<u>SMOO Incident coordination trainer's notes – All modules</u>

Slide 1 – Introduction

Slide 2 – House keeping

Discuss the fire alarm procedures and what to do in the event of a fire.

Mobile phones should be switched off or on silent during the lesson and kept in bags unless anyone is expected an important phone call then make the trainer aware.

Uniform standards and enforce the requirement to wear correct uniform

Absences – to contact the trainer as soon as possible if they are not going to be attending for any reason – pass trainers work mobile number

Time keeping – lessons will start at 9am and it is up to an individual to make up time if they are absent. If you need to miss any class, please inform the trainer at the beginning of the session

COVID – Breakout rooms are allocated and remain aware of the current restrictions of social distance, wearing of masks around the building, had washing etc

Module A – Legal Framework

Slide 3 – Aims and objectives

The aims and objectives of the course is to provide a SMOO with the necessary knowledge and skills to undertake the management of an incident from the initial awareness to its conclusion and any post mission reports.

These SMOO delegates will have completed the MOO training, including the MOO Incident response course or MC which gives the knowledge of the initial incident creation and actions they can take to assist in the operational environment. This module is the next step being able to manage the incident and make decisions within the incident, becoming accountable for these decisions and actions. This will prepare them for the next step as an SMC. This is not a 'mission conduct' course but elements of Mission Conduct are explored as there is more to Incident coordination than just Mission conduct. This course also explores the leadership and management of individuals as well as the team to ensure a successful outcome in an incident.

Slide 4 – Title slide - Module A introduction slide – Legal Frame work

Slide 5 – Legal framework – Aims and objectives

In this module we look at the legal framework in which HMCG works and the responsibilities we have as an agency.

Delegates will also be able to recognise the several types of reports that may be required during and post incident and how to complete a SARSITRP. The other reports are explored fully in the SMC course, but they will be given an awareness of their purpose.

The last element in this module is the importance of risk assessments and we explore the hierarchy of rescue and look at the rescue dilemma

Slide 6 – Legal framework title

Slide 7 – HMCG Responsibility statement

Within the UK Government, the Department for Transport has overall responsibility for the establishment, operation and maintenance of an adequate and effective civil maritime and civil aeronautical search and rescue service. For maritime SAR, the Coastguard Act 1925 has placed a statutory duty upon HM Coastguard to carry out those duties performed by the Coastguard prior to the 1925 Act and any other duties as determined by the Secretary of State for Transport and the most important of those "determinations" was laid down before Parliament in 1992 and stated that:

"HM Coastguard is responsible for the initiation and coordination of civil maritime search and rescue within the UK search and rescue region. This includes the mobilisation,

organisation and tasking of adequate resources to respond to persons either in distress at sea, or to persons at risk of injury or death on the cliffs or shoreline of the UK."

Emphasise the littoral area and the blurred lines that sometimes occur with other emergency services especially within the littoral area. It is important SMOO's are aware of our responsibility but also be prepared to be flexible and discuss with the relevant people (Coastal, Commanders etc) if a request has come in for assistance out with our area of responsibility.

Slide 8 – United Nations Convention on the Law of the High Seas 1982

The United Nations Convention on the Law of the Sea lays down a comprehensive regime of law and order in the world's oceans and seas establishing rules governing all uses of the oceans and their resources. It enshrines the notion that all problems of ocean space are closely interrelated and need to be addressed as a whole.

The Convention was opened for signature on 10 December 1982 in Montego Bay, Jamaica. This marked the culmination of more than 14 years of work involving participation by more than 150 countries representing all regions of the world, all legal and political systems and the spectrum of socio/economic development. At the time of its adoption, the Convention embodied in one instrument traditional rules for the uses of the oceans and at the same time introduced new legal concepts and regimes and addressed new concerns. The Convention also provided the framework for further development of specific areas of the law of the sea.

The Convention entered into force in accordance with its article 308 on 16 November 1994, 12 months after the date of deposit of the sixtieth instrument of ratification or accession. Today, it is the globally recognized regime dealing with all matters relating to the law of the sea.

The Convention (full text) comprises 320 articles and nine annexes, governing all aspects of ocean space, such as delimitation, environmental control, marine scientific research, economic and commercial activities, transfer of technology and the settlement of disputes relating to ocean matters.

Slide 9 – Convention of the High Seas 1958

The Convention on the High Seas is an international treaty which codifies the rules of international law relating to the high seas, otherwise known as international waters. The convention was one of four treaties created at the United Nations Convention on the Law of the Sea (UNCLOS I). The four treaties were signed on 29 April 1958 and entered into force on 30 September 1962, although in keeping with legal tradition, later accession was permitted.

As of 2013, the treaty had been ratified by 63 states, including most NATO-bloc and Soviet-bloc nations but with the notable exceptions of most of the OPEC and Arab

league nations like Syria, Egypt, Jordan, Saudi Arabia, and Iran, as well as China, North Korea, and South Korea.

The convention on the High Seas was superseded by the 1982 UNCLOS III, which introduced several new concepts to the law of maritime boundaries including Exclusive Economic Zones.

The treaty is divided into 37 articles, although articles 10-12 refer to safety and rescue

1. Every State shall take such measures for ships under its flag as are necessary to ensure safety at sea with regard, inter alia, to: (a) The use of signals, the maintenance of communications and the prevention of collisions; (b) The manning of ships and labour conditions for crews taking into account the applicable international labour instruments; (c) The construction, equipment and seaworthiness of ships. 2. In taking such measures each State is required to conform to generally accepted international standards and to take any steps which may be necessary to ensure their observance.

2. Article 11 1. In the event of a collision or of any other incident of navigation concerning a ship on the high seas, involving the penal or disciplinary responsibility of the master or of any other person in the service of the ship, no penal or disciplinary proceedings may be instituted against such persons except before the judicial or administrative authorities either of the flag State or of the State of which such person is a national. 2. In disciplinary matters, the State which has issued a master's certificate or a certificate of competence or license shall alone be competent, after due legal process, to pronounce the withdrawal of such certificates, even if the holder is not a national of the State which issued them. 3. No arrest or detention of the ship, even as a measure of investigation, shall be ordered by any authorities other than those of the flag State.

3. Article 12 1. Every State shall require the master of a ship sailing under its flag, insofar as he can do so without serious danger to the ship, the crew or the passengers: (a) To render assistance to any person found at sea in danger of being lost; (b) To proceed with all possible speed to the rescue of persons in distress if informed of their need of assistance, insofar as such action may reasonably be expected of him; 5 (c) After a collision, to render assistance to the other ship, her crew and her passengers and, where possible, to inform the other ship of the name of his own ship, her port of registry and the nearest port at which she will call. 2. Every coastal State shall promote the establishment and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea and — where circumstances so require — by way of mutual regional arrangements cooperate with neighbouring States for this purpose.

Slide 10 – International convention on Maritime search and rescue

The 1979 Convention, adopted at a Conference in Hamburg, was aimed at developing an international SAR plan, so that, no matter where an accident occurs, the rescue of persons in distress at sea will be co-ordinated by a SAR organization and, when necessary, by co-operation between neighbouring SAR organizations.

 Although the obligation of ships to go to the assistance of vessels in distress was enshrined both in tradition and in international treaties (such as the International Convention for the Safety of Life at Sea (SOLAS), 1974), there was, until the adoption

of the SAR Convention, no international system covering search and rescue operations. In some areas there was a well-established organization able to provide assistance promptly and efficiently, in others there was nothing at all.

The technical requirements of the SAR Convention are contained in an Annex, which was divided into five Chapters. Parties to the Convention are required to ensure that arrangements are made for the provision of adequate SAR services in their coastal waters. Parties are encouraged to enter into SAR agreements with neighbouring States involving the establishment of SAR regions, the pooling of facilities, establishment of common procedures, training and liaison visits. The Convention states that Parties should take measures to expedite entry into its territorial waters of rescue units from other Parties.

The Convention then goes on to establish preparatory measures which should be taken, including the establishment of rescue co-ordination centres and subcentres. It outlines operating procedures to be followed in the event of emergencies or alerts and during SAR operations. This includes the designation of an on-scene commander and his duties.

IMO search and rescue areas

Following the adoption of the 1979 SAR Convention, IMO's Maritime Safety Committee divided the world's oceans into 13 search and rescue areas, in each of which the countries concerned have delimited search and rescue regions for which they are responsible.

Provisional search and rescue plans for all of these areas were completed when plans for the Indian Ocean were finalized at a conference held in Fremantle, Western Australia in September 1998.

Chapter 1 - Terms and Definitions

Chapter 2 - Organization and Co-ordination

Chapter 3 - Co-operation between States

Chapter 4 - Operating Procedures

Chapter 5 - Ship reporting systems

IAMSAR Manual

Concurrently with the revision of the SAR Convention, the IMO and the International Civil Aviation Organization (ICAO) jointly develop and publish the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, published in three volumes covering Organization and Management; Mission Co-ordination; and Mobile Facilities.

Slide 11 – Civil Contingencies Act 2004

The Civil Contingencies Act

The Civil Contingencies Act, and accompanying non-legislative measures, delivers a single framework for civil protection in the UK. The Act is separated into 2 substantive parts: local arrangements for civil protection (Part 1); and emergency powers (Part 2).

Slide 12 – Civil Contingencies Act 2004 – Part 1

Part 1 of the Act and supporting Regulations and statutory guidance 'Emergency preparedness' establish a clear set of roles and responsibilities for those involved in emergency preparation and response at the local level. The Act divides local responders into 2 categories, imposing a different set of duties on each.

