REVIEW OF OIL FIELD WASTE BARGE (OFWB): GENERAL ARRANGEMENT, STRUCTURES, LIGHTSHIP, AND STABILITY

Procedure Number: C1-17
Revision Date: September 22, 2022

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Purpose

This Plan Review Guideline (PRG) provides guidance and information regarding the submission of Oilfield Waste Barges (OFWB) plan approvals regarding general arrangement, structures, lightship, and stability.

Contact Information

If you have any questions or comments concerning this document, please contact the Marine Safety Center (MSC) by e-mail or phone. Please refer to Procedure Number C1-17.

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1. Applicability

This Plan Review Guideline (PRG) is applicable to Oil Field Waste Barges.

2. References

a. 46 CFR 170, Subpart F, Determination of Lightweight Displacement and Center of Gravity
b. 46 CFR 170, Subpart E, Weather Criteria
c. 46 CFR 174, Subpart B, 174.015, Intact Stability
d. ABS Rules for Building and Classing Steel Vessel for Service on Rivers and Intracoastal Waterways
e. ASTM F 1321-14, Standard Guide for Conducting a Stability Test (Lightweight Survey and Inclining Experiment) to Determine the Light Ship Displacement and Centers of Gravity of a Vessel
f. NVIC 17-91, Guidance for conducting stability tests
g. NVIC 7-87, Guidance on Waterborne Transport of Oil Field Wastes
h. G-MTH-3 Policy Letter, dated 22 Sep 1989
i. G-MTH-3 Policy Letter, dated 12 March 1990
j. G-MTH-3 Policy Letter, dated 7 June 1990
k. MSC Marine Technical Note (MTN) 04-95, Light Ship Change Determination: Weight-Moment Calculations vs. Deadweight Survey vs. Full Stability Test

3. Definitions

a. Oil Field Waste: an oil-water mixture, sludge, petroleum drilling products, and other hazardous liquid materials. It is not removable by conventional pumping means. Oil field wastes may present a wide variety of potential hazards, and have unique transportation and handling problems. The liquid content of the material should be reduced to no more than 40% liquid by volume prior to movement of the oil field waste vessel and it should not contain free oil. In addition, the flash point should be greater than 300 degrees F.

b. Downflooding Point: The lowest opening on a vessel that allows the entry of seawater into the hull or superstructure of an undamaged vessel due to heel, trim, or submergence of the vessel. (Note: Deck Bin Type, the top of the bin is considered the downflooding point)

4. Content

In general, the regulations and applicable provisions for the carriage of oil field waste (including provisions for cargo, route, structures, and stability) restriction are contained in 46 CFR Subchapter D. However, due to the unique nature of the cargo as a bulk, un-pumpable hazardous material, OFWB's do not fall neatly under the regulations. Therefore the Coast Guard has established equivalent standards, policy letters and inspection guidance for the purpose of environmental protection, and safe transportation (vessels/personnel safety).

a. If the vessel is new and not a sister vessel, has the Application for Inspection been submitted? In general, plan review may not occur until a copy of the Application is received.

b. Does the submission include all necessary information to demonstrate compliance with the applicable requirements? At a minimum, submissions should include the following:

(1) General Arrangement
- (i) Inboard Profile
- (ii) Outboard Profile
- (iii) Deck

(2) General Arrangement
- (i) Midship Section
- (ii) Shell Plating
- (iii) Deck and Inner Bottom
- (iv) Longitudinal Bulkheads
- (v) Stiffeners/Girders

(3) Stability
- (i) General Arrangements
- (ii) Lightship values
- (iii) Lines, offsets, or computer disk with hull model
- (iv) Hydrostatic Tables
- (v) Tank Capacity Tables/Plan
- (vi) Intact stability calculations

c. Does the submission clearly state what is desired from MSC?

d. Are all plans requiring Coast Guard review and/or approval submitted in triplicate (if submittal is in hard copy)?

e. Are there any special/unusual requests or a time critical element involved?

f. Is the vessel being reviewed under NVIC 10-82? If **Yes**, then ABS will review structural and structural fire protection plans; these plans may be reviewed by CG under normal oversight procedures. The Coast Guard retains review of the General Arrangement Plans; disregard sections for structure and structural fire protection when conducting normal plan review.

g. Is the vessel being classed by ABS? If yes, check file for ABS letter/drawings or request from submitter/ABS. As stated in 46 CFR 31.10-1(c), CG considers ABS structural review for class as acceptable for showing compliance with US regulations.

h. This Plan Review Guide (PRG) is applicable to OFWB's on **protected waters** routes. The construction standards applicable to OFWB's utilized for other routes must be determined by the Commandant (CG-ENG-2).

