



BARGE SALVAGE – PORTREE- OIL, GAS AND FEED DISCHARGE AND REMOVAL METHOD STATEMENT

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Amendment Register

Revision	Date	Issued by	Approved by	Amendments
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Supporting Documentation

Document Ref	<ul style="list-style-type: none"> BMC Diving Operations Manual HSEMP Manual DV0240-4002 Barge Salvage – Portree ROV method statement DV0240-4003 Barge Salvage – Portree Diving ops method statement DV0240-4005 Barge Salvage – Portree Escape Plan DV0240- 4006 Barge Salvage – Portree General FRC Operations Method statement DV0240-4007 Barge Salvage – Portree Oil, Gas and Feed Discharge and Removal method statement DV0240-4008 Barge salvage - Portree Rescue Party Method Statement
Assessments	<ul style="list-style-type: none"> DV0240-3001 Barge Salvage – Portree General Diving RA DV0240-3010 Barge Salvage – Portree General ROV ops RA DV0240-3007 Barge Salvage – Portree Covid-19 RA DV0240-3015 Barge Salvage – Portree Hydraulic/vibration tools RA DV0240-3003 Barge Salvage – Portree Underwater welding/Burning RA DV0240-3002 Barge Salvage – Portree Lift bag use RA DV0240-3004 Barge salvage – General FRC operations RA DV0240-3020 Barge Salvage – Portree H₂S RA
Permits	<ul style="list-style-type: none"> BMC permit to work
Lifting Plans	<ul style="list-style-type: none"> Forth Drummer Knuckle boom crane - Planned lifts
Drawings	N/A

Abbreviations

Abbreviation	Definition
BMC	Briggs Marine Contractors Limited
CTV	Crew Transfer Vessel
CH ₄	Methane (gases)
DS	Dive supervisor
DSV	Dive Support Vessel
H ₂ S	Hydrogen Sulfide (gases)
IBC	Intermediate Bulk Container
MV FD	MV Forth Drummer
MV FJ	MV Forth Jouster
VTS	Vessel Traffic service
NOK	Next of Kin
PAX	Passengers
PID	Photoionization device
PLB	Personal Locator Beacon
POB	Persons on board
PM	Project Manager
PPE	Personal Protective Equipment
SMB	Surface Marker Buoy
SOLAS	Safety of Life at Sea

1. INTRODUCTION

1.1. Background

The Seamate 450 fish feed barge supplying pellet food to the salmon farm in Portree Harbour, Isle of Skye sank during Storm Arwen in Q4 2021 with approximately 400t of feed on board. Briggs Marine Contractors (BMC) responded to a request from Scottish Salmon Company (SSC) shortly thereafter to secure the feed silos, of which there are six, with temporary hatch covers to control and prevent the emission of feed oils that are part of the feed pellets from being emitted to the environment.

In May 2022 BMC was awarded the contract to recover the barge. An ROV survey was conducted in June 2022 to aid the preparation of the salvage plan. Preliminary diving work started on site July 2022 with the aim of preparing the barge for recovery August 2022. During these works it was noticed that gas bubbles were escaping from the temporary hatch covers and from previously unidentified cracks in the concrete wall of the

accommodation block on the starboard stern. These gas bubbles had not been identified during the ROV survey or during the early preparatory works.

Hoses, pumps, and two IBCs were supplied to allow the relief of the unknown pressure within the silos as there was concern over the possibility of an uncontrolled release of the pent up gases and oils or structural harm to the barge as cracks were identified by the emission of the gases. During the relief of the gas and oils from the silos it became apparent that the gases were toxic in composition with Hydrogen Sulphide (H²S) and Methane (CH⁴) detected by the onsite Draeger X-am 2500 4 gas. At the mouth of the IBC where the oil was being collected on the deck of the Dive Support Vessel (DSV) MV Forth Drummer concentrations of H₂S were detected at 154ppm and away from the IBC on the back deck of Forth Drummer in concentrations between 30 and 80 ppm.