Those in Category 1 are organisations at the core of the response to most emergencies (the emergency services, local authorities, NHS bodies). Category 1 responders are subject to the full set of civil protection duties. They will be required to:

- assess the risk of emergencies occurring and use this to inform contingency planning
- put in place emergency plans
- put in place business continuity management arrangements
- put in place arrangements to make information available to the public about civil protection matters and maintain arrangements to warn, inform and advise the public in the event of an emergency
- share information with other local responders to enhance co-ordination
- co-operate with other local responders to enhance co-ordination and efficiency
- provide advice and assistance to businesses and voluntary organisations about business continuity management (local authorities only)

Slide 13 – Civil Contingencies Act 2004 – Part 1

Category 2 organisations (the Health and Safety Executive, transport and utility companies) are 'co-operating bodies'. They are less likely to be involved in the heart of planning work, but will be heavily involved in incidents that affect their own sector. Category 2 responders have a lesser set of duties - co-operating and sharing relevant information with other Category 1 and 2 responders.

Category 1 and 2 organisations come together to form 'local resilience forums' (based on police areas) which will help co-ordination and co-operation between responders at the local level. For more on what LRFs do and contact details for each, see the guide on 'Local resilience forums: contact details'.

Slide 14 – Civil Contingencies Act 2004 – Part 2

Part 2 of the Act updates the 1920 Emergency Powers Act to reflect the developments in the intervening years and the current and future risk profile. It allows for the making of

temporary special legislation (emergency regulations) to help deal with the most serious of emergencies. The use of emergency powers is a last resort option and planning arrangements at the local level should not assume that emergency powers will be made available. Their use is subject to a robust set of safeguards - they can only be deployed in exceptional circumstances.

Part 2 of the Act was brought into force in December 2004.

Slide 15 – SAR reports Title Slide

Slide 16 – SAR reports – Formal report

Ask the delegates to list the types of reports that are sent from HMCG

In this element we look at the different types of reports that may be used during and post incident. A SMOO should be able to compete all of these reports and guidance is on CIP for each one, however in this course we are only going to look at SITREPS, DOR and fatality reports. The other reports are fully explored in the SMC course, but the delegates should have an awareness of what they are and when they should be used.

Ask the delegates when each of the reports would be used

SITREP - A Search and Rescue Situation Report (SAR SITREP) is a detailed report sent by an incident-coordinating Ops Centre to other national or foreign MRCCs and authorities that are participating, or may have an interest in, the incident

POLREP - A Pollution Report (POLREP), also known as the CG77, is a report of any known or potential pollution. The report is intended for national use and is made by Ops Centres on receipt of a notification of pollution and sent to the Maritime and Coastguard Agency's Counter Pollution Branch

DEFREP There are two types of DEFREP:

Vessel DEFREP - Incoming reports received from vessels

Coastguard DEFREP - Outgoing reports made by HM Coastguard

Certain vessels are required to make a report to HM Coastguard if they are involved in an incident, accident (see VTM - Incidents and Accidents for definitions) or pollution event within the United Kingdom Pollution Control Zone

HAZREP A Hazardous Incident Report (HAZREP) is a report made by a vessel or an observing third party of a near miss incident or breach of the International Regulations for Preventing Collisions at Sea 1972 (COLREGS) other than Rule 10

Reports are made to HM Coastguard and/or the Marine Accident Investigation Branch (MAIB)

WETREP is a mandatory reporting system for all oil tankers over 600 tonnes dead weight entering the Western European Particularly Sensitive Sea Area (PSSA)

MAREP is a voluntary system for ships to report their position and details to an appropriate shore station. MAREPs can forewarn HMCG of potential casualties, particularly in bad weather. All vessels of 300 gross tons or more are strongly encouraged to participate in the MAREP system and report to the appropriate Coastguard station at least one hour before entering the route, and on final departure

CALDOVREP The Pas De Calais / Dover Reporting System (CALDOVREP) is a mandatory reporting system under SOLAS Chapter V (Regulation 11)

DOR - The purpose of the HM Coastguard Daily Operations Report (DOR) is to provide a chronological and consolidated record of incidents and significant operational events that have taken place during the previous 24-hour period

Fatality The Fatality Report Form (MSF 5388) should be completed and returned for any fatalities listed on ViSION including:

- Inland jobs, which are recorded for inland information purposes only
- Incidents outside of UKSAR
- Assisting other authorities

Slide 17 – SAR reports – Other reports

OSPAR report OSPAR Reports are made after encounters with dumped conventional or chemical munitions in United Kingdom (UK) waters or on the coastline. The OSPAR Convention is a legal instrument guiding international cooperation on the protection of the marine environment of the North-East Atlantic

Reports on encounter with munitions are made from vessels in accordance with MGN 323 Explosives Picked up at Sea or from members of the public on finding munitions on the shoreline

Immersion report It should be completed every time a person is recovered from the water. It matters not whether the person was recovered almost immediately or whether the incident led to a fatality (including at recovery), and reports should be made for both sea and fresh water related incidents e.g. land water-incidents – rivers, lakes, lochs, flooding events

Fishes Royal Complete & submit Stranded Cetacean Report Form for Fishes Royal:

- Caught in nets
- Drifting
- Stranded
- Washed ashore anywhere in the UK
- EU – SITREP

999 call misroute report Calls to the wrong emergency service

If a 999 call is received that was meant for another emergency service try and attract the operator's attention verbally - in some cases they may still be monitoring the call

If not, ring the 24-hour number of the appropriate CHA and request that the call is passed to the appropriate authority complete and send 999/112 Misroute or Problem Report Form MSF 6026

Diving Incident report – used for all diving related incidents

Report of Wreck or salvage Report wreck material, for example parts of a ship or its cargo, to the Receiver of Wreck. You must report any material you recover within 28 days, or you could be fined £2,500.

Reporting wreck material gives the legal owner the opportunity to have their property returned.

Slide 18 – SAR SITREPS

The importance of accurate SITREPS can't be emphasised enough. This is particularly important when dealing with sensitive incidents, where reputational damage may be caused if information if passed to inappropriate stakeholders. Be mindful of who the recipients are and only pass factual information and do not include personal details or assumptions.

A Search and Rescue Situation Report (SAR SITREP) is a detailed report sent by an incident-coordinating Ops Centre to other national or foreign MRCCs and authorities that are participating, or may have an interest in, the incident.

Slide 19 – SAR SITREP

The purpose of SAR SITREPs is to:

- Alert others who are, or may become, involved
- Inform those who should be kept aware of the incident
- Record events

SAR SITREPS must be sent:

- for incidents requiring involvement of a higher level within the Maritime and Coastguard Agency (MCA)
- for high profile incidents, likely to attract media interests
- for incidents that are likely to become major or prolonged
- for incidents involving a number of SAR units and authorities
- when requested by duty officers

Slide 20 – SITREP formats

There are two formats in which a SAR SITREP can be sent; the Short Form and the Full Form

The Short Form is used during initial incident actions to:

- provide the earliest notice of a casualty and/or
- to pass essential details quickly when requesting assistance

The Full Form is used:

- to provide full and detailed information during the incident

Timings

A Short Form SITREP is to be sent as part of the initial actions at the beginning of an incident

A Full Form SITREP should be compiled and sent as soon as practicable after the initial Short Form SITREP

If there are no significant updates, the Full Form SITREP is to be re-sent at intervals of no more than three hours

When there are significant amendments, a revised Full Form is to be sent immediately and the three-hourly re-send timing restarted

During protracted incidents when the duration of SAR action is longer than six hours, consideration may be given to extending the interval between SITREPs to four or six hourly intervals

Slide 21 – Short form

[Casualty name] SAR SITREP [sequential number] AND FINAL (last sitrep only)

A Identity of casualty (name of vessel, call sign, flag state)

B Position (Latitude/longitude + Geographical proximity reference e.g. 'Off Lands End', 'Troon Entrance')

C Situation (type of message, e.g. distress / urgency, date / time, nature of distress / urgency, e.g. fire, collision, medico)

D Number of persons at risk

E Assistance required (by co-ordinating Ops Centre)

F Co-ordinating Ops Centre

Slide 22 – Full form

The Full Form consists of the Short Form paras A to E plus additional paragraphs G to N

G   Description of casualty (PERSON - physical description, male/female, age, clothing/lifejacket worn etc; VESSEL - physical description, owner / charterer, cargo carried, passage from / to, life saving appliances carried, etc.)

Do not include personal information such as the name of the person(s) involved

H   Weather on scene

J   Initial actions taken (by casualty and co-ordinating Ops Centre)

K   Search Area (as planned by the co-ordinating Ops Centre)

L   Co-ordinating Instructions (On Scene Co-ordinator (OSC) / Aircraft Control Officer (ACO) designated, units participating, communications, etc.)

M   Future plans

N   Additional information / conclusion (include time SAR Operation terminated)

Slide 23 – SAR SITREP

The following is a list of 'standing' addressees that should be in the SAR SITREP address list in ViSION

When sending a SAR SITREP, organisations that are not involved in or that do not have any interest in the incident or subsequent outcome can be removed from the list.

Send SAR SITREPs from ViSION. This ensures it is traceable and taggable to ViSION incident – do not use personal emails for SITREPS

- Duty Controller
- Duty Commander
- HQ Maritime Operations
- Duty Counter Pollution and Salvage Officer (DCPSO)
- Counter Pollution and Salvage Team
- Offshore Energy Liaison Officer
- Vessel Traffic Management Officer
- Marine Accident Investigation Branch (MAIB)
- Regulatory Compliance Investigations Team
- International Maritime Organization
- Lloyds Casualty Section
- IHS (ex Lloyds) Fairplay
- Tug brokers
- UK Hydrographic Office (UKHO) Radio Navigational Warnings (RNW) Taunton

- MCA's Hydrographic Department
- UK Mission Control Centre (UK MCC)
- MCA Press Office
- SOSREP
- Fishing Vessel Surveyors
- Scottish U15m FV Team
- SCOO
- COAC
- ARCC
- Marine Management Organisation
- Marine Scotland
- General Lighthouse Authorities
- RNLI HQ
- Police / Fire / Ambulance
- Local Authorities
- Local Ports and Harbours
- National Trust
- Flank MRCC(s)
- Superintendent of Death
- SEAFISH
- Fishermen's Mission

Slide 24 – Daily Operations report – Purpose

The purpose of the HM Coastguard Daily Operations Report (DOR) is to provide a chronological and consolidated record of incidents and significant operational events that have taken place during the previous 24 hour period.

