

Appendix 10-F
Backloading of Wet Bulk Cargoes and Carriage
on Offshore Support Vessels

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Revision History

Revision Number	Date	Section	Changes
1	1/6/18	Title	Title changed to 'Appendix 10-F Backloading of Wet Bulk Cargoes and Carriage on Offshore Support Vessels'
		General	Wording updated throughout this appendix to ensure that good practice steps are applied to ALL wet bulks being planned and transported on offshore vessels
		Annex-10-F-2 - Analysis Form	Title of form changed to "Annex 10-F-2 Backload & Analysis Form"
		Annex-10-F-2 - Analysis Form	Form layout and wording changed

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1 OBJECTIVE

To provide specific advice for the safe transportation, offshore handling, tank cleaning, onshore handling and onshore disposal or treatment of all wet bulk backloads from offshore facilities.

This guidance is aimed at offshore installations, Offshore Support Vessels and appropriate onshore staff (e.g. Surveyors, Tank Cleaners, Base Operators, and Waste Processors). In particular, relevant documentation must be made available to the Vessel Master prior to backloading, confirming that Flash Point exceeds 60°C, appropriate steps to avoid H₂S generation and documented acceptable level of Lower Explosive Limit (LEL) have been carried out.

The vessels master must have reliable documentation to assess safe transportation onboard the vessel. The base operators and bulk processors must also have relevant documentation for the handling at the onshore base.

All appropriate sections of the Annex 10-F-2 Backload & Analysis Form must be completed prior to backloading the wet bulk to the vessel.

2 BACKGROUND

Industry, in conjunction with the GOMO Steering Committee and the Marine Safety Forum has produced this Good Practice document to assist operators in better describing the wet bulk backload cargoes they wish to transfer to shore for processing, using the bulk mud tanks on Offshore Support Vessels (OSVs).

In the course of well operations, water based fluids such as seawater, brine or water based mud may become contaminated, commonly with oil based mud or base oil from oil based mud, (herein after called wet bulk waste) which cannot be legally discharged to the marine environment. These contaminated fluids are returned to shore for treatment or disposal. All wet bulk backload must have relevant documentation for the transportation on OSV and subsequent discharge to the shore facility.

Operations giving rise to such fluids include:

- Well bore clean-up operations where oil base mud is displaced from the wellbore to seawater or completion brine.
- Operations where water base mud becomes contaminated with oil based mud during displacements.
- Cementing operations with associated spacers.
- Pit cleaning operations.
- Drilling operations where wellbore fluids are contaminated with oil based mud, crude oil, or condensate.
- Other tank cleaning operations where fluid chemical components cannot be discharged because of the Offshore Chemical Regulations.
- Rig floor drains where the fluid is oil contaminated.
- Any of the above fluids may also be contaminated with hydrogen sulphide (H₂S), typically from sulphate reducing bacteria (SRB) activity.
- Mud that has been in contact with hydrocarbons.
- Any wet bulk planned for backload that has been assessed and found to have no elevated risk during transportation must have this documented on the backload form along with relevant datasheet and a confirmation from the mud engineer / laboratory person.

When fluids are severely contaminated and of small volume, then general industry practice is to transport to shore in Tote tanks or similar type carrying units. For fluids that are “lightly” contaminated, general industry practice has been to backload to the mud tanks on the OSVs. It is this latter practice in particular that has raised grave concerns for the following reasons.

- a) It is difficult to accurately describe the chemical make-up of the fluid and hence provide a Material Safety Data Sheet (MSDS) sheet that adequately describes the material.
- b) Gas testing on OSVs returning to shore with this cargo has found, on a significant number of occasions, high levels of H₂S in the atmosphere above the cargo. Lower Explosive Limit (LEL) tests also revealed an explosive atmosphere in excess of that which the OSV has the capability to safely transport.
- c) The mud tanks on the OSVs are not designed or classified to contain and transport wet bulk cargo with a flash point of less than 60°C. The pump rooms and pumping systems for the discharge of the product tanks are not intrinsically safe. This classification is only found onboard specialist type OSVs.

