



**ENCLOSED SPACE  
ENTRY PRECAUTIONS**

**MSF AMM 27 NOVEMBER 2008**

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**VROON OFFSHORE SERVICES LTD  
QHSE MANAGER**



## **ENCLOSED SPACE ENTRY PRECAUTIONS**

- **What Vroon Offshore Services Ltd have done in the last year**
  - **Increased focus on Control of Work**
  - **Space Assessment/Registers**
  - **Enhanced Training Drills**
  - **Additional Gas Testing Equipment**
  - **Emergency Escape Breathing Device (EEBD) Training**



# CONTROL OF WORK


- All Sea Staff attended refresher training on
  - Permit to Work
  - Risk Assessment
  - Tool Box Talks
- All Risk Assessments relating to Space Assessment Revised and Updated
- Increase auditing of the Control of Work processes onboard
  - Audit of compliance
  - Coaching

**VROON OFFSHORE SERVICES LTD**

**PERMIT TO WORK**

**DANGEROUS SPACE ENTRY**

**This permit or a copy must be taken to the place of work**



The Responsible Officer issuing the permit must complete all sections. Careful consideration should be given to all conditions appropriate to the risk involved. A valid Risk Assessment MUST be in place before a permit can be granted.

Reference should always be made to the current edition of the UK Code of Safe Working Practices for Merchant Seamen (COSWPMS)

Name of Vessel	Permit Number: ENT /	e.g. ENT 88455																																																	
Tank No / Space																																																			
Last Cargo Contents																																																			
Work to be carried out:																																																			
Supervising Person in charge of the actual work:																																																			
Date & Period of Validity of Permit:	Period of validity not to exceed 24 hours																																																		
Crew/Contractors involved in carrying out work (Names):																																																			
Other Permits issued for same location/Conflicting permits:																																																			
Valid Risk Assessment for the proposed task																																																			
Enter Assessment number:																																																			
1. Toolbox talk with all relevant parties in attendance																																																			
2. COV informed																																																			
3. Safety Data sheet available and consulted for last cargo																																																			
4. Space adequately ventilated																																																			
5. Atmosphere tested and found safe for																																																			
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">O<sub>2</sub></td> <td style="width: 50%; text-align: center;">Flammable gases</td> </tr> <tr> <td style="text-align: center;">No. H<sub>2</sub>S below</td> <td style="text-align: center;">Toxic</td> </tr> </table>			O <sub>2</sub>	Flammable gases	No. H <sub>2</sub> S below	Toxic																																													
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6. Space secured for entry, including isolation of pumps, agitators and valves, barriers around entrance, no sources of ignition, and warning signs posted as appropriate																																																			
7. PPE and rescue equipment available at entrance, including 80% user to be familiar with unit																																																			
8. Atmosphere testing equipment available for regular monitoring - See hourly check.																																																			
9. Communication between tank and entrance established, including emergency signals																																																			
10. Access and illumination adequate																																																			
11. All equipment to be type approved and in good condition																																																			
12. Appropriate PPE is worn, including safety harness																																																			
13. Personnel trained and familiar with all equipment to be used																																																			
14. If contractors engaged in work, e.g. Tank cleaners etc. See Note below.																																																			
i. Number of contractors onboard vessel:																																																			
ii. Procedures established and agreed with contractors.																																																			
iii. Safety induction and PPE system completed.																																																			
Hourly check:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"></td> <td style="width: 5%;">1</td><td style="width: 5%;">2</td><td style="width: 5%;">3</td><td style="width: 5%;">4</td><td style="width: 5%;">5</td><td style="width: 5%;">6</td><td style="width: 5%;">7</td><td style="width: 5%;">8</td><td style="width: 5%;">9</td><td style="width: 5%;">10</td><td style="width: 5%;">11</td><td style="width: 5%;">12</td><td style="width: 5%;">13</td><td style="width: 5%;">14</td><td style="width: 5%;">15</td><td style="width: 5%;">16</td><td style="width: 5%;">17</td><td style="width: 5%;">18</td><td style="width: 5%;">19</td><td style="width: 5%;">20</td><td style="width: 5%;">21</td><td style="width: 5%;">22</td><td style="width: 5%;">23</td> </tr> <tr> <td>Initials</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Initials																								
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NOTE: If this Work Permit is to be issued for work in a hydrocarbon tank, then a chemist must be called in to test tank atmosphere. If contractors are entering the tank or space, they are responsible for ensuring the atmosphere is safe and must sign this Permit as being person approving the work, and must complete the hourly checks

