

## Cornwall County Fire Brigade - Marine Operations ~ September 2001

*Powerpoint presentations on this CD Rom have been produced predominantly to assist with the delivery of 'Marine Training' within Cornwall County Fire Brigade and are as follows:-*

- Part 1...[Safe Working On Or Near Water](#)
- Part 2...[Offshore Incidents ~The Legal Framework](#)
- Part 3...[Offshore Incidents ~Command and Control](#)
- Part 4...[Offshore Incidents ~Helicopter Operations](#)
- Part 5...[Tactical Ship Firefighting](#)
- Part 6...[Ship construction.](#)
- Part 7...[Sea Survival](#)
- Part 8...[Small Boat Fire Safety](#)
- Part 9...[Ships Plans \(NEW August 2001\)](#)
- Case Study '[Scandinavian Star](#)'

NOTE:- Parts 2/3/4 have been produced in conjunction with information provided from other UK Fire Brigades, in particular Kent and Suffolk.  
Parts 3/4 are based on the CACFOA Standard Operational Procedural (SOP) documents also available on this CD in Word format.

Part 9 has recently been produced in conjunction with the Shipping Section of the Fire Service College, Moreton in Marsh.

A further Powerpoint presentation available is the [Incident Command System \(ICS\)](#) package which underpins all of the above.

The following Word documents are also on this CD Rom:

- CCFB [Brigade Policy documents for Water Safety](#) (under review Sept.2001)...
- CCFB [Risk Assessments](#) (under review Sept.2201)...
- CCFB SOP's with [RNAS Culdrose](#) 771 SAR Squadron...
- CACFOA SW '[Safe Working On Or Near Water](#)' (January 2001)...

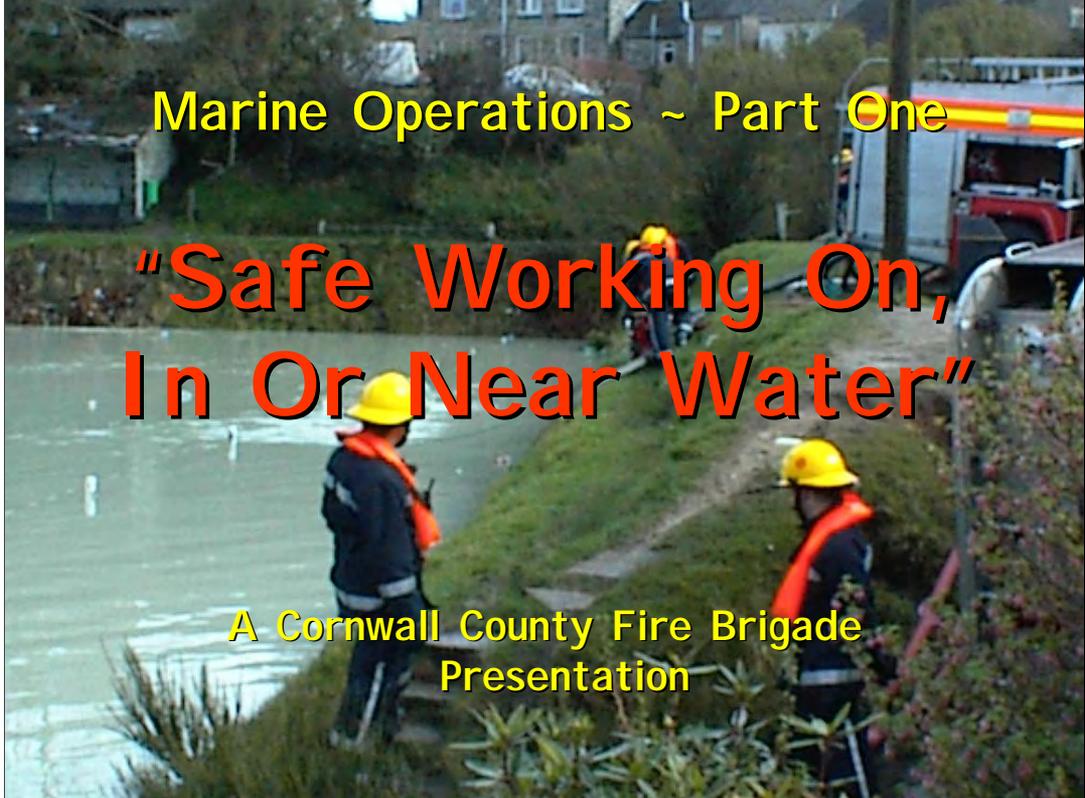
An [Excel spreadsheet](#) is also included which is hopefully self explanatory, but may not be up to date due to the difficulties in getting accurate feed back and research data.

Other reference points **not** held on this CD Rom include:-

- Fire Service Manuals ~ Command and Control
  - ~ Marine Operations
  - ~ Safe Working On, In Or Near Water (New Sept 2001)...
- DCOL's 9/1992...

Should you require any further information then please contact:

Senior Staff Officer ~ Divisional Officer Mervyn Kettle, Cornwall County Fire Brigade, Old County Hall, Truro, Cornwall, TR1 3AY  
E mail: [opsdev@cornwall.fire.gov.uk](mailto:opsdev@cornwall.fire.gov.uk)  
[mkettle@cornwall.fire.gov.uk](mailto:mkettle@cornwall.fire.gov.uk)



## Marine Operations ~ Part One

# "Safe Working On, In Or Near Water"

A Cornwall County Fire Brigade  
Presentation

The 'Marine Operations' packages are produced by CCFB Marine Operations Group (MOG) and are as follows

### **Part 1...Safe Working On Or Near Water...\***

Part 2...Offshore Incidents ~The Legal Framework

Part 3...Offshore Incidents ~Command and Control

Part 4...Helicopter Operations ~ SOP

Part 5...Tactical Ship Firefighting

Part 6...Ship construction.

Part 7...Sea Survival

Part 8...Small Boat Fire Safety

Part 9...Ships Plans (NEW August 2001)

Other reference points include:-

ICS.ppt

Fire Service Manuals ~ Command and Control / Marine Operations...

DCOL's...

BIS Doc's...

Case Studies e.g 'Scandinavian Star'

CACFOA South West ICS packages

**\*CACFOA SW 'Safe Working On Or Near Water' (January 2001)**

# INTRODUCTION...

- Promote Personal Safety
- Climatic change...
- Loss of firefighters lives...
- No statutory duty...
- Brigade will respond...
- Policy ~  
(BIS OPS1/046 & CACFOA Doc).

Marine Operations - One

Safe Working On, In Or Near Water

Due to many factors, but the biggest appears to be climatic change, we are dealing with more water related incidents than ever before.

We have been very lucky that we have not had a serious injury or even a fatal incident involving our own fire-fighters, therefore the issue has been raised at the highest level to provide training and equipment to deal with water related incidents.

The term water related incident's is very broad and covers a large number of scenario's such as flooding, working alongside water, pumping from open water, water rescues (Bedfordshire) Mud/sand rescues, ice rescues to name a few.

The GMC case is still on going with court proceedings against the DCFO.

Brief explanation how GMC FF lost life.

Jan 01, SW Brigades set up working group and now nationally

# Standard Operational Procedures (SOP)

## LEVEL ONE

*"no known immediate threat to life"*

**All WRI's that require an initial attendance of either a Supervisory Officer and/or nearest pumping appliance and trained crew.  
Requires limited PPE.  
Safe working practices and procedures.**

Marine Operations - One

Safe Working On, In Or Near Water

The emergency response provided by the Brigade to water related incidents is essentially modular and can be illustrated as two progressive levels.

### Mobilising

Down to logistics of control room mobilising procedures, that will be based on type of incident (I.e. flooding, pumping out vessel), location of incident, available Supervisory officer in area etc.



# AIM...

To enable personnel to  
work safely at  
Water Related Incidents  
(WRI's).

What is a Water Related Incident ?

Although the primary water risk within the county stems from coastal and estuarial waters, a number of other risk areas exist such as:-

- ~ Offshore
- ~ Fast and/or deep running rivers
- ~ reservoirs
- ~ ponds and lakes
- ~ quarries
- ~ mine shafts
- ~ local flooding
- ~ slurry pits
- ~ mud/sand rescues
- ~ ice rescues

# OBJECTIVES...

At the end of the session you will be able to:

- Undertake a generic risk assessment and apply basic dynamic risk assessment to water related incidents (WRI's)...
- Identify the primary features and characteristics of water flow and its associated hazards...

- List and explain rescue options low to high risk...
- State the principles of water rescue...
- Demonstrate the correct use of safety & rescue equipment...
- Demonstrate basic reach techniques...
- Define Level 1 and 2 Attendance.

# Who is at risk ?...



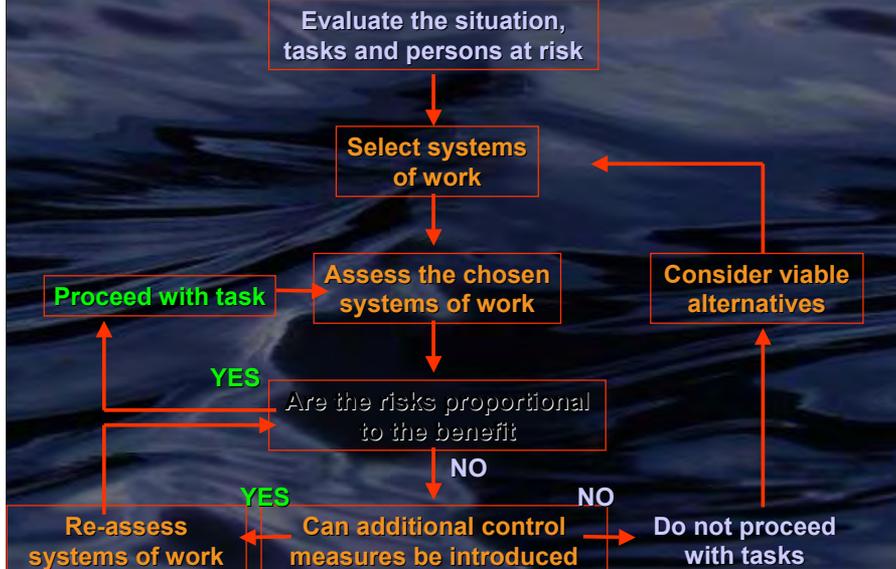
- **Anyone working near water where accidental immersion could occur...**
- **Anyone who may become involved in a rescue.**

## The Risk Area:

Normally the risk area will be deemed within 3 metres of water, where it might be possible for people to trip and fall in.

Remember, people may fall into the water even if they are working at a greater distance way( I.e. up a slope or on a bridge)

In a rescue situation the risk area includes the banks adjacent to the casualty, and areas both upstream and downstream.



Hazard identification and risk assessment should be routine to most operational personnel and this flowchart will assist the IC in selecting an appropriate tactical approach to the incident.

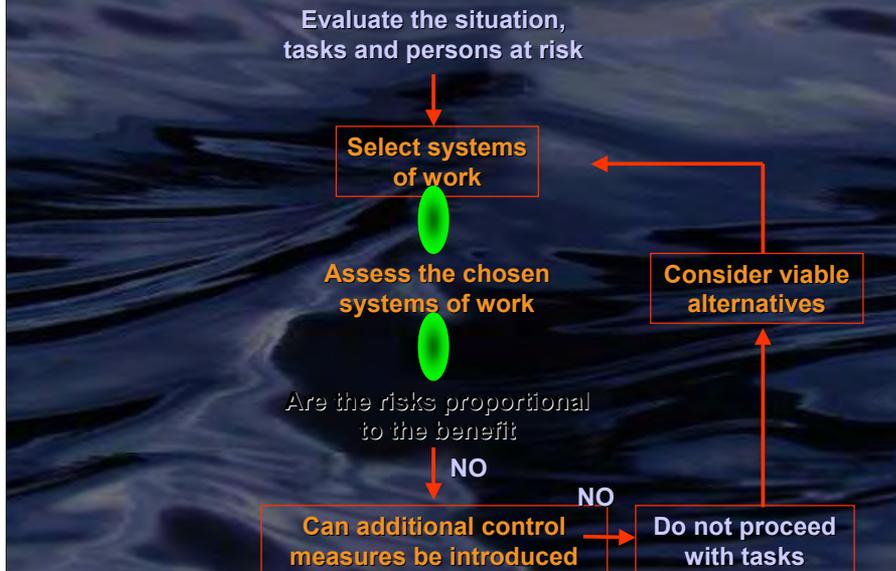
## DEFINITIONS

**Hazard** - Something that has the potential to cause harm

**Risk** - The likelihood of harm arising from the hazard

The IC will carry out a risk assessment on arrival at an incident, the result of which will determine the **Tactical Mode** to be employed. The risk assessment is dynamic, that is to say it is constantly reviewed to identify

- any change in the level of hazard or risk
- any need to review the Tactical mode or operating procedures to match any change



**All persons accounted for**

**EVALUATE**

All persons accounted for – confirmed by responsible person

Local knowledge 11d

**SELECT**

Full PPE

**ASSESS**

Does the system of work minimise the risks to the fire-fighters

**NO**

**CAN ADDITIONAL CONTROL MEASURES BE INTRODUCED**

The fire fighters can don additional PPE **BUT** this will not remove hazard from fast water risk.

**NO**

**DO NOT PROCEED**

**CONSIDER VIABLE ALTERNATIVES**

Helo assistance...Level TWO.

**ASSESS**

Does the system of work minimise the risks to the fire-fighters

**YES**

**RISK PROPORTIONAL?**

The actions are carried out and the fire-fighters adequately protected

**YES**

**PROCEED**

It is safe to proceed with the task **BUT** we must maintain a constant reappraisal of the incident and associated hazards. If circumstances change you must re-evaluate the system of work.

Evaluate the situation,  
tasks and persons at risk

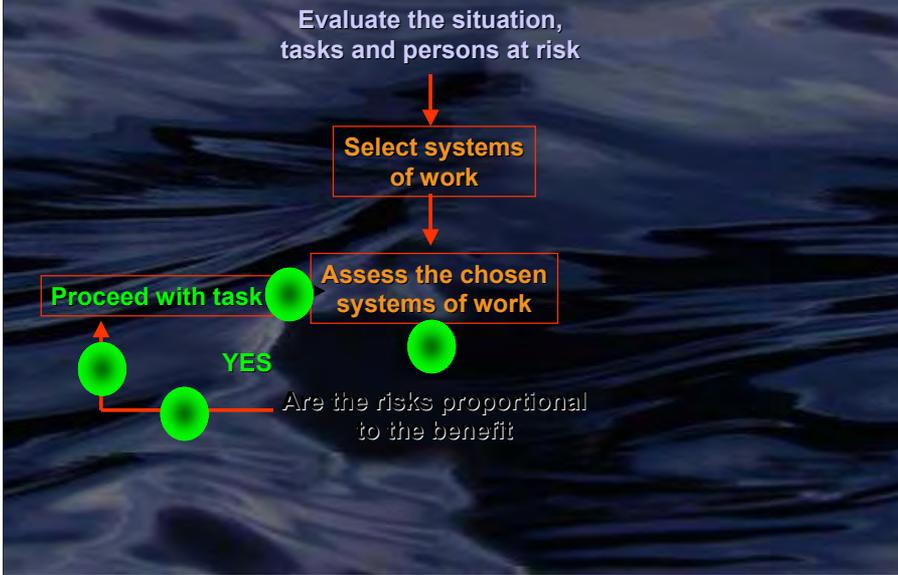
Select systems  
of work

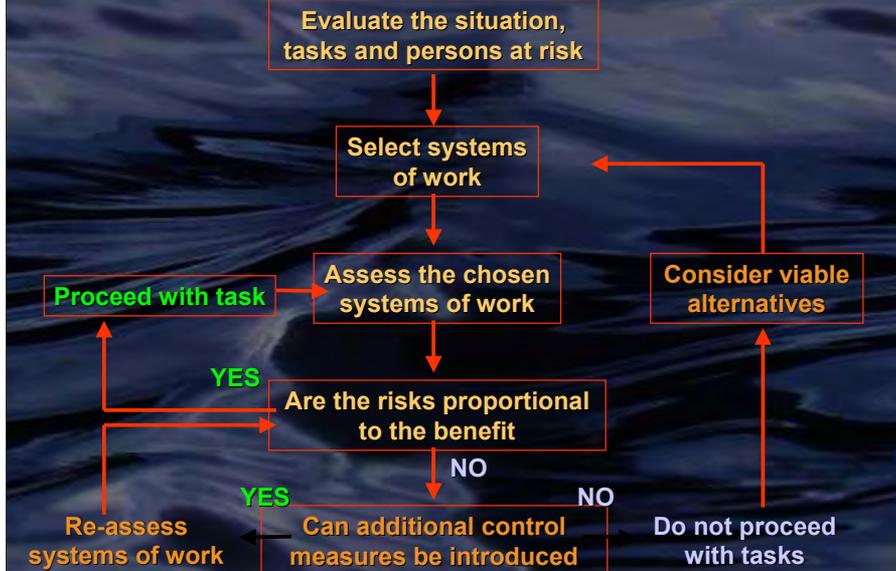
Proceed with task

Assess the chosen  
systems of work

YES

Are the risks proportional  
to the benefit





### Review

What may at first seem a complicated process is only a formalised, structured approach to the process that a competent Incident Commander has always undertaken. This process **MUST** be employed at **EVERY** incident the Service attends.

## Permissible Risk...

- We **may** risk our lives a lot, in a highly calculated manner, to protect **saveable** life...
- We **may** risk our lives a little, in a highly calculated manner, to protect **saveable** property...
- We **will not** risk our lives at all for life or property that is already lost.

Marine Operations - One

Safe Working On, In Or Near Water

The Fire Service approach to risk assessment can be summed up by these three phrases

We may risk our lives a lot, in a highly calculated manner, to protect saveable life

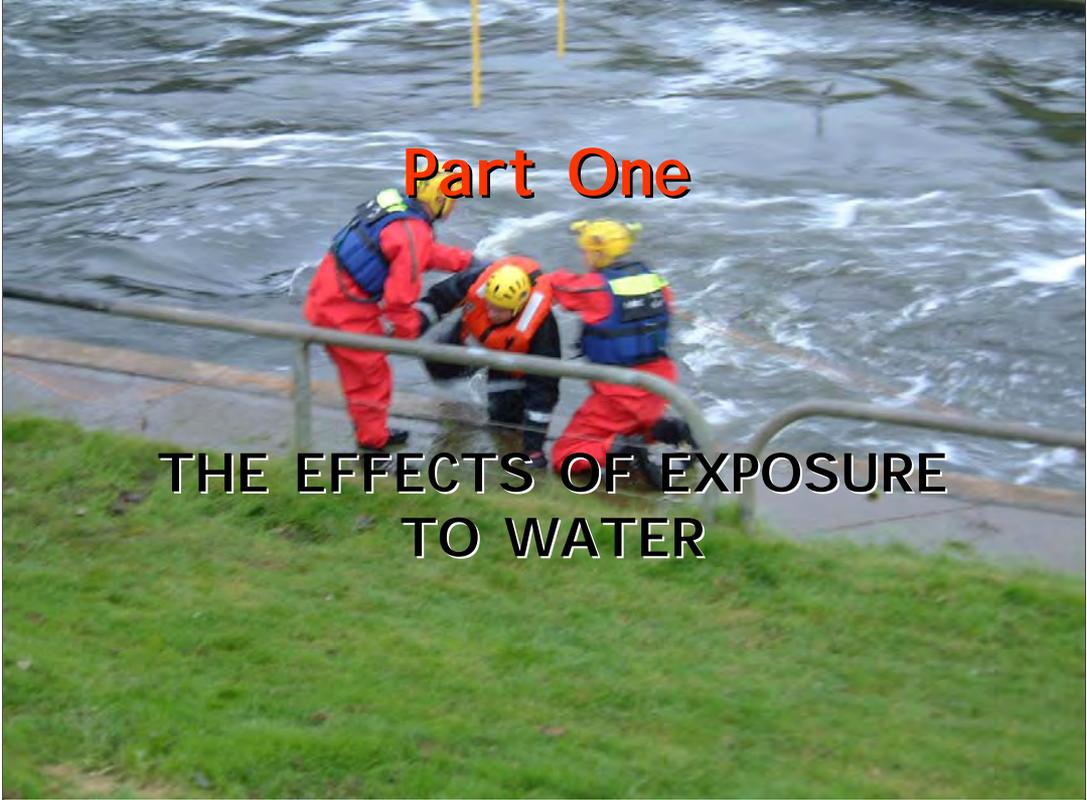
We may risk our lives a little, in a highly calculated manner, to protect saveable property

We will not risk our lives at all for life or property that is already lost

Regulation 3 of the Management of Health and Safety at Work Regs 1992 requires the Service to carry out suitable and sufficient assessment of the risks to which operational personnel are exposed

# Part One

## THE EFFECTS OF EXPOSURE TO WATER



## '10 minute rule'..

- The majority of incidents involving 'submerged casualties' can almost be classified as 'body recovery' after 10 to 15 minutes...
- However we need to be aware of the 'Mammalian Dive Reflex' syndrome...

The majority of incidents involving 'submerged casualties' can almost be classified as 'body recovery' after 10 to 15 minutes...

However we need to be aware of the 'Mammalian Dive Reflex' syndrome...

# 'Mammalian Dive Reflex'

Prolonged exposure to sub surface survival depends on:

- Water temperature...
- Age of the casualty...
- Alcohol content.

'Mammalian Dive Reflex' is a reaction by the body to shut down key 'activities'. The initial gasp on being exposed to cold water induces this effect in some people and potentially can prolong life expectancy after exposure.

However survival depends on:

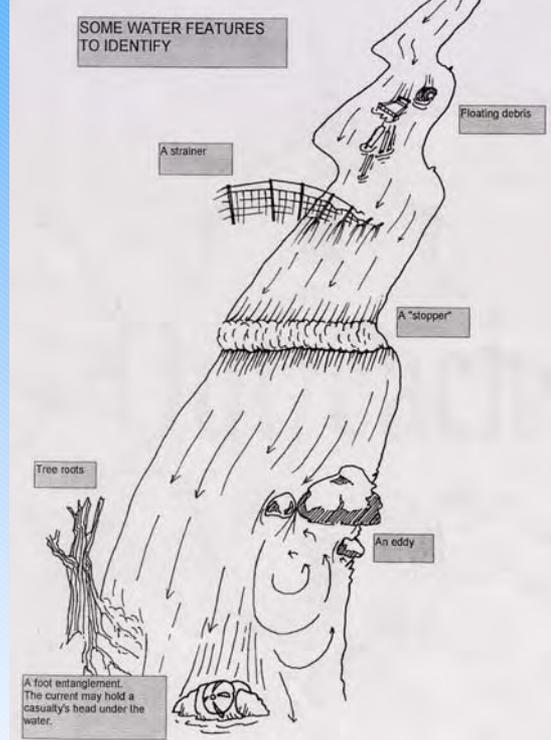
...age..young children are more liable to be effected

Water temperature... less than 70F..but temps again vary by depth!!

Alcohol content...high content will reduce the effect.

Ultimately this puts the IC in a position where risk assessment, including advice and available information will dramatically effect his/her decision making process

# Hazards & Features of Moving Water.



Marine Operations - One

Safe Working On, In Or Near Water

**Eddies** These are places where the water recirculates downstream from an object, sometimes holding floating objects. It is also a place to head for if you want to escape from the main flow.

**Stoppers** These are places where the water drops and then recirculates, like weirs and rock steps. Floating objects and people are held in the recirculating water. They are killers and can be difficult to spot.

**Strainers** Objects that let water through, but catch and pin down people and debris, e.g. gates, fences

**Rocks** It is not always possible to see rocks under the surface. There is a danger of impact, pinning upstream, and holding downstream.

**Underwater** The main danger from other underwater objects is foot entanglement.

**Objects** In strong current you may be held down. There may be a chance of saving someone in this situation if you simply lift their head above water.

**Floating** Large, floating objects have a good chance of tangling in any throw line.

**Debris** They may become stuck near casualties making it harder to rescue them.

**Lines** When misused they can cause entanglement and possible strangling of

**Throw lines** casualties.

# Hazards & Features of Water Related Incidents

- Mud and Ice...
- Contamination...
- Casualties...
- River Banks.



Marine Operations - One

Safe Working On, In Or Near Water

**Mud & Ice** \_\_\_\_\_ Most movement on mud or ice is ineffective and dangerous. To effect rescues involving mud and ice you will need training in the use of inflatable rafts or other recognised equipment.

**Contamination** There may be dangerous substances in the water, both chemical and biological, particularly in run off during floods. It is important to wash all personnel and equipment after an incident. Cover in greater depth later on.

**Casualties** They may attempt to pull you in !!!! Beware in a reach rescue.

**River Banks** Be aware of slippery rock and mud surfaces and trees interrupting your path along the bank.

# River Characteristics...

Moving water has three main characteristics. It is: ~

**Powerful**

**Relentless**

**Unpredictable**

Marine Operations - One

Safe Working On, In Or Near Water

**Powerful** As the speed of a river current increases, so does the power. As the speed is double the force of the water against an object is quadrupled - greatly increasing the difficulty of a rescue or a river crossing.

Even fast moving water below knee level may take you off your feet.

In deeper water, the force will pin you down against any objects.

**Relentless** The current on a river will push an object continuously, unlike an ocean wave which breaks then ebbs. The current is relentless and unforgiving.

But also ...

**Unpredictable** A river may look very random, but to the trained eye it is orderly and unpredictable.

The nature of the river is variable, and is determined by three things; the volume of water, the speed of the water, and what is on the riverbed and banks. All three can vary from day to day, even hour to hour.

Only by understanding how moving water behaves can we use it and by doing so avoid unnecessary or unacceptable levels of danger.

**We need... knowledge & respect**

# DROWNING...

- near drowning...
- dry drowning...
- fresh water drowning...
- salt water drowning...
- secondary drowning...
- flush drowning.

**Near Drowning** ~ If a casualty is rescued before the point of death or there is at least temporary survival, this is known as near survival.

**Dry Drowning** ~ As a drowning person sinks and unconsciousness deepens, they continue to try and breath. The impact of this is that water flows through the pharynx and stimulates the reflex, which triggers the larynx and epiglottis to close. With the trachea protected, water is diverted to the stomach. In most cases it is found that less than one litre of fluid has entered the lungs of a drowning casualty, compared with several litres of water swallowed. Dry drowning, where water has not entered the lungs accounts for approximately 10% of incidents.

**Fresh Water Drowning** ~ A sufficient volume of water entering the lungs will cause interference with the process of external respiration by preventing the passage of gases between the alveoli and pulmonary capillaries. Hemodilution is then created by rapid absorption of the water into the blood. This in turn distorts the pH level of the blood. In these circumstances a cardiac arrest may occur within some two to four minutes after rescue.

**Salt Water Drowning** ~ Salt water has the opposite effect to fresh water but the same result often occurs. Salt water entering the lungs is more soluble than blood; therefore water is drawn into the alveoli from the bloodstream increasing the volume of fluid in the lungs. This in turn increases the viscosity of the blood causing sluggish circulation, which eventually slows the heart up to a point of a cardiac arrest. Cardiac arrest may occur up to twelve minutes after rescue.

**Secondary Drowning** ~ Where a drowning casualty is successfully rescued and resuscitated, they may appear to have fully recovered. However, if water has entered the body, rapid absorption will take place from the stomach into the bloodstream causing a distortion of the pH balance. Death could occur up to 72 hours later.

**Flush Drowning** ~ An untrained person either entering or falling into cold water experiences an automatic inhalation reflex as the body tries to increase its metabolic rate, as well as hyperventilation this can cause the swimmer to inhale water into the lungs.

## **COLD WATER SHOCK...**

involuntary inhalation...  
hyperventilation...

## **SWIMMING FAILURE...**

heat loss...  
muscle failure...

## **HYPOTHERMIA...**

mild...  
moderate...  
major.

Marine Operations - One

Safe Working On, In Or Near Water

You may be familiar with the reaction experienced with sudden cold water contact .....gasp!!....the sudden gasp is involuntary and is due to the body's demand for oxygen.

If this occurs with the face in or near the water, water will be inhaled triggering the drowning sequence.

Holding your breath is impossible...the body's demand for oxygen causes hyperventilation short gasps in and out (panting) again at this stage water can be inhaled triggering drowning.

The body loses heat 25 to 30 times faster in water than in air of the same temperature...flowing water can multiply this by ten fold.

Rapid cooling causes the muscles to stiffen, the blood thickens thus causing brain function to be slower.

Blood is diverted from the extremities to the core, starving the limbs of oxygen and heat

Swimming co-ordination becomes impaired eventually the victim is unable to keep themselves on the surface... drowning can occur within 2 to 15 mins.

A strong swimmer can be reduced to that of a non swimmer within seconds... and panic and over exertion can cause cardiac arrest in unfit people.

Reduction of body temperature

Mild:- shivering, slurred speech, lack of co-ordination, cold to touch.

Moderate:- shivering stops, pulse and respiration slow, semi-conscious state occurs.

Major:- unconsciousness, looks dead, heart failure...death can occur within 15 to 30 mins.

# SURVIVAL TIMES

EFFECT	SURVIVAL TIME	OUTCOME

Marine Operations - One

Safe Working On, In Or Near Water

Next Slide ~ Survival times

# SURVIVAL TIMES

EFFECT	SURVIVAL TIME	OUTCOME
COLD SHOCK	2-3 MINS	DROWNING

Marine Operations - One

Safe Working On, In Or Near Water

Next Slide ~ Survival times

## ...SURVIVAL TIMES...

EFFECT	SURVIVAL TIME	OUTCOME
COLD SHOCK	2-3 MINS	DROWNING
SWIMMING FAILURE	3-15 MINS	DROWNING

Marine Operations - One

Safe Working On, In Or Near Water

Next Slide ~ Survival times

## ...SURVIVAL TIMES...

EFFECT	SURVIVAL TIME	OUTCOME
COLD SHOCK	2-3 MINS	DROWNING
SWIMMING FAILURE	3-15 MINS	DROWNING
HYPOTHERMIA	15-30 MINS	DEATH

Marine Operations - One

Safe Working On, In Or Near Water

Next Slide ~ Waterborne Contaminants

# WATERBORNE CONTAMINANTS...

- Leptospirosis & Weil's Disease...
- Hepatitis A...
- Gastrointestinal...
- Blue green algae...

Marine Operations - One

Safe Working On, In Or Near Water

Leptospirosis & Weil's Disease ~ Bacterial Infection caused by organisms which is excreted in animals/rodents urine, which contaminates any water including streams, rivers, canals, ponds, and wet riverbanks. The leptospires enter the body through the lining of the nose, mouth or eyes. They enter the blood stream more readily through minor skin cuts and abrasions. Will give a flu like illness after 3 - 4 days, a few cases develop kidney failure and jaundice.

Hepatitis A ~ A virus present in faeces, therefore present in water where there is sewage. Onset is usually abrupt producing fever, abdominal discomfort followed by jaundice.

Gastrointestinal ~ Another significant risk is the ingestion of bacteria that causes gastrointestinal infection. Sewage contains large numbers of organisms, Salmonella infection is probably the principle bacteria risk.

Blue Green Algae~ Cyanobacteria is a blue green algae frequently found in fresh water. During extended periods of warm settled weather they multiply and form a bloom on the surface of the water. The blooms may be flocculent or look like jelly or paint and are normally blue green in colour, though other colourants can occur. The majority of the blooms produce allergens and or toxins. The types and potency of toxins produced varies considerably, although ingestion of small quantities of concentrated bloom could be fatal, human deaths are extremely rare, however there have been numerous cases of animal deaths.



## Part Two

# COMMAND AND CONTROL



## TACTICAL OPTIONS...

Working near water...

Risk Zone...

Rescue...

Recovery...

Upstream, downstream safety...

Low to high risk options.

Marine Operations - One

Safe Working On, In Or Near Water

Working near water the '*risk zone*' must be established i.e 3m from waters edge. If in '*risk zone*' firefighters must wear full firefighting kit plus life jacket or restricting line. Fire helmets should be removed, or if chance of contact with debris, chin strap should be undone.

Rescue:- casualty in difficulty on surface of water or stranded or trapped in or near water

Recovery:- victim floating face down / no information on time of entry / victim subsurface for more than 10 mins

Upstream spotter:- must have good communications with personnel working on water as to debris heading towards them.

Downstream safety:- must have similar number to those working on water must have the appropriate PPE. and throw line.

## Risk Assessment...



Marine Operations - One

Safe Working On, In Or Near Water

Balance the risk against the possible benefit to the community we serve.

On scale of one to ten - the rescue of persons trapped in a water related incident may be considered as a ten. Whilst the rescue of a cat from a tree, may be considered as a one.

This is not to say that a crew will never attempt to rescue a cat from a tree, but the benefit must be balanced against the risk to any crew member involved in the rescue. Having considered the possible benefit to the community we must now assess the possible risk to personnel.

# Standard Operational Procedure (SOP)

## LEVEL TWO

*"persons reported"*

**Level One attendance, supported by two further pumping appliances, OSV, RT, ambulance, RAF Kinloss advised for SAR support.**

Marine Operations - One

Safe Working On, In Or Near Water

This will come from the new Operational Support Units that will be based at Falmouth & St. Austell. Personnel will have enhanced training To carry out rescues and additional equipment.

Water rescues may require a larger attendance than other Emergency Special Service Calls to provide both resources and to provide a greater degree of safety to personnel.

IC's Should also consider the involvement of other services such as:

The Coastguard

RNLI

Police Underwater Search Unit

Ambulance/Paramedics

RSPCA

Environment Agency

Emergency Planning Dept's

Also consider the attendance of the Rescue Tender for additional equipment ( inflatable rescuer paths, line rescue equipment including paraguard stretcher).

The use of a helicopter will be invaluable in such rescues, for locating, carrying out the rescue and transporting casualties to hospital, as hospital care will be very important for any person being recovered from a water environment.

# Command & Control...

- In all instances, the safety and welfare of Brigade personnel is of paramount importance...
- IC's must ensure that all elements of Command and Control are followed.

The principles of ICS will apply and the terminology and roles will be used the same as any Fire brigade related incident. (for example, sectorisation of the river bank could take place to assist in Command & Control)

Safety Officers **must** be nominated and fully briefed as to the hazards and rescue limitations.

- A dynamic risk assessment is to be undertaken prior to setting priorities and allocating tasks...
- The **risk** must be proportional to benefit at all times.

When detailing tasks, consider the following roles:

Up Stream spotting

Line Throwing

Line Throwing helper

Back Up Line Throwing

Back Up Line Throwing helper

Downstream spotting

Finding an extraction point

Casualty Care

Remember: risk proportional to benefit

## RISK VERSUS BENEFIT...

- High Risk      ⇒      High Benefit...
- High Risk      ⇒      Low Benefit...
- Tolerable Risk      ⇒      Low Benefit...
- Tolerable Risk      ⇒      High Benefit.

Marine Operations - One

Safe Working On, In Or Near Water

1. Example - Family trapped on car roof in river, in rising water.- **high risk to FF's due to conditions - *high benefit in the saving of lives.***

Risk reduced by carrying out correct procedures.

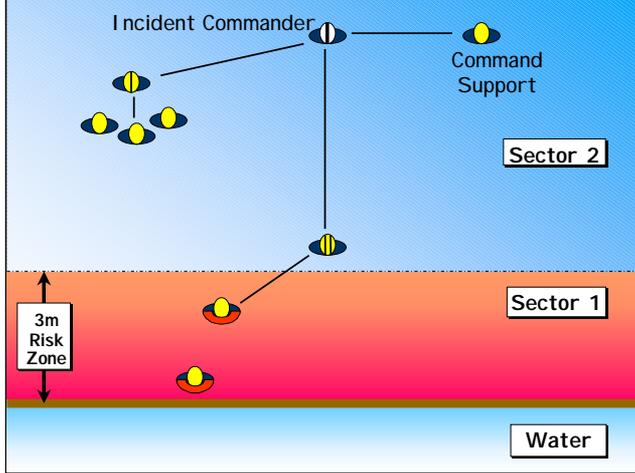
2. Example - Asked to recover a dead person entangled in wire in a fast flowing river due to flooding **Danger of injury to FF's - *Recovery of a dead animal for owners - Loss or damage to equipment.***

(Halt crews - re-assess - consider alternative).

3. Example - Retrieval of dead person from a clay pit using specialist equipment. **No real danger to FF's if procedures followed**

(Get to work - constantly re-assess).

4. Example - person trapped in house due to floodwater with medical complaint. **Low risk to FF's - *High benefit in saving life.***



Command Team ~

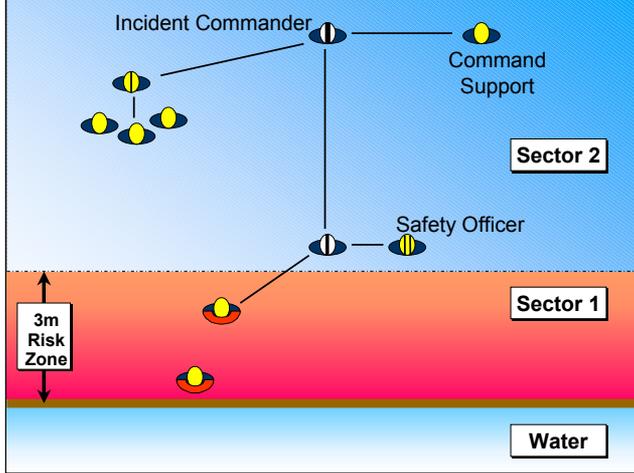
Incident Commander - 3 lines of communication

Sector Commanders

Command Support

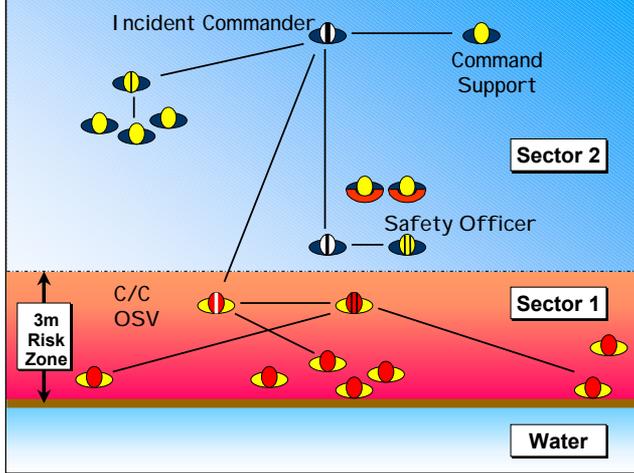
as before with Safety Officer

Any fire-fighter with the risk area (normally 3m), working will be secured to a safe anchor point using a line.



As previous, but with arrival of OSV for Level Two response.  
Incident Commander 4 lines of communication.

Not all crew members of OSV attached by safety line, due to dynamic situation and the need to reposition themselves for rescue.



As previous, but with arrival of OSV for Level Two response.  
 Incident Commander 4 lines of communication.

Not all crew members of OSV attached by safety line, due to dynamic situation and the need to reposition themselves for rescue.

# LOW TO HIGH RISK OPTIONS

LOW



HIGH

- TALK
- REACH
- THROW  
(STABILISE)



- ROW
- GO & TOW

Marine Operations - One

Safe Working On, In Or Near Water

**Talk** Firstly try to establish contact with the casualty in any way possible. Try to assess their condition. They may be able to swim out of trouble with direction from you. Give encouragement and positive attitude.

Consider **HELO** early on.

If the casualty is in a relatively stable situation. E.g., on a car roof, then talk and request a rescue helicopter, to effect rescue, as opposed to putting someone in a relative safe area to a danger area.

**Reach** You may be able to physically reach them (this is potentially dangerous, as they may pull you in). You may be able to reach them with poles, ladder, or inflated fire hose.

**Throw** You may have to throw a throw line to them. **The Incident must be stabilised by the initial crews if the above fails. Entering the water is the last resort.**

## Level 2 Attendance

**Row** Use a boat to get to the casualty. Either paddle, controlled by lines or powered.

**Go & Tow** This involves swimming to the casualty. You will need different PPE and greater training. Choose rescue team carefully.

# Helicopter response

- Risk Assess..consider travel time/distances...
- Early notification to ARCC...
- Search plan for SAR...
- Consider FLIR in Police Air support as first resort...
- Be aware of local overhead hazards...
- Communicate with aircrew.



Marine Operations - One

Safe Working On, In Or Near Water

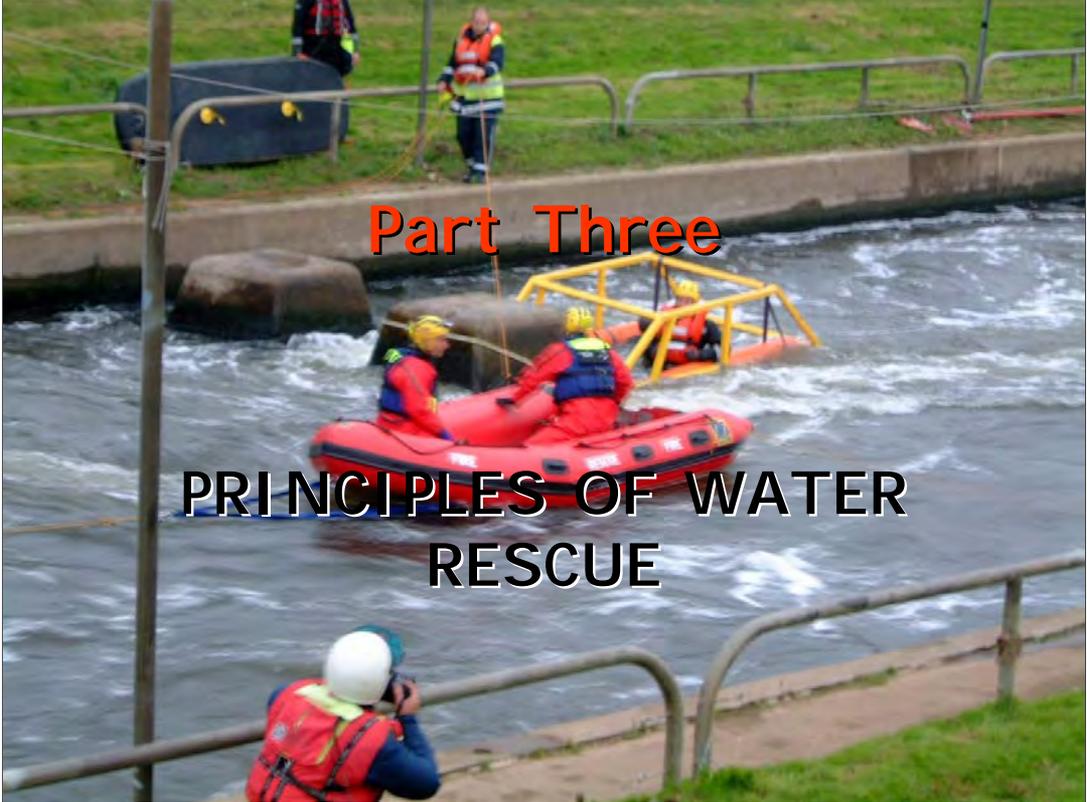
Risk Assess..consider travel time/distances... both Fire Control must carry out a risk assessment prior to the request for air support. There is NO CHARGE to the Brigade for SAR operations. However full risk assessment must be carried out.

Early notification to ARCC... taking into consideration the above, early notification is important. Travel times and istancees do vary. Availability of resources etc etc.

Search plan for SAR..The IC must have a search plan for the aircraft, probably produced in conjunction with the police. Consider what you want the aircraft to do. Be aware RAF SAR do not always carry a diver. If you are mobilising an aircraft you need to indicate in initial messages if a diver is an important aspect of the request.

Consider FLIR in Police Air support as first resort... local Police helicopters, although not having winching/divers do carry FLIR (thermal imaging..consider their response)

Be aware of local overhead hazards...In your search plan identify any hazards I.e overhead cables etc and communicate with the aircrew if possible. The OSV's carry Marine Band radio's, Channel 16 could be used..depending on how near the coast you are located. Consider mobilising an MCA (Coastguard) mobile to assist.



## Part Three

# PRINCIPLES OF WATER RESCUE



# Principles of water safety/rescue...

- Always wear additional personal protective equipment within 3m of the waters edge ~ **the Risk Area!!**
- Remove helmet chin strap...
- Always deploy upstream spotters of the rescue location ~ ideally both sides.

*Use White Board to expand on this*

~ Lifejackets, dry suits, gloves etc

~ If potential of falling in from height, remove fire helmet chin strap to prevent neck injury from wide brimmed helmet when hitting water

~ spotters to look out for casualties, whether members of public or brigade personnel accidentally fallen in, as well as additional hazards such as floating debris, lines etc.

- Always have multiple downstream backups...
- The priorities at the scene are always self-rescue first, the rescue and security of fellow crew members and the casualty last...
- Always maintain DRA and have a backup plan...
- Provide good communications..and don't work alone in the 'risk area'...
- **Keep It Simple and Safe (KISS).**

multiple downstream backups with appropriate equipment such as throw lines, floating GP lines, inflated hose etc.

like RTA's always have a back up plan, use the formula of talk, reach, throw, row & go & tow, exploring each one thoroughly before going up a level.

Always provide adequate communications i.e radio's. Ensure that pre arranged signals (hand, arm ) are clearly identified with any rescuer who may have to enter the water..and always attempt to obey the standard rule of good BA operations...never work alone in the risk area.

- **Clean line principal should always be followed to avoid entanglements...**
- **Never count on the casualty to help in his/her own rescue...**
- **Once casualty is spotted never lose sight of them.**

Extreme care should always be exercised with lines.

Under no circumstance will a fire-fighter tie a line around him/herself on the riverbank with a casualty attached to the line for the risk of the rescuer being pulled in.

Difficulty in understanding principle, but you must let go, rather than get pulled in yourself.

Use anchor points such as trees etc to take the strain.

Do not put loops in the line to put your hand through

# If you are in the water...

- Adopt safe swimming position...



Marine Operations - One

Safe Working On, In Or Near Water

Video to show position

or

demonstrate

Main points:

- travel feet forward(downstream) on back
- keep feet high to avoid entanglement
- control your position with backstroke
- stay in main flow until you see an eddy or slack

water

- listen for instructions
- if you reach a throw line, hold it with both hands diagonally (same as seatbelt)

# 'Water Emergency'

In the event of Brigade personnel accidentally falling into water and finding themselves in difficulty a standard message must be formulated and transmitted to provide immediate assistance at the incident.

## Water Emergency

-

In the event of Brigade personnel accidentally falling into water and finding themselves in difficulty a standard message must be formulated and transmitted to provide immediate assistance at the incident.

Similar to the BA and incident ground emergencies the message can be sent by anyone from the incident by contacting Brigade Control and stating "Water Emergency". On receipt of the message Brigade Control will mobilise the following:

- I. Level 2 attendance.
- II. Search & Rescue (SAR) Helicopter.
- III. Duty Officer.
- IV. Ambulance.
- V. Accident Investigation Officer.

This new procedure is designed to be in line with existing messages and procedures. It provides a short, simple method of obtaining urgent assistance when firefighters are in difficulty.

# VEHICLES UNDERWATER...

- Persons trapped?
- Type of water hazard?
- Vehicle behaviour...
- Associated hazards...
- Sub surface activity.

BIS Refer to BIS Sections 8

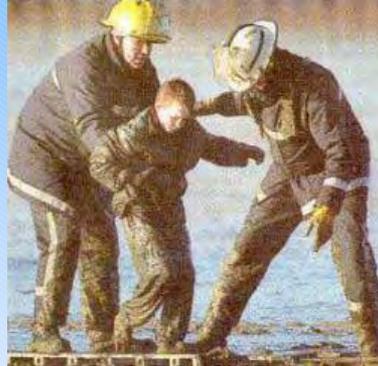
# ICE RESCUE...

- High risk situation...
- Risk assessment...
- Use the formula...
- Usually occur in remote areas...
- Level Two response.

Refer to BIS Sections 5/6

# MUD & SAND RESCUE...

- Surface will be soft and treacherous...
- Risk assessment...
- Minimum crew...
- Crews movements
- Strictly monitored...
- Specialist equipment.



Refer to BIS Sections 5/6

## POST IMMERSION CARE...

- Airway...
- Warming...
- Clothing...
- Welfare...
- Medical advice.

All personnel who have been immersed in cold water should be taken to a warm environment as soon as possible. Fire Brigade personnel should be removed from operational duties, until they are thoroughly warmed, have dry clothing and their welfare has been suitably addressed.

Non Fire Brigade personnel, who are either casualties or rescuers, should be advised to seek medical advice. Any person who has been revived or was near to drowning should be conveyed to hospital. Secondary drowning can take place up to 72 hours later.

## POST INCIDENT...

- Contamination...
- Welfare...
- Documentation...
- Debrief...
- Monitor.

All crews exposed to the incident need to be cleared with regards contamination etc. The new BIS (Sept 2001) will indicate 'Post Incident Welfare' procedures

All incidents of this type must be debriefed and details submitted to BHQ

Personnel must be monitored for at least 24 hours post incident and Occupational health advised.

# Part Four

## EQUIPMENT

Marine Operations - One

Safe Working On, In Or Near Water

## LEVEL ONE APPLIANCE EQUIPMENT PACKS

- PPE ~ dry suits, under suits, gloves & lifejackets, cylume light sticks...
- Two throw lines...
- Inflatable hose kit...
- Loud hailer...
- Knife...
- Walking poles.



