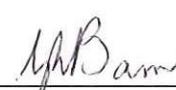


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Transnet Capital Projects Health and Safety Management

Working Over Water

HAS-P-0003

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Table Of Contents

1. Purpose	4
2. Scope	4
3. Definitions	4
4. References	4
5. Responsibilities	4
6. Requirements	4
6.1 Preamble	4
6.2 Hazard Assessment and Work Method Statement	4
6.3 Work Method Statement	5
6.4 Access to and from Work Platform.....	6
7. Construction Activities	6
7.1 Plant and Equipment.....	7
7.2 Electrical Power Tools and Equipment	7
7.3 Mobile Plant	7
7.4 Fall Arrest Equipment.....	8
7.5 Personal Floatation Device	8
7.6 Scaffolding	8
7.7 Ladders.....	8
7.8 Personal Protective Equipment	8
7.9 Housekeeping	9
7.10 Working Alone.....	9
7.11 Warning Signs	9
7.12 Lighting	9
7.13 Marine Stingers	9
8. Emergency Rescue	9
8.1 Rescue Vessels.....	9
8.2 Emergency Rescue Teams.....	10
9. Refuelling of Plant	10
9.1 Oil and Hydraulic Leaks.....	10
10. Training	10



Note: If hardcopy, check electronic system for latest revision

11.Crew Members Actions 11

12.Supervisor’s Actions..... 12

13.Records 12

Note: If hardcopy, check electronic system for latest revision

1. Purpose

To establish the minimum requirements for personnel working on, near or above water.

2. Scope

This procedure applies in its entirety to all Marine Project Operations undertaken by Transnet Capital Projects, unless a specific variance from its requirements is granted by the Project Manager.

3. Definitions

Work Platform pontoon, barge, boat, ship etc.

Shall a mandatory requirement

4. References

Occupational Health and Safety Act No.85 of 1993 and associated Regulations as amended.

5. Responsibilities

The Project Manager or Construction Manager is responsible for identifying risks involved and for the implementation of this procedure and that it is verified by regular Audits.

6. Requirements

6.1 Preamble

Any work over water is considered to be high risk. As such, a high degree of safety procedures are essential however long or short-term the work is. The nature of the precautions needed may vary from one job to another, but not providing any safeguards is unacceptable.

6.2 Hazard Assessment and Work Method Statement

A Hazard Assessment shall be carried out for all work over water. It is essential that the hazards be identified and the risks assessed before the work starts and that the

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appropriate safety precautions and safe systems of work are provided and implemented.

Factors to be considered, but not limited to, are listed below:

- Type of access provisions
- Height above water
- Depth of water
- Employees ability to swim
- Marine creatures
- Type of work activity
- Work environment e.g. exposure to the elements
- Tidal influences
- Type of plant used
- Temporary or permanent structures in place

6.3 Work Method Statement

Following the Risk Assessment a detailed Method Statement shall be prepared and submitted to the Construction Manager for review and sanction. The Construction Safety Manager shall also review and comment on the Method Statement and be part of the Sanction Process. The Method Statement must be specific and relevant to the job in hand and describe clearly the safety precautions and systems of work identified during the Risk Assessment. Everyone involved in the work needs to know the Safety Procedure to be used in conjunction with the Work Statement and what they have to do. The Drilling Supervisor or "person – in – charge" will need to check that the correct procedures are being adhered to.

A Method Statement shall be prepared by a competent person. The person shall have had adequate training and practical experience and be capable of making recommendations on safe methods of work

The Method Statement shall contain written instructions regarding the technical aspects of the Drilling Process and how work can be carried out safely as designed. It shall be well documented to ensure that everybody involved in the process is aware of what to do. It shall be distributed to all parties concerned in the language understood by them before works commence.

The Method Statement should contain as a minimum the following:

- Arrangement for coordination, responsibilities and authority of Management personnel during the Work Process

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- Use of suitable plant and equipment
- Sequence of work
- Detailed methodology of the Work Process
- Risk Control for the hazards identified in the Hazard Assessment
- Use of suitable personal protective equipment i.e. safety harness, lifebuoys and lifelines
- Detailed Emergency Response Procedures, including training and testing i.e. "man-overboard"
- Procedures for adverse weather – weather conditions that could have an adverse effect on the work over water include rain, high wind or typhoon and those causing poor visibility, such as fog and mist
- Procedures for securing the work platform in the event of adverse weather. Prior to resumption of work, all plant, equipment shall be checked for safe operation

6.4 Access to and from Work Platform

Safe means of access between the work platform and the shore shall be provided as far as it is reasonably practical at all states of the tide. At the point of access to a work platform, a lifebuoy with a buoyant lifeline (10mm rope with a minimum of 30 meters of line) shall be kept ready for use. Provision for access shall be taken into consideration, prior to, and during operations undertaken over water, as detailed below:

