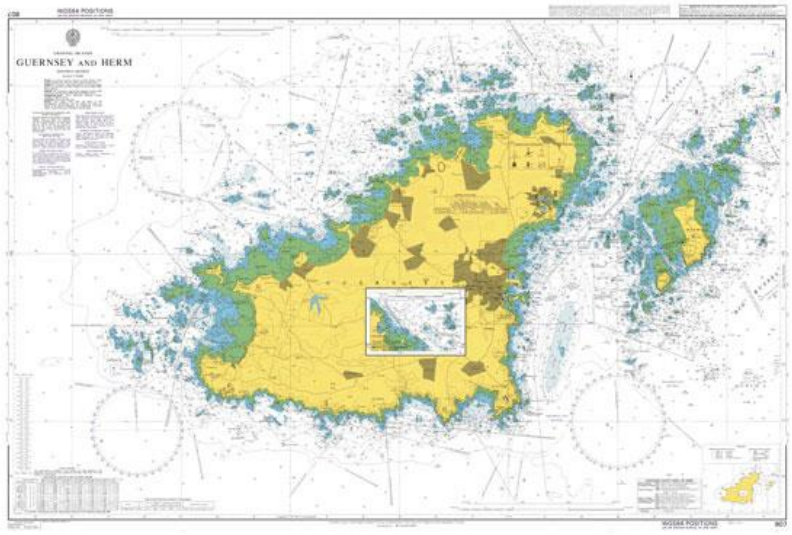
GOSHA

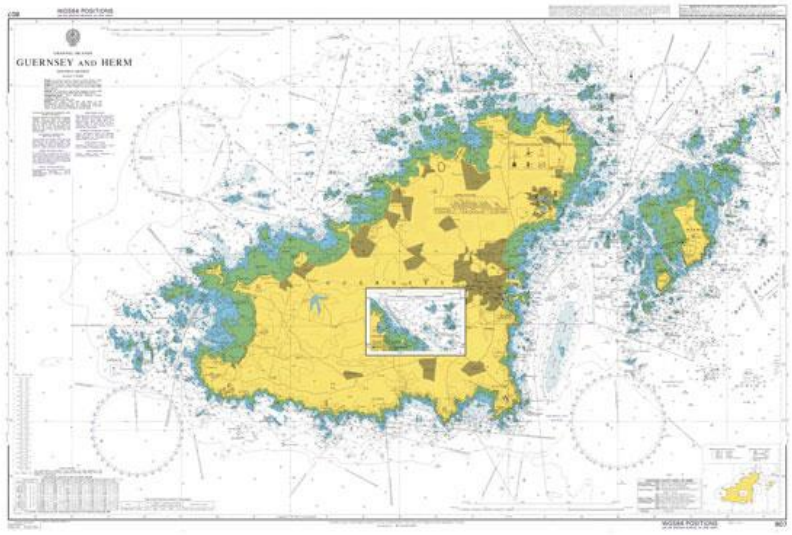


States of Guernsey
Head of Profession - Health & Safety

16.11.2023

Dan Espley MSc, Dip NCRQ, CMIOSH

GOSHA



- Welcome
- Breaks & Welfare Information
- Traumatic Events
- Mobile Phones
- Finish Time

GOSHA

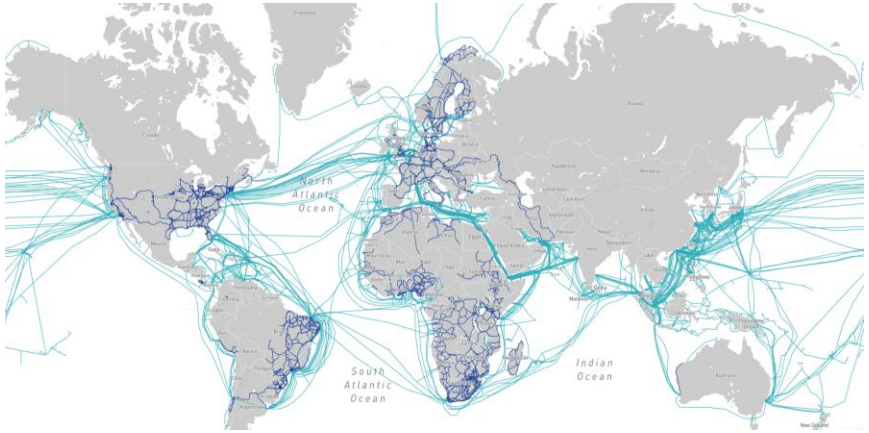
Contents

- 1.0 Maritime, Offshore & Safety Background
- 2.0 Regulatory Compliance, Improving Operational Performance & Use of Safety Management Systems
- 3.0 Overview of Offshore Wind Safety – Risk Management Components, Approach, Common Risks & Hazards
- 4.0 Summary & Questions