1.2. Purpose and Scope

The purpose of this methodology document is to provide a clearly defined process for the removal of any further oils and gas within the silos of the barge followed by the removal of the feed from the silos prior to the resumption of the preparatory works for recovery in order to mitigate the risk of the release of the oils and further production of the gases from the decomposition of the feed and oils contained within the silos of the sunken barge thus significantly reducing the risk to the personnel involved in the fish farm operations, BMCs personnel and contractors involved all stages of the recovery, and the local population and tourists to the area of Portree. This document is provided primarily for use by the responsible persons noted below and as a reference document for BMC site Dive supervisor, BMC Forth Drummer crew and The Scottish Salmon Company

1.2.Roles and Responsibilities

The site Dive supervisor has the authority to supervise the Dive team and operations in accordance with BMC procedures, legislation, ACOP and guidance.

- To ensure to the best of his ability that the expectations defined in the BMC procedures, legislation, ACOP are met.
- Responsible for safety of all personnel at the work site
- To confirm that all personnel have sufficient training and competence to carry out works
- To confirm all equipment is certified against industry standards
- To confirm that risk assessments relevant to work scopes have been completed
- Responsible for efficient operations of the project and to ensure all personnel employed to carry out works are competent to do so and work in accordance with BRIGGS rules
- Ensures that BRIGGS company responsibilities are fully met
- Reports to onshore Operations Manager.
- To work in accordance with the BRIGGS rules and SMS
- Ensure that equipment maintenance activities are carried out in accordance with industry standards.
- Must initiate Emergency Response if an incident/medical emergency takes place at site

The BMC Team have the duty to maintain general safety as directed by the client and BMC site Dive supervisor and detailed in the Operations Manual. Abnormal situations should be cascaded to relevant interested parties.

2. Methods

2.1. Task list

- Oil and gas removal

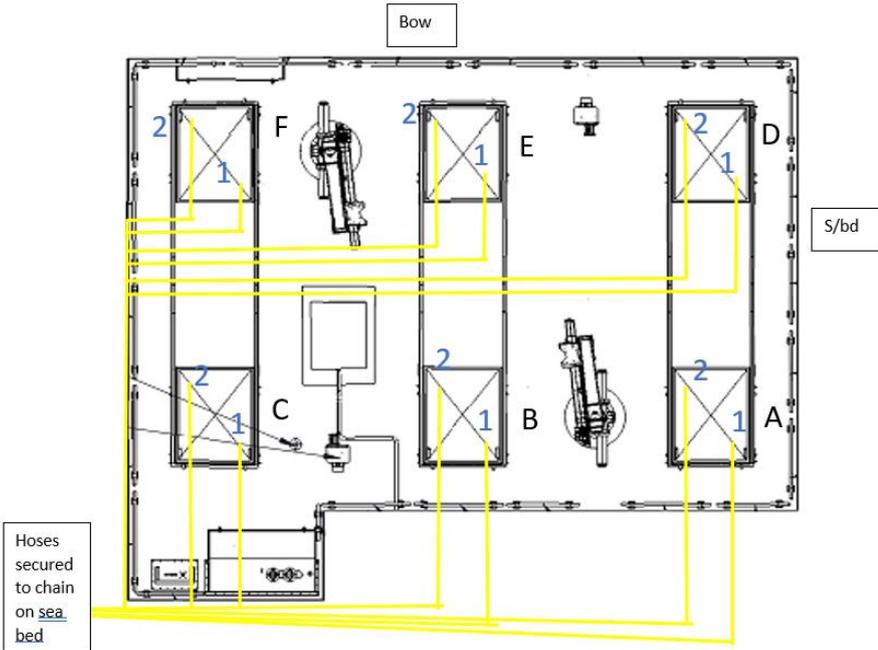
Oil and Gas removal

The following steps describe the procedure for venting and removing the oil from the silos subsea

