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Coast Guard

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NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 7-87
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Subj: Guidance on Waterborne Transport of Oil Field Wastes

1. PURPOSE. The purpose of this circular is to:

   a. Disseminate information to vessel/facility owners and operators, and other interested persons regarding acceptable methods of transporting oil field wastes generated by petroleum drilling and production operations, or the clean-up of waste pits.

   b. Provide acceptable equivalent standards and inspection guidance for certification under Title 46, Code of Federal Regulation (46 CFR), Subchapter D of previously uncertificated hopper barges based on restrictions of cargo, route, and loading (stability).

   c. Terminate an interim Letter of Authorization (LOA) program established by the Eighth Coast Guard District for hopper barges and establish a six (6) month period to allow industry sufficient time to bring these hopper barges into compliance with the equivalent standards.

2. BACKGROUND.

   a. Various federal, state, and local regulatory agencies are upgrading their requirements governing the disposal of wastes from drilling or production operations and are requiring clean-up of waste pits used in earlier operations. This has resulted in increased interest in the methods by which these wastes may be transported by water.

   b. Oil field wastes may present a wide variety of potential hazards and/or have unique transportation and handling problems. Some wastes, when properly identified and handled, may pose relatively low combustibility hazards. However, federal statutes are based on environmental protection as well as vessel and personnel safety. Therefore, even though Coast Guard regulations do not specifically address the carriage of low hazard oil field wastes, the statutes regulating material containing any quantity of oil or other hazardous substances are applicable.

   c. As an interim measure, the Commander, Eighth Coast Guard District permitted the transportation of certain waste materials by uninspected vessels under an LOA. The wastes authorized for transportation under this program presented minimal flammability, explosive, and toxic hazards. Although the toxic hazards were slight, they could be significant to the environment in the large quantities generated by the drilling industry. The program was not applicable to general industrial wastes, material from oil or hazardous chemical spill clean-up, or clean-up of toxic waste dumps sites. Each operation was evaluated in view of local conditions and accepted on a case-by-case basis by the cognizant Coast Guard officials in accordance with the provisions of 46 CFR 30.15-1 permitting the acceptance of "equivalents."

3. STATUTORY AND REGULATORY APPLICABILITY.

a. Title 46, U.S. Code, Section 3301 (46 USC 3301) requires "tank vessels" to be inspected by the Coast Guard. As defined in 46 USC 2101(39), a tank vessel is a vessel that is constructed or adapted to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue. "Oil," for this purpose, includes oil of any type or in any form, including petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes except dredged spoil. "Hazardous material" means a liquid material or substance that is:

(1) Flammable or combustible;

(2) Designated a hazardous substance under Section 311(b) of the Federal Water Pollution Control Act (33 USC 1321); or

(3) Designated a hazardous material under Section 104 of the Hazardous Materials Transportation Act (49 USC 1803).

Vessels carrying most oil field wastes in bulk are subject to inspection since the wastes generally fall within one or more of the above categories; implementing regulations are contained in 46 CFR, Shipping.

b. Tank vessel regulations are contained in 46 CFR, Parts 30 through 40 (Subchapter D).

c. These materials may become subject to Coast Guard regulation while being transported on board vessels as "packaged hazardous materials" in accordance with 49 CFR Parts 171 through 176.

d. A Certificate of Financial Responsibility (COFR) (water pollution) is required by 33 CFR 130 on self-propelled vessels of more than 300 gross tons, and non-self-propelled barges of more than 300 gross tons which carry oil or hazardous substances as fuel or cargo. Similarly, a vessel engaged in any segment of the transportation of oil produced from an offshore facility on the Outer Continental Shelf, when operating in the waters above submerged lands seaward from the coastline of a state or the waters above the Outer Continental Shelf, is required by 33 CFR 132 to obtain a COFR (Outer Continental Shelf).