GOSHA

1.0 – Maritime, Offshore & Safety Background

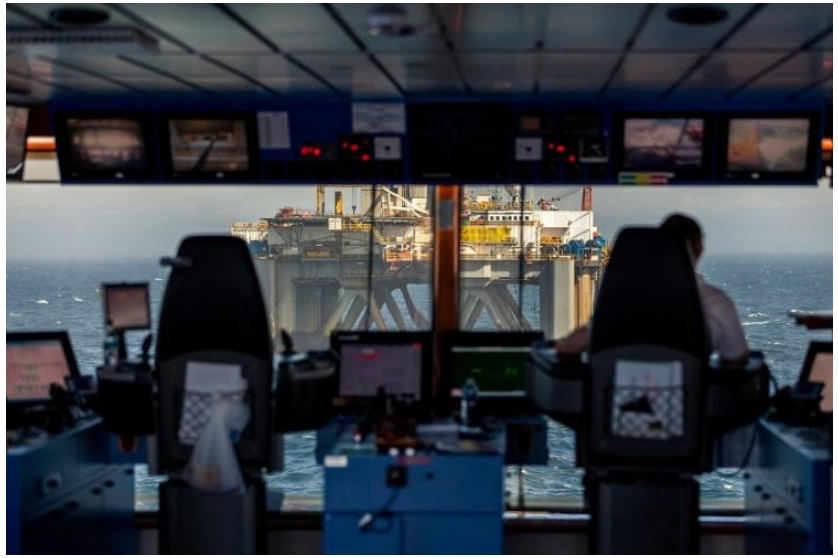
Deep Sea Cable Installation & Maintenance

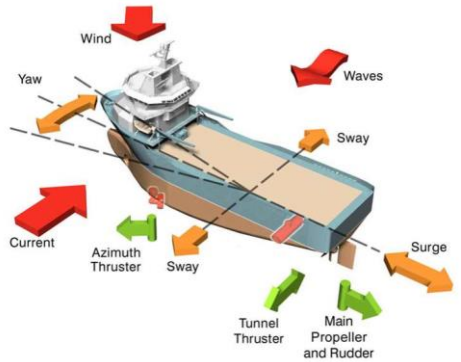


Maritime – North Sea Offshore Oil & Gas:

Dynamic Positioning

Saturation Diving, ROV, Construction & Well Stimulation





GOSHA

Maritime - Offshore Wind

GOSHA

Maritime - Offshore Wind

From Left to Right: **Monoplile, Jacket**, Twisted Jacket, Tension-Leg Floating Platform, Semi-Submersible Platform, and Spar-Buoy.

Monopile and tripod/jacket foundations are currently proven technologies.

Floating structures have been using three main types of foundations, which are adapted from the oil and gas industry: the Tension Leg Platform (TLP), semi-submersible (Semi-sub), and Spar Buoy (Spar).

GOSHA

Onshore - Safety, Security & Risk Management

Government Organisations

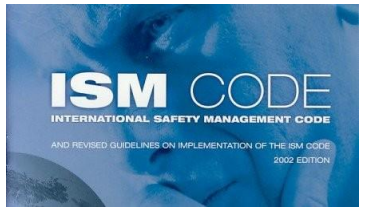
GOSHA

2.0 Regulatory Compliance, Improving Operational Performance & Use of Safety Management Systems

Maritime & Coastguard Agency

Lloyd's Register

BUREAU VERITAS



IMCA

HSE
Health & Safety Executive

GOSHA

Safety Management Systems

Designed to help Organisations meet legal compliance and take a pro-active approach to manage occupational health & safety.

The systematic approach makes the management of Health & Safety easier and more effective.

GOSHA

Management System Certification

Supplier selection and evaluation processes ensure products and services meet health, safety, and environmental requirements, provide the specified quality and is financially robust.

It is expected that suppliers and subcontractors have developed and implemented management systems in accordance with recognised standards, often subject to 3rd Party audits.

GOSHA

Offshore Wind Safety & SMS – Why?

- **Moral Perspective** – Work related injuries result in a great deal of pain and suffering for those affected. Organisations must do everything possible to avoid this occurring.
- **Legal Duties** – Legal requirement to protect the health and safety of employees and others that may be affected by an organisations work activities.
- **Reducing Financial Impact** – Insured and uninsured costs.
- **Reputational Drivers –** Effectively dealing with associated risks, influences local and international standing.
- **Offshore Wind Industry -** Attractive Career Option.