Marine Operations - One

Safe Working On, In Or Near Water

All WRI 's that require an initial attendance of either a Supervisory Officer and/or crew with knowledge, basic training, limited PPE, safe working practices and procedures covered in this document.

## OFFICERS CARS..

- Normal firefighting PPE...
- Lifejacket...
- 'Snaplights'...

self explanatory

## OPERATIONAL SUPPORT VEHICLE (OSV)

The OSV is specially equipped to deal with water related incidents. Operational equipment includes:-

- PPE (dry suits, under suits, gloves, personal floatation devices, helmet)...
- BOAT...
- Mud/Sand Lance...
- Loud hailer...
- Lighting.



Marine Operations - One

Safe Working On, In Or Near Water

The OSV will include the safety boat plus a minimum of nine trained personnel . Personnel all trained to a minimum of Swiftwater' first responder'.

The boat is a 3.6m rigid inflatable with a 25hp mariner outboard engine. the boats top speed is approximately 20-25mph. With the boat will be :-  
*throw lines, echo sounder, portable floodlight come torch, 'Jasons Cradle'*

Other equipment on the OSV includes:-

PPE for each member of unit i.e dry suit , thermal under suit, canoe style helmet, buoyancy aid, gloves and safety knife.

Inflatable path's (2) ~ 10m X 1m (can be linked together) and used on ice, mud and unstable surfaces ~ water possible but not recommended

Inflated fire hose:- will be inflated by air bag inflation unit to a pressure of between 2 to 3 bars.

Uses:- e.g stabilisation and rescue from water or ice lowered from a bridge; pushed out into a weir diagonally; woven through short ladder for ice and mud ;surface pollutants.

## And...

- HOSE INFLATION KIT...
- THROW LINES...
- RESCUE LINES...
- RESCUE BOARD...
- WELFARE PACKS.



Marine Operations - One

Safe Working On, In Or Near Water

BIS Document Issued with Equipment and personnel fully trained in use of equipment prior to being on the run.

- rescue boards to be developed and available later on

# INFLATABLE RESCUE PATH (IRP)

AVAILABLE FROM BODMIN & CAMBORNE



Marine Operations - One

Safe Working On, In Or Near Water

Inflatable path's (2) ~ 10m X 1m (can be linked together) and used on ice, mud and unstable surfaces ~ water possible but not recommended

## OSV ~ SAFETY BOAT



Marine Operations - One

Safe Working On, In Or Near Water

The boat is a 3.6m semi rigid inflatable with a 15hp outboard engine. With the boat will be :- *throw lines, portable floodlight come torch, etc etc'*

# Part Five

# TRAINING

Marine Operations - One

Safe Working On, In Or Near Water

# INSTRUCTOR TRAINING

Currently (October 2001) four  
Instructors have carried  
out two specific  
Swiftwater Rescue Training  
courses at  
'Outreach', North Wales.

Marine Operations - One

Safe Working On, In Or Near Water

October 2001 qualified instructors are:

SubO Wilkinson ~ Newquay

(T)SubO Hewitt ~ Falmouth

(T)SubO Herrington ~ Training

(T)LFF Tremellon ~ St Austell

# **Level One Training**

## **All Operational Personnel**

- One day Officers courses...
- Training Packs issued...
- Cascaded to Wholetime Watches and Retained Stations by 1/01/02...
- Performance Review early January 2002.

## Level Two Training OSV Personnel

- Four Coxswains per watch at St Austell and Falmouth to RYA Level II...
- Water Rescue Responders...
- Water Rescue Instructors...

Marine Operations - One

Safe Working On, In Or Near Water

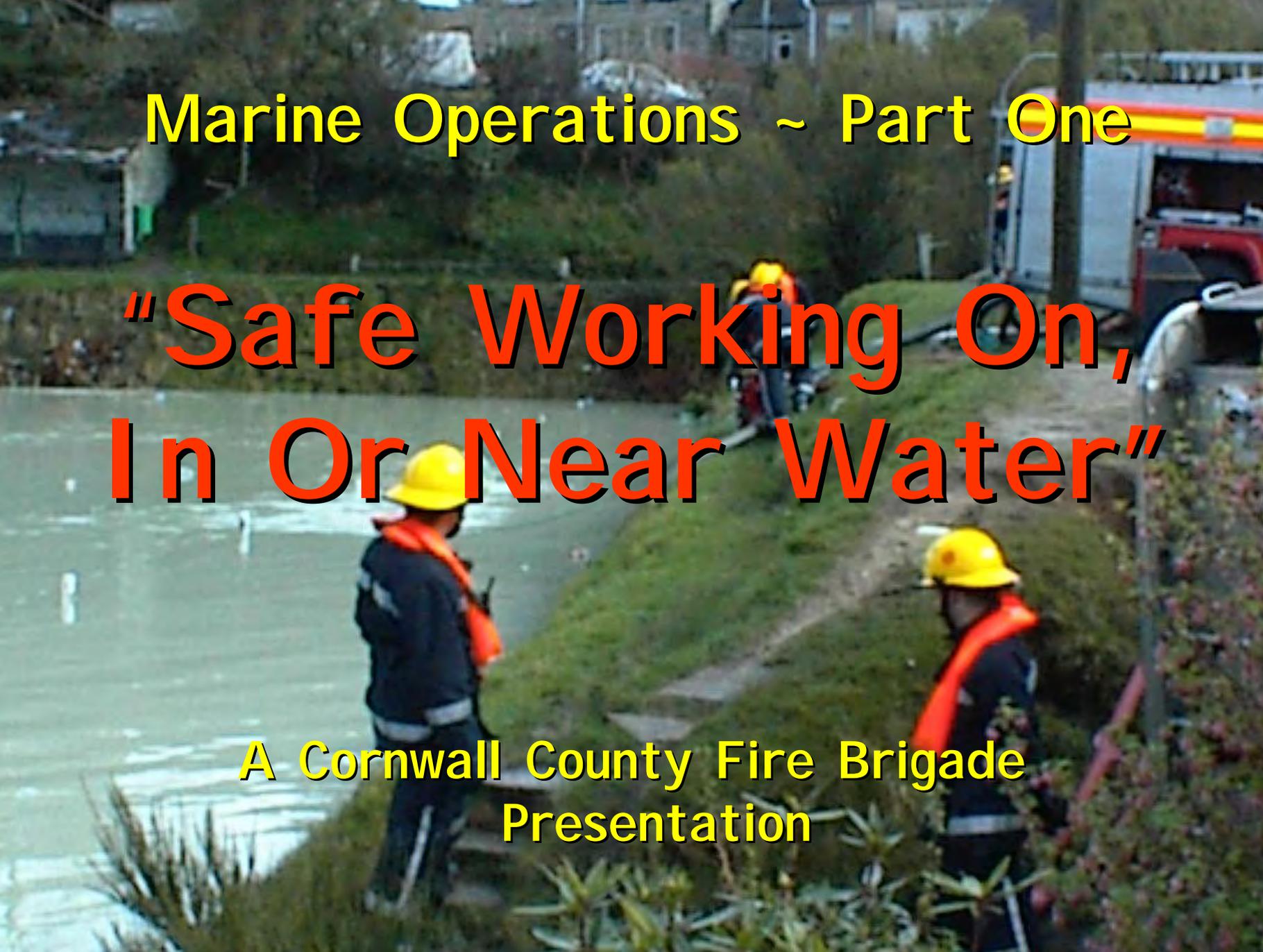
It is also hoped that we will start to train 7 per watch at each station to Water Rescue One this coming year.

# SUMMARY...

- Policy and Procedures...
- Associated hazards & features of WRI 's...
- Rescue options (low to high risk)...
- Correct use of safety & rescue equipment...
- Training.

## Further references...

- BIS OPS1/046 ~ "Safe working on or Near Water"...
- A Guide to Operational Risk Assessment ~ Rescues from ice/unstable ground & incidents involving flooding...
- Greater Manchester County Fire Brigade's report...
- NEW... FSM 'Safe Working On, In Or Near\Water' (Issued Sept.2001)
- Brigade's Sea Survival presentations.



# Marine Operations ~ Part One

## "Safe Working On, In Or Near Water"

A Cornwall County Fire Brigade  
Presentation

# INTRODUCTION...

- Promote Personal Safety
- Climatic change...
- Loss of firefighters lives...
- No statutory duty...
- Brigade will respond...
- Policy ~  
(BIS OPS1/046 & CACFOA Doc).

# Standard Operational Procedures (SOP)

## LEVEL ONE

*"no known immediate threat to life"*

All WRI's that require an initial attendance of either a Supervisory Officer and/or nearest pumping appliance and trained crew.

Requires limited PPE.

Safe working practices and procedures.

**AIM...**

**To enable personnel to  
work safely at  
Water Related Incidents  
(WRI's).**



# OBJECTIVES...

At the end of the session you will be able to:

- Undertake a generic risk assessment and apply basic dynamic risk assessment to water related incidents (WRI's)...
- Identify the primary features and characteristics of water flow and its associated hazards...

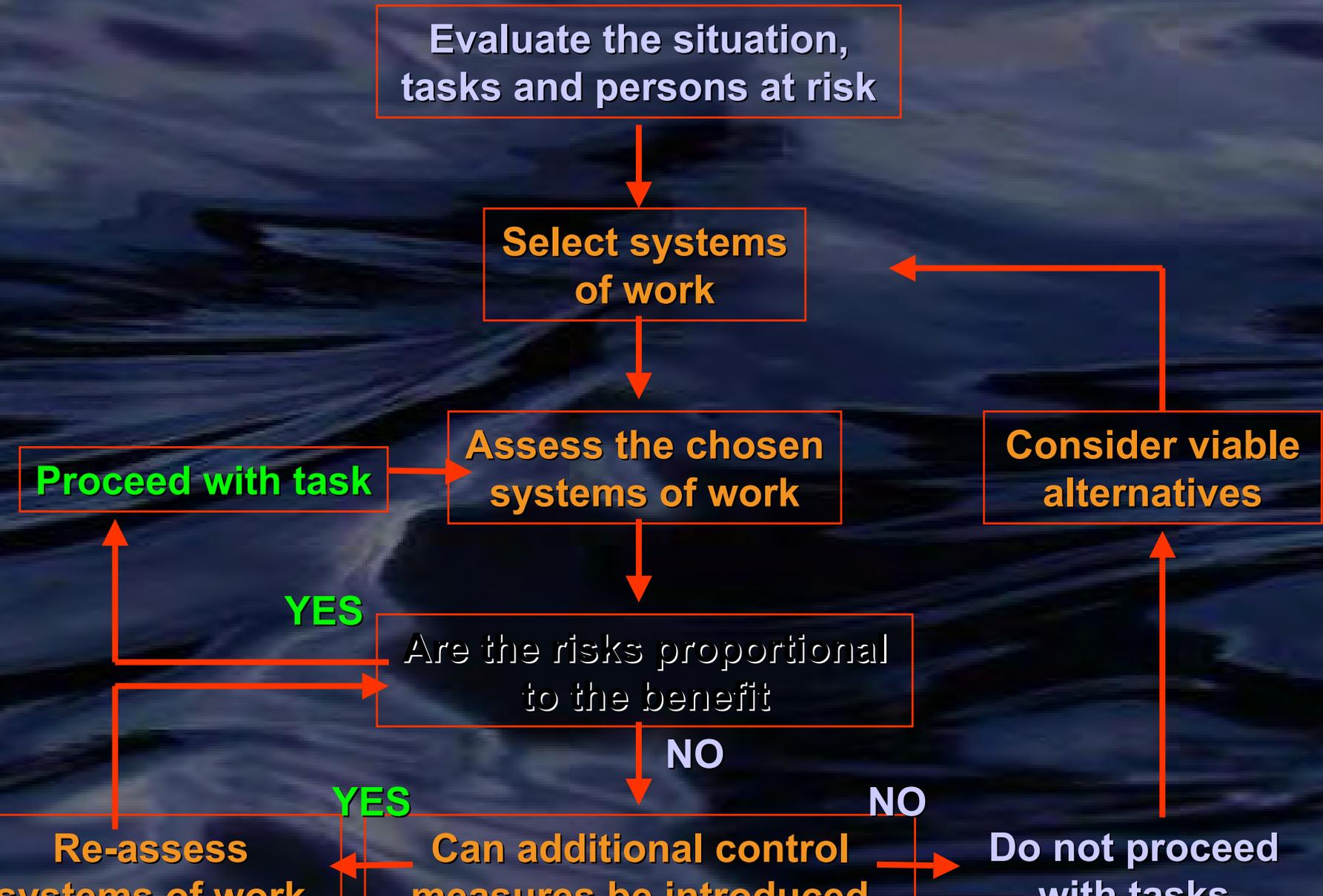
- List and explain rescue options low to high risk...
- State the principles of water rescue...
- Demonstrate the correct use of safety & rescue equipment...
- Demonstrate basic reach techniques...
- Define Level 1 and 2 Attendance.

# Who is at risk ?...



- Anyone working near water where accidental immersion could occur...
- Anyone who may become involved in a rescue.

# Dynamic Risk Assessment



Evaluate the situation,  
tasks and persons at risk

Select systems  
of work

Assess the chosen  
systems of work

Are the risks proportional  
to the benefit

NO

Can additional control  
measures be introduced

NO

Do not proceed  
with tasks

Consider viable  
alternatives

Evaluate the situation,  
tasks and persons at risk

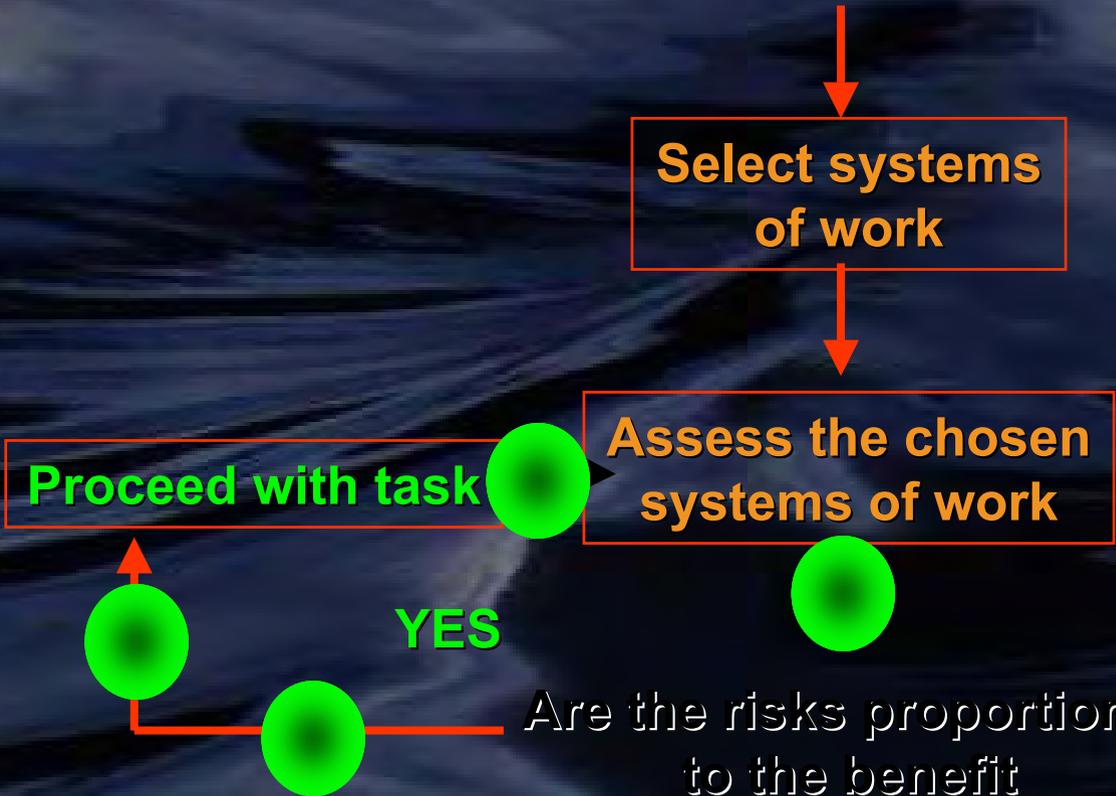
Select systems  
of work

Assess the chosen  
systems of work

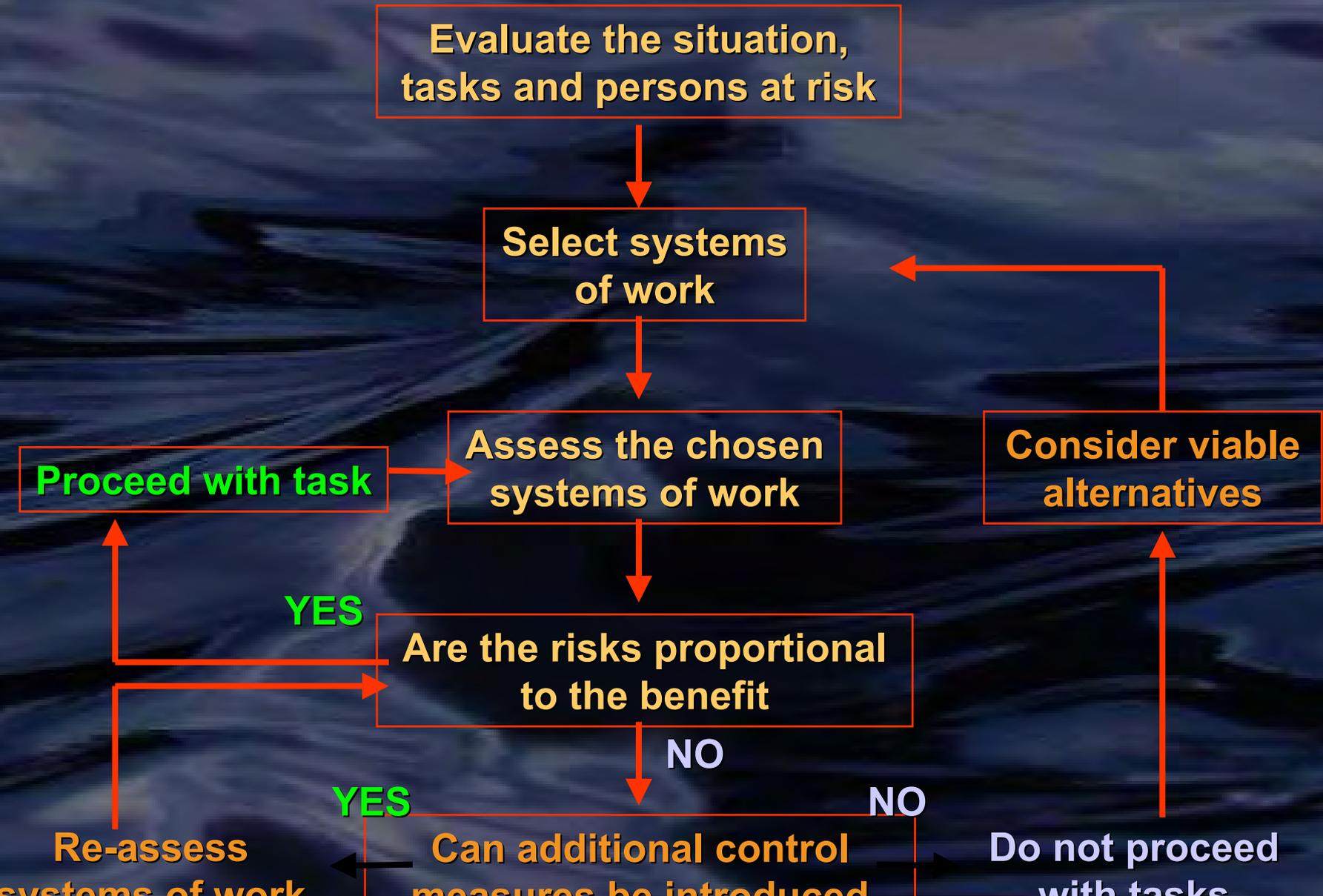
Proceed with task

YES

Are the risks proportional  
to the benefit

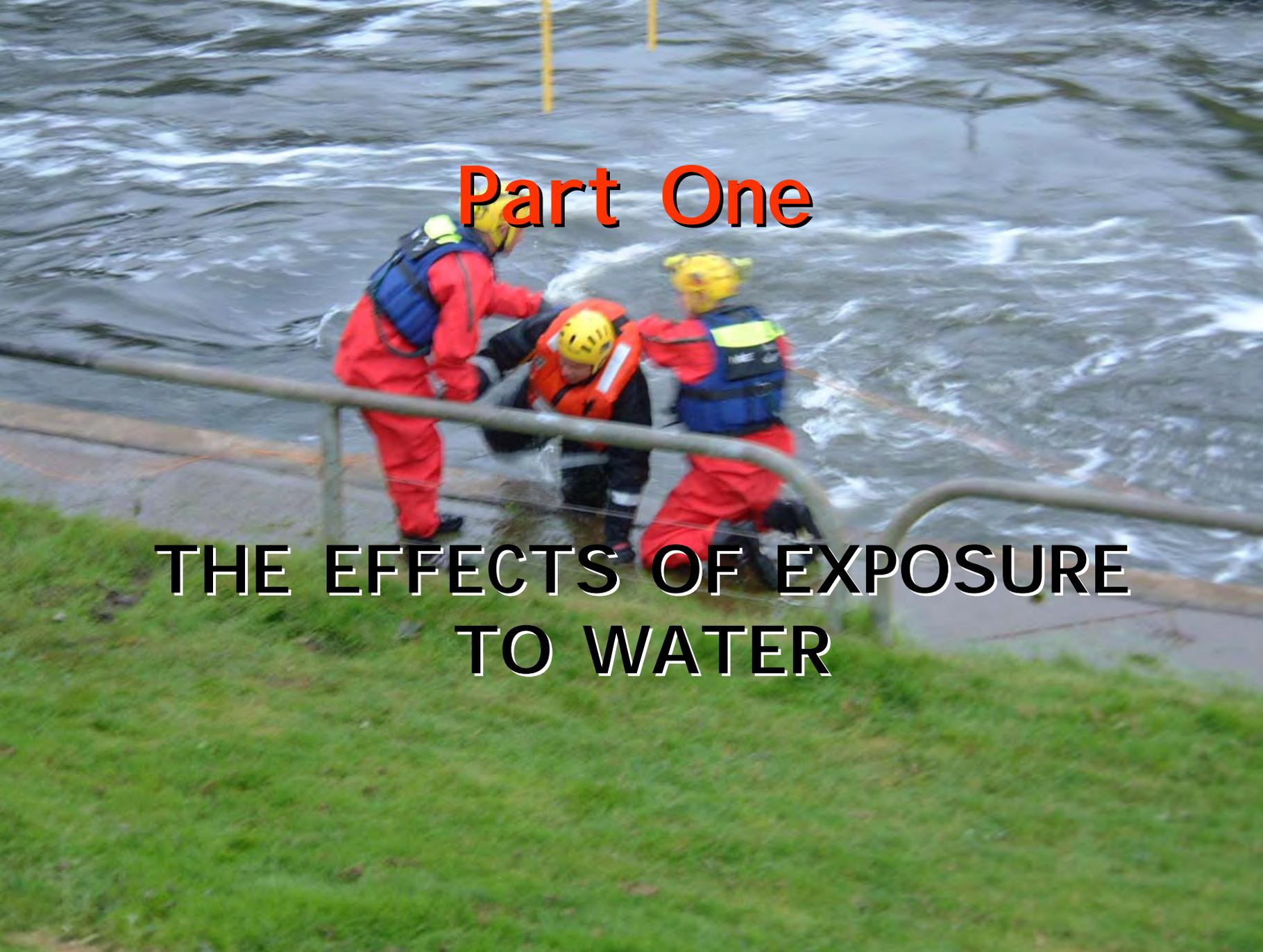


# Dynamic Risk Assessment



# Permissible Risk...

- We **may** risk our lives a lot, in a highly calculated manner, to protect **saveable** life...
- We **may** risk our lives a little, in a highly calculated manner, to protect **saveable** property...
- We **will not** risk our lives at all for life or property that is already lost.

The image shows three rescue workers in red wetsuits and yellow helmets assisting a person in the water. They are positioned near a metal railing on a grassy bank. The water is dark and turbulent. The text 'Part One' is overlaid in red, and 'THE EFFECTS OF EXPOSURE TO WATER' is overlaid in white with a black outline.

# Part One

## THE EFFECTS OF EXPOSURE TO WATER

# '10 minute rule'..

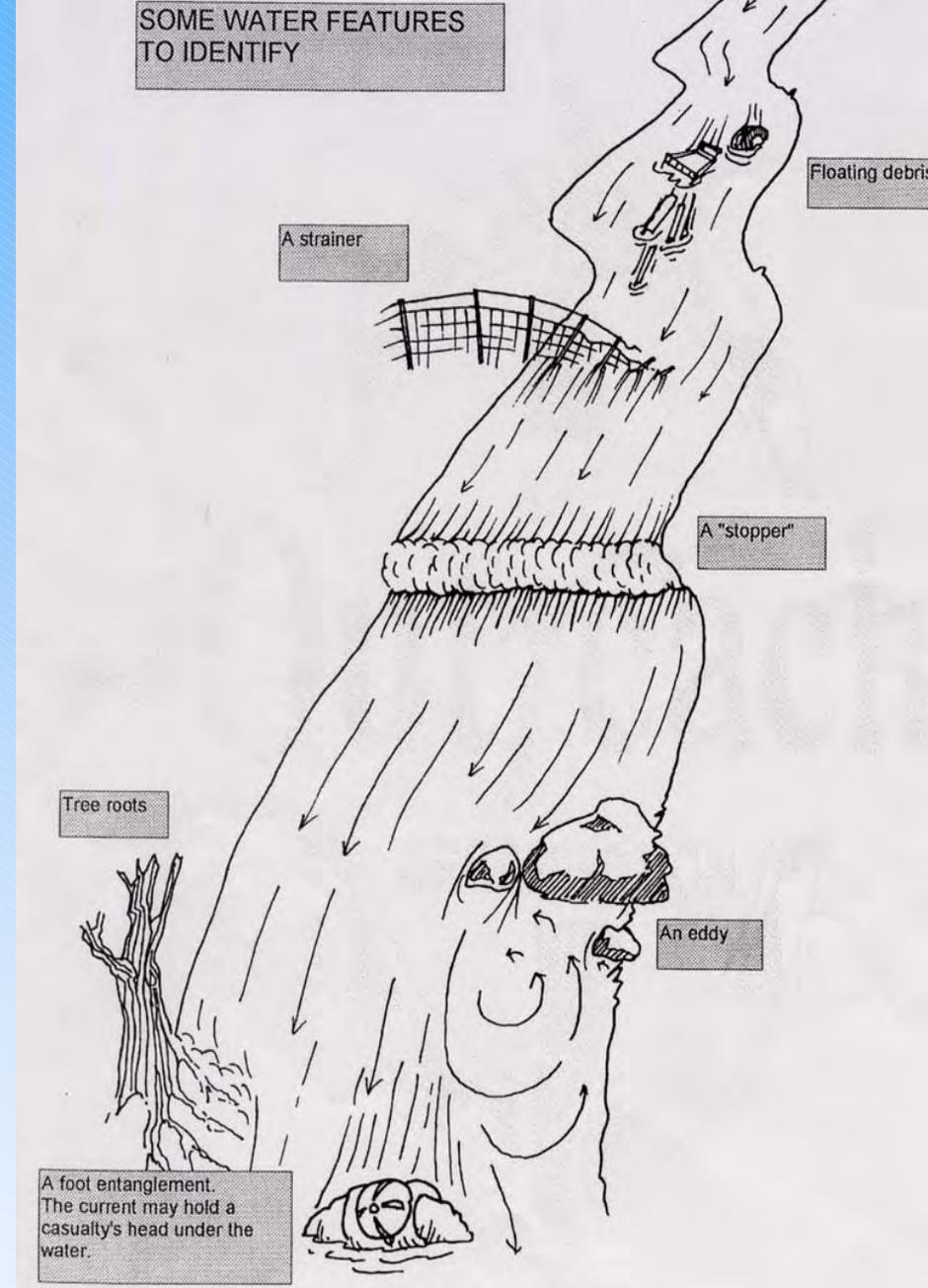
- The majority of incidents involving 'submerged casualties' can almost be classified as 'body recovery' after 10 to 15 minutes...
- However we need to be aware of the 'Mammalian Dive Reflex' syndrome...

# 'Mammalian Dive Reflex'

Prolonged exposure to sub surface survival depends on:

- Water temperature...
- Age of the casualty...
- Alcohol content.

# Hazards & Features of Moving Water.



# Hazards & Features of Water Related Incidents

- Mud and Ice...
- Contamination...
- Casualties...
- River Banks.



# River Characteristics...

Moving water has three main characteristics. It is: ~

**Powerful**

**Relentless**

**Unpredictable**

# **DROWNING...**

- near drowning...
- dry drowning...
- fresh water drowning...
- salt water drowning...
- secondary drowning...
- flush drowning.

## **COLD WATER SHOCK...**

involuntary inhalation...

hyperventilation...

## **SWIMMING FAILURE...**

heat loss...

muscle failure...

## **HYPOTHERMIA...**

mild...

moderate...

major.

# SURVIVAL TIMES

EFFECT	SURVIVAL TIME	OUTCOME

# SURVIVAL TIMES

EFFECT	SURVIVAL TIME	OUTCOME
COLD SHOCK	2-3 MINS	DROWNING

# ...SURVIVAL TIMES...

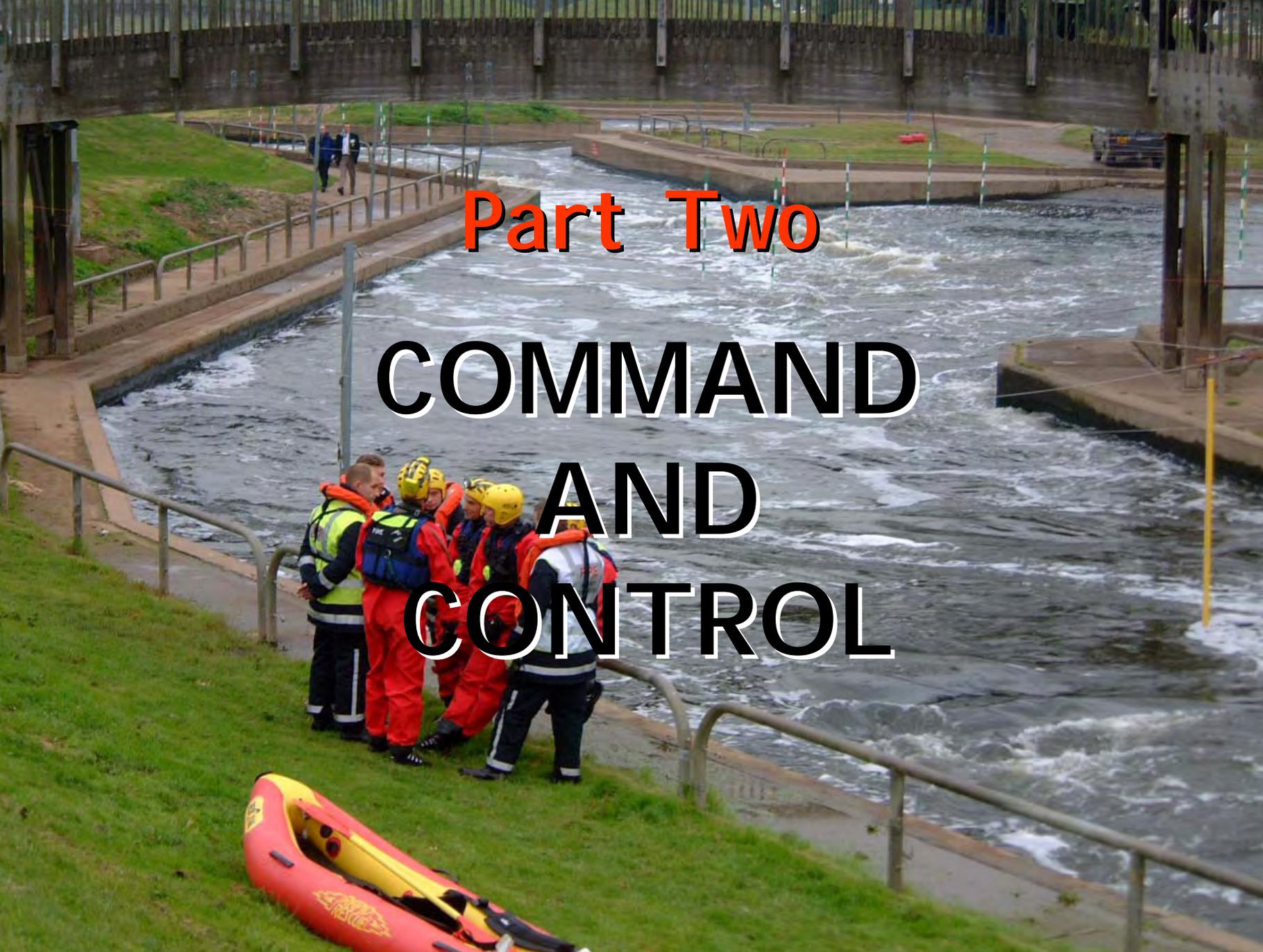
EFFECT	SURVIVAL TIME	OUTCOME
COLD SHOCK	2-3 MINS	DROWNING
SWIMMING FAILURE	3-15 MINS	DROWNING

# ...SURVIVAL TIMES...

EFFECT	SURVIVAL TIME	OUTCOME
COLD SHOCK	2-3 MINS	DROWNING
SWIMMING FAILURE	3-15 MINS	DROWNING
HYPOTHERMIA	15-30 MINS	DEATH

# **WATERBORNE CONTAMINANTS...**

- **Leptospirosis & Weil's Disease...**
- **Hepatitis A...**
- **Gastrointestinal...**
- **Blue green algae...**



**Part Two**

**COMMAND  
AND  
CONTROL**

# TACTICAL OPTIONS...

Working near water...

Risk Zone...

Rescue...

Recovery...

Upstream, downstream safety...

Low to high risk options.

# Risk Assessment...

**RISK**



**BENEFIT**

**BALANCE**

# Standard Operational Procedure (SOP)

## LEVEL TWO

*"persons reported"*

Level One attendance, supported by two further pumping appliances, OSV, RT, ambulance, RAF Kinloss advised for SAR support.

# Command & Control...

- In all instances, the safety and welfare of Brigade personnel is of paramount importance...
- IC's must ensure that all elements of Command and Control are followed.

- A dynamic risk assessment is to be undertaken prior to setting priorities and allocating tasks...
- The **risk** must be proportional to benefit at all times.

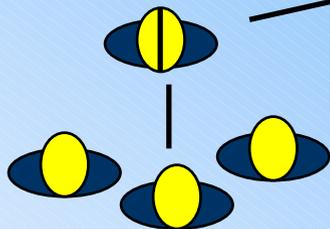
# RISK VERSUS BENEFIT...

- High Risk → High Benefit...
- High Risk → Low Benefit...
- Tolerable Risk → Low Benefit...
- Tolerable Risk → High Benefit.

Incident Commander



Command Support



Sector 2



Sector 1

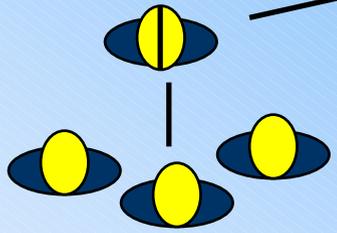


Water

Incident Commander



Command Support



**Sector 2**

Safety Officer



**Sector 1**

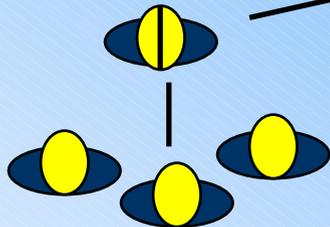


**Water**

Incident Commander



Command Support



**Sector 2**



Safety Officer



3m Risk Zone

C/C OSV



**Sector 1**



**Water**

# LOW TO HIGH RISK OPTIONS

LOW



HIGH

- TALK
- REACH
- THROW  
(STABILISE)



- ROW
- GO & TOW

# Helicopter response

- Risk Assess...consider travel time/distances...
- Early notification to ARCC...
- Search plan for SAR...
- Consider FLIR in Police Air support as first resort...
- Be aware of local overhead hazards...
- Communicate with aircrew.



A photograph of a water rescue training exercise. Two red inflatable rescue rafts are on a turbulent river. The front raft has three people in red gear and yellow helmets. The back raft has one person in a blue and orange outfit. A person on the bank is pulling a rope attached to the rafts. Another person in a red vest and white helmet is in the foreground, taking a photo. The background shows a grassy bank with a metal railing and a blue container.

## Part Three

# PRINCIPLES OF WATER RESCUE

# Principles of water safety/rescue...

- Always wear additional personal protective equipment within 3m of the waters edge ~ **the Risk Area!!**
- Remove helmet chin strap...
- Always deploy upstream spotters of the rescue location ~ ideally both sides.

- Always have multiple downstream backups...
- The priorities at the scene are always self-rescue first, the rescue and security of fellow crew members and the casualty last...
- Always maintain DRA and have a backup plan...
- Provide good communications..and don't work alone in the 'risk area'...
- **Keep It Simple and Safe (KISS).**

- **Clean line principal should always be followed to avoid entanglements...**
- **Never count on the casualty to help in his/her own rescue...**
- **Once casualty is spotted never lose sight of them.**

# If you are in the water...

- Adopt safe swimming position...



# 'Water Emergency'

In the event of Brigade personnel accidentally falling into water and finding themselves in difficulty a standard message must be formulated and transmitted to provide immediate assistance at the incident.

# VEHICLES UNDERWATER...

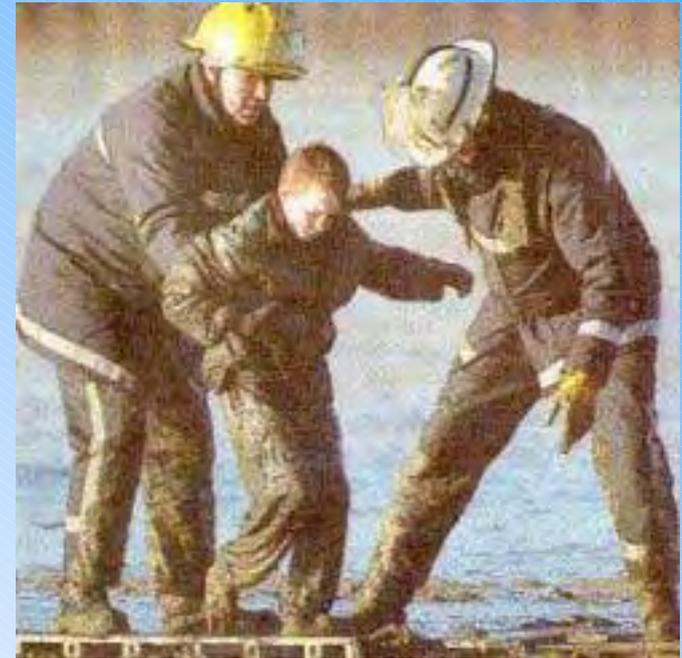
- Persons trapped?
- Type of water hazard?
- Vehicle behaviour...
- Associated hazards...
- Sub surface activity.

# ICE RESCUE...

- High risk situation...
- Risk assessment...
- Use the formula...
- Usually occur in remote areas...
- Level Two response.

# MUD & SAND RESCUE...

- Surface will be soft and treacherous...
- Risk assessment...
- Minimum crew...
- Crews movements
- Strictly monitored...
- Specialist equipment.



# POST IMMERSION CARE...

- Airway...
- Warming...
- Clothing...
- Welfare...
- Medical advice.

# POST INCIDENT...

- Contamination...
- Welfare...
- Documentation...
- Debrief...
- Monitor.

# Part Four

# EQUIPMENT

# LEVEL ONE APPLIANCE EQUIPMENT PACKS

- PPE ~ dry suits, under suits, gloves & lifejackets, cylume light sticks...
- Two throw lines...
- Inflatable hose kit...
- Loud hailer...
- Knife...
- Walking poles.



# OFFICERS CARS..

- Normal firefighting PPE...
- Lifejacket...
- 'Snaplights'...

# OPERATIONAL SUPPORT VEHICLE (OSV)

The OSV is specially equipped to deal with water related incidents. Operational equipment includes:-

- PPE (dry suits, under suits, gloves, personal floatation devices, helmet)...
- BOAT...
- Mud/Sand Lance...
- Loud hailer...
- Lighting.



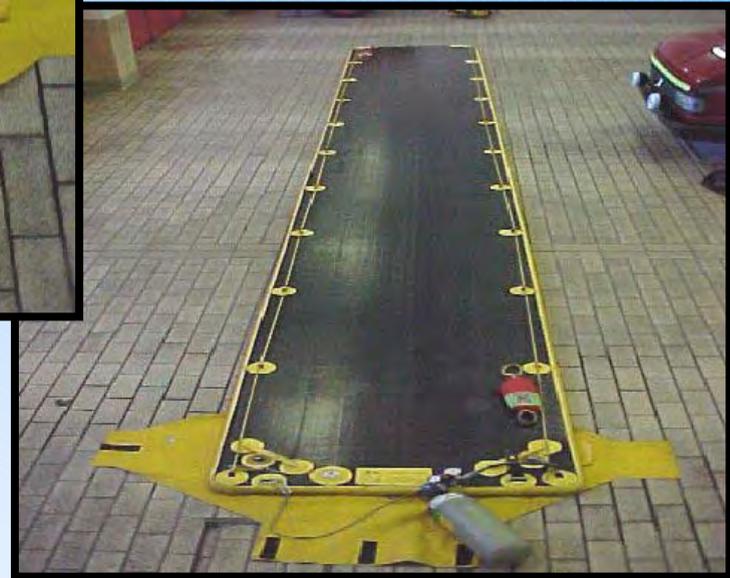
# And...

- HOSE INFLATION KIT...
- THROW LINES...
- RESCUE LINES...
- RESCUE BOARD...
- WELFARE PACKS.



# INFLATABLE RESCUE PATH (IRP)

AVAILABLE FROM BODMIN & CAMBORNE



# OSV ~ SAFETY BOAT



# Part Five

# TRAINING

# **I N S T R U C T O R   T R A I N I N G**

**Currently (October 2001) four  
Instructors have carried  
out two specific  
Swiftwater Rescue Training  
courses at  
'Outreach', North Wales.**

# **Level One Training**

## **All Operational Personnel**

- **One day Officers courses...**
- **Training Packs issued...**
- **Cascaded to Wholetime Watches and Retained Stations by 1/01/02...**
- **Performance Review early January 2002.**

# Level Two Training

## OSV Personnel

- Four Coxswains per watch at St Austell and Falmouth to RYA Level II...
- Water Rescue Responders...
- Water Rescue Instructors...

# SUMMARY...

- Policy and Procedures...
- Associated hazards & features of WRI's...
- Rescue options (low to high risk)...
- Correct use of safety & rescue equipment...
- Training.

# Further references...

- **BIS OPS1/046 ~ "Safe working on or Near Water"...**
- **A Guide to Operational Risk Assessment ~ Rescues from ice/unstable ground & incidents involving flooding...**
- **Greater Manchester County Fire Brigade's report...**
- **NEW... FSM 'Safe Working On, In Or Near\Water' (Issued Sept.2001)**
- **Brigade's Sea Survival presentations.**

## MARINE OPERATIONS - 2



The 'Marine Operations' packages are produced by CCFB Marine Operations Group (MOG) and are as follows

Part 1...Safe Working On Or Near Water...

**Part 2...Offshore Incidents ~The Legal Framework**

Part 3...Offshore Incidents ~Command and Control

Part 4...Helicopter Operations ~ SOP

Part 5...Tactical Ship Firefighting

Part 6...Ship construction.

Part 7...Sea Survival

Part 8...Small Boat Fire Safety

Other reference points include:-

ICS.ppt

Fire Service Manuals ~ Command and Control / Marine Operations...

DCOL's...

BIS Doc's...

Case Studies e.g 'Scandinavian Star'

CACFOA South West ICS packages

**Grateful thanks to Kent Fire Brigade for much of the original content that was used in the production of this presentation.**



This presentation originally produced by Divisional Officer Allan Kimpton, Kent Fire Brigade has been amended by Divisional Officer Mervyn Kettle, Cornwall County Fire Brigade, January 2000 and some of the procedures indicated are a mix of the two brigades although the generic procedures are compatible to both organisations.

## “FIRE SERVICES ACT 1947”

1. No power explicit - the local authority boundary is low water mark...
2. Section 3(i)d - Power to employ outside area...
3. Section 3(i)dd - Extends power beyond territorial limits - gives legal base for offshore work. Removes ambiguity...

NOTE: Additional Insurance is a matter for individual Chief Fire Officers.  
Competing resource priorities.  
Deployment of any financial provision.

There is no provision in the Fire Services Act 1947 empowering the Fire Authority to employ its Fire Brigade in extinguishing fires in ships at sea. Nevertheless, the power of a Fire Authority to employ its Fire Brigade applies in relation to fires in ships in its area as it does to fires on land.

Whilst it is the duty of the Fire Authority to make provision for firefighting purposes which normally relates to the Authority's own area, there is nothing to prevent a Fire authority employing its Fire Brigade to extinguish a fire in a ship at sea outside its area. All incidents at sea below the low water mark are responded to in accordance with section 3(I)d and (dd) of the 'Fire Services Act 1947'.

The new paragraph 3 (I)(dd) of the Fire Services Act 1947 extends powers beyond territorial limits and ensures that the deployment of Fire Brigades at sea has a clear legal base within existing UK legislation but it does not extend the statutory powers of duties of the Authority. This amendment strengthens the advice within Dear Chief Officer Letter 9/1992 and removes any ambiguity over Fire Authority's discretionary powers to attend incidents at sea beyond territorial waters.

# INTRODUCTION

## CONSIDERATIONS

1. Statutory position...
2. Initial response - transport...
3. Command and Control...
4. Communication...
5. Logistics - equipment.

Ship fires and other emergency incidents involving ships offshore always present particular and extreme problems for the Fire Service.

Due to their location off shore incidents can often be a major life risk as they are always much more difficult to control and subdue than fires on land and create enormous command and control, logistical, and communication problems.

Some coastal Fire Brigades regard offshore firefighting operations as an integral part of the service and whilst demand for this service is not frequent, experience has shown that when it does occur the need is very real. The consequences of it not being available are too disturbing to contemplate.

Over the years there has been a huge amount of debate regarding offshore operations. A great part of this debate has centred on the legality of offshore work and the procedures that should be adopted and the interface with other agencies involved.

See Parts 3A and 4 for further details on items 2>5

# **STATUTORY POSITION**

**United Kingdom Fire Brigades are not legally bound to carry out any activity except that involving fires...this does not extend outside the Local Authority boundary.**

**Should a Chief Fire Officer declare the resources of the Brigade to deal with 'offshore' incidents, then this is done with the approval of the local Public Protection Committee - and at no additional cost.**

## Known declared response...



- Cornwall
  - Mid and West Wales
  - North Wales
  - Merseyside
  - Isle of Man
  - Lancashire
  - Northern Ireland
  - Highlands and Islands
  - Humberside
  - Lincolnshire
  - Suffolk
  - Kent
  - East Sussex
  - Isle of Wight
  - Hampshire
  - Guernsey
  - Jersey
- TOTAL ... 17

## OTHER KEY GUIDANCE DOCUMENTS

- Memorandum of Understanding between Coastguard Agency and the Fire Service for firefighting and chemical hazards including rescue on vessels at sea (Sept 1994)...
- Dear Chief Fire Officer Letter (DCOL) 9/92 Firefighting and Rescue at Sea...
- CACFOA Memorandum of Understanding between Coastal Fire Services on Offshore Procedures South East Region (1996).

### DEAR CHIEF OFFICERS LETTER 9/1992 (DCOL)

This updates a previous DCOL and contains the substantive Home Office guidance in relation to firefighting in associated operations at sea. It is interesting to note that since the production of this Guidance there has been continual debate about the validity of any of its elements.

### CHIEF AND ASSISTANT CHIEF FIRE OFFICERS ASSOCIATION (CACFOA) MEMORANDUM OF UNDERSTAND BETWEEN THE COASTGUARD AGENCY AND CACFOA FOR FIREFIGHTING, CHEMICAL HAZARDS AND RESCUES ON VESSELS AT SEA (SEPTEMBER 1994).

This document deals with the issues relating to offshore response and recognises the coastguard's co-ordination role along with that of the Fire Service and other Agencies.

Other documents regarding offshore operations have been produced and, in particular, the CACFOA 'Offshore Procedures between coastal Fire Brigades'. This document was produced initially for CACFOA No. 4 and 5 Districts (South East England) to create harmony for those joint users of the RAF Search and Rescue. The agreed document is to be the format for the South East Coast users which include Kent, Norfolk, Suffolk, Lincolnshire and Essex. The Ministry of Defence seem keen at the present time for the Home Office to accept the document as a National standard, albeit that it is a compromise between those involved and the Fire Brigades Union have taken a similar approach.

## DECLARED FACILITIES

(CACFOA Memorandum of Understanding with Coastguard Agency, September 1994)...

1. Maintaining to declared standard...
2. Informing of changes to declared facilities...
3. Informing H.M. Coastguard of reasons for non-availability when requested...

**NOTE:** *The MCA is the co-ordinating Service for incidents at sea (Coastguard Act 1925).*

Fire Brigades declared resources to MCA for use at offshore incidents could include the following example:

Initial flight teams of personnel (airborne).