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The reason for the very high LEL % values that have been recorded is contamination with crude oil and condensate. The bulk mud tanks on standard OSVs are not designed for this purpose and under NO CIRCUMSTANCES should fluids contaminated with the mentioned products be backloaded to an OSV's mud tanks.

Recognising the relatively complex nature of the cargo, this Good Practice document has addressed the issue by recognising that a series of tests should be undertaken on the material intended for backload to provide an indicative view of the constituent make up and reactive qualities of the material. It must be recognised that because of the segregation issues described in section 3.0 below, these tests can only be indicative.

The tests can be performed either on the rig or onshore but must be performed by a competent person as determined by the Operator. The rate at which these fluids are generated during certain operations on the rig may preclude sending samples to shore for testing, necessitating rig-based testing. In either case, the results of the tests must be made available to the Master of the OSV prior to the backloading hose connection taking place. Once tests have been carried out, no more fluid should be added to the intended cargo on the offshore installation. If any further additions are made, then a further test will be required.

The results of these tests will allow the Master to establish if the backload is acceptable for carriage onboard the OSV. Acceptance is based on the reported analytical information and the measured physical properties, the known nature of the chemical make-up and the previous cargo carried in the OSV's tanks. A generic risk assessment will be available onboard the OSV and updated when new, improved or different information and circumstances become apparent. Offshore installation staff should be aware that, in certain circumstances, the Master of the OSV may require advice from the OSV's onshore technical advisors and that a response from onshore may take time to progress. **If there is any doubt regarding results repeat the tests and review.**

The backload hose should not be sent to the OSV and connected up unless there is an agreement between the OSV Master and the Installation OIM/Operating DSV that the backload is acceptable for transportation.

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3 COMPOSITION OF THE WET BULK WASTE

This section of the guidance relates mainly to Wet Bulk Waste although certain principles to allow for safe transportation may apply to other types of wet bulk.

The final wet bulk waste may contain components and formulated mixtures including but not limited to:

- Water (both seawater and potable water)
- Oil based mud
- Base oil
- Water based mud
- Well bore clean-up detergents
- Completion brine (including corrosion inhibitors, biocide etc.)
- Cement spacers
- Rig wash
- Brines containing various salts
- Other substances, e.g. glycol, pipe dope, etc.

The major component is normally seawater. The proportions of the other constituents are variable. The wet bulk waste is likely to be heterogeneous in that oil mud will separate to the bottom, base oil to the top, with seawater in between. OSV motion will not normally be sufficient to mix and stabilise the cargo to a homogeneous form.

The components and formulated mixtures may arise from different wellbore operations. The volumes of each component are normally known, although the degree of volumetric accuracy is variable depending on how and where this material is stored on the rig prior to backloading to the OSV.

During discharge to onshore storage tanks and road tankers, the make-up of the initial discharge may be different in composition to that discharged later due to separation of components during transportation. This may result in higher concentrations of an individual component being transported in road tankers.

Example

Oil based mud or contaminated wet bulk waste containing:

Seawater	75% (volumes)
Mineral oil base mud	10%
Cement spacer with surfactants	10%
Base oil	5%

The above mixture will separate, leaving the base oil on the surface, the seawater below this and the mineral oil mud on the bottom. The cement spacer will mix with the seawater, although the surfactants will also mix with base oil and oil mud.

During transfer operations from the OSV to road tankers, the initial fluid comprises the heavy oil mud, followed by the lighter seawater and finally the base oil. In the event of a hose rupture or spillage, all component fluids should be treated as oil contaminated and should be contained, preventing discharge to the sea.

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4 TESTING PRIOR TO BACKLOAD

Whilst the guidance in this section is specifically aimed at testing of Wet Bulk Waste, some of the tests and test processes may apply to other types of wet bulk and should be used where possible to help ensure safe carriage.