GOSHA

3.0 Offshore Wind Safety – Risk Management Components, Approach, Common Risks & Hazards

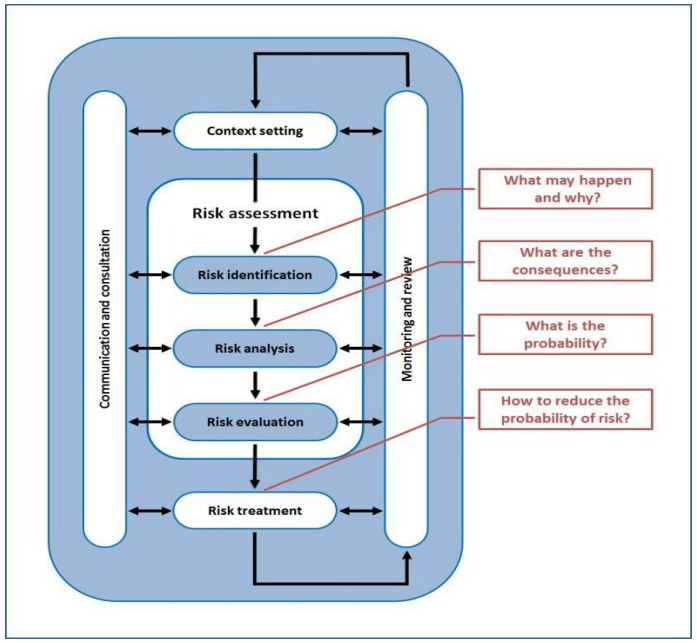
Risk Management Approach:

Implementing a **risk management approach** into processes is a **key element of proactively controlling hazardous** situations in the workplace.

By assessing activities in advance **reduces the likelihood of incidents** in a systematic way.

Communicating the outcome of a risk assessment, including mitigation measures and active supervision **is vital** to safeguarding workers from injury and ill-health.

GOSHA



Typical Risk Management Components:

- QHSE Policy / Operational Manuals - Offshore & Onshore
- Safety Requirements Onshore & Offshore
- Health Requirements / Environmental Considerations
- Risk Management - ISO 31000
- Safety Management Systems - ISO 45001
- Training / Emergency Response / Quality Management

GOSHA

Typical Risk Management Approach:

(Routine, Non-Routine & High-Risk Activities)

- **Hazard Identification & Risk Assessment -** Based on Method Statement(s), Safe Working Practice, Risk Assessment Process and a Risk Assessment Database.

Safe Job Analysis (SJA) - Explain and discuss with participants and sign off on a document.

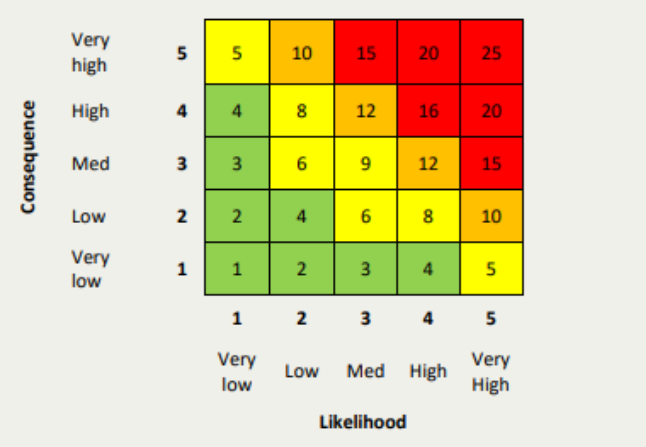
Permit to Work (PTW) - Confirm controls with participants and sign off documents.

Toolbox Talks - Final checks before starting work.

Shift Meetings - Exchange of information at handovers.

- **Safety Meetings –** Exchange of information and review of outstanding or emerging safety issues.
- **Audits & Accident Investigation –** Proactive & reactive management.

GOSHA



Typical Risk Management Approach:

Risk Assessment

Based on minimising, eliminating, reducing, or mitigating hazards and risks to as low as reasonably practicable, using:

- Method Statement(s)
- Safe Working Practice
- Risk Assessment Process
- Risk Assessment Database

GOSHA

Typical Risk Management Approach:

Safe Job Analysis (Also known as Task Risk Assessment (TRA))

Systematic documented procedure that breaks the activity into steps or a sequence, identifying safety hazards and controls.

For example, slip or fall hazards, high noise levels, adverse temperatures or vibrations. The aim being to identify and mitigate hazards empower employees to reduce risk.

SJA be used in situations with:

- Time constraints, i.e. existing RA does not cover the work operation;
- A written procedure does not exist,or cannot be followed or for non-complex work operations that include hazards.

GOSHA

Typical Risk Management Approach:

Permit To Work

A permit to work (PTW) or ‘Work Permit’ system serves two main purposes:

- Co-ordination of simultaneous operations (SIMOPS), managing potential conflicts.
- To ensure activities are prepared and risk assessed prior to starting hazardous work.

All vessels and onshore sites have established and implemented detailed procedures for PTW, requirements for risk assessments and types of activity needing a PTW.