GENERAL ARRANGEMENT

a. Hopper Barge Type

(1) Verify that the coaming is at least 3 foot above the surface of the lightest product to be carried, see reference (i). The wall of the hopper may be counted towards the 3 feet, see reference (i).

(2) Verify that the vessel is fitted with a breakwater, (which can be the hopper coaming), see reference (j).

(3) Verify the total height of breakwater and freeboard is at least 6 feet along the vessel, see reference (j).

(4) Verify that the sections of the double hull standards of 33 CFR 157.10d(d) (OPA 90) have been met. See PRG C1-16 for guidance on Tank Barge General Arrangements.

(5) Verify the vessel is fitted with watertight bulkheads to reduce the effective of shifting materials, see reference (g).

b. Deck Bin Barge Type

(1) Verify the double boundary protection of deck bin per 33 CFR 157.10d(d) when the cargo boundary is within 30 inches of the side, reference (j). See PRG C1-16 for guidance on Tank Barge General Arrangements.

(2) Verify that the vessel is fitted with a breakwater, (which can be the hopper coaming), see reference (j).

(i) Deck bins are typically 4 to 5 feet in depth and divided into four compartments.

(ii) Open hopper type OFWB's on protected waters routes are not required to be fitted with watertight hopper covers. OFWB's on routes other than protected waters are required to be fitted with watertight hopper covers.

STRUCTURES

a. Hopper Barge Type

(1) Verify that the vessels are constructed as follows:

(i) The applicable tank barge sections of ABS Rules, reference (d), section 3, shall be used for the vessel structural review. See PRG C1-12 for guidance on Inland Tank Barge Structures.

(ii) Verify that the tank boundary bulkheads meet the standards of ABS Rules, reference (d), Part 3.2.1/19.3 with the specific gravity of 1.05 to the top of the coaming. All other watertight bulkheads shall be reviewed as per ABS Rules, reference (d), Part 3.2.1/19.5 with a full hopper of cargo using highest specific gravity to be carried.

(iii) ABS rules for dry cargo barges are not acceptable for OFWB's of hopper type

(2) For Existing Hopper Barge Type

(i) Verify the specific gravity to be used for structural purposes is the weighted average of water and highest density cargo.

(ii) Verify that the hopper scantlings meet the standards of reference (d), Part 3.2.1/19.5, with full hopper of cargo using the weighted average specific gravity.

(iii) If cargos with specific gravities higher than 1.05 are to be carried, verify that the hopper scantlings meet the non-tank bulkhead requirements (ABS Rules, reference (d), Part 3.2.1/19.5 with the higher cargo density per 46 CFR 151.15-3(e) and reference (h).

(iv) Verify that cargo density is assumed homogeneous, see reference (h), 46 CFR 174.310(e)(1).

(v) Verify that cargo is considered to be liquid for the structural review, reference (i).

b. Deck Bin Barge Type

(1) Verify that the non-bin structural members meet the standards of ABS Rules, reference (d), Part 3, Chapter 2. See Plan Review Guide C1-12 for Inland Tank Barges Structures and Longitudinal Strength.

(2) Verify that the tank boundary bulkheads (bin boundaries) meet the standards of ABS Rules, reference (d), Part 3.2.1/19.3 with the specific gravity of 1.05 to the top of the deck bin. All other watertight bulkheads shall be reviewed as per ABS Rules, reference (d), Part 3.2.1/19.5 with a full bin of cargo having the specific gravity cargo.

(3) Verify that cargo density is assumed homogeneous, see reference (h), 46 CFR 174.310(e)(1).

(4) Verify that cargo is considered to be liquid for structure review, reference (i).