Method of Work		
Item	Task	Persons responsible
	NO SMOKING ALLOWED!	
	<p>Note: Project team and Vessel Master assess weather conditions and sea state are within parameters to carry out tasks.</p> <p>Maximum operational limits:</p> <p>Water current: 0.8 knots</p> <p>Surface visibility : ≤1km</p> <p>Lightning Risk: Lightning forecast within 4hrs</p> <p>Wind speed: 20 knots</p> <p>Significant wave height: 1m</p>	
1 	<p>Dive supervisor holds TBT with team.</p> <p>Reviews risk assessments and emergency procedures</p> <p>Dive Supervisor obtain permit to work from vessel and harbour authority</p>	Dive supervisor and Duty officer
1.	Dive supervisor holds toolbox talk – ensuring that all personnel are aware of the escape plan, safe use of the escape set and familiarisation with the risks at hand, including irritation of skin at wrists and neck if H2S concentrated in water	DS
2.	<p>Personal gas monitors to be bump tested and recorded daily</p> <p>Static monitors to be checked for functionality during all plant checks</p> <p>BA sets to be checked over for readiness, charged if necessary and placed into locations for immediate access by the dive team.</p>	All crew
3. 	<p>Only personnel immediately needed to perform the task are to be present on deck e.g. Crane operator, slinger banksman</p> <p>Escape sets to be worn by all personnel on the vessels – ready for use!</p> <p style="text-align: center;">NO SMOKING ALLOWED!</p>	All Crew

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4.	Gas monitor readings to be obtained in all areas CH ₄ = O ₂ = C ₀ = M ₂ S H ₂ S =	All crew
5.	Dive team to set up the dive spread and plant for the scheduled tasks ahead	Dive team
6.	DS and vessel master confirm vessel is in a suitable position for diving	DS Vessel master
7.	Function test equipment, Standby and diver cross checks complete.	Dive team
8.	Dive team and deck crew ensure all hoses and tools are ready to be lowered to the diver down the job line using a messenger line	Dive team Deck Crew
9.	Diver enters the water via the ladder	Diver Tender
10.	Diver places hat and hoses under the surface to check for leaks, Topside tenders to confirm to DS that there are/are not leaks.	Diver Tenders DS
11.	When satisfied there are no leaks DS instructs diver to leave surface. (In the event of leaks dive is aborted and diver recovered to deck to check leaks and repair)	DS Diver Tenders
12.	Diver makes way down the job line taking the first length of hose Topside paying out the hose as dive descends	DS Diver Deck crew
13.	Diver takes hose to first location as listed in the table below	Diver

	 <p>Hoses secured to chain on sea bed</p>	
<p>14. </p>	<p>Prior to connecting the crows' feet fittings, diver is to make sure umbilical is clear</p>	<p>Diver</p>
<p>15.</p>	<p>Diver connects fittings in order of the table, confirms with DS before securing with R-clip and whip checks</p>	<p>Diver DS</p>
<p>16.</p>	<p>Diver uses zip ties to secure the hose running along to the Aft Portside quarter railings ensuring the hoses will be clear of lifting ops to take place</p>	<p>Diver DS</p>
<p>17.</p>	<p>Diver requests next hose is sent down the job line on the weighted messenger</p>	<p>Diver DS Topside</p>
<p>18.</p>	<p>Diver recovers hose and instructs topside to recover messenger</p>	<p>Diver DS Topside</p>
<p>19.</p>	<p>Diver installs hose on next position. Repeat steps 15 – 19 until all hoses are in place.</p>	<p>Diver</p>

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20.	Diver to secure all hoses to each other at the Aft Portside quarter and then secure to the Chain on the seabed that runs towards the pens from the Port side of the vessel	Diver
21.	Diver will secure an SMB to themselves and make way along the chain securing the hoses to the chain on the bed.	Diver
22.	Once the SMB is at distance safe enough for the MV FD to move in and out of moorings the diver make way back to the barge	Diver DS Vessel master
23.	Diver leaves bottom and makes way to the job line for ascent to surface, adhering to ascent rate stipulated by the DS in accordance with tables	Diver DS Tenders
24.	Diver leaves the water at the splash zone ladders	Diver DS Tenders
25.	Tenders will use PID meter to ensure the PPM levels from the divers clothing are at a safe level prior to making contact with the diver to undress	Tenders
26.	Once the diver is on deck, the FRC will be used to place a weighted 27mm polypropylene line down the SMB a second line is to be secured for recovering the pipes to the surface	FRC skipper Crew
27.	When the FRC is back alongside the next diver can enter the water	DS Diver FRC Skipper Vessel Crew
28.	Diver places hat and hoses under the surface to check for leaks, Topside tenders to confirm to DS that there are/are not leaks.	Diver Tenders DS
29.	When satisfied there are no leaks DS instructs diver to leave surface. (In the event of leaks dive is aborted and diver recovered to deck to check leaks and repair)	DS Diver Tenders