GOSHA

Typical Risk Management Approach:

Toolbox Talks

Toolbox Talks (TBT) are job specific meetings covering health and safety regarding planned work activiies.

TBT are normally a concise meeting with all personnel participating in the upcoming task to discuss potential hazards and safety issues, especially any last-minute changes.

The purpose is to ensure that everyone knows what they are supposed to be doing.

A good TBT is an open communication session involving all parties and includes review of the risk assessment, method statement, and PTW.

GOSHA

Typical Risk Management Approach:

Shift Meetings

‘Shift meetings’ are held at start of the shift to exchange information related to the work.

When operating 24 hours a day, the shift meeting also functions as handover meeting between the previous and upcoming shift.

Safety Meetings

Exchange of information and review of outstanding or emerging safety issues.

Usually held at least monthly, unless the situation or an event requires additional input.

Meetings are recorded noting the person chairing the meeting, participants, dates and times.

GOSHA

Typical Risk Management Approach:

Audits

Audits are systematic, independent, and documented processes for obtaining evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

Often can highlight proactive / reactive strengths and weaknesses.

Audits are formal in nature and conducted in accordance with an audit plan.

GOSHA

Typical Risk Management Approach:

Reporting & Investigation

Incident can be recorded using the following types of classification:

- **Personnel Incident** -a work-related occurrence that results in injury or ill health;
- **Environmental Incident** -an occurrence that causes pollution to sea, air, and/or ground;
- **Material Damage** - an occurrence that causes damage to property or equipment, resulting in loss of value or the impairment of usefulness;
- **Near Miss** - an event or chain of events that under slightly different circumstances could have resulted in an incident.

GOSHA

Offshore Wind Safety – Data Collection

Safety Data Gives:

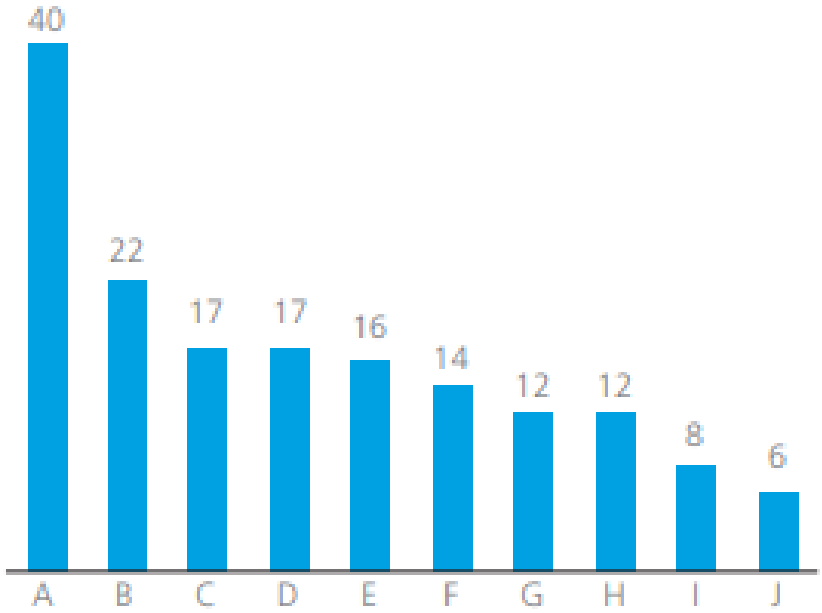
- Visual representation of health and safety incident and injury trends.
- Commitment, transparency and accountability.
- A valuable resource for continual improvement.

Collecting data from Stakeholders enables the development of effective measures to prevent or mitigate similar events in the future. Ultimately, assisting proactive risk management to prevent the likelihood of adverse financial implications.

