OFFSHORE EMERGENCY RESPONSE TEAM LEADER FIRE FIGHTING TRAINING

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OPITO

Course Aims & Objectives

- The aim and objectives of the OERTL Initial Training Programme are to equip the delegate with the necessary knowledge, understanding and skills to perform the role of Offshore Emergency Response Team Leader effectively.

Learning Outcomes

Upon completion of this training, delegates must be able to:

1) Define the role and explain the key responsibilities of the Emergency Response Team Leader.
2) State the main priorities of the Emergency Response Team Leader.
3) Explain the purpose of OER arrangements and procedures.
4) Identify the typical elements of emergency response planning.
5) Identify the emergency response PPE requirements for the OERTL and the OERTM.
6) Explain the purpose of setting priorities and objectives in response to an incident.
7) Explain the importance of monitoring environmental conditions during an incident.
8) Explain the importance of monitoring human factors during an incident.
9) Explain the reason for dynamic risk assessment during an emergency response

Learning Outcomes – (cont'd)

Upon completion of this training, delegates must be able to:

10) Delegate tasks to the OERT effectively.
11) Communicate effectively with relevant emergency response personnel.
12) Give clear and concise instructions to the OERT members during the emergency.
13) Lead the OERT in a clear and confident manner.
14) When safe to do so, direct the OERT members into the incident area - continually assessing how the changes in the emergency could impact on the safety of the OERT members.
15) Conduct dynamic risk assessments throughout the incident.
16) Look for and respond accordingly to signs of stress in individual ERT members during the emergency
17) Effectively monitor breathing apparatus (BA) control.
18) Lead the OERT during non-fire incidents effectively.
19) Lead the OERT during firefighting operations effectively.
20) Conduct missing persons and casualty management effectively during the emergency.

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Learning Outcomes (10) through (20) are to be assessed during practical exercises

Module 1
The Offshore Emergency Response Team Leader

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Element 1.1 – The role of the OERTL

1.1.1 – The Role & Key Responsibilities of the OERTL

a) Restrict access to the incident scene and surrounding area as the situation demands

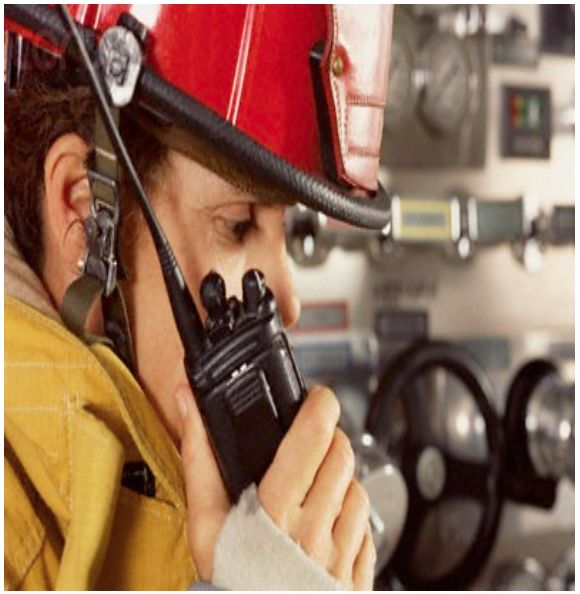
b) Take any other steps necessary to minimize any threat to health and safety

c) Request medical assistance, if necessary

d) Verify substance released and obtain Material Safety Data sheets, as necessary

e) Identify and isolate source to minimize product loss

f) Coordinate further response actions with Incident Commander and local responders



Element 1.1 – The role of the OERTL

1.1.1 – The Role & Key Responsibilities of the OERTL – (cont'd)

g) Activate the Emergency Response team

h) Appoint a Safety Officer

i) Activate additional response contractors and local resources

j) Evaluate the Severity, Potential Impact, Safety Concerns, and Response Requirements based on the initial information provided by the First Person On-Scene

k) Confirm safety aspects at site, including need for personal protective equipment, sources of ignition, and potential need for evacuation

Element 1.1 – The role of the OERTL

1.1.1 – The Role & Key Responsibilities of the OERTL – (cont'd)

l) Communicate and provide incident briefings to company superiors, as appropriate

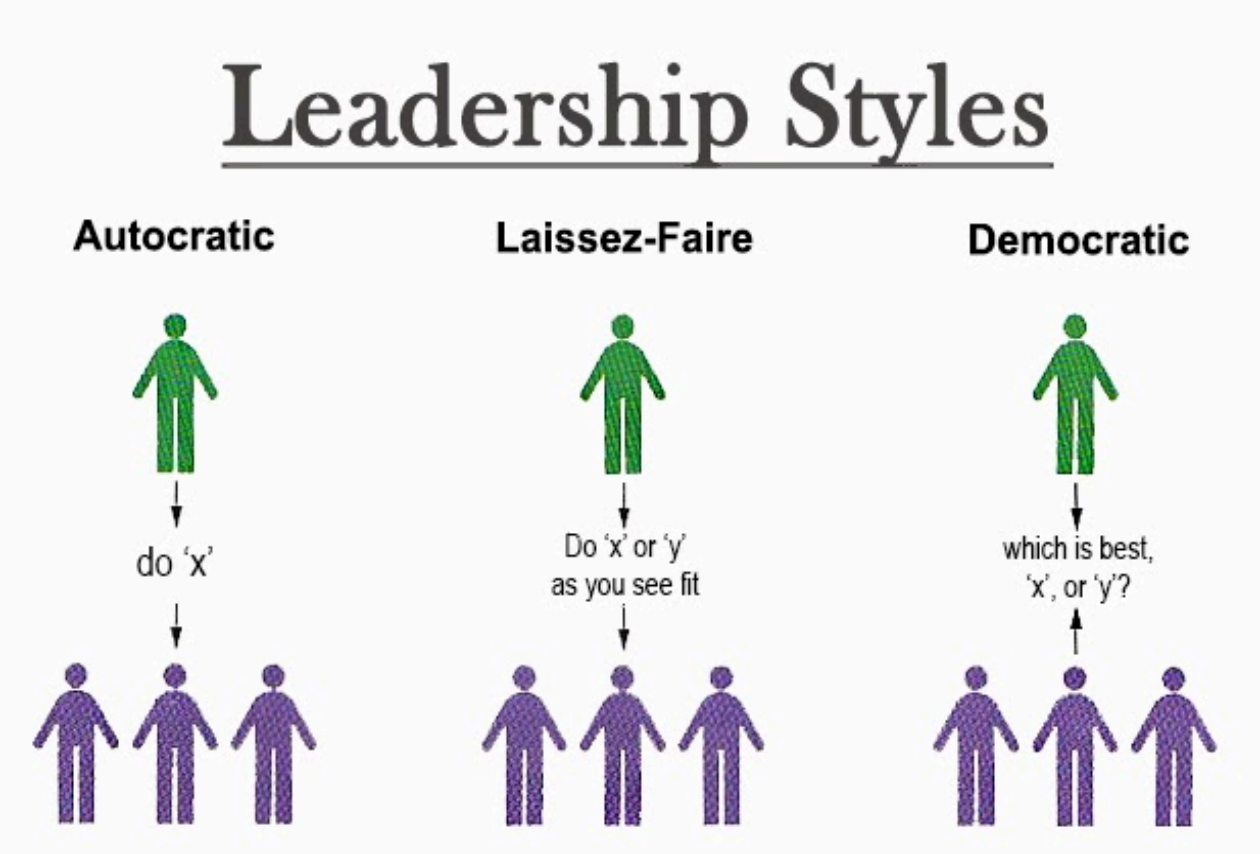
m) Coordinate/complete additional internal and external notifications