- Establishment of Access - The establishment of access to temporary or permanent structures over water, from land based operations, shall utilise equipment such as walkways and personnel lift cages. All equipment provided for the lifting of personnel must comply with the current legislative requirements
- Access during Construction - The means of access to be provided during construction shall primarily be access walkways. These may be temporarily or permanently fitted to the structure as required, dependent on design. Where walkways are not provided, another means of fall protection must be used to ensure safe access subject to Hazard Assessment (e.g. personnel lift cages, safety harness and static lines, and/or personnel flotation devices)

7. Construction Activities

During construction over water, the risks associated with falls from heights shall be considered as detailed below:

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- Edge Protection - Generally, edge protection shall be provided to reduce the risk of falls from heights. Where edge protection is not provided, another means of fall protection must be used to ensure safe access subject to Risk Assessment (e.g. personnel lift cages, harness and static lines, and/or personnel flotation devices)
- Emergency Rescue Stations - shall be maintained at each workface, but not greater than 100 metre intervals and on any individually operating pontoon. They shall contain at least the following items
 - ◆ Life ring
 - ◆ Disposable overalls
 - ◆ 2 litres of vinegar (for jelly fish stings)
 - ◆ Emergency air horn

7.1 Plant and Equipment

All plant and equipment used in works over water shall comply with any applicable and the requirements of the Project Plant and Equipment Standard or Procedure.

7.2 Electrical Power Tools and Equipment

In addition to the above requirements, electrical power tools and equipment shall be:

- As far as practical prevented from falling into water
- Isolated or prevented from making live contact with steelwork
- Checked for damage to cords and tools daily at a minimum
- Inspected and tested by a certified person as per legislative requirements and at least once a month and colour coded according to Project Colour Code
- Used in accordance with Safe Work Procedures for such equipment

7.3 Mobile Plant

If mobile plant (Cranes, drilling rigs, generators etc.), are located near or adjacent to the sides of the working platform, then provision shall be made to protect Operators from slipping, tripping or falling over the side of the work platform.

Guard rails and toe-boards shall be installed at edges where persons are liable to fall from height into the water. The guard rails shall have adequate strength and shall be secure to the deck.

When work is being carried out over-side or in an exposed position where there is a foreseeable risk of falling into the water and it is impracticable to provide guard rails at the edges over water, every worker shall wear a lifejacket or use a buoyancy aid and fall arrest equipment suitable anchored to the work platform.

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7.4 Fall Arrest Equipment

Providing adequate platforms and edge protection may not always be possible or reasonably practical, if so either safety nets or safety harnesses will be required.

If nets are used, they shall be installed by competent persons. Where safety nets are used instead of buoyancy aids the netting must be checked on a daily basis by a competent person and a record of the checks maintained.

If harnesses are used they shall be securely attached to a sufficiently strong anchorage point. A Recovery Method shall be developed and tested prior to work being undertaken.

7.5 Personal Floatation Device

Every worker on the work platform having a foreseeable risk of falling into water shall wear a personal floatation device. Workers being required to work within 2 m of the edge of a jetty or pier will wear a flotation vest.

The device shall have a distinctive and easily visible colour. High visibility and reflective material shall be affixed on its surface which is normally above the water when it is in use.

7.6 Scaffolding

Where access over water is via a scaffold, the scaffold shall be certified as safe for use by a suitably qualified and competent person. Regular inspections shall be carried out of the scaffold and the scaffold maintained by competent persons.

7.7 Ladders

Ladders must be of sufficient length and strength and be secured to prevent slipping. Employees should check that ladders are firmly secured before beginning ascent or descent. Where ladders are permanently fixed to a work platform over water, they should be fitted with safety hoops. Safety nets and harnesses form an added precaution. Ladders should be slung sufficiently far above high water level to ensure clearance on suspension. Persons at risk must wear the appropriate safety equipment. The type of equipment will be determined by the Project Manager or Safety Staff, but will be one of the following:

7.8 Personal Protective Equipment

In addition, the following safety equipment should be worn:

- Hard Hats - Head protection is required by on all construction sites
- Footwear – Non-slip protective toe footwear is essential. It should however be remembered that this type of footwear, once filled with water, act as a dead-weight and may not be the desired footwear when working over water
- Other equipment, such as safety lines and throw ropes must be provided

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- Persons working from work platforms should have support from the land
- Persons working offshore should be able to swim to a standard appropriate to the conditions

7.9 Housekeeping

On work platforms the work areas shall be maintained free of trip hazards e.g. ropes, tools, building materials etc. Slippery surfaces should be avoided by removing seaweed, slime and bird excrement, gritting and sanding oily surfaces, and reducing oily surfaces by fitting drip trays to machinery.

7.10 Working Alone

Working alone shall not be permitted on, over or adjacent to any body of water, other liquids, or solid which acts like a liquid.