An incident summary is a brief synopsis of an incident which explains 'who did what for whom, when and where'. It must also detail the 'outcome' of the incident – which resource located/rescued/recovered/assisted the person, persons, vessel for example.

Slide 25 – Daily Operations Report – Process

A Daily Operations Report is valid for a 24 hour period from DD0000 UTC to DD2359 UTC. Each Operations Centre (OC) will generate a summary for all incidents that occur within their area of responsibility throughout that 24 hour period.

Incidents which fall within the following criteria are to be recorded in the DOR under the coordinating stations identity e.g. MRCC Aberdeen:

- All SAR incidents categorised as Distress, Alert or Uncertainty
- All other incidents where an SRU has been tasked

- All Vessel Machinery incidents (including broken down or disabled vessels) if not already recorded as a Distress, Alert or Uncertainty phase incident

HM Coastguard's DOR is published to the Maritime Operations SharePoint Published Documents area no later than 0600 the morning after the reporting period by the Duty Controller. The final version should be thoroughly checked and marked "OFFICIAL" prior to emailing in PDF form to dor@mcga.gov.uk addressees.

Slide 26 - Daily Operations Report – Process

Security incidents, migrant incidents and sensitive operational events (e.g. Fixed Wing Patrol for the NCA or Border Force) or any incident which may impact upon the reputation of the MCA/HMCG are not to be recorded in the DOR. These are to be recorded in the Sensitive Operations Report (SOR) in the same format as the DOR.

Slide 27 - Daily Operations Report – Recording

All centres are responsible for recording their summaries in the appropriate area within the single document. Controllers are to ensure that their teams are suitably trained in compiling the DOR to the required standard by following the process laid down in this page.

ARCC do not need to add an ARCC summary for an incident already summarised by a MRCC containing an air asset tasking. All other ARCC incidents should be summarised in line with the guidance including deferred and declined incidents.

MRCCs do not need to add a MRCC summary for an incident already summarised by ARCC containing a CRT tasking where ARCC have primacy for the incident.

At the start of each new DOR period a new draft DOR document is created by the duty Controller or delegated officer. Ensure that the date and other relevant info is changed on a daily and then monthly basis.

Slide 28 – Daily Operations report – Format

Each summary must include the following information:

Incident start DTG (incident creation time) to end DTG. End DTG is the time at which SAR action was completed if no SRUs were tasked or the time that the final SRU was released from the incident. If the incident is not concluded by DD2359 then end DTG should be replaced with ONGOING.

Ops Centre initials (see Ops Centre abbreviations)

The full GIN of the incident.

Final incident category. Where the final incident category is FAGI/FAMI, include the initial incident category in brackets e.g. FAGI (PAID).

Incident Summary 'who did what, for whom, when and where' and the 'outcome' – who located and recovered the casualty.

Slide 29 – Task

Ask the delegates to write a DOR based on the following information

Slide 30 – Write a DOR entry based on the following information

Example DOR should read something like this

280513 UTC to 080915 UTC. BFST 012564. VFE. Rescue Helicopter 118, Portrush ALB and Coleraine CRT tasked to motor Vessel Thunder after a fire on board and injured crew 12 nm NE of Lough Swilly. R118 evacuated injured crew to hospital, Portrush ALB towed casualty back to Portrush and were met by Coleraine CRT.

Slide 31 – Fatality Reports

In the event of an incident involving a fatality, it is HMCG's policy to take the following steps, in order to allow for the release of information and data in accordance with the relevant regulations, whilst providing appropriate support to staff members where required.

This process applies to all HMCG staff and volunteers across Maritime and Coastal Operations.

Slide 32 – Fatality report – Actions

In the event of a fatality during a HM Coastguard coordinated incident, the SMC/OIC must ensure:

- The fatality report form is submitted
- The Duty JRCC Commander is informed
- A short statement is completed at the earliest practicable opportunity

Slide 33 – Fatality report

The Fatality Report Form (MSF 5388) should be completed and returned for any fatalities listed on ViSION including:

- Inland jobs, which are recorded for inland information purposes only
- Incidents outside of UKSAR
- Assisting other authorities

When you suspect that a fatality has occurred, the form should be completed. This applies even if the incident did not result in body recovery or no resources were sent. The outcome of the incident can be followed up by the Drowning Prevention Team, if necessary.

Slide 34 – Fatality report – why?

While sometimes emotive to complete, the Fatality Report Form provides valuable information for the MCA and its stakeholders. Its results help to form a part of the UK's National Drowning Prevention Strategy which aims to reduce accidental drowning fatalities by 50% by 2026. These strategy implementations help reduce the chances of drowning among higher risk populations, groups and communities.

The form also allows the Drowning Prevention Team to account for each fatality and ensure as much information is collated as possible. It is a step in an important process for stakeholders and the public who rely on the services of the Maritime and Coastguard Agency.

Slide 35 – Title Slide – Hierarchy of rescue

Slide 36 – Hierarchy of Rescue

The most important person to keep safe during a rescue is **yourself.** There's no point being a rescuer if you are injured or incapacitated because you won't be able to affect a rescue, and team resources are then used looking after, or rescuing you.

Team members are taught this concept to emphasise that if you are to effectively assist the casualty you must safeguard yourself, your team and those around you. Any of the first three in this hierarchy requiring assistance will detract effort and resources from the casualty. Permanent injury or death to any of the top three in an effort to help the casualty is unacceptable.
 This concept should be followed from pager bleep to getting home again; • journey to incident • setting up • the rescue • de-rigging • returning. The term 'Rescue Team' includes other rescue teams. The term 'Bystanders' includes for instance other road users, pedestrians, general public, other services.
 Do not be afraid to speak out if you have any doubt as to the safety of any practice or procedure you observe in the course of your duty.
 Safety is an individual and team responsibility. Double-check everything and concentrate on what you are doing and watch out for others. Remember: care, caution and concentration.

The second most important person, or group, is the rest of the Coastguard **Team**. You need your team to affect a rescue.

The third most important group are the **public**. You do not want others getting injured and needing rescue themselves, again using resources. We will often put in a cordon and ask people to move back as they often put themselves in danger. A member of the public standing next to the edge of a cliff taking exciting photos with a helicopter downdraft is a recipe for disaster. Lots of people get quite uppity about this and complain that we have no right to do so, sadly they put us at risk or distract us. Often a team member (or resource) is then used to hold them back when really that resource should be used in the rescue. You would be surprised at how many people think they know better.

The final person is the **casualty**. Just because they are last does not mean we do not care, in fact the whole point we volunteer is that we do care, and want to assist and save lives.

Slide 37 – Risk assessments – What is a risk assessment?

When the CRT's and lifeboat are briefed for their tasking, it is important we give them as much of the information as possible, including any known risks that we are aware of so that they can make a full risk assessment for the safety of their crew. Each incident will be different and there is not a one size fits all approach

They will take into account the weather, sea state, location of casualty, number of casualties, escape routes, experience of the rescue crew

The following risk assessment we look at are MCA specific. The RNLI will have their own process but it would be something similar

Slide 38 – risk assessments – different types

Ask the delegates to think of types of risk assessments that may be used within HMCG

"Generic" activities are those that are undertaken across HMCG e.g. types of rescue undertaken by the CRS. Occasionally there are specific activities (perhaps due to geography or the use of specialist equipment) that require specific risk assessments (SRAs).

"Specific" activities are identified by the Area Teams who work with CROs to develop SRAs where needed. SRAs will result in the development of local standards to control these unique risks.

GRA and SSRA provide a process to identify hazards, risks and control measures relating to generic activities and some specific circumstances, respectively, where hazards and risks remain relatively similar over time. However, there will be circumstances when situations and associated hazards and risks are changing in a dynamic way over the course of an operation. In these cases a dynamic risk assessment needs to be undertaken to provide a real time assessment and review of hazards and risks to help determine situation safety and identify any additional control measures to be taken.

Slide 39 – Generic Risk assessments

Purpose of GRA
The GRA is for a generic type of activity, (i.e. a common or similar activity undertaken across the CG, e.g. search operations, mud rescue, rope rescue, trailer towing etc) and provides the general information on which a common safe system of work is developed for that type of activity.
When to complete a GRA
SAR Ops co-ordinate the completion of GRAs to cover situations, activities and tasks

where there is a degree of confidence that the work undertaken is generally similar, although it may vary depending on circumstances, for example conditions during rope rescues or CRE activities, but a common safety system of work still applies. GRAs are recorded on the MCA's risk assessment proforma MSF6515 and are available on the CRS and MCA websites.

Why carry out a GRA?

This assessment allows the CRS to identify the people, equipment, training and other resources we need to undertake a range of activities covered by the assessment. It provides the information needed to inform staff and volunteers about the hazards and risks and ensures that the CRS have covered all the foreseeable issues that may arise.

For example, GRAs are used to help develop and refine for the CRS:
- Safe Systems of Work;
- Equipment requirements;
- Competency frameworks;
- Staffing requirements (required number of competent people required to do the
- task);
- Fitness and health requirements;
- Safety limits for doing the tasks;
- Instructions and information to give to people before and during the activity;
- Supervision arrangements and command and control aspects;
- Monitoring and auditing process for activity completion;

Who is responsible for carrying out GRAs?