Wet bulk waste may contain a significant number of chemicals for which Material Safety Data Sheets (MSDS) are available offshore. It is not practicable, however, to develop a description of the wet bulk waste from such an array of documents. Although MSDS will be available for formulated mixtures, there may still be uncertainty in describing the properties of the wet bulk waste. As a precaution the following tests should be carried out, prior to backloading, in order to assist confirmation of the potential hazards:

- | | | | |
|---|----------------------|---|----------|
| • | pH | Numerical range 0 - 14 | |
| • | Salinity (Chlorides) | mg/l | |
| • | Retort | Oil content | volume % |
| | | Water content | volume % |
| | | Solids content | volume % |
| • | Flash point | (closed cup °C) | |
| • | Noxious gases | LEL Explosive gases,
H ₂ S,
Oxygen | |
| • | Bulk density | Specific gravity | |

As described in section 2.0, tests may be carried out offshore on the installation by trained and competent personnel or samples sent onshore for analysis by the Waste Processor or other competent laboratory.

The analysis and treatment should be carried out in a timely fashion on representative samples of each wet bulk waste intended for backloading to an OSV. If backloading is delayed for any reason, such as bad weather, it should be noted on the Annex 10-F-2 Backload & Analysis Form and the volume and the pH of the Wet Bulk Waste should be monitored daily. If there is any doubt regarding results, repeat the tests and review.

Results of the tests along with the analyst's signature and date completed should be entered on the Annex 10-F-2 Backload & Analysis Form and attached to the appropriate Waste Consignment Note, e.g. SEPA C note.

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4.1 KEY TEST RESULTS RANKED

Test	Indicator	Range of results	Interpretation
Flash point	Potential for explosion	>60°C	Should be > 60°C to backload. If the flash point is low (<70°C) then an explanation should be provided.
LEL	Potential for explosion	Ideally zero. Meter alarm typically set to 10 - 20% LEL	Consistent with Flash point above - for transport only. If measurable LEL, repeat test and review explanation.
H ₂ S	Poisonous gas	Must be zero	Indication of bacterial activity
pH	Measure of acidity or alkalinity	9.5 – 10.5	To keep H ₂ S in solution COSHH Personnel Protection Equipment and personnel exposure If pH greater than 11 discuss with OSV Master
Oil % volume	The major component requiring backload	Agrees with components in Annex 10-F-2	Confirm retort agrees with Annex 10-F-2 and waste consignment note
Solids % content	Potential need for tank cleaning	Agrees with components in Annex 10-F-2	Confirm retort agrees with Annex 10-F-2 components and waste consignment note. Tank residue could form a source of SRB and H ₂ S over time.

More detailed Procedures are provided in Annex 10-F-I attached to this Appendix. Test results should be consistent with the information on the Annex 10-F-2 Backload & Analysis Form.

5 FURTHER GUIDANCE FOR THE OSV

No Wet Bulk should be backloaded until an Annex 10-F-2 Backload & Analysis Form has been received onboard confirming that it is acceptable for transportation.

The form should be completed and signed for all relevant/applicable sections relating to the type of wet bulk being backloaded.

There is no onus on the OSV to carry out further tests. Tank hatches should not be removed offshore because of associated risks to vessel and personnel

Tests on board the OSV at the time of backloading are only possible if sampling ports are available. Consideration should be given to installing suitable sampling ports onboard OSVs to allow the use of the LEL/H₂S meter (Usually this can be dropped from the vent system using the extended sniffer hose).

Loading on top of bulk fluids already in ships tanks should be avoided. Wet Bulk Waste should, where possible, be backloaded to a suitable clean tank. Where this is not possible further guidance should be sought from operator's competent person and with reference to operator's procedures.

The potential for biological activity resulting in H₂S in the dead volume and sludge must be risk assessed. Should the overall pH be reduced through mixing of the fluids, H₂S breakout can occur.