Waterborne approach teams of personnel (tug).

It always should be noted that, regardless of the mode of transport used for initial attendance be it by sea or air, arrangements are made to have a vessel standing by for safety purposes throughout the incident in case rapid evacuation is required, or a firefighter falls overboard.

Following a request for assistance, usually from the MCA who have overall responsibility in UK territorial waters, the specialist initial team of nine personnel are deployed by helicopter to carry out an assessment of any fire and can usually be on board a stricken vessel in mid channel within 45minutes of the time of call to the Brigade, speed of response being of the utmost importance, and as stated, other firefighters and safety crews can be transferred to the incident area by way of helicopter or firefighting tugs to ensure an effective attack can be then made and sustained throughout the incident.

## INSURANCE

1. Local Authority Employers Liability Insurance...
2. Marine Liability Indemnity Insurance...
3. Aviation Liability Insurance...
4. Personal Accident Insurance - Incidents and Training  
(Total £7.5m; Death £306,000; Temporary total or partial disablement. @ Dec.1999 )...
- 5 Firemen's Pension Scheme...

**NOTE:** Fire Brigades' Union (FBU) policy £1 m per fire-fighter.

Brigades having taken up the responsibility for offshore operations will require additional marine liability indemnity insurance and possible aviation contingency insurance. They will also require contractual liability whilst using vessels for transporting personnel and equipment by tugs or other craft and the use of aircraft for training purposes and for transportation to incidents.

Most Fire Authorities would have employers liability insurance which covers the local authorities legal liability for injury to employees arising out of their employment with that Authority. This cover normally extends to all areas within the European boundaries.

# RESPONSIBILITIES

## Section 45 A(i) Merchant Shipping Act 1894:

Responsibility for the safety of a ship at sea rests with the Master / Captain and the owner.

### **Merchant Navy ~**

Power delegated from Master to Fire Brigade as accepted practice...

### **Royal Navy ~**

‘a joint approach’.

Normally Brigades will ensure that assistance has been expressly requested by the Owners Agents or Master/Captain of the ship through Maritime Coastguard Agency (MCA) before they will agree to attend. The Senior Fire Officer in attendance will normally confirm upon arrival that the Brigade’s assistance is still required.

This continues to be important under Section 45a of the Merchant Shipping Act 1894 which lays out the responsibility for safety of a ship at sea rests with the Master/Captain and the owner.

The Captain or Master of a ship retains overall responsibility for the safety of the ship, even when the ship is in refit or under repair. In case of fire offshore the Captain will normally be expected to transfer the responsibility for firefighting to the Senior Fire Brigade Officer present (unlike Royal Navy ships). Once a ship’s Master has agreed and requested Fire Brigade assistance it would be expected that he would hand over firefighting and rescue responsibilities to the Fire and Rescue Commander on scene and therefore any further involvement of his crew would be under the sole direction of the Fire and Rescue Commander although this would be by way of liaison between a senior ship’s officer and the Fire and Rescue Commander at the incident scene, in other words a partnership arrangement.

# RECLAIMING COSTS ~ 'SALVAGE'

1. Lloyds forms of salvage not used (Fire Brigade could be liable for losses!)
2. Brigades are not allowed to charge 'for the purposes of fighting fire'.

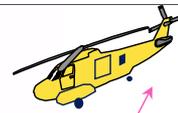
(Case law: 1999. ex 'Kukawa' fire ~ Cornwall Fire Brigade 1997)...

3. 'Reasonable costs' and ex-gratia payments?

Several Brigades have now moved away from the **Lloyds Form** of salvage agreement as the Brigade could be held liable for any loss if it occurred. Under normal circumstances the Brigade would seek to cover reasonable costs by rendering an account for services provided by prior agreement with the Master or owners upon arrival at the incident. In other words, offshore incidents are treated as chargeable special services through the owners or salvors.

# **CORNWALL COUNTY FIRE BRIGADE RESPONSE**

*~ Airborne ~*



**RAF Chivenor  
HMCG Portland**

**Falmouth Fire Station  
used as Initial Command  
Point (ICP).  
Falmouth Docks air RV**

**Brigade Control  
Truro**

**RNAS Cudrose,  
Cornwall.**

**Falmouth  
MRCC**

## Response criteria...

Request from MCA ...

Request from another source that is approved and supported by the MCA...

Must be approved by a Fire Brigade 'Principal' Officer - where there is an *immediate risk to life* or high risk of an incident developing that will have a *serious environmental impact*.

### **IT IS ANTICIPATED HELICOPTER RESPONSE TEAMS ACTING IN ISOLATION CANNOT AND WILL NOT INITIATE 'OFFENSIVE' TACTICS.**

The defined task will be to provide actions and make provisions for when additional resources become available.

The MCA will seek the help of the relevant Fire Service after receiving a request for Fire Service assistance from the Master of a vessel at sea. It is considered that Fire Services/Brigades may respond to calls for assistance particularly where life is at risk. The decision to attend or not will be made by the appropriate Chief Fire Officer or his/her nominated representative.

The Chief Fire Officer Firemaster or his/her representative will require specific information before committing the resources of his Fire Service. The form detailed in Section 19 should be used for this purpose. In the first instance HM Coastguard should attempt to complete those items asterisked and in bold print. This should also be faxed to the Fire Service by the co-ordinating HM Coastguard station. Subsequent information can be added when required by the Coastguard.

# Teams...

## 'Assessment' Team:-

...team of two Officers only. Despatched when very limited information available...

## 'Strike' Team:-

...team of six, minimum. Despatched when immediate risk to life is known and / or suitable risk assessment has been achieved...

## 'Support' Teams:-

... as transport resources permit; to allow 'Offensive' tactics to be more suitably introduced.



# MARINE OPERATIONS - 2

## 'Offshore' Incidents

### The Legal Framework



**Grateful thanks to Kent Fire Brigade for much of the original content that was used in the production of this presentation.**



# “FIRE SERVICES ACT 1947”

1. No power explicit - the local authority boundary is low water mark...
2. Section 3(i)d - Power to employ outside area...
3. Section 3(i)dd - Extends power beyond territorial limits - gives legal base for offshore work.  
Removes ambiguity...

NOTE:            Additional Insurance is a matter for individual  
                         Chief Fire Officers.  
                         Competing resource priorities.  
                         Deployment of any financial provision.

# INTRODUCTION

## CONSIDERATIONS

1. Statutory position...
2. Initial response - transport...
3. Command and Control...
4. Communication...
5. Logistics - equipment.

# **STATUTORY POSITION**

**United Kingdom Fire Brigades are not legally bound to carry out any activity except that involving fires...this does not extend outside the Local Authority boundary.**

**Should a Chief Fire Officer declare the resources of the Brigade to deal with 'offshore' incidents, then this is done with the approval of the local Public Protection Committee - and at no additional cost.**

# Known declared response...



- Cornwall
  - Mid and West Wales
  - North Wales
  - Merseyside
  - Isle of Man
  - Lancashire
  - Northern Ireland
  - Highlands and Islands
  - Humberside
  - Lincolnshire
  - Suffolk
  - Kent
  - East Sussex
  - Isle of Wight
  - Hampshire
  - Guernsey
  - Jersey
- TOTAL ... 17

# OTHER KEY GUIDANCE DOCUMENTS

- Memorandum of Understanding between Coastguard Agency and the Fire Service for firefighting and chemical hazards including rescue on vessels at sea (Sept 1994)...
- Dear Chief Fire Officer Letter (DCOL) 9/92 Firefighting and Rescue at Sea...
- CACFOA Memorandum of Understanding between Coastal Fire Services on Offshore Procedures South East Region (1996).

# DECLARED FACILITIES

(CACFOA Memorandum of Understanding with Coastguard Agency, September 1994)...

1. Maintaining to declared standard...
2. Informing of changes to declared facilities...
3. Informing H.M. Coastguard of reasons for non-availability when requested...

**NOTE:** *The MCA is the co-ordinating Service for incidents at sea (Coastguard Act 1925).*

# INSURANCE

1. Local Authority Employers Liability Insurance...
2. Marine Liability Indemnity Insurance...
3. Aviation Liability Insurance...
4. Personal Accident Insurance - Incidents and Training

(Total £7.5m; Death £306,000; Temporary total or partial disablement. @ Dec.1999 )...

- 5 Firemen's Pension Scheme...

**NOTE:** Fire Brigades' Union (FBU) policy £1 m per fire-fighter.

# RESPONSIBILITIES

## Section 45 A(i) Merchant Shipping Act 1894:

Responsibility for the safety of a ship at sea rests with the Master / Captain and the owner.

### **Merchant Navy ~**

Power delegated from Master to Fire Brigade as accepted practice...

### **Royal Navy ~**

‘a joint approach’.

# RECLAIMING COSTS ~ 'SALVAGE'

1. Lloyds forms of salvage not used (Fire Brigade could be liable for losses!)...
2. Brigades are not allowed to charge 'for the purposes of fighting fire'.

(Case law: 1999. ex 'Kukawa' fire ~ Cornwall Fire Brigade 1997)...

3. 'Reasonable costs' and ex-gratia payments?

# ***CORNWALL COUNTY FIRE BRIGADE RESPONSE***

***~ Airborne ~***



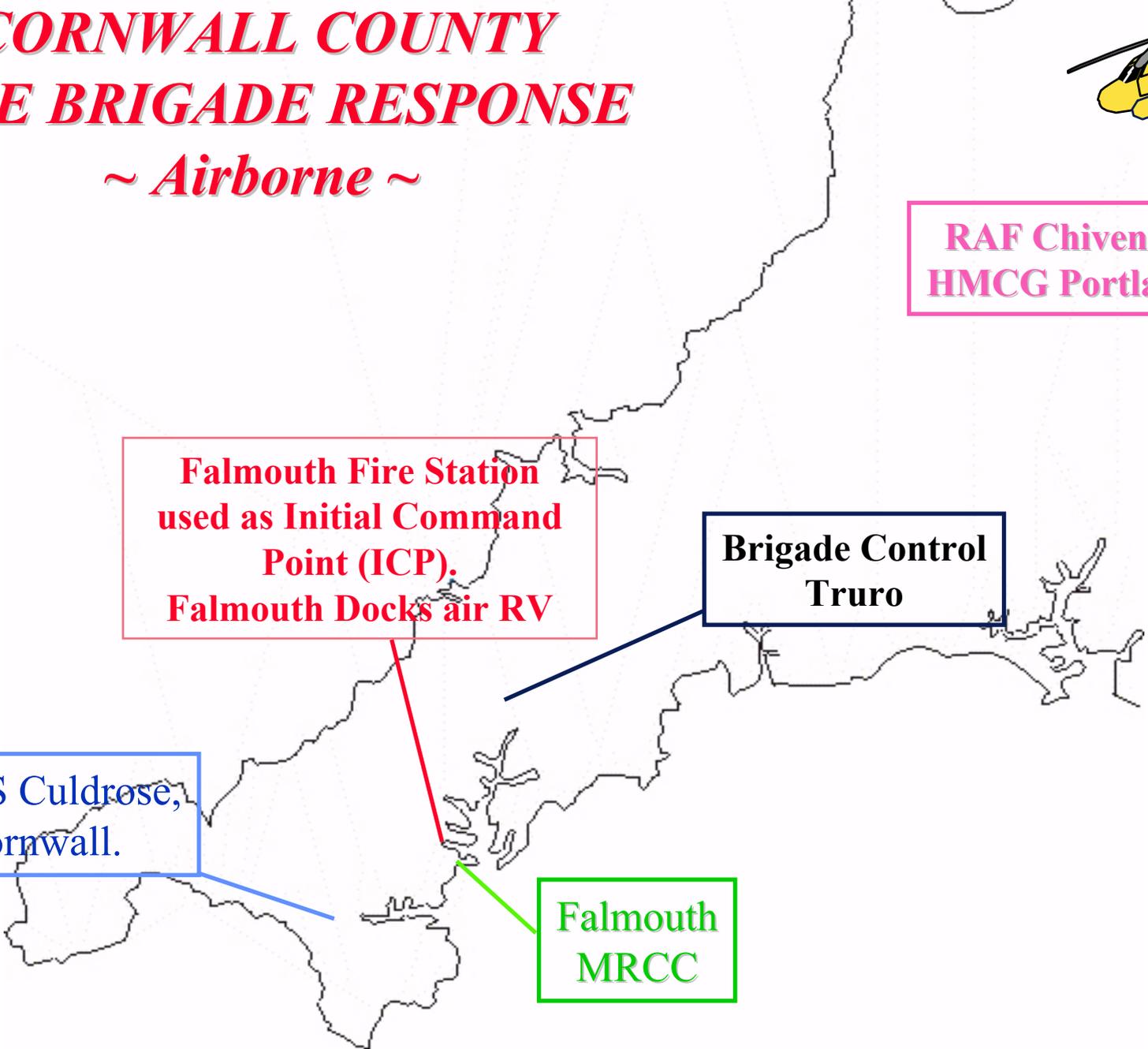
**RAF Chivenor  
HMCG Portland**

**Falmouth Fire Station  
used as Initial Command  
Point (ICP).  
Falmouth Docks air RV**

**Brigade Control  
Truro**

**RNAS Cudrose,  
Cornwall.**

**Falmouth  
MRCC**



# Response criteria...

Request from MCA ...

Request from another source that is approved and supported by the MCA...

Must be approved by a Fire Brigade 'Principal' Officer - where there is an *immediate risk to life* or high risk of an incident developing that will have a *serious environmental impact*.

# Teams...

## 'Assessment' Team:-

...team of two Officers only. Despatched when very limited information available...

## 'Strike' Team:-

...team of six, minimum. Despatched when immediate risk to life is known and / or suitable risk assessment has been achieved...

## 'Support' Teams:-

... as transport resources permit; to allow 'Offensive' tactics to be more suitably introduced.



*Thankyou.*

## **- Executive Summary-**

**This package outlines the aspects  
of Offshore Ship Firefighting  
Command and Control procedures as  
produced by the  
CACFOA (UK) Marine Operations  
(Offshore) Group.**

This presentation should be used in conjunction with the other packages in this series  
For further details... see 'Notes' page on this slide.

Marine Operations - Offshore Command & Control

June 2001

The 'Marine Operations' packages are produced by CCFB Marine Operations Group (MOG) and are as follows

Part 1...Safe Working On Or Near Water...\*

Part 2...Offshore Incidents ~The Legal Framework

**Part 3...Offshore Incidents ~Command and Control ( See also SOP below)**

Part 4...Helicopter Operations ~ SOP

Part 5...Tactical Ship Firefighting

Part 6...Ship construction.

Part 7...Sea Survival

Part 8...Small Boat Fire Safety

Other reference points include:-

ICS.ppt

Fire Service Manuals ~ Command and Control / Marine Operations...

DCOL's...

BIS Doc's...Ship firefighting/ Helo Operations

Case Studies e.g 'Scandinavian Star'

CACFOA South West ICS packages

**CACFOA( UK) MOG~Offshore Command and Control SOP**

\*CACFOA SW 'Safe Working On Or Near Water' (January 2001)

**'Pan-Pan' from casualty vessel requesting assistance ...  
MCA collate details, complete Fire Service 'Tasking Form'**



Extracted from Helosop..

The Chief Fire Officer Firemaster or his/her representative will require specific information before committing the resources of his Fire Service. The form detailed in Appendix One should be used for this purpose. In the first instance HM Coastguard should attempt to complete those items asterisked and in bold print. This should also be faxed to the Fire Service by the coordinating HM Coastguard station. Subsequent information can be added when required by the Coastguard.

# Coastguard 'Tasking' Form

## MCA - Questions to Casualty Master

- What is the emergency?
- Are there casualties?
- Location of the fire...
- Is the fire spreading?
- What is your exact location?
- What are the local weather conditions?
  - What is the Cargo?
  - Is it highly flammable?
  - Status of the vessel.

The above questions are key to Risk Assessment and form part of the 'Tasking Form'.

## Fire Brigade Control - Request for support from MCA. Inform Duty Principal Officer



Marine Operations - Offshore Command & Control

June 2001

On receipt of the initial call from the MCA, Fire Control will commence a log for the incident and advise the Brigade Principal Officer. Fire Control should confirm with the MCA that the 'Tasking Form' is being despatched.

A procedure must be in place within Fire Control to ensure the appropriate mobilisation actions are taken and recorded

## Strategy, Tactics and Operations in the Offshore Arena

- **STRATEGIC:** *'the planning and directing of the organisation to meet the overall objectives'*  
... will be carried out at Principal Officer level ...
- **TACTICS:** *'the deployment of personnel and equipment to achieve strategic aims'*  
... carried out by the Incident Commander who remains at a shorebased Command Centre e.g MRCC ...
- **OPERATIONS:** *'carrying out described tasks using prescribed techniques and procedures'*  
...determined by the Operations Commander onboard the vessel.

It must be remembered that Command and Control is of the utmost importance and is required for all incidents. It may, itself, not be in place until sometime after a receipt of the initial call and it is likely that modes of transport to and from the incident will differ with personnel traveling to the incident by helicopter and returning by sea borne transport. It is essential that a system of Command and Control is initiated at an early stage, that it be constantly updated and be available to all necessary Fire Brigade departments and locations as well as outside agencies where applicable, i.e., MRCC.

## Principal Officer and Brigade Control consider immediate pre-planning

- Insufficient information - contact MCA for more information before a decision can be made...
- Is the operation of sufficient priority to justify a strike being sent? ie., life threatened or serious environmental impact...
- 'Assessment or **Strike Team**'?...
- Are there logistical restraints? ie., distance, weather conditions and do they contain a sufficient safety margin to justify a strike?



Marine Operations - Offshore Command & Control

June 2001

### Extract from Command and Control SOP:-

The Brigade Principal officer (PO), on receipt of:-

(a) initial call details and (b) 'Tasking form' (See Appendix 'D') will then consider the strategy options for a possible response.

These options may include:-

- adequate information available
- risk versus benefit
- transport availability
- ability to evacuate
- weather/sea conditions
- environmental impact
- financial implications to Brigade
- assistance from other Brigades
- operational availability of Brigade personnel and equipment
- welfare issues

The PO must be aware of the implications of a prolonged incident, which may impair the ability of the Brigade to react elsewhere.

As an 'aid to civil power', military resources may be made available to fly teams from neighbouring Brigades to assist

## Fire Control / PO Action List

- Nominate IC/OC and **'Strike'** Team, dispatch to embarkation point...
- Nominate and dispatch Embarkation Officers...
- Nominate and dispatch **'Liaison'** Officer to MCA...
- Clarify with MCA that a helicopter has been mobilised and **'Tasking Form'** completed...
- Request Tug from towage company, nominate 'Strike' Team and dispatch to Waterborne Embarkation Point.

Marine Operations - Offshore Command & Control

June 2001

A procedure must be in place within Fire Control to ensure the appropriate mobilization actions are taken and recorded.

Some of these procedures may, by local agreement be cascaded to key stations or experienced personnel.

## and ...

- *IC* to MCA with *Command Support* to liaise with Coastguard and SOS Representative...
- Alert neighbouring offshore response Brigades...
- Continue to request information from MCA...
- Consider bringing additional resources to alert if *'Support Teams'* are required...
- Set-up Major Incident Room...
- Appropriate provisions to be made to continually inform the next of kin of all personnel deployed offshore.

An MCA 'Liaison' Officer must be sent to the nearest MRCC at the outset of an incident, and work closely with a dedicated MCA/Fire Liaison Officer. This is a Command Support function, and may well be supported by a Senior Officer (functional Commander) as the incident expands.

As an 'aid to civil power', military resources may be made available to fly teams from neighbouring Brigades to assist.

When it is known that teams will be deployed a 'functional section commander (Welfare) should be introduced shoreside.

## Identification of 'Command Team'

Tabards identify key personnel as follows:

- Incident Commander (IC) WHITE...
- Operations Commander (OC) RED...
- Sector Commander (SC) RED & YELLOW...
- Command Support (CS) RED & WHITE ...
- Safety Officer (SO) BLUE & YELLOW.

The 'Command Team' as identified will form part of the 'Strike Team' and may form an assessment team.

They are identified as indicated.

(See ICS.ppt presentation for further details on command and control principals set down in accordance with the ICS)

# 'Strike' Team to Helo or Tug Embarkation Point



# Criteria for Helicopter Operations

Helicopter transport depends on:

- Casualties...
- Need for deployment...
- Distance...
- Weather...
- Weight...
- Safety issues (Operational Safety Margin).



Marine Operations - Offshore Command & Control

June 2001

*Extract from HeloSOP*

### 3. RESPONSE CRITERIA

Request from MCA for assistance.

- Request from another source that is approved and supported by the MCA.
- Approved by Fire Brigade Principal Officer - where there is an immediate risk to life or high risk of an incident developing that will have a serious environmental impact.

**helicopter 'strike' teams acting in isolation with limited resources should NOT initiate 'offensive' TACTICS. HOWEVER, FOLLOWING A Dynamic risk assessment (DRA) THE OPERATIONS COMMANDER MAY INITIATE LIMITED ACTIONS e.g SNATCH RESCUES**

The defined task will be to provide actions and make provisions for when additional resources become available.

## Actions for OC prior to mobilisation

- Select the team...
- Confirm number of personnel and weight for flight...
- Inform the IC and Embarkation Officer of the number of personnel and equipment required for the flight...
- Get further situation report from MCA or Brigade Control...
- IC confirm with OC that team briefed on the current situation and their role.

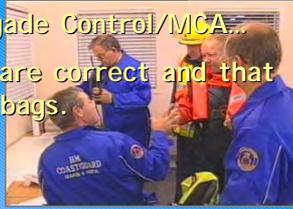
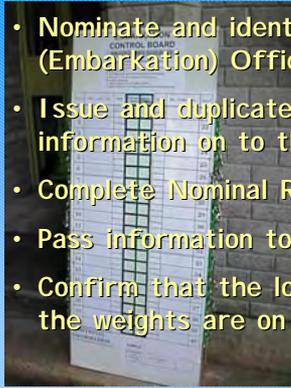
The IC in consultation with the PO and identified OC will determine the issues shown.

The IC must ensure at all times that he/she is fully aware of the numbers of persons being transferred etc and continually ensure tactical messages are updated via the MCA.

Prior to embarkation on the 'transport' the IC and OC must communicate and confirm all procedures and R.A.'s have been dealt with.

## EMBARKATION (CSO)

- Nominate and identify a Command Support (Embarkation) Officer...
- Issue and duplicate personal tally information on to the Embarkation Board...
- Complete Nominal Roll Form (see Helosop)...
- Pass information to Brigade Control/MCA...
- Confirm that the loads are correct and that the weights are on the bags.



Marine Operations - Offshore Command & Control

June 2001

### Extract from CommSOP

### Embarkation Officer

The Embarkation Officer will be located 'landbased', at the designated 'Embarkation Point' and will:-

- Ensure safety brief received by teams
- Checking suitability of PPE
- Nominate a Loadmaster who is responsible for loading equipment bags and checking weights
- Co-ordinate all landbased support operations with regard to personnel and equipment
- Establish and maintain communications with Brigade Control/ MRCC
- Gather and record relevant information i.e Tasking Form regarding incident.
- Collection of nominal roll boards and Officer tallies
- Issuing and recording embarkation tallies.
- Completing nominal roles of deployed personnel and passing to Fire Control and MCA.
- Listing of all equipment sent to casualty and specialist equipment availability.

## Helicopter lands at RV/LZ and Aircrew liaise with Crew (Ops) Commander



Marine Operations - Offshore Command & Control

June 2001

Prior to departure / embarkation all crews must have received a pre flight safety briefing. This must include details on the aircraft to be used, appropriate use of PPE .e.g. eye, ear protection, methods of approach, seating and equipment location, disembarkation and emergency procedures.

The pilot may require illumination of the landing zone when collecting or returning crews, this may be done by the use of two fire appliance's headlights directed in a vee shape on the landing zone. Night vision goggles may be used by the aircrew in these circumstances, strobe torches etc should never be shone directly at the aircraft.

NB. The Coastguard may be mobilised to secure the landing site.

## BOARDING BOARD (CSO)

- To record all personnel boarding and egressing the casualty, i.e., receiving tallies...
- Onboard welfare.



Marine Operations - Offshore Command & Control

June 2001

### Boarding Control Board

To be designed for local circumstances and must be suitable for seaborne and airborne responses a Boarding Control Board is used to identify the names and numbers of persons onboard the casualty.

For joint operations each Brigade must provide their own board.

The design of the board should include the following:-

Clock

Space for recording time of individuals arrival

Identity of Brigade

Spare tallies

Tallies for non Fire Service personnel

Space for recording location of Firefighters on board

Tallies to be removable

**The design of the tallies must include a facility for showing :-**

Name

Rank

Brigade number.

**They should be colour coded as follows:**

Red ~ Ff to SubO White. SO and above ~ White . Yellow ~ other agencies

## COMMAND WALLET/BOARD



A Command Wallet, suitably modified for Offshore Incidents will accompany the first flight and additional wallets are to be used by Sector Commanders when in place.

## Flight Despatched...

Pre-flight safety brief is given before flight dispatched...

Crews now fully dressed in PPE and checked before boarding...



Marine Operations - Offshore Command & Control

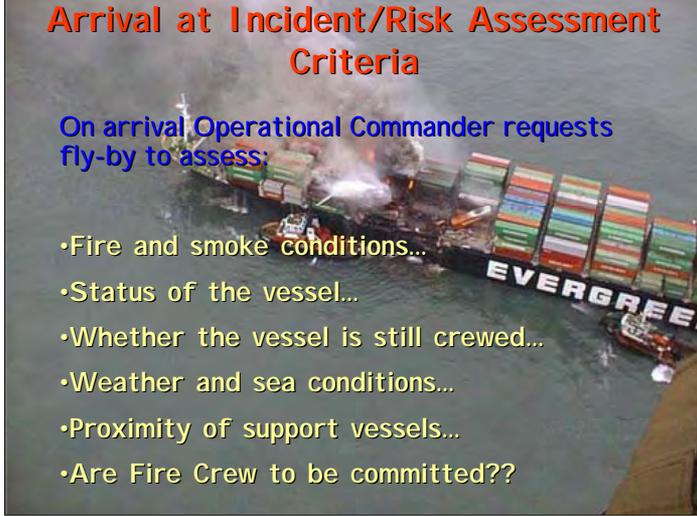
June 2001

Prior to departure / embarkation all crews must have received a pre flight safety brief. This must include details on the aircraft to be used, appropriate use of PPE .e.g. eye, ear protection, methods of approach, seating and equipment location, disembarkation and emergency procedures.

## Arrival at Incident/Risk Assessment Criteria

On arrival Operational Commander requests fly-by to assess:

- Fire and smoke conditions...
- Status of the vessel...
- Whether the vessel is still crewed...
- Weather and sea conditions...
- Proximity of support vessels...
- Are Fire Crew to be committed??



Picture 'Ever Decent' ..off Kent 2000

## 'GO' Situation

Winchman may go to deck ~ followed by Operational Commander, Command Support, equipment and remainder of team.



**Break**



**Time to reflect!!**

## In Attendance

- Operational Commander and Command Support Establish contact with Master of vessel...
- OC confirms Fire Brigade assistance is required...
- Basic Strategy and Tactics agreed by the OC and Master...
- These will be based predominantly on a 'Defensive' strategy of containment until support teams arrive.

## Operational Commander's Responsibilities

- Establish Command Point with 'command wallets'. Liaise with ship's Master...
- Obtain ship's plans...
- Maintain communication to MRCC and Fire Brigade CS ('Liaison') Officer...
- Dynamic risk assessments, formulate plan, decide all tactics, request assistance (mutual aid)...
- Ensure CSO maintains liaison with 'Boarding Officer' at embarkation location.



(Picture bridge of 'Scandinavian Star' )

As indicated previously.

(see Part 5 of CCFB training packs)

## and ...

- Limit 'span of control' by delegation...
- Appoint Sector Commanders/Safety Officers...
- Appoint 'functional' officers, eg., stability...
- Consider use of ship's crew...
- Be aware of:
  - water supplies ~ boundary starvation/cooling...*
  - fixed installations...*
  - state of cargo and crew...*
- Continual liaison with ship's officers...
- Regular briefings and confirmation of 'tactical modes' (20 mins)...
- Safety of all personnel including ship's crew.

Marine Operations - Offshore Command & Control

June 2001

All 'command' and 'functional' Officers must be identified by the appropriate tabards, and must be properly briefed before accepting the role.

The use of 'recon'/'support'/'attack' fire teams (see Part 5 of CCFB training packs) need to be fully considered, briefed and debriefed.

# On-Board Command & Control

## Fire Command Point (FCP):

- ❖ Ship's Master/Ship's plans ~ Comms. to MRCC...
- ❖ Operations Commander / Command Support ~ Comms. to Sector's Command.



## Sector Commander 'Aft':

- ❖ 'Support Crew'...
- ❖ Boundary cooling...
- ❖ Water supplies...
- ❖ General functional roles.

## Sector Commander 'For'ard':

- ❖ SC with 'Attack Crew'...
- ❖ Ship's Officer...
- ❖ Ship's plans...
- ❖ Comms to other Sectors...
- ❖ Ship's fire team.

## Items to be confirmed and actioned by Command Team

- Establish 'abandon ship' procedures and muster points from Master and inform SC's...
- Instigate a reconnaissance of area affected by fire and establish a Sector Command point if not already in place...
- Full update on current fire situation and status of vessel from Master.



Marine Operations - Offshore Command & Control

June 2001

A good ICS always supports regular briefings to all crew members, and good communications is a key factor in successful command and control.

The 'command team' are the key decision makers and no person should influence key tactical decision making without consultation to the command teams.

## Items to be consider and actioned by the Sector Commander

- Establish directional safety lines to:
  - i) *Open Air/Muster Points...*
  - ii) *OC at Fire Command Point (FCP).*
- Situation report to OC and Crew Commanders ...
- Regular Tactical Mode messages (20 minutes)...
- Ship expertise available, i.e., 1st Officer or Chief Engineer...
- Ship's plans, ship's crew available or involved in firefighting duties...
- Sufficient resources available to complete the tactics...
- Status of vessel and utility services.

## 'Offensive' Actions

- Number of ship's 'Attack Crew's' being used for firefighting purposes...
- Fixed installations in use...
- Number of BA in use...
- Number of hose lines in use.



## Cordon Control

- All personnel arriving onboard to be logged in..
- Identify those leaving..
- Wheneventually alongside, limit gangways, control access and egress...
- (Cordon Control - to be further developed).

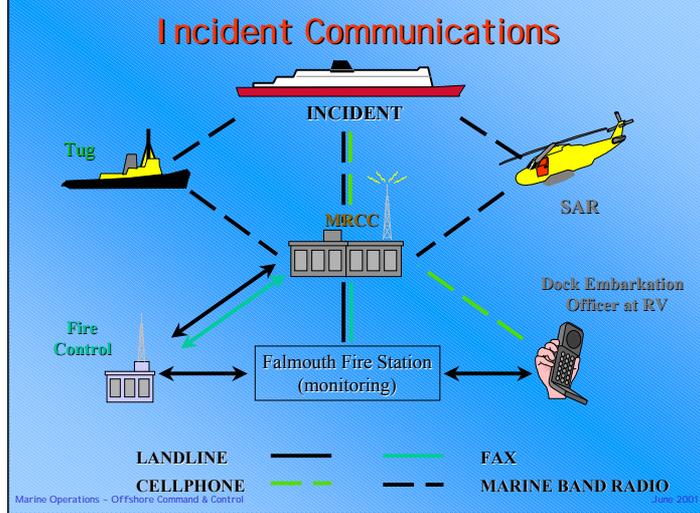
At all incidents a level of 'cordon control' must be put in place, on small craft this may be the entire vessel and therefore the Boarding' officer's nominal role board will be the controlling factor overall . On larger vessel's an inner and outer cordon may be established and the use of a Command Wallet each Sector Command Point should be considered to enhance control. The command wallet should contain numbered armbands to issue, with a safety brief to non Fire Brigade personnel.

An inner cordon refers to an area or section of the vessel which demands a greater degree of control e.g the immediate risk area, and may be clearly defined by watertight bulkheads , decks , compartments etc. All personnel must be aware of the areas within the inner cordon and all plans must indicate this. Any person working within the inner cordon, service or non service must be logged in and out at the Sector Command Point

**Command Support sets up  
communications link to MCA and  
confirms the  
numbers of Brigade personnel on board**



**Brigade Liaison Officer at MCA must  
ensure that each message  
received by MCA is relayed to  
Brigade Control.**



The MCA is responsible for co-ordinating all information received by any means, from any source.

It has access to all marine channels, including those used by harbour launches, pilot boats, tugs, Customs launches, MCA vessels, ships at sea and rescue aircraft.

It is imperative therefore that 'key' messages are passed to the MCA usually via the MCA network.

The following equipment may be used for ship to shore or onboard communications:-Marine Band Radio:Messages should preferably be passed through MCA using marine radio on the transport vessel or vessel requiring assistance.

Cellphone: Individual cellphones, with International Call Dialling may be available to key officers and used in circumstances where other facilities are unavailable, however key 'agencies' must not be left out of the 'loop' by using this method

UHF Hand Portable Radio: Inter Fire Brigade local communication eg., OC to SC

'Hard' Wires Sound powered phones using hard wire around the vessel.

## Communication Links

- Portable marine radios...
- Handheld marine radios...
- Vessel's marine band fixed radio...
- Field telephone system...
- Exchanges telephones...
- Fax machines...
- Cellular (satellite) telephones...
- Brigade main scheme radio.
- GMDSS



self explanatory.

## Assistance/Informative Message

Request for additional resources:

- Number of firefighters and officers...
- The numbers and items of equipment required.



## Informative Message (Sit-Rep)

- **Exact fire location:**  
*Deck level...*  
*Hold or compartment number or machinery space...*  
*Forward, aft or midships...*  
*Port or Starboard.*
- **Extent of the fire and what's involved:**  
*Cargo type...*  
*Type of compartment space.*
- **Whether the fire has been contained by closing up:**  
*Watertight/bulkhead doors, ventilation dampers.*
- **Are there any casualties involved:**  
*Medivac required.*

### Informative (Situation Report (SITREP):-

This message, transmitted every 45 minutes, should give a full update of the current situation and should include some or all of the following:-

- Exact location of fire/hazard
- Extent of fire / hazard and what was involved
- Casualties involved or persons missing
- Passive Fire Containment e.g structural
- Status of ship's utilities / services
- Status of motive power
- Stability
- Availability of fixed firefighting installations
- Firefighting media and equipment in use
- Tactical mode and options
- Record of key tactical decision making

**Audit/Debrief:-**The transmission of information must be carried out by formally writing and recording some / all of the above.

This information may be archived in accordance with individual Brigade policies.

All written records need to be collated by the Command Support Officer and held within a Command Wallet and/or at MCA /Fire Control.

## Status of the Vessel

- Stability...
- Whether the ship is still under way...
- Ship's utilities are operational, ie., electrical power and pumps.



## Evacuation of casualty...

- Roll Calls should be taken and all personnel mustered and the support vessel/aircraft requested to come alongside...
- 'Boarding Board's' to be taken aboard the support vessel...
- Message sent to MCA that all personnel are now aboard the support vessel/aircraft and the casualty vessel has been fully evacuated...
- Destination and ETA of support vessel / aircraft to be sent to MCA and Brigade Control...
- Upon landing at UK/EU port a full list of names, ranks and numbers to be sent to MCA and Brigade Control.

## On Arrival of 'Support' teams



A Command Support 'Deck' Officer to be nominated to co-ordinate arriving support personnel...

The Command Support Boarding Officer will:  
Accept Crew tallies and add to the Boarding Control Board once aboard the casualty vessel and amend details with MCA.



Marine Operations - Offshore Command & Control

June 2001

## 'Support' Teams and Equipment

-

Will be as prescribed by the Operations Commander following an operational assessment

## 'Support Teams' - Nomination of Tasks

- Crews and Officers when nominated a task will then be further identified on a tasking record held within the Sector Command Wallet at each Sector...
- Officers will be given specific functional Sector Commander roles, eg.,

Water...

Equipment...

BA...

**This allows the provision to Sector evacuate only and Roll Call for that Sector.**

## Operational Commander instigates further Sit-Rep Message

- Send further sit-rep's updating with names and numbers of personnel on board...
- Relief times...
- Request for personal welfare:

Hot food...

Drink...

Dry clothing...

Personal hygiene.

Example From SOP

### Informative Message (SITREP):

***“From Operations Commander on board (Name of casualty vessel) ~ The Master has handed over to the Brigade responsibility for fire-fighting operations at 1432 hours BST. ~ Ship’s fire main and engines still operational. Stability is good. Two jets, six breathing apparatus wearers and thermal image camers in use. ~ MCA please advise on available ports and destinations. ~ Tactical Mode ‘Offensive’ (Oscar).”***

## Issues to consider over Protracted Time Scales for the Command Team

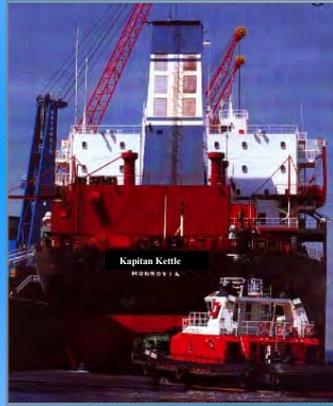
- Status of the vessel...
- Weather forecasts...
- Can the vessel proceed or will it have to be towed into port...
- Fire development...
- Physical condition of the firefighters (all personnel not gainfully employed should be rested).

## and...

- Relief crews...
- Prolonged personnel welfare...
- Adjust tactics, to continue 'defensive' or change to 'offensive'...
- Regular dialogue with Master and Salvors if appointed...
- Environmental issues...
- Regular General Roll Calls.

## Successful completion of Incident

- Fire contained and brought under control...
- Vessel docked in foreign port...
- Short, hot debrief...  
**and...**



## Ensure...

- Hand over to relative Fire Brigade...
- Roll Call, names, ranks and numbers to be sent to MCA and Brigade Control...
- Repatriate the crew and equipment...
- Welfare of crew...
- Transportation for team and equipment...
- Passage to UK and Customs clearance...
- Reception party and medical checks if required and inform next of kin...
- Incident debrief.

- Transport IC to scene to provide full 'incident' brief.
- Passport numbers ? photocopy.

## Further Considerations ~ The Vessel

- It may still be on fire:-  
Consider only 'defensive' tactics, eg.,  
boundary starvation/cooling and batten  
down the fire to enable the ship to  
evacuate its passengers...
- It may be damaged and unsafe by virtue  
of its cargo...
- It may not be able to come into port  
unaided (loss of power/crew)...
- It may not be allowed in to a port ~  
(Harbourmaster's decision).

## ... Casualties from the Vessel

- Fatalities (Police, Coroners, Mortuaries)...
- Those without money, cars or luggage ~ needing housing/transport (Local Authority County Emergency plans)...
- Seriously injured ~ possibly a large number ~ 40 or more... (Local health authority ~ ambulance)...
- Relatives ~ casualties and survivors will have relatives anxious for information and reassurance (Press Bureau)...
- Debriefing ~ crew/passengers/Fire Brigade.

## Agencies requiring Attention

- The Media...
- Harbour/Port Authorities...
- National/Local Government VIP's...
- Inquiry Boards/Environment Agencies/Department of Transport...
- Inspectorates/Insurers/Local Businesses.

Whilst the role of the Fire Service is difficult and sometimes, dangerous the challenges of an incident whilst at sea are finite and usually fall within a fairly short time scale.

There are implications for other agencies with regards, for example, fatalities, loss of personal possessions, cars, luggage, seriously injured casualties, anxious relatives. The never ending request from the media, national and local government hierarchy, inquiry boards, environmental agencies, Department of Transport, and local inspectorates and insurers.

All will have implications for shore based agencies which are more diverse and will need to be sustained for a much longer time.

IC/PO Role.

## To Summarise

- Obtain full details before mobilising..
- Limit 'Tactical Modes'...
- Crew Welfare..
- Ability to 'withdraw'...
- Ability to 'support'...
- Command and Control considerations..
- Use of SOP's...
- Debrief and Post incident.



# Marine Operations ~ Part 3

## OFFSHORE SHIP FIREFIGHTING

'COMMAND & CONTROL'



# ~ Executive Summary ~

This package outlines the aspects of Offshore Ship Firefighting Command and Control procedures as produced by the CACFOA (UK) Marine Operations (Offshore) Group.

This presentation should be used in conjunction with the other packages in this series  
For further details... see 'Notes' page on this slide.

**'Pan-Pan' from casualty vessel requesting assistance ...**

**MCA collate details, complete  
Fire Service 'Tasking Form'**

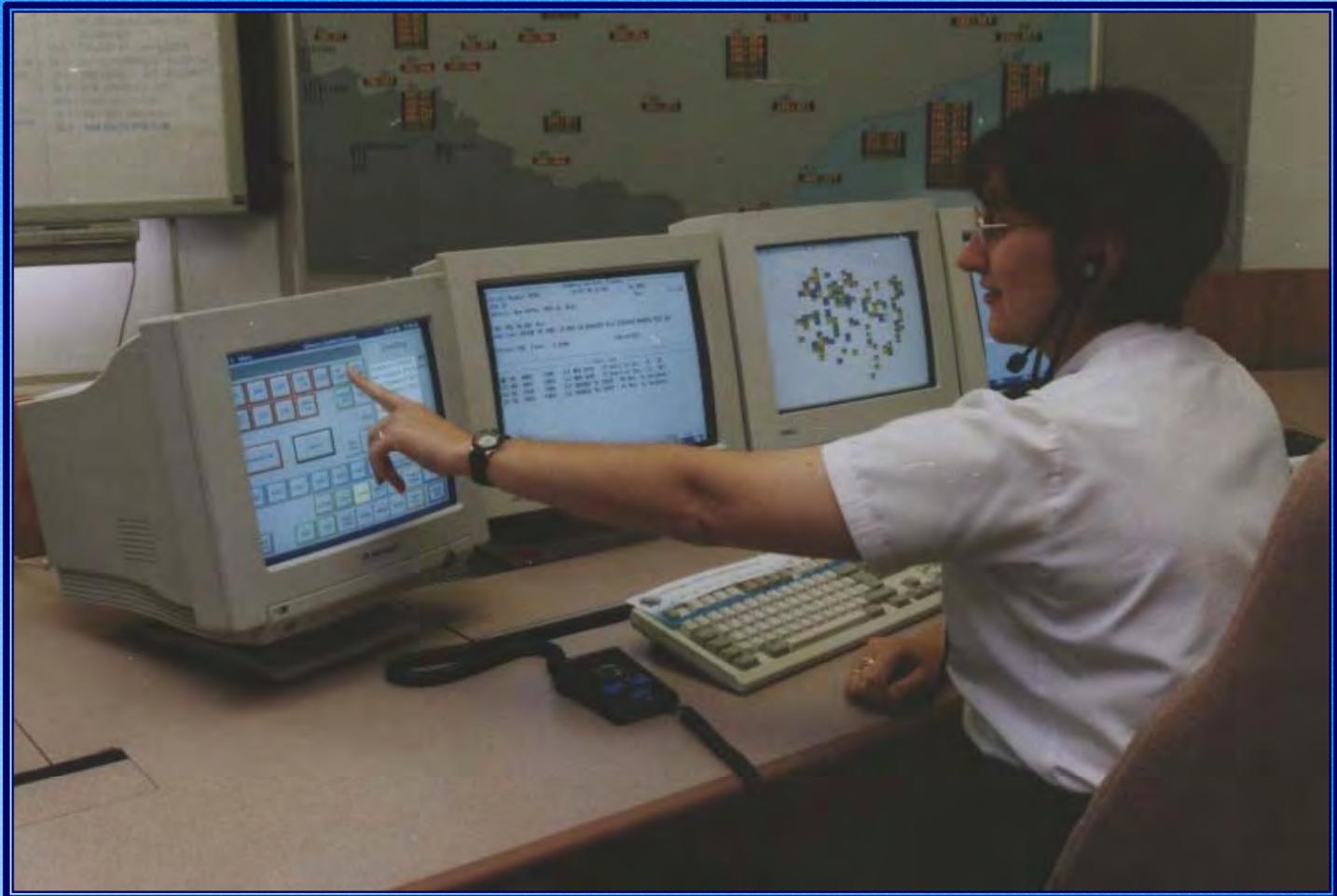


# Coastguard 'Tasking' Form

# MCA ~ Questions to Casualty Master

- What is the emergency?
  - Are there casualties?
  - Location of the fire...
  - Is the fire spreading?
- What is your exact location?
- What are the local weather conditions?
  - What is the Cargo?
  - Is it highly flammable?
  - Status of the vessel.

# Fire Brigade Control ~ Request for support from MCA. Inform Duty Principal Officer



# Strategy, Tactics and Operations in the Offshore Arena

- **STRATEGIC:** *'the planning and directing of the organisation to meet the overall objectives'*  
... will be carried out at Principal Officer level ...
- **TACTICS:** *'the deployment of personnel and equipment to achieve strategic aims'*  
... carried out by the Incident Commander who remains at a shorebased Command Centre e.g MRCC ...
- **OPERATIONS:** *'carrying out described tasks using prescribed techniques and procedures'*  
...determined by the Operations Commander onboard the vessel.

# Principal Officer and Brigade Control consider immediate pre-planning

Insufficient information ~ contact MCA for more information before a decision can be made...

Is the operation of sufficient priority to justify a strike being sent? ie., life threatened or serious environmental impact...

'Assessment or **Strike Team**'?...

Are there logistical restraints? ie., distance, weather conditions and do they contain a sufficient safety margin to justify a strike?



# Fire Control / PO Action List

- Nominate IC/OC and *'Strike'* Team, dispatch to embarkation point...
- Nominate and dispatch Embarkation Officers...
- Nominate and dispatch *'Liaison'* Officer to MCA...
- Clarify with MCA that a helicopter has been mobilised and *'Tasking Form'* completed...
- Request Tug from towage company, nominate *'Strike'* Team and dispatch to Waterborne Embarkation Point.

## and ...

- *IC* to MCA with *Command Support* to liaise with Coastguard and SOS Representative...
- Alert neighbouring offshore response Brigades...
- Continue to request information from MCA...
- Consider bringing additional resources to alert if '*Support Teams*' are required...
- Set-up Major Incident Room...
- Appropriate provisions to be made to continually inform the next of kin of all personnel deployed offshore.

# Identification of 'Command Team'

Tabards identify key personnel as follows:

- Incident Commander (IC) WHITE...
- Operations Commander (OC) RED...
- Sector Commander (SC) RED & YELLOW...
- Command Support (CS) RED & WHITE ...
- Safety Officer (SO) BLUE & YELLOW.

# 'Strike' Team to Helo or Tug Embarkation Point



# Criteria for Helicopter Operations

Helicopter transport depends on:

- Casualties...
- Need for deployment...
- Distance...
- Weather...
- Weight...
- Safety issues (Operational Safety Margin).

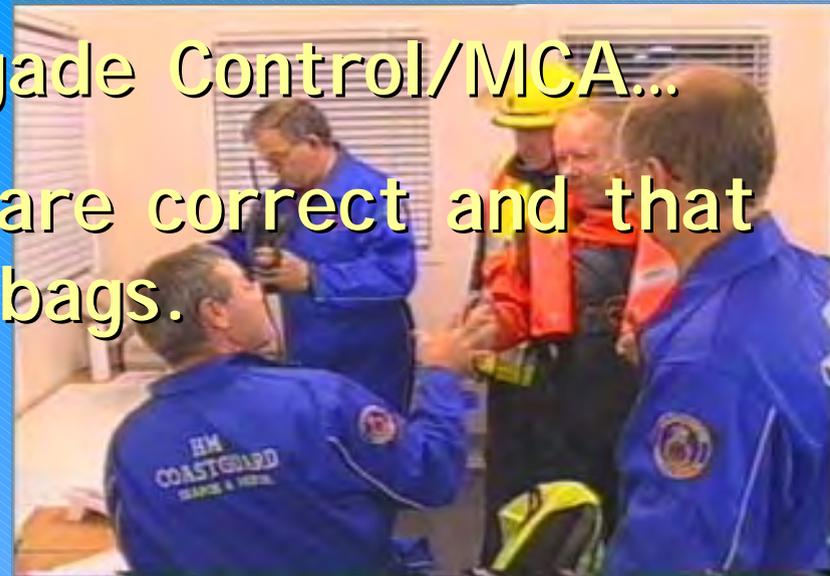
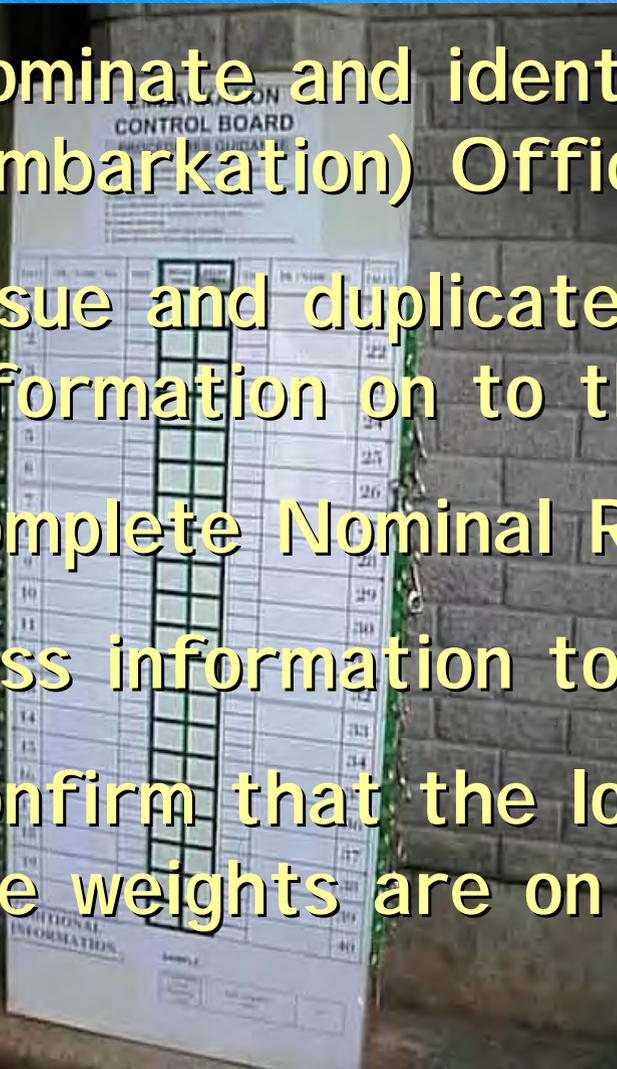


# Actions for OC prior to mobilisation

- Select the team...
- Confirm number of personnel and weight for flight...
- Inform the IC and Embarkation Officer of the number of personnel and equipment required for the flight...
- Get further situation report from MCA or Brigade Control...
- IC confirm with OC that team briefed on the current situation and their role.