SAR Ops for the Maritime Services Directorate of the MCA will allocate teams and subject matter experts to complete and regularly review the GRAs. These teams will, where required, be assisted by the MCA's Health & Safety Team. The current GRAs can be found on the CRS and MCA websites but the key outputs of interest to CRS volunteers and staff will be the safe systems of work, CRO training packages and other risk reduction controls that are generated by the risk assessment process.

Slide 40 – Site specific Risk assessment

Purpose of SSRA

The GRA is designed to cover an activity routinely undertaken across the CRS. However, there are a number of situations where a GRA either does not exist or does not cover all the risk factors for a given activity or site. In these cases a SSRA is required, for example hazards relating to a specific workplace or location for a Coastguard activity.

When to carry out a SRA An SSRA will typically be carried out when: There are local circumstances either in or outside MCA premises, where CRS staff or volunteers need additional information on specific hazards and risks, which are not covered by a GRA, or local circumstances actually present a higher risk than can be covered by the GRA, for example rope rescue activity in certain locations.
- In this case the SSRA can help:
- Identify routes and access to specific areas for operational purposes;

- Provide for familiarisation of personnel with the specific risks that exist at the premises or area, (especially at site or new staff induction);
- Identify specific communication needs;
- Develop exercises to respond to specific incidents in the defined areas;
- Locally set resource requirements in terms of personnel and equipment;
- Set specific local control measures for an activity being undertaken.

Why carry out a SSRA? An SSRA is carried out to meet local needs and ensures the MCA can identify and control the specific hazards and risk presented by local operations or circumstances. It is completed on the same form as GRAs, namely MSF6516. It is likely that the majority of these assessments will be geographical or premises based or for temporary activities, such as open days. There may be occasions, however, when the use of specific equipment or procedures will need to be assessed.

Who is responsible for ensuring that SSRAs are completed? Area or local managers, e.g. Building Managers, COACs, CODC, SCOO, etc assisted, where required, by experienced SOs and DSOs.

Slide 41 – Dynamic Risk assessment

Purpose of a DRA GRA and SSRA provide a process to identify hazards, risks and control measures relating to generic activities and some specific circumstances, respectively, where hazards and risks remain relatively similar over time. However, there will be circumstances when situations and associated hazards and risks are changing in a dynamic way over the course of an operation. In these cases a dynamic risk assessment needs to be undertaken to provide a real time assessment and review of hazards and risks to help determine situation safety and identify any additional control measures to be taken.

When to carry out a DRA This type of assessment is limited to those situations where hazards and risks may be changing in a dynamic way, where the situation is novel and / or a GRA and a SSRA cannot be or have not been applied. The need for DRA is most likely to arise in rescue activities where no familiar safe system of work can be called upon. DRA must be grounded in sound operational practice and experience, which can be gained through live training or operations. DRA is largely a mental process, requiring the on-going monitoring of the situation and identification of when a situation is or could be moving outside the safe system of work and operational procedures and determining the appropriate control measures to implement, based on situation, requirements and available control measures. DRA build upon the GRAs and / or SSRAs and the identified control measures and therefore the understanding of, the training in, and the application of GRAs, SSRAs and the control measures is an essential prerequisite for applying DRA principles. When doing a DRA it is always possible that it is determined that the activity and associated tasks may not be undertaken reasonably safely, that is, the risk to personnel outweigh the benefits of undertaking the action, even in rescue activities, (remember the hierarchy of rescue). In this circumstance action may need to be suspended until tasks can be achieved safely or more resources arrive.

Why carry out a DRA? OICs undertake DRAs on the ground as the activity/scenario unfolds. This is a comparative process to check their knowledge of the conditions they

face against what they already know and whether given procedures, use of equipment or abilities of personnel are sufficient or capable of keeping whatever risks are present under control, thereby helping to ensure individuals are safe throughout the operation. To demonstrate that a DRA has been completed, a formal statement should be made to the MRCC/JRCC and logged, that a rescue plan has been formulated and that a risk assessment has been made.

Who will carry out the DRA? Predominantly these assessments will be undertaken in operational situations by the person[s] in charge, Station Officers, DSOs etc but should also be applied by those CROs first to the scene of an incident.

Module B – Stages of SAR operations

Slide 42 – Stages of SAR operations title slide

Slide 43 – SAR ops aims and objectives

Describe the 5 stages of SAR operations
Identify the actions that maybe required at each stage
Apply information analysis to determine a Mission statement
Describe how a mission statement helps to form the mission plan
Awareness of suspension and termination criteria
Describe the role of OSC and OIC, when would they be designated and what they are expected to do

Slide 44 – Awareness

The awareness stage is where we become aware that an incident is occurring or about to occur.
Discuss – what are some ways in which we become aware of incidents?
Reinforce separate incidents for all 999 calls and can always be merged, once it is confirmed it is all the same. Treat each incident as a separate one until proved they are linked.

Slide 45 – Initial Action stage

The initial action stage encompasses the preliminary action taken to alert SAR facilities and obtain more information. This stage may include evaluation and classification of the information, alerting of SAR facilities, communication checks, and, in urgent situations immediate performance of appropriate activities from other stages.

Slide 46 – Initial actions – Information gathering

The key to a successful operation is accurate and timely information gathering. This should be a linked process of validation, analysis, and assessment.
In the initial action stage, the incident is created with the correct classification and as information is gathered, it is constantly evaluated to ensure that we are responding in an appropriate manner. This is an iterative process that continues throughout the execution of the incident. Where information is gathered and evaluated and decisions are made depending on the information gathered.
- Information Gathering
- MIPNANO / 6Ws
- 6ws (999 call)
    - Vision MLPs
- Message Logging Protocol Form (2nd Form)
    - These are the forms that appear when an incident is classified and can be used as an aide memoire to help with the information gathering process.

This also encompasses the use of the broadcast forms that are used whilst prosecuting an incident.
- CIP SOP

- Standard Operating Procedure
    - The SOPs in CIP will prompt the operator in the tasks required to prosecute an incident dependent on the incident type.

Slide 47 – Initial Action – Evaluation

Validity
The information needs to be validated – where has it come from? Who is reporting it? Have there been any other reports? We need to be able to identify that which is totally reliable, may be reliable but requires further validation or unreliable.
As part of this process, information can be analysed and developed into a sequence. It can also be assessed and placed in an order of priority and can become the basis for "Facts, Factors, Deductions and Outputs"

Urgency for Action
Based on the information gathered so far and the validity of the report, what is the appropriate response? Do we need to send resources instantly, for example - a person on a cliff, about to fall would require immediate assistance where a vessel broken down, not in immediate danger may require a response less urgently

Extent of Operation Required
Once again – this depends on the validity and severity of the incident- what resources need to be sent? A measured and appropriate response is required – there is no point in being Sir Launch-a-lot if that involves utilising resources that may be better used elsewhere.

Slide 48 – Initial Actions – Grade

This slide shows the different grades of incidents available in Vision 4.
All incidents initially start with the
Information Grade as in the initial stage, the Operator will be information Gathering. As the information is validated and the extent of the operation is determined, this grade can be changed to the most appropriate.
- Monitoring is used for VTM and for incidents where the monitoring of a vessel passing through UK water – Ebola, COVID positive etc
- NON-SAR is used for incidents where there is no life in danger, such as an animal rescue – technically we don't do animal rescues but would do prevent the owner from getting themselves into difficulties. Ordnance when the CRT is maintain a cordon etc
- Uncertainty – possibly the initial stage of an overdue vessel – according to IAMSAR no assets are required for Uncertainty phase incidents.
- Alert could be something like Medical Advice required / vessel broken down
- Distress – Grave and imminent danger requires immediate assistance

Slide 49 – Emergency Phases

- Uncertainty "A situation wherein doubt exists as to the safety of an aircraft or a marine vessel, and of the person on board" (IAMSAR Vol II) This is the lowest of the three emergency phases - the key word is 'doubt'
- Alert Phase "A situation wherein apprehension exists as to the safety of an aircraft or marine vessel, and of the person on board" (IAMSAR Vol II) This is the second of the three emergency phases - the key word is 'apprehension'
- Distress "A situation wherein there is reasonable certainty that a vessel or other craft, including an aircraft or a person, is threatened by grave and imminent danger and requires immediate assistance" (IAMSAR Vol II) This is the highest of the three emergency phases - the key phrase is 'grave and imminent danger and **requires immediate assistance**'

Slide 50 – Planning

A Mission Plan is derived from identified courses of action. When you have identified the intended outcome, and worked out what steps need to be taken to achieve it, how you will do those steps becomes your Mission Plan.

Having decided on a plan, the Mission Coordinator should write a clear concise statement of the task. This will be used as a tool to prevent mission creep and to keep the team focused on the mission. This takes the form of a Mission Statement.
The Mission Statement contains the task, and its purpose but also allows freedom of action, and has scope for initiative, within the guidelines of the Mission Statement. Mission statements are expressed using defined language, this is particularly important as terminology has to be understood and interpreted in a common way. The Mission statement will articulate: Who, What, Where, When and 'In Order to….', not the How.

Slide 51 – Exercise

Slide 52 – Scenario

Using the given scenario, the delegates are to work in groups to identify the types of plans that would need to be put in place in order to have a successful outcome of the incident.

Slide 53 – Planning Stage

Search Plan – Formal search plans for assets, derived from SARIS. Land search plans
Resource plan – do you have enough resources to complete your task and have you the right resources
Comms plan – Which channels are you going to use – do all tasking comms go in ch 16, what channels are the assets going to talk to each other, they can't all use ch 16. it would get too busy

Rescue plan – how are the casualties going to be recovered and where are they being taken to – don't forget the reception areas. A rescue doesn't stop just because they are in a helicopter or lifeboat

Media Plan – has the press office been informed, if other agencies are involved are we having out the same information

Contingency plan – our plan B, what if the helicopter develops a fault and needs to return, what if the weather deteriorates

Welfare plan – have the units been on a previous tasking, are they fatigued, is this a sensitive incident is this a stressful incident. Are they likely to see severe injuries? Is your team ok, are they under too much pressure, do they need a break, do you need network support?