GOSHA

Offshore Wind Safety – G+ GOWH&SO 2022

High potential incidents and injuries



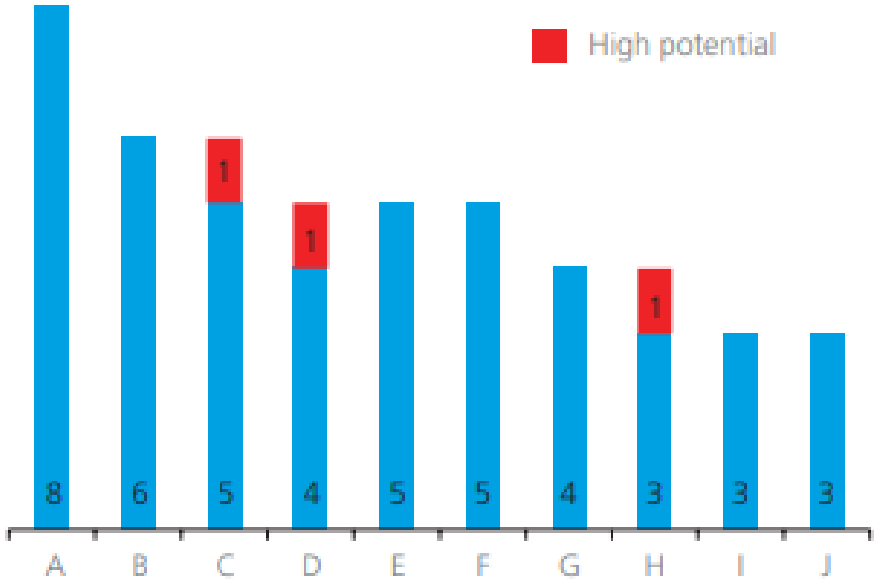
Key	
A	Lifting operations
B	Electrical systems (working with)
C	Access/egress
D	Vessel operation (including jack-ups and barges)
E	Working at heights
F	Routine maintenance
G	Surveys (geophysical, environmental, meteorological)
H	Transfer from/to vessel
I	Civil works onshore including excavations
J	Hand tools/power tools (working with)*