7.11 Warning Signs

Warning Notices shall be placed at all edges from which a person might fall into the water. These must be clearly visible and legible.

7.12 Lighting

Adequate lighting is essential, especially in shafts, dark corners and stairways. Standard illumination should be adequate to allow free unimpeded access for pedestrians within and to or from the site. Night time working should only take place if sufficient lighting is available. The area floodlit should always include the immediate water surface and spotlights should be strategically fixed to ensure prompt location of a person in the water. Illumination for night time working should provide sufficient light to enable all work to be carried out with full visibility.

7.13 Marine Stingers

Workers required to work in the water shall wear sting suits or appropriate clothing to protect them from contact with marine stingers if identified during the Hazard Assessment.

8. Emergency Rescue

8.1 Rescue Vessels

A rescue vessel, appropriate to the operation being undertaken, and capable of providing a quick response in an emergency situation shall be available at all times during the works, (preferably stationed downstream of the works). The boat must also be equipped with the necessary gear as described under the relevant Acts and Regulations. Recovery buoys and a First Aid kit shall also be provided in the boat.

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8.2 Emergency Rescue Teams

An Emergency Team shall be established and trained to carry out Rescue Procedures from the rescue vessel. The Team should comprise of workers directly involved in the works and shall include at least one Senior First Aid Attendant. Where possible all Team Members should be trained in CPR techniques. At least two (2) members of the Team must be authorised to use the boat during each shift if working multiple shift operations.

Equipment to be made available to the Emergency Team shall be kept on site and consist of:

- A stretcher capable of being lifted by a crane from the water and fitted with necessary straps to restrain the injured person
- Additional flotation devices - life ring- vests
- A minimum of 30 meters of 10mm rope
- As a minimum provide ring buoys with at least 30 meters of line at locations not greater than 60 meters apart, or as required by local legislation

9. Refuelling of Plant

A method of refuelling items of plant whilst situated over water is to be established to minimise the risk of spillage while refuelling.

- A person shall be present at the outlet end at all times to ensure the nozzle does not become dislodged from the particular machine during the refuelling process
- Any spillage occurring shall be reported and immediately cleaned up before any fuel enters the water

9.1 Oil and Hydraulic Leaks

All leaks from machinery working over water shall be contained immediately. Regular inspections are to be carried out and appropriate maintenance organised to stop any contaminants entering the harbour.

10. Training

The Project Manager shall ensure that the Workforce has received proper training for activities over water.

Training may include general Induction and more specific training, and may be met by a mixture of on-the-job and off-the-job training. It shall embrace safety practices, constituents of a safe workplace and information on specific work hazards. Additional training shall be provided to the Workforce on matters such as Safety Rules,

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Regulatory Safety Requirements, Safety Organisation and Accident Reporting Procedures.

11. Crew Members Actions

- The work crew shall prepare a Job Safety Analysis (JSA) for the work to be carried out
- An Observer must be in attendance and be in radio contact with the Supervisor whilst all activities are carried out when working over water
- Communication and line of sight shall be maintained between the Observer and any member of the work crew working over water
- All personnel in the work group shall have basic swimming skills to enable them to survive if they happened to fall in the water
- All safety equipment will be inspected prior to use (where equipment is not suitable for use due to wear or damage, the equipment will be tagged as unsuitable and placed in the quarantine area)
- A Rescue Plan shall be developed by the work crew and all work group members shall be aware of this Plan
- A lift buoy(ring) with attached heaving line shall be provided adjacent to the activity taking place
- A buoyancy vest shall be worn as a minimum in work situations involving the working in the vicinity of water
- When working off scaffold or over hand rails a safety harness with dual lanyards must be worn and be attached to a suitable anchor point
- Work must not commence or continue during weather conditions where high winds are being experienced (high wind conditions shall be assessed by consultation between the work crew and their Supervisor)
- Working must not take place where rough sea state or large swells are occurring
- Low visibility work (during fogs, mist, night work without suitable lighting, during heavy rain etc.) will preclude work being carried out by the work crew
- The work crew will maintain good house keeping in the area they are working and make sure that all areas are free of blockages if an emergency evacuation is to be carried out
- Oil spill equipment and containment equipment will be provided at the work site if there is a possibility of a spill or leak

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12. Supervisor's Actions

- The Supervisor shall check that all permitting procedures have been complied with prior to approving work to commence on the activity
- The Supervisor shall approve the JSA prepared for this activity
- The Supervisor shall approve the Rescue Plan to be used in the activity
- The Supervisor shall monitor the weather conditions and where changes to conditions could cause a safety problem immediately cease activities until a more favourable set of conditions is available
- The Supervisor shall inspect the work area prior to work commencing and during the work activity
- All hydraulic or oil spill will be reported by the Supervisor

13. Records

All documents generated during the life of the contract will be retained in terms of the Document Management Procedure.