STABILITY

a. In general, OFWB's must meet the stability requirements of 46 CFR Subchapter S. The intact stability requirements of 46 CFR 174.015, with a 10 foot degree right energy requirement and the weather criteria of 46 CFR 170.170, are applicable. The basic requirement for the stability is that the submitter must clearly demonstrate that each possible loading condition meets the required stability criteria of 46 CFR, Subchapter S per references (b) and (c).

b. A satisfactory stability review results in operational guidance in the form of a stability letter, and approved vessel loading conditions.

c. In addition, stability reviews may be preliminary or final, depending on the basis of the light ship values. Preliminary stability calculations are not required, but at the option of the owner/naval architect they may be submitted before the incline of the vessel, using assumed light ship values. This is often done to facilitate expedited final stability reviews. Preliminary stability reviews are conducted in the same manner as final stability reviews, except that a stability letter is not generated and all returned items are marked "Examined". Following the incline of the vessel and calculated results indicating the true light ship of the vessel, a final stability review may be accomplished and a stability letter generated. A new set of stability calculations is not required if the submitter demonstrates that the assumed light ship values closely match those resulting from the incline experiment (see reference (k) for further guidance and acceptable ranges).

d. When conducting Stability reviews for OFWB's:

(1) Verify Lightweight Characteristics utilizing one of the following methods:

(i) Does a sister vessel with known characteristics exist?

(ii) Has an approved procedure and subsequent stability test been performed in accordance with references (a), (e), and (f) reviewed in accordance with the PRG Gen-02, Submission of Stability Test Results.

e. Hopper Barge Type:

(1) A Stability study may not be necessary if the vessel meets all the following conditions as outlined in enclosure (2) of reference (g):

(i) The maximum specific gravity of the cargo does exceed 3.0 (12 cu ft/long ton or 25 lb/gal).

(ii) The following four barge characteristics define a hopper barge:

(a) Beam/depth ratio exceeding 2.3

(b) Long parallel mid-body with a nearly rectangular cross section

(c) Cargo hopper recessed into the main deck so that most of the material is carried below the main deck

(d) Buoyant voids surrounding all four sides of the hopper

(iii) The cargo hopper must be subdivided with a longitudinal centerline bulkhead and enough transverse bulkheads so that no compartment exceeds ½ the length of the hopper.

(iv) 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 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.

(v) The maximum allowable draft does not exceed the minimum of one of the following three cases:

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

(b) draft = 0.7 x D (D = depth of the 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 corresponds to the maximum load determined from the structural capabilities of the hopper.

f. If the vessel does not meet the above conditions, the following stability requirements apply:

(1) Verify that the criteria of 46 CFR 174.015, 10 foot degree righting energy criteria have been met, reference (e). (ensure use of the maximum free surface corresponding to the highest cargo to be carried, see 46 CFR 172.087(b)).

(2) Verify the criteria of 46 CFR 170.170, GM weather criteria, reference (b) has been met.

(3) Verify that the minimum freeboard is 3 feet.

(4) Verify that cargo density is assumed homogeneous for the calculations, see reference (h), 46 CFR 174.310(e)(1).

(5) Verify that cargo is considered to be liquid for stability, see reference (i). (Spillage of cargo is considered acceptable in stability calculations).

(6) Verify that the top of coaming is considered downflooding point, breakwater should be fitted, see reference (j) item 8.

g. Deck Bin Barge Type

(1) Verify that the criteria of 46 CFR 174.015, 10 foot degree righting energy criteria have been met, reference (c). (using the maximum free surface corresponding to the highest cargo to be carried, see 46 CFR 172.087(b)).

(2) Verify that the criteria of 46 CFR 170.170, GM weather criteria has been met, reference (b).

(3) Verify that the deck bin has 1 foot minimum ullage.

(4) Verify that cargo density is assumed homogeneous for the calculations, see reference (h), 46 CFR 174.310(e)(1).

(5) Verify that cargo is considered to be liquid for stability, reference (i).

(6) Verify that spillage of cargo occur at or above 5 degrees of heel (spillage considered acceptable in stability calculations).

