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Work On or Near Water Procedure

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Work On or Near Water Procedure

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1.0 PURPOSE

This procedure provides the requirements necessary to ensure that all Operations and Maintenance (O&M) activities involving work over or adjacent to water is conducted in a safe manner and to Support Staff, Contractors, and Management eliminating any operational risk when working near water by complying with all roles, regulations, and requirements of the local authorities and governmental agencies.

2.0 SCOPE

The scope of this procedure applies to all Operations and maintenance works performed near water, within, or under the authority and responsibility of an Entity under the ~~control~~ supervision of Mashroat - throughout the Kingdom of Saudi Arabia.

3.0 DEFINITIONS

Definitions	Description
Lanyard	Means a rope, suitable for supporting one person. One end is fastened to a safety belt or harness and the other end is secured to a substantial object or a safety line.
Lifebuoys	A ring-shaped device that floats in water and used to keep a person from drowning.
Lifeline	Means a rope, suitable for supporting one person, to which a lanyard or safety belt (or harness) is attached.
PFD	Personal Flotation Device is a life jacket or life vest (but not a buoyancy aid), designed to support an unconscious person face upwards. They are not designed to turn an unconscious person over who is in the face down position.
Skiff	A light rowing boat or sculling boat, typically for one person.
Rescue Vessel	Rescue Vessel that has a means of propulsion.
OSHA	Occupational Safety and Health Administration
CFR	Code of Federal Regulations
JHA	Job Hazard Analysis
PPE	Personal Protective Equipment
HSE	Health, Safety and Environment
SOLAS	Safety of Life at Sea
Hazard	A danger that might be an individual slip or fall into the water, by wave action, tide action, strong currents or swell from passing water traffic. That may increase by adverse weather.

4.0 REFERENCES

- OSHA 29 CFR 1910.140 Personal fall protection systems
- OSHA 29 CFR 1926.104 Safety belts, lifelines and lanyards.
- OSHA 29 CFR 1926.105 Safety nets
- OSHA 29 CFR 1926.106 Working over or near water
- EOM-KSS-PR-000003 Personal Protective Equipment Procedure.
- EOM-KSS-PR-000010 Night Works Procedure.
- EOM-KSS-PR-000030 Scaffolding Control Management Procedure.
- EOM-KSS-PR-000033 - Job Hazards Analysis (JHA) & Pre-Start Briefing Procedure

5.0 RESPONSIBILITIES

5.1 Facility manager or Contractor Responsible

- Providing the training material and resource to implement the requirements of this procedure. Communicating with management concerning Facility HSE requirements concerning general safe work practices.



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Providing leadership regarding HSE requirements and expectations for Managers, Supervisors, superintendents and other leadership.

5.2 HSE Responsible

- Auditing this procedure.
- Confirming that this procedure complies with any mandatory, statutory requirements and regulations applicable to the Facility.
- Provides HSE advice to management, where required, on implementing the requirements of this procedure.

5.3 Supervisors

Superintendents and/or Engineers in charge of the work shall carry out the following activities:

- Review job information provided by the Facility manager, Client, or Owner.
- Prior to the start of any marine operations, conduct a Risk Assessment of the area to identify any Facility specific hazards and share this information with the Contractor(s), when applicable.
- Identify the presence of any obstructions.
- Inspect plant and equipment to be used.
- Identify the need for any permits that are required in the area and arrange for them.
- Brief the Subcontractor carrying out the work of any adjacent operations that may impact on the work.
- Review the subcontractor's Job Hazard Analysis (JHA) or Work Method Statement (as applicable) for completeness.

5.4 Facility and Contractors Responsible personnel

The following points will assist Contractor/Sub-contractors in their responsibilities when working over or near water:

- Conduct Job Hazards Analysis (JHA) & Pre-Start Briefing, if necessary, and obtain approval from the Supervisors.
- Prepare and submit an application for any permit to work or licenses.
- Program the work in order to ensure maximum protection of the environment.
- Provide equipment that is safe, well maintained and is certified for use at the Facility.
- Provide adequate barriers, flashing lights, and signs for the work. Equipment should be delivered to the work location before work commences.
- Conduct a Pre-start briefing with personnel on the safe working practices required for the work to be performed.
- Ensure the availability of a competent person whom shall check daily or before use, lifesaving and protective equipment, navigation and warning lights.
- Notify a Supervisor regarding any environmental contamination discovered during the work.
- Provide adequate emergency response capabilities and rescue services to handle any eventualities.
- Ensure that mechanisms for controlling the safety of personnel working over, or near, water are in place.
- Provide suitable personnel protective equipment and clothing to their employees and their visitors to carry out the work in a safe manner.
- Communicate the requirements of the work method statements and permit to all their employees
- Ensure that all personnel they employ are fit and competent to do the work safely.
- Train and allocate sufficient personnel to act in a standby function with duties for monitoring the work activity in case requirements, like Hot Work, arise.
- Observe and comply with all the rules, regulations and requirements of local authorities, and all such requirements stipulated in procedures, rules and regulations.



