



Title: Water Management Plan (DMSB)

DOCUMENT CONTROL			
Doc. Reference	PL-AUS-DAR-030	Function	HSSEQ
Revision Date	17/06/2020	Group Owner	Director of Operations and Safety
Rev. Number	0	Group Approver	Global Head of HSSEQ
APPROVED VARIANCE			
There are currently no approved variances for this plan and is to comply with Australian rules and regulations.			
DOCUMENT REFERENCES			
Internal References	<ul style="list-style-type: none"> • FRM-GOP-QS-009.01 - Potable Water System Verification • FRM-GOP-HSEQ-058.02 - Business Risk Management Verification • GOP-HSEQ-024 - Personal Protective Equipment • GOP-HSEQ-046 - Service Improvement Document • WA-GOP-QS-009.02 - Potable Water Sampling and Bunkering • DMSBOPS011 - Water Stand TBRA • DMSB Risk Register 		
External References	<ul style="list-style-type: none"> • Australian Drinking Water Guidelines 6 (2011) - Updated August 2018 		
DOCUMENT SCOPE / PURPOSE			
The purpose of this document is to is specify the requirements for maintenance of the DMSB water system and the procedure for delivery of water (vessel bunkering) for offshore use at Darwin Marine Supply Base.			
REVISION HISTORY			
Rev	Date	Comment	
0	17/06/2020	Creation of plan	



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<p>1.0 Purpose</p> <p>The purpose is to ensure that:</p> <ul style="list-style-type: none"> • Risk associated with the scope are identified and controlled • Interfaces are clearly described • Information from this plan is communicated to DMSB stakeholders
<p>2.0 Responsibility Summary</p> <p>This document is relevant to the following roles:</p> <p>Marine Supply Base Manager</p> <ul style="list-style-type: none"> • Has overall responsibility and accountability for overseeing the delivery of safe and efficient operations at the MSB • Monitor the activities of Facilities Users to ensure compliance with this plan • Ensure chlorine monitoring and periodic sampling is carried out as laid out below, reports are checked, and corrective actions are taken when necessary • Preventative maintenance tasks and repairs are undertaken to any equipment • A risk assessment has been carried out on the system / for the task • Complete monthly verifications on water system • Ensure scheduled bunkering activities are discussed at Scheduling / Toolbox meetings. <p>MSB Coordinator, Facility Coordinator and/or DMSB Security</p> <ul style="list-style-type: none"> • Ensure advice and support is provided to Facility Users in meeting the requirements of this plan • Monitor controls in relation to this plan ensuring all Facility Users are compliant • Promptly report all non-conformances to BU Manager and HSSEQ Department • Follow the TBRA for task DMSBOPS011 Water Stand • Complete monthly verifications on water system • Wear PPE free from contamination including clean gloves that are not used for other tasks that may introduce contaminants. • Ensure exclusion zones are set up / removed before and after bunkering • Record water usage prior to and on completion of bunkering on Vessel Log Sheet. <p>HSSEQ</p> <ul style="list-style-type: none"> • Review HSSEQ trends and analysis and develop risk mitigation strategies • Support Supply Base Manager and Supervisors to conduct work in a safe and efficient manner • Approve TBRA's within level of authority • Provide HSSEQ support to DMSB • Complete monthly verifications on water system. <p>Agent/Client Responsibilities</p> <ul style="list-style-type: none"> • Communicate requirements of this plan to vessel masters. <p>Vessel Task Requirements</p> <ul style="list-style-type: none"> • Supply all connections & hoses for the supply of water from DMSB to vessel • Ensure all equipment is fit for purpose and maintained, ensuring no contamination • Connect/ disconnect hoses from vessel/ standpipe.



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3.0 Abbreviations & Definitions

Terms	Meaning
Bunkering	The transfer between shore facilities and vessel
DMSB	Darwin Marine Supply Base
PPE	Personal Protective Equipment
Water	Water that is safe to drink, use for food preparation or personal bathing
SID	Service Improvement Document
TBRA	Task Base Risk Assessment

4.0 Introduction

The Darwin Marine Supply Base (DMSB), owned by Darwin Port and operated by ASCO, is a specific purpose intermodal freight facility servicing the offshore oil and gas industry with necessary supplies of equipment, water, drilling mud, fuel and other consumables required by offshore platforms.

Mains water is supplied via main water line and water is supplied to vessels via water bunker standpipes. ASCO shall conduct weekly sampling to monitor water quality. A third-party consultant is to conduct water sampling at ad hoc intervals. If warranted and depending on the water results, the sampling regime may be varied.

5.0 Water Bunkering Procedures

Water bunkering procedures are detailed in:

- Water Stand TBRA [DMSB OPS011](#)
- Water Sampling and Bunkering Work Aid [WA-GOP-QS-009.02](#).