5. Disclaimer

This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is not intended to nor does it impose legally-binding requirements on any party. It represents the Coast Guard's current thinking on this topic and may assist industry, mariners, the general public, and the Coast Guard, as well as other federal and state regulators, in applying statutory and regulatory requirements. You can use an alternative approach for complying with these

requirements if the approach satisfies the requirements of the applicable statutes and regulations. If you want to discuss an alternative, you may contact MSC, the unit responsible for implementing this guidance.

U.S. Department of Transportation
United States Coast Guard

Commandant
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16703/NVIC 7-87
16703/46 CFR 151.15

22 SEP 1989

From: Commandant
To: Commanding Officer, Marine Safety Center

Subj: STRUCTURAL STANDARDS FOR VESSELS TRANSPORTING OIL FIELD WASTES

Ref: (a) Your ltr 16703/NVIC 7-87 dtd 28 Aug 89

1. Reference (a) requested our consideration of a proposal from industry to permit structural evaluation of hopper structure using a specified height for cargo, in lieu of assuming that the hopper is filled to the coaming with cargo of the maximum allowable specific gravity. We recognize that the provision in NVIC 7-87 can impose greater design loads than are necessary for safety and offer the following guidance that retains a reasonable margin of safety.

2. A method to account for the higher stresses associated with loading high density cargoes in barges is found in 46 CFR 151.15-3(c) and may be employed when reviewing the structure of an open hopper barge carrying oil field wastes. The procedure involves evaluating the structure to the ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways, using two separate applications. First, apply section 3.7.2a, Tank Boundary Bulkheads, with 1.05 specific gravity water up to the coaming. Second, apply section 3.7.2b, Other Watertight Bulkheads, with a full hopper of cargo having the highest specific gravity to be carried. The required scantlings are established by the more severe requirement.

3. Although the described procedure for analyzing structural adequacy when carrying high density cargoes requires a full hopper, the formulas used produce conclusions favorable to the industry. The proposal to use specified fill heights, even with the tank bulkhead formula, is not acceptable since it does not account for vessel motions and trim or heel caused by non-uniform loading. A method that accounts for maximum cargo load, motions, and non-uniform loading is acceptable in concept, but appears to be of less benefit to industry than the above procedure.

4. To account for all possibilities in loading, homogeneous cargo density must be assumed in all calculations. This is consistent with the requirements in 46 CFR 174.310(e)(1), as published in 54 FR 36978 6 September 1989, for dredge spoils, which can settle and stratify similar to oil field wastes.

J. C. MAXHAM
By direction

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16703/NVIC 7-87
12 March 1990

From: Commandant
To: Commanding Officer, Marine Safety Center

Subj: STRUCTURAL STANDARDS FOR VESSELS TRANSPORTING OIL FIELD WASTES

Ref: (a) Your letter 16703/NVIC 7-87 dated 16 January 1990
(b) NVIC 7-87
(c) ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways
(d) G-MTH-3 letter 16703/NVIC 7-87 dated 22 September 1989

1. The questions posed in reference (a) cover the general applicability of reference (b) as well as procedures for structural evaluation using reference (c). Each of your questions is being addressed in the order posed.

2. The tank barge rules in section 3 of reference (c) shall be used throughout the vessel, as modified by reference (d). Design heads for structure that supports the hopper shall be consistent with design heads for adjacent hopper structure. Oil field waste is considered as a liquid for the purpose of structure and stability review and therefore, the dry cargo barge rules in section 4 are not appropriate for hopper barges. Section 3 contains procedures for evaluating double skin tank barges. All vessels carrying oil field wastes must comply with the applicable standards; no special provision is intended for accommodating existing barges designed as dry cargo hopper barges.

3. Reference (d) is correct as worded; partial loading analysis is not acceptable. The allowance for not actually filling hoppers full with high density products in service is already accounted for by reverting to the ordinary bulkhead rules with the maximum specific gravity. This reduces bulkhead thickness requirements by about 30 percent and SM requirements by 54 percent from the requirements when using tank bulkhead rules. This procedure is in the regulations for barges that carry high density hazardous chemicals, a strong precedent in easing an analysis for tanks that may not be carried full of high density products. The hypothetical condition of a full hopper at the maximum specific gravity accounts for infrequent possible accidental overfilling without a resulting catastrophic structural failure, a scenario easy to envision with small tanks as are often found on subchapter O barges. For the long narrow hoppers typical of barges transporting oil field waste, trim and list conditions resulting from uneven loading/unloading and cargo shifts might cause an actual partial load to present a full load head at boundary bulkheads. One of these vessels trimmed then sank, due to the settling of the cargo.