# EMBARKATION (CSO)

- Nominate and identify a Command Support (Embarkation) Officer...
- Issue and duplicate personal tally information on to the Embarkation Board...
- Complete Nominal Roll Form (see Helosop)...
- Pass information to Brigade Control/MCA...
- Confirm that the loads are correct and that the weights are on the bags.

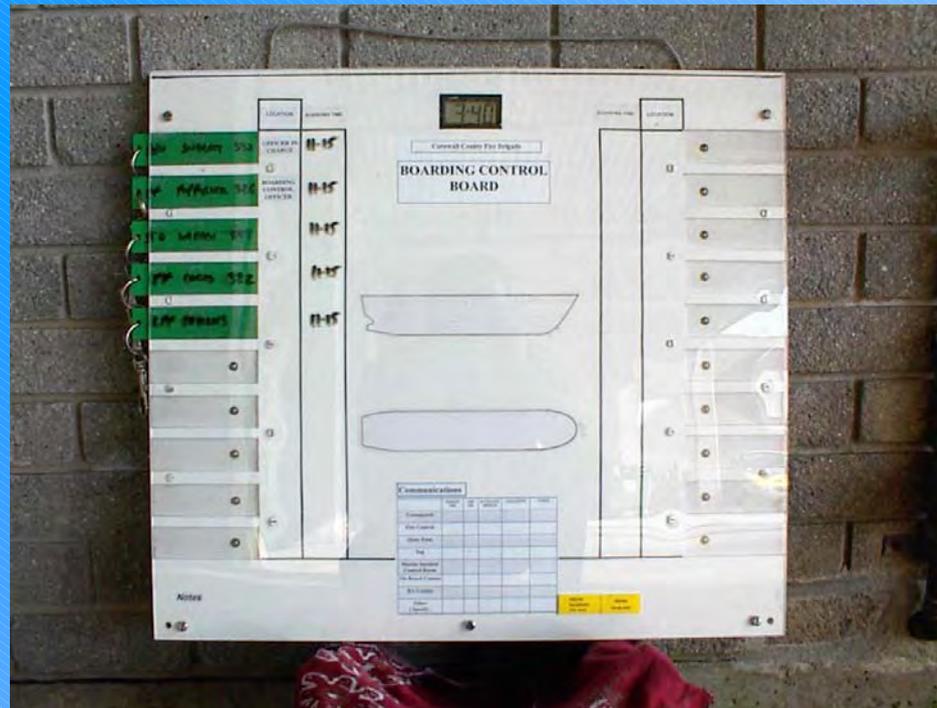


# Helicopter lands at RV/LZ and Aircrew liaise with Crew (Ops) Commander



# BOARDING BOARD (CSO)

- To record all personnel boarding and egressing the casualty, i.e., receiving tallies...
- Onboard welfare.



# COMMAND WALLET/BOARD



# Flight Despatched...

Pre-flight safety brief is given before flight dispatched...

Crews now fully dressed in PPE and checked before boarding...



# Arrival at Incident/Risk Assessment Criteria

On arrival Operational Commander requests fly-by to assess:

- Fire and smoke conditions...
- Status of the vessel...
- Whether the vessel is still crewed...
- Weather and sea conditions...
- Proximity of support vessels...
- Are Fire Crew to be committed??



# 'GO' Situation

Winchman may go to deck ~ followed by Operational Commander, Command Support, equipment and remainder of team.



# Break

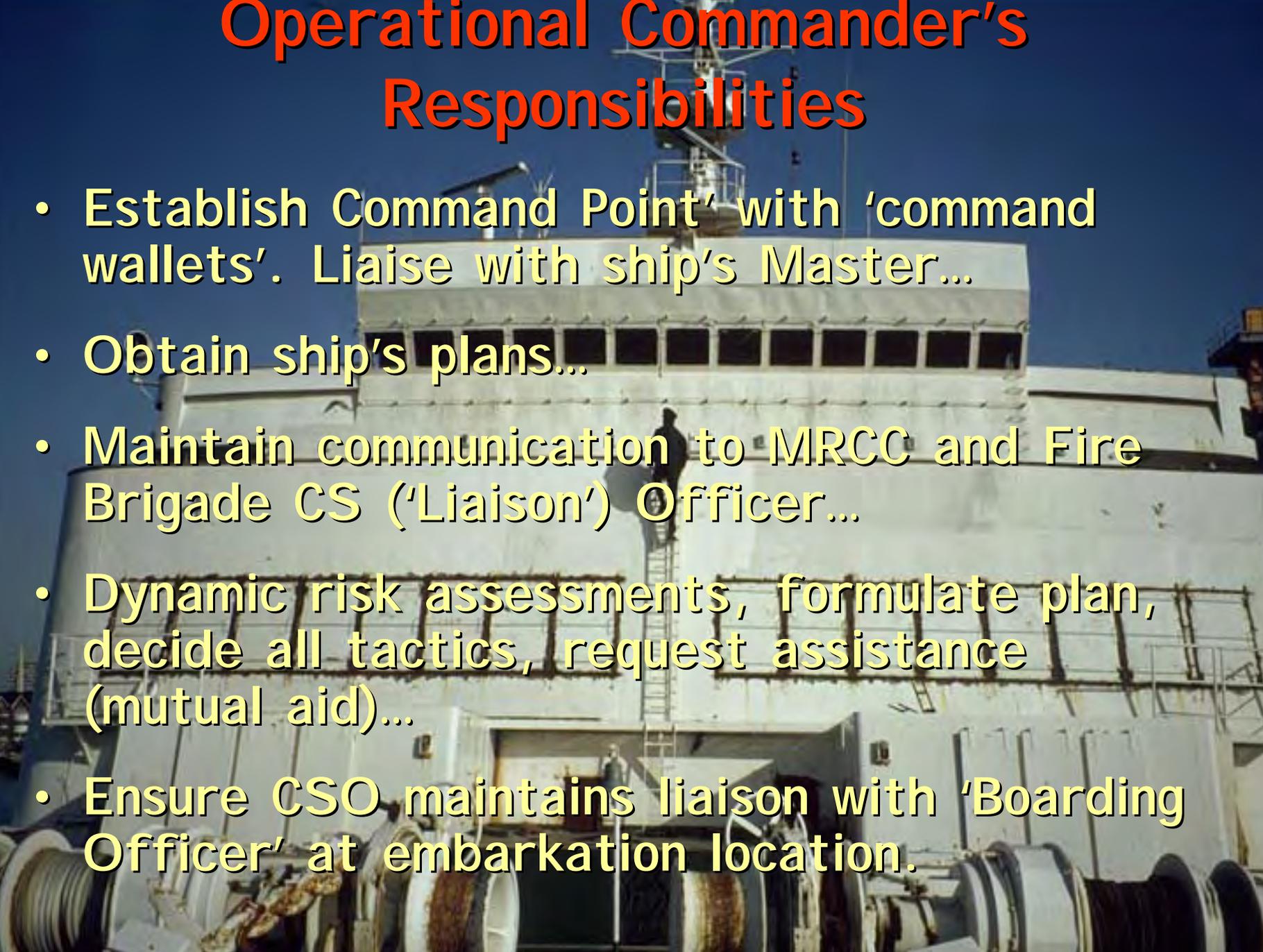


## Time to reflect!!

# In Attendance

- Operational Commander and Command Support Establish contact with Master of vessel...
- OC confirms Fire Brigade assistance is required...
- Basic Strategy and Tactics agreed by the OC and Master...
- These will be based predominantly on a 'Defensive' strategy of containment until support teams arrive.

# Operational Commander's Responsibilities

The background of the slide is a photograph of a ship's superstructure. A person is visible on a ladder, climbing or working on the side of a white structure. The sky is clear and blue. The overall scene is that of a maritime environment.

- Establish 'Command Point' with 'command wallets'. Liaise with ship's Master...
- Obtain ship's plans...
- Maintain communication to MRCC and Fire Brigade CS ('Liaison') Officer...
- Dynamic risk assessments, formulate plan, decide all tactics, request assistance (mutual aid)...
- Ensure CSO maintains liaison with 'Boarding Officer' at embarkation location.

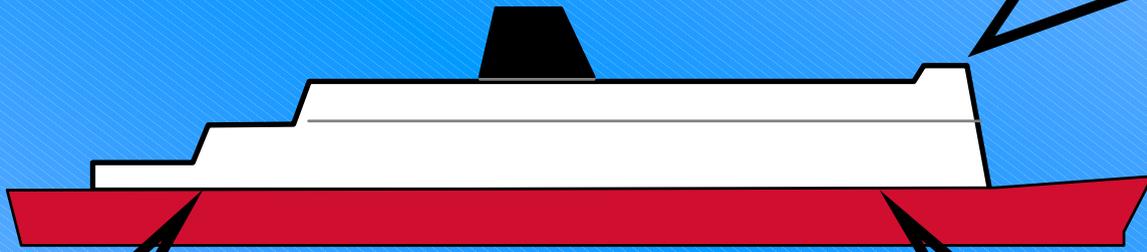
## and ...

- Limit 'span of control' by delegation...
- Appoint Sector Commanders/Safety Officers...
- Appoint 'functional' officers, eg., stability...
- Consider use of ship's crew...
- Be aware of:
  - water supplies ~ boundary starvation/cooling...*
  - fixed installations...*
  - state of cargo and crew...*
- Continual liaison with ship's officers...
- Regular briefings and confirmation of 'tactical modes' (20 mins)...
- Safety of all personnel including ship's crew.

# On-Board Command & Control

## Fire Command Point (FCP):

- ❖ Ship's Master/Ship's plans ~ Comms. to MRCC...
- ❖ Operations Commander / Command Support ~ Comms. to Sector's Command.



## Sector Commander 'Aft':

- ❖ 'Support Crew'...
- ❖ Boundary cooling...
- ❖ Water supplies...
- ❖ General functional roles.

## Sector Commander 'For'ard':

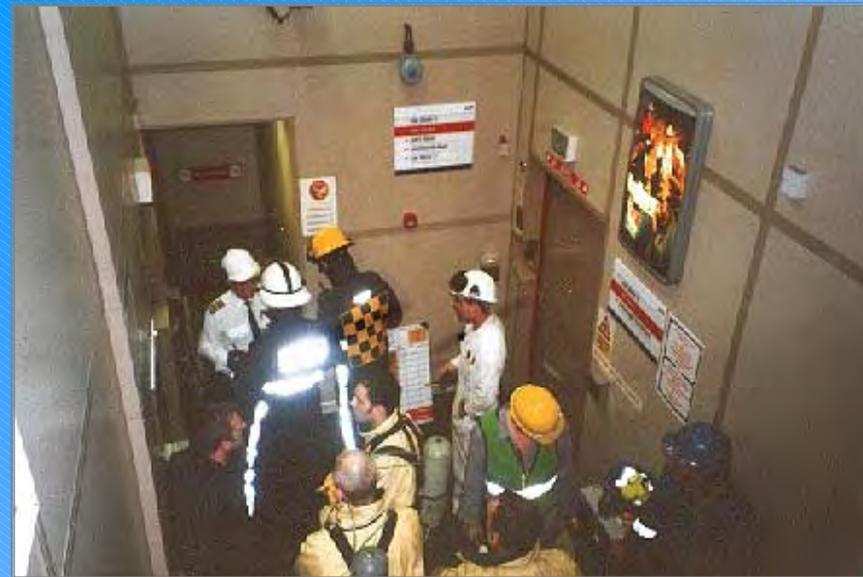
- ❖ SC with 'Attack Crew'...
- ❖ Ship's Officer...
- ❖ Ship's plans...
- ❖ Comms to other Sectors...
- ❖ Ship's fire team.

# Items to be confirmed and actioned by Command Team

Establish 'abandon ship' procedures and muster points from Master and inform SC's...

Instigate a reconnaissance of area affected by fire and establish a Sector Command point if not already in place...

Full update on current fire situation and status of vessel from Master.



# Items to be consider and actioned by the Sector Commander

- Establish directional safety lines to:
  - i) Open Air/Muster Points...*
  - ii) OC at Fire Command Point (FCP).*
- Situation report to OC and Crew Commanders ...
- Regular Tactical Mode messages (20 minutes)...
- Ship expertise available, i.e., 1st Officer or Chief Engineer...
- Ship's plans, ship's crew available or involved in firefighting duties...
- Sufficient resources available to complete the tactics...
- Status of vessel and utility services.

# 'Offensive' Actions

- Number of ship's 'Attack Crew's' being used for firefighting purposes...
- Fixed installations in use...
- Number of BA in use...
- Number of hose lines in use.



# Cordon Control

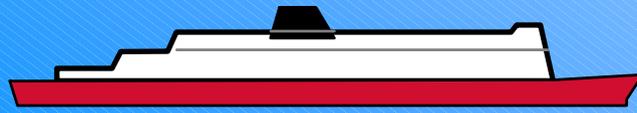
- All personnel arriving onboard to be logged in..
- Identify those leaving..
- Wheneventually alongside, limit gangways, control access and egress...
- (Cordon Control - to be further developed).

**Command Support sets up  
communications link to MCA and  
confirms the  
numbers of Brigade personnel on board**



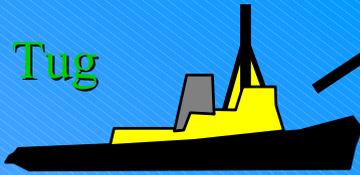
**Brigade Liaison Officer at MCA must  
ensure that each message  
received by MCA is relayed to  
Brigade Control.**

# Incident Communications

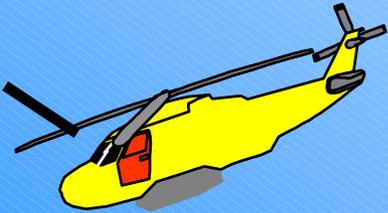


**INCIDENT**

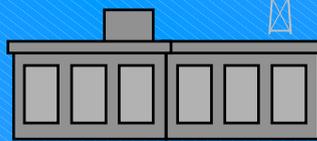
Tug



SAR



MRCC



Dock Embarkation  
Officer at RV

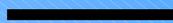
Fire  
Control



Falmouth Fire Station  
(monitoring)

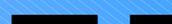


**LANDLINE**



**FAX**

**CELLPHONE**



**MARINE BAND RADIO**

# Communication Links

- Portable marine radios...
- Handheld marine radios...
- Vessel's marine band fixed radio...
- Field telephone system...
- Exchanges telephones...
- Fax machines...
- Cellular (satellite) telephones...
- Brigade main scheme radio.
- GMDSS



# Assistance/Informative Message

Request for additional resources:

- Number of firefighters and officers...
- The numbers and items of equipment required.



# Informative Message (Sit-Rep)

- Exact fire location:
  - Deck level...*
  - Hold or compartment number or machinery space...*
  - Forward, aft or midships...*
  - Port or Starboard.*
- Extent of the fire and what's involved:
  - Cargo type...*
  - Type of compartment space.*
- Whether the fire has been contained by closing up:
  - Watertight/bulkhead doors, ventilation dampers.*
- Are there any casualties involved:
  - Medivac required.*

# Status of the Vessel

- Stability...
- Whether the ship is still under way...
- Ship's utilities are operational, ie., electrical power and pumps.



# Evacuation of casualty...

- Roll Calls should be taken and all personnel mustered and the support vessel/aircraft requested to come alongside...
- 'Boarding Board's' to be taken aboard the support vessel...
- Message sent to MCA that all personnel are now aboard the support vessel/aircraft and the casualty vessel has been fully evacuated...
- Destination and ETA of support vessel / aircraft to be sent to MCA and Brigade Control...
- Upon landing at UK/EU port a full list of names, ranks and numbers to be sent to MCA and Brigade Control.

# On Arrival of 'Support' teams



A Command Support 'Deck' Officer to be nominated to co-ordinate arriving support personnel...

The Command Support Boarding Officer will:  
Accept Crew tallies and add to the Boarding Control Board once aboard the casualty vessel and amend details with MCA.



# 'Support Teams' ~ Nomination of Tasks

- Crews and Officers when nominated a task will then be further identified on a tasking record held within the Sector Command Wallet at each Sector...
- Officers will be given specific functional Sector Commander roles, eg.,

Water...

Equipment...

BA...

**This allows the provision to Sector evacuate only and Roll Call for that Sector.**

# Operational Commander instigates further Sit-Rep Message

- Send further sit-rep's updating with names and numbers of personnel on board...
- Relief times...
- Request for personal welfare:

Hot food...

Drink...

Dry clothing...

Personal hygiene.

# Issues to consider over Protracted Time Scales for the Command Team

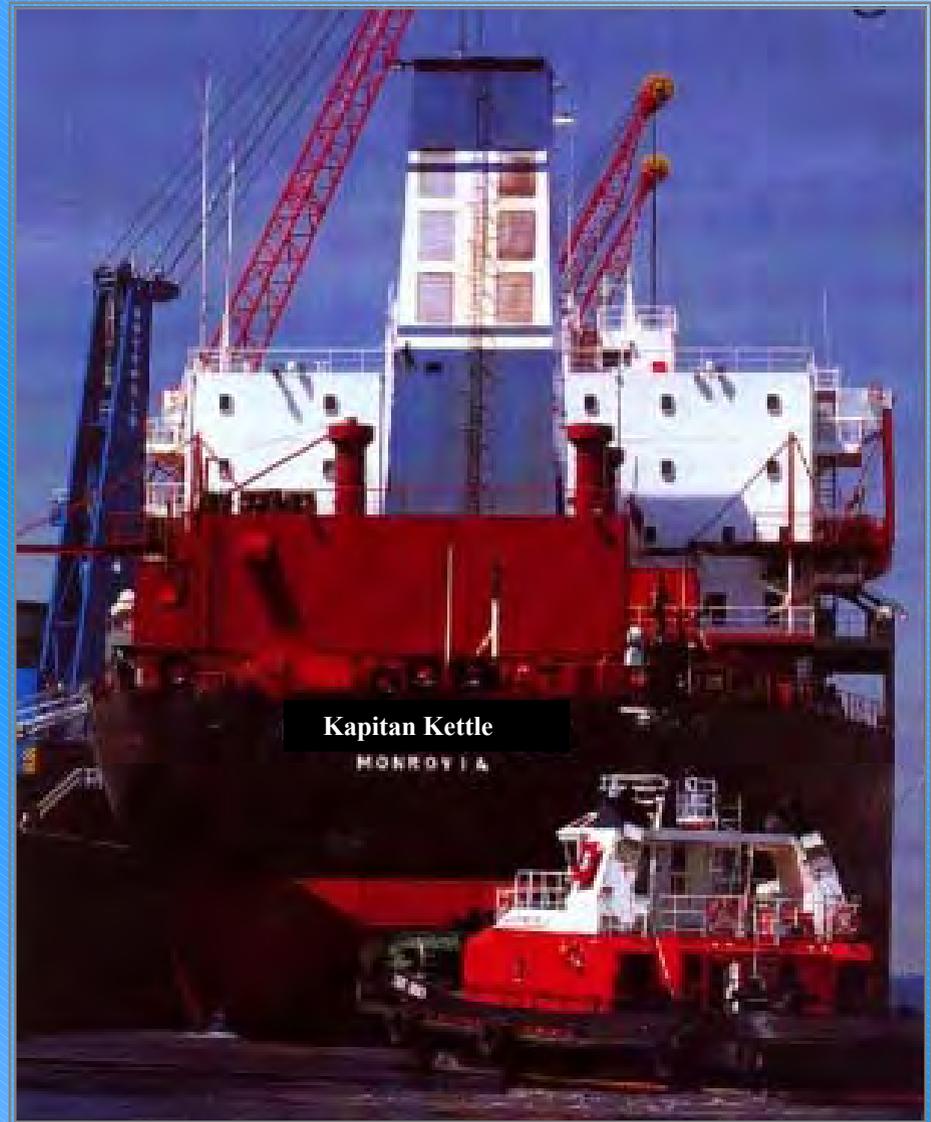
- Status of the vessel...
- Weather forecasts...
- Can the vessel proceed or will it have to be towed into port...
- Fire development...
- Physical condition of the firefighters (all personnel not gainfully employed should be rested).

# and...

- Relief crews...
- Prolonged personnel welfare...
- Adjust tactics, to continue 'defensive' or change to 'offensive'...
- Regular dialogue with Master and Salvors if appointed...
- Environmental issues...
- Regular General Roll Calls.

# Successful completion of Incident

- Fire contained and brought under control...
- Vessel docked in foreign port...
- Short, hot debrief...  
and...



# Ensure...

- Hand over to relative Fire Brigade...
- Roll Call, names, ranks and numbers to be sent to MCA and Brigade Control...
- Repatriate the crew and equipment...
- Welfare of crew...
- Transportation for team and equipment...
- Passage to UK and Customs clearance...
- Reception party and medical checks if required and inform next of kin...
- Incident debrief.

# Further Considerations ~ The Vessel

- It may still be on fire: ~  
Consider only 'defensive' tactics, eg., boundary starvation/cooling and batten down the fire to enable the ship to evacuate its passengers...
- It may be damaged and unsafe by virtue of its cargo...
- It may not be able to come into port unaided (loss of power/crew)...
- It may not be allowed in to a port ~ (Harbourmaster's decision).

# ... Casualties from the Vessel

- Fatalities (Police, Coroners, Mortuaries)...
- Those without money, cars or luggage ~ needing housing/transport (Local Authority County Emergency plans)...
- Seriously injured ~ possibly a large number ~ 40 or more... (Local health authority ~ ambulance)...
- Relatives ~ casualties and survivors will have relatives anxious for information and reassurance (Press Bureau)...
- Debriefing ~ crew/passengers/Fire Brigade.

# Agencies requiring Attention

- The Media...
- Harbour/Port Authorities...
- National/Local Government VIP's...
- Inquiry Boards/Environment Agencies/Department of Transport...
- Inspectorates/Insurers/Local Businesses.

# To Summarise

- Obtain full details before mobilising...
- Limit 'Tactical Modes'...
- Crew Welfare...
- Ability to 'withdraw'...
- Ability to 'support'...
- Command and Control considerations...
- Use of SOP's...
- Debrief and Post incident.



Marine Operations - Part 4

Helicopter Operations



The purpose of this document is to summarise the agreement reached between the participating coastal Fire Services for the adoption of best policy and practices regarding arrangement for heli ops for firefighting, chemical hazards and rescue on vessels at sea.

### Further Information:-

- Memorandum of Understanding between MCA and the Fire Service.
- DCOL 9/92

## Response criteria...

- Request from MCA ...
- Request from another source that is approved and supported by the MCA...
- Must be approved by a Fire Brigade 'Principal' Officer - where there is an *immediate risk to life* or high risk of an incident developing that will have a *serious environmental impact*.

## **IT IS ANTICIPATED HELICOPTER RESPONSE TEAMS ACTING IN ISOLATION CANNOT AND WILL NOT INITIATE 'OFFENSIVE' TACTICS.**

The defined task will be to provide actions and make provisions for when additional resources become available.

The MCA will seek the help of the relevant Fire Service after receiving a request for Fire Service assistance from the Master of a vessel at sea. It is considered that Fire Services/Brigades may respond to calls for assistance particularly where life is at risk. The decision to attend or not will be made by the appropriate Chief Fire Officer or his/her nominated representative.

The Chief Fire Officer Firemaster or his/her representative will require specific information before committing the resources of his Fire Service. The form detailed in Section 19 should be used for this purpose. In the first instance HM Coastguard should attempt to complete those items asterisked and in bold print. This should also be faxed to the Fire Service by the co-ordinating HM Coastguard station. Subsequent information can be added when required by the Coastguard.

## Teams...

### 'Assessment' Team:-

...team of two Officers only. Despatched when very limited information available...

### 'Strike' Team:-

...team of six, minimum. Despatched when immediate risk to life is known and / or suitable risk assessment has been achieved...

### 'Support' Teams:-

... as transport resources permit; to allow 'Offensive' tactics to be more suitably introduced.

Self explanatory..to be discussed in detail..

## 'ASSESSMENT' TEAM...

### Primary Objectives

- Provide first impression risk assessment information...
- Maintain communications links with MRCC...
- Provide professional advice on matters relating to fire...
- Formulate plan - if appropriate, advise Fire Brigade 'Principal' Officer (shoreside), to allow strategic decision making process...
- Keep MRCC fully advised.
- NOTE: This team 'may' be transported by air or sea

Minimum of two Officers *with the relevant competencies...the 'assessment' team may form part of a larger 'multi agency' response*

*The team should wear full PPE i.e immersion suit and lifejacket and carry a minimum of equipment as follows:-*

*Welfare packs ( 2kgs )*

*Marine band radios.. two (1kg )*

*Heavy duty torch (1 kg )*

*Thermal Image camera (8kg)*

*Notebooks / Dictaphone*

## 'STRIKE' TEAM (Airborne) - Composition - minimum of 6

- 'Operations' Commander [OC]....Tactical decision maker...
- 'Sector' (or 'Forward') Commander...second in command...
- 'Command Support'...to assist the OC, comms. etc...
- Team Members (3) ... 'defensive' tactics only.

The 'Strike' team may be the initial team and therefore will need to carry out the primary objectives of the 'Assessment' team before any further actions are taken.

(A waterborne 'strike' team may consist of up to 20 personnel (CCFB))

Team of six, *maximum eight, with pre designated equipment bags - One - Two - Three*  
*Minimum of two Officers with relevant competencies if no 'Assessment' team previously mobilised.*

This will provide an *Operations* Commander and / Command Support.

The final decision for deployment of personnel *to the casualty* will rest with the OC.

The 'Strike' team consists of only Fire Service personnel

## 'STRIKE' TEAM... Primary Objectives

- As dictated for 'Assessment' team ...
- Establish initial command point (ICP), normally the ship's bridge...
- Consider a 'forward' command point (FCP)...
- Initiate 'defensive' tactics and rescues...
- Identify muster / evacuation point...
- Continually risk assess, maintain good communications, brief and debrief all...
- Consider further / mutual assistance.

Carry out a risk assessment (*as per the 'Assessment' team if not previously deployed*).

Collect information .

Identify ICP and evacuation point

Rescues may not be an option....

Transmit a full situation report via the co-ordinating HM Coastguard Station.

Make provision for: Command and Control, Safety and Welfare, Comms.

To provide the CFO / Firemaster with a risk assessment to enable decision on further deployment to be made at the strategic level.

Request necessary resources to enable the incident to be dealt with effectively. The resources requested should be prioritised to enable proper logistical planning by onshore organisation.

**MINIMUM LOAD FOR STRIKE TEAM**  
~ Airborne ~

BAG 1	BAG 2	BAG 3
<ul style="list-style-type: none"> <li>▪ Bag /box</li> <li>▪ 2 x CABA sets</li> <li>▪ BA boards</li> <li>▪ Thermal image camera(TIC)</li> <li>▪ First aid box</li> <li>▪ 2 torches</li> <li>▪ 2 x Marine band portable radios and spare batteries</li> </ul>	<ul style="list-style-type: none"> <li>▪ Bag /box</li> <li>▪ 2 x CABA sets</li> <li>▪ 4 x handheld radios and waterproof covers.</li> <li>▪ 4 torches</li> <li>▪ Incident control board</li> <li>▪ Transit line or guide tape</li> </ul>	<ul style="list-style-type: none"> <li>▪ Bag /box</li> <li>▪ 2 x CABA sets</li> <li>▪ Welfare pack</li> <li>▪ Field telephone</li> <li>▪ Cable drum</li> </ul>
Weight: 65kgs.	Weight: 61kgs.	Weight: 65kgs
<b>TEAM of SIX: 600 kgs</b>		<b>TOTAL LOAD: &lt; 800 kgs</b>

© Central Coast Fire Brigade      Helicopter Operations      December 2009

Maximum loads may differ for different types of helicopter. In all cases the maximum load will be at the direction of the helicopter loadmaster or pilot.

Fire Services should have available prepared equipment lists with weights in lbs./kgs to cover all the equipment likely to be utilised. Weight calculation charts should also be incorporated *and account must be taking of Manual Handling regulations*

Brigades will have prepared equipment lists for the appropriate teams. Further specific loads will depend on the nature of the incident. However, it is anticipated that equipment dumps will be prepared at helicopter landing sites or waterborne embarkation points for water, foam, breathing apparatus, rescue and/or chemical protection equipment in preparation for further flights.

**ALL BRIGADES NEED TO ADOPT THE SAME IDENTIFICATION ETC TO AVOID DUPLICATION FROM 'MUTUAL AID' INCIDENTS**

## Load bags...

Helicopter load bags should meet a minimum criteria for Manual Handling:-

- Maximum dimensions...
- Sling heights...
- Base specification...
- Method of clearly displaying contents...
- Identify SWL, be tested and recorded.

**What is the aircraft's available payload?**



## Embarkation...

- Nominal roll completed...
- Safety brief...  
eye, ear protection / aircraft approach / seating and loading / disembarkation / emergency procedures...
- Illumination landing site.

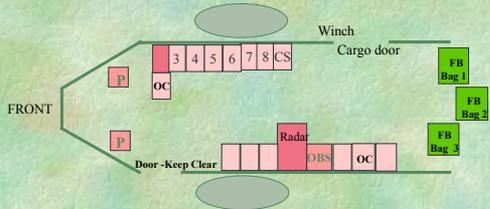
In all circumstances a nominal roll form (Section 20) should be completed to record all personnel taken offshore. Copies of this should be FAXED to HM Coastguard, HM Customs and the HM Immigration Office which covers the Service/Brigade where the incident has occurred. With HM Coastguard being the central coordinator in cases of repatriation, if this becomes necessary.

In the case of firefighters returning to shore, their Fire Control Centers must fax their names to HM Coastguard to ensure nominal rolls are always current.

Prior to departure / embarkation all crews must have received a pre flight safety brief. This must include details on the aircraft to be used, appropriate use of PPE .e.g. eye, ear protection, methods of approach, seating and equipment location, disembarkation and emergency procedures.

The pilot may require illumination of the landing zone (lz) when collecting or returning crews, this may be done by the use of two Fire appliance's headlights directed in a vee shape on the lz. Night vision goggles will not normally be used by the aircrew in these circumstances, but strong torches etc should never be shone directly at the aircraft.

**AND EQUIPMENT BAGS STOWAGE  
(R.N. Sea King Mk5.)**



The Fire Brigade Operations Commander may be seated in either of the seats shown OC as determined by pilot. (The OC will be provided with a headset for comms.)

- Suitable equipment...
- Suitable PPE...
- Use of communications...
- Maintaining communications.

The teams, personnel and equipment should meet the following:

Current standards for the safety and protection of personnel during transportation, transfer and activities on board vessels in need of assistance.

Current standards for the safety and protection of personnel during firefighting and associated activities.

Enable personnel to communicate to the relevant rescue co-ordination centre.

*All portable radio equipment including cellphones, taken on board a helicopter must be switched OFF and must not be operated inside the helicopter.*

*Radio communications for the Fire Service Crew whilst on board the helicopter will be provided by the helicopter crew.*

Communications with the aircraft will only normally be available via VHF Marine wave band radio's. Crews operating on the ground, without assistance from a member of the aircraft's crew, should always maintain communications with the helicopter

## Personal Protective Equipment (PPE)...

- Lifejacket (non-auto)...
- Immersion / Transit suit...
- Head protection (fire helmet, eye protection, chin strap)...
- Ear protection...
- Ancillary equipment... safety belt, 'Cylume' sticks, supplementary air device, torch.



Cornwall County Fire Brigade

Helicopter Operations

December 2010

It is now decided that a coverall immersion suit meets the current and future needs. The suit plus undergarments giving thermal protection affords adequate protection to personnel. The combination of both satisfies SOLAS regulations and meets the requirements of CAA Specification 19.

Some Brigades wear fire resisting personnel protective equipment (PPE) as immersion suit undergarment, whilst other Brigades may carry firefighting PPE which is then donned on arrival.

### Lifejacket

Lifejackets must be suitably approved to meet the standards required for airborne use *i.e non auto inflate ( or the ability to 'disarm' auto inflate )*

### Immersion / Transit Suits

Approved immersion suits for helicopter use are the *minimum* requirement for travelling by helicopter *and are to be worn at all times.*

### Head Protection

A *Fire Brigade* helmet with chin strap fastening and built in visor is the minimum standard.

### Ear Protection

Ear protection should be made available to all personnel.

### Ancillary Equipment

All personnel should be afforded the appropriate level of personal protection and safety equipment which may include:

The provision of a supplementary air device.

Safety belt with pouch, personal line and karabiner.

Cylume chemical lights.(to be worn at night on board vessel)

Torch.

- Emergency rations e.g water, 'Hot Packs'...
- Anti nausea treatments, e.g, tablets, 'Seabands'...
- Emergency clothing packs...
- Personal 'holdalls'...
- Immigration provisions... 'we sometimes end up where we don't want to be'!!! ( or do!!).

To be able to provide personnel with such equipment as they need to sustain them for a reasonable period of time offshore, should arrangements not be available on board the vessel / structure or standby vessel(s), welfare packs should be provided.

The exact nature of welfare packs is not stipulated, however, the following should be considered:

Hot Cans

Drinking Water

High Energy Bars

Toilet Paper

Face Wipes

Hand Cleaner

Sea Sickness pills / Seabands

Personnel who require to take seasickness tablets ( *subject to advice from Brigade Occupational Health* ) must ensure these are taken before embarkation (some tablets may cause drowsiness and this needs to be taken into account). Sea wrist bands provide some protection from seasickness and may be considered an alternative to seasick tablets.

All personal equipment and food could, if required, be carried in a personal holdall which the individual could retain during the flight and winching operation. This equipment must be limited in weight to the extent that it will not increase equipment levels beyond the maximum weight limits allowed for helicopter transport.

Consideration must also be given to immigration provision, where firefighters may land in a foreign country.

## 'SUPPORT' Teams Primary Objectives..

- Normally maximum of 8 per team (airborne), and may be from supporting Fire Brigades...
- ...to support 'response' team as dictated by OC...
- ...to carry out 'Offensive' tactics...
- ...relieve previous crews.
- ...waterborne approach provides additional emergency egress, transportation of heavy equipment additional welfare facilities.

When all assessments have been concluded the OC may take the decision that some Offensive tactics are necessary. Support teams will need to be mobilized to ensure these actions can be carried out with maximum safety and resource support.

Further resources may be committed via a seaborne transfer.

Support teams may be mobilised from supporting Brigades.

The OC must ensure that suitable, safe means of egress are available from the casualty for all those persons who will eventually be onboard. This may include the use of helo, standby vessels or the casualties own evacuation equipment.

Ultimately the number of personnel onboard the casualty will be down to local agreements

### Composition

At the discretion of the OC in liaison with the IC (shorebased), taking into account the balance of need i.e personnel or equipment.

Any further equipment required by the Offshore team needs to be evaluated by the Operational Commander. He / she must be provided with the appropriate information so the correct assessment can be taken. This detail must be available for participating Brigades and carriers.

Account must be taken of helo carrying capacity.

Maximum payload of 2500lbs

- Helo transfer - initial only...
- Sea survival training (Brigade approved course) - three yearly...
- Safety briefings and helo familiarisation - annual...
- Dry winching techniques - annually...
- Mutual aid / liaison joint training.

Fire Brigades' investment in training and equipment is continuous and has resulted in an ability to rapidly airlift the reconnaissance team of nine firefighters to a stricken vessel and support it by sea borne approach. Such a provision requires a comprehensive training plan and, as with many Brigades, this plan is based on realistic training for firefighters and officers by the provision of exercises held annually involving all agencies such as Coastguard, Royal Navy, tug and ferry companies. The experience has shown that the demands of marine firefighting can only be met by firefighters who are both well trained and well equipped.

*The following is subject to local risk assessment.. and **requires further discussion.***

*Approved helicopter familiarisation / safety briefings. (Annually)*

*Sea Survival techniques - Brigade approved courses. (Three yearly)*

*Dry winching techniques. (Annually)*

*Helicopter transfer. ( Initial only)*

Fire Brigades participating in offshore incidents that involve the use of helicopters as a primary mode of transport should carry out training with the appropriate 'carrier' and also with other key agencies e.g MCA and 'mutual assistance Brigades

Training should include testing of mobilising procedures, communication functions and the ability to respond to a request for mutual aid. Brigades must ensure that when mutual aid training is carried out, personnel are made aware of any relevant differences in command and control procedures, key equipment and communication systems

Summary...

Team Composition...

Equipment Loads...

Mobilising...

Welfare...

Training.





## Marine Operations – Part 4

### Helicopter Operations



## Known declared response...



- Cornwall
  - Mid and West Wales
  - North Wales
  - Merseyside
  - Isle of Man
  - Lancashire
  - Northern Ireland
  - Highlands and Islands
  - Humberside
  - Lincolnshire
  - Suffolk
  - Kent
  - East Sussex
  - Isle of Wight
  - Hampshire
  - Guernsey
  - Jersey
- TOTAL ... 17

## Response criteria...

- Request from MCA ...
- Request from another source that is approved and supported by the MCA...
- Must be approved by a Fire Brigade 'Principal' Officer - where there is an *immediate risk to life* or high risk of an incident developing that will have a *serious environmental impact*.

# Teams...

## 'Assessment' Team:-

...team of two Officers only. Despatched when very limited information available...

## 'Strike' Team:-

...team of six, minimum. Despatched when immediate risk to life is known and / or suitable risk assessment has been achieved...

## 'Support' Teams:-

... as transport resources permit; to allow 'Offensive' tactics to be more suitably introduced.

# ‘ASSESSMENT’ TEAM...

## Primary Objectives

- Provide first impression risk assessment information...
- Maintain communications links with MRCC...
- Provide professional advice on matters relating to fire...
- Formulate plan - if appropriate, advise Fire Brigade ‘Principal’ Officer (shoreside), to allow strategic decision making process...
- Keep MRCC fully advised.
- **NOTE:** This team ‘may’ be transported by air or sea

# ‘STRIKE’ TEAM (Airborne) - Composition - minimum of 6

- ‘Operations’ Commander [OC]....Tactical decision maker...
- ‘Sector’ (or ‘Forward’) Commander...second in command...
- ‘Command Support’...to assist the OC, comms. etc...
- Team Members (3) ... ‘defensive’ tactics only.

The ‘Strike’ team may be the initial team and therefore will need to carry out the primary objectives of the ‘Assessment’ team before any further actions are taken.

(A waterborne ‘strike’ team may consist of up to 20 personnel (CCFB))

# ‘STRIKE’ TEAM...

## Primary Objectives

- As dictated for ‘Assessment’ team ...
- Establish initial command point (ICP), normally the ship’s bridge...
- Consider a ‘forward’ command point (FCP)...
- Initiate ‘defensive’ tactics and rescues...
- Identify muster / evacuation point...
- Continually risk assess, maintain good communications, brief and debrief all...
- Consider further / mutual assistance.

# MINIMUM LOAD FOR 'STRIKE' TEAM

~ Airborne ~

## BAG 1

- Bag /box
- 2 x CABA sets
- BA boards
- Thermal image camera(TIC)
- First aid box
- 2 torches
- 2 x Marine band portable radios and spare batteries

Weight: 65kgs.

## BAG 2

- Bag /box
- 2 x CABA sets
- 4 x handheld radios and waterproof covers.
- 4 torches
- Incident control board
- Transit line or guide tape

Weight: 61kgs.

## BAG 3

- Bag /box
- 2 x CABA sets
- Welfare pack
- Field telephone
- Cable drum

Weight: 65kgs

**TEAM of SIX: 600 kgs**

**TOTAL LOAD: < 800 kgs**

# Load bags...

Helicopter load bags should meet a minimum criteria for Manual Handling:-

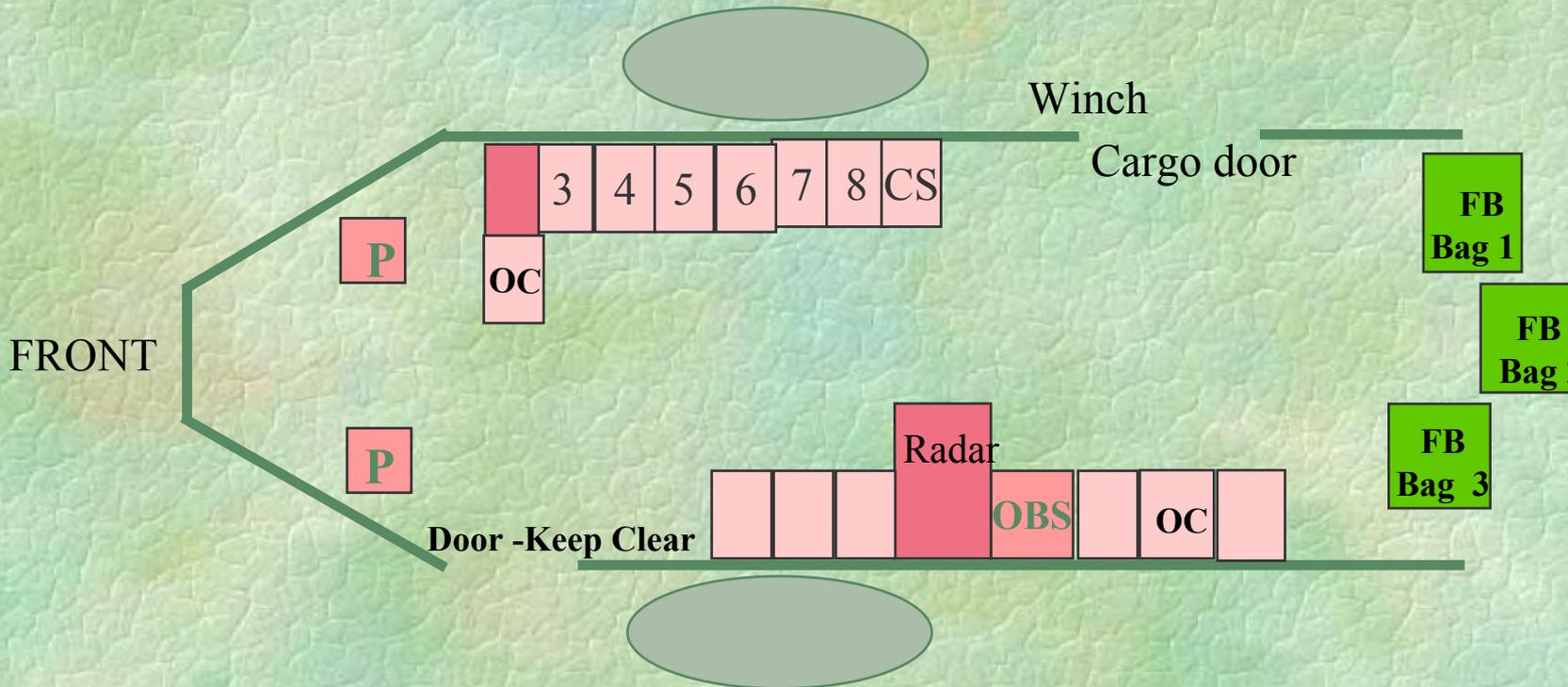
- Maximum dimensions...
- Sling heights...
- Base specification...
- Method of clearly displaying contents...
- Identify SWL, be tested and recorded.

**What is the aircraft's available payload?**

# Embarkation...

- Nominal roll completed...
- Safety brief...  
eye, ear protection / aircraft approach / seating and  
loading / disembarkation / emergency procedures...
- Illumination landing site.

# PLAN OF HELICOPTER SEATING AND EQUIPMENT BAGS STOWAGE (R.N. Sea King Mk5.)



The Fire Brigade Operations Commander may be seated in either of the seats shown OC as determined by pilot. (The OC will be provided with a headset for comms.)

# Equipment & Communications...

- Suitable equipment...
- Suitable PPE...
- Use of communications...
- Maintaining communications.

# Personal Protective Equipment (PPE)...

- Lifejacket (non-auto)...
- Immersion / Transit suit...
- Head protection (fire helmet, eye protection, chin strap)...
- Ear protection...
- Ancillary equipment...safety belt, 'Cylume' sticks, supplementary air device, torch.



# Welfare..

- Emergency rations e.g water, ‘Hot Packs’...
- Anti nausea treatments, e.g, tablets, ‘Seabands’...
- Emergency clothing packs...
- Personal ‘holdalls’...
- Immigration provisions... ‘we sometimes end up where we don't want to be’!!! ( or do!!).

# **‘SUPPORT’ Teams**

## **Primary Objectives..**

- Normally maximum of 8 per team (airborne), and may be from supporting Fire Brigades...
- ...to support ‘response’ team as dictated by OC...
- ...to carry out ‘Offensive’ tactics...
- ...relieve previous crews.
- ...waterborne approach provides additional emergency egress, transportation of heavy equipment additional welfare facilities.

# Training for 'heliops'...

- Helo transfer - initial only...
- Sea survival training (Brigade approved course)  
- three yearly...
- Safety briefings and helo familiarisation -  
annual...
- Dry winching techniques - annually...
- Mutual aid / liaison joint training.

# Summary...

Team Composition...

Equipment Loads...

Mobilising...

Welfare...

Training.





The 'Marine Operations' packages are produced by CCFB Marine Operations Group (MOG) and are as follows

Part 1...Safe Working On Or Near Water...

Part 2...Offshore Incidents ~The Legal Framework

Part 3...Offshore Incidents ~Command and Control

Part 4...Helicopter Operations ~ SOP

Part 5...Tactical Ship Firefighting

Part 6...Ship construction.

Part 7...Sea Survival

Part 8...Small Boat Fire Safety

Other reference points include:-

ICS.ppt

Fire Service Manuals ~ Command and Control / Marine Operations...

DCOL's...

BIS Doc's...

Case Studies e.g 'Scandinavian Star'

CACFOA South West ICS packages

## *BIBLIOGRAPHY...*

- Fire Service Manuals...
- BR 4007/94 RN Handbook on ship firefighting...
- DCOL 9/92...
- MSA publications...
- 'Fog Attack'..Paul Grimwood...
- Fundamentals of Fire..Giselsson...
- CCFB Incident Command lectures.

Indicate MoF available..Book 4etc.

RN 'Orange' reference book .. show

DCOL9/92...All the training we are doing for ship ff.

Marine Safety Agency publications.

Fog Attack..tactical ff.

S.5...Points of safety...

## AIM...

To provide students with an awareness of the tactical firefighting methods required, to satisfactorily deal with fires in sea going vessels.

Note:

When dealing with an incident offshore, the Incident Commander remains ashore.  
An Operational Commander is introduced to lead the offshore teams.

# Self explanatory

## S.3...Objectives...

## *OBJECTIVES...*

- Command and Control procedures...
- Efficient use of water/foam...
- Hatch and door entry procedures...
- Effects of heat, humidity and stability...
- BA search procedures...
- Ventilation...
- Specialist equipment.

Emphasise each of the bullet points....

S.4...Bibliography...

## *Points of SAFETY...*

- Always work in **PAIRS**...
- BA crews 'should' always be minimum of **THREE** Firefighters...
- Wear **LIFE-JACKET** if working on or near the water...
- Monitor movement of people on and off the vessel...
- Ensure ALL persons understand evacuation whistle and '**Safeguard**'.

Emphasise dangers onboard ships, trip hazards etc.

BA crews, increased numbers improve safety.

Lj's..if going below leave with BAECO or OIC, but wear when working near ships side.

S.6..Role of the incident commander.....

## *NOTE - Fixed installations...*

• *Are they available?*

• *Have they been used?*

• *Can they be re-used?*

• *Are they necessary?*

*The 'OC' must evaluate all these issues.*

Carbon Dioxide...

Halon...

Foam...

Water...

Steam.

Identify the problems of each e.g BA within these areas, alarms, change in environment.

Can they be recharged.

Do they cover the appropriate areas..

Sprinklers/ multi sprays...stability and drainage.

23 Foams..

## ***NOTE: Lifejackets***



Unless working on or near the water, lifejackets should be removed and located at the boarding point / or equipment area.

If working on weather decks, lifejackets must be worn.