n) Communicate with Emergency Response Team, as the situation demands

o) Direct response an clean-up operations

Element 1.1 – The role of the OERTL

1.1.2 – The type of leadership required for ERTL



Element 1.1 – The role of the OERTL

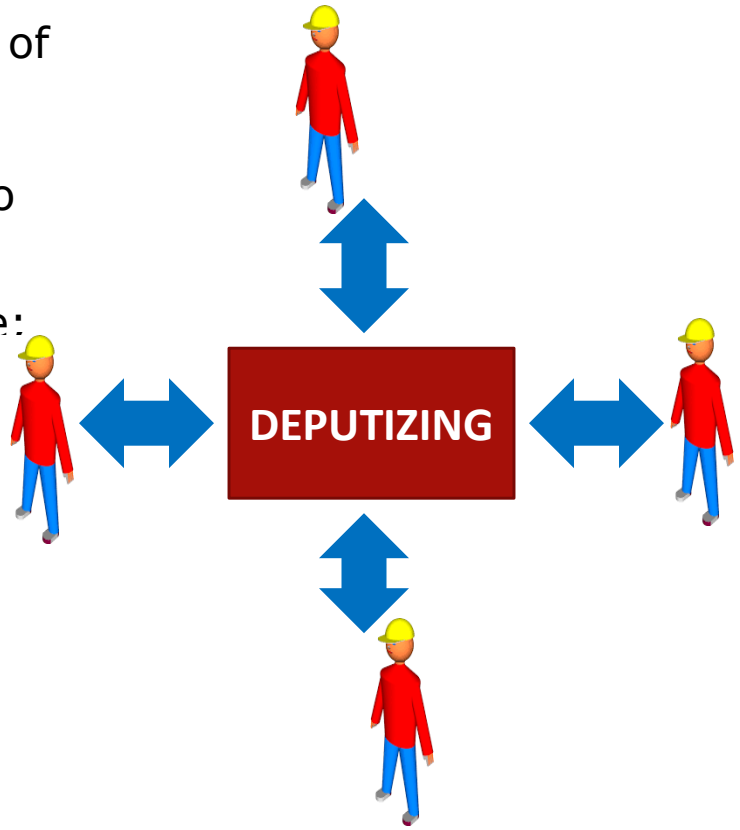
1.1.3 – The priorities for ERTL

- Protection of Team Members
- Saving Life
- Minimize risks with highest potential
- Minimize damage

Element 1.1 – The role of the OERTL

1.1.4 – Deputizing Arrangements

- Deputizing is an action taken by the head of installation to delegate part of his critical duties during an emergency to his subordinates or team members in order to preserve time.
- Common deputizing arrangements include:
  - ERTL
  - SAR leader
  - Breathing Apparatus Control Officer (BACO)
  - Hose Man, Kinker Man, Nozzle Man & Hydrant Man
  - Stretcher Team