Comments:

**CERTIFICATE OF CHECKS** (to be completed by the Issuing Officer). To be countersigned when watch handed over.  
 I am satisfied that all precautions have been taken, and that safety arrangements will be maintained for the duration of the work.  
 Permit issued by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Signature: \_\_\_\_\_  
 Handover accepted by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Signature: \_\_\_\_\_

**CERTIFICATE OF ACCEPTANCE** (By supervising person completing the actual work).  
 I understand the precautions to be taken and will ensure all requirements are carried out and all persons performing this work are aware of this permit and its conditions. I will return this permit for cancellation when the work is complete or when requested.  
 Permit issued to: \_\_\_\_\_ Company/Position: \_\_\_\_\_ Signature: \_\_\_\_\_

**CERTIFICATE OF CLOSURE** (to be completed by the Issuing Officer, when permit is closed but area/work incomplete)  
 I certify that the work is incomplete, the area is contained off, and in safe condition. No machinery should be started. Abbrevs and signs are all in place.  
 Reason for closure - close of work shift/ left vessel to obtain maintenance expiry of 24-hour limit.  
 Permit closed by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Signature: \_\_\_\_\_

**CERTIFICATE OF COMPLETION** (to be completed by the Issuing Officer).  
 I am satisfied that the work has been completed and all persons involved, materials, signs and equipment have been withdrawn and work site restored to normal condition.  
 Permit closed by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Signature: \_\_\_\_\_

Vroon Offshore Services Ltd Rev 01



# SPACE REGISTERS

- Every Vessel subject to a Space Survey
- All Tanks, Chain Lockers etc. surveyed
- Space Register produced for each vessel
- Labels to clearly identify Spaces
- All Spaces which could potentially, under any foreseeable set of circumstances, contain an atmosphere which could be dangerous to any person in that space.

DANGEROUS SPACE REGISTER VOS PATHFINDER						
Space Identification	Dangerous/ Confined	Date Labels Fixed	Initial & Sign	Verified By	Date	Remarks
1. 07 OF DB Port 41-51	Dangerous					
2. 07 OF DB Stbd 41-51	Dangerous					
3. 08 OF Wing Port 44-51	Dangerous					
4. 08 OF Wing Stbd 44-51	Dangerous					
5. 09 OF Wing Port 38-44	Dangerous					
6. 09 OF Wing Stbd 38-44	Dangerous					
7. 11 OF Wing P 22-38	Dangerous					2 Labels for Space
8. 11 OF Wing S 22-38	Dangerous					2 Labels for Space
9. 13 OF DS Port 27-33	Dangerous					
10. 13 OF DS Stbd 27-33	Dangerous					
11. 14 OF Oflow Crc 22-27	Dangerous					
12. 05 FW Port 57-65	Dangerous					
13. 05 FW Stbd 57-65	Dangerous					
14. 06 FW Port 52-57	Dangerous					
15. 06 FW Stbd 52-57	Dangerous					2 Labels for Space
16. 15 FW Lwr-Port 8-21	Dangerous					
17. 15 FW Lwr Stbd 8-21	Dangerous					
18. 15 FW Lwr Ctr 8-21	Dangerous					

DSRV/VOS PATHFINDER/REV 0 20.05.08 Page 1 of 1



# DANGEROUS SPACES

- No Entry at Sea
- Third Party Chemist used for Atmosphere Testing in Port
- Entry Controlled by Permit
  - Typically:
    - Tanks
    - Chain Lockers