## *Incident / Operational Commander (OC)...*

- The 'Tactical' decision maker...
- Must NOT become directly involved with operations...
- Must ensure Risk Assessment and special hazards are adequately addressed...
- Must nominate 'Command Support'...
- Should nominate 'Safety Officer's' and ensure safety of ALL personnel...
- Maintain close liaison with 'ships master' and make use of 'ship's' personnel...

A vessel is a most hazardous place the OIC needs to be fully briefed by a RESPONSIBLE person before committing crews.

He must decide on the appropriate ext. media, entry points, safe use of support and attack parties. Communications. Are rescues required and if so are they achievable?

Is it safe to commit crews, or have the ships crew contained the fire. have the fixed installations been operated, are they available.

Are there any particular hazards he needs to consider

S.7...Command support...

*and...*

- obtain ships plans and if possible use Bridge or ship control centre [SCC/HO1]
- ascertain the Class and size of fire...
- use the appropriate extinguishing medium...
- instigate reconnaissance and containment...
- identify the method of approach , dependent on the relevant 'tactical' mode i.e. **Defensive - Transitional - Offensive**
- Nominate 'key' personnel..

[Click here to Start](#)

A vessel is a most hazardous place the OIC needs to be fully briefed by a RESPONSIBLE person before committing crews.

He must decide on the appropriate ext. media, entry points, safe use of support and attack parties. Communications. Are rescues required and if so are they achievable?

Is it safe to commit crews, or have the ships crew contained the fire. have the fixed installations been operated, are they available.

Are there any particular hazards he needs to consider

S.7...Command support...

## *Safety Officer's*

- Must have a constant awareness of the environment and the changes which take place during an incident...
- Take necessary urgent action to avoid injuries...
- Continually monitor and ensure Command Team advised and updated...
- Actions must be recorded.

## *Command Support*

IC / OC MUST nominate an individual as Command Support...

At 4 pumps or over this will be the Command Support Vehicle [CSV] Officer..

He /she will...

- Support the IC / OC...
- Advise Fire Control of Tactical mode...
- Make written records.

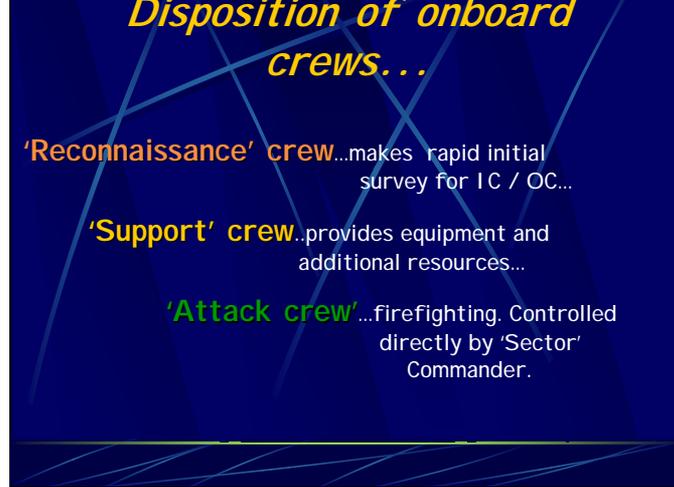
## *'Sector' Commander*

Responsible to the IC /OC for the tactical role of the 'attack' party.

There may be more than one Sector Commander and this must be taken into account with regards use of radio communications and committing crews into a scene of operations

Self explanatory..being based on the West Yorkshire command system

9...Crews roles...



The principal of these three teams is based around those practices as used by the Royal navy, and will in these circumstances promote Firefighter safety

Explain briefly that three key teams need to be instigated.as follows.

S 10 Recon team..

## *'RECONNAISSANCE' CREW...*

- Initial briefing by IC / OC - work in pairs...
- Make use of ship's plans...
- Check for signs of fire [using TIC.s and 'Hotspotters'] ...
- Avoid opening affected compartments...
- Check all six sides [if possible]...
- Report back to Commander.

Emphasise all the above and if able to check all six sides ensure the OIC receives all the information.

Use comms. beware of screening, be aware of ships comms. systems and note where the OIC is located ..you may wish to phone him!!

S.11...Support crew...

## 'SUPPORT' CREW...

- Lay 'transit' line to Sector Command...
- Prepare 'attack' hose [45/38mm]...
- Set up equipment 'area'...
- Provide independent water supply...
- Provide additional ship's plans.
- Carry out containment i.e. boundary cooling.

Initially equipment dump on upper deck [pre determined kit]. Also provide kit at forward bridgehead for attack party...as req'd by OIC. Run 'guide' [8mm conspic. line] line from access point on upper deck to for'd bridgehead.

Lay out required hose for attack party.

Once initial work done provide indepen. water supply i.e. port.pp.

Run 'hard comms. wire to ford bh. Prepare to carry out boundary starv./cool.

S.12...Boundary starvation/cooling...

## *'CONTAINMENT'- and achieving it...*

- Work in pairs.
- Boundary 'STARVE' first...
- Boundary 'COOL' all six sides...
- Use sprays...
- Locate bulkhead thermometers...

PREVENTS SPREAD

STOPS STRUCTURAL FAILURE

REDUCES INTERNAL TEMPERATURE

Starvation...removing combustibles from adjacent compartments..no starve..no cool properly.

Boundary cool all six sides if possible to completely contain fire.

Do Not work alone.

Sprays use less water,wider coverage and prevents localised cooling leading to structural failure.

S.13... FORWARD COMMAND...

## *Resources at 'Forward' Command ..*

- Ship's plans...
- Communications; including hard wire to CSV...
- Suitable branch and adequate hose to reach fire...
- Equipment i.e.. TIC, water, writing instruments, first aid kit, branch shut off valves....
- Two BA boards for ECO, two guide lines, cleaning materials, spare radio, 'Snaplights'...
- ~~Illumination, shelter, place of safety - means of egress.~~

## SELF EXPLANATORY

14..but where does it go...

## *BA Entry Control Officer ...*

- Managed by 'Sector' Commander...
- Tight control of BA comms..their may be other ECO's!!..
- Ensure BA teams of THREE...
- Liase with BA Main Control...
- 'Snaplights' worn by team leader to identify team ...
- Obtain 'boarding' tallies if in use and attach to BA tally.

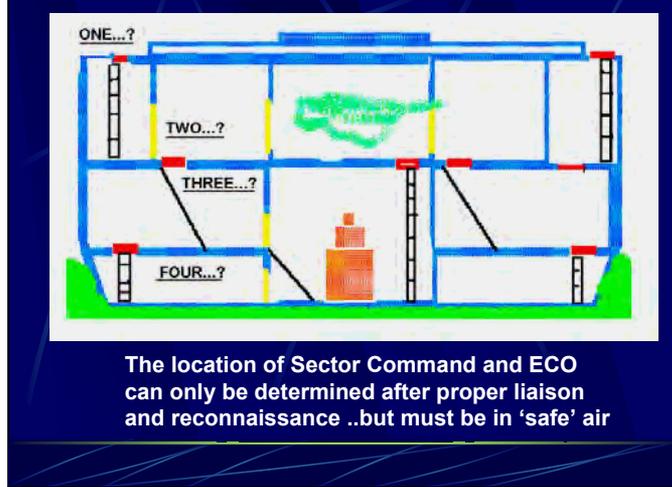
Consider the role of EPM or For. Comm to take the 'weight' off the baco.

Use of Snaplights and communications

Teams should not be wearing boarding tallies. Attach to BA tally if they are.

the awareness and problems of other BACO.s I.e. comms etc..

16 Attack crew...



Discuss options..no hard and fast rules. Discuss guide lines and withdrawal and the associated problems

15...BACO...

## ATTACK CREWS...

- Team of THREE...
- Communications ...
- Consider use of TIC...
- Briefing by 'Sector' Commander...
- Don BA in 'CLEAN/SAFE' air...
- Try to maintain smoke boundary...
- Take in adequate hose...

CLEAN/SAFE air are synonymous, but be aware of having the 'bridgehead' jeopardised when doors/hatches are open. What do do if BAECO etc.. has to withdraw. Consider using salvage sheets to set up a smoke boundary.

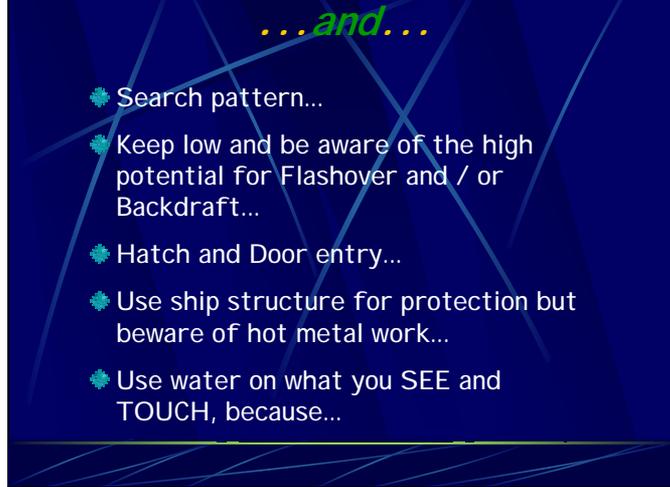
Crews must be properly briefed..use ships plan.

Comms/TIC are essential. TIC may 'white out'..but will spot a fire in a compartment.

Feed in hose..ensure adequate before entry.

Carry out correct ff. procedures i.e.. water walls.

S.17...continued...Where to locate...



Dont deal with fires i.e.. direct ff, if other crews are working in area..communicate!

Rescues,use of progressive vent. Search patterns..Briefing..backs to ladders then left/right..

When going through doors and hatches,if a fire is suspected..defensive ff. To be demonstrated later. BEWARE OF FO/BD.Lack of signs and symptoms because of compartmentation

Use ships structure for protection. SHUT doors .

Use water sensibly and on what you touch, to cool, and what you see..ff because....

S.18...Water... .



Self explanatory.....humidity worsens working conditions.

Steam produced reduces visibility and scolds.

Too much water will eventually upset stability..

19.. entering compartments Be aware of...

*'Attack' crew, remember...*

When entering DOWN into a compartment, allow all of team to reach deck level before carrying out firefighting...or else!!!

Be aware of - and communicate with other crews within the compartment - the 'Sector Command' - each other!  
and THINK...

Very important. Scalding other crews if jets used etc.

Always debrief by forward /sector commanders.

20 Be aware of...

# 'Safety - Safety - Safety'

[Click here to return to MPCS](#)



- Door / hatch entry...
- use of 'water walls'...
- 'Gas cooling'...
- 'Indirect / Direct' branch attack...
- Realise your limitations...
- Continually risk assess...
- Protect your egress.

## *EVACUATION...*

- Boarding procedures...
- Good briefing / Communication...
- 'Safeguard' rule...
- Use of gangways...
- Use of 'whistle'.
- Protect all crews...
- Controlled i.e.. Tactical Withdrawal...

Safe evac. in an emergency relies on good briefing and comms. with crews.

If an emerg. arises SAFEGUARD should be transmitted to gain radio silence. Then the BAECO or BASC needs to Tac. With. crews from greatest point of danger. Other crews protecting their egress if necessary. Also take the hose line back..you may need it!

The use of the whistle MAY put crews in danger by calling everybody out..in the wrong sequence.Ensure ALL personnel are aware of whistle.

29 Fire out....

S.20..Fire out...

# TACTICAL WITHDRAWAL

*'The controlled evacuation of personnel from a risk area to a place of safety' as defined in DCOL 5/1994. Consider:-*

Briefings / communications and liaison with ALL personnel.

Phased evacuation...

Protect crews...

A phased evacuation carried out to ensure safety of all crews...relies heavily on pre entry briefing and good communications both with crews inside and other EPMs etc outside.

The Tac. With. takes time and great control. Crews may need to protect their own egress ie returning with jets etc. Strict controls on radio are required for this to succeed .

Slide ..19...Evacuation considerations.....

## *Evacuation / Withdrawal considerations...*

- Crew briefing and communication...
- Accurate records kept...
- Use of 'whistle'..beware!...
- **'SAFEGUARD'** procedure'...
- ECO/ 'Sector Commander' liaison...
- OC / SC to instigate 'appropriate' procedure.

To safety 'evacuate' or 'tactically withdraw' from within a building the above must be adhered to.

The whistle **COULD** jeopardise safety, be aware.

To obtain radio silence the term **SAFEGUARD** should be repeated **THREE** times then the necessary instructions issued to give a greater degree of control of wearers.

Liaison between all concerned is of paramount importance to ensure a successful outcome.

Slide 20... What may instigate an evacuation?...

## *What may instigate an evacuation?...*

- A Command decision...
- Unsafe structure...
- Sounding of the 'whistle'...
- Communications 'failure'.

Self explanatory...

AND...

Slide 21...Operation of a DSU...

## *All personnel need to be aware of :...*

- Sudden ships movement...
- Use of BA guide lines...
- Hose couplings/submerged hose...
- Firemain bulkhead valves...
- Fixed systems i.e. comms / sounds...
- Automatic watertight / fire doors...
- Pressure waves.

Guidelines can be cut by violent movement of ships doors.  
Good comms. in case bridgehead has to 'retire'..

Hose etc..

Valves know what is available and where.

Pressure waves when opening doors and hatches  
compartment pressurised for various reasons..and sudden  
ships movements may catch people and cargo off guard!

Auto doors can be operated from bridge!

21...teams of three...



Self explanatory

22 Fixed installations

## *THE USE OF FOAM...*

- Hi-ex, medium or low...
- Machinery space fires...
- Tanks...
- Bulk cargo...
- Use of foam branches with shut - off valves...
- Supporting jets /sprays and ventilation.

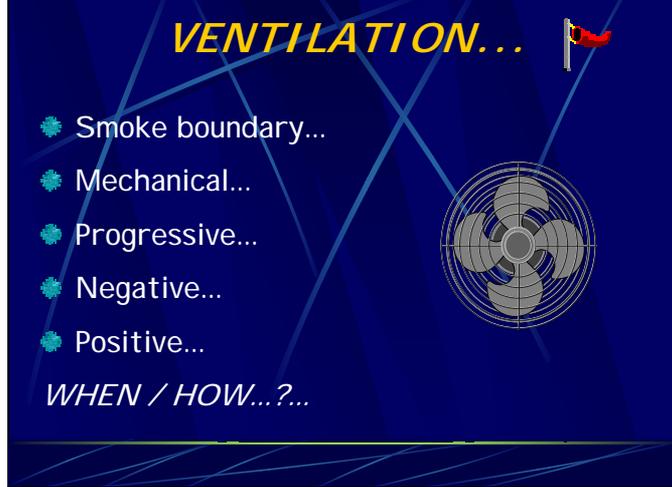
Foam must always be taken into any mach.space fire, with water wall protection. Low/medium/high expansion foams can also be used in tanks and on bulk cargo.

Shut off vv's for FB225's

Prove foam prior to proceeding and entry into compartment.

Beware of problems with hi - ex ,vents,covering jets etc.

S.24...Ventilation...



Set up smoke boundaries..doors/curtains.

Can ships vent extract be used to move / contain smoke or are fans [portable] going to have to be introduced.

Systematic/Progressive...working through venting as team proceeds[natural]

Neg./ Pos...depends on type of fan being used and where and if it can be located.

S.25...When to ventilate..

## *WHEN TO VENTILATE...*

- When 'safe' to do so...
- On the instruction of the 'IC'...
- Fire is contained and the compartments are covered...
- Aid with rescues...
- To assist with firefighting.

SAFE..not increase fire spread/not jeopardise crew safety.

OIC to liaise with ships Officer..

Adequately contained and covering sprays at vent points..

Systematic/progressive 'natural' venting may assist with rescues ie clear room.. vent...close down room...move on.

Assist ff. but with care in unaffected areas.

## S.26 How to ventilate...

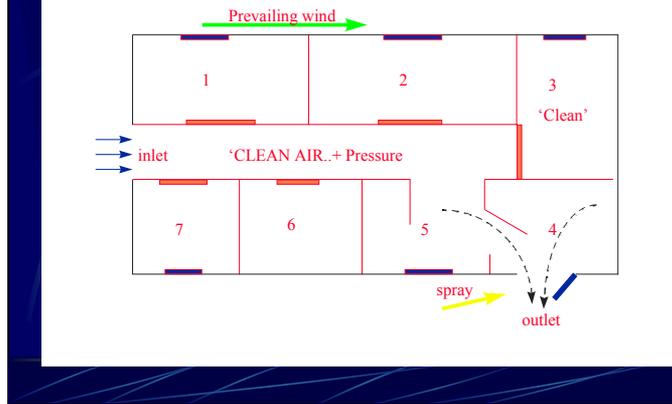
## *HOW TO VENTILATE...*

- Top or lateral...
- Protect crews...
- Communicate.
- Make use of prevailing winds...
- Use ships structure...
- Covering sprays...
- Only make openings when necessary.

Explain each ..the next slide shows progressive and can be used to highlight each...

27 Progressive ventilation...

## Sequential or progressive...



Explain the various options including the use of fans, sprays etc

28 Evacuation...

## *Confined spaces...*

- All spaces can be classed as 'confined'...
- Check spaces e.g monitoring equipment...
- Extinguishing agents present...
- Use of BA / Confined space equipment.

## SUMMARY...

- Information and liaison...
- Briefing and debriefing...
- Tactical mode i.e Defensive / **Transitional** / **Offensive** firefighting...
- Fixed installations...
- Reconnaissance, Support and Attack crews...
- Heat / Humidity / Stability...

Pre planning..visit ships or obtain plans if they are regular visitors.At incident obtain good info. and set up liaison with responsible ships Officer.

Obtain all info. on fixed inst. etc...

Ensure everybody is briefed ..

Ff/ ventilation/HHS..must all be taken account of/

Consider how and where the crews will work and with whom ie ships crew.

31...summary continued..

*...and...*

- Search patterns...
- Be aware of other crews...
- Boundary starvation/cooling...
- Communications...
- Ventilation..
- NEVER WORK ALONE.

Searching..briefing..bums to the ladders..

Beware of other crews when Ff.

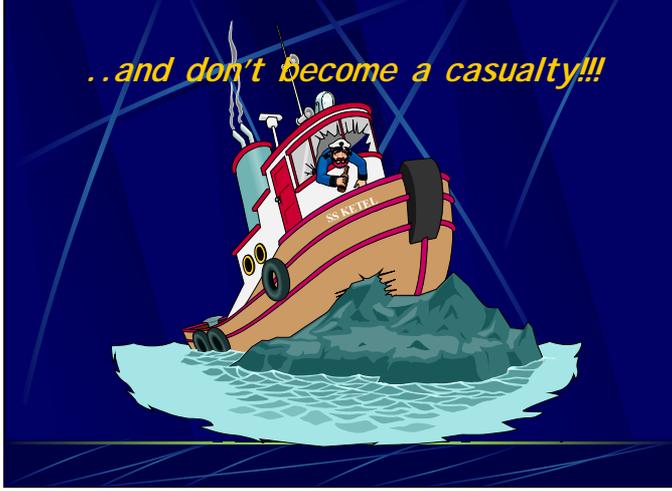
Bound.St/Cool at early stage..

Good comms inc hard wire

Never allow personnel to work alone aboard a ship.

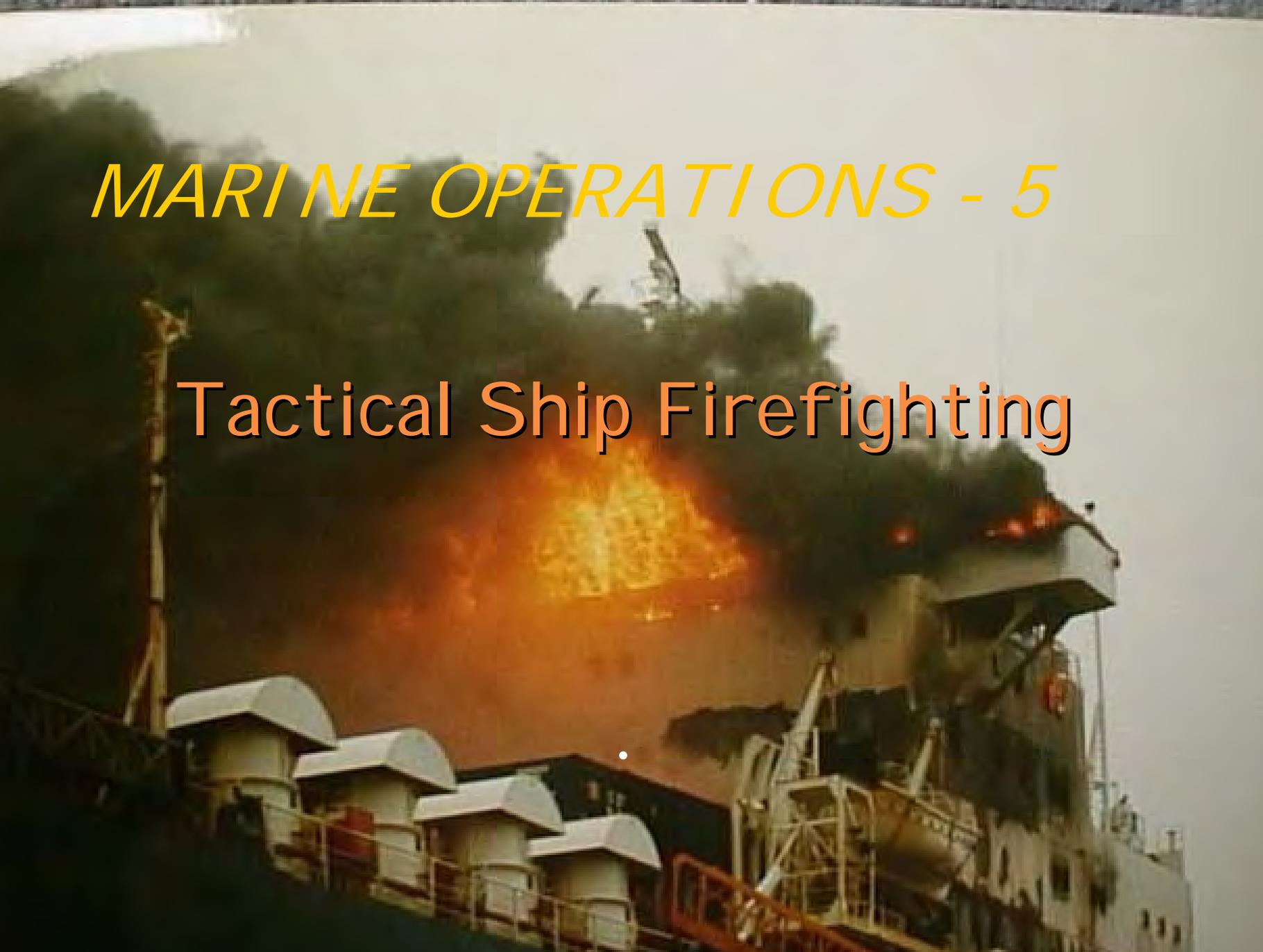
LAST SLIDE... Do not become a casualty!!!!.

*..and don't become a casualty!!!*



# *MARINE OPERATIONS - 5*

## Tactical Ship Firefighting



# ***BIBLIOGRAPHY...***

- ◆ Fire Service Manuals...
- ◆ BR 4007/94 RN Handbook on ship firefighting...
- ◆ DCOL 9/92...
- ◆ MSA publications...
- ◆ 'Fog Attack'..Paul Grimwood...
- ◆ Fundamentals of Fire..Giselsson...
- ◆ CCFB Incident Command lectures.

# AIM...

To provide students with an awareness of the tactical firefighting methods required, to satisfactorily deal with fires in sea going vessels.



## Note:

When dealing with an incident offshore, the Incident Commander remains ashore.

An Operational Commander is introduced to lead the offshore teams.

# *OBJECTIVES...*

- Command and Control procedures...
- Efficient use of water/foam...
- Hatch and door entry procedures...
- Effects of heat, humidity and stability...
- BA search procedures...
- Ventilation...
- Specialist equipment.

# *Points of SAFETY...*

- ✿ Always work in **PAIRS**...
- ✿ BA crews 'should' always be minimum of **THREE** Firefighters...
- ✿ Wear **LIFE-JACKET** if working on or near the water...
- ✿ Monitor movement of people on and off the vessel...
- ✿ Ensure ALL persons understand evacuation whistle and '**Safeguard**'.

# *NOTE - Fixed installations...*

- Are they available?*
- Have they been used?*
- Can they be re-used?*
- Are they necessary?*

*The 'OC' must evaluate all these issues.*

Carbon Dioxide...

Halon...

Foam...

Water...

Steam.

# *NOTE: Lifejackets*



Unless working on or near the water , lifejackets should be removed and located at the boarding point / or equipment area.

If working on weather decks, lifejackets must be worn.

# *Incident / Operational Commander (OC)...*

- The 'Tactical' decision maker...
- Must NOT become directly involved with operations...
- Must ensure Risk Assessment and special hazards are adequately addressed...
- Must nominate 'Command Support'...
- Should nominate '**Safety Officer's**' and ensure safety of ALL personnel...
- Maintain close liaison with 'ships master' and make use of 'ship's' personnel...

## *and...*

- ✿ obtain ships plans and if possible use Bridge or ship control centre [SCC/HQ1]
- ✿ ascertain the Class and size of fire...
- ✿ use the appropriate extinguishing medium...
- ✿ instigate reconnaissance and containment...
- ✿ identify the method of approach , dependent on the relevant 'tactical' mode i.e. **Defensive - Transitional - Offensive**
- ✿ Nominate 'key' personnel..

# *Safety Officer's*

- ✿ Must have a constant awareness of the environment and the changes which take place during an incident...
- ✿ Take necessary urgent action to avoid injuries...
- ✿ Continually monitor and ensure Command Team advised and updated...
- ✿ Actions must be recorded.

# *Command Support*

IC / OC MUST nominate an individual as Command Support....

At 4 pumps or over this will be the Command Support Vehicle [CSV] Officer..

He /she will....

- Support the IC / OC...
- Advise Fire Control of Tactical mode...
- Make written records.

# *'Sector' Commander*

Responsible to the IC /OC for the  tactical role of the 'attack' party.

There may be more than one Sector Commander and this must be taken into account with regards use of radio communications and committing crews into a scene of operations

# *Disposition of onboard crews...*

**Reconnaissance' crew**...makes rapid initial survey for IC / OC...

**'Support' crew**..provides equipment and additional resources...

**'Attack crew'**...firefighting. Controlled directly by 'Sector' Commander.

# *'RECONNAISSANCE' CREW...*

- ✿ Initial briefing by IC / OC - work in pairs...
- ✿ Make use of ship's plans...
- ✿ Check for signs of fire [using TIC.s and 'Hotspotters'] ...
- ✿ Avoid opening affected compartments...
- ✿ Check all six sides [if possible]...
- ✿ Report back to Commander.

# 'SUPPORT' CREW...

[Click here to return to MOG3](#)

- Lay 'transit' line to Sector Command...
- Prepare 'attack' hose [45/38mm]...
- Set up equipment 'area'...
- Provide independent water supply...
- Provide additional ship's plans.
- Carry out containment i.e. boundary cooling.

# *'CONTAINMENT'- and achieving it...*

- ✿ Work in pairs.
- ✿ Boundary '**STARVE**' first...
- ✿ Boundary '**COOL**' all six sides...
- ✿ Use sprays...
- ✿ Locate bulkhead thermometers...

**PREVENTS SPREAD**

**STOPS STRUCTURAL FAILURE**

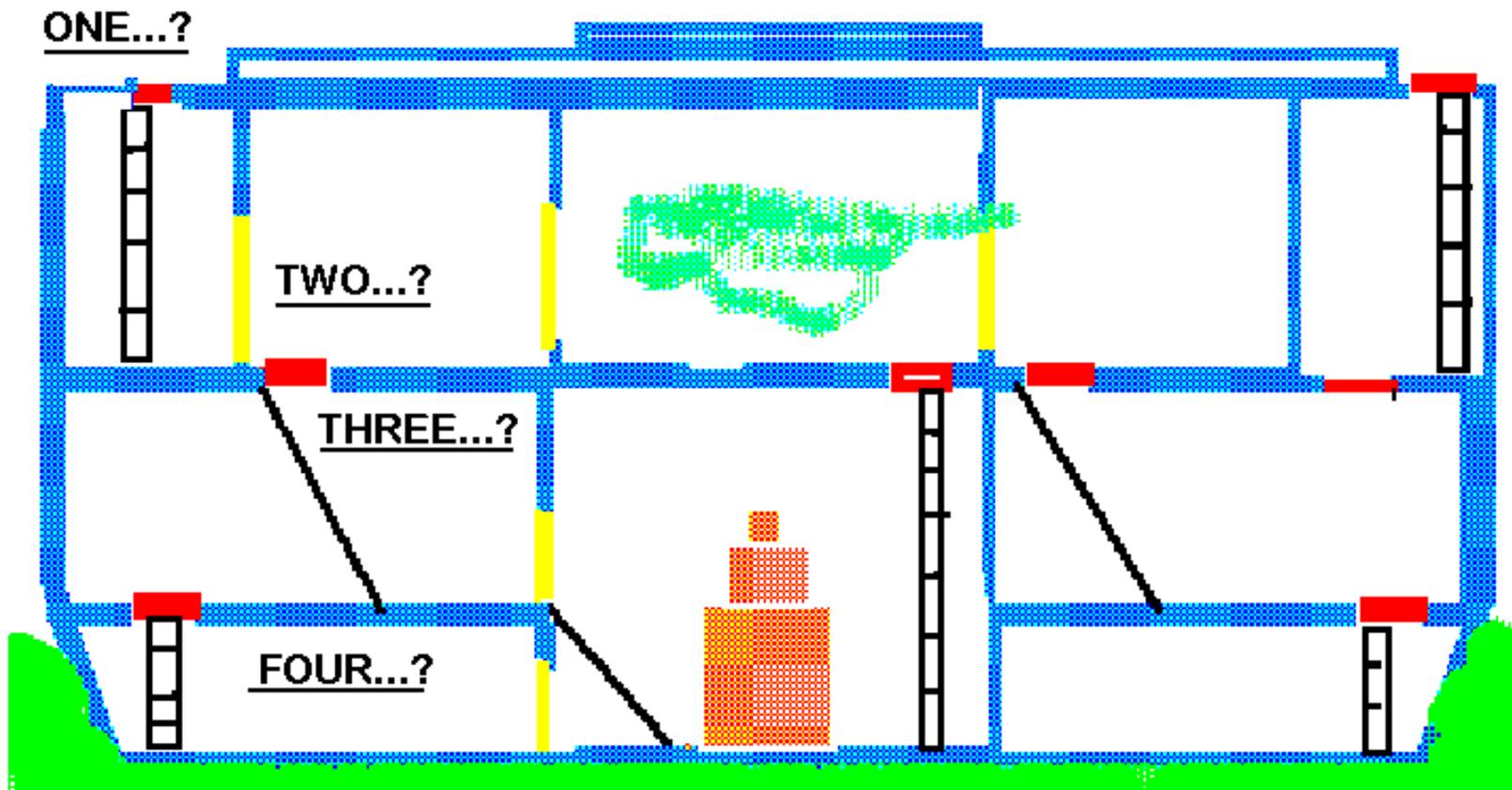
**REDUCES INTERNAL TEMPERATURE**

# *Resources at 'Forward' Command ..*

- Ship's plans...
- Communications; including hard wire to CSV...
- Suitable branch and adequate hose to reach fire...
- Equipment i.e.. TIC, water, writing instruments, first aid kit, branch shut off valves....
- Two BA boards for ECO, two guide lines, cleaning materials, spare radio, 'Snaplights'...
- Illumination, shelter, place of safety - means of egress

# *BA Entry Control Officer ...*

- Managed by 'Sector' Commander...
- Tight control of BA comms..their may be other ECO's!!..
- Ensure BA teams of THREE...
- Liase with BA Main Control...
- 'Snaplights' worn by team leader to identify team ...
- Obtain 'boarding' tallies if in use and attach to BA tally.



**The location of Sector Command and ECO can only be determined after proper liaison and reconnaissance ..but must be in 'safe' air**

# 'ATTACK' CREWS...

- Team of THREE...
- Communications ...
- Consider use of TIC...
- Briefing by 'Sector' Commander...
- Don BA in 'CLEAN/**SAFE**' air...
- Try to maintain smoke boundary...
- Take in adequate hose...

*...and...*

- ❁ Search pattern...
- ❁ Keep low and be aware of the high potential for Flashover and / or Backdraft...
- ❁ Hatch and Door entry...
- ❁ Use ship structure for protection but beware of hot metal work...
- ❁ Use water on what you SEE and TOUCH, because...



**WATER...**

**INCREASES  
HUMIDITY..**

**REDUCES VISIBILITY..**

**UPSETS STABILITY**

# *'Attack' crew, remember...*

When entering DOWN into a compartment, allow all of team to reach deck level before carrying out firefighting...or else!!!

Be aware of - and communicate with other crews within the compartment - the 'Sector Command' - each other!

and THINK...

# 'Safety - Safety - Safety'

[Click here to return to MOG3](#)



- Door / hatch entry...
- use of 'water walls'...
  - 'Gas cooling'...
- 'Indirect / Direct' branch attack...
  - Realise your limitations...
  - Continually risk assess...
  - Protect your egress.

# *EVACUATION...*

- ✿ Boarding procedures...
- ✿ Good briefing / Communication...
- ✿ 'Safeguard' rule...
- ✿ Use of gangways...
- ✿ Use of 'whistle'.
- ✿ Protect all crews...
- ✿ Controlled i.e.. Tactical Withdrawal...

# TACTICAL WITHDRAWAL

*'The controlled evacuation of personnel from a risk area to a place of safety' as defined in DCOL 5/1994. Consider:-*

Briefings / communications and liaison with ALL personnel.

Phased evacuation...

Protect crews...

# *Evacuation / Withdrawal considerations...*

- Crew briefing and communication...
- Accurate records kept...
- Use of 'whistle'..beware!...
- **'SAFEGUARD'** procedure'...
- ECO/ 'Sector Commander' liaison...
- OC / SC to instigate 'appropriate' procedure.

# *What may instigate an evacuation?...*

- ❁ A Command decision...
- ❁ Unsafe structure...
- ❁ Sounding of the 'whistle'...
- ❁ Communications 'failure'.

# *All personnel need to be aware of :....*

- Sudden ships movement...
- Use of BA guide lines...
- Hose couplings/submerged hose...
- Firemain bulkhead valves...
- Fixed systems i.e. comms / sounds...
- Automatic watertight / fire doors...
- Pressure waves.

# *REMEMBER...*

❄️ SLOW DOWN...

❄️ LISTEN...

❄️ THINK...

❄️ DECISION...

❄️ COMMUNICATE...

❄️ MOVE!!!

BA CREWS  
SHOULD BE  
MINIMUM OF  
THREE  
FIREFIGHTERS.

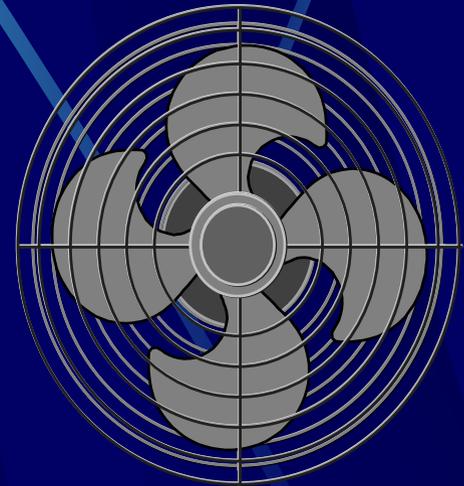
# *THE USE OF FOAM...*

- ❁ Hi-ex, medium or low...
- ❁ Machinery space fires...
- ❁ Tanks...
- ❁ Bulk cargo...
- ❁ Use of foam branches with shut - off valves...
- ❁ Supporting jets /sprays and ventilation.

# *VENTILATION...*



- Smoke boundary...
- Mechanical...
- Progressive...
- Negative...
- Positive...



*WHEN / HOW...?...*

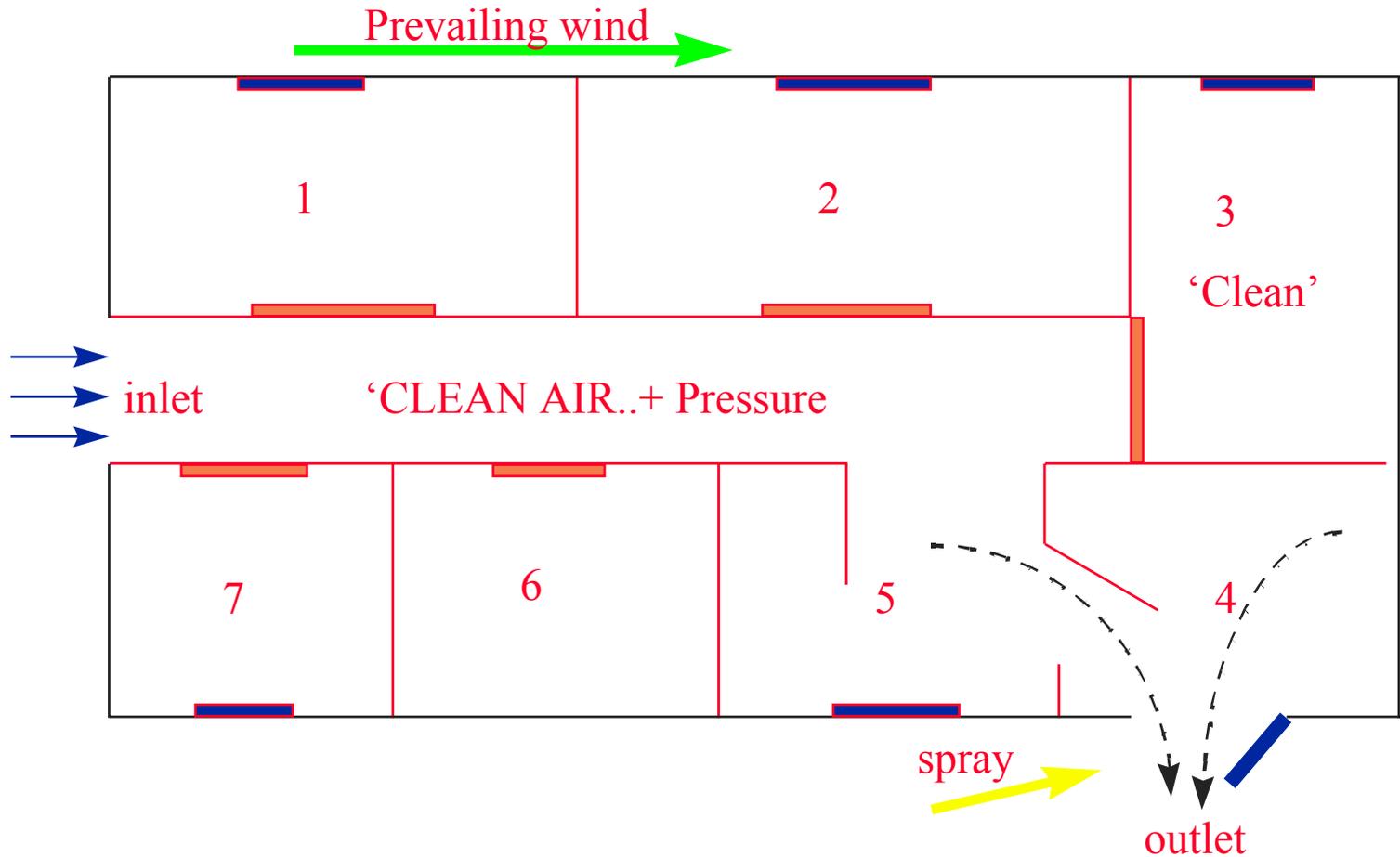
# *WHEN TO VENTILATE...*

- ❁ When 'safe' to do so...
- ❁ On the instruction of the 'I C'...
- ❁ Fire is contained and the compartments are covered...
- ❁ Aid with rescues...
- ❁ To assist with firefighting.

# *HOW TO VENTILATE...*

- Top or lateral...
- Protect crews...
- Communicate.
- Make use of prevailing winds...
- Use ships structure...
- Covering sprays...
- Only make openings when necessary.

# Sequential or progressive...



# *Confined spaces...*

- ❁ All spaces can be classed as 'confined'...
- ❁ Check spaces e.g monitoring equipment...
- ❁ Extinguishing agents present...
- ❁ Use of BA / Confined space equipment.

# *SUMMARY...*

- ❁ Information and liaison...
- ❁ Briefing and debriefing...
- ❁ Tactical mode i.e Defensive / **Transitional** / **Offensive** firefighting...
- ❁ Fixed installations...
- ❁ Reconnaissance, Support and Attack crews...
- ❁ Heat / Humidity / Stability...

*...and...*

- ❁ Search patterns...
- ❁ Be aware of other crews...
- ❁ Boundary starvation/cooling...
- ❁ Communications...
- ❁ Ventilation..
- ❁ **NEVER WORK ALONE.**

*..and don't become a casualty!!!*



# MARINE OPERATIONS - 6



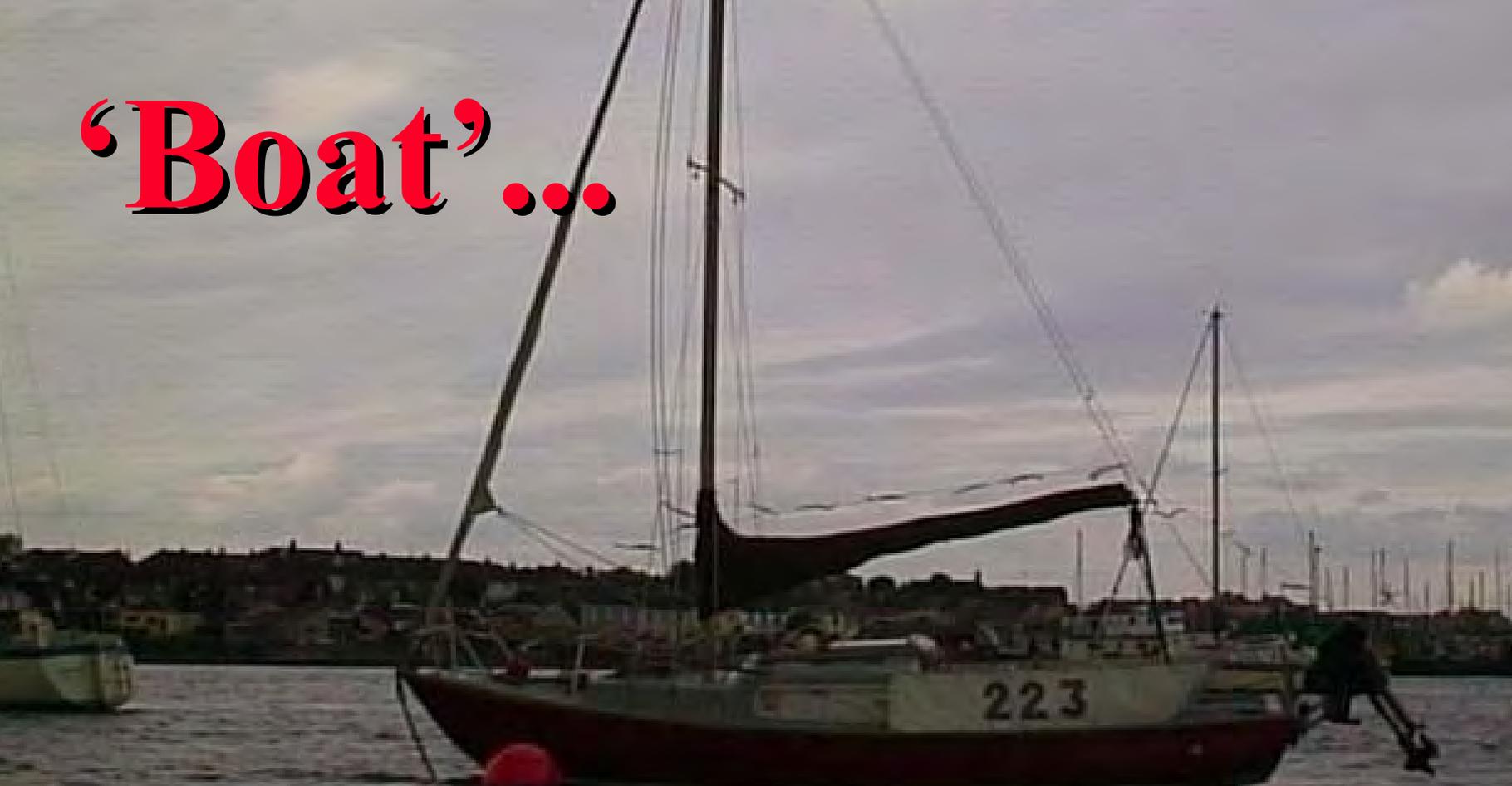
Ship Construction

# Aim...

To give you a brief insight into the types of vessels and basic construction of these vessels.



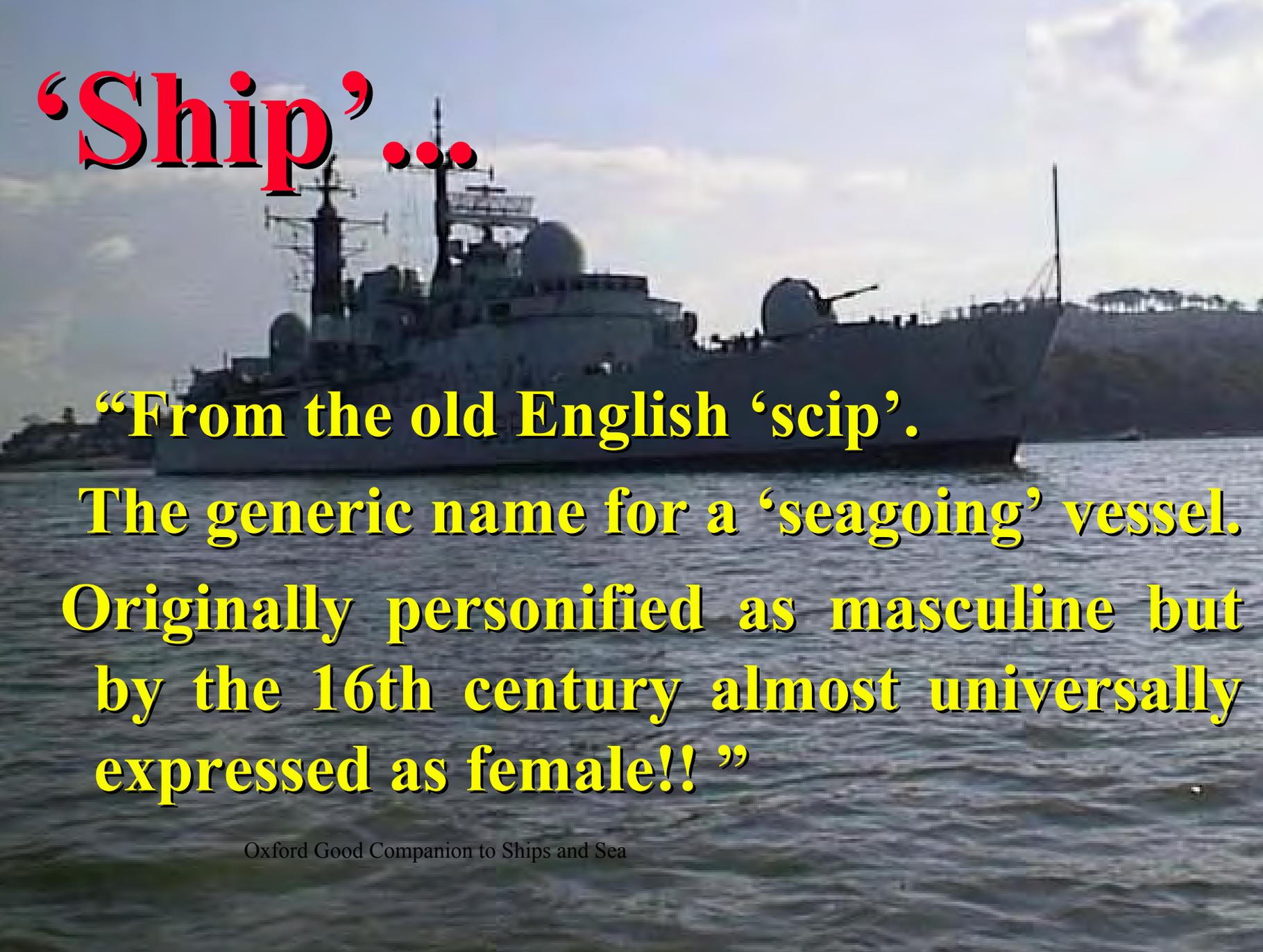
# **‘Boat’...**



**“The generic name for a ‘small’ open craft used for travelling across water, normally propelled by sail, oars or engine.”**

Oxford Good Companion to Ships and Sea

# ‘Ship’...

A large grey naval ship, possibly a destroyer or cruiser, is shown at sea. The ship has a complex superstructure with various masts, antennas, and radar domes. The background shows a hazy sky and distant land.