e. Vessels classified as "oil tankers" of 150 gross tons or more, and other vessels of 400 gross tons or more operating beyond the outer limit of the territorial seas are required by 33 USC 1901-1911 to comply with the requirements of MARPOL 73/78, Annex I; the implementing regulations are contained in 33 CFR 151 155 and 157. These regulations specify design and equipment standards and operating requirements to prevent oil pollution. Under these regulations, petroleum in any form including crude oil, fuel oil, sludge, oil refuse, and refined products is classified as "oil."

f. Transfers of materials classed as oil, either between vessels, or between a vessel and shoreside facility are regulated by 33 CFR 154, 155 and 156.

g. Facilities which are used for the handling and storage of, and for vessel loading and discharging of any flammable or combustible liquid in bulk; any hazardous materials subject to the Dangerous Cargo Regulations; and any hazardous material subject to the

Hazardous Materials Regulations are required to be designated waterfront facilities. Such facilities are regulated under 33 CFR, Part 126.

4. DISCUSSION.

a. The application of various vessel inspection regulations is determined by the classification of the product or cargo carried. Liquid bulk product carriage requirements and classifications are determined by cargo tables in 46 CFR, Subchapter D (Subpart 30.25) or Subchapter 0 (46 CFR 151.01-10; 46 CFR 151.05; 46 CFR 153, Table 1; 46 CFR 153, Appendix 1; 46 CFR 154, Table 4). Hazardous materials not listed must be evaluated by Commandant (G-MTH-1) prior to shipment. Products shipped as "packaged" cargoes are evaluated by the shipper who selects the proper shipping name from 49 CFR 172.101 or 49 CFR 172.102. A material may be shipped under one of the "not otherwise specified" (N.0.S.) categories unless otherwise prohibited from shipment.

b. Oil field wastes are not specifically classified in the regulations. However, they should be treated as a hazardous material until otherwise identified. Enclosure (1) categorizes oil field materials. This listing is not considered inclusive of all the materials that may result from drilling or production operations. Ultimately, it is the shipper who must identify the material being shipped, its hazards, and determine the appropriate methods of transportation.

c. Various methods have evolved for transporting these waste materials in compliance with the Coast Guard's regulations. The allowed methods are as follows:

(1) Transporting the materials in inspected vessels certificated for carrying oil or other hazardous materials. This is the preferred method of transportation. Standard tank barges inspected and certificated under 46 CFR, Subchapter D can be used for the transportation of most oil field wastes, except those which contain large amounts of sediment or other materials in suspension which are unpumpable.

(2) Transporting the materials as "packaged cargo." This method of transportation generally lends itself only to small quantities of materials, e.g., drill cuttings. Oil field wastes may be packaged and shipped in accordance with the provisions of 49 CFR, Parts 171 through 176.

(3) Transporting the material as a bulk product using portable tanks in accordance with the provisions of 46 CFR, Part 98. Only Marine Portable Tanks (MPT) can be filled or discharged while on board a vessel. Transfers of this type are considered to be bulk liquid transfers.

(4) Treatment of the materials so that they are no longer classified as oil or hazardous material nor required to be transported by certificated vessels. This is generally limited to the transportation of materials from a treatment facility to a disposal point. The shipper performs such tests and inspections as necessary to be assured that the transportation of the materials is no longer subject to regulations.

d. In an effort to assist those persons or organizations desiring to transport oil field waste that is unpumpable by conventional methods, the Coast Guard has established standards

and inspection guidance that, if followed, will enable owners of hopper barges to comply with the applicable provisions of 46 CFR Subchapter D. Those standards are described in enclosure (2) and are deemed equivalent to 46 CFR, Subchapter D for the carriage of oil field waste in previously uncertificated hopper barges based on cargo, route, loading, structural, construction, and stability restrictions. Additional guidance is provided to ensure safe transfer of oil field waste and operation of the barges.