Figure 5: High potential – Top 10 work process breakdown

GOSHA

Offshore Wind Safety – G+ GOWH&SO 2022

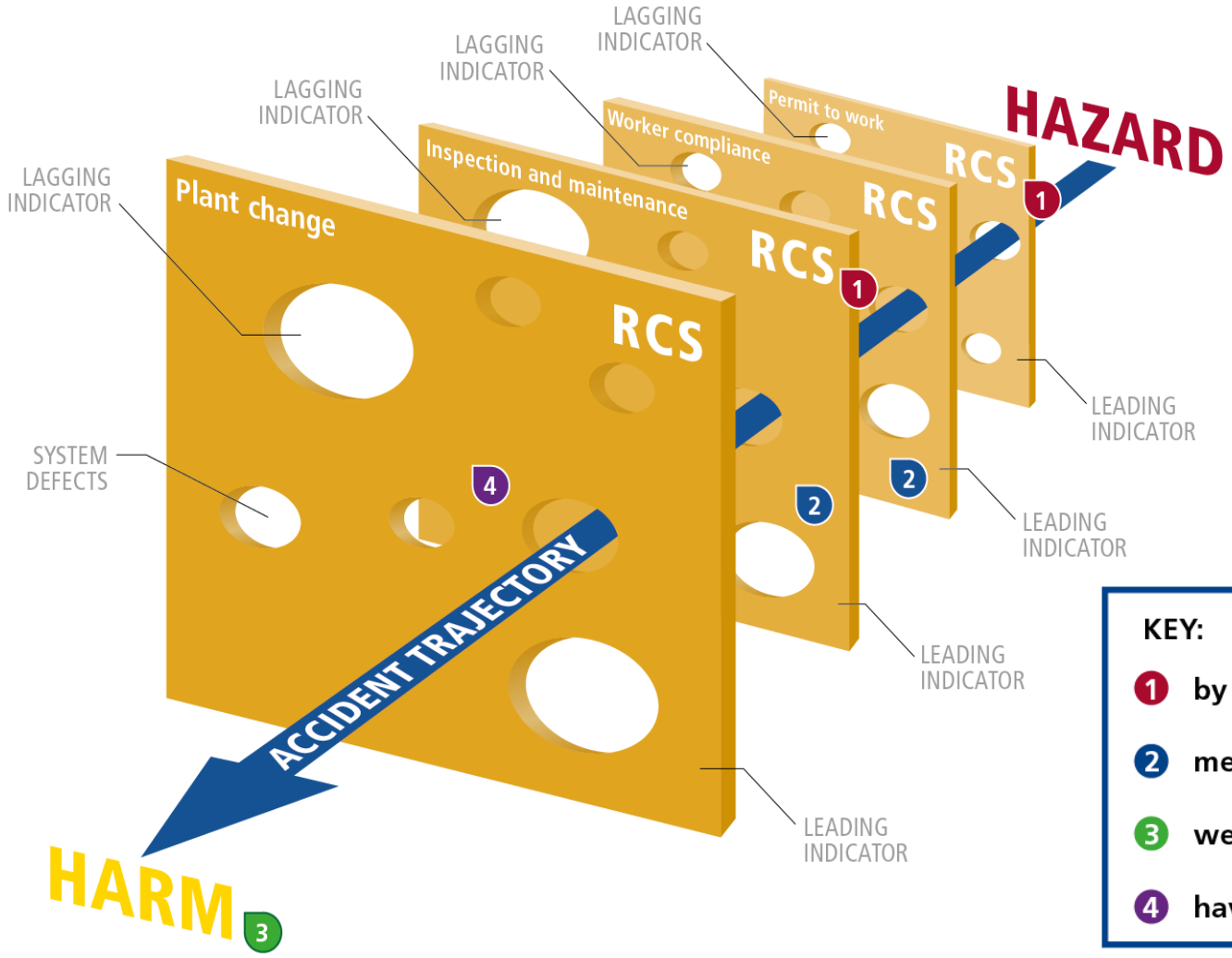
Work process analysis: Manual handling



Key	
A	Turbine: Nacelle
B	Vessel: SOV
C	Offshore: Substation other
D	Vessel: Jack-up vessel/Barge
E	Onshore: Turbine assembly
F	Turbine: Foundation external
G	Turbine: Transition piece/boat landing
H	Onshore: Warehouse/workshop
I	Turbine: Tower
J	Turbine: Hub and blades

GOSHA

Importance of measuring the right things



KEY:

1. by ensuring these actions take place; and
2. measuring success or failure here;
3. we are having an effect here; and
4. having less reliance here.

GOSHA

Offshore Wind Safety - Risks & Hazards

Stop Work Policy

This means employees have the right (and responsibility) to stop their own or other's work, if believed it threatens the safety of personnel, may result in material damage or an environmental incident.

Consolidated Contracting Engineering & Procurement S.A.L Offshore (CCEP)
Future Growth Project / Wellhead Pressure Management Project (FGP/WPMP)-3GP

SAFETY OBSERVATION CARD

Name/Badge	Saif Jayyousi 62291	Location	A2 Office
Company	CCEP	Date	16-11-2020
Trade of observer	IT SUPPORT ENG	Time	07:00 Am
I Observed: Falling light cover		Near Miss	✔
		Unsafe Condition	
		Unsafe Act	
		Positive Observation	
Actions Taken:			
Comments			

Observations or ‘Stop Work’ action can be recorded on ***Safety Observation Cards*** (SOC). A SOC promotes proactive safety, **a no blame culture**, with an ability to measure and record performance, highlighting issues that require attention, **critical to continual improvement**. **Information provides statistics, promotes a positive safety culture.**

GOSHA

Offshore Wind Safety - Risks & Hazards

PPE

Standard PPE on all worksites usually includes:

Depending on the task and subject to Risk Assessment(s), site requirements may require additional PPE.

GOSHA

Offshore Wind Safety - Risks & Hazards

Slips, Trips, Falls & Cuts

- Most incidents occur during low hazard task activities. Injuries often result in a stop to operations, evacuation and or advanced hospital treatment.
- Preventing slips, trips and falls can be achieved by housekeeping, using the correct PPE, identifying and removing potential hazards.
- Only using knives with stop grips.

GOSHA

Offshore Wind Safety - Risks & Hazards

Safety Barriers

- Used to keep visitors and or non-authorised personnel away from danger, usually during lifting operations.
- Barriers are arguably more effective than signage.

GOSHA

Offshore Wind Safety - Risks & Hazards

Working at Height (WaH)

- You are working at height when there is a risk of injury if you fall.

- PTW systems ensure WaH is considered and fall prevention strategies are used.

GOSHA

Offshore Wind Safety - Risks & Hazards

Dropped Objects

- Offshore work involves a constant risk of dropped objects, often potentially fatal.

GOSHA

Offshore Wind Safety - Risks & Hazards

Dropped Objects

- The term ‘dropped objects’ equals the term ‘falling objects’, e.g., tools, fixed equipment, or loose items falling from height, creating a risk for serious personnel incidents or material damage.

- Dropped objects represent many of the reported incidents and near misses in the Offshore Wind Industry.

GOSHA

Offshore Wind Safety - Risks & Hazards

Lifting Operations

- Lifting operations involve risks related to personnel hit by a dropped load, objects falling from loads, crushing by swinging loads, and material damages.
- Possible failures may include cranes or lifting accessories, incorrect use of shackles or slings, items left on load before lifting, operator errors/lack of training, communication errors/misunderstandings, or insufficient physical barriers.
- Controlled with Lift Plans and PTW.