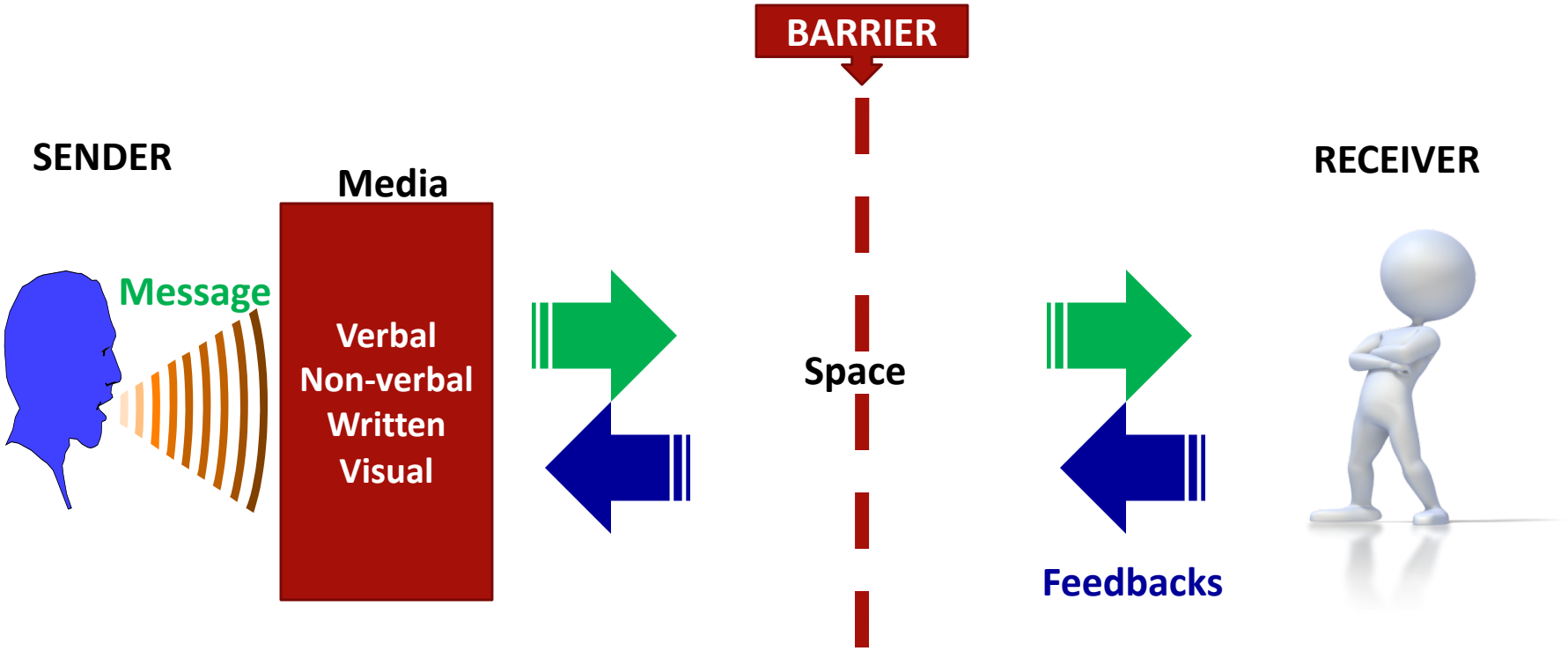
Element 1.1 – The role of the OERTL

1.1.5 – Effective Communications during Emergency Response

- Communication is vital for the success of any emergency operation
- It reinforces visual observations, sets the stage for the entire incident and provides valuable information for everyone involved in the operation.
- Complete and effective communication is a must! Without it, information, events, conditions, situations or questions remain unknown.
- Communication must be clear & precise that include:
  - Communication between the leader & the team members – to ensure safety & correct action taken.
  - Communication between the leader & the Emergency Response Command Centre (ECC) – to ensure coordination amongst various teams.

Element 1.1 – The role of the OERTL

1.1.5 – Effective Communications during Emergency Response (ER) – cont.



Communication Process

Element 1.1 – The role of the OERTL

1.1.6 – The effects and management of stress while leading a team in an emergency

Firefighting regardless of where it happens is one of the most-stressful job to the members or leaders; but understanding what makes it so is key to reducing that stress.

The immediate effects include:

- Aggressive behaviour
- Buck-passing
- Poor communication
- Carelessness/mistakes
- Indecisive

Element 1.1 – The role of the OERTL

1.1.6 – The effects and management of stress while leading a team in an emergency – cont'd

For firefighters, stress can't be avoided, but it can be managed. Coping techniques for acute and chronic stress include:

- Deep breathing exercises
- Positive thinking – even small, optimistic thoughts or funny anecdotes
- Physical exercise
- Peer Support

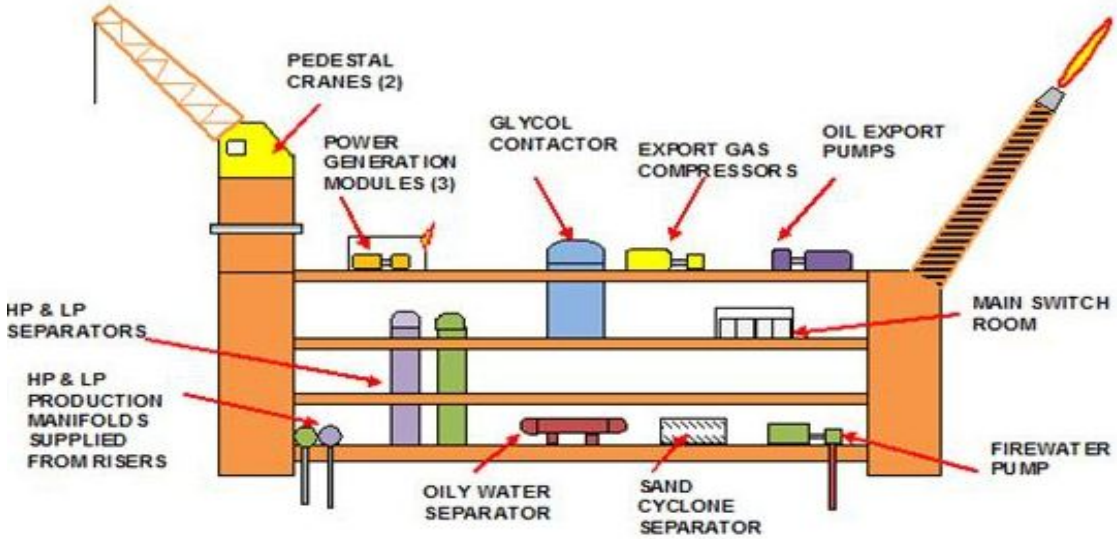
Element 1.2 – Emergency Response Arrangement

1.2.1 – The key principles of effective leadership and their application to offshore emergency response teams

- Assess situation & take appropriate actions.
- Ensure safety of Emergency Response Team (ERT)
- Apply suitable command & control procedures.
- Ensure correct selection & operation of fire fighting/rescue equipment during the incident.
- Ensure suitable communication methods are utilised.
- Training – conduct regular exercises or drills.

Element 1.2 – Emergency Response Arrangement

1.2.2 – The requirement for the OERTL to be fully conversant with Installation layout and predetermined emergency response plans derived from the safety case.