**“From the old English ‘scip’.**

**The generic name for a ‘seagoing’ vessel.  
Originally personified as masculine but  
by the 16th century almost universally  
expressed as female!! ”**

# **Safety of life at sea...**

- **SOLAS Convention**

Chapter 2/2..Fire protection >500tons

Chapter 7 HAZMATs

- **International Maritime Organisation**

[IMO]- 140 member states

- **Classification Societies** - e.g... Lloyds

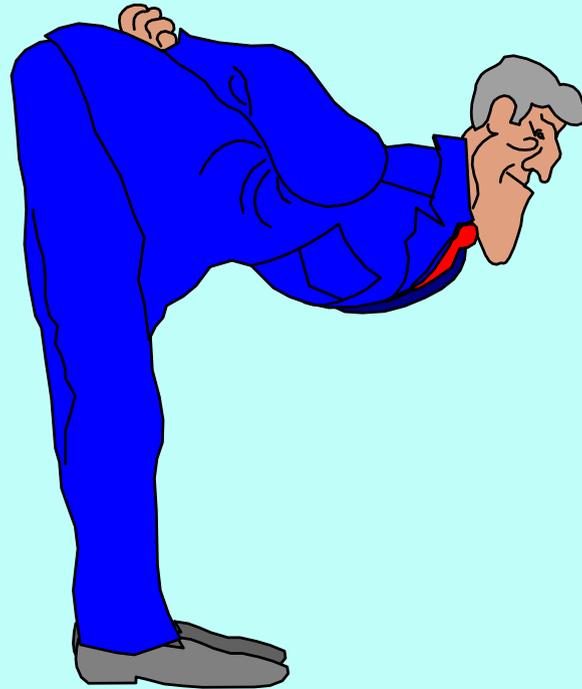
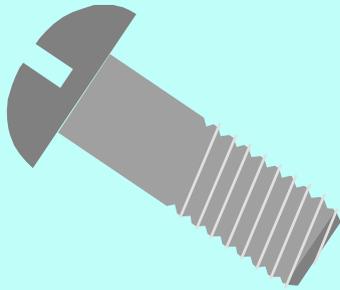
Register of Shipping [LR]

# Some common nautical terms...

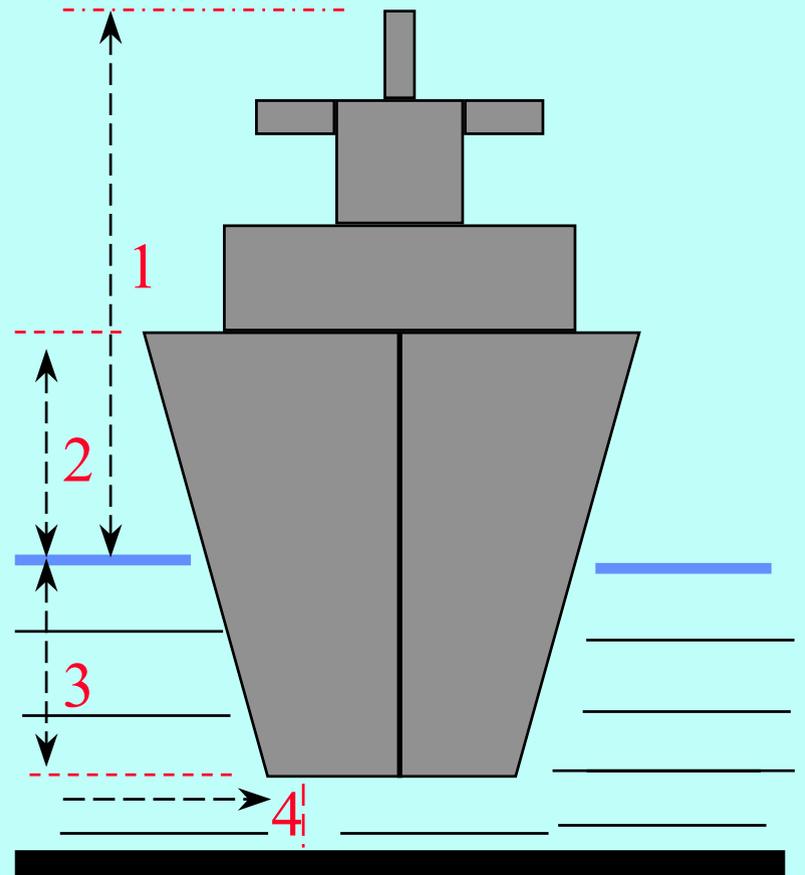
[See also Book 4 - Manual of Firemanship]

- WATER / FUEL... ..*BALLAST.*
- DOWNSTAIRS... ..*BELOW.*
- WALL... ..*BULKHEAD.*
- OIL / GRAIN / ETC... ..*BULK CARGO.*
- WHERE THE DRIVER SITS... ..*BRIDGE.*
- LOW PART OF THE HULL... ..*BILGE.*
- FLOOR... ..*DECK.*
- CEILING... ..*DECKHEAD.*
- KITCHEN... ..*GALLEY.*
- TOILET... ..*HEADS.*
- CARGO LIST... ..*MANIFEST.*
- DRAIN... ..*SCUPPER.*
- 'SIDE' PILOT DOOR... ..*SHELL DOOR.*
- UPPER DECK... ..*UP TOP.*
- OPEN CONTINUOUS DECK... ..*WEATHER DECK.*

**and...The Golden Rivet!!**  
**- ask a Stoker!!!**

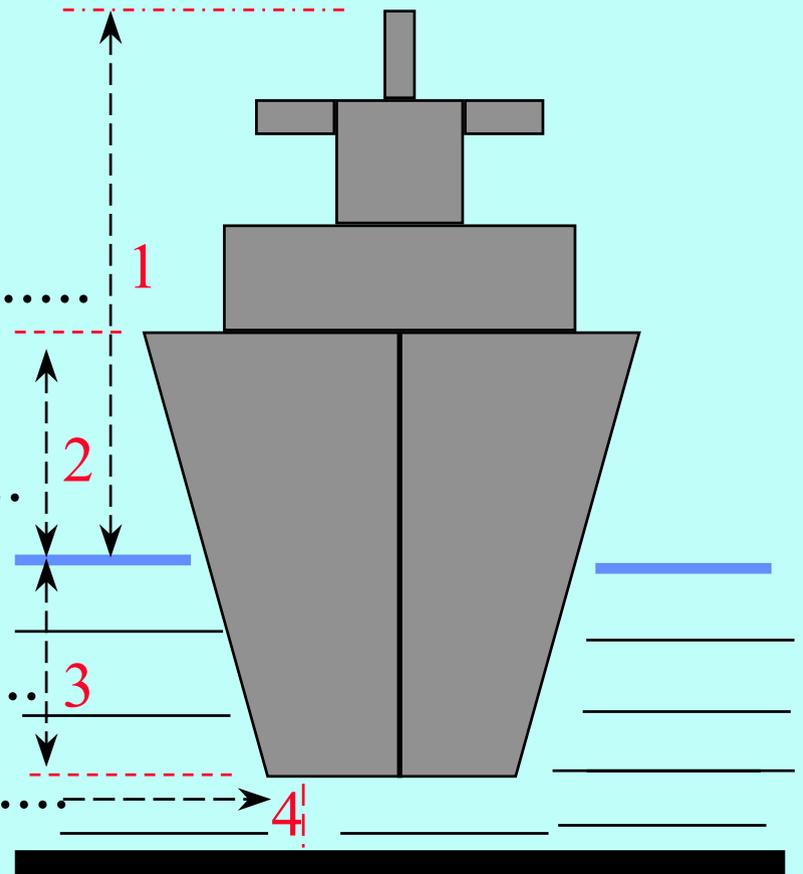


# More terms...

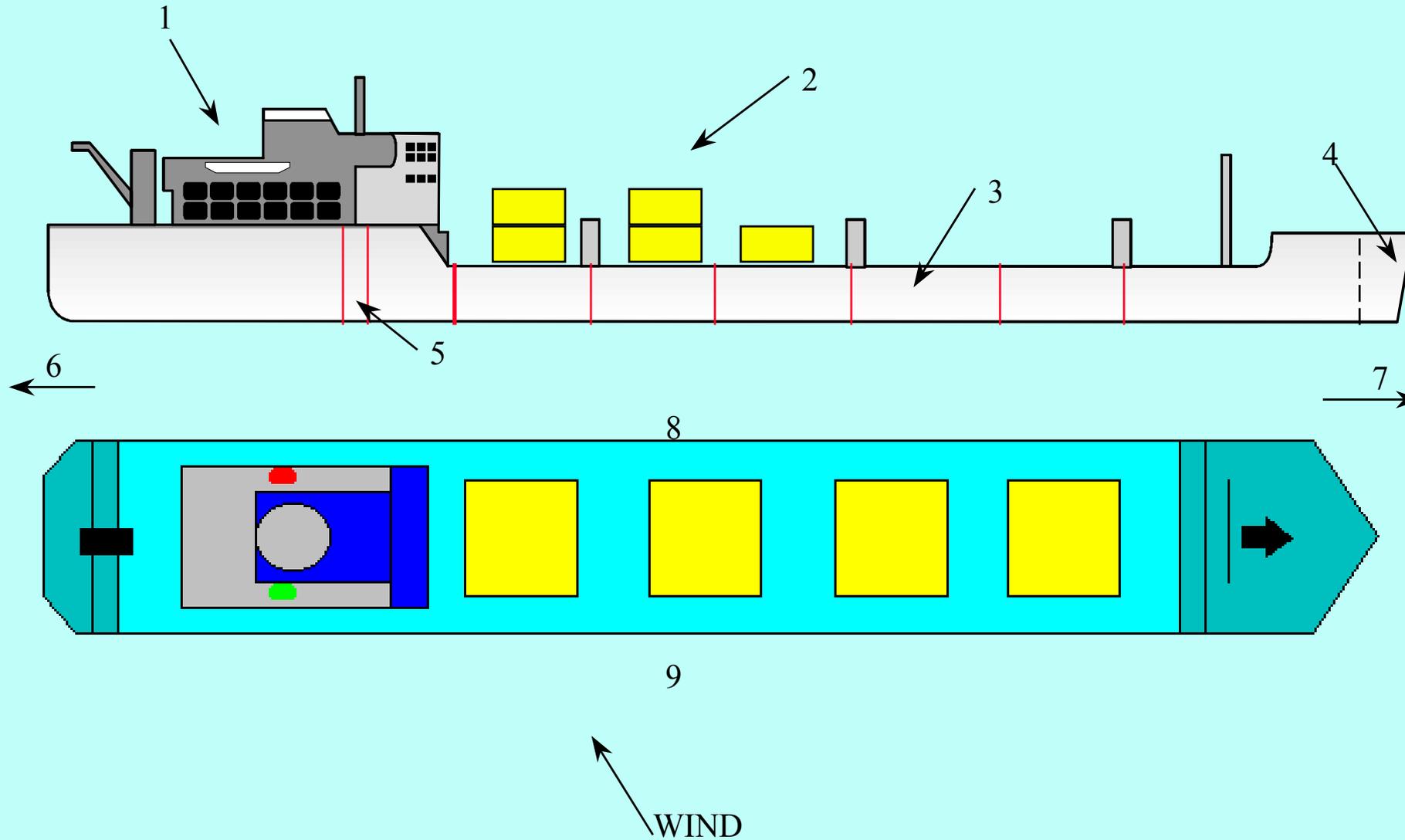


# More terms...

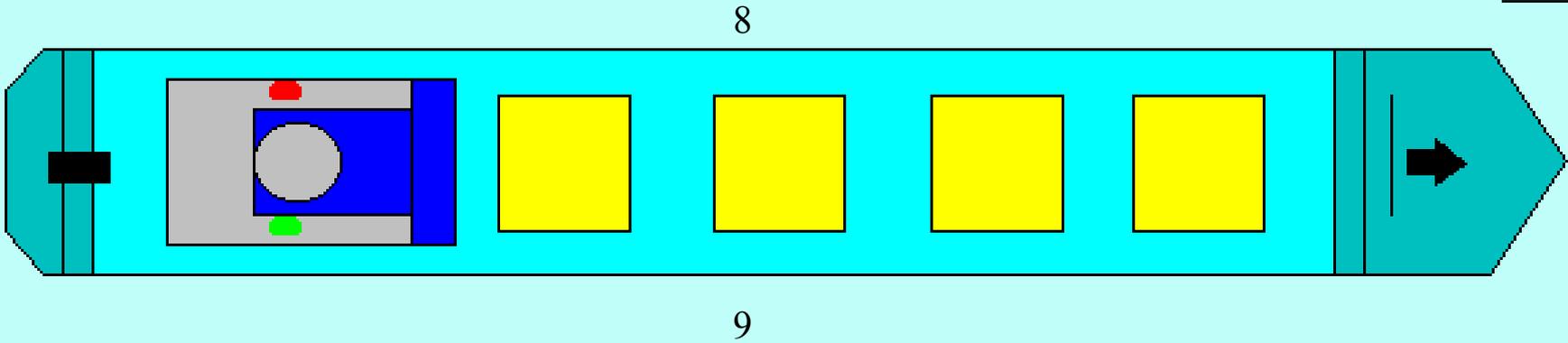
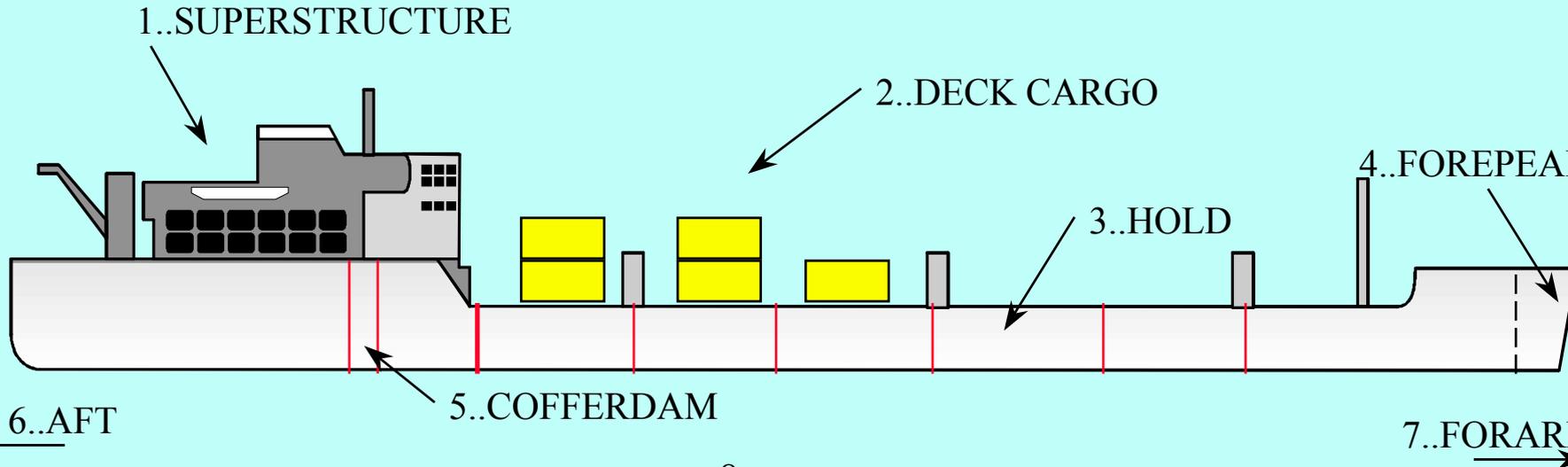
- Height.....
- Freeboard.....
- Draught.....
- Under keel clearance.....



# Parts of ship...



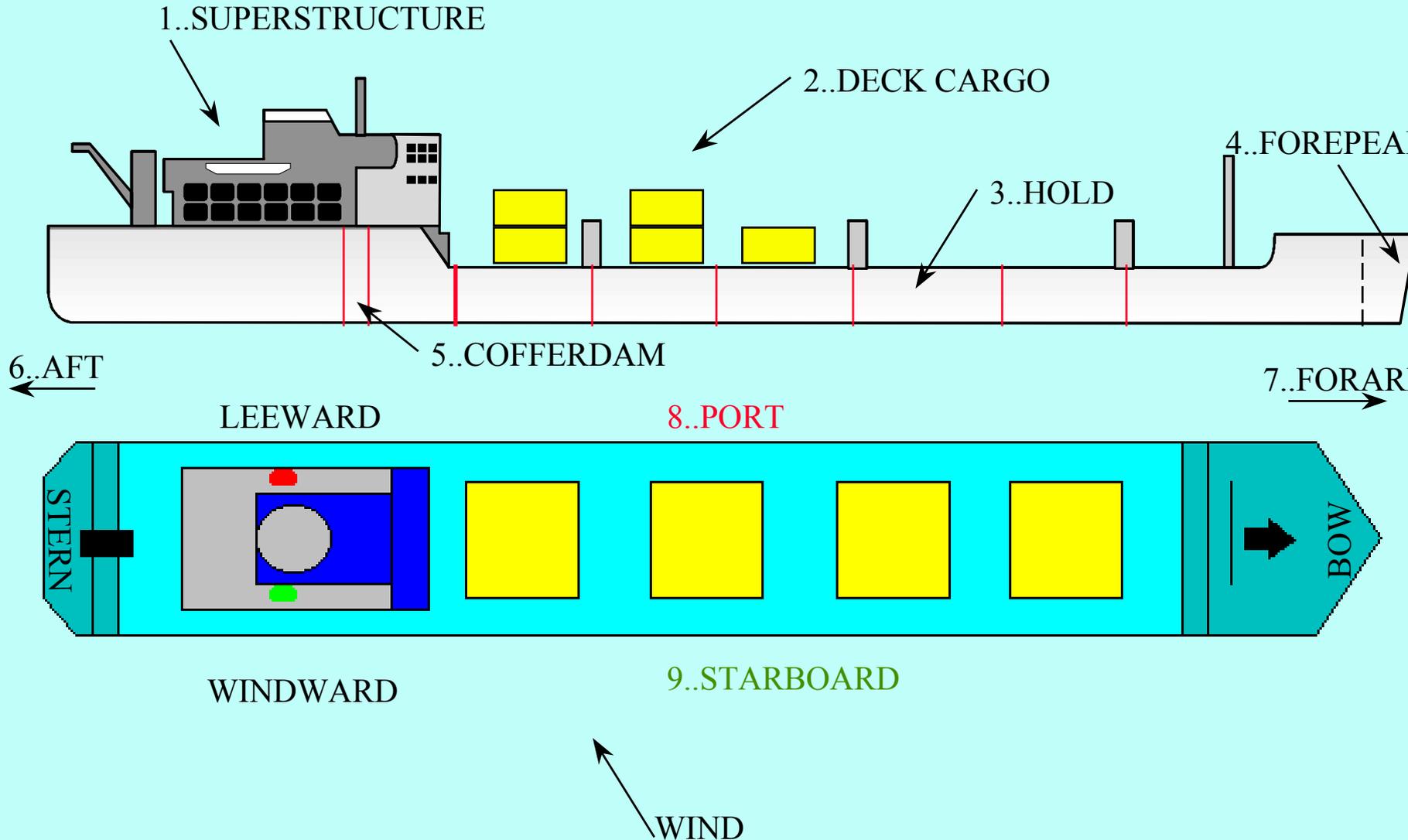
# Parts of ship...



WIND

This arrow points towards the upper-left corner of the diagram, indicating the direction of the wind.

# Parts of ship...



# Fire separation...

- **Class A** construction - 60 min.FR [integrity / stability..not insulation]. Primary structure i.e.. main decks, transverse and longitudinal bulkheads [and fittings ]...
- **Class B** construction - 30 min.FR [ as Class A ] Non primary structure i.e.. corridors, cabins etc.....
- **Class C** construction - non combustible e.g.. cabin partition...
- **Class F** - fishing vessels.

# **Means of Escape - very similar to 'shoreside, for example..**

- Limited dead ends, protected 'shafts', alternative exits...
- 'Atria' design etc.....
- Watertight doors -weight, control, angle of heel..
- Smoke control, fire alarms, emergency lighting.

# Types of passenger vessels...



- **Liners..** ‘Oriana’ / QE2 etc....
- Ferries.. ‘Scandinavian Star’ / ‘Herald of Free Enterprise’ / ‘Torpoint’...
- **Cruise ships..** ‘Romantica’ / ‘Carnival Ecstasy’...
- **River cruisers..** ‘Marchioness’.

# Construction 'problems' on passenger ships...

- Large areas i.e. atria, restaurants etc....
- Dead ends, long passageways...
- Surface finishes and decor...
- Alcohol!!!...
- Disorientation...
- Passive / active Fire safety measures..
- Large numbers of people...

# Finding your way around....

- Deck names...
- Deck numbers...
- Deck letters...
- Start high - work low!!!
- Start low - work high!



# **Ro - Ro / Container ships...**

- Cargo / passenger ships...
- Vehicles...
- Containers - above and below decks...
- Mixed cargoes...
- HAZMATs - IMDG Codes...
- Confined spaces...

# Confined spaces...

- Air spaces...
- Double bottoms [DB's]...
- Deep tanks...
- Cofferdams...
- Twin hulls.

Remember.....Confined Space Regulations 1998

# **Hazardous materials**

## **[HAZMAT's]**

- Containers of HAZMATs should be upper deck cargo, clearly identified on ships manifest...
- Norfolk 1991, two containers of 'Lindane' on beach!!..
- All ships have some form of HAZMAT e.g. fridge gases, tank fumes etc..

# Tankers...

- **Crude** - Larger tanks, less pipework, [from field to refinery]...
- **Product** - Smaller tanks, more pipework etc., various products [refinery to end user]...
- **OBO** - Ore / Bulk / Oil...
- **Gas** - Methane, butane, etc....

# Tanker tonnage...

- **LCC** - Large Crude Carrier  
100,000 to 200,000 tonnes dw...
- **VLCC** - Very Large Crude Carrier  
200 to 400,000 tonnes dw...
- **ULCC** - Ultra Large Crude Carrier  
400,000 plus, tonnes dw...
- **Dead-weight** tonnage..is the ‘carrying’ capacity of the vessel [her earning power]...  
[**Gross** tonnage.. ‘cargo’ space .Dry cargo and passenger ships only]

# Why is a ship called 'She'?...

*...because there is always a great deal of bustle around her.*

*There is usually a gang of men around her.*

*She has a 'beam' and 'stays' and it takes considerable pains to keep her in 'trim'.*

*It takes an experienced man to handle her correctly; and without a man at the helm she is uncontrollable!*

*She displays her 'topsides', hides her 'bottom' and, when entering port always heads for the buoys after crossing the 'bar'!!!*

# Summary

- Ships and boats...
- Terminology...
- Types of craft...
- Fire separation...
- Topography...
- Cargoes...
- Confined spaces...



The 'Marine Operations' packages are produced by CCFB Marine Operations Group (MOG) and are as follows

Part 1...Safe Working On Or Near Water...

Part 2...Offshore Incidents ~The Legal Framework

Part 3...Offshore Incidents ~Command and Control

Part 4...Helicopter Operations ~ SOP

Part 5...Tactical Ship Firefighting

Part 6...Ship construction.

Part 7...Sea Survival

Part 8...Small Boat Fire Safety

Other reference points include:-

ICS.ppt

Fire Service Manuals ~ Command and Control / Marine Operations...

DCOL's...

BIS Doc's...

Case Studies e.g 'Scandinavian Star'

CACFOA South West ICS packages

This presentation forms the theory part of Cornwall County Fire Brigade's one day sea survival course. This is followed by a practical session given by a qualified ,competent instructor.

## ***SEA SURVIVAL is...***

**“the ability to stay alive  
when your life is threatened before,  
during and after abandonment,  
by the hazards associated  
with the offshore environment.”**

Cornwall County Fire Brigade

Sea Survival

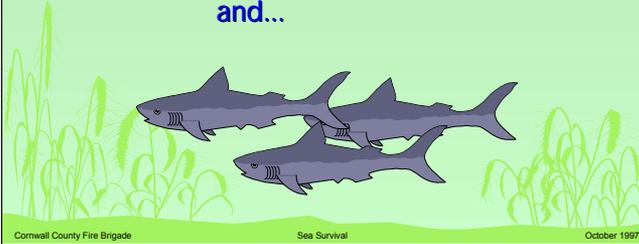
October 1997

So what do we need to survive at sea?

S3...

*Three basic requirements to survive at sea are....*

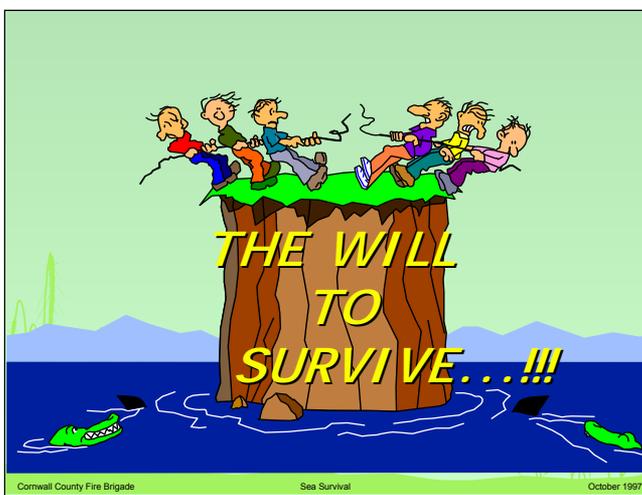
- The provision of suitable equipment...
- Adequate knowledge via training ...  
and...



Equipment comes in the form of Lifejackets..[types].../ Immersion, transit suits/ Seabands.

Knowledge and training comes from attendance on this course and refresher training.

AND....next slide 4...



THE WILL TO SURVIVE...comes from the individual.

The equipment and knowledge will assist..but the WILL comes from within.

Piper Alpha examples from SST book/ Herald of Free Enterprise/ Estonia disaster[Paul Barney].

Slide 5..Course aims....

## ***AIM...***

- To understand and apply basic sea survival procedures...
- Recognise sea safety equipment...
- Correctly use Lifejackets, Liferrafts and Immersion Suits...
- Recognise the signs, symptoms and treatment of Hypothermia.

Explain the above by referring to the practical training being given and the information available to students in the pre course information folder.

Next slide..Objectives...

## ***OBJECTIVE...***

To give personnel employed onboard vessels, **alongside** or offshore, a basic working knowledge of life saving appliances, survival techniques and associated operational procedures.

Self explanatory, again as dictated by DCOL 9/92.

Next slide ..7...



Primarily with regards hypothermia, mentioned later.

Going back to the hazard.

Drowning is a combination of carrying out incorrect actions once in the water, ie swimming [body heat] as seen in video.

Lets now look at equipment...

S8...Equipment ...Seabands

## ***SEASICKNESS***

- Use of anti-nausea 'Seabands...
- Worn at all times...
- NOT EFFECTIVE FOR ALL !!!...
- Tablets may cause side effects...
- Maintain liquid / food intake.

Cornwall County Fire Brigade

Sea Survival

October 1997

Explain and show Seabands. Info. in course file. Developed by Chinese doctor, based on acupuncture theory.

Used by health service[cancer care]./RFA's and other marine organisations.

Saves taking tablets particularly if about to work in heat/humidity.

Emphasise does not work for all.

S9...Equipment...lifeboats.



Two types of lifeboats...Open ie as on the Scandinavian Star[case history from Phase A] Titanic etc.

Closed...more modern. Found on all new ships and oil platforms. Provide greater protection form the elements and ‘unsinkable’

S.10...Liferafts...

## ***LIFE-RAFTS...***

- Three common types of liferaft are:

**Conventional...**

Davit launched...

**Heliraft.**

Three types of life-raft normally found. The Conventional is a ships life-raft and found in containers around the vessel. the davit type is normally only found on fixed platforms.ie oil rigs and hangs inflated in a davit similar to a lifeboat.

The Heliraft comes in various sizes and are stored within the 'lining ' of the helicopters.

S.11... Life-jackets...

## ***LIFE-JACKETS...***

Cornwall County Fire Brigade use  
only TWO types of lifejacket:

**Aviation [Manual]...**

**Auto Inflation.**

Cornwall County Fire Brigade

Sea Survival

October 1997

Three types of LJ:

PIB has some inbuilt buoy. and then requires additional air by mouth. [SHOW]

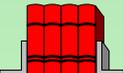
Aviation are non auto in operation due to being submerged and trapped. Manual operation, no inherent buoy. CO2 charge.

The Auto LJ is totally auto in operation ie water activated with manual back up, CO2 again. Both our Crewsaver and Falcon jackets are these with the ability to convert to aviation type. These will be demonstrated later.

S12...Regulations for LJ's...

*Lifejacket's regulations...*

- British Standard...
- CEN ...
- SOLAS / IMO...
- Offshore Installation....
- Civil Aviation./ DoT.



Cornwall County Fire Brigade      Sea Survival      October 1997

Obviously a minefield.

The new Falcon Lj's are one of the few on the market to achieve a CEN standard, which is the highest.

S13...Lifejackets, requirements...

## *Life-jackets...*

- Can be worn when fully clothed...
- Must right an unconscious person...
- Operate if worn inside out...
- Must be reflective in colour...
- Have a LIGHT / RESCUE LOOP / WHISTLE attached.

Cornwall County Fire Brigade

Sea Survival

October 1997

Explain the above. Emphasise that Crewsavers should be fitted with Snaplights but the new falcons are fitted with a water reactive light.

The rescue loop is NOT a lifting strop, purely for 'buddying' up.

S14...Note..wearing a LJ....

## ***SAFETY...***

**A life-jacket should always be worn when working on or near deep water.**

**If BA is required when working on a weather deck, don the lifejacket first.**

[ Once onboard a vessel, unless working on a weather deck, lifejackets should remain with the Boarding Officer. ]

Self explanatory...

S.14...Immersion/transit suits...

## *Immersion/Transit Suits...*

- Will be worn when flying; may be worn for seaborne transfer...

Check for correct size...

Wear appropriate undergarments...

Don correctly - teamwork...

Ventilate to prevent unwanted buoyancy...

Maintain integrity...

Don life-jacket...

**If damaged - do not wear and tell somebody!!!**

The suits will be demonstrated later. They are not Survival suits..purely for transit. They have no designed insulation/buoyancy. Make sure it fits and is not damaged. Wear firekit beneath for surface transit, Huggy Bear for helo. transit[because of air entrapment]. Don correctly, vent . Beware of air migration and water ingress. Lifejacket. Operational procedures.

Take care of them...and they will take care of you.

S.16...Entering the water...

## *If you have to enter the water...*

- .....**DONT !!!**...
- Correctly dressed - if possible...
- Remove all sharp objects / fire helmet...
- Get close to the water...
- Check 'Buddy'..assume correct posture...
- **Check below,look ahead..STEP off...maintain posture.**

Cornwall County Fire Brigade

Sea Survival

October 1997

Self explanatory emphasise the DONT..ie increase chance of hypothermia and ultimately drowning.

Identify correct position for water entry.

Emphasise 'buddy' ie team work etc

S.17...Helo drill...

*Helicopter ditching!!!*

- Listen for instructions...
- Tighten seat belt...
- Remove ear defenders...
- Don suit hood...
- Check lifejacket..do NOT inflate...
- Touchdown procedure - be prepared for 'roll over'.



Cornwall County Fire Brigade      Sea Survival      October 1997

Emphasise all relevant points, particularly lifejackets and rollover.

Aide memoir...SHITE.

S.18 Next..so now you are in the water..

## ***So now you are in the water!!***

- Discard unnecessary equipment...
- Avoid excessive swimming...
- Swim on back if necessary...
- Retrieve fire helmet if possible...
- 'Buddy' up..saves valuable heat...
- Get into rescue 'craft'.

Cornwall County Fire Brigade

Sea Survival

October 1997

Self explain...

Avoid swimming...rapid loss of heat [seen in video].

Swimming on back more comfortable and less water taken in.

Fire helmet...keeps heat in/conspicuous

S.18...MOB procedure...

## ***RESCUER' ACTIONS...***

- Attempt to remove horizontally...
- Re assure casualty who should relax...
- Maintain horizontal position...
- SEEK URGENT SPECIALIST MEDICAL HELP.

Cornwall County Fire Brigade

Sea Survival

October 1997

The casualty must not exert himself and the horizontal rescue position reduces the effects of the 'embolisms' moving around the body..

Supervision for 24 hours is of paramount importance. Secondary drowning can also occur within this time ie water remaining in the lungs.

S.21...Hypothermia...

## ***MAN OVERBOARD [MOB] PROCEDURE...***

If a crew member enters the water:-

- Maintain visual contact and point at MOB...
- Raise verbal alarm...keep pointing...
- Launch a flotation marker i.e.... lifebuoy...
- Advise standby vessel / aircraft...
- When recovering MOB beware of JRCRC.....

Self explain....

Emphasise importance of keeping strict observation of mob’.

S.19... Immersion related circum rescue collapse....

## ***Immersion Related Circum-Rescue Collapse[IRCRC]...***

**" Casualties immersed in water undergo physiological changes affecting cardio-vascular output due to hydrostatic pressure and/or hypothermic shock"**

**[Institute of Naval Medicine 1994]**



Cornwall County Fire Brigade

Sea Survival

October 1997

A form of embolism that is produced in the cardio vascular system after water immersion....this can kill if not identified and controlled/treated.

S.20...Rescuers actions to prevent IRCRC.....

## ***HYPOTHERMIA...***

- Wear correct protective clothing...
- Protect from the elements..and  
DON'T ENTER THE WATER!!...
- Avoid unnecessary swimming...
- Board rescue craft quickly...
- Keep warm and dry...
- Maintain insulation.

Cornwall County Fire Brigade

Sea Survival

October 1997

Self explain.... also in course folder.

Be aware that Hypo. can occur on the fireground at any time any place if the weather and physical conditions are correct.

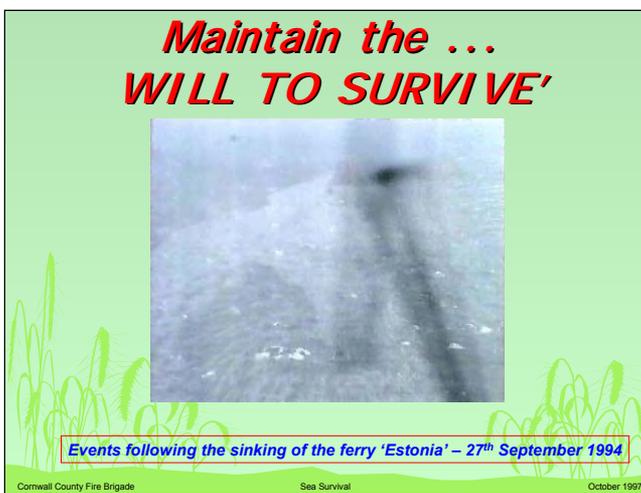
S.22...Summary...

## ***SUMMARY...***

- Wear full PPE/Life-jacket...
- Know your vessel, and survival equipment...
- Consider Seasickness problems...
- Keep out of the water...
- Maintain 'Buddy' system...
- Be aware of Hypothermia, AND...

Self explain....

S.23...The Will to Survive...



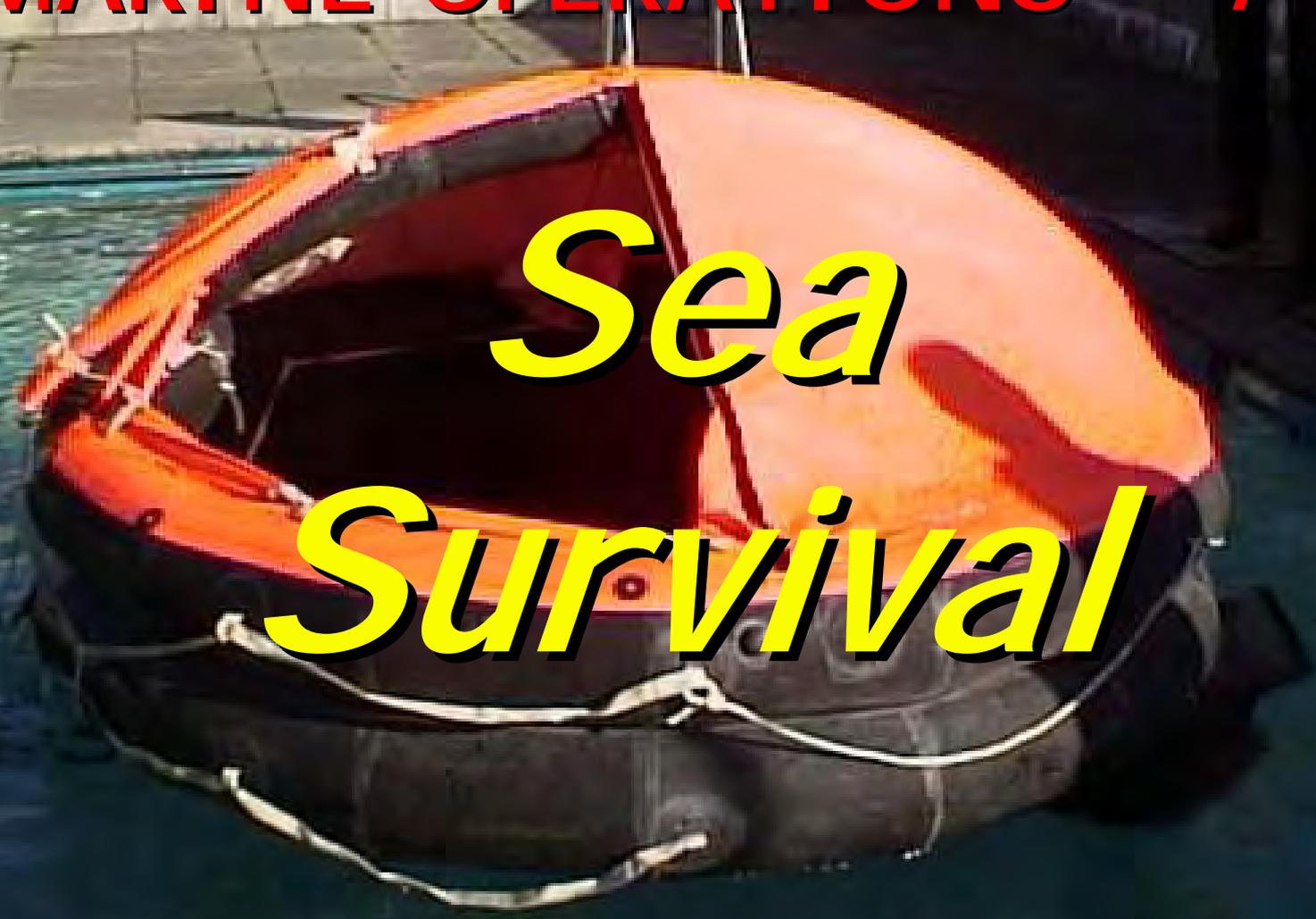
Re emphasise this....

Identify briefly how we will now go and practice some of the techniques and demonstrate the equipment.

Last slide

# MARINE OPERATIONS - 7

## *Sea Survival*

A red and black inflatable survival raft is shown floating on the water. The raft is partially inflated and has a black base with red upper sections. It is positioned in the foreground, with a stone wall and a person in a red jacket visible in the background.

This presentation forms the theory part of Cornwall County Fire Brigade's one day sea survival course. This is followed by a practical session given by a qualified ,competent instructor.



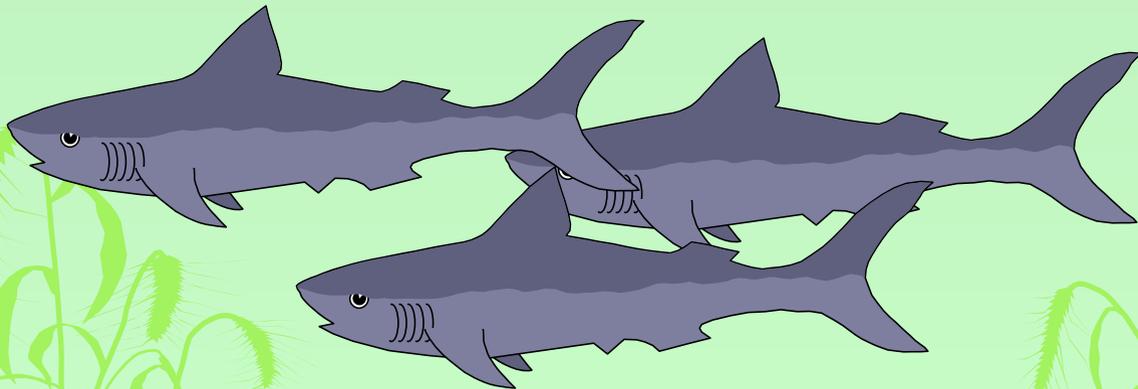
# ***SEA SURVIVAL is...***

**“the ability to stay alive  
when your life is threatened before,  
during and after abandonment,  
by the hazards associated  
with the offshore environment.”**



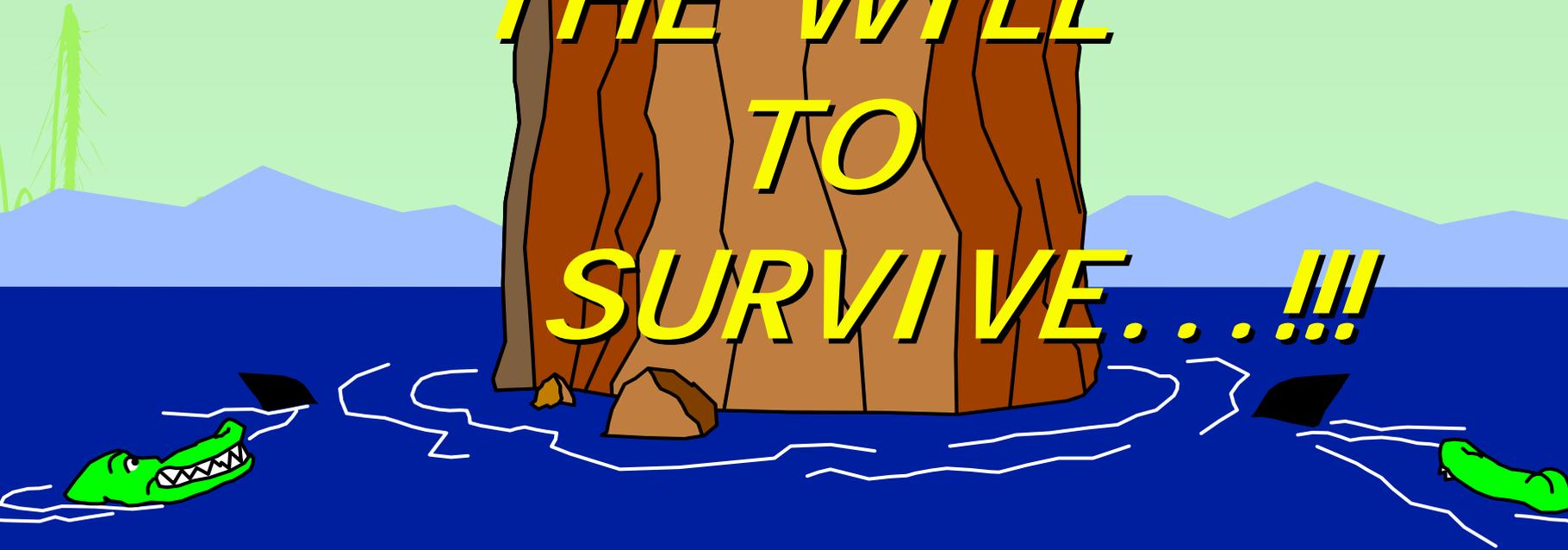
# *Three basic requirements to survive at sea are....*

- The provision of suitable equipment...
  - Adequate knowledge via training ...
- and...





***THE WILL  
TO  
SURVIVE...!!!***



# *AIM...*

- To understand and apply basic sea survival procedures...
- Recognise sea safety equipment...
- Correctly use Lifejackets, Liferafts and Immersion Suits...
- Recognise the signs, symptoms and treatment of Hypothermia.

# ***OBJECTIVE...***

To give personnel employed onboard vessels, **alongside** or offshore, a basic working knowledge of life saving appliances, survival techniques and associated operational procedures.

***Danger to life at sea presents  
itself primarily in three ways...***

**Exposure to the elements...**

**Re exposure to the original hazard...**

**and ultimately ... DROWNING!!!**



# ***SEASICKNESS***

- Use of anti-nausea 'Seabands...
- Worn at all times...
- NOT EFFECTIVE FOR ALL !!!...
- Tablets may cause side effects...
- Maintain liquid / food intake.

# ***LIFEBOATS..***

Two types of lifeboat  
commonly available -

**OPEN...**

**CLOSED.**



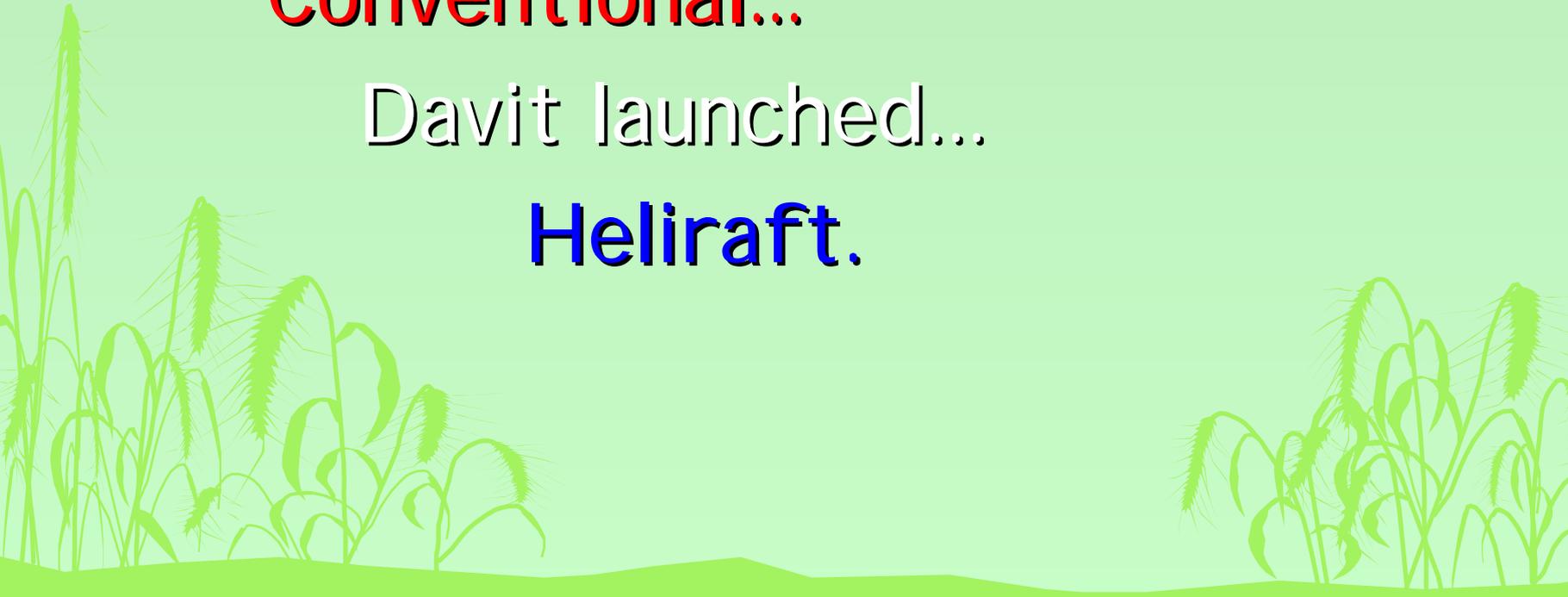
# ***LIFE-RAFTS...***

- Three common types of liferaft are:

**Conventional...**

David launched...

**Heliraft.**

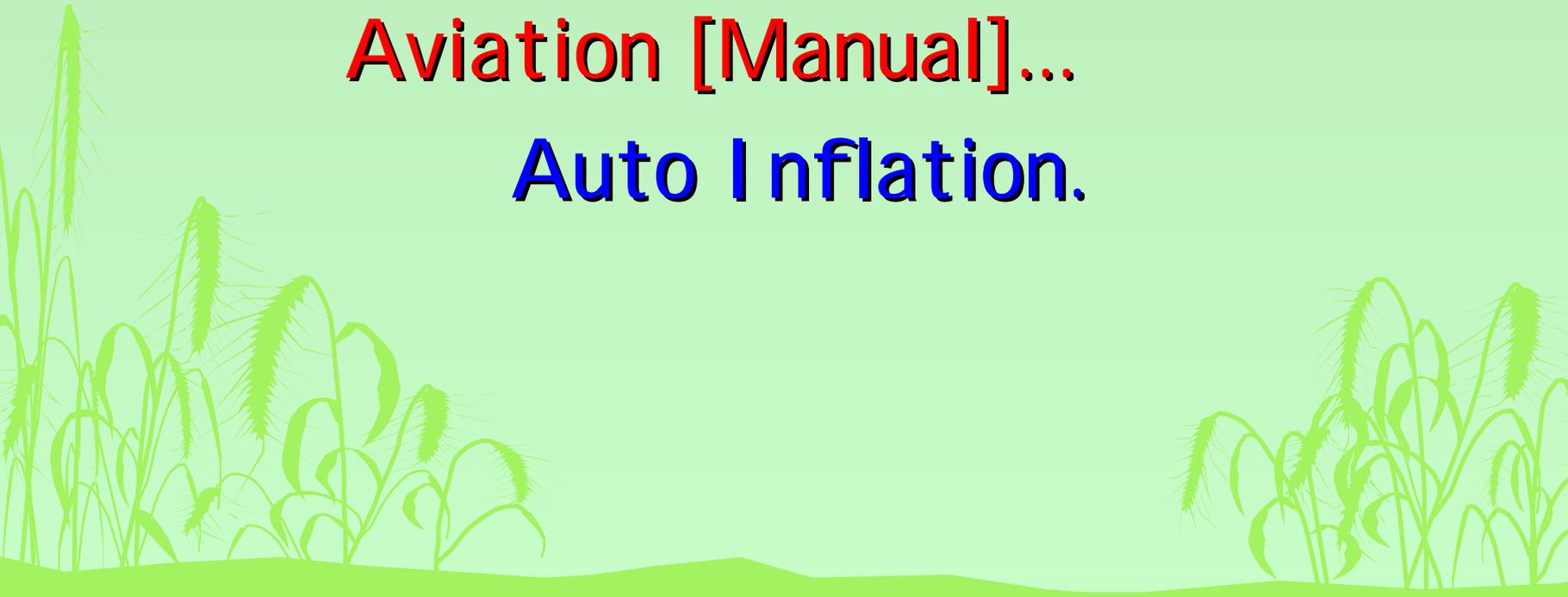


# ***LIFE-JACKETS...***

**Cornwall County Fire Brigade use  
only TWO types of lifejacket:**

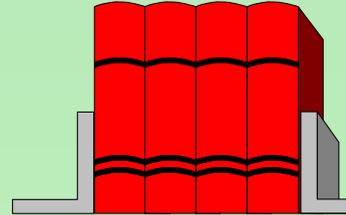
**Aviation [Manual]...**

**Auto Inflation.**



# *Lifejacket's regulations...*

- British Standard...
- CEN ...
- SOLAS / IMO...
- Offshore Installation....
- Civil Aviation./ DoT.