6.0 PLANNING

Contractors must comply with all rules, regulations and requirements of authorities and all such requirements of government agencies, this may include acquiring all applicable permits. The contractor/subcontractor executing the work must prepare a plan to mitigate the job hazards, the following topics must be addressed during the Job Hazards Analysis (JHA) in the planning phase of all operations near or over water:

- Electricity
- Impact of wind speeds on scaffolds, man-lifts and lifting operations Wave height
- Tides and current
- Weather conditions
- Marine traffic
- Mooring and embarkation / disembarkation Loading / unloading operations of ships
- Port lifting operations, and Contractor's own lifting operations
- Hot works, flammable and combustible liquids.
- Confined spaces
- Emergency response
- Fall protection
- Swimming capabilities of workforce Working platforms & access Marine electrical wiring
- Spill reporting and clean-up.

7.0 JOB HAZARD ANALYSIS

- A Job Hazard Analysis must be conducted at the Planning Stage to identify the hazard risks and determine control measures. These are used as part of the Work Permit Process to ensure that all controls are in place prior to commencing the task. Refer to EOM-KSS-PR-000033 Job Hazards Analysis & Pre-Start Briefing Procedure for further details.
- No work is to commence until the above has been implemented and signed by the relevant Supervisor in charge.

8.0 IMPLEMENTATION

The following requirements establish the criteria for an effective assessment program to ensure the safety of personnel and the environment when working over or near water:

- Where practicable, a scaffold or working platform shall be used for working over water in accordance with EOM-KSS-PR-000030 Scaffolding Control Management Procedure.
- When positioned within 2 meters of an exposed edge that is not fully enclosed by a permanent barricading, where an employee might fall into water, and a risk of drowning is present. Lifebuoys or lifelines guardrails, temporary fencing or barriers meeting the strength of a scaffold hand-rail must be available. Where this is impracticable, personal flotation devices must be worn by all persons.
- A pre-task briefing as per: EOM-KSS-PR-000033 - Job Hazards Analysis (JHA) & Pre-Start Briefing must be given by the Supervisor on a daily basis for all working in, near or adjacent to water. Local rules, procedures, wearing of PPE and emergency arrangements are to be addressed.
- Dumping of all wastes, concrete, slurries, materials and waste water into the sea, lakes, ponds, waterways or canals is strictly prohibited.
- Contractor shall ensure that all applicable Environmental permits have been acquired for all discharges of water (including dewatering operations) into the marine environment.
- All plants located near or adjacent to water shall have drip trays or other adequate measures to prevent pollution.
- All equipment and external fuel tanks, hydraulic, lubrication and fuel hoses will be kept in good order and free from any leaks. All examples of damaged, worn or poorly maintained hose and connections must be immediately removed from service and repaired or replaced
- Adequate measures in accordance with the Environmental Impact Assessment and Plan must be taken to ensure minimum disturbance to marine and wildlife.
- Access walkways, steps, revetments, ladders and gangways must be maintained free from mud, seaweed, algae and any other materials likely to contribute to a slip hazard.



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- Emergency routes must be clearly signposted and highlighted.
- Pre-start briefing on personal hygiene must be given by Contractor regularly to all employees that work in, on, near or adjacent to water.
An adequate amount of lifebuoys / life rings must be clearly situated along the length of unprotected edge, no more than 50m apart. A lifeline constructed of material that is able to float shall be attached to the life ring, a minimum length of 30m.

8.1 Environmental Impact and Controls

To reduce the impact on aquatic ecology to lowest possible levels:

- Prohibit the dumping of waste and wash water into the waterway.
- Develop methods of work to ensure silt and mud disturbance, particularly on incoming tides, is kept to a minimum.

When work must be scheduled during migratory season, measures shall be taken to protect migratory fish movements in estuaries.