Installation Layout Plan

Element 1.2 – Emergency Response Arrangement

1.2.2 – The requirement for the OERTL to be fully conversant with Installation layout and predetermined emergency response plans derived from the safety case – (cont'd)

Establishing layout and relevant structures and systems of incident area:

- Access and egress points
- Weather exposure
- Structures
- Confined spaces
- Scaffolding
- Live machinery
- Live process

Installation Layout Plan

Element 1.2 – Emergency Response Arrangement

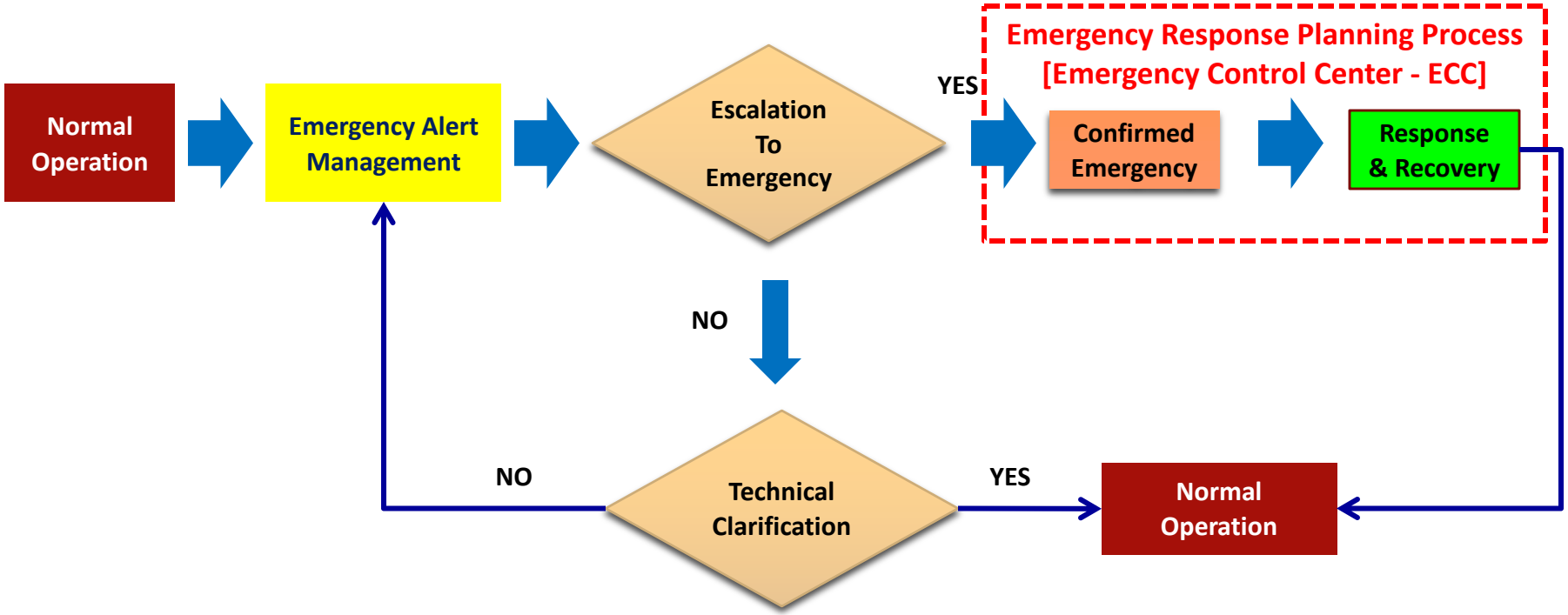
1.2.2 – The requirement for the OERTL to be fully conversant with Installation layout and predetermined emergency response plans derived from the safety case – (cont'd)

Pre-determine ERP – Safety Case

- On hearing the alarm, ERT personnel to report to muster
- Don appropriate PPE
- Await further instructions from Team Leader
- Team Leader may be awaiting details of incident from Control Room
- Team Leader to Adopt Pre-formed plan
- Team Leader then leads team to location.
- Team Leader to detail ERT members of tasks

Element 1.2 – Emergency Response Arrangement

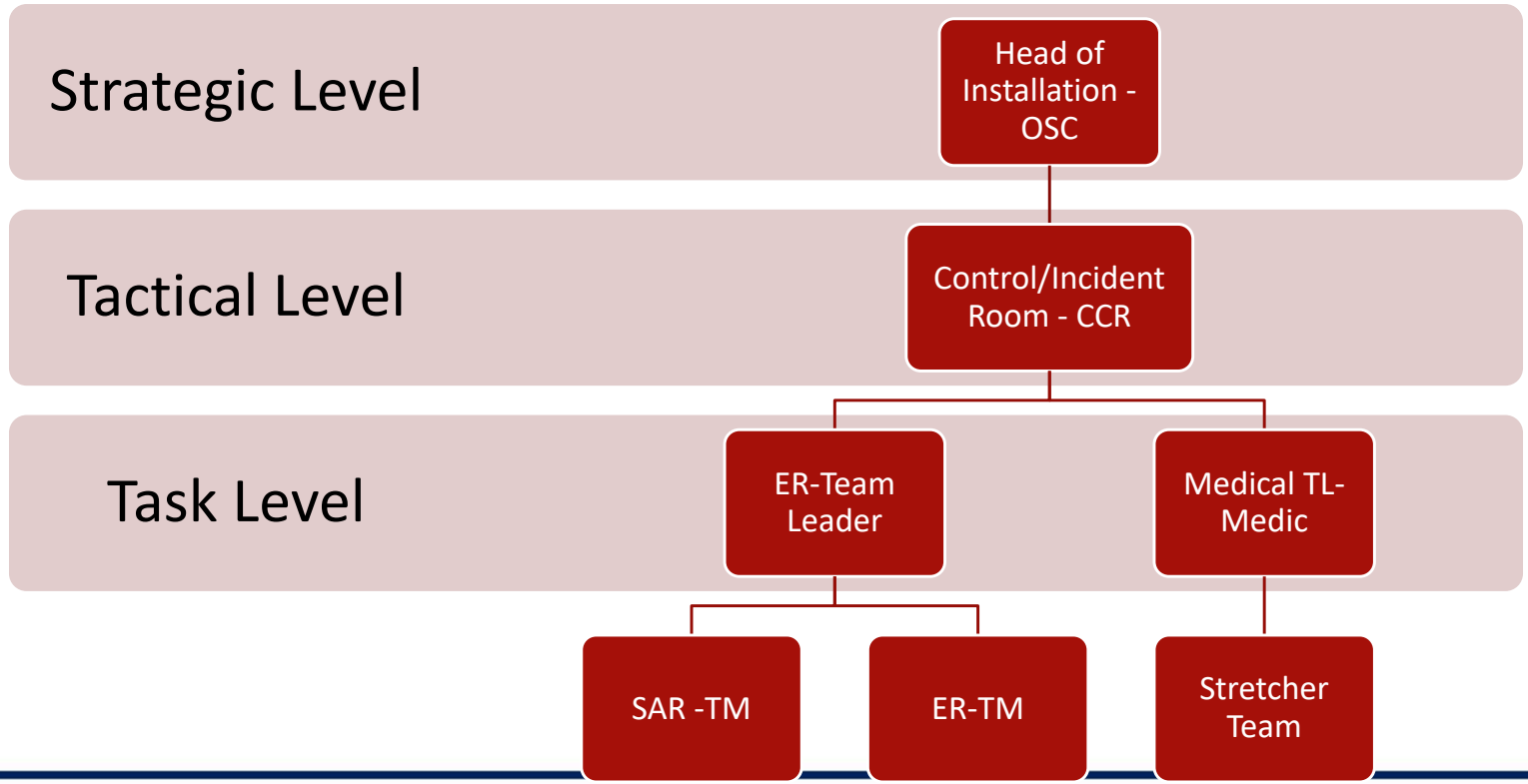
1.2.3 – Typical Emergency Response Procedures