**Category: Dangerous Space**

**Do not enter at sea**

**Full permit procedure must be followed prior to entry**





# CONFINED SPACES

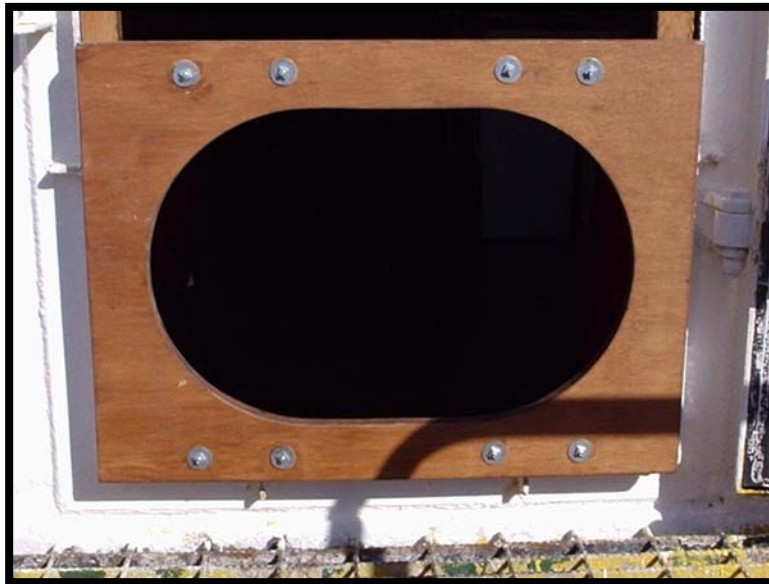


- **Previously 'Free Access' Spaces**
- **Very Remote but foreseeable potential for atmosphere problems – often due to closure of vents**
- **Very small number of Spaces in this category across the fleet**
- **Typically:**
  - **Rope Stores**
  - **Steering Flats**
- **Enhanced Controls**
  - **Inform Officer of Watch**
  - **Test Atmosphere before entry**



# SPACE ENTRY TRAINING

- Tank Entry Training Aid
  - Allows Crew to practice Tank Entry in a Safe & Controlled area onboard
  - Can be used vertically or horizontally





# GAS TESTING EQUIPMENT



- Review of Equipment Used
- Selection of:
  - 1 x Honeywell Impact Pro
  - 1 x Honeywell X4
- Impact Pro
  - Pre Entry Space Testing
  - Max/Min Setting
  - 4 Gas
  - IP67
- X4
  - Clip on 'Personal' Meter
  - 4 Gas



# EEBD TRAINING





# EEBD USER INSTRUCTIONS

## The Dräger | saver CF A Constant Flow Emergency Escape Breathing Device (EEBD)

- 
- 1 **Open the Bag and remove the Hood** this automatically opens the air cylinder; the air will immediately start to flow into the Hood.
  - 2 **Pull the Hood down over the head**, put both hands into the neck seal of the Hood, and stretch it wide enough to go over the head, ensure the nose and mouth are in the 'Oral/Nasal' Mask.
  - 3 **Air will flow into the Hood** (through the 'Oral/Nasal' Mask) from the moment the bag is opened until the supply runs out.
  - 4 **This is a Constant Flow Set**; air will flow into the Hood at a pre-determined rate. Breathing restriction may be experienced and the Hood may 'suck in' when breathing very heavily.

**Immediately make your way to a safe area with a breathable atmosphere**

**Do not remove the EEBD Mask until in a safe breathable atmosphere**

**An EEBD is a limited duration air supply for personal escape purposes only – it should NOT be used in place of a full duration B.A. set for attempting a rescue or Fire Fighting.**



## CAM LOCK FAST-mask® A Positive Pressure Demand Emergency Escape Breathing Device (EEBD)

- 
- 1 **Remove spectacles**
  - 2 **Open the Bag and pull out the Face Mask** this automatically pulls a tag, opens the air cylinder, primes the set and allows air to flow into the special 'Spider'
  - 3 **Place the Face Mask on the face** with the inflated orange 'spider' behind the head and press lightly to seal onto the face
  - 4 **Take a Deep Breath**, the design of the FAST-Mask is unique. The 'Spider' is pressure activated; with the first breath the air will flow into the mask, the 'spider' will tighten and secure the Mask onto the face.
  - 5 **This is a Demand Set**; air will only flow into the Mask when a breath is taken. The duration of the cylinder may decrease if breathing very heavily.

**Immediately make your way to a safe area with a breathable atmosphere**

**Do not remove the EEBD Mask until in a safe breathable atmosphere**

**An EEBD is a limited duration air supply for personal escape purposes only – it should NOT be used in place of a full duration B.A. set for attempting a rescue or Fire Fighting.**





# **RISK ASSESSMENT**

**The five steps to Risk Assessment:**

- 1. Identify the hazard**
- 2. Decide who is at risk**
- 3. Evaluate the risk - this includes control measures**
- 4. Record the findings**
- 5. Review and Revise the assessment**