Wet Bulk Waste should be discharged from the OSV as soon as possible. The need to clean the tanks should be reviewed on each trip to minimise the risk of biological activity and H₂S build up from any solid residue.

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Experience has shown that round tripping untreated Wet Bulk Waste increases the risk of H₂S breakout occurring due to the additional time Sulphate Reducing Bacteria (SRB) have to be active.

IMPORTANT:

Where Wet Bulk Waste is to be round tripped, a sample should be obtained from the tank and the pH checked to ensure no change has occurred since analysis. The volume of Wet Bulk Waste should also be checked to determine if any ingress has occurred (seawater ingress into the tank will reduce the pH and introduce a food source for bacteria) Where a change has occurred, further guidance should be sought from operator's competent person and with reference to operator's procedures.

6 TESTING IN THE HARBOUR PRIOR TO OFFLOAD

A gas test for LEL and H₂S must always be performed on the OSV tanks containing the backloaded material prior to offloading in port as a matter of standard procedure.

Waste Processors should also check the Annex 10-F-2 Backload & Analysis Form parameters onshore. Prior to discharge, the ullage air space in the tank will be sampled by the Waste Processor, preferably in conjunction with the Surveyor, for LEL and H₂S, to confirm that no change of condition has occurred. Undertaking these tests will confirm that the Wet Bulk Waste is safe to offload.

A sample from the offloaded material should be taken and compared to the original analysis. In the event that there is a significant divergence between offshore analysis and onshore analysis, the Waste Processor should raise a non-conformance. If there is any doubt regarding results, repeat the tests and review. The Offshore Operator, the Offshore location, the OSV Master, Base Operator, Surveyor, and Tank Cleaners should be advised accordingly.

Note.

If the wet bulk waste is backloaded into tanks already containing oil based mud residues as can be the case, then the onshore test results will be different to those measured on the rig.

7 DOCUMENTATION AND REPORTING REQUIREMENTS

Material Safety Data Sheets (MSDS) documentation of the components and mixtures must be made available to the OSV Master. IMDG manuals are carried on the OSV for all types of chemical materials shipped.

A Waste consignment note appropriate to the area of operations, e.g. EA or SEPA C, is generated to accompany the wet bulk waste being backloaded. This should reference the attached Annex 10-F-2 Backload & Analysis Form.

The completed Annex 10-F-2 Backload & Analysis Form must be reviewed, signed and dated by the Operator's Representative to confirm the backload is safe to transfer.

The Waste Consignment note, along with duly completed, signed and dated Annex 10-F-2 Backload & Analysis Form is to be made available to the Ship's Master prior to backload operations for review and comment.

Once it is agreed to backload, a copy is forwarded to the Waste Processor onshore by the offshore Installation which will include volume of Wet Bulk Waste and estimated time of arrival in port. This will allow planning to ensure in most cases the Wet Bulk Waste is discharged in a timely and efficient manner reducing delays in port and likelihood of round tripping.

A dangerous goods certificate must be provided by the Offshore Installation based on the requirements of the individual component MSDS.

The Waste Processor checks the samples drawn onshore, comparing the analytical results to those obtained from the offshore analysis. In the event of a discrepancy the Offshore Operator, the Offshore location, the OSV Master, Base Operator, Surveyor, and Tank Cleaners should be advised accordingly.

Test results should be also be provided to tank cleaning companies in the event tank cleaning is required

Whilst every effort has been made to ensure the accuracy of the information contained in this Appendix and its Annexes, neither the GOMO Steering Committee nor the Marine Safety Forum nor any of their member companies will assume liability for any use made thereof.

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8 ANNEX 10-F-1

8.1 SAMPLING OF LIQUID AND SOLID COMPONENT PROPERTIES

The sample for the following analyses should be taken from the middle of the pit immediately after adequate agitation.