Element 1.2 – Emergency Response Arrangement

1.2.3 – Typical emergency response procedures – cont'd

Common command structure in offshore



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Element 1.2 – Emergency Response Arrangement

1.2.4 - Typical incident response planning elements, to include:

a) the typical phases of an emergency response

Element 1.2 – Emergency Response Arrangement

1.2.4 - Typical incident response planning elements, to include:

b) hazard identification during emergency response

A core challenge faced by emergency leaders is how to prevent, prepare, mitigate, respond and recover from a myriad of hazards. Several questions arise when faced with this challenge:

1. What hazards exist in the area?
2. How frequently do they occur?
3. How severe can their impact be on the people, property, and the environment?
4. Which hazards pose the greatest threat to the people?

Element 1.2 – Emergency Response Arrangement

1.2.4 - Typical incident response planning elements, to include: (cont'd)

A Hazard Identification and Risk Assessment (HIRA) assists emergency leaders in answering these questions. It is a systematic risk assessment tool that can be used to assess the risks of various hazards.

There are three reasons why a HIRA is useful to the emergency management:

1. It helps ERTL to prepare for the worst and/or most likely risks.
2. Allows for the creation of exercises, training programs, and plans based on the most likely scenarios.
3. Saves time and resources by isolating hazards that cannot occur in the designated area.

Element 1.2 – Emergency Response Arrangement

1.2.5 - Emergency Response PPE requirements for OERTL and OERTM

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Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

Deluge System

A Deluge System is a fixed fire-protection system which totally floods an area with pressurized water through a system of piping and open nozzles or sprinklers. The system piping is empty until the Deluge Valve is activated by a hydraulic, pneumatic, electric or manual release system.

Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

Automatic Sprinkler Systems

- Discharge water after the release of the cap or plug that is activated by some heat responsive element.
- Commonly identified by the temperature at which they are designed to operate.
- The temperature is identified by color coding the sprinkler frame arms, colored liquid in bulb-type sprinklers, or by stamping onto the head.

Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

Water Spray Fixed Systems

- Fixed piping network with specialized spray nozzles.
- Designed to:
  - Protect specific equipment
  - Protect structural members surrounding equipment
  - Function as part of an overall fire protection installation
- System delivers concentrated, directed water spray pattern onto surface of the hazard.

Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

Carbon Dioxide (CO2) Suppressed Systems

- Carbon dioxide (CO_2) is a colorless, odorless, and chemically inert gas.
- It extinguishes fire primarily by lowering the level of oxygen
- CO_2 fire suppression systems are used for:
  - Power Generation
  - Shipboard or Offshore installation
- Benefits of CO_2 Fire Suppression Systems:
  - Fast
  - Environmentally Friendly
  - Non-damaging
  - Non-conductive
  - Adaptive

Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

Foam Systems

- Extinguishment of class B flammable & combustible liquids
- Appropriate for prevention, control & exposure protection.
- Commonly installed at Helideck and at class B liquid fuel storage area.

Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

Water Mist Systems

- Cooling system.
- Prevention spread of fire.
- Commonly installed at highly hazardous area.

Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

Trolley Type Fire Extinguisher

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Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

Foam Equipment

Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

Hose & Coupling

Nozzles

Portable Monitor

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Element 1.2 – Emergency Response Arrangement

1.2.6 - Fixed and Mobile Firefighting Systems and Equipment

air release valve

fire alarm

fire hose box

Fire-Hydrant-Valve

Fire Hose Delivery Coupling

Fire Hose

monitor foam branch pipe

Fire-Sprinkler

Two Way Breeching Inlet Breaching

Four Way Inlet Breaching

Hose Pipe Reel

pipe-nozzle

Stand Post Type Water Monitor

Element 1.2 – Emergency Response Arrangement

1.2.7 - Briefing the installation/vessel Offshore Emergency Response Team

OERT Briefing

- Divide team into groups/individual allocating a task to each
- Giving clear and concise instruction – confirm understanding
- Designate sub leaders/deputizing

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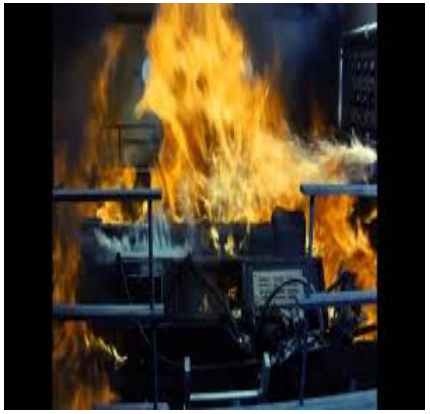
Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Fire Incident – Mechanical Fire

Hazard	Risk	Mitigation
• Fire • Smoke • Heat • Bad visibility • Explosion	• Severe burn • Heat stroke • Confined area • Entrapment	• Proper firefighting gears • Use of correct firefighting equipment • Fixed fire protection system