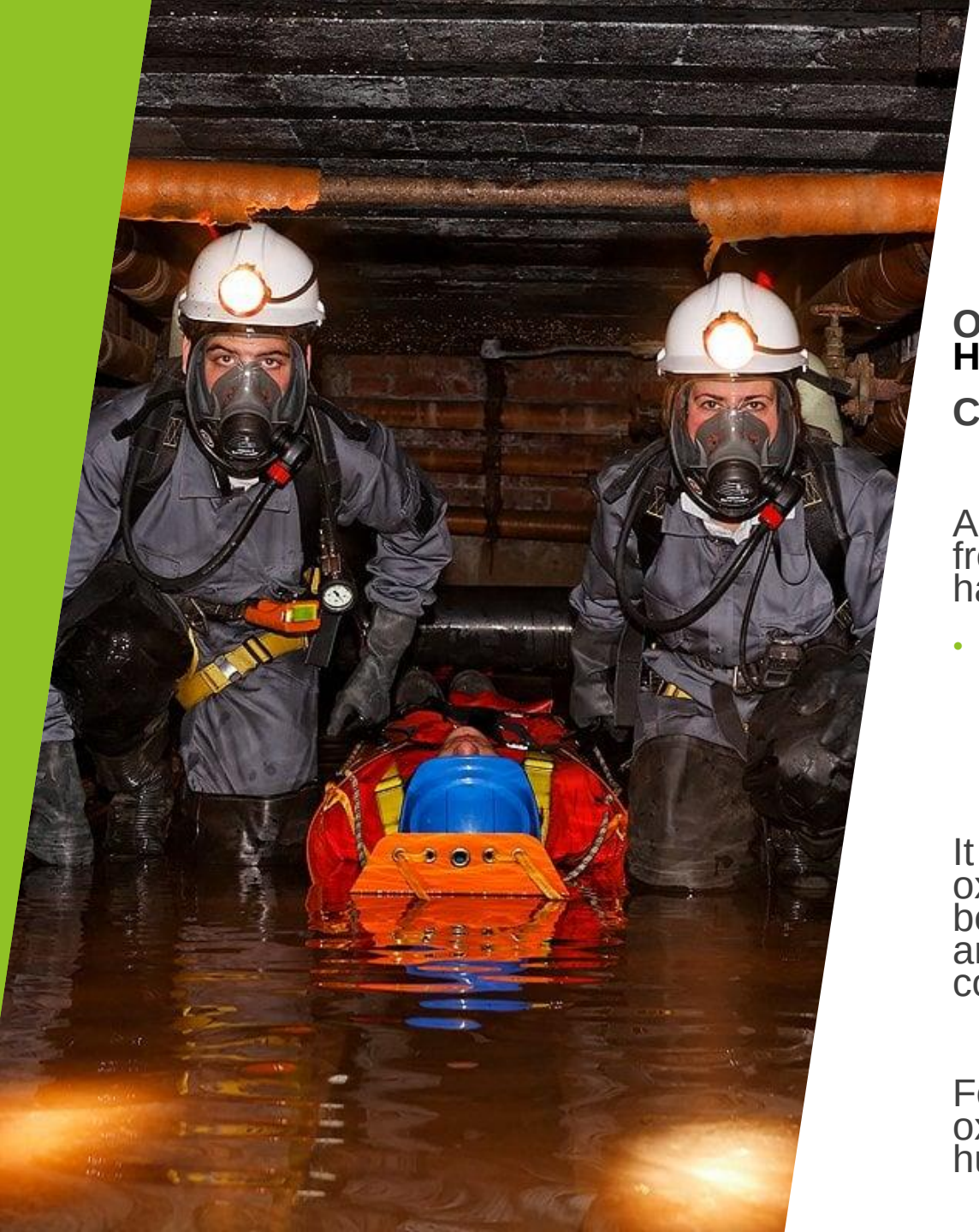
GOSHA

Dropped object incidents

Key

A	Lifting operations
B	Working at heights
C	Routine maintenance
D	Civil works offshore including trenching
E	Hand tools/power tools (working with)
F	Climbing/rope access
G	Transit by vessel
H	Walking from A to B
I	Mechanical systems (working with)
J	Access/egress
K	Surveys (geophysical, environmental, meteorological)
L	Manual handling
M	Operating plant and machinery

Offshore Wind Safety – G+ GOWH&SO 2022



GOSHA

Offshore Wind Safety - Risks & Hazards

Confined (Enclosed) Space Activities

A confined (enclosed) space is frequently defined as a workplace that has:

- Limited openings for entry and exit, inadequate ventilation, and is not designed for continuous worker occupancy.

It is critical to test that the air has normal oxygen levels and is free of toxic gases before entry. For vessels, high risk areas are tanks, void spaces, cofferdams, etc.

For onshore turbines, inadequate oxygen may occur in tower basements, hubs, and blades.

GOSHA

Offshore Wind Safety - Risks & Hazards

Hot Works

‘Hot works’ include welding, burning/flame cutting, metal grinding, heat shrinking, or other operations causing high temperatures.

- Hot work health hazards relate to burns, respiration of toxic gases, noise, injuries from flying particles and sparks. Hot works are a common cause for fire and explosions.
- Competent personnel, PTW, RA are used to control this activity.

GOSHA

Offshore Wind Safety- Risks & Hazards

Portable Generators

Portable generators are internal combustion engines used to generate electricity. Hazards include are:

Shocks and electrocution from improper use of power or accidentally energising other electrical systems. Fires from improperly refuelling a generator or inappropriately storing the fuel for a generator. Noise and vibration. Carbon monoxide (CO) poisoning. Spillage and leaks.