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30.	Diver leaves surface and descends along the job line	DS Diver Tenders
31.	Diver makes it to the top of the barge, moves along secured hoses to the seabed and makes way along the chain and hose to the SMB.	Diver Tenders
32.	Diver removes the polypropylene line from the SMB and secures to the chain on the seabed Diver secures hose ends to the recovery line secured to the polypropylene line for recovery to surface	Diver
33.	Diver removes the SMB marker buoy reel from the chain and releases for recovery by the FRC	Diver
34.	Dependant on bottom time <ul style="list-style-type: none"> - Diver will make way back to the barge and leave bottom - Diver will leave bottom at the marker buoy just installed Diver leaves bottom and adheres to ascent rate stipulated by the DS in accordance with tables	Diver DS Tenders
35.	Diver leaves the water via the splash zone ladders Tenders will use PID meter to ensure the PPM levels from the divers clothing are at a safe level prior to making contact with the diver to undress	Diver DS Tenders
36.	Once the diver is on deck the FRC can make way to the buoy recover hoses and secure at the surface on the marker buoy If possible, dive team will utilise one of the marker buoys in location	Diver DS Tenders FRC Skipper Crew
37.	Hoses are now installed sub surface ready for connections on the surface	All crew
38.	Hoses recovered with the FRC and run to the 1 st of the Northern pens on the inshore side to the manifold for venting, and discharge of oils into the boomed off area in the 3 rd pen North inshore side.	FRC Skipper Crew



Figure 1 Proposed boomed off area (image for reference only)

From the manifold at pen 11 the discharge pipe will continue onto pen 3 for discharge into the boomed off area.

The discharge pipe is tethered to the pen using ropes, there will be 4 pellet buoys placed between pens 1 and 2, then 4 pellet buoys placed between 2 and 3.



<p>39.</p>	<p>When all pipes have been connected and confirmed secure dive team will prepare to dive and open the valves on tanks as specified by the dive supervisor and operations supervisor.</p> <p>Gases will be dispersed slowly into the atmosphere – any oils that are recovered in the boomed off area will be recovered using the skimmer and dealt with according to instructions to follow!</p>	<p>All crew</p>
<p>40.</p>	<p>Function test equipment, Standby and diver cross checks complete.</p>	<p>Dive team</p>
<p>41.</p>	<p>Diver enters the water via the splash zone ladders</p>	<p>Diver</p>

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42.	Diver places hat and hoses under the surface to check for leaks, Topside tenders to confirm to DS that there are/are not leaks.	DS Diver
43.	When satisfied there are no leaks DS instructs diver to leave surface. (In the event of leaks dive is aborted and diver recovered to deck to check leaks and repair)	DS Diver Tenders
44.	Diver makes way down the job line to the barge, then makes way to tank A	Diver DS
45.	With surface manifold valves all closed diver will be instructed to open Valve A on the venting manifold <div style="text-align: center;"> <p>VENTING MANIFOLD</p> </div>	DS Diver Tenders
46.	Surface operator opens valve A1 on venting Manifold and records pressure reading before opening discharge valve to containment boom in pen 3.	Tenders
46.	Once Silo “A” has been discharged of gas/oil all valves on manifold will be closed ready to repeat previous operation on remaining silos hatches, each time recording pressures for each silo.	DS Diver Tenders
47.	When all silos have been depressurised Diver will be instructed to open all 12 valves so control of the venting can be achieved from surface manifolds and to allow low pressure flushing/de-gassing of silos.	DS Diver
48.	Surface operator will open Valve “A1” on venting manifold and “A2” on flushing Manifold.	Tender

FLOODING MANIFOLD		
49.	Surface operator opens valve to Wilden pump allowing low pressure seawater to transverse pipework to the lower valve "A2" which in turn will push any remaining gases and oil up to venting manifold then onwards to pen 3 containment booms.	Tender
50.	Once operation on silo "A" has completed and no visible oils can be seen the Wilden pump will be shut down and all valves on manifolds to be closed.	Tender
51.	Repeat operation 48, 49 and 50 on remaining 5 silos	Tender
52.	At end of shift Diver to close all valves on top of silos and surface operator to do the same with the manifolds.	DS Diver Tender
53.	De-gassing/oil removal operation to be carried out daily to ensure silos safe depressurised and safe for remaining salvage operations to continue.	DS Diver Tender