Slide 54 – Asset suitability

Assess the suitability of the assets – is it sensible to put an ALB close inshore?
Or ask an ILB to tow a large vessel
It has happened and things have gone wrong before
The closest asset may not be the more suitable – if you are not paging the closest lifeboat it is good practice to inform the LOM of the reason why you are not tasking them.

Slide 55 – Helicopter tow video

As we can see in this video a helicopter is being used to tow a vessel which had broken down –
It subsequently crashed
All persons were recovered from the water

Slide 56 – When it all goes wrong!

And this is what happens when it all goes wrong.
The rhib was aground on the breakwater and the lifeboat attempted to tow. A freak wave lifted her onto the breakwater also
Without ops knowledge the lifeboat then launched the Y boat which capsized in the breaking water
So the lifeboat itself was the most suitable given the conditions on the day. It was too rough for an ILB. It was just on high water and all it took was one wave slightly higher than the rest to life the lifeboat onto the rocks.
The lifeboat stayed there for several weeks before being dragged off and scrapped.

Slide 57 – Planning

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The Mission Statement contains the task, and its purpose but also allows freedom of action, and has scope for initiative, within the guidelines of the Mission Statement.
Mission statements are expressed using defined language, this is particularly important as terminology has to be understood and interpreted in a common way. The Mission statement will articulate: Who, What, Where, When and 'In Order to….', not the How.

Slide 58 – Operations

Slide 59 – Operations

Encompasses all activities that involve searching for the persons or craft in difficulty, providing assistance, and removing them to a place of safety.

Slide 60 – Conclusion stage

Slide 61 – Conclusion stage

What do you think the Conclusion stage is?
Discuss the multiple incidents for one incident and how these can be merged either during the incident, or at the end.
Return of SAR units – debriefed, refuelled, replenished and prepared for other missions, return of other SAR facilities to their normal activities, and the completion of all Documentation – such as, SAR SITREP, POLREP, DEFREP etc. along with more Formal reports – such as Post Mission Review, as necessary

Slide 62 – Suspension or termination

Slide 63 – Suspension or termination – Consider

The possible ramifications of suspending searching (e.g. political involvement, impact on the maritime community)
  * Is it safe to continue searching?
  * Is there any chance of finding the casualty alive?
  * Is there a high or potentially adverse media interest?
  * Informing the Press Office
  * Is there a need for welfare support due to the effect on individuals
Do not stop searching just because it has become dark

Slide 64 – Suspension or termination – Consult

You must always make the decision together with the Duty Controller and Commander as appropriate and consult:
  • The Ops team

- The facilities involved
- Other authorities involved
- The OSC

The Next of Kin (NoK)

Have the NoK / family been given advanced warning of termination?
Provide relatives with as much notice of your intention to terminate the search as possible

Slide 65 – Suspension or termination – Review

Before a decision can be reached you must review the incident to ensure it has been conducted correctly

A review of the incident should include:

- Search decisions (for proper assumptions and reasonable planning scenarios)
- Certainty of initial position and any drift factors used to determine the search area
- Significant clues and leads
- Data computations
- Accuracy of information
- Error Margins and other Variables
- The Search Plans and POD
- What was the Coverage Factor and POD for the planned / completed searches
- Survivability
-

The reasons for suspending a search must be clearly recorded. Searches may be terminated even if the incident remains open

Module C – Effective Briefing

Slide 66 – Module C – Effective briefing title slide

Slide 67 - Effective briefing aims and objectives

- Brief using SMEAC
- Delivers a brief that adheres to the principle of accuracy, brevity and clarity
- Delivers a brief appropriate to the level for the recipient
- Ensuring the accountability and responsibility for the tasks directing during the brief

Slide 68 – SMEAC

A good SMEAC brief to your team will not only make them aware of the incident and the actions you plan to take, but it also helps to order your thoughts and by vocalising what is happening you might remember things you had forgotten. It also gives your team the opportunity to add their own thoughts and suggestions.

Situation – what has happened or what is happening
Mission – what is your aim
Execution – what actions are you going to take to resolve the situation
Any questions – opportunity for your team to ask any questions
Confirmation – team to clarify the task you have asked – provides clarity and proves understanding

Slide 69 – What is a good brief?

A good brief will be clear and concise, ensuring there is nothing ambiguous – do not waffle – only include actual information

It will be structured, so that everyone knows what element is coming next

Clear beginning and end so the team know to stop what they are doing and to listen, a clear end will allow the team to know when to start their tasks.

Slide 70 – briefing up and out

What do we mean by up and out – Upwards to Tactical Commanders and outwards to external partners
Facts only Do not waffle, if you don't have the answer – don't guess
A brief to commander is usually to make them aware of the incident but also to ask for guidance or assistance – be clear about what you are asking

Slide 71– accountability and responsibility

While there an element of trust within a team that the task you have directed will be completed it is still the responsibility of the individual running the incident to ensure those tasks have been completed and recorded in the incident narrative

Module D – Making effective Decisions

Slide 72 – Module D - Making effective Decisions - title Slide

Slide 73 – Making effective decisions – Aims and objectives

- Set and revise DUS priorities
- Assimilating information (FFDO, effective narrative)

Slide 74 – Making effective decisions – Priority

It is important to be able to view all tasks that need to be complete and order these in terms of priority.
All the tasks will needs to be completed but it is a skill to ensure they are all completed in a timely manner, nothing forgotten but the important ones are completed first
During your practical element you will be managing several incidents and your role as the SMOO is to be able to prioritise these incidents. Your SMC is running another major incident and you are in control of the small team around you.

List the following tasks in order of your priority

Slide 75 – FFDO for the lifeboat task

Male 65 years old	Make fall unconscious	Request lifeboat assistance to provide casualty care
No previous medical episodes	May suffer a fit	Request ambulance to meet on arrival ashore
Was knocked on the head with the boom		Request CRT to assist ashore with casualty transfer
2 POB both experienced		
Weather S F3 slight		

Slide 76 – FFDO for the Helicopter search

Missing person last sighted 2330 the previous evening – Police teams had been searching	Entered the water to swim	Request ARCC helicopter
Known to be distress state	Entered the water as self harm intent	Request lifeboat assistance
Was seen to enter the water 10 minutes before call by police units		Request CRT assistance

Slide 77 – FFDO for the CRT tasking

15 people entered the water in attempt to rescue a friend who had gone swimming and was being dragged out by rip	Initial swimmer will self recover	Task CRT to scene
All under the influence of drugs/alcohol	Other persons will get into difficulty	Task Lifeboat to scene
Age range 18-23 years		Request police for crowd assistance
Large crowds gathering on the shore		

Slide 78 – Has your priority changed?

Now that you have more information has your priority changed.
It is so important to ensure all information is accurately recorded in the narrative and
you brief your team and they brief you. If you notice information that isn't recorded
challenge the team and ask for that to be accurately recorded.

Module E – Managing the team

Slide 79 – Module E title slide – Managing the team

Slide 80 – Aims and objectives

Discuss the objectives of the leadership element of being a SMOO and that they have to be flexible in the management of the teams and be able to change tasks and priorities without causing more stress.

Communicating the standards and expectations – morning brief set out your day at the start of the shift, who is doing what and when

Delegate while retaining oversight - MOO under training, set then tasks and responsibilities but at the same time make sure you are always available and approachable to them

Adapt to busy periods – Be able to be flexible and change tasks to individuals, asking for additional support

Provide and receive feedback – both to and from your team but up to SMC/TL and Commanders too

Debrief process – what is the process, understand your role within that process. How to complete IMR/OLR/ PMLR and the process surrounding why

Human factors – Recognizing HF and when they impact you and your team

Module F – Managing the task

Slide 81 – Module F – Managing the task title slide

Slide 82 – Managing the task

Determining the phase of an incident – guidance should be provided to the MOO
Maintaining records – It is important that all records are maintained accurately and if you notice information not being recorded challenge the individual // it is so important
Plan B – have a plan B ready should your initial plan have to change – think one step ahead
Network – recognize when you are becoming to work heavy and prompt commander – don't leave it until its too late – it takes time to put the plan in place
Understanding other stations have varying functions – LORSAR/ CSAS/

Module G – Managing the individual

Slide 83 – Module G managing the individual title slide

Slide 84 – Managing the individual

Recognize the signs of a high workload – not talking about the team but one individual person.
CPD – opportunities – MOO to run an incident under supervision, trainee staff to run elements of a complex incident
Traumatic events – remember what you think isn't traumatic someone else may find it is
Recognize a job well done and offer praise – a thank you – good job etc but also be prepared to challenge poor behaviors

Module H – Major incidents, interagency working, JESIP

Slide 85 - Major Incidents, interagency working, JESIP Title Slide

Slide 86 - Major Incidents, interagency working, JESIP – Aims and Objectives

- Understand definitions, declaration criteria and structures for major incidents
- METHANE
- Awareness of IIMARCHQ
- JESIP requirements in multiagency incident
- Understanding the importance of raising debriefing points with other agencies
-

How and when do we declare a major incident, and how do other agencies declare theirs.
What is the responsibility of HMCG in a major incident

What is METHANE and when would it be used

What IIMARCHQ briefing is and what information is required from the ops room

What is JESIP principles and the requirement of HMCG

Why are external agency debriefs important and how an incorrectly approached debrief can cause reputational risk and create barriers.