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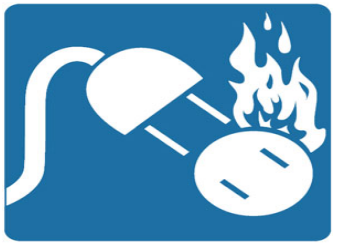
Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Fire Incident – Electrical Fire

Hazard	Risk	Mitigation
• Fire • Smoke • Heat • Bad visibility • Explosion	• Electrocution • Severe burn • Heat stroke • Entrapment	• Proper firefighting gears • Use of correct firefighting equipment • Fixed fire protection system



Cautions the use of water to extinguish electrical fire

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Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Fire Incident – Galley/Laundry Fire

Hazard	Risk	Mitigation
• Fire • Smoke • Heat • Bad visibility • Hot water or oil • Chemical	• Electrocution • Severe burn • Scald • Heat stroke • Entrapment • Chemical fume inhalation	• Proper firefighting gears • Use of correct firefighting equipment • Fixed fire protection system

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Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Fire Incident – Process Area Fire

Hazard	Risk	Mitigation
• Fire • Smoke • Heat • Huge explosion	• Abandonment • Major burn • Bodily injuries • Sea condition	• Proper firefighting gears • Use of correct firefighting equipment • Fixed fire protection system

Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Fire Incident – Drill Floor / Weld Test Area Fire

Hazard	Risk	Mitigation
• Fire • Smoke • Heat • Huge explosion • Blowout • Chemicals • Radiation	• Burn • Fall from height • Electrocution • Chemical burn, toxic fume inhalation, combustible	• Fixed fire protection system • Standby portable fire fighting equipment • Fire watcher

Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Fire Incident – Fabrication Shop (Welding & Grinding) Fire

Hazard

- Fire
- Welding fume
- Heat
- Sparks
- Cylinder explosion

Risk

- Burn
- Inhalation of welding fume
- Heat stroke
- Electrocution

Mitigation

- Fixed fire protection system
- Standby portable fire fighting equipment
- Fire watcher

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Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Non-Fire Incident – Confined Space Incident

Hazard	Risk	Mitigation
• Toxic gas • Flammable /combustible gas • Poor oxygen level • Physical hazards	• Gas intoxication • Unconsciousness • Death • Fall	• Confined space entry permit • Gas testing • Proper PPE • CS rescue team • CS rescue equipment

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Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Non-Fire Incident – Working At Height Incident

Hazard	Risk	Mitigation
• Fall • Falling object	• Fall from height • Bodily injuries • Total disability • Fatality	• WAH permit • Full-bodied safety harness with fall arrester • WAH rescue team • WAH rescue equipment

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Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Non-Fire Incident – Man Overboard Incident

Hazard

- Fall from height
- Exposure to open sea conditions

Risk

- Hypothermia
- Near drowning

Mitigation

- MOB retrieving equipment
- MOB procedure

Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

Non-Fire Incident – Heli-crash and ERT involvement with heli-deck team

Hazard	Risk	Mitigation
• Fire & Explosion • Heat • Smoke	• Helicopter explosion • Heli-deck fire • Injuries	• Helideck firefighting equipment • Coordination between ERT & Heli-deck Team

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Element 1.2 – Emergency Response Arrangement

1.2.7 - Hazards and risks mitigation associated with typical fire and non-fire incidents – (cont'd)

- Loss of Containment, to include:
  - i. Hydrocarbon liquid spills and releases
  - ii. Unignited and toxic gas releases
  - iii. Chemical and simulated radiation incident

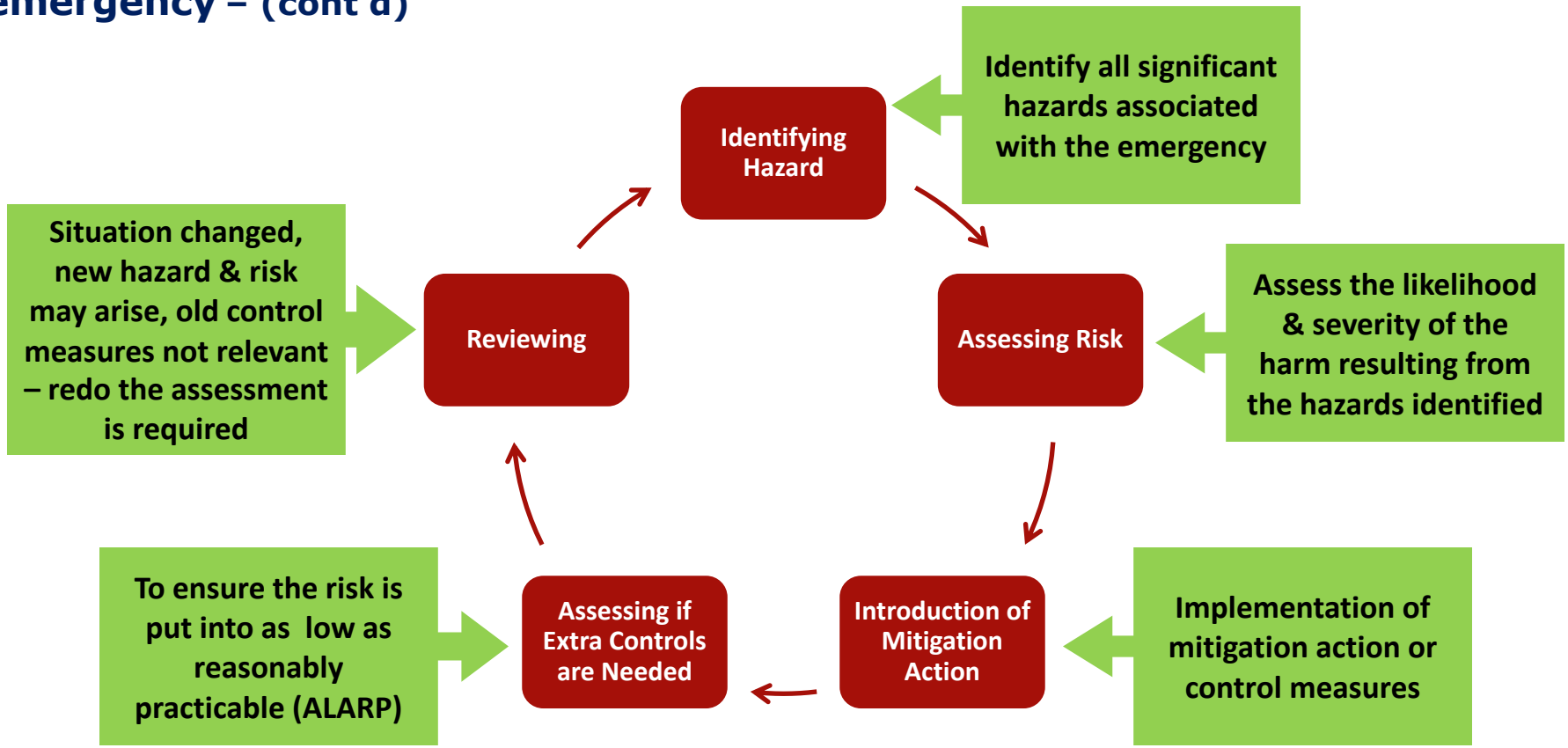
Element 1.3 – Leading the Response to the Incident