5. IMPLEMENTATION.

a. Persons or organizations desiring to transport oil field waste in previously uninspected hopper barges should review the information presented in this NVIC and its enclosures and determine which option they will use to continue the transport of oil field waste in compliance with the applicable statutes.

b. All LOAs currently issued for hopper barges will expire no later than six (6) months after the publication date of this NVIC. Owners of vessels operating under an LOA may apply for a Certificate of Inspection as soon as possible, but not later than 90 days prior to the expiration of the LOA, in order to allow time for plan review, drydock, and hull inspections. LOAs with less than 90 days remaining to expiration may be extended a maximum of 3 months to allow time to complete inspection procedures.

End: (1) Definition/Description of Oil Field Wastes
(2) Equivalent Standards and Inspection Guidance for Certification of Open Hopper Barges Under Title 46, Code of Federal Regulations 46 (CFR), Subchapter D

Non-Standard Distribution:

C:e New Orleans (90); Baltimore (45); Alameda (40); Port Arthur, Honolulu, Puget Sound (35); Morgan City (30); Miami, Mobile, Long Beach (25); Norfolk, Jacksonville, Portland OR (20); Boston, Portland ME, Charleston, Anchorage, Galveston (15); Cleveland (12); Louisville, Memphis, Nashville, Paducah, Pittsburgh, St. Louis, Savannah, San Juan, Tampa, Buffalo, Chicago, Detroit, Duluth, Milwaukee, San Diego, Juneau, Valdez (10); Providence, Huntington, Wilmington, Corpus Christi, Toledo (5).

C:m New York (70); Philadelphia (35); Houston (25); St. Ignace (5); Sturgeon Bay (4).

D:l CG Liaison Officer MILSEALIFTCOMD (Code M-4E4), CG Liaison Officer RSPA (DHM-22), CG Liaison Officer JUSMAGPHIL (1).

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DEFINITION/DESCRIPTION OF OIL FIELD WASTES

1. Salt water (produced brine or produced water). May contain oil.

2. Oil-based drilling mud and cuttings should always be considered to contain oil.

3. Water-based drilling mud and cuttings. Prior to its use, water-based drilling mud may not be a regulated cargo if it does not contain oil or hazardous materials; recovered material may contain oil.

4. Drilling, work over and completion fluids. May contain oil or be classified as hazardous materials depending on their composition.

5. Production pit sludges. Normally contain oil; may also be classified as hazardous materials.

6. Production storage tank sludges. Normally contain oil; may also be classified as hazardous materials.

7. Produced oily sands and solids. Contain oil.

8. Produced formation fresh water. May contain oil.

9. Rainwater from ring levees and pits at production and drilling facilities. Normally contains oil.

10. Washout water generated from the cleaning of vessels (barges, tanks, etc.) that transport oil field waste. May contain oil.

11. Washout pit water from oil field related carriers. Normally contains oil.

12. Natural gas plant processing waste which is commingled with produced formation water. Normally contains oil.

13. Waste from salvage oil operators who only receive waste oil from oil and gas leases. Normally contains oil.

14. Pipeline test water which cannot be discharged because it does not meet the established discharge limitations or other waste fluids generated from the cleaning of a pipeline. Normally contains oil.

15. Wastes from commercial treatment facilities. May contain oil.

16. Materials used in oil spill clean-up operations. Normally contains oil. (Specific variance from Coast Guard regulations may be permitted or ordered by cognizant federal or state official acting as on-scene coordinator.)

EQUIVALENT STANDARDS AND INSPECTION GUIDANCE FOR CERTIFICATION OF OPEN HOPPER BARGES UNDER TITLE 46, CODE OF FEDERAL REGULATIONS 46 (CFR), SUBCHAPTER D

A. Inspection Standards - Requirements are based on environmental protection as well as combustibility hazards. Hopper barges may be certificated under 46 CFR, Subchapter D if an equivalent level of safety/protection can be established. Cargo limitations that reduce the combustibility hazard to a minimum level are necessary for hopper approvals. Similarly, route and loading restrictions, hull design review, and hull inspection are required to ensure equivalent environmental protection.

B. Requests for Certification - Should be submitted on an Application for Inspection (Form CG-3752) at least 90 days in advance of proposed operations.