Slide 87 – Major incident title slide

Slide 88 – what is a major incident

The Civil Contingencies Act defines an 'emergency' as "an event or situation which threatens serious damage to human welfare or to the environment in the United Kingdom, or war or terrorism which threatens serious damage to the United Kingdom's security. This includes events occurring in territorial waters. The threat itself may emanate from outside the United Kingdom."

Emergency Service organisations may have their own definition of a Major Incident, but most are aligned closely to that given under the Joint Emergency Services Interoperability Principles (JESIP), which defines a major incident as "an event or situation with a range of serious consequences which requires special arrangements to be implemented by one (or more) emergency responder agency".

Slide 89 – Types of major incidents

- **Big Bang** – a serious transport accident, explosion, or series of smaller incidents
- **Rising Tide** – such as a developing infectious disease epidemic / pandemic resulting in incapacity / staffing crisis, or flooding due to continuous rainfall

- **Headline News** – public or media alarm about a personal threat from internal incidents – fire, breakdown of utilities, major equipment failure, flooding
- **Mass Casualties** – including the potential for large passenger vessels requiring evacuation
- **Pre-planned major events** – that require specialist planning – demonstrations, sports fixtures, concerts, air shows

Slide 90 – Types of major incident

More specifically, these incidents will require the implementation of special arrangements for:
- The rescue, triage, treatment and transportation of large numbers of casualties
- The involvement either directly or indirectly, of large numbers of people
- The handling of a large number of enquiries, likely to be generated from both the public and the news media
- Large-scale combined resources and integrated management of two or more of the emergency services
- Mobilisation and organisation of the emergency services and partner organisations to cater for threat of death, serious injury or displacement of a large number of people

And for HM Coastguard, for example:

The mobilisation of specialist resources such as Counter Pollution stockpiles

Slide 91 – Declaration of a major incident

The declaration of a major incident may fall upon the MCA itself; one or more of the other emergency services, and/or other category 1 responders as defined by the Civil Contingencies Act 2004.
MCA Personnel Empowered to Declare a Major Incident
The following officers may declare a major incident for the MCA:
- The Coordinating Ops Centre SMC*
- The Duty Controller
- The Duty Commander
- The Duty Counter Pollution & Salvage Officer
- The Duty Operations Director

According to the Major Incident plan and SMC cannot declared a major incident – conflict with the guidance on CIP.

Slide 92 – Maritime Major Incidents – Ferries

It is likely that incidents involving ferries or passenger vessels will be declared major incidents, particularly if there are large numbers of persons aboard. In these instances, the SMC should consider the following:

SAR Cooperation Plan
- Refer to the relevant SAR Cooperation Plan and request the owners attend own or other Ops Centre
- Ensure that shoreside responders are alerted, then fully briefed, such that other emergency services, landing sites, reception centres etc are prepared

Tote
It is important that a detailed and accurate tote is maintained, identifying:
- Number of persons taken off the vessel(s), by which resource and to where
- Casualty transfers (i.e. from one unit to another)
- Number of persons landed aboard the casualty vessel(s) (e.g. [HYPERLINK "https://mcga.sharepoint.com/sites/MLD/MLD/Forms/AllItems.aspx?q=MCO&id=/sites/MLD/MLD/SOSREP/AN1015_MCO_ADVICE_NOTE.pdf&parent=/sites/MLD/MLD&parentview=7"], FRMR fire-fighters)

European companies who operate passenger or cruise vessels (anywhere in the world) should have a 'Passenger Registrar' who maintains a 'Persons on Board Manifest' for each vessel/voyage. Always check with shipping companies for information on passenger numbers.

Slide 93 – Major Incidents – who needs to know

The personnel listed below must be notified without delay if major incident has been formally declared
- The 'Empowered to Declare' officers and:
- SOSREP(via the DCPSO or Duty Commander)
- The Duty Press Officer
- ARCC
- The Police - with the request that other shoreside responders be informed by cascade
- Other shoreside responders as required, if not being notified by cascade via the Police
- Fleet Commander
- Other authorities depending on the type of incident

The officers declaring and confirming the major incident are responsible for ensuring that this notification is done either directly or by cascade.

Slide 94 – Closing a major incident

When it is clear that a major incident response is no longer required, the Duty Commander or DCPSO as appropriate, in consultation with other responders as necessary, may declare the major incident closed.

Slide 95 – JESIP Principles Title Slide

Slide 96 – JESIP principles – what is JESIP

The findings from a number of reviews of major national emergencies and disasters made clear that the emergency services carry out their individual roles efficiently and

professionally.However, there were some common themes relating to joint working where improvement was needed - JESIP was established to address these issues:

The Pollock Report

Early in the programme, JESIP commissioned the Cabinet Office Emergency Planning College to research the persistent lessons identified relating to interoperability so we could gain an understanding of the issues. The outcome of this research was the Pollock Report, which can be downloaded

Slide 97 – JESIP Principles

- Challenges with initial command, control and coordination activities on arrival at scene

- A requirement for common joint operational and command procedures
- Role of others, especially specialist resources and the reasons for their deployment, not well understood between services
- Challenges in the identification of those in charge at the scene leading to delays in planning response activity
- Misunderstandings when sharing incident information and differing risk thresholds not understood

-

We need to ensure that our initial multi-agency response to all incidents is more organised, structured and practiced. The emergency services need to ensure they constantly update their working practices and learn from events of the past… together… and not just in isolation. JESIP aims to help them do that.

Slide 98 – 5 JESIP Principles

Co-Location
When commanders are co-located, they can perform the functions of command, control and co-ordination face-to-face. They should meet as early as possible, at a jointly agreed location at the scene that is known as the Forward Command Post (FCP). This allows them to establish jointly agreed objectives and a co-ordinated plan, resulting in more effective incident resolution. The benefits of co-location apply equally at all levels of command.
If there is any delay in commanders co-locating, interoperable communications should be used to begin establishing shared situational awareness.
The operational and tactical commanders of each service should be easily identifiable at an incident. This is usually achieved by wearing role specific tabards. There are exceptions, such as at public order and other specialist incidents where coloured epaulettes and helmet markings are used. Click here to read more about incident commander tabards.
Although not all responders will have role specific tabards they should wear appropriate personal protective equipment (PPE) and have identification as a minimum.

Communication

Meaningful and effective communication between responders and responder agencies underpins effective joint working.

Sharing and understanding information aids the development of shared situational awareness, which underpins the best possible outcomes of an incident.

The following supports successful communication between responders and responder agencies:

- Exchanging reliable and accurate information, such as critical information about hazards, risks and threats
- Ensuring the information shared is free from acronyms and other potential sources of confusion
- Understanding the responsibilities and capabilities of each of the responder agencies involved
- Clarifying that information shared, including terminology and symbols, is understood and agreed by all involved in the response

Common terminology

- Using terminology that either means different things to different people, or is simply not understood across different services is a potential barrier to interoperability.
- The Lexicon of UK civil protection terminology sets out definitions for common terminology in emergency management, including important terms in interoperability. There is also a set of common map symbols for civil protection.
- Emergency services and responder agencies should cross-reference definitions in their own organisation's documents and adopt the common definitions contained from the Lexicon. Agreeing and using common terminology is a building block for interoperability. If there is any doubt about what is meant by a specific term, individuals should check and confirm whether a common understanding has been established.

Some of the terms used in this document are key to successful joint working and responders should understand them. Definitions and a short explanation can be found here

Co-ordination

Co-ordination involves commanders discussing resources and the activities of each responder agency, agreeing priorities and making joint decisions throughout the incident. Co-ordination underpins joint working by avoiding potential conflicts, preventing duplication of effort and minimising risk

For effective co-ordination, one agency generally needs to take a lead role. To decide who the lead agency should be, factors such as the phase of the incident, the need for specialist capabilities and investigation, during both the response and recovery phases should be considered. There is specific guidance for some types of incidents, highlighting which agency should take the lead role. The decision on who takes the lead role should be documented – the lead agency may change as the incident develops. The lead agency should chair co-ordinating meetings and make sure they take place regularly.

Joint Understanding of Risk

Different responder agencies may see, understand and treat risks differently. Each agency should carry out their own 'dynamic risk assessments' but then share the results so that they can plan control measures and contingencies together more effectively.

By jointly understanding risks and the associated mitigating actions, organisations can promote the safety of responders and reduce the impact that risks may have on members of the public, infrastructure and the environment.

Shared Situational Awareness

'Shared situational awareness' is a common understanding of the circumstances, immediate consequences and implications of the emergency, along with an appreciation of the available capabilities and the priorities of the emergency services and responder agencies.

Achieving shared situational awareness is essential for effective interoperability. Establishing shared situational awareness is important for a common understanding at all levels of command, between incident commanders and between control rooms.

If the principles are followed then the result should be a jointly agreed working strategy where all parties understand what is going to happen when and by who, this strategy should include:

What are the aims and objectives to be achieved?
Who by – police, fire, ambulance and partner organisations?
When – timescales, deadlines and milestones
Where – what locations?
Why – what is the rationale? Is this consistent with the overall strategic aims and objectives?
How are these tasks going to be achieved?

Slide 99 – METHANE title page

Slide 100 – Methane

The METHANE model is an established reporting framework which provides a common structure for responders and their control rooms to share major incident information. It is recommended that M/ETHANE be used for all incidents.

For incidents falling below the major incident threshold 'METHANE' becomes an 'ETHANE' message. During the decision making process using the joint decision model, there should be period consideration of the 'M' (representing 'major incident') by responders to establish whether a developing incident goes above the major incident threshold.

Each responder agency should send a M/ETHANE message to their control room as soon as possible. The first resources to arrive on scene should send the M/ETHANE message so that situational awareness can be established quickly. The information received through multiple M/ETHANE messages will gradually build to support shared situational awareness in those responding to the incident and between control rooms.

