearest fault from the injection zone.

B. Offshore Storage Guidelines

When wastes containing NORM above background levels are to be temporarily stored offshore, applications for storage should be submitted to the Regional Supervisor for Field Operations and should contain the following information:

1. The lease number, area, block, and platform where storage is requested.
2. Whether the platform proposed for storage is a manned or unmanned platform.
3. The number of containers, a description of the wastes within the containers, and a description of the containers.
4. For wastes containing NORM above background levels to be stored at the platform, the radiation exposure rate (microrems/hr) for each container and for background conditions.
5. The length of time requested for storage (not to exceed 1 year).
6. The method of securing the containers to the platform to avoid loss during severe storms or hurricanes.
7. The height above sea level of the deck(s) on which the storage is to take place.
8. The lease number(s), area(s), and block(s) where the material originated.
9. Similar information for additional containers to be stored on the platform should be provided to the Regional Supervisor for Field Operations prior to placement.

V. REPORTING AND RECORDKEEPING

- A. All applications for disposal operations should verify that the applicant will submit a report to MMS within 30 days of the disposal describing:

1. The results of the operation,
2. A discussion of any problems encountered during the disposal operation,
3. If the material was disposed of in containers:
 - a. The total number of containers,
 - b. A description of the wastes in each container,
 - c. A description of the containers used.
4. If the material was disposed as a slurry, the wet weight of the waste slurry.
5. Radiation Exposure Rate Measurements:
 - a. The radiation exposure rate, reported in microrems/hr, obtained from the outside of each container of NORM waste prior to disposal and from the 1-liter sample by placing the sensing element in direct contact with the top or bottom and the four sides of the middle of the container and liter sample;
 - b. For solid materials that are an odd size, such as pipe, the radiation exposure rate readings taken from at least three different accessible points with the highest readings recorded. Pipe exposure rate readings should be taken from the middle and end of the pipe;
 - c. The average of each group of measurements for the containers, the liter samples, and/or the odd-sized materials, as well as the highest reading recorded for each group; and
 - d. A recorded background reading;
 - e. The survey, calibration, and measurement should be performed by trained personnel. The radiation detection instrument should measure gamma radiation, should be capable of measuring 1 microrentgen per hour through 500 microrentgens per hour, and should be calibrated by a qualified person at intervals not to exceed 6 months.

B. For all NORM Storage Operations:

1. That the operator will maintain records indicating the beginning date of storage; the origin of the stored material and, if applicable, where the material was previously stored; the

radiation exposure measurements for each container; and the total number of containers.

2. That the operator will notify MMS within 30 days when the material is no longer stored at the site.

[signed] Thomas Gernhofer
Associate Director, Offshore
Minerals Management

May 8, 1996 Dated:

This NTL is also on Minerals Management Service's worldwide website at [HTTP://WWW.MMS.GOV](http://www.mms.gov).