8.2 FLASH POINT

The minimum acceptable flash Point (Pensky Martin Closed Cup or equivalent) of 60°C is applicable to all wet bulks and will determine whether the material is safe for transportation via the OSV's tanks. SOLAS regulations determine that materials with a flash point below 60°C cannot be backloaded to a OSVs mud tanks unless the OSV is certified for carriage where additional systems of inerting the environment onboard the OSV will be in place. Generally, OSVs do not have the intrinsically safe systems required for the carriage of produced or unrefined hydrocarbons.

Sampling should be set up to detect the worst case situation, particularly where there is potential for crude oil or condensate contamination where the oil will rise to the surface of the tank. Drilling rigs will normally have robust ventilation in the area used to store oil contaminated fluids and this may mask the condition experienced onboard an OSV when carrying hydrocarbon contaminated product. OSV storage tanks are not normally vented. Air sampling from above the drilling rig mud pits may understate explosive gases.

Sampling should reflect the conditions in the OSV tanks, i.e. no agitation. Base oils typically have flash points in the range 70 - 100°C. If the only oil component in a wet bulk is base oil, then the flash point cannot be lower than that of the base oil itself. If the flash point is relatively low (60 - 70°C), an explanation must be provided on the Annex 10-F-2 Backload & Analysis before the form is presented to the OSV Master. Prior to sampling, the installation pit should be left without agitation for at least 30 minutes and then surface sampled. If there is any doubt regarding results repeat the tests and review.

This sample can then be split and one part used for Flash Point testing and the other for Noxious gases. Flash point is tested as per Closed Cup Flash Point equipment manufacturers instructions.

8.3 LOWER EXPLOSIVE LIMIT (LEL)

The LEL gas detector will confirm potential flash point problems. Note that the LEL meter is used in harbour to check vapour condition in the ullage air space above the tank prior to discharge. The test carried out prior to backloading should reflect the conditions in the ships tanks, i.e. there will be no agitation and no forced ventilation unless it is specifically required or requested (unlike rig mud pits).

The Noxious gas test is modified to simulate the unvented ships tanks. The sample is placed in a closed container with a sampling port on top and left to equilibrate for 30 minutes. A tube is then connected from the port to the gas analyser and the sample analysed. This method simulates the unvented ships tank.

The above Procedure has been agreed with gas analyser manufacturers and service companies carrying out the test offshore.

The flash point and LEL results should be consistent with each other. LEL gas meters are normally set so that the alarm goes off in the range 10 - 20% LEL methane equivalent. Any number above 25% would be considered high. Other gases potentially present can have a different LEL range than methane. If there is any doubt regarding results, repeat the tests and review.

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8.4 HYDROGEN SULPHIDE (H₂S)

H₂S can occur in wellbore fluids but this source would normally be identified by rig equipment and appropriate measures taken to neutralise and remove the H₂S.

In surface tanks and facilities H₂S most commonly arises from the activity of sulphate reducing bacteria (SRB). SRB will become active provided there is a "food" source and low oxygen conditions. This would be typical of stagnant oil contaminated fluid stored for a long time. This environment can arise on both installations and OSVs in tanks and manifolds. Disturbing stagnant fluids or mixing low pH fluid into a high pH fluid containing H₂S could cause the release of H₂S into the void space above the tank.

Hydrogen Sulphide is a heavier than air and an extremely poisonous gas. Maximum exposure limit is 10 ppm over an 8 hour period. The LEL gas meters currently being used also tests for the presence of H₂S. H₂S is a known danger during drilling operations. Offshore sensors and routine offshore analysis methods will detect if H₂S is a potential problem in wet bulk backloads. In the event of a positive test another sample should be collected to confirm the result. If this second result is positive further work may be required to determine the source of the H₂S. A test using a Garrett Gas train (if available) will determine the levels of H₂S dissolved in the liquid.