C. Route - Operating endorsements for open hopper barges should be restricted to protected waters if built to river rules. Covered hopper barges may operate on other routes as authorized by the officer in charge, marine inspection (OCMI).

D. Cargo Restrictions - Cargo restrictions are as follows:

1. Flash point greater than 300 degrees Fahrenheit and no other hazardous characteristics.

2. Material must be unpumpable by conventional means.

3. The liquid content of the material should be reduced to no more than 40% liquid by volume prior to movement of the barge and contain no free oil. Field test equipment must be available to determine the percent liquid by volume of a sample of cargo taken from the hopper. The sample must be representative of the most fluid-like portion of the cargo. Sumps and/or aeration of the cargo may be required to keep the liquid content of the cargo within the approved level.

E. Structural Review - Calculations are to be presented which demonstrate that the vessel meets the minimum structural requirements of the American Bureau of Shipping (ABS) Rules for Building and Classing Steel Vessels on rivers and intracoastal waterways and employ a head corresponding to a full hopper of cargo having the maximum specific gravity of cargoes anticipated for carriage on the hopper structure. Where operators seek to operate hopper barges on other routes, these vessels should meet the applicable ABS Rules for those areas.

F. Inspection - Drydock and structural inspections, including wing tank internals and double bottoms, are necessary to adequately assess hull integrity as follows:

1. Drydock Examination - Prior to initial certification and at the intervals prescribed by 46 CFR, Part 31, thereafter, hopper barges should be fully drydocked for examination of the underwater hull. Depending upon the condition of the hull, belt gagging may be required by the cognizant OCMI at the initial drydock examination and as deemed necessary during future examinations.

2. Internal Examination - Tank vessel inspection standards and intervals apply. All internal spaces must be determined safe to enter by a certified marine chemist prior to entry. Inspector safety is a primary consideration during internal examinations.

NOTE: It can reasonably be expected that most previously uncertificated hopper barges were constructed with E-7024 electrodes, commonly referred to as jet rod, or other filler material that was unacceptable for "all position" welding. Consequently, careful examination of all welds is warranted. In cases where repairs are required or structural modifications made, only welding procedures acceptable to the Commandant shall be employed.

G. Construction - As a minimum, hopper barges employed in the carriage of oil field waste should be of double skin construction with watertight access hatches fitted to all voids. The hopper must be subdivided by watertight bulkheads to reduce the effects of shifting material. The structural details of those bulkheads should be to the satisfaction of the cognizant OCMI and generally meet the requirements of a recognized classification society, i.e., rules for ordinary watertight bulkheads for the maximum specific gravity of the material to be carried. Additionally, a coaming at least three (3) feet higher than the deck should be fitted around the hopper to avoid material spillage and ensure the safety of operating personnel who may be on the barge. Open hopper barges are permitted for service only on protected waters routes. Barges utilized for other routes must be fitted with weathertight hopper covers) of construction suitable to the Commandant.

H. Vessel Stability - Adequate stability is to be demonstrated in accordance with the applicable sections of 46 CFR, Parts 170 and 174. However, if all of the following conditions are satisfied, stability calculations need not be submitted.

1. The maximum specific gravity of the cargo is not to exceed 3.0 (12 cu ft/long ton or 25 lb/gal).

2. The barge characteristics are: Beam/depth ratio exceeding 2.3; a long parallel mid-body with a nearly rectangular cross-section; a cargo hopper recessed into the main deck so that most of the material is carried below the main deck; and buoyant voids surrounding all four sides of the hopper.

3. The cargo hopper must be subdivided with a longitudinal centerline bulkhead and enough transverse bulkheads so that no compartment exceeds 1/2 the length of the hopper.

4. When the specific gravity of the material exceeds 2.0 (24 cu ft/long ton or 16.7 lb/gal), the hopper must be subdivided by a longitudinal centerline bulkhead and enough transverse bulkheads so that no compartment exceeds 1/3 the length of the hopper. In specific cases where wing void width is less than 5 feet and the draft to depth ratio (d/D) exceeds 0.6, the hopper must be further subdivided so that each compartment is no wider than 1/3 of the hopper width.