# *Life-jackets...*

- Can be worn when fully clothed...
- Must right an unconscious person...
- Operate if worn inside out...
- Must be reflective in colour...
- Have a LIGHT / RESCUE LOOP / WHISTLE attached.

# ***SAFETY...***

**A life-jacket should always be worn when working on or near deep water.**

**If BA is required when working on a weather deck, don the lifejacket first.**

[ Once onboard a vessel, unless working on a weather deck, lifejackets should remain with the Boarding Officer. ]

# *Immersion/Transit Suits...*

- Will be worn when flying; may be worn for seaborne transfer...

Check for correct size...

Wear appropriate undergarments...

Don correctly - teamwork...

Ventilate to prevent unwanted buoyancy...

Maintain integrity...

Don life-jacket...

**If damaged - do not wear and tell somebody!!!**

# ***It you have to enter the water...***

- .....**DONT !!!**...
- Correctly dressed - if possible...
- Remove all sharp objects / fire helmet...
- Get close to the water...
- Check 'Buddy'..assume correct posture...
- **Check below, look ahead..STEP  
off...maintain posture.**

# *Helicopter ditching!!!*

- 
- A red and white helicopter is shown in flight against a cloudy sky. The helicopter has "RUSSIAN RESCUE" written on its side and the number "23" on its tail. The background shows a dark blue ocean.
- Listen for instructions...
  - Tighten seat belt...
  - Remove ear defenders...
  - Don suit hood...
  - Check lifejacket..do NOT inflate...
  - Touchdown procedure - be prepared for 'roll over'.

# *So now you are in the water!!*

- Discard unnecessary equipment...
- Avoid excessive swimming...
- Swim on back if necessary...
- Retrieve fire helmet if possible...
- 'Buddy' up..saves valuable heat...
- Get into rescue 'craft'.

# ***RESCUER' ACTIONS...***

- Attempt to remove horizontally...
- Re assure casualty who should relax...
- Maintain horizontal position...
- **SEEK URGENT SPECIALIST MEDICAL HELP.**

# ***MAN OVERBOARD [MOB] PROCEDURE...***

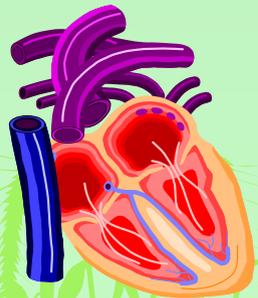
If a crew member enters the water:-

- Maintain visual contact and point at MOB...
- Raise verbal alarm...keep pointing...
- Launch a flotation marker i.e.... lifebuoy...
- Advise standby vessel / aircraft...
- When recovering MOB beware of IRCRC.....

# *Immersion Related Circum- Rescue Collapse[IRCRC]...*

**“ Casualties immersed in water undergo physiological changes affecting cardiovascular output due to hydrostatic pressure and/or hypothermic shock”**

**[Institute of Naval Medicine 1994]**



# ***HYPOTHERMIA...***

- Wear correct protective clothing...
- Protect from the elements..and  
DON'T ENTER THE WATER!!...
- Avoid unnecessary swimming...
- Board rescue craft quickly...
- Keep warm and dry...
- Maintain insulation.

# ***SUMMARY...***

- Wear full PPE/Life-jacket...
- Know your vessel, and survival equipment...
- Consider Seasickness problems...
- Keep out of the water...
- Maintain 'Buddy' system...
- Be aware of Hypothermia, AND...

***Maintain the ...  
WILL TO SURVIVE'***



***Events following the sinking of the ferry 'Estonia' – 27<sup>th</sup> September 1994***



**Cornwall County Fire Brigade  
Marine Operations - 8**

**Small Boat Fire Safety**

This package consists of:  
20 translates.

Document: Marine Training - Fire  
Safety Afloat.

FPA leaflet - Avoiding Fire Afloat.  
NO notes.

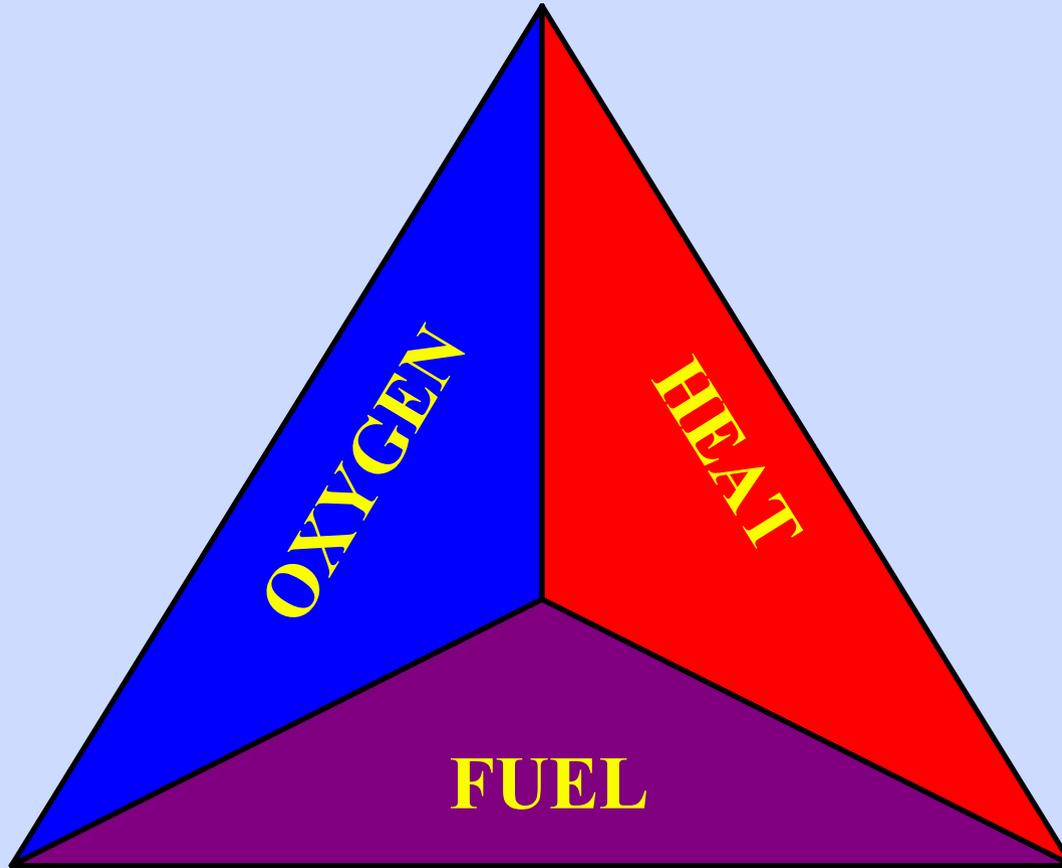
MJK Feb.97



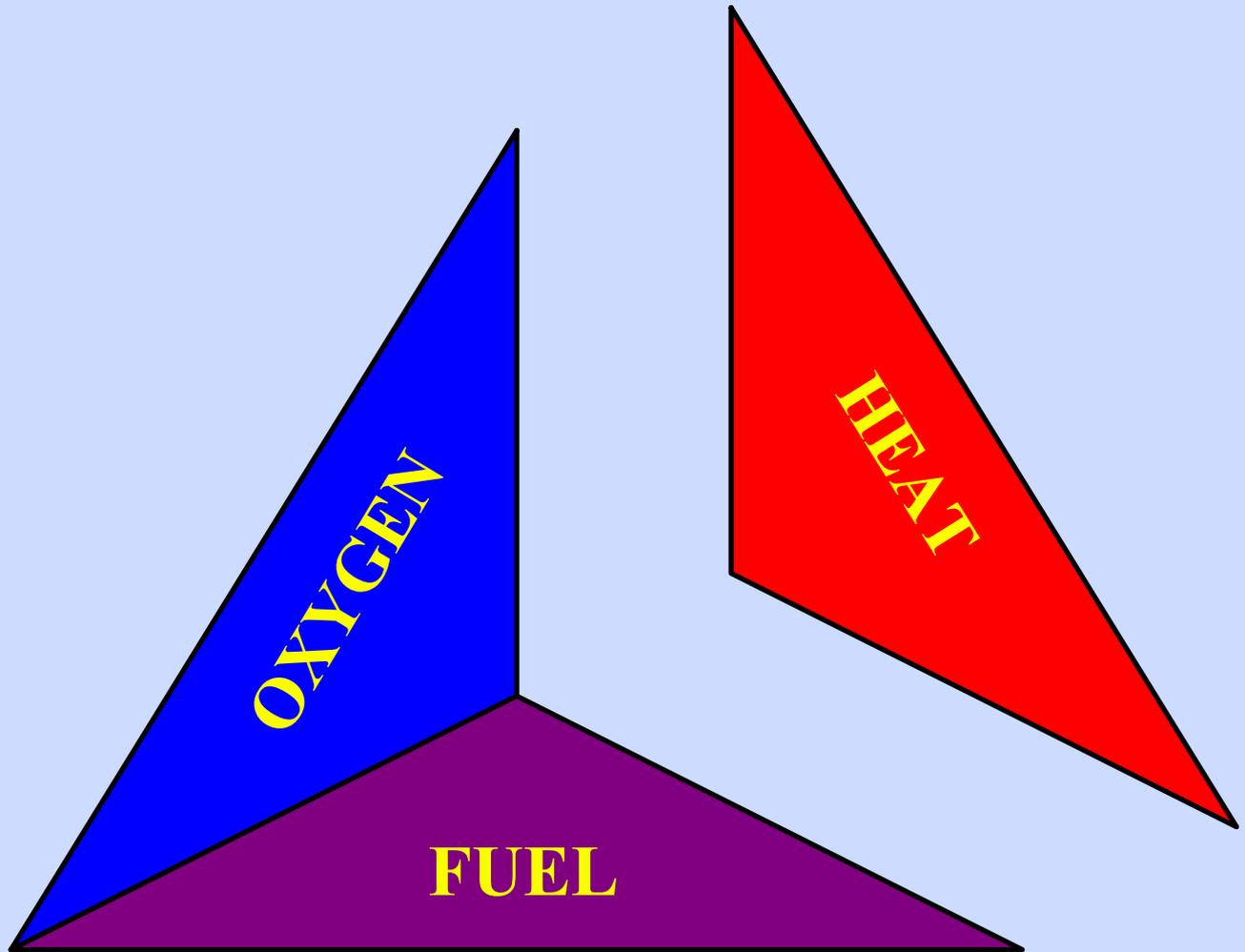
**Fires do occur in all sorts of  
craft!!!!**



# The Triangle of Combustion...



**No combustion!!!**



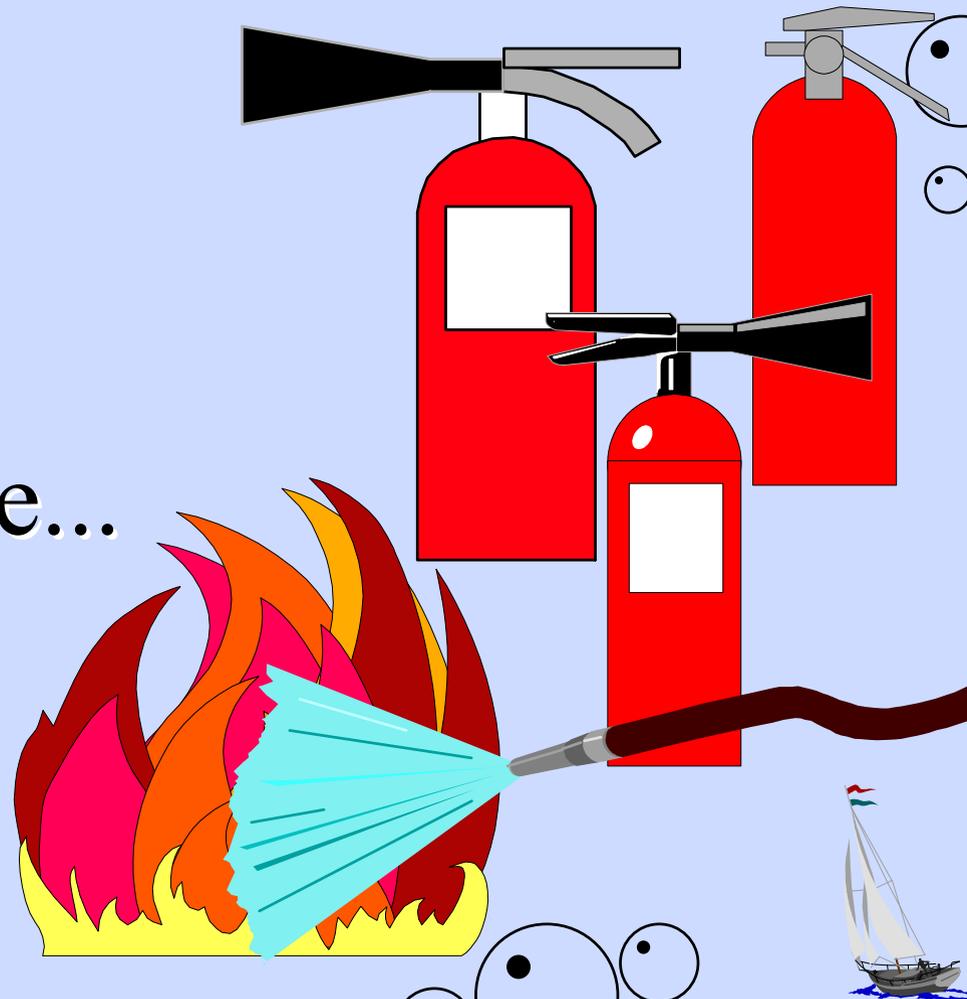
# Classification of fires...

- CLASS A
- CLASS B
- CLASS C
- CLASS D
- Solids...
- Liquids...
- Gases ...
- Metals.

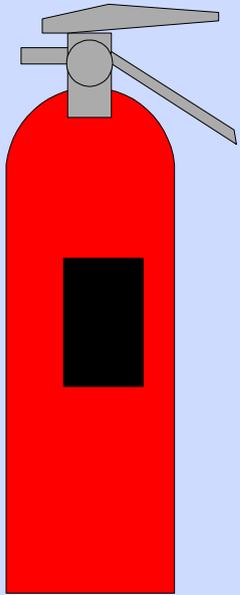


# Types of extinguishers...

- Water...
- Foam...
- Dry powder...
- Carbon Dioxide...
- Halon...
- Fire blanket.



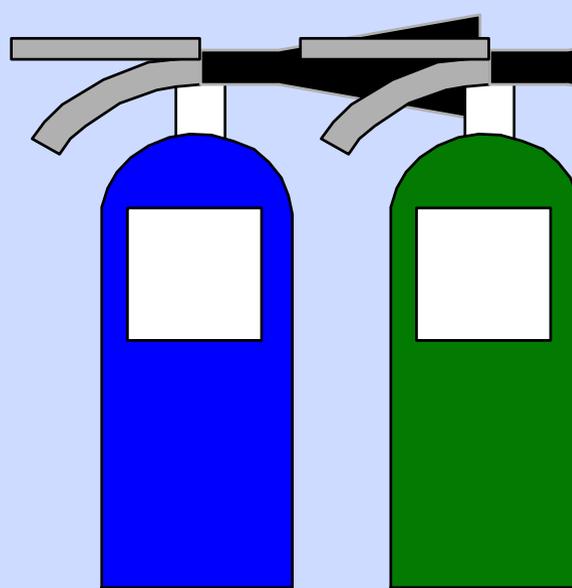
**As you may see them...**



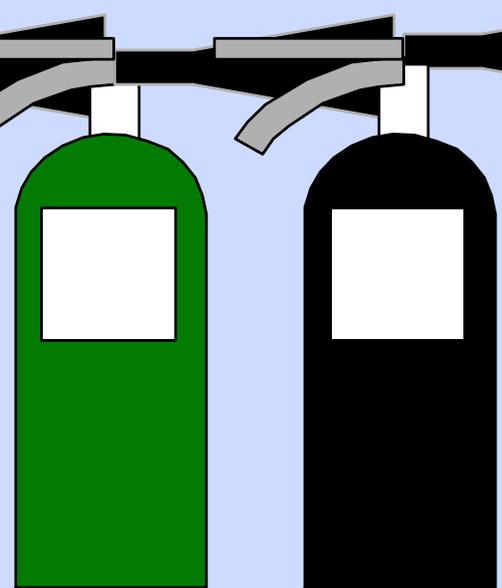
**Water**



**Foam**



**Dry  
Powder**



**Carbon  
Dioxide**



# Colour coding...

January 1997.

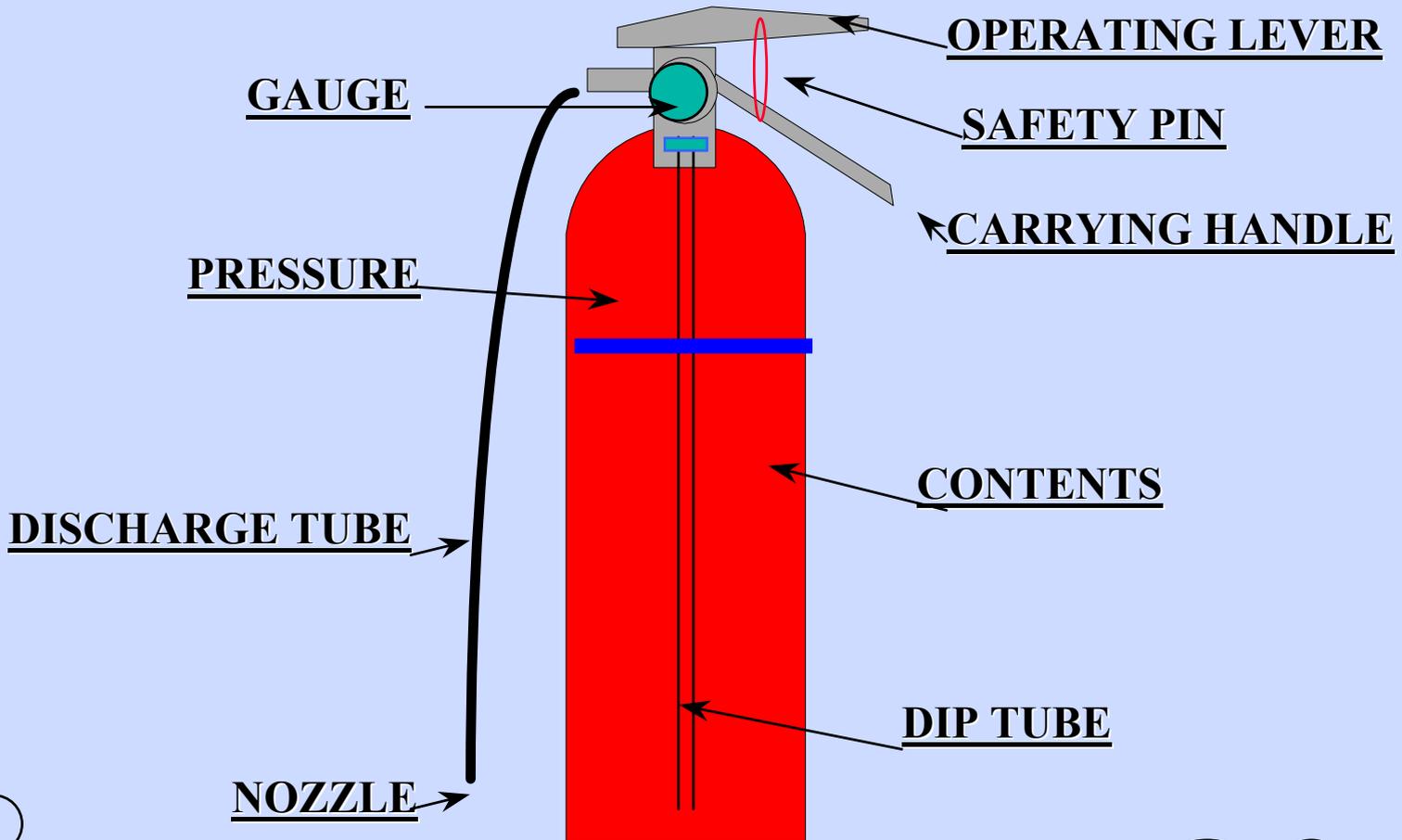
**The European Standard specifies that all fire extinguishers will be Red with a colour code block.**

[Not retrospective]

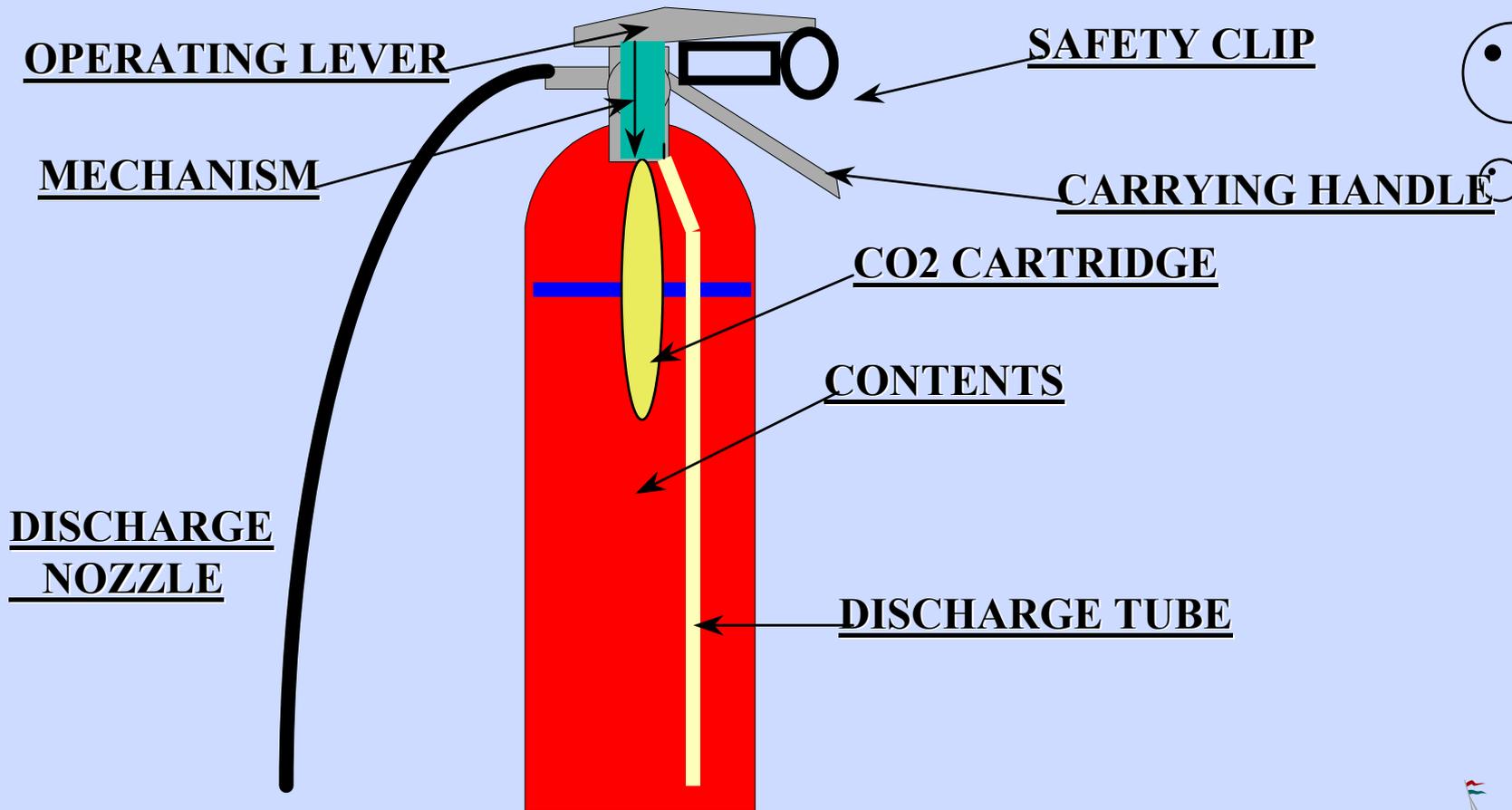
• The man from Brussels!



# STORED PRESSURE.



# GAS CARTRIDGE.



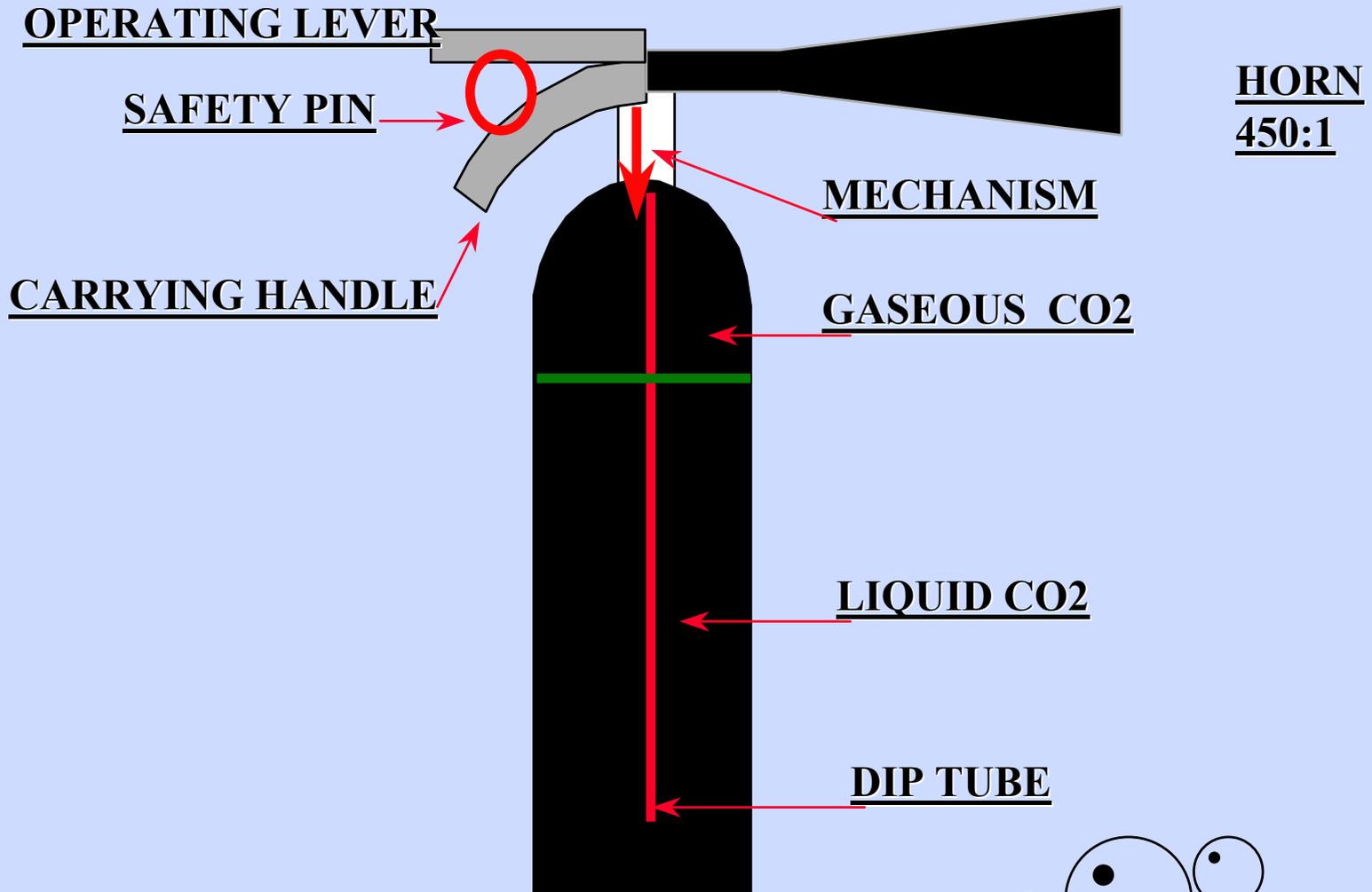
# GENERAL SAFETY RULE..

Do NOT use water on class B  
fires i.e... fuels.

Water will instantly turn to  
steam causing a rapid 'boil'  
over!!!

**BURNS...OUCH!!!**

# CARBON DIOXIDE [ CO<sub>2</sub> ].



# **Fire Blankets...**

*Should satisfy the specification  
and test criteria prescribed in  
British Standard 6575: 1985 -  
British Standard  
Specification for Fire  
Blankets*



# General 'boatkeeping'...

- **DO** - fit a smoke detector...
- **DO** - ensure furnishings[foam] and insulation is fire retardant...
- **DO** - run wiring looms through conduit to avoid chafing...
- **DO** - contain and vent battery boxes...
- **DO NOT** keep waste oily rags...
- **DO NOT** store non safety matches .. vibration!



# Petrol...

- **DO** use approved containers and store on deck...
- **DO** - use a funnel when decanting...
- **DO** ensure tanks vent directly overboard and fuel lines have a **shut off valve** THAT WORKS!!...
- **STOP** the engine when refuelling **NO SMOKING or NAKED LIGHTS...**
- Clear any spillage and ventilate.



# Liquified Petroleum Gas (LPG)...

- **DO** - fit a gas detection system...
- **DO** - secure cylinders securely in a sealed container with atmospheric vent...
- **USE** - approved piping ...
- **DO** - isolate cylinders when not in use...
- **DO** - maintain adequate ventilation...
- **DO** - regularly 'hand pump' bilge.





# Diesel / Paraffin...

Although normal vapour concentrations are outside low flash point limits, they can fuel a developing fire...treat with similar respect!!!

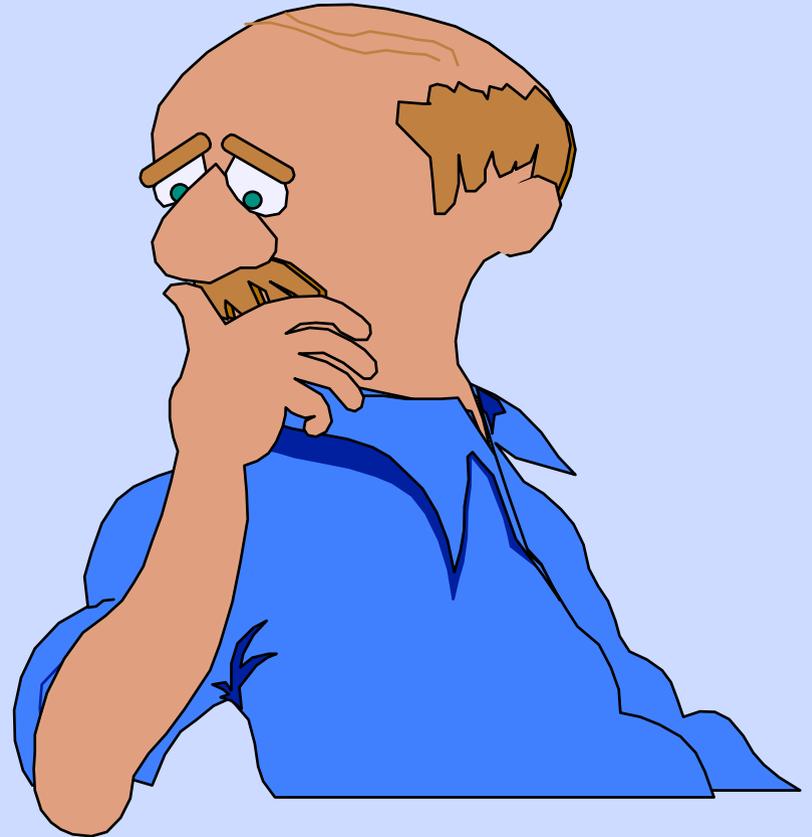


# Methods of extinguishing fire afloat...



Think ...

When do you  
use a fire  
extinguisher  
???





**IF IT IS SAFE TO DO SO WITHOUT**  
**PUTTING YOURSELF IN**  
**DANGER!!!**

**....difficult on a small boat!!!**

- **When there is a fire!!!...**
  - **If you have been trained...**
  - **Have the right equipment.**
- 

# How???

- Have extinguishers located near the exits...
- Ensure you know how they operate...
- Isolate gas and petrol if possible..
- Realise your limitations...
- Keep low...
- Aim at the base of the fire (**not foam**)...



**and...**

- Avoid other craft..and alert them...
  - Prepare emergency ‘grab’ bag and liferaft...
  - Remove non essential crew...
  - If all else fails...
  - **ABANDON SHIP!!!**
- 



# Remember - SAFETY...

Fires involving 'oils' and electrical apparatus and systems...

Do NOT use water...although there is lots of it!!

Isolate supply..if safe to do so!!!





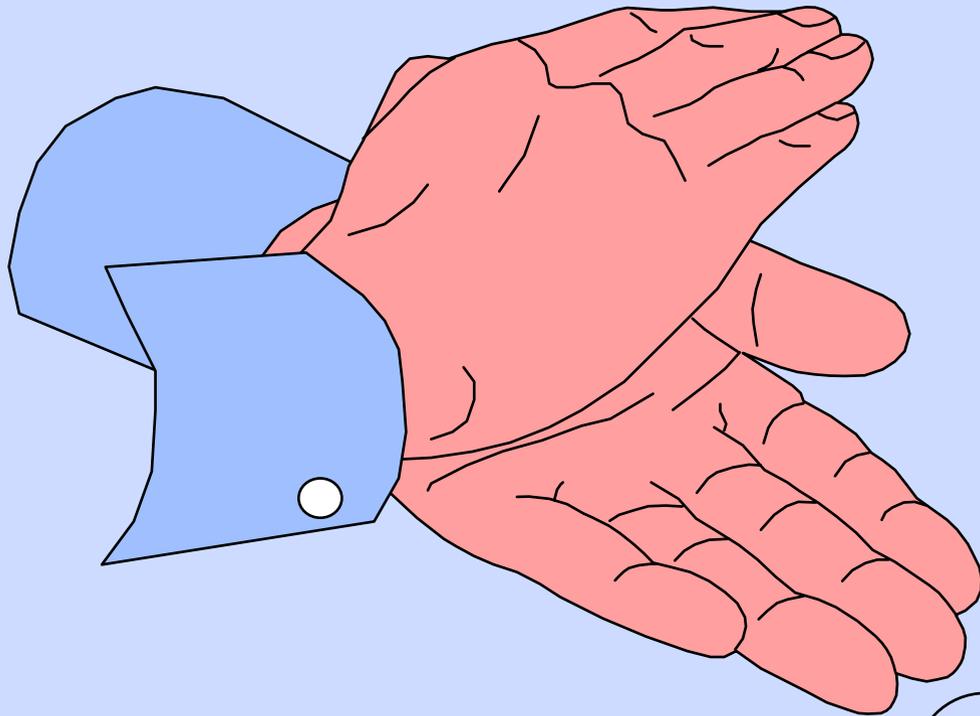
**and...**

ensure you service your fire  
extinguishers / detectors etc  
annually, preferably prior to  
the start of the season...

**you may need them one  
day!!!**

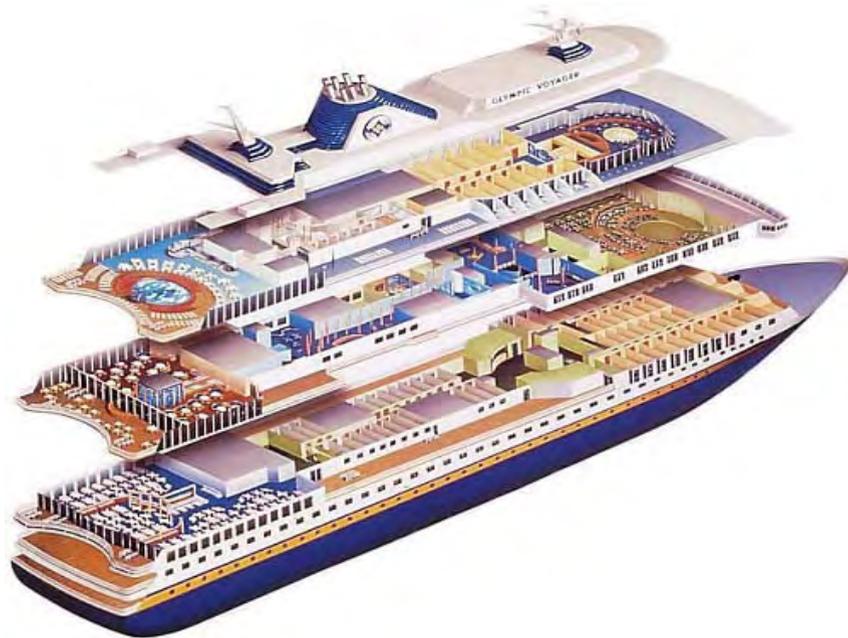


*Thankyou!!*



# Marine Operations ~ Part 9

## Marking Of Ships Plans



# *Standard Approach to the 'Marking Up' of Ship's Plans During Tactical Operations*

- Standard symbology...
- To ensure compatibility...
- Improve understanding...
- Improve communication...
- Enhance Command and Control.



# *On Attendance, or Prior to attendance, Obtain Plans From...*

- Brigade Port's Liaison Officer...
- 1(i)d Inspections...
- Master of the vessel...
- Harbour Authority...
- Ships agents...
- MCA...
- Internet data bases.

*Divisional Officer  
Mervyn Kettle*

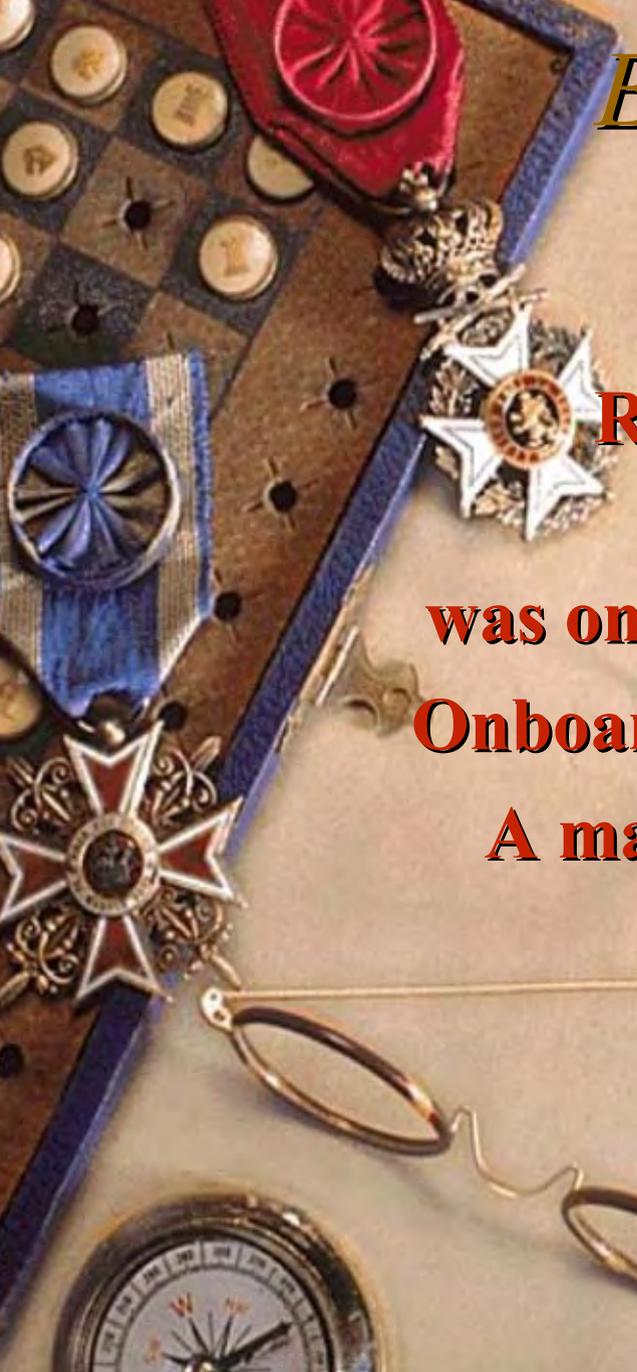


*Cornwall County  
Fire Brigade*

*- Case History -*

M.S. SCANDINAVIAN STAR  
NASSAU

8

A collection of medals and a compass rose on a dark surface. The medals include a red ribbon with a circular emblem, a white star-shaped medal with a central emblem, and a blue ribbon with a circular emblem. A pair of glasses is also visible in the lower part of the image.

## *Executive summary...*

**On the 7th April 1990 the  
Roll-on Roll-off passenger ferry  
'Scandinavian Star'  
was on passage from Norway to Denmark.  
Onboard were 383 passengers and 99 crew.  
A major fire took place that ultimately  
claimed the lives of 158.**

## *The ship...*

- ◆ Registered to 'Seascope' in the Bahamas...
- ◆ Built in 1971...
- ◆ Length 141m; Beam 22m...
- ◆ Stern ramp ...
- ◆ Nine decks...



# *Fire Protection....*

- ◆ 12 Transverse watertight bulkheads...
- ◆ 4 Fire pumps...
- ◆ Sprinkler system on car deck three...
- ◆ Hydrants / extinguishers...
- ◆ Automatic Fire Detection (AFD) in machinery spaces and some stores only...
- ◆ Manual fire alarm - 148 call points / 53 sounders..





*and*

- ◆ Escape lighting ( by fire doors only)...
- ◆ 92 Ventilation dampers - 78 of which required manual operation...
- ◆ Carbon Dioxide (CO<sub>2</sub>) / Halon / Foam - fixed firefighting systems to some machinery areas..
- ◆ 7 Breathing Apparatus sets...
- ◆ 9 Hand held radio's..

A collection of maritime-related items is displayed on a light-colored surface. On the left, there is a blue ribbon with a red circular emblem, a silver star-shaped medal with a central emblem, and a pair of gold-rimmed glasses. Below the glasses is a circular compass with a white face and black markings. The items are arranged in a way that suggests a theme of maritime safety or achievement.

The ship satisfied existing  
SOLAS  
(Safety of Life at Sea)  
requirements and met  
IMO (International Maritime  
Organisation) regulations

So why did 158 people  
die????



## *History...*

- ◆ Two sister ships had suffered ‘fire’ incidents...
- ◆ Transferred to ‘Scandinavia from Caribbean routes...
- ◆ Departed from Oslo without any dedicated crew training prior to departure...
- ◆ Only 60% occupied by passengers at time of fire.



## *Scenario...*

- ◆ 2145 hours on 6th April 1990 - left Oslo...
- ◆ 0145 hours on 7th April - a 'small' fire was extinguished outside cabin 416; port side - *NO FURTHER ACTION TAKEN...*
- ◆ 0200 hours -further fire reported outside cabin 419; starboard side ( this was mainly vacant cabins.The fire alarm was operated initially on 4 and 5 decks...



## *continued...*

- ◆ 0210 - Fire spreads upwards via stairs to 4;5 and decks, laterally via passageways and fills long ‘dead end’ passageways...
- ◆ 0224 - MAYDAY sent - ship being abandoned...
- ◆ 0230 - Ventilation crash stopped. (45 minutes after first alarm) . Ship is stopped...
- ◆ 0250 - First rescue ship on scene...



*and...*

- ◆ 0320 - Captain and some crew abandon ship...
- ◆ 0335 - First helicopters arrive...
- ◆ 0530 - Swedish Firefighters arrive...
- ◆ 1155 - Towed to Lysekill, Sweden...
- ◆ 2117 - Vessel docks...

1800 hours, Sunday 8th April 1990 - Fire extinguished.



*The Norwegian government  
commissioned an enquiry following the  
incident.*

*There were three main conclusions..*

- ◆ Lack of training...
- ◆ Failure of 'passive' fire protection...
- ◆ Poor command and control.

A collection of military medals and a pair of glasses on a light-colored surface. The medals include a red ribbon with a circular emblem, a white star-shaped medal with a central emblem, and a blue ribbon with a circular emblem. A pair of gold-rimmed glasses with thin temples is also visible. The background is a light-colored, textured surface.

Subsequently several major recommendations were made by the committee of investigation. These recommendations would apply to vessels operating in Scandinavian waters.

They were as follows...



# *Training..*

- ◆ Regular crew training at approved training centres...
- ◆ Pre sailing safety inspections...
- ◆ Stricter ship fire patrols...
- ◆ Use of additional Breathing Apparatus...
- ◆ Passenger smoke masks..



## *Fire precautions...*

Install comprehensive ‘active’ fire safety equipment...to include:-

- ◆ Continually sounding fire alarms at 75dBa...
- ◆ Ventilation to be automatically controlled...
- ◆ Fire doors to have vision panels. Doors to be controlled by fire detection...



## *continued...*

- ◆ Reduce ‘dead end’ passageways...
- ◆ Improved sign posting and escape lighting; high and low...
- ◆ Limit the use of combustible materials...

*and...*



...early assistance from  
shorebased Firefighters  
where the situation permits.



# *Video Presentation...*

Courtesy Channel 4 TV  
1999~(16 minutes).



END OF  
PART TWO

CDMVIDE8.AVI

# *Summary*

- In December 1992 Captain Hugo Larsen and the Chief Officer were sentenced to 60 days prison...
- The company's managing director was sentenced to 40 days prison ...

A collection of military medals and a pair of glasses are arranged on a light-colored, textured surface. On the left, there is a blue ribbon with a red rosette, a silver star-shaped medal with a central emblem, and a larger silver star-shaped medal with a central emblem. Below these is a pair of gold-rimmed glasses with thin temples. In the bottom left corner, there is a circular compass rose with a needle pointing towards the top. The background is a plain, light-colored surface.

*Could it happen around  
our coasts ...  
and if it does - are we  
prepared???*

*The End*

# *Liaison and 'Joint Approach'*

- Make use of ships personnel when dealing with the transposition of information...
- Ensure adequate copies of plans are available for all 'key' personnel etc...
- Keep a record of previous plans if possible, there may be an investigation...
- Notes times/actions etc...
- Support with a Command Wallet.



# *Terminology*

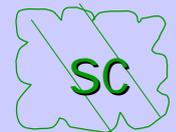
Remember...ships vary with design etc...

- Decks may be numbered or named...
- ‘Rooms’..are ‘compartments’, which also may be numbered or named...
- Try to use their terminology

# *'Tools Required*

- Ships plans
- Command Wallet
- Marker Pens ..

# *Standard symbols*



Searched and Clear (Green)



Boundary Cooling (Blue)



Boundary Cooling on Deck  
Or Deckhead (Blue)



Smoke Logged (Black)



Hot Bulkheads (Red)



Fire (Red)



Casualties (Red)



Free Surface (Blue)



Command Point



Sector Command Point



Safety Officer



Evacuation Position (Red)



Boarding Control

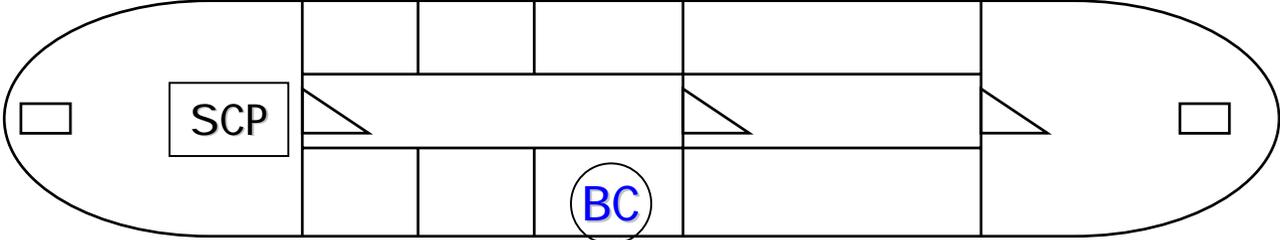


BA Team (add Team No.)