6.0 Chlorine Monitoring & Testing

The presence of free chlorine residual in the distribution system provides evidence of initial disinfection and protection against recontamination.

Free Chlorine Residual Testing shall be undertaken weekly on water and water delivery infrastructure by ASCO personnel, utilising the Hanna Free Chlorine Testing Kit. This testing is to check that the recommended chlorine levels are present and being maintained.

Recommended Chlorine Levels

For normal domestic use, residual chlorine levels at the point where the consumer collects water should be between 0.2 and 0.5 mg/l. However, for water systems where drinking water temperatures in service tanks/reservoirs and the distribution system can consistently reach temperatures greater than 25°C, the long-term evaluation of microbial performance should also include a similar review of Naegleria monitoring data. Free chlorine or chloramine residual is required at 0.5 mg/L or higher will control naegleria.

7.0 Weekly Chlorine Testing Process

Weekly free chlorine testing is conducted at various sample points using the instruction manual for the Chlorine Test Kit. The process is to:

1. Wash your hands thoroughly before sampling and wear disposable gloves



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2. Do not allow the screw cap or mouth of the sample container to touch anything that may contaminate the sample
3. Remove any attachments, clean the sampling point, ensuring it is free from oily residue
4. Flush the system for 2 minutes with a HIGH rate of flow, then reduce to steady stream (approx. size of pencil)
5. Remove the cap from the sample bottle, taking care not to touch the inside of the cap or the neck of the bottle
Do not allow the screw cap or mouth of the sample container to touch anything that may contaminate the sample
6. Fill the bottle to level line and then replace the cap tightly till ready to add reagent
7. Zero the checker as per the Instruction Manual
8. Add the reagent to the water sample
9. Place vial into the checker
10. Press button to analyse and read the results
11. Record results
12. During sampling check for material, discolouration or discernible odours and report any observations on the sampling record sheet.

8.0 Maintenance

DMSB water storage and delivery infrastructure is maintained in accordance with the DMSB Asset Management Plan. The maintenance regime includes:

- Weekly water flushing
- Above ground pipe and valve inspections
- Bunker standpipe inspections and cleaning
- Any recommended intervention if water sampling figures are above recommended requirements.

9.0 Sampling for Bacterial Analysis of Water

As required field sampling for bacterial analysis, laboratory assessment and reporting is undertaken at various sample points across the site.

ASCO will use a qualified, independent 3rd Party service provider to conduct field sampling. The contracted provider details are available from the Supply Base Manager.

Microbiological analysis for the following contaminants is tested.

Contaminant	Type	Limits / Acceptable results
E.coli	Present in animal faeces, E.coli is the most common thermotolerant coliform in the group and is regarded as the most specific indicator of recent faecal contamination	Detection of E. coli indicates recent faecal contamination and the possible presence of other disease-causing micro-organisms, should not be detected in 100 mL of drinking water.
Total Coliforms	Total coliforms refer to a large group of bacteria that can be of faecal or non-faecal origin. Total coliforms do not present a direct health risk but can provide information on the efficiency of drinking water disinfection.	Recommends establishing numbers on a system-specific basis and investigating any increase in the number of total coliforms
Heterotrophic Plate Count (HPC)	Heterotrophic Plate Count is a test used to detect a number of micro-organisms present in water; general microbiological content of the water and hence a measure of the effectiveness of disinfection.	System-specific basis and investigate any marked increase in numbers following disinfection



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Naegleria	Free-living amoebae, generally results from contact during bathing, or domestic uses of water other than drinking	A detection of Amoeba, will then be further tested for Naegleria in the treated water system
Total and free chlorine	Comes from chlorination of water supplies or is the result of pollution	Chlorine is best tested on-the-spot because samples lose chlorine quickly Minimum level 0.5 mg/l.
Legionella	Legional bacteria comes from when it gains entry to the respiratory system through, a fine misted caused by showers or air conditioning systems. It can cause Pontic Fever which has flu like symptoms or Legionnaire's disease which is a serious type of lung infection which can be fatal	No current guidelines on limits of Legionella best practice < 10cfu/l

10.0 Testing Results

Testing Results are retained by DMSB and will be communicated to the clients on request.

11.0 Non-Conformances

All non-conformances shall be investigated and recorded utilising [GOP-HSEQ-046](#) Service Improvement Process (SID). Actions include.

- Investigate the source of contamination
- If water has been discharged advise vessel / the Client
- Retest

12.0 Remediation

Any results of water sampling that is out of specification for microbiological or free chlorine readings shall be remediated in consultation with Darwin Port (DP).

13.0 Monitor and Review

This plan will be reviewed to ensure full compliance, as a minimum, a full review will be conducted annually. Water System Verification [FRM-GOP-QS-009.01](#) shall be utilised to verify adherence to this Plan.