- Develop planned maintenance, deck washing and refueling protocols to ensure the risk of pollution is as low as is reasonably achievable.
- Reduce noise generated by materials handling, dredging, heavy plant and machinery operations, piling and vibration, to a level as low as is reasonably practical by shrouding, screening and duration. Where applicable, noise levels must be maintained below established limits.
- Facility lighting must be arranged to prevent interference to shipping and navigation, and light pollution and nuisance on shore.

8.2 Physical Environment

The impact of various elements of the physical environment on the working conditions shall be assessed

- Daily meteorological reports and direct contact with the local meteorological authority/office personnel is essential to be aware of imminent and future weather conditions, such as:
 - High winds that could adversely affect the integrity of scaffolds, lifting operations, temporary structures and the safety of personnel.
 - Icing on walkways, structures, vessel decks and companionways
 - Wave heights, tidal surges etc.
 - Fog
- Essential historical information concerning tidal range, wave height, tidal surge (bores), and currents will determine methods for:
 - Mooring floating craft
 - Height of temporary platforms
 - Specification and characteristics of rescue craft
 - Emergency rescue equipment
 - Landing platforms
- Access walkways, steps, revetment, ladders and gangways must be maintained free from mud, seaweed, algae, and slime as far as is reasonably practical.
- Consideration of emergency requirements, signposts, and provision of adequate lighting.

9.0 OPERATIONAL REQUIREMENTS

9.1 General Safety Instructions

The following requirements establish the criteria for an effective assessment program to ensure the safety of personnel and the environment when working over or near water:

- All personnel will be subject to Pre-start meetings prior to working on or in the vicinity of water, explaining the rules and procedures required.
- Fishing will be a prohibited activity and suitable warning signs shall be erected to ensure that all personnel are aware of this restriction.



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- An adequate quantity of approved fire extinguishers, shall be provided at Facility. These shall be periodically checked, inspected and tagged as to inspection date, actions taken etc., and a log maintained of such inspections.
- All vessels will carry adequate and suitable lifesaving equipment, fire extinguishers and communications equipment and lighting appropriate to the class of vessel.
- Rescue boat owner will be required to submit insurance inspection certificates for all vessel hulls, lifting equipment and lifting gear, pressure vessels, fire protection systems and lifesaving equipment.
- All marine plant must be fit for purpose, properly maintained and safe to use.
- All personnel will wear an appropriate and approved lifejacket or buoyancy aid or personal floatation device when required.
- All hydraulic, lubrication, and fuel hoses will be kept in good order, free from abrasion and unions tight and free from leaks. Any damaged, worn, poorly maintained hoses and connections must be immediately removed from service and replaced or repaired. Hose register and maintenance strategy for hose maintenance is recommended
- Spill kits or proprietary absorbent materials must be provided on board for use in the event of a spillage. Facility management must ensure that workers are sufficiently trained in their use.
- Containment booms for capturing fuel/chemical spills on water surface.
- There shall be a rescue vessel on standby for all work on, in, near or adjacent to water, which must be operated by a competent person experienced in operating a small boat in flowing water, the crew trained in emergency rescue, and be equipped with boat hook, grab lines or similar to assist in recovering a person from the water. There must be a trained first aider onboard.
- All vessels must be annually 3rd party certified fit for purpose, properly maintained and safe to use. Vessels will clearly display the maximum number of passengers it can carry, and this number must never be exceeded.
- Personal flotation devices issued to welders shall be complete with spark-proof covers.
- Personal flotation devices shall be fitted with water reactant lights and whistles when night work has been approved by the Facility management.
- Facility lighting must be arranged to prevent interference to shipping and navigation.
- Contractor must co-ordinate with the meteorological authority for all work in ports.

9.2 Life Saving Equipment

The following equipment and services shall be supplied as a minimum:

9.2.1 General

All work activities will present a range of health and safety issues that need to be properly managed. The basic principles involve the identification of hazards, assessment of risks, designing safe systems of work, ensuring the workforce are properly trained, equipped and supervised, and having appropriate procedures in place.

When work has to be carried out on or in the vicinity of water several additional hazards must be introduced and very carefully evaluated and controlled.