1.3.1 - The principles of initial and dynamic risk assessment during an emergency

- To ensure safety of ERT during an emergency, the risk associated with the type of an emergency shall be assessed, mitigated and monitored.
- There are 5 basic steps in a risk assessment:-
  1. Identifying Hazards
  2. Assessing the risk of harm
  3. Assessing existing control measures, to see if they are adequate
  4. Assessing if extra controls are needed
  5. Reviewing later on, to see if the controls are working

Element 1.3 – Leading the Response to the Incident

1.3.1 - The principles of initial and dynamic risk assessment during an emergency – (cont'd)



Element 1.3 – Leading the Response to the Incident

1.3.2 – Setting objectives and priorities

- During fire emergency, ERT suppresses and extinguishes fires to protect lives and to prevent the destruction of property and of the environment.

- During non-fire emergency, ERT rescue lives and mitigate emergency situation to ensure it is safe to live in.

- The priorities are:
  1. Ensure safety of the ERT
  2. Ensure associated hazards are identified & risks are assessed & mitigated
  3. Responding to an emergency as per Location Emergency Respond Plan

Element 1.3 – Leading the Response to the Incident

1.3.2 – Setting objectives and priorities – (cont'd)

- Having assessed and stabilize the situation the team leader now has to formulate and implement a more detailed plan
- A list of priorities need to be decided and acted upon. Will involve: Communications with his teams, Control room, & ECC assessing effectiveness of his actions.
- As the situation progress, it may be necessary to: RE-ASSESS – RE-PRIORITISE-RE-COMMUNICATE

Element 1.3 – Leading the Response to the Incident

1.3.3 – Agreeing Communication Methods with the ERT

- During an emergency, effective communication is crucial. Methods of communication shall be established & agreed by all teams involved.
- Communication methods include:
  1. Two-way Radio with agreed channel
  2. Paging system
  3. Telephone fire alarm box
  4. Runner
  5. Hand-signals
  6. Verbal - Shout

Element 1.3 – Leading the Response to the Incident

1.3.4 – Keeping the Emergency Response Command Centre updated with relevant information

- ER Command Center - is a central command and control facility responsible for carrying out the principles of emergency preparedness and emergency management, or disaster management functions at a strategic level during an emergency.

Element 1.3 – Leading the Response to the Incident

1.3.4 – Keeping the Emergency Response Command Centre updated with relevant information – (cont'd)

- Act as a filter and route for the flow of information
- Ensure groups/individuals have sufficient information to perform their tasks
- Acquire information from team, especially from internal BA wearers
- Remember to inform higher authorities, e.g. OIM, On Scene Commander, Emergency Control Room

Element 1.3 – Leading the Response to the Incident

1.3.5 – Monitoring the safety of the ER team

- It is the main responsibility of the Team Leader to monitor & ensure the safety of the team members during an emergency.
- Ensure task are carried out correctly.
- Co-ordinate actions of team with regard to effectiveness and safety control tempo of team activities.

Element 1.3 – Leading the Response to the Incident

1.3.6 – Monitoring of environmental conditions and how they may impact on the emergency response

- Environmental Conditions include:
  - Weather
  - Sea state
  - Wind direction
  - Hazardous materials release

Element 1.3 – Leading the Response to the Incident

1.3.7 – Monitoring human factors elements during emergency response e.g. stress affecting decision making and recognizing signs of stress in the ER Team.

Critical Incident Stress

- Event can trigger emotional response
- Most time is kept internal
- Signs of CIS are exhibited in many ways which include:
  - Faraway stares
  - Desire to be alone
  - ERT that stop & look as if they are forgotten their tasks.

Element 1.3 – Leading the Response to the Incident

1.3.8 – Techniques for keeping calm while leading an emergency response.

- Deep breathing exercises
- Positive thinking
- Listen to TM
- Give assurance & support to TM
- Keep TM up to date with information
- Observe individuals behaviour – how do they interact with each other?

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Element 1.3 – Leading the Response to the Incident

1.3.9 – Asking for assistance if overwhelmed by the emergency situation.

- Call for back up team or support team
- Request for additional equipment

Element 1.3 – Leading the Response to the Incident

1.3.10 – Optimizing the use of fixed and mobile ER systems.

- Trolley portable extinguishers
- Activate all fixed systems
- Basic fire-fighting equipment may be utilized fully

Element 1.3 – Leading the Response to the Incident

1.3.11 – Directing the ER team in using appropriate extinguishant media.

- Ensure correct extinguishers are used for different types of fire.

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Element 1.3 – Leading the Response to an Incident

Delegate to practice & demonstrate the followings during the practical exercises.

1.3.12 - Implementing an appropriate initial response plan for the emergency.

1.3.13 - Effective communications with all relevant ER personnel – clear and concise instructions and requests.

1.3.14 - Leading the OER team in a clear and confident manner.

1.3.15 - Directing entry to the incident area with due regard to emergency response team safety.

Element 1.3 – Leading the Response to an Incident

Delegate to practice & demonstrate the followings during the practical exercises.