Slide 101 – Methane descriptors

Slide 102 – IIMARCHQ

IIMARCHQ is used the Coastguard Search advisors to brief the search team when on a missing person search. It is also a recognised briefing tool used by PolSA
There is no requirement for use within the ops room bur some of the information contained in the brief will be obtained through the initial and subsequent information the ops room will gather.

Slide 103 – IIMARCHQ

Information – details about the missing person, 10 point descriptor includes physical description, clothing, items carried, time last seen, place last seen etc

Intent – What is the search trying to achieve, search strategies

Method – Type of search – hasty, effective

Administration – planning points, logistics ets

Risk assessment – what are the risks, weather forecast, tidal information, known risks in the area

Communications – What channels are the search teams using, are the ops room using specific channels for other incidents

Humanitarian – welfare of the team, missing person family close by

Questions – back from the team to the search advisor

Slide 104 – External Briefing

Slide 105 – External Briefing how and why

As soon as possible after the completion of the incident so small details are still fresh in people's minds and can be captured and logged.
Ensure a representee from all parties involved are included
It is not a platform to apportion blame, it is to establish facts surrounding the incident, search and rescue or recovery to identify potential issues which can be resolved

All partied should be encouraged to highlight the good point, what did go well in addition to suggestions or ideas for areas of improvement
Ensure the discussion is recorded in the Vision narrative
Complete PMLR on the basis of the debrief which formally captures all inputs

Slide 106 – Module I - Confirmation Bias and Human Element

Slide 107 – Confirmation Bias Title slide

Slide 108 – images

Flip through the pictures and explain that all of the incidents had some element if not all human factors

Slide 109 – Confirmation bias

Read through the definition of confirmation bias
The tendency for appraisers to believe something and search for confirmation of what they already believe. When appraisers jump to premature conclusions, or biased in certain direction, they do not wait until all the pertinent market facts have been gathered and objectively analysed. The try to interpret everything to justify their conclusions.

Slide 110 – Exercise slide

Slide 111 – Listening exercise

Read out the following list of words asking the delegates to listen. Once the list is complete they have 1 minute to write down as many words as they remember. Some words have been repeated a number of times

Night   Awake   Dark   Sheets
Duvet   Dark   Quiet   Dream
Bed   warm   dark   snore
Nightmare   drowsy   relax   slumber
Cosy   pillow   dark   late

Slide 112 – List of words

Usually, 60% will remember the first word. 75% will get the last word. 80% will remember the word repeated 3 times and 20% will write a word that was not mentioned

Slide 113 – Case Study 1 title slide

Slide 114 – FV Ocean way

This is an actual incident and MAIB has released a report on it. Worth going to read it. The SMC thought process effected the tasking of assets and how well the incident was conducted. This was partly to do with the distance off shore but a situation closer to shore might have made a difference

Slide 115 – FV Ocean way timeline

Within 5 minutes of the vessel capsizing the EPIRB activated. A detect only alert was received followed 3 minutes later with an unresolved alert.

A quick look at AIS identified a position for the vessel, but the position was never plotted to see if it matched the EPIRB position A and B.

Amble lifeboat was tasked to the position which was taken off AIS, and while on route picked up a 121.5 MHz signal. The assumption was made the signal was that of the FV

Slide 116 - Timeline

At 1115 information was received that the fishing vessel was intending to fish the GUT 120nm off shore
And at 1130 Amble lifeboat report a target on radar 12nm away from location in the same direction as the 121.5 signal

1145 the resolved EPIRB position was obtained and the lifeboat stood down. With an aircraft tasked to the resolved position.

Slide 117 – Map

The map shows all the positions including that from Themis

Slide 118 – FV Ocean way

The AIS information was not fully explored nor interrogated, and it was not noticed the time stamp was from the previous evening, when she was in that position as she headed out to fish
The homing signal was spurious, and the source never found
Fishing vessel database was never check to confirm AIS position

Slide 119 – FV Ocean way

The information regarding the position was not checked by anyone in the team, It was glanced at, saw the vessel in that position and the assumption was made that where she was, with the SMC justifying the error and the unresolved EPIRB position as being inaccurate so the AIS position was correct, and all search effort concentrated on the position from the previous night.

It wasn't until the resolved position was received sis the SMC begin to check the positions.

Slide 120 – Case study 2 – title slide

Slide 121 – 1540 UTC July

A cyclist was out for a ride while on holiday and noticed a fishing vessel sinking. He was not carrying a mobile phone and cycled back to the holiday cottage he was staying at to call in the report.

Slide 122 – 1602 UTC

It takes him about 20 mins to cycle back and calls 999 and is put through to MRCC A. A clear location of the cottage and the location of the fishing vessel was passed and confirmed by the owner of the holiday cottage.
During the call collection, and while it was still occurring the SMC requests a helicopter from ARCC and at 1605 UTC an aircraft is confirmed and tasked.

Slide 123 – 1608 UTC

The SMC resumes listening to the call collection and realises the incident isn't actually where he thought it was and was actually in the flank stations area of responsibility.
The SMC calls back ARCC and stands the helicopter down (This was when ARCC was based at Prestwick and did not have oversight of the incidents like we do now in the current set up)
The flank MRCC is contacted and informed of the incident but was not told the helicopter had been stood down. Infact they were informed the helicopter was proceeding to the initial location.

Slide 124 – 1621 UTC

On calling ARCC to ask for the helicopter to be diverted to the correct location MRCC B was told it had been stood down but a different helicopter would now be tasked and the asset was tasked at 1635 UTC – almost 1 hour after the incident occurred.

Slide 125 – Map of area

The yellow dots are the helicopter bases
The blue dots are the MRCC locations
The red dots – the dot furthest North is the incident location – Kilmory on the Ardnamurchan Peninsula.

The one in the middle is Kilmory, Jura Sound and the one furthest South is another Kilmory

Slide 126 – Bias

The SMC didn't fully listen to the call collection and heard the name Kilmory and assumed it was within their area, without waiting for further clarification.

When it became clear the asset was stood down by the SMC but didn't tell the rest of the team and so when MRCC B was informed, they were told they aircraft was still proceeding.

It is important to talk to the team. Yes, this was a distress phase incident but by not taking those extra few minutes to clarify details and communicate with the team an hour was lost before an assets was tasked!

Slide 127 – The Human element – Title slide

Slide 128 – Image and quote

People make mistakes – organisations make it possible for them to be really serious

Slide 129 – Human factors

We look at human factors in three ways.
The job – nature of the task, the environment they are working in, display and control, procedures

The individual – competence, skills, attitudes, perception of risk, personality

The organisation – work patterns, communications, leadership, culture, resources.

Slide 130 – Latent failures

Latent failures are made by people whos tasks are removed from time and space from operational activities, eg designers, decision makers and managers.
Examples of latent failures are
Poor design of equipment
Ineffective training
Inadequate supervision
Ineffective communication
Uncertain in roles and responsibilities

Latent failures provide a great potential danger to health and safety as active failures. They are usually hidden within an organisation until they are triggered by an event which is likely to have serious consequences.

Slide 131 – Error enforcing conditions

Time pressures
Changes in working practice – new systems
Stress
Psychological conditions
Physical conditions

Slide 132 – Active failures

You as an individual and contribute to failures. It's human nature we are not perfect every day, we have our own issues, person and home life, fatigue.
We have a duty of care to ourselves and to our team to inform someone if something is distracting us from carrying out our job effectively.

Slide 133 – Types of active failures

Knowledge and skills failure - if you don't practice something you get rusty. You might be able to 'muddle' through but is it effective, is it conducive to the situation you are now facing.

Cognitive failure – not understanding the situation or what is going on – a brand new MOO will have some element of cognitive failure in the first few incidents happening around then purely because they do not have a full understanding. It can still happen to the best of SMC's - particularly if the information is not fully gathered, analysed or passed and recorded in the narrative.

Communications failure – internal communications between the team and comms equipment failure

Situational awareness failure - Situation awareness is not a one-off or a snapshot, it is a continuous process, hence the 'dynamic awareness 'phrase in the above definition. If what we expect to happen does not align with what is actually happening in the real world, we may check our data, gather new information, and revisit our decisions. This will help us to 'regain control'. Situation awareness is maintained by continually checking facts against our understanding. Often, we use our expectations to influence how attention is directed, how information is perceived and how it is interpreted.

Behaviour failure – Look your own behaviours, do you respect and value your colleagues, or are you always 'right' and won't listen to others. Think about your temper and raised voice.

Slide 134 – Situational Awareness failure

Being aware of factors and conditions which affect safe operations. Can be subject to a number of degrading influences including inattention and fatigue.

Confirming accuracy with other team members by sharing information and by stating intentions is important.

Sharing knowledge and information helps to avoid incidents and accidents arising from loss of situational awareness, and lays a firm foundation for high quality decisions regarding the overall management of operations.

Slide 135 – Swiss Cheese model

Explain the Swiss cheese model.

It likens human systems to multiple slices of [HYPERLINK "https://en.wikipedia.org/wiki/Swiss_cheese_(North_America)" \o "Swiss cheese (North America)"], stacked side by side, in which the risk of a threat becoming a reality is mitigated by the differing layers and types of defenses which are "layered" behind each other. Therefore, in theory, lapses and weaknesses in one defense do not allow a risk to materialize, since other defenses also exist, to prevent a [HYPERLINK "https://en.wikipedia.org/wiki/Single_point_of_failure" \o "Single point of failure"].

Slide 136 – Case study 1 title slide

Slide 137 – Herald of free enterprise image

Slide 138 – Herald of free enterprise

On 6th March 1987 the 9,000 GT Herald of Free Enterprise left her berth in the inner harbour of the Belgian Port of Zebrugge at 1805 GMT. She was overloaded carrying 459 passengers, 80 crew, 81 cars, 47 trucks and 3 buses. Within 20minutes she had passed completely out of the harbour, was rapidly picking up speed and was heading for the open sea at just over 18 knots. No-one had yet noticed the vast bow loading doors were still open.