4. The 3 foot coaming required by reference (b) should extend 3 feet above the surface of the lightest product to be carried, when the vessel is at the deepest permitted draft in calm water with operating trim and no list. The walls of a hopper may count toward the 3 feet, provided crew protection is maintained at the edge of the hopper. The lightest product must be considered since pollution prevention is a primary reason for a coaming. Although not

specifically mentioned in reference (b), one important function of a coaming is to prevent downflooding, which can occur on protected waters. For this purpose, the total of the freeboard and the coaming height above deck must be sufficient to preclude downflooding angles, and therefore waste spill angles, of less than 12 degrees at operating trims. Vessels with large freeboards could have reduced coaming heights, conceptually to the point of not having a coaming above deck, provided restraint is provided for personnel protection and the 3 foot outage criteria mentioned above is met.

5. Reference (b) was not intended for application to a deck cargo barge with an on deck cargo bin, although it may be applied if proper consideration is given to the differences in design. Cargo bins should be reviewed as tanks with the procedures applicable to an open hopper. Section 4 of reference (c) may be used for vessel structure that is not part of the cargo bins. The double skin construction requirement for the hopper barge serves to prevent spillage of waste from both external grounding/collision damage and from internal damage caused by the loading/unloading operation. For the deck cargo barge with deck mounted bins, the bin location eliminates any need for double hull construction to protect against grounding/collision damage. Prevention of spillage caused by internal loading/unloading damage could be accomplished by double skin bin construction but also could be achieved by other means such as secondary containment in the form of additional coamings surrounding the deck mounted bin.

6. The cargo tank may form part of the required coaming with deck cargo bins as discussed above for hoppers.

7. The stability requirements are for vessel survival, not directly for the prevention of pollution. The righting energy criteria should be applied in the normal manner with the coaming considered as a point of downflooding. Also, spilling of cargo in the calculations, as done with hopper dredges, is acceptable for the purpose of stability calculations.

8. There are no standards governing the arrangement of bulkheads needed to subdivide hoppers or limit their dimensions, other than what is necessary to comply with the applicable stability standards. Paragraph 3.7.1 of reference (c) applies. It is quite possible that subdivision will be necessary to limit the spill angle to greater than 12 degrees since the coaming is to be considered as a point of downflooding.

9. Stability and structural guidance shall continue to include maximum drafts. You are free to voice your concerns and recommendations to the OCMI since operational controls to ensure that the vessel is not overloaded should be to the satisfaction of the OCMI. However, physical fill height markers in hoppers will generally not be useful due to the density variability of oil field waste. Fill height markers shall not be substituted for draft marks and freeboard readings. Oil field waste may vary considerably in average density and operators may not monitor the specific gravity closely, although they should know that the specific gravity of the waste on board does not exceed the maximum allowed by loading restraints. In general, using fill height markers will not be as accurate as reading draft marks in determining the maximum allowable load when the specific gravity of the cargo is not closely monitored.

J. C. MAXHAM
By direction

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DECK BIN POLICY

16703/NVIC 7-87

07 JUN 1990

From: Commandant
To: Commanding Officer, Marine Safety Center

Subj: VESSELS TRANSPORTING OIL FIELD WASTES

Ref: (a) G-MTH-3 letter 16703/NVIC 7-87 dated 12 Mar 90

1. Reference (a) answered questions regarding the application of the provisions of NVIC 7-87. You subsequently indicated concern with the guidance provided in reference (a) pertaining to open top tanks on deck barges (deck bins). Commandant had not previously addressed the use of deck bins, particularly in NVIC 7-87. In response to the concern regarding the impact of reference (a) on the operators of barges fitted with deck bins, the issue of deck bins has been studied.