The SRB organisms thrive in a pH range of 5.5 - 8.0. The lower the pH, the greater the breakout of H₂S. The backload MUST be treated on the installation to prevent breakout of H₂S in the OSV tanks. Biocides kill the bacteria but do not remove dissolved H₂S. H₂S scavengers will remove dissolved H₂S but do not stop biological activity. Caustic soda (or similar alkaline materials) will raise the pH and prevent H₂S gas breakout.

In the event H₂S is detected, tests should be carried out offshore to determine the best treatment prior to backloading. If H₂S is detected but no H₂S scavenger is added to remove the dissolved H₂S, this should be noted in the conclusions section of the Annex 10-F-2 Backload & Analysis Form.

After treatment, a final headspace H₂S test should be carried out to confirm zero H₂S and noted on the Annex 10-F-2 Backload & Analysis Form before the hose is connected to the OSV for backload.

8.4.1 Example Procedure for LEL% and H₂S meter only

Collection of Sample

The sample should be taken from below the surface of the unagitated tank to simulate the unagitated OSV tank. Most oil will be in the top layer and will give a worst case oil content.

1. Leave tank or pit unagitated for 30 minutes before taking a 2.5 litre sample.
2. Fill the sample into container provided, up to the marked line and replace screw cap lid
3. If a magnetic stirred is available, mix for 1 hour before proceeding to gas detection. Two large magnetic fleas included in kit.

Gas Detection (% LEL value, combustible gases)

1. Ensure batteries have been fully charged. If not, place in charger and allow charging for 12 hours.
2. Switch instrument on in a clean air environment
3. The detector will beep and run a set of self-checks. Once these are complete, the screen will display 3 levels on the screen
H₂S: 000 ppm
O₂: 20.9 %
LEL: 000 %
4. The pump automatically starts and continues to run until the unit is switched off.
5. Remove the plugs in the sample container lid and place the sampling hose into the head space
6. Any combustible gas will be registered on the LEL monitor.
7. After 5 minutes remove the hose and switch detector off by holding down the on/off button for 5 seconds; (the unit will beep 4 times before switching off)
8. Any gases detected should be reported on the Annex 10-F-2.

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Calibration

1. O₂ sensor is automatically calibrated each time the unit is switched on.
2. LEL sensor is factory calibrated to Methane and can be calibrated using a calibration gas supplied by BW Technologies.
3. H₂S sensor is factory calibrated but subsequent calibrations can be done using a calibration gas supplied by BW Technologies.
4. It is recommended that the LEL and H₂S sensors be calibrated every three months or when the unit is onshore using the appropriate mixed calibration gas from BW Technologies.

8.5 pH

Seawater pH is typically 8.3. Oil mud is alkaline and could raise the pH slightly. Cement contaminant is highly alkaline. In general, alkaline pH (above 7) protects from corrosion. Highly alkaline materials can be caustic and require care in handling. Cement and sodium silicate can lead to high pH.

Low pH (less than 4) is highly acidic and an explanation should be provided on the Annex 10-F-2 Backload & Analysis Form. Acids such as citric acid or acidizing chemicals such as hydrochloric acid can lead to low pH.

Low pH Wet Bulk Waste is very uncommon and would require large quantities of alkaline material to increase pH above 9.5. In this unlikely event further guidance should be sought from operator's competent person.

Note that low pH (less than 9) means any H₂S present will already have broken out as a gas.

The pH range of 4 – 11 is the acceptable range for transportation of any bulk fluids to avoid damage to OSV tank coatings and seals. Some OSV tanks may be capable of carrying fluids out with this pH range; this should be discussed with the OSV Master prior to backloading.

Wet Bulk Waste will be treated to have a pH of 9.5 – 10.5 as this is the range that H₂S will remain in solution.

8.6 SALINITY – CHLORIDES

Seawater is typically 20500 mg/l chlorides. Oil mud contains some calcium chloride increasing this level slightly. Sodium chloride brine can contain up to 189000 mg/l. Results should agree with the composition.