As the ship reached critical forward speed, the bow dipped and scooped a huge mass of seawater through the open doors. With no watertight compartments, the water flooded through the entire deck. In seconds, the ship listed 30° to port, righted herself, then listed to port again and capsized in shallow water 1km from shore, coming to rest on a sandbank.

The entire event took just 90 seconds. 193 people died.

Slide 139 – Human element

Was not the normal route of that ferry and as a result she needed to carry more ballast to allow for the fitting onto the linkspan, thus adjusting her centre of gravity.

This ship was under pressure to leave the berth. A recent MOU sent to assistant managers stating that sailing 15 minutes early was the new expected norm.

The assistant bosun had been working long hours previous to the sailing and slept in his cabin while in harbour. Was not wakened by the general 'harbour stations' call

The first officer took over the loading from the 2nd officer, and believed it was his responsibility to ensure the assistance bosun was in position to close the doors, not actually to check the doors were shut. The thought he saw the assistant bosun going towards the doors and assumed he would close them

The bosun was loading the vehicles and after the last was loaded, he knew the bow doors would be closed by the assistant bosun and said '*It wasn't his job'* to close the doors.

The design of the ship made it impossible for the master to see the bow doors from the bridge.

A request to have indicator lights installed on the bridge to show the door position was dismissed by management as it was frivolous to spend money on equipment to indicate if employees had failed to do their job correctly.

Slide 140 – Case Study 2 Title slide

Slide 141 – Piper Alpha

Slide 142 – Piper Alpha

Piper Alpha was an oil platform located in the North Sea approximately 120 miles (190 km) north-east of Aberdeen, Scotland. It was operated by Occidental Petroleum (Caledonia) Limited and began production in 1976, initially as an oil-only platform but later converted to add gas production.

An explosion and resulting oil and gas fires destroyed Piper Alpha on 6 July 1988, killing 167 men, including two crewmen of a rescue vessel; 61 workers escaped and survived. Thirty bodies were never recovered. The total insured loss was about £1.7 billion, making it one of the costliest man-made catastrophes ever. At the time of the disaster, the platform accounted for approximately ten percent of North Sea oil and gas production. The accident is the worst offshore oil disaster in terms of lives lost and industry impact.

Slide 143 - 145 – Time line

- 12:00 noon, 6 July 1988: Two condensate pumps, designated A and B, were operating to displace the platform's condensate for transport to the coast. On the morning of 6 July, Pump A's pressure safety valve (PSV #504) was removed for routine maintenance. The pump's two-yearly overhaul was planned but had not started. The open condensate pipe was temporarily sealed with a disk cover (flat metal disc also called a *blind flange* or blank flange). Because the work could not be completed by 18:00, the disc cover

remained in place. It was hand-tightened only. The on-duty engineer filled in a permit which stated that Pump A was not ready and must not be switched on under any circumstances.

- 18:00: The day shift ended, and the night shift started with 62 men running Piper Alpha. As the on-duty custodian was busy, the engineer neglected to inform him of the condition of Pump A. Instead, he placed the permit in the control centre and left. This permit disappeared and was not found. Coincidentally there was another permit issued for the general overhaul of Pump A that had not yet begun.

- 19:00: Fire-fighting system put under manual control: Like many other offshore platforms, Piper Alpha had an automatic fire-fighting system, driven by both diesel and electric pumps (the latter were disabled by the initial explosions). The diesel pumps were designed to suck in large amounts of sea water for firefighting; the pumps had automatic controls to start them in case of fire (in this case they could not be started remotely/manually because the control room was near the center of the explosion and had been evacuated). However, the fire-fighting system was under manual control on the evening of 6 July: the Piper Alpha procedure adopted by the Offshore Installation Manager (OIM) required manual control of the pumps whenever divers were in the water (as they were for approximately 12 hours a day during summer) although in reality, the risk was not seen as significant for divers unless a diver was closer than 10–15 feet (3–5 m) from any of the four 120 feet (40 m) level caged intakes. A recommendation from an earlier audit had suggested that a procedure be developed to keep the pumps in automatic mode if divers were not working in the vicinity of the intakes as was the practice on the Claymore platform, but this was never implemented.

- 21:45: Pump B tripped and could not be restarted: Because of problems with the methanol system earlier in the day, methane clathrate (a flammable ice) had started to accumulate in the gas compression system pipework, causing a blockage. Due to this blockage, condensate (natural gas liquids NGL) Pump B stopped and could not be restarted. As the entire power supply of the offshore construction work depended on this pump, the manager had only a few minutes to bring the pump back online, otherwise the power supply would fail completely. A search was made through the documents to determine whether Condensate Pump A could be started.

- 21:52: Permit for pump A PSV recertification not found and pump restarted: The permit for the overhaul was found, but not the other permit stating that the pump must not be started under any circumstances due to the missing safety valve. The valve was in a different location from the pump and therefore the permits were stored in different boxes, as they were sorted by location. None of those present were aware that a vital part of the machine had been removed. The manager assumed from the existing documents that it would be safe to start Pump A. The missing valve was not noticed by anyone, particularly as the metal disc replacing the safety valve was several metres above ground level and obscured by machinery.

- 21:55, First explosion due to condensate leak from PSV flange: Condensate Pump A was switched on. Gas flowed into the pump, and because of the missing safety valve, produced an overpressure which the loosely fitted metal disc did not withstand. Gas audibly leaked out at high pressure, drawing the attention of several men and triggering six gas alarms including the high-level gas alarm. Before anyone could act, the gas ignited and exploded, blowing through the firewall made up of 2.5 by 1.5 m (8 by 5 ft) panels bolted together, which were not designed to withstand explosions. The custodian pressed the emergency stop button, closing huge valves in the sea lines and ceasing all oil and gas extraction.

Theoretically, the platform would then have been isolated from the flow of oil and gas and the fire contained. However, because the platform was originally built for oil, the firewalls were

designed to resist fire rather than withstand explosions. The first explosion broke the firewall and dislodged panels around Module (B). One of the flying panels ruptured a small condensate pipe, creating another fire.

- 22:04: Control room of Piper Alpha abandoned. A Mayday call was signalled via radio by the radio operator David Kinrade. Piper Alpha's design made no allowances for the destruction of the control room, and the platform's organisation disintegrated. No attempt was made to use loudspeakers or to order an evacuation.
- 22:05: The Search and Rescue station at RAF Lossiemouth received its first call notifying them of the possibility of an emergency, and a No. 202 Sqn Sea King helicopter, "Rescue 138", took off at the request of the Coastguard station at Aberdeen. The station at RAF Boulmer was also notified, and a Hawker Siddeley Nimrod from RAF Kinloss was sent to the area to act as "on-scene commander" using the designation "Rescue Zero-One".

- 22:06: The resulting condensate fires causes crude oil storage tanks in Module B to rupture and flood the floor with burning crude oil, creating a characteristic black smoke plume as seen in photographs from nearby ships. The burning oil later drips onto a lower platform area where the rig's divers prepare for work. The platform floor is normally covered by steel grates (where the burning oil would normally drip throuh the holes and into the sea), but because the divers on the previous shift placed rubber matting on the metal grate (apparently to cushion their bare feet from the relatively sharp metal), the oil forms a burning puddle on the rubber matting. Directly above this area is a high-pressure gas pipeline connecting to the Tartan platform.

- 22:20, The high-pressure gas pipeline (connected to the nearby Tartan platform) ruptured in the second explosion. Tartan's gas pipeline (pressurised to 120 atmospheres) was weakened by the fire from the burning crude oil (that pooled up on rubber matting ontop of a suspended work platform used for the rig's divers) and ruptured, releasing 15-30 tonnes (10,000 m³ (350,000 cu ft) to 30,000 m³ (1,100,000 cu ft)) of high-pressure gas every second, which immediately ignited. From that moment on, the platform's destruction was inevitable.
- 22:30: The *Tharos*, a large semi-submersible firefighting, diving / rescue and accommodation vessel, drew alongside Piper Alpha. The *Tharos* used its water cannon where it could, but it was restricted, because the cannon was so powerful it would injure or kill anyone hit by the water. Tharos was equipped with a hospital with a Offshore Medic assisted by Diver Paramedics from the Tharos Saturation Diving team. A triage and reception area were set up on the vessels Helideck to receive injured casualties.

- 22:50, The MCP-01 gas pipeline rupture is the third explosion. The second gas line ruptured (the gas line riser to the MCP-01 platform), ejecting millions of cubic feet of gas into the conflagration and increased its intensity. Huge flames shot over 300 ft (90 m) in the air. The *Tharos* was driven off by the heat, which began to melt the surrounding machinery and steelwork. It was only after this explosion that the Claymore platform stopped pumping oil. Personnel still left alive were either desperately sheltering in the scorched, smoke-filled accommodation block or leaping from the various deck levels, including the helideck, 175 ft (50 m) into the North Sea. The explosion killed two crewmen on a fast rescue boat launched from the standby vessel *Sandhaven* and the six Piper Alpha crewmen they had rescued from the water.

- 23:18, The Claymore gas line rupture is the final explosion. The gas pipeline connecting Piper Alpha to the Claymore platform ruptured, adding even more fuel to the already massive firestorm that engulfed Piper Alpha. With thousands of cubic metres of gas burning every second, the 20,000-tonne steel platform melted over the next 80 minutes.

Slide 146 – errors

The safety valve had been removed but the on coming watch was not made aware and the paperwork was not ever found

Due to the works the firefighting system was put onto manual control. This normally could also have been triggered remotely but due to reconfiguration of the rig the control room was located close to the blast centre and was destroyed therefore the system could not be activated.

Feeder pipelines were not immediately shut down therefore giving a continuous source of fuel to the fire.