2. Reference (a) remains valid, except as noted herein. Oil field wastes may be transported on protected waters in deck bins without covers. For spill protection, an ullage of at least 2 feet that ensures a spill angle of at least 12 degrees should be provided and replaces the requirement for a 3 foot ullage. Also, paragraph 5 of reference (a) is modified to require a double boundary for collision protection of a deck bin only when the cargo boundary is within 30 inches of the side of the barge, which is rarely the case. The rescinding of previous approvals is not intended. Some pertinent background information follows.

SUPERCEDED BY CGD91 CTR

3. The issue of oil field waste is not new. On 12 September 1985, approximately 90 interested persons from the public attended a public meeting on the matter. Written comments advocated a coaming 3 feet higher than the deck, for the safety of the carriage of cargo and personnel. They advocated subdivided hulls for stability purposes. Water intrusion was the concern of some commenters in addressing coamings. Freeboard was recognized as important to stability, many commenters advocating a minimum of 3 feet. Spillage in normal operations, caused by loading/unloading activity, does not appear to have been a major concern. A review of available casualty and spill information indicates existing vessel arrangements do not pose a problem. The 2 identified spills occurred on uncertificated vessels and one resulted from a foundering caused by shifting of the waste.

4. The public comments in 1985 described quite well both arrangements currently under review, the open hopper barge and the deck bins. The deck bins are used in the Louisiana marshes, where hopper barges are too large. The inland market is considerable because Louisiana required the clean-up of numerous waste pits. The deck bins were typically 4 to 5 feet in depth and divided into 4 compartments. The term "shale barge" was used by some commenters. No evidence exists to indicate that a second boundary has ever been fitted on a barge with deck bins, although in 1985 some letters of authorization were suspended because more liquid than solids was being loaded.

Subj: VESSELS TRANSPORTING OIL FIELD WASTES

5. NVIC 7-87 originated with a draft submitted by OCMI NOLA on 23 January 1986. The draft addressed "specially designed bins on the deck of the barge...or hoppers." The forwarding endorsement by CCGD8(mvs) included a recommendation: the "level of cargo in hoppers shall be at least 3 feet below the lowest point on the edge of the hopper." In the 18 months up to the publication of NVIC 7-87, the deck bin arrangement disappeared from the text, apparently without specific intent. The reasoning in NVIC 7-87 for the 3 foot coaming does not include the prevention of downflooding, although downflooding in most cases would lead to spillage as a consequence of vessel sinking.

6. Given the substantial amount of "satisfactory service" with deck bins, a second boundary to contain spillage appears to be more than is necessary. From the 1985 public comments it is apparent that clamshell buckets have been used to load/unload waste oil barges for years, generally without a spill problem caused by mechanical damage during unloading.

7. The issue of required coaming height (ullage) to prevent spillage is complicated. Documentation of past practice and test results are not available to determine how much ullage is needed for service on protected waters. It appears that the industry has been operating with less than 3 feet without incident, although often with at least 2 feet. However, the current sensitivity with oil pollution dictates that a lesser standard not be set if it might result in designing to that lesser standard and subsequent spills. The CCGD8 recommendation for a 3 foot ullage reinforces the need to retain that figure unless it can be shown to be excessive, or an equivalent level of safety can be established. The ullage may be reduced to 2 feet provided the minimum spill angle is at least 12 degrees. The 12 degree provision will preserve the spill protection for slowly shifting cargo afforded by a 3 foot ullage on a typical hopper barge, and the 2 foot ullage will compensate for using an angular criteria when it might result in unreasonable spill protection.

8. The concept of downflooding is important with open top vessels, as indicated in 46 CFR 32.63-10. On protected waters, vessel roll is not of concern but waves and wake are of concern. Specifying the minimum acceptable downflooding protection is not necessary for deck bins due to the height of the bin. Open hopper barges should be fitted with a breakwater, which can be the hopper coaming, such that the sum of the height of the breakwater and the minimum freeboard along the length of the barge is at least 6 feet. Typical open hopper barges have a minimum freeboard of at least 3 feet and a hopper coaming of at least 3 feet in height above the deck.

Subj: VESSELS TRANSPORTING OIL FIELD WASTES

9. NVIC 7-87 will be revised to address recent issues and comments expected from OCMI New Orleans.

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By direction

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