9.2.2 OSHA Legislative Requirement

- **926.106** - Fall protection in lieu of personal fall arrest systems and the need for a rescue skiff. - 03/21/1997
- **1926.106** - Fall protection requirements for work docks/bridges used during bridge construction. - 02/09/2004
- **1926.106** - Fall protection, lifejacket, and lifesaving requirements when working over or near water. - 09/28/1999
- **1926.106** - Life jacket and skiff requirements when working over or near water. - 12/05/2003
- **1926.106** - OSHA currently accepts U.S. Coast Guard devices approved as a Type I PFD, Type II PFD, Type III PFD or Type V PFD, or their equivalent. - 08/02/1991



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- **1926.106** - Requirement to use U.S. Coast Guard-approved life jackets for workers performing construction work over or near water does not specify type or classification. - 04/02/2004
- **1926.106** - Requirements for ringbuoys, life jackets, and skiffs when working over or near water. - 12/10/1998
- **1926.106** - When a lifesaving skiff is to be considered as being "immediately available". - 12/06/1991
- **1926.106** - Whether construction workers while inside crane cabs or enclosed break areas on barges are required to wear life jackets. - 06/19/2006
- **1926.106(a)** - Fall protection, lifejacket, and lifesaving requirements when working over or near water. - 09/28/1999
- **1926.106(a)** - Life jacket and skiff requirements when working over or near water. - 12/05/2003
- **1926.106(a)** - Life jacket/buoyant work vest requirements for employees working over water <2 feet deep; requirements for lifesaving skiffs. - 08/23/2004
- **1926.106(a)** - Requirement to use U.S. Coast Guard-approved life jackets for workers performing construction work over or near water does not specify type or classification. - 04/02/2004
- **1926.106(a)** - Whether construction workers while inside crane cabs or enclosed break areas on barges are required to wear life jackets. - 06/19/2006
- **1926.106(c)** - Fall protection, lifejacket, and lifesaving requirements when working over or near water. - 09/28/1999
- **1926.106(d)** - Fall protection, lifejacket, and lifesaving requirements when working over or near water. - 09/28/1999
- **1926.106(d)** - First Aid treatment required within 3 to 4 minutes of injury. - 06/13/1990
- **1926.106(d)** - Life jacket and skiff requirements when working over or near water. - 12/05/2003
- **1926.106(d)** - Life jacket/buoyant work vest requirements for employees working over water <2 feet deep; requirements for lifesaving skiffs. - 08/23/2004

9.2.3 Hazards

Any workplace over, on or near water presents a danger that persons might slip or fall into the water, be swept off their feet by wave action, tide action, strong currents or swell from passing water traffic. Adverse weather is also a factor that can increase the danger, and work conditions can change quickly. Whether or not a person is injured by falling in the water, there is an immediate risk of drowning and/or being carried away by water currents.

9.2.4 Causes of Entry into water

These include:

- Falls from height.
- Trips, slips, stumbles from low level.
- Persons being knocked over by moving objects (e.g. crane loads, vehicles, etc.).
- Loss of balance (e.g. by high winds, sudden boat movements, etc.).
- Failure or absence of edge barriers.
- Failure or absence of fall prevention equipment, ropes, lines.
- Floating platforms or vessels sinking.
- Tide action, waves or swell from passing waterborne traffic.

9.2.5 Hazards of Falling into Water

The most immediate danger is of drowning. Factors that can contribute to this are:

- Shock from sudden immersion in cold water.



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- Weight of waterlogged clothing.
- Incapacity following injury – caused by striking an object during a fall, or whilst in the water.
- Fatigue or hypothermia where rescue is not immediate.

9.2.6 Precautions

Standby safety/rescue boat present at all times with first aid trained crew.

Platforms, edges, gangways etc. Whenever reasonably practicable fixed edge protection must be provided to prevent people falling into water. Where edge barriers are not reasonably practicable at exposed edges, e.g. quay edges, appropriate warning signs and/or edge markings should be displayed to highlight the danger.

Sound precautions must be taken to mitigate risk, firstly to prevent persons entering the water and, secondly, if the worst happens, to ensure that they will float and are able to be rescued in the shortest possible time and provide first aid as required. A standby rescue boat allows in water rescue in the shortest possible time. It is essential, when working on or near water that safe systems of work are in place based on a thorough risk assessment and that staff are properly trained and instructed.

When working on or near water consideration must also be given to the health implications of falls into the water. The water may possibly be polluted, for example when working near sewage discharge points, and there is the ever-present risk of contracting leptospirosis (or Weil's disease) from water contaminated by rat urine.