8.7 RETORT ANALYSIS (SOLIDS, WATER, OIL VOLUME %)

This should match the estimated composition (volume %) on the Annex 10-F-2 Backload & Analysis Form. Note that it may be difficult to get representative samples if the liquid tends to separate. Some divergence is expected e.g. if oil is noted as 5%, the range could be 3 - 10%. If separation is likely a range is preferred e.g. 5 - 10%. The solids component can form a residue in the OSV tank and a potential location for SRB activity and H₂S.

8.8 SPECIFIC GRAVITY - S.G.

Common water based fluids cover the range 1.03 (seawater), sodium chloride (1.2), and calcium chloride (1.33). Rarely used brines such as caesium formate can reach 2.2. Oil mud is typically 1.1 - 1.5 but can exceed 2.0. Mixtures will have intermediate values, most tending to 1.03 as seawater is the major component. Note that if mixtures separate the top half can be a different density than the bottom half.

8.9 APPEARANCE

General description confirming if cloudy, clear and colour. Should be consistent with Waste Consignment Note description.

8.10 ODOUR

Slight versus strong odour, consistent with description.

8.11 CONCLUSIONS

Should demonstrate the various parameters measured are in agreement with one another.

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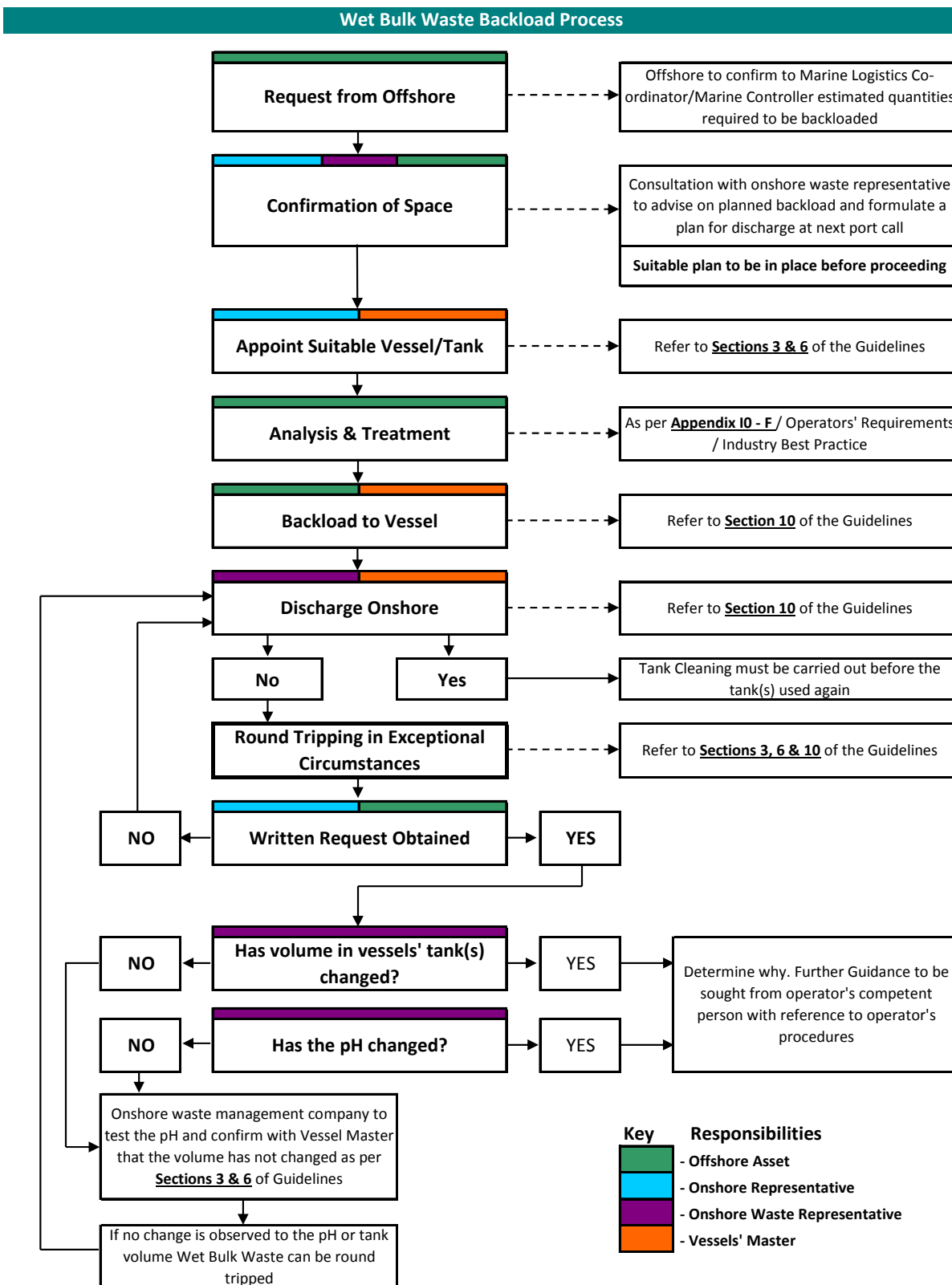
9 ANNEX 10-F-2 – BACKLOAD & ANALYSIS FORM