5. The maximum allowable draft is not to exceed the minimum of one of the following three cases:

   a. draft = D - 3 feet (D - depth of barge at side (ft.))

   b. draft = 0.7 x D (D = depth of barge at side (ft.))

   c. draft = draft corresponding to a full hopper of cargo having the maximum specific gravity of cargoes to be carried in the hopper. Normally, this draft will

correspond to the maximum load determined from the structural capabilities of the hopper (see example below).

Example:

Design specific gravity of structures:	1.05
Corresponding specific volume:	34.25 cu ft./ton
Hopper volume:	43,200 cu ft.
Vessel dimensions (Length x Beam x Depth):	180x36x12 ft
Hopper dimensions (1 x w xh):	120x30x12 ft

max = barge + cargo = maximum displacement

barge = [0.003 + (l/10L)]LBD L tons = 276 L tons

cargo = Hopper volume/Design spec. volume = 1261 L tons

max = 276 + 1261 = 1537 L tons

The draft corresponding to calculated maximum displacement is determined by using curves of form for the vessel or calculated by hand. Such an example is:

draft = displacement x 35/ f (L-l/2(sum of rake lengths)) x B]
= 1537 x 35/ [(180 - 1/2(40 + 20)) x 36]
= 9.96 ft. = 9 ft. 11-1/2 in.

Requests for deeper drafts must be accompanied by a stability analysis, completed by a naval architect, which considers the possible free surface effects of the cargo from the standpoint of intact stability as well as environmental protection.

I. Vessel Loading - During loading and prior to vessel movement, oil field waste should be distributed uniformly to minimize hull bending stresses, trim, and list. In no case may the load exceed the cargo weight which corresponds to a full hopper of material of a design specific gravity for the hopper structure.

J. Piping - Fixed piping systems are not required.

K. Transfer Operations - All operators are reminded that discharge of this material into federal waters is a violation of 33 USC 1321 and subject to civil penalty procedures prescribed, thereunder. Operators are cautioned to devise transfer systems that will preclude such discharges.

L. Operating Plan - In order to ensure all vessel operations will be conducted safely, a vessel operating plan incorporating the following criteria should be submitted to the cognizant OCMI for approval:

1. The geographic limits of the proposed operating area, as narrowly defined as possible.

2. Specific locations where materials will be loaded or discharged from the vessels, i.e., drilling units, platforms, waterfront facilities, and waste pit locations, when known, and the method of transfer to be employed.

3. Identification of the persons who will be responsible for the movement and/or operation of the vessel and how they can be contacted. For vessels subject to 33 CFR 130 or 131, the "operator" named on the Certificate of Financial Responsibility should also be identified.

4 A listing, for the aid of operating personnel, of the individuals and federal or state agencies who must be contacted in the case of various emergencies.

5. A description of the security to be provided for the vessels, including any measures to be used to prevent dumping of unauthorized materials into the vessels.

M. Vessel Security and Material Handling - The cognizant captain of the port must be reasonably assured that the total operation, of which the vessel is a part, will conform to the applicable operational provisions of 33 CFR, Parts 126, 154, 155, 156, and 157. Because of the nature of the materials, the facilities where they are loaded from or discharged to may be required to be designated "waterfront facilities" in accordance with 33 CFR 126.

N. Certification - Upon completion of a satisfactory drydock examination and inspection, the cognizant OCMI is authorized to issue a Certificate of Inspection (COI) valid for two (2) years. An appropriate mid-period inspection shall be conducted in accordance with 46 CFR 31.10-17.

The proposed carriage endorsement on the COI shall be as follows:

"Inspected and approved for the carriage of oil field waste of a flashpoint greater than 300 degrees and a specific gravity not to exceed *_____."

* As determined by structural calculations.