1.3.16 - Effective delegation of OER tasks to team members.

1.3.17 - Obtaining feedback on progress against the plan.

1.3.18 - Recognizing and effectively dealing with stress in the OERTM

1.3.19 - Effectively monitoring breathing apparatus (BA) control.

1.3.20 - Leading non-firefighting ER operations

Element 1.3 – Leading the Response to an Incident

Delegate to practice & demonstrate the followings during the practical exercises.

1.3.21 - Effective use of firefighting fixed systems

1.3.22 - Effective use of firefighting mobile equipment and systems.

1.3.23 - Conducting dynamic risk assessment throughout the emergency.

1.3.24 - Utilizing any back-up ER teams via the Team Leader (this only requires briefing the back-up team leader).

Element 1.3 – Leading the Response to an Incident

Delegate to practice & demonstrate the followings during the practical exercises.

1.3.25 - Missing persons and casualty management, to include:

a) prioritizing
b) accounting for missing personnel
c) casualty handling.

Element 1.4 – Practical Exercises for ERTL

The scope of the emergency response exercises must include the following:

1.4.1 Maintaining a means of access and egress from the incident area

1.4.2 Ensuring that appropriate fire-fighting equipment is used for the incident

1.4.3 Responding to Class A fires

1.4.4 Responding to Class B fires, to include:
- a) flammable hydrocarbon liquid spill
- b) flowing hydrocarbon liquid fires
- c) Pressure-fed hydrocarbon fires

1.4.5 Responding to a Class C (gas) fire

1.4.6 Responding to a chemical incident

1.4.7 Responding to a radiation incident

Element 1.4 – Practical Exercises for ERTL

The scope of the emergency response exercises must include the following – (cont'd)

1.4.8 Effective use of portable fire monitors

1.4.9 Effective use of mobile and portable firefighting and rescue equipment, to include: dry chemical, foam and CO2 fire extinguishant.

1.4.10 Locating, extracting and handling missing personnel and casualties

1.4.11 Breathing Apparatus (BA) control

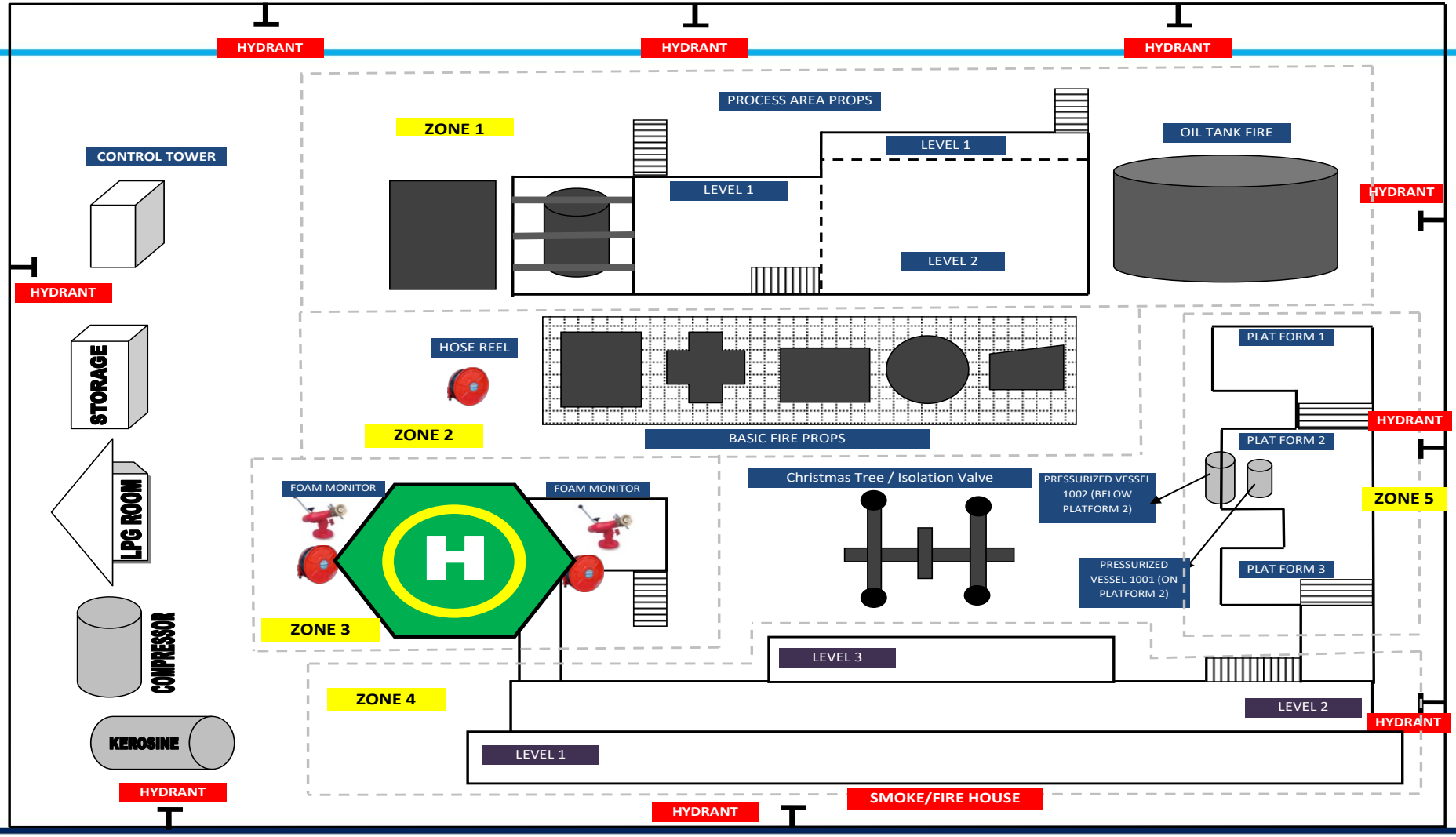
1.4.12 Personnel protection using water spray

1.4.13 Non-fire emergency response, to include:

a) Confined space entry and recovery of casualties

b) Rescue of casualties from elevated work area with restricted access (height of between 2-4 metres)

BSTC's Fire Ground



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