TO BE COMPLETED AND PROVIDED TO OSV MASTER PRIOR TO BACKLOADING				
Bulk description		Full analysis required? Y/N		
Offshore asset		If not; what supporting documentation is provided		
Vessel		Risk for the transport phase (H2S, LEL, LFL)		
Sample reference		Date		
Volume		Receiver at shore base		
WET BULK COMPONENTS				
Component Name	Concentration	Units	MSDS Available	
		% Volume		
		% Volume		
		% Volume		
		% Volume		
		% Volume		
		% Volume		
		% Volume		
LABORATORY ANALYSIS RESULTS (all relevant tests must be conducted)				
Test	Method	Units	Result	Range of Results / Guidance
Salinity (Chloride)	Titration	mg / l		
Flash Point	Closed Cup Flashpoint	°C		Must be >60°C to backload If flashpoint is low (<70°C) then explanation should be provided
Gas Test (H2S)	Gas Meter	Ppm		Must be zero Indication of bacterial activity
Gas Test (LEL)		%		<25%, ideally zero. Meter alarm typically set to 10 – 20% LEL. Should be consistent with flashpoint
Gas Test (Oxygen)		%		
pH	pH Meter			4 – 11 is acceptable range for OSV tank coatings. MUST be 9.5 – 10.5 to keep any H2S in solution
Water	Retort	% Volume		
Oil Content	Retort	% Volume		Confirm retort report agrees with Appendix 10 – F, Section 4 components and waste consignment note.
Solids	Retort	% Volume		Confirm retort report agrees with Appendix 10 – F, Section 4 components and waste consignment note.
Bulk Specific Gravity		S.G.		<2.5 If >2.5 seek further guidance on vessel capability
Appearance				
Odour				
Date and Time of Analysis				
CONCLUSIONS				
1.				
Analysis to be conducted by person competent to do so				Comments (Yes / No / Details)
The Wet Bulk as detailed above has been assessed in-line with the guidance contained in GOMO Appendix 10-F; The planned backload has been discussed with the vessel Master and confirmed as safe for carriage in a clean tank(s)				
H2S Avoidance				
Details of mandatory wet bulk waste treatment with biocide (chemical / quantity)				
Details of wet bulk waste treatment in order to produce pH of between 9.5 and 10.5 (chemical / quantity)				
Has waste handling facility been informed of volume and ETA onshore? Y/N				
Does the waste handling facility have the capability to take off the waste at the first port call? Y/N				
	Name	Signature	Date	
Analyst				
Operations Representative				

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Appendix 10-F Backloading of Wet Bulk Cargoes and Carriage on Offshore Support Vessels

10 ANNEX 10-F-3 - PROCESS FLOW CHART



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