Competent personnel, PPM, PTW, RA are used to control this activity.

GOSHA

Offshore Wind Safety - Risks & Hazards

Man-Basket Operations

- By its nature, a man-riding crane device is a one-barrier solution and involves considerable risks.
- Crane failure or operator failure may lead to fatal incidents.
- Uncontrolled swinging may lead to severe crushing injuries.
- In order to reduce risks, it is a general policy that man-basket operations are to be avoided.
- Competent personnel, PPM, PTW, RA are used to control this activity.

GOSHA

Offshore Wind Safety - Risks & Hazards

Control of Substances Hazardous to Health (COSHH)

Work involves handling various chemical products, e.g., oil, grease, cleaners, lubricants, paint, glue, etc.

Many of these products may be hazardous to health. Some have potential to cause allergic reactions upon repeated skin contact.

Other products are hazardous to the health when breathing the fumes or are incompatible when mixed. Some products have no immediate symptoms, and the effect of exposure may be evident after time has passed.

Dedicated COSHH & RA utilising up-to-date MSDS control relevant work activities.

GOSHA

Offshore Wind Safety - Risks & Hazards

Noise & Vibration / HAV

- **Noise:** Damage to hearing can occur when exposed to constant noise > 80 dB(A) or impact noise > 130 dB(C).
- Exposure to high levels of noise may cause permanent hearing loss. Short term exposure to loud noise can also cause a temporary change in hearing, ringing in your ears (tinnitus).
- **Hand Arm Vibration**: Use of hand-held power tools such as grinders, hammer drills, torque tools, impact drivers for more than a few hours a day may lead to Hand Arm Vibration Syndrome or Carpal Tunnel Syndrome.
- RA, PTW are used to control this work activity.

GOSHA

Offshore Wind Safety - Risks & Hazards

Electrical Work

The following requirements apply to electrical work on live or potentially live electrical installations that may involve hazards to person performing the work:

- Electrical work shall only be performed by approved/certified personnel responsible for ensuring that any electrical system is installed to a suitable standard;
- Risk Assessment (RA) or Task Risk Assessment (TRA/SJA) are provided prior to high voltage electrical work.
- Before work begins, Lock-Out-Tag-Out (LOTO) or Isolation Confirmation Certificate (ICC) procedure shall be implemented in conjunction with a PTW.

GOSHA

Offshore Wind Safety - Risks & Hazards

Personnel Transfer Offshore

- Personnel transfer from jack-up vessels offshore turbines is normally conducted by using either the vessel's boat landing ladder or the Transition Piece (TP) ladder.
- Climbing boat landings includes hazards related to slips/trips/falls, fall from height, dropped objects, crushing/squeezing, hypothermia, and drowning. Procedures are followed rigorously.
- It is critical that all personnel are trained and fully aware of the procedures to be used for the specific boat landing and Crew Transfer Vessel (CTV) used.

GOSHA

Offshore Wind - Risks & Hazards

Helicopter Operations

- When using helicopters for crew transfer, critical standards are employed.
- Helicopters should be equipped and operated for extended overwater flights with floating gear, two manual releasable life rafts, emergency locator transmitter, individual pop-out evacuation hatches, PA system, rescue equipment, flight surveillance system, flight data monitoring system, ground proximity warning system, traffic avoidance system.
- Helicopter operators should only be from recognised companies with relevant Certification, experience from the offshore oil & gas or offshore wind industry.

GOSHA

Offshore Wind - Risks & Hazards

Diving

Diving operations are sometimes necessary for underwater inspections and work on a vessel.

The subcontracted diving company is certified, following special rules and guidelines for the work.

The ship’s Master has overall responsibility for ensuring the subcontractor is competent and safety regulations are adhered to.

Normally, diving operations will not be part of WTG or foundation installation work. Competent personnel, Supervisors, Dive Plans, and PTW play a part of this activity.

GOSHA

Offshore Wind - Training

Skills knowledge and experience builds ***competence****:*

Depending on the job description, maritime and training courses will include, yet are not limited to:

- Maritime & Coastguard Agency - Certificate of Competency
- Nautical Institute Dynamic Positioning Operator Certificates
- STCW Basic Training
- GWO Working at Heights
- GWO First Aid
- GWO Manual Handling
- GWO Fire Awareness
- Helicopter Underwater Egress Training (HUET) Certificate

GOSHA

Summary

- Outlined Maritime and Offshore Experience
- Summarised Offshore Regulatory Compliance Requirements
- Reviewed Importance of Improving Operational Performance & Use of Safety Management Systems
- Brief Overview of Offshore Wind Safety – Risk Management, Components, Approach, Common Risks & Hazards

Any Questions?