9.2.6.1 Work Outside Of Edge Barriers

Standby safety/rescue boat required at all times. Safety Nets can provide good fall protection for those carrying out occasional work outside edge barriers though are not 100% fail proof. e.g. maintenance activities. An alternative is the use of a full body harness attached by lanyard to a suitable anchorage point or proprietary fall prevention anchorage system. Such equipment needs to be carefully selected by a competent person to ensure it is suitable for the task, checked and maintained to ensure it is kept in good order and the users instructed and trained in its use. Emergency rescue arrangements also need to be in place. These should include the provision of a safety boat as a safe means of recovering persons being lowered down after being suspended from a fall.

9.2.6.2 Work from Mobile Elevating Work Platforms

Safety Boat Required. When working next to water, a harness should not be worn due to the risk of drowning if the work platform falls into the water. Coast guard approved Life jackets should be worn.

9.2.6.3 Housekeeping

This is of special importance when working on or near water. Tools, equipment, ropes and other materials not in use should be stored away. Waste should be cleared up promptly, and materials stacked or positioned with care.

Slippery surfaces increase the risk of people falling into water and must be properly treated to ensure good grip. Water weed, slime, bird droppings etc. should be cleaned off. Oily or greasy surfaces should have absorbent granules or grit spread on them, and icy or frosty surfaces should be treated with salt or grit.

9.2.6.4 Weather Conditions

The prevailing conditions and local weather forecast should be taken into account at the beginning of each shift. Revisit JHA if in doubt. Changing weather conditions including rain, rising winds, fog, mist, etc. are all potential dangers.



9.2.6.5 Clothing and Equipment

Where the work presents a risk of people being struck on the head then safety helmets must be worn. Such an injury prior to falling into water presents a significant risk. Footwear with good, non-slip soles should be worn when working on or near water. Rubber boots should not be worn as, once filled, they act as a weight and could drag the wearer under water.

9.2.6.6 Life Jacket

This is a personal safety device which, when fully inflated (if inflatable), will provide sufficient buoyancy to turn and support even an unconscious person face upwards. These must be worn at all times whilst working on boats and where there is a foreseeable risk of drowning when working near to water. Those using life jackets need to be trained and instructed in their proper use and storage, and the equipment regularly inspected and maintained.

9.2.6.7 Rescue Equipment

Coast guard approved rescue boat including SOLAS safety equipment. Coast guard approved lifebuoys or rescue lines should be positioned at intervals along the work area (See OSHA). Daily checks must be made to ensure that lifebuoys and lines are in their proper place.

9.2.6.8 Rescue Vessel

These must meet Coast Guard approval if required and requirements in terms of their construction, use, equipment, (including safety, communication and rescue equipment) and the competence of the operator. In most circumstances it will be necessary to provide a rescue boat standing by during work activities on or near water. For example, work near tidal water or fast flowing rivers. Practice exercises in respect of rescuing people from the water will need to be carried out.

9.2.7 Rescue Procedure

It is important to avoid working alone to ensure that there is always someone to raise the alarm. Each person is trained in what to do in the event of an emergency. An emergency rescue plan is in place for the work activity. The elements of a rescue procedure consists of:

- A routine for raising the alarm.
- A drill to provide the rescue boat facilities. Emergency rescue training exercises on a regular basis as required by task. At a minimum an exercise is to be conducted on a quarterly basis covering:
 - Man overboard rescue.
 - Rescue of injured persons from a vessel.
 - Casualty handling.
 - Induction training must be given to all individuals going on board vessels for the first time covering the correct procedure for embarkation / disembarkation and emergency procedures in the event of an incident.
 - All documentation relating to training must be kept and made available upon request.
- A routine for getting the rescued person(s) appropriate medical assistance. Thus, all rescue boat skippers to hold HSE first aid at work.
- Rescue procedures need to be practiced at regular intervals involving all persons who would be required to participate in a rescue.

Please also refer to: EOM-KSS-PR-000014 Emergency Preparedness Procedure for further information.

10.0 TRAINING

All person required to be involved in work near water will receive adequate awareness and participate in drill sessions to enable them to be competent in their safety roles. This is the responsibility of the Facility manager. Some of the training course may include (but not limited to) the following:



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- Near Water working rescue philosophy and strategies
- National and International standards
- Personal and team equipment
- Dynamics and hazards of water
- Rescuer safety and procedures
- Use of rope equipment
- Channel crossing methods
- Entrapments
- Search, management and organization of water incidents
- Line crossing methods
- Tethered boats to support Swift Water Rescue Technicians