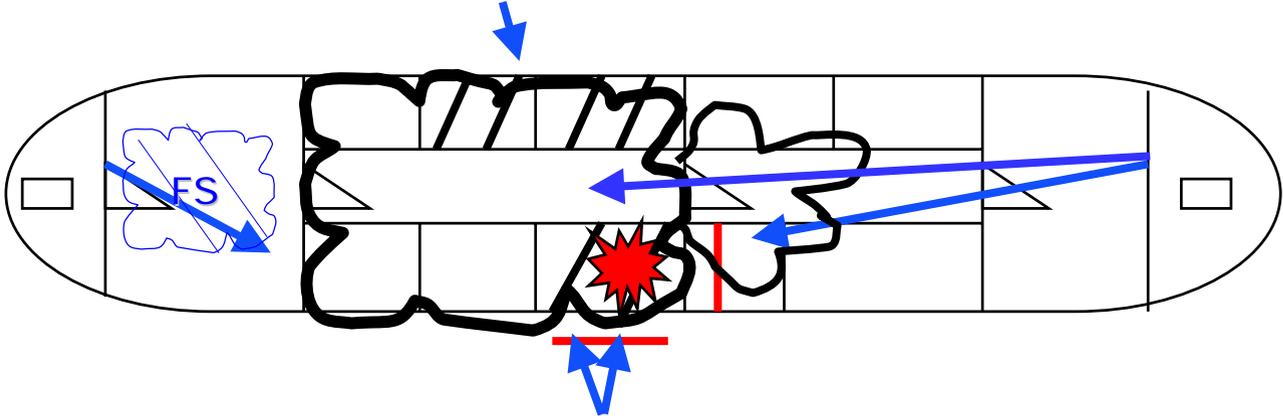
Aft

For'ard

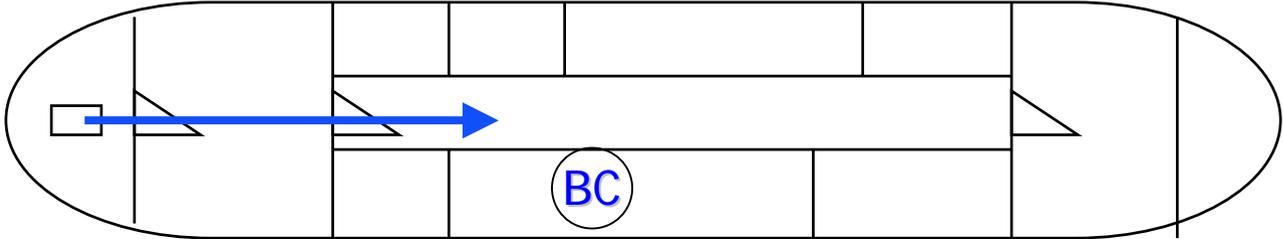
Weather Deck



Deck 01



Deck 02

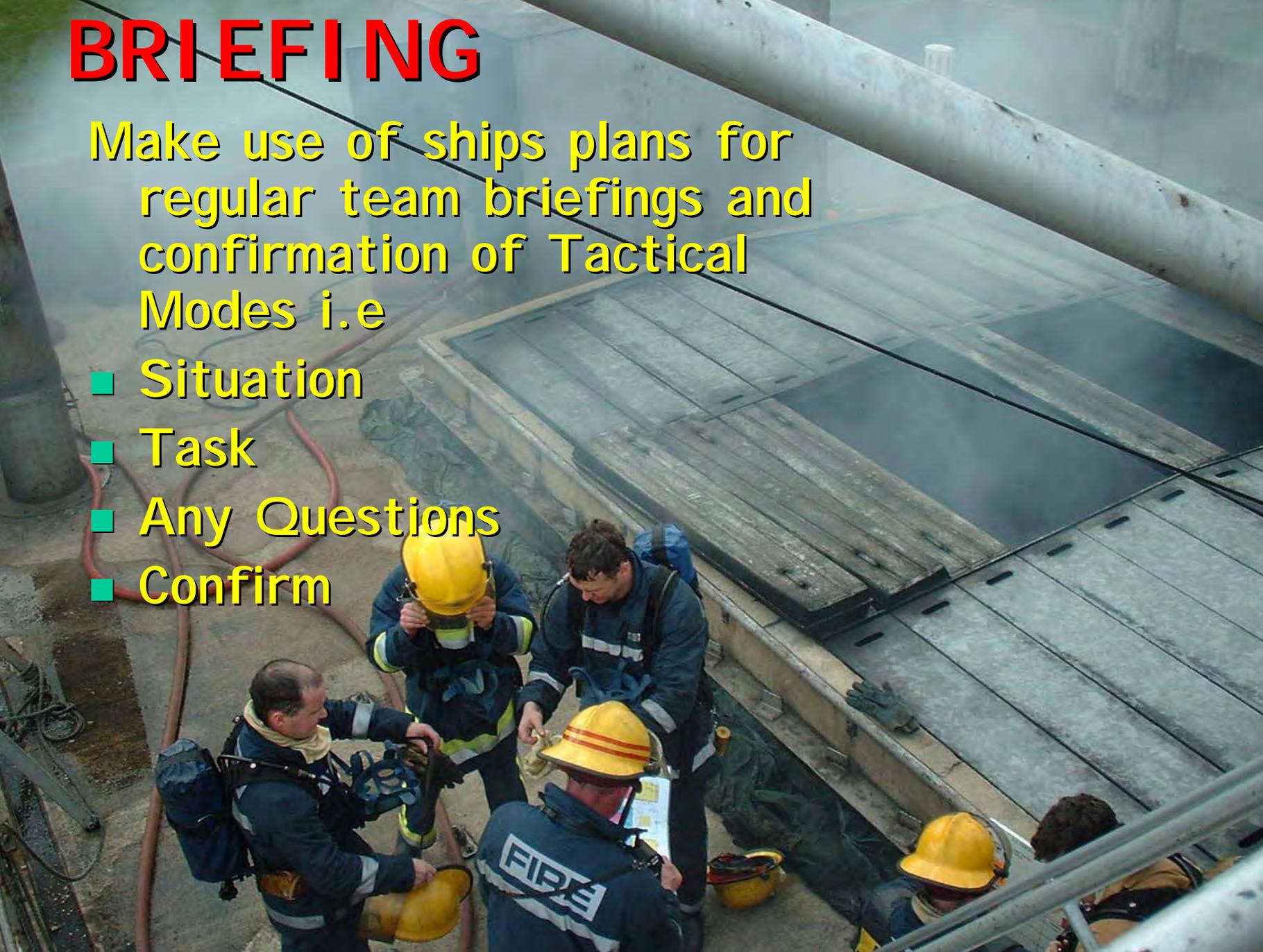


# Use of plans

# BRIEFING

Make use of ships plans for regular team briefings and confirmation of Tactical Modes i.e

- Situation
- Task
- Any Questions
- Confirm



# *Termination of Incident...*

- Collate details from all plans produced...
- Provide details as required e.g debrief, FDR1, Training, Investigations.



## MARINE OPERATIONS ~ 'Safe Working On Or Near Water'

### Summary:-

Information on pre-planning and operational considerations for water related incidents including , ice, mud, sand and unstable ground. Environmental incidents resulting from escape of 'slurry'.

### Further Information:-

Marine Operations Group ~ Training Packages  
BIS docs.- Marine Operations~ Ship Firefighting  
~ Helicopter Operations

DCOL 3/2000 Item E

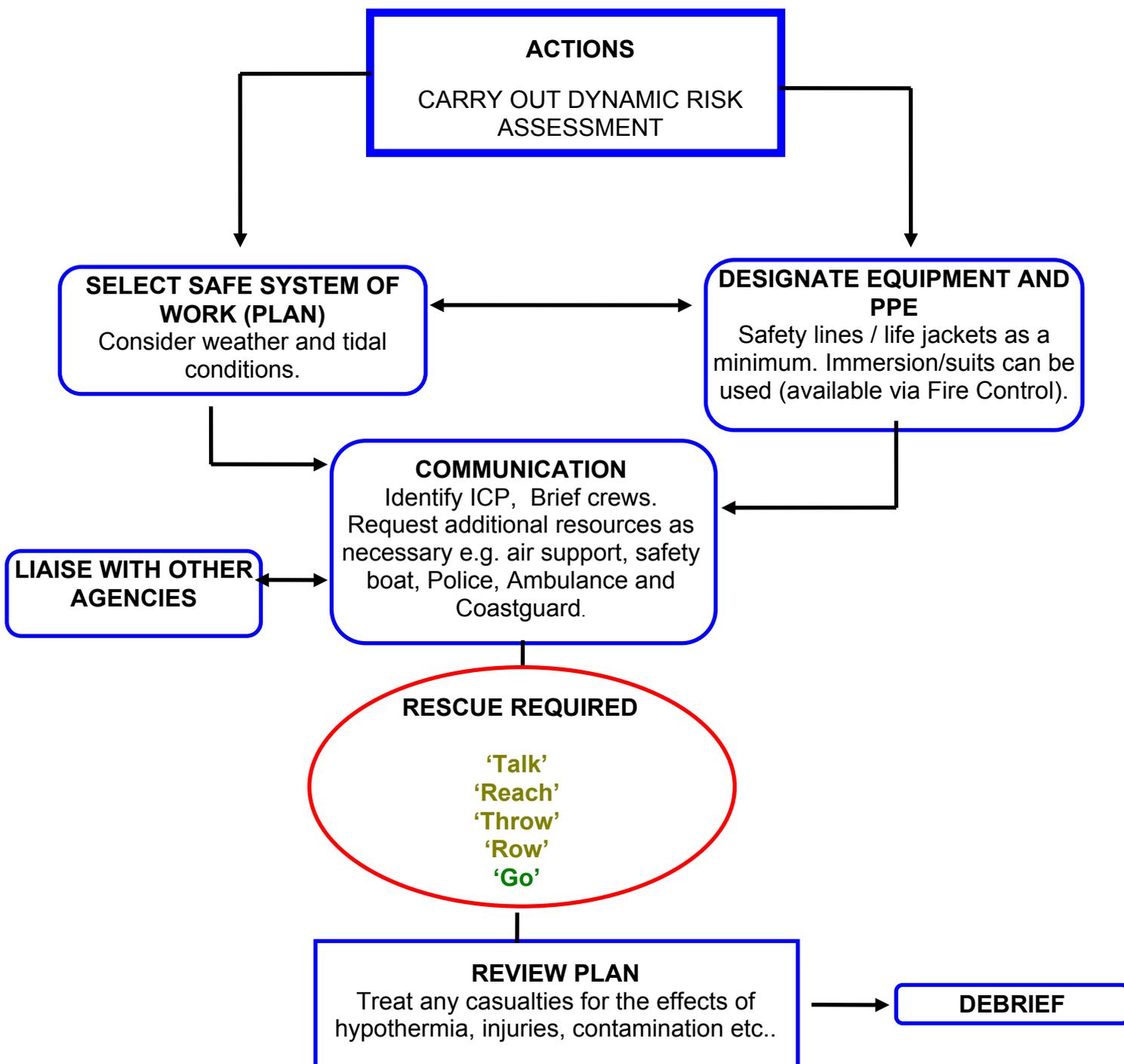
<b>Contents</b>	<b>Page</b>
<b>INDEX:-</b>	1
<b>KEY INFORMATION:-</b> ~ Water Related Incidents (WRI's)	2
<b>PRIMARY INFORMATION:-</b>	
1. INTRODUCTION	3
2. COMMAND AND CONTROL	4
3. STANDARD OPERATIONAL PROCEDURES	4 - 11
4. SUB SURFACE RESCUES/RECOVERY	11
5. ICE RESCUES	12
6. MUD, SAND/CLAY RESCUES	13
7. ANIMAL RESCUES	14
8. VEHICLES IN WATER	14-15
9. POST INCIDENT CARE	16-17
<b>SUPPORTING INFORMATION:-</b>	
10. WATER HAZARDS	18-19
11. BIOLOGICAL CONTAMINATION	20
12. HELICOPTER OPERATIONS	21-22
13. GLOSSARY	23-24

# WATER RELATED INCIDENTS (WRI's)

## KEY INFORMATION

### HAZARDS

E.g ~ Drowning. / Hypothermia. / Bacterial Contamination / Unknown Ice thickness.  
~ Tides, Currents, Depths and Underwater Obstructions



# PRIMARY INFORMATION

## 1. INTRODUCTION

The Brigade attends a number water related incidents (WRI's) each year where personnel are potentially at risk from injury or loss of life due to working in close proximity to water. Personnel must be aware of the dangers presented at such incidents and ensure that the safety of all concerned in these activities is maintained through pre-planning and/or operational dynamic risk assessment.

The Brigade does not have a statutory duty to respond and apply resources to incidents of this type, where fire is not involved. However, no other emergency service is prepared to provide the level of response expected by the public on inland waterways and the Brigade is perceived as the prime rescue service across a wide diversity of hazardous situations.

The Brigade recognises and accepts this moral responsibility and will provide an appropriate level of response to all distress calls it receives.

Although the primary water risk within the county stems from coastal and estuarial waters, a number of other risk areas exist such as:-

- Offshore.
- Fast and/or deep running rivers.
- Reservoirs.
- Ponds and lakes.
- Quarries.
- Mine shafts.
- Local flooding.
- Slurry pits.

These risk areas in turn can be sub-divided into categories of tasks and for each subjects the firefighter to some degree of hazard. Although these are numerous they mainly fall under the following headings:-

- Working alongside water.
- Working on/being transported on water.
- Pumping from open water.
- Water rescues including submerged vehicles.
- Mud/sand rescues.
- Ice rescues.

Other areas of activity, such as sewer and slurry pit rescues, will also subject firefighters to similar hazards, but due to the nature of such risks additional safeguards will be required to protect the individual from contamination, infection or asphyxiation. These additional risks are dealt with separately and details can be found in the Brigade Information System and the Fire Service Manuals (FSM's).

## 2. COMMAND AND CONTROL

The Brigade will rely on Incident Commanders (IC's) applying the generic procedures encompassed within this document, the Incident Command System utilising the principles of dynamic risk assessment and the safe person concept.

Additionally, current, relevant and high quality information will be communicated to all operational personnel to provide them with the information enabling them to assess risks as objectively as practicable.

Each situation involving the above activities will present its own difficulties and problems, therefore this policy cannot be prescriptive. However, its contents should be viewed as the absolute minimum and IC's will determine the course of action according to the individual circumstances of the situation. *Nevertheless, the following items must be used as a framework of minimum safety.*

- In all instances the safety and welfare of Brigade personnel is of paramount importance.
- IC's must ensure that all elements of Command and Control are followed.
- A risk assessment is to be undertaken prior to setting priorities and allocating tasks.
- Where the rescue of animals is involved, undue risk to human life should not be taken.
- Risk must be proportional to benefit at all times.

## 3. STANDARD OPERATIONAL PROCEDURES (SOP)

### **Attendance:**

The emergency response provided by the Brigade to water related incidents (WRI's) is essentially modular and can be illustrated as two progressive levels.

**Level 1** All WRI's that require an initial attendance of either a Supervisory Officer and/or crew with knowledge, basic training, limited PPE, safe working practices and procedures covered in this document.

**Level 2** Persons Reported - Level 1 supported by attendance of crews with enhanced training and equipment.

Water rescues may require a larger attendance than other Emergency Special Service Calls (SSC's), to provide both resources for the rescue and to provide a greater degree of safety to personnel.

### **NB. IC's should consider the involvement of other services such as:**

- The Coastguard
- RNLI
- Police Underwater Search Unit
- Ambulance/Paramedics
- Royal Society for the Prevention of Cruelty to Animals (RSPCA)
- Environment Agency (EA)
- Emergency Planning Departments

However, it should be advised that an anticipated early emergency response may not be forthcoming and the relevant mobilising centre needs to advise the IC as a matter of urgency of any delays anticipated.

**Drivers of all Brigade vehicles must continually assess their ability to proceed to incidents taking into account local environmental conditions.**

Vehicles should park at a 'safe' area and allow crews to dress in the appropriate PPE e.g immersion suits etc before committing to any 'offensive' tactics.

**Safety of Personnel:**

This is paramount and IC's must ensure that:

- They do not enter the water unless absolutely necessary.
- Lifejackets and/or suitable buoyancy aids are worn by all firefighters working on or near the water, i.e., the "Risk Zone" (which, extends 3 metre horizontally from the water).
- Use appropriate PPE whenever possible to prevent cold shock, hypothermia, and contamination (even in summer water temperature can debilitate rescuers within a relatively short time).
- A Safety Officer is appointed as soon as practicably possible.
- The IC gives consideration to any personnel in or near the water using a safety line.
- All non-essential personnel must stay out of the risk area.
- Panic of a Casualty: - A drowning person when physically contacted by an in-water rescuer may attempt to climb on top of the rescuer; overcoming the rescuers buoyancy and submerging them both.
- Physical contact with a struggling casualty should be avoided whenever possible. Offer a buoyancy aid, line, etc. Tow casualty to safety.

**Fire fighting PPE affords mechanical and limited thermal protection and is slightly positively buoyant in water (mainly due to the air both inside the fabric/material and air pockets trapped between the material and wearer). Water entering fire boots will equalise and will not have a detrimental sinking effect.**

**Initial Actions on Arrival**

The Dynamic Risk Assessment (DRA) process must be carried out.

The IC at a WRI may be faced with many difficult decisions and the greatest difficulty may be in stopping ill conceived and reckless rescue attempts being made (where a rescuer may become a victim).

Firm control must be exercised to ensure that unauthorised personnel do not venture into the water.

Any witnesses should be interviewed to ascertain what has happened, how many people are involved, where any casualty was last seen, etc.

Then a logical plan of action, taking into account all possible hazards, must be devised and initiated as quickly as possible, with the safety of personnel as the overriding factor.

**NB.**

**'When a person has disappeared below the surface of the water little can be achieved without specialist equipment or personnel. A clear distinction must be drawn as to when a rescue attempt becomes a body recovery'.**

## **Key tactical considerations ~ water rescue.**

***This procedure is dependent on applying a prioritised approach to water rescues, Talk, Reach, Throw, Row are the preferred options, with entry to water as a very last resort.***

Any attempt to rescue people or animals from waterways or associated hazards without the aid of specialist PPE and ancillary equipment should be carried out from the safety of firm ground (bank) or a structure (bridge or jetty).

Also:

- Only the minimum number of personnel should be used to undertake the task.
- Weather conditions and the duration of the incident may increase the requirement to rotate crews.
- At night, lighting of the scene is a priority.
- Always deploy upstream spotters above the location of the rescue operations, ideally on both sides of the river.
- Consider alternative measures to cater for a sudden change of situation i.e. prepare a secondary plan of action.

**Talk** It is important that contact is made with the casualty as quickly as possible. Keep talking to them, explain what you are going to do, what you want them to do and keep encouraging them.

**Reach** Either with your hand, or equipment from the appliance - e.g. ceiling hook, chimney rods, inflated fire hose then pull the casualty to firm ground. By lying down, you can increase the distance reached and also prevent yourself being pulled in.

**Throw** Use a purpose designed Throw Line and/or BA Guide Line. Throw one end out to the casualty. Do not weight the bag or the thrown end as it may injure the casualty.

**Row** If a boat is available then care must be taken to ensure that it does not capsize during the rescue. If it is powered, approach the casualty bow on and as soon as the contact is made switch off if safe to do so. It may then be better to row the boat to shore towing the casualty rather than try to pull the casualty aboard.

Remember never to stand up in a small boat and be aware of underwater obstructions particularly if using an inflatable boat.

**Go** ***Only if all these fail, as a very last resort should suitably trained personnel enter the water to attempt to facilitate a rescue.***

***Where the Incident Commander is faced with a rescue situation (after considering all other courses of action) it is determined that the only possible approach is to commit personnel to the water to carry out a swimming rescue, the following control measures must be in place.***

### **For 'still' water rescues:**

- A Line Safety Officer should be appointed to control each rescue swimmers floating line.
- All personnel must be fully briefed regarding the rescue procedure and the role of each individual.
- Effective communications must be established between the IC the rescue swimmer and all safety personnel.

**For 'fast flowing' water rescues:**

- The risks associated specifically with swimming rescues from flowing water are extremely high. Only personnel who have received enhanced training and are provided with the appropriate PPE should attempt to perform this type of rescue.
- If personnel wade in rivers they should take care not to trap their feet in rocks or other debris, which may cause them to lose their balance, fall and be prevented from standing due to the force of the water flowing over them.  
*As a general rule, never wade in water, which is above knee high.*
- Anyone *entering* the water should be dressed in the appropriate PPE
- Firefighters provided with a life jacket and suitable communications should be deployed as spotters upstream to warn of any surface debris heading towards the rescue scene. The spotters must maintain regular communication with the IC. Their position should be such as to allow adequate time for rescuers to get clear of the rescue scene before the hazard arrives.
- Downstream, a boom of inflated fire hose (or similar), the boat, or personnel with throwing lines, should be positioned as a safety measure for any rescuer who may accidentally enter the water and be carried along with the flow. (When using throwing lines, the number of safety personnel should reflect the number of casualties and rescuers in the danger area, but in any case must be a minimum of two).

In situations where it has been determined that a swimming rescue will be attempted, buoyancy aids such as inflated fire hose or composite BA cylinder, etc., must be used to attempt to stabilise the casualty.

**A floating line and harness must be attached to the rescue swimmer.**

Raising a hand directly above the head is a recognised method for a rescue swimmer to indicate they are in difficulty and/or need removing from the water. All personnel must understand this signal and the action to take should it be given.

Entry into the water must be done slowly to minimise cold-water shock and reduce the chance of injury. The person entering the water should have a means of gauging the depth, e.g. ceiling hook.

**N.B. RAPID IMMERSION IN COLD WATER CAN COMPROMISE GOOD SWIMMERS ALMOST IMMEDIATELY.**

**Water Emergency**

In the event of Brigade personnel accidentally falling into water and finding themselves in difficulty a standard message must be formulated and transmitted to provide immediate assistance at the incident.

Similar to the BA and incident ground emergencies the message can be sent by anyone from the incident by contacting Brigade Control and stating "Water Emergency". On receipt of the message Brigade Control will mobilise the following:

- I. Level 2 attendance.
- II. Search & Rescue (SAR) Helicopter.
- III. Duty Officer.
- IV. Ambulance.
- V. Accident Investigation Officer.

This new procedure is designed to be in line with existing messages and procedures. It provides a short, simple method of obtaining urgent assistance when firefighters are in difficulty.

### **Use of Safety Lines**

Approved safety lines and harnesses should be employed whenever possible and always in fast flowing rivers. Safety lines must be attended at all times by a Line Tender Team and not attached to a shore side anchor point.

The Line Tender Team will be supervised by the Line Safety Officer (LSO), who's responsibilities are:-

- The rescue swimmer safety:
- Be positioned to have overall control of the rescue swimmers line.
- To maintain visual and verbal contact with the rescue swimmer.
- Before the rescue swimmer enters the water ensure sufficient personnel are available to retrieve the rescue swimmer.
- Initiate emergency action if necessary.

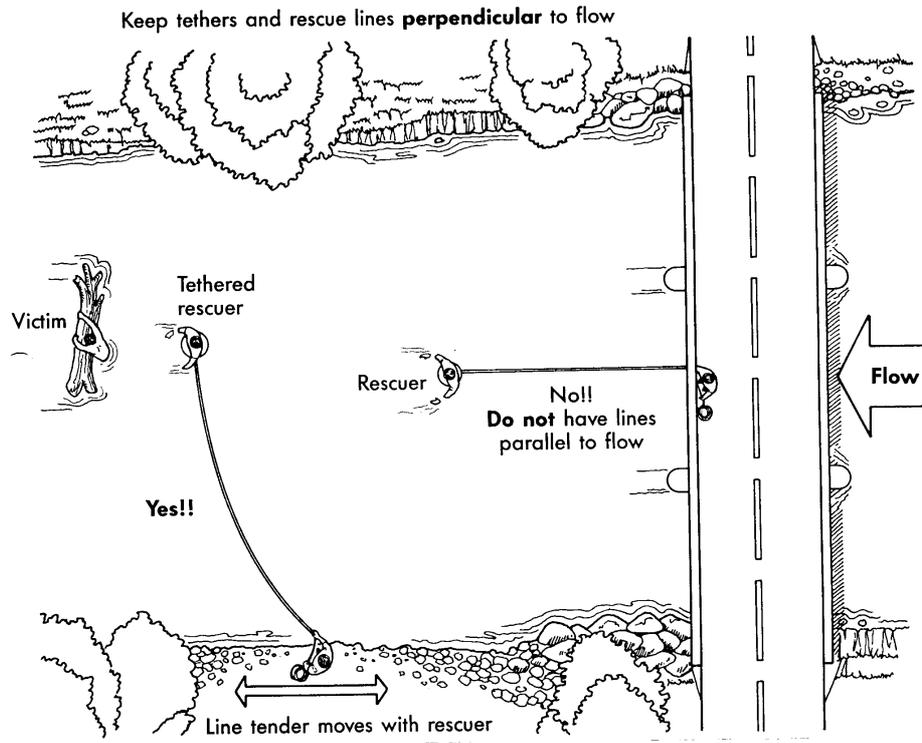
The only task allocated to the LSO (whilst the rescue swimmer is in the water) will be to ensure safety of the swimmer and control of the line. Although it is not essential for the LSO to have direct contact with the floating line they must be in sole control of any personnel holding it.

Verbal and visual contact must be maintained at all times between the LSO and the rescue swimmer.

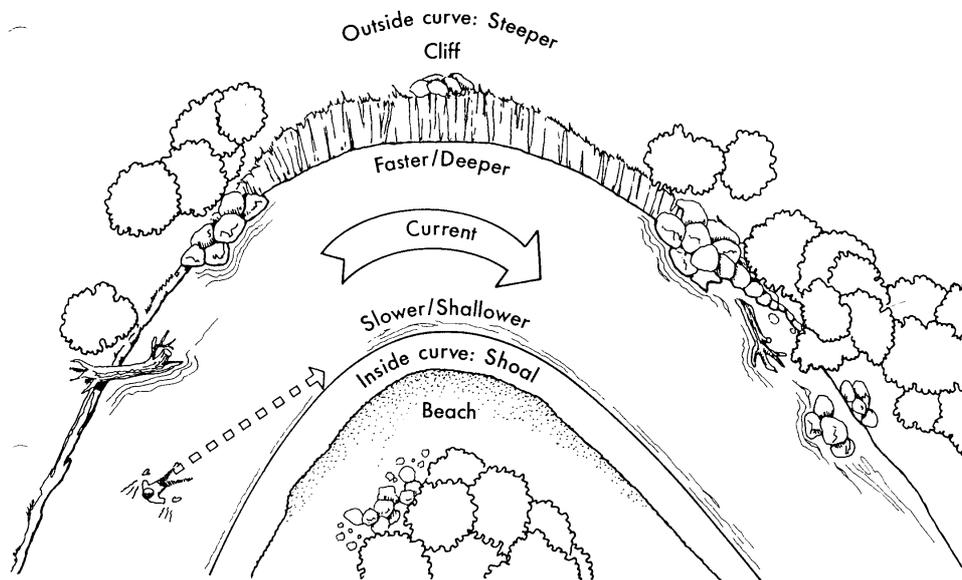
If either of these break down at any point during the rescue attempt, the LSO must initiate emergency action by withdrawing the rescue swimmer (if necessary by physically removing).

The Line Tender Team should position themselves upstream of the rescuer on one of the river banks. If the rescuer then loses his or her footing the current will swing the rescuer to the river bank and relative safety.

In no circumstances should the Line Tender Team work in parallel to the current as this could cause the rescuer to be held into the current and be drowned in the flow.



Water will flow deeper and faster on the outside of a bend and slower and shallower on the inside of the bend. This can be used to the advantage of the rescuer in getting near to the casualty but by remaining in shallow water.



**Risk Zone:**

Most accidents result in drowning after a casualty slips, trips, or falls from the bank from within 3 metres horizontally from the water's edge, ie., the 'risk zone'. To reduce the risk and provide a safer working area, all personnel required to work within the risk zone must be dressed in the minimum standard of Personal Protective Equipment consisting of:

- Full Firefighting Kit
- Life Jacket
- For 'lone' workers, e.g., pump operators who are working within the 'risk zone' a 'Restricting Line' should be provided (this should be anchored and restricted to a length that prevents falling into water).

**N.B. The fire helmet should be removed unless there is a possibility of falling debris, in which case the chin strap should be unfastened (this is to prevent a neck injury in the event of accidental immersion).**

A safe route should be identified and marked from the nearest access point to the scene of operations (Traffic tape may be used to indicate this route).

Any significant hazard that may cause injury i.e. trip hazards, should be clearly marked and identified to all personnel working in the vicinity.

### **Contact with the casualty**

It is important to make contact with the casualty as quickly as possible. Keep talking to them, explain what you are going to do, what you want them to do and keep encouraging them.

*Where possible it should be the aim of the rescuer to stay dry and not enter the water. Therefore, the talk, reach, throw principals already described should be adhered to.*

Be aware of the local environment (See page 19).

Never let the casualty make direct physical contact with you.

If the casualty cannot use their arms, turn them on to their back and allow the shore team to tow you back using your safety line.

Offer the casualty a suitable flotation device and allow them to hold on to it as a buoyancy aid.

If the casualty is not conscious the airway must be maintained and where a neck injury is suspected then the head, neck and back must be supported throughout the rescue.

Resuscitation should be commenced as soon as practically possible.

### **Standard Operational Procedures - Summary**

- Start dynamic risk assessment on receipt of call.
- Use preplanning information/local knowledge.
- Consider equipment requirements.
- Consider personnel requirements.
- Consider access/egress.
- Gather information.
- Review dynamic assessment.
- Formulate plan.

- Initiate plan.
- Establish risk.
- Consider specialist assistance.
- Prepare secondary plan of action.
- Post incident consideration

## 4. SUB SURFACE RESCUES/RECOVERY

### Breathing Apparatus (BA) for Sub Surface Rescue.

**Brigade BA must not be used under water.** Personnel are not trained and the equipment is not designed for such use. It may be considered necessary to fit a BA face mask (with air supply) to a casualty trapped below the surface of the any 'unstable surface' to afford extra time to rescuers. However, firefighters must be able to achieve this without wearing BA themselves.

**All activities of this type must be strictly controlled.**

The risks associated with sub surface rescue attempts are considered to be excessive. It is not possible to reduce this risk to tolerable levels for firefighters. Because of this firefighters **MUST NOT** attempt sub surface rescues. However, there are certain situations, which may be considered as sub surface but because of their type, or location adequate control measures can be put into place to reduce the risk to within tolerable levels. Examples of this would be:

- **A person is in difficulty on the bottom of a deep swimming pool because hair or a finger is trapped in a grate.**  
Although rescue personnel may have to 'duck dive' below the surface of the water to effect the rescue, safety crews can control the safety of the rescuer. The rescuer can be seen from the side of the water. The water environment is also considered to have few uncontrollable hazards and therefore this type of activity would be considered to be acceptable.
- **In open water where a casualty is in difficulty below the surface of the water.**  
If the rescuer is able to stand upright in the water with the water at no more than shoulder level and is only required to place the head and shoulders beneath the surface of the water to attempt rescue, this will also be regarded as an acceptable practice. Simply by standing upright at any time in the water, the rescuer is again in a tolerable risk situation.
- **Where a rescuer is in open water attempting to recover a casualty who has just gone beneath the surface of the water.**  
If the casualty is located touching part of the rescuers body, with rescuers head above water, an attempt can be made to recover the casualty provided the rescuer is able to do so without submerging totally below the surface of the water and the activity is rigidly controlled.
- **Where a vehicle has entered the water and submerged below the surface with occupants known to be trapped inside.**  
If firefighters are able to work from a horizontal surface of the vehicle (i.e. roof, bonnet or boot) to affect the rescue without totally submerging below the surface

of the water this would be regarded as an acceptable practice provided correct levels of PPE and rigid control measures are in force.

**NB: Sub surface rescues in open water MUST ONLY be attempted when firefighters actually witness the casualty disappearing below the surface of the water. This activity must only be continued up to a maximum period of 10 minutes after the casualty is known to have disappeared below the surface.**

## 5. ICE RESCUES

Incidents involving persons falling through ice are rare, however, research indicates that where persons do fall through ice, then the risk of loss of life is extremely high. Additionally, the risk to the would-be rescuer is equally high, if they are not properly trained or equipped.

Total cold-water immersion, or part immersion will, after an extremely short period of time, (about 4 minutes) render the victim into an almost helpless state. They will probably only have sufficient strength and co-ordination to cling to the broken, floating ice.

The problems and dangers faced by attending fire crews are:

- These incidents occur usually in the more remote areas and often provide difficult access to the rescuer.
- The Level 1 attendance will have limited equipment available to assist them to affect a safe rescue.
- Walking on the ice might easily result in the rescuer requiring to be rescued should the ice continue to break.
- People who have fallen through ice tend to be surrounded by broken ice that prevents the rescuer approaching directly up to them

### **Procedures for ice rescues**

All ice rescues will automatically receive a Level 2 response, the inflatable rescue path (IRP) should be considered as the primary tool for this type of incident. Both ambulance and police controls shall be informed.

The principles of Talk, Reach, Throw, Row and Go apply, urgent consideration must be given to the use of throw lines and inflated hose to assist in stabilising the casualty.

The IC of the first attending appliance shall confirm with control the most suitable access route for supporting rescue vehicles.

The casualty may not be able to affect their own rescue; therefore, a Level 2 trained firefighter will have to make their way out to the casualty utilising the IRP.

The rescuer should ideally be a lighter member of the crew they shall always be a swimmer and confident in water. A safety line shall be attached to the rescuer.

## 6. MUD/SAND/CLAY RESCUES

People or animals may find themselves trapped in or on these unstable surfaces either when the surface is so soft that they simply sink to a point where movement becomes impossible, or they break through a layer of a relatively firm surface into a soft solution.

**IN ANY EVENT, THE SURFACE PRESENTED TO A RESCUE TEAM WILL BE BOTH SOFT AND TREACHEROUS.**

- Time spent on reconnaissance is never wasted. Consider the most effective route to the casualty. The route the casualty took might not be the best route for access and recovery. Poor conditions or difficult terrain may require additional personnel or equipment.
- All rescue activities should be controlled and coordinated by the IC from a safe working area on firm ground. A minimum number of personnel required to complete the task should be committed to the immediate area around the casualty. Access to a casualty may be difficult due to the soft surface of the mud, making walking impossible, the only effective method is to spread the weight as widely as possible across the surface.
- IRP's, ladders, inflated fire hose, salvage sheets and rescue boards/stretchers may all be useful tools for providing a safe working platform around the casualty. A boat may also be of value if the mud is adjacent to water.
- Initial activities should be directed to stabilisation of the casualty using lines and safe preparation for extrication. A safety line should be attached to all personnel working in mud. Each line should be under the control of an individual LSO.
- A BA set should be provided for the benefit of the casualty and account needs to be taken of any local tidal conditions.
- The area should be well lit. Artificial lighting must be provided to illuminate access routes and work areas where natural light is poor.
- An equipment recovery area should be set up on safe ground as part of the incident control area. Items of equipment should be immediately returned to the recovery area after use.

**Rescue**

There are only two principal rescue methods available - water injection or digging out.

**Water Injection**

An IRP should be laid out on the surface adjacent to the casualty to provide a stable working platform for the rescuers.

- A safety line and/or suitable strops should be passed around the casualty (under the arms where possible) to give support and prevent further sinking.
- A mud lance is placed down the sides of the casualty and around the body in a circular motion, this loosens the clinging mud/sand and breaks the suction effect.
- As the lance is being used, other members, working from the IRP, should attempt to pull the casualty clear to firm ground.

**Digging Out**

“Digging” is self-explanatory. However, considerable care should be exercised when working close to the casualty. It is likely that the casualty will be partially numbed by the mud and may not feel any contact with the spade. Serious injury may be caused that would not become

apparent until the condition of the casualty abruptly worsens, or they are evacuated and cleaned up.

## 7. ANIMAL RESCUES

Determine the condition of the animal and urgency of action, i.e., need for a vet or RSPCA.

The majority of incidents will involve farm animals, i.e., the release of a cow that has fallen into a slurry pit or a horse that has stumbled into a river. This type of rescue is potentially hazardous and the IC on arrival at the scene must put strict control measures in place.

It must be considered that in many instances animals manage to get to safety unaided after falling into water. Provided that the lives of firefighters are not unduly risked, attempts may always be made to rescue animals.

## 8. VEHICLES IN THE WATER

This information is designed to assist the Incident Commander to make an informed judgement on the appropriate actions to take and control measures which may be necessary at incidents where vehicles are positioned in, on or near water.

It is not a definitive guide.

It may also be necessary to use additional skills and techniques to deal with the incident, such as those related to Road Traffic Accidents on a roadway.

Incidents involving vehicles submerged in water may vary quite dramatically because of: -

- The type of vehicle - Car, LGV, Articulated, Laden/Unladen.
- The type of water hazard - Still, Flowing, Temperature, Depth, Flood condition.

### Vehicle Behaviour

Initially, (even with all windows open) the average car will float for at least 45 seconds. The electrical system (lights, wipers, radio and power window) will usually still work even when a vehicle is full of water.

- Once a vehicle is full of water a number of factors will determine what happens next, such as, the nature of the riverbed, the surface current, weight and distribution of passenger or load.
- In flowing water if the vehicle is side on to the current on a solid riverbed a roll is almost inevitable. Even in slow currents a vehicle will be rolled a considerable distance if unimpeded.
- On a soft bottom, (mud, sand or small rocks) if the vehicle lands on its wheels, each tyre will create an eddy, scooping mud, sand, etc. out, so that the vehicle will settle onto its chassis.
- If a vehicle comes to rest more or less straight in line with the current, water pressure will sink the upstream end of the vehicle deeper than the downstream end.
- An eddy will be created on the downstream side of the vehicle providing rescue crews with a calm area of water to work from. However, strict control must be exercised over crews working in this area, as there is the potential for the vehicle to roll in the direction of rescuers.

- Anchoring a line to each side of it may reduce the risk of the vehicle rolling.
- If the vehicle is wedged against an obstacle the area of eddy is usually a safer area for crews to work from. Consideration should be given to the fact that the object/condition causing the vehicle to be wedged may move or change, thus allowing the vehicle to move whilst rescue operations are in progress.

### **Associated Hazards**

- Slippery vehicle surface.
- Sudden uncontrollable movement of the vehicle.
- Entrapment of rescuers inside vehicle.
- Snags, sharp edges.
- Once the body panels of a vehicle are wet, they may be extremely slippery to personnel attempting to stand or place equipment on.
- Even in still water, movement of the vehicle load (passengers, etc.) or access onto the vehicle by rescuers may cause the vehicle to move.
- In flowing water use of a window punch or axe to break glass, enabling access, can cause drastic decompression. Do not use such tools to break a downstream window as this may cause a loss of internal pressure resulting in all the glass breaking and the possibility of occupants and rescuers being flushed downstream.

Where the vehicle is totally submerged below the surface of the water but rescue personnel are able to stand either on the vehicle or equipment bridged between the bank and the vehicle, this will not be regarded as sub surface activities.

Extreme care must be taken by anyone entering a submerged or partially submerged vehicle as the weight of water or vehicle fittings may cause entrapment inside the vehicle.

The vehicle may have sustained impact damage prior to, or as a result of, entry into the water. Glass or damage to body panels may have created numerous sharp hazards.

### **Rescue Considerations**

Effective and continuous communications will play an essential part in the success of the actions taken. Firefighters must be fully briefed on the tasks they are to perform, including the aims and any control measure, which will be in place. Casualties need to be reassured and instructed on what to do to assist with any rescue attempt, in addition to being advised of the activities being undertaken by firefighters to rescue them.

When the vehicle is close enough to the bank side, it may be possible to wade through the water or to bridge ladders or use the Inflatable Rescue Path (IRP) to gain access to, or onto it.

If the occupants of the vehicle have managed to self-rescue and position themselves on top of the vehicle it may be possible to use rescue boards, inflated fire hose, throwing lines or a bridged ladder to stabilise or remove them.

Where the incident involves a vehicle submerged below the surface of the water and it is determined from a reliable source (Police or witness) that the vehicle has been in the water for a considerable time (in excess of 15 minutes), the Incident Commander should await the arrival of the specialist equipment to examine the vehicle and should not commit personnel prior to its arrival.

## 9. POST INCIDENT CARE

Even in the most minor cases the casualty should not be allowed to walk out with the rescue team. Sudden release and attempts to stand may induce post rescue collapse with possible fatal results. For this reason the casualty should be evacuated on the stretcher in as near a horizontal position as possible.

The Institute of Naval Medicine, Portsmouth, has provided the following information.

Survival times of people on the surface of the water, maximum water temperature of 15°C (59°F) can be categorised as follows:

Effect	Maximum Time Period	Outcome
Cold Water Reflex	2-3 minutes	Drowning
Swimming Fatigue	2-15 minutes	Drowning
Hypothermia	15-30 minutes	Death

### **N.B. Wearing a life jacket will not stop the above effects.**

Cold-water immersion cools the body 27 times faster than static dry air temperature; this is multiplied by a further factor of 10 when swimming.

In cold water a good, strong swimmer will quickly be reduced to a non-swimmer because of the effects of immersion hypothermia.

Summer inland water temperatures are known to average between 10° and 15°C.

All personnel who have been immersed in cold water should be taken to a warm environment as soon as possible.

Brigade personnel should be removed from operational duties until they are thoroughly warmed, have dry clothing and their welfare has been suitably addressed.

Beware of hypothermia. Symptoms are shivering, slurred speech, lack of co-ordination and cold to the touch. If there is any doubt, seek medical attention. Remember, shivering ceases in the more advanced stages of hypothermia and so the lack of such shivering in isolation cannot be relied upon as to the welfare of the individual.

Non Brigade personnel, who are either casualties or rescuers, should be advised to seek medical advice. Any person who has been revived or was near to drowning should be conveyed to hospital. Secondary drowning can take place up to 72 hours later.

### **Further considerations**

- Decontamination of personnel.
- Equipment retrieval.
- Equipment cleaning and testing on scene.
- Cleaning and testing of equipment at station.
- Remedial measures - reinstatement of fences, etc.
- Personal hygiene. (*Personal hygiene is important where crews have been in contact with open water, mud or similar. All personnel must wash and shower as soon as is practically possible after the incident and all equipment should be cleaned, tested and serviced in accordance with the periodic maintenance schedule*).

- record details of those Fire Brigade personnel who have been exposed to possible 'contaminants'.
- Critical Incident Defusing should be considered for personnel involved.
- Incident debrief.

## SUPPORTING INFORMATION

### 10. WATER RESCUES - HAZARDS

Firefighters spend a portion of their duties involved in activities working with and alongside water. Normally, this involves pumping from ponds, lakes and rivers, but on occasions they will be called upon to rescue persons and animals or recover bodies and other objects from water, sometimes in hazardous, time-critical situations.

It is essential that personnel appreciate the hazards associated with working in, or near water. These may be summarised as:-

- Current, flow, undertow, eddies, whirlpools, weirs, stoppers.
- Weight, temperature.
- Depth.
- Water clarity.
- Pollution/Contamination/Biological risks.
- Mud, Silt, Roots, Weeds and Rocks.
- Entrapment, debris/trees, fencing, car's, shopping trolleys.
- Panic of drowning person.
- Riverbank quay-side conditions (slips, trips, and falls).
- Surface vessel movements and water borne debris.
- Impacts from casualties and animals.
- Sprains and strains caused by over-reaching, pulling and lifting from unnatural positions.
- Drowning/Fatigue.
- Danger from action of bystanders.
- Equipment falling in.
- Electrical hazards - overhead power lines etc.
- Inadequate lighting.

The Operational Procedures Section of this document outlines the actions to be taken by crews to minimise the risk posed as a consequence of the above hazards. However, special consideration should be given to the following:-

#### Current/Flow

There are two types of current generated as water flows along a river:- helical flow and laminar flow.

- Helical Flow is the flow which causes the banks of the river to be undercut. The hazard provided by this current is that an object in moving water will tend to be swept away from the bank into the centre of the river.
- Laminar Flow does not provide a particular hazard in itself, but it is worth noting that it causes water near to the surface to move more quickly than water near the river bed.

Furthermore, at a bend in the river, water on the outside of the curve will travel faster than that on the inside.

#### Weirs/Stoppers

The hazards presented by these currents to a person or object in the water is that they will be drawn upstream towards the face of the weir by the tow back then forced under the surface, to be flushed out further downstream. In many cases the person or object is again caught by the tow back and circulated in a similar manner, rapidly becoming disorientated.

#### Weight of Water

The weight of water exerted against an object is directly related to the speed of the flow. A flow of 1m per second exerts a force of almost 8kgs on a person's legs (in depth of approximately 1 metre). If the flow doubles to 2m per second the force quadruples to 32kgs.

## **N.B. Double the water speed = quadruple the weight.**

Thus standing in fast flowing water is extremely difficult.

### Strainers

The main hazard associated with a strainer is that a person or object may be drawn against it and trapped by the weight of water passing through it.

### Entrapment

A similar hazard to strainers exists where fast moving water flows against a solid object such as a bridge pillar. Although most objects will tend to be flushed around the obstacle, a swimmer or boat that hits side on can be pinned against it with considerable force.

Rocks or other debris below the water surface may cause entrapment hazards to personnel wading in the water. This is particularly hazardous in flowing water where the weight of water may also cause a loss of balance.

### Local Environment

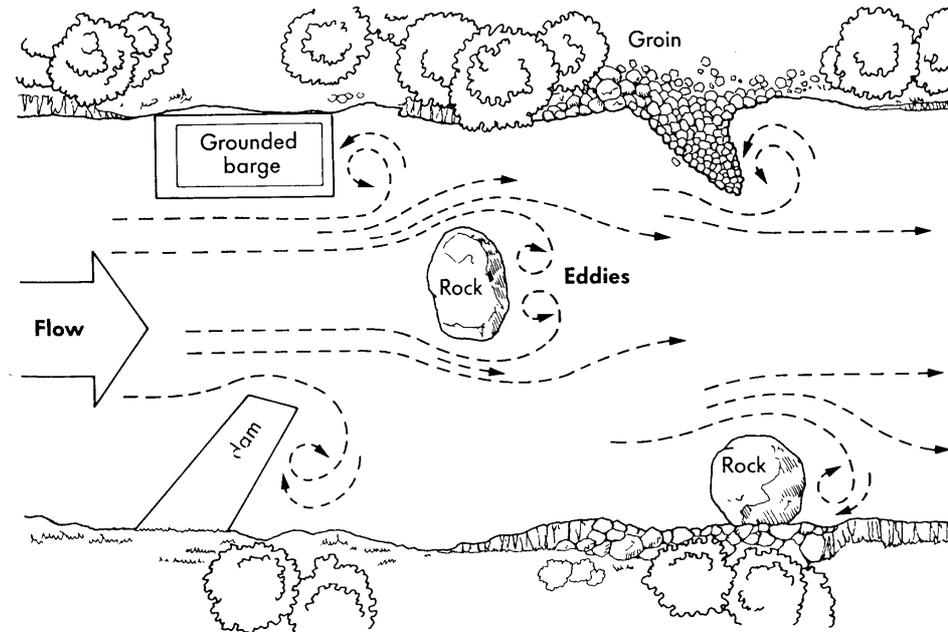
The local environment could have a profound effect on the situation and the following hazards should be considered in the operational risk assessment:-

- Fast flowing rivers and changes in water flow due to tidal conditions, heavy rain, and flash flooding may increase the risk. Conditions could change quickly and dramatically due to these effects.
- In tidal situations, local tide times and heights should be ascertained either locally or through Fire Control at the earliest opportunity.
- Particularly in quarries and around the coastline the bottom may shelve away very quickly, changing the depth of water from a few millimetres to 30 metres or more.
- Underwater obstructions and hazards may be unseen and personnel must take the utmost care when moving through water. It is best to adopt a shuffle as when wearing BA and some form of additional support such as a ceiling hook may be of use.
- Darkness will significantly increase the risk to rescuers and additional lighting should be provided. Rescuers should carry a lit torch or lightstick to enable the shore crew to see them. High visibility jackets may also be worn under lifejackets to increase visibility.
- Cuts and grazes should be cleaned and covered.

### FAST FLOWING RIVERS

In any fast flowing water stream, various currents and eddies will be formed by obstructions in or under the water, thus changing the direction and speed of the flow.

These eddies can have adverse effects on a rescuer and must be considered in the dynamic risk assessment. Remember that waves on the sea tend to move and the water stays still but in a river the waves remains in one place and the water moves. Therefore, eddies and currents can often be detected by the presence of such static waves.



## 11. BIOLOGICAL CONTAMINATION

All open water is potentially hazardous and the risk to the firefighter may be increased by the presence of contaminants. The sources of such contamination are numerous, but stem mainly from the following :-

- Outflows from slurry pits and sewage/water treatment plants.
- Run-off from agricultural and industrial sites.
- Leaking fuel from submerged vehicles.
- Blue green algae (usually in summer months).
- Water borne diseases (see supporting information).

Biological contamination should be prevented wherever possible by taking the following actions: -

- Only enter the water if absolutely necessary.
- Wear immersion/dry suits.
- Personnel with open wounds should not enter the water.
  
- After the incident and before eating, drinking, or smoking, personnel should wash their hands using soap and water or detergent. Antiseptic wipes where available should also be used once hands have been washed.
- Cuts and grazes should be cleaned and covered.

The foregoing shows that any water can provide hazards to firefighters. These can all be avoided by avoiding contact with the water in the first place.

The diseases most likely to be encountered are Hepatitis A, Gastro-enteritis and Weil's disease caused by a variety of bacteria and virus.' Weil's' Disease is carried in the urine of rats and other small rodents and is particularly prevalent in canals and rivers.

### **What can you do to protect yourself?**

- Cover all cuts and broken skin with waterproof plasters before and during work.
- Wear protective clothing.
- Wash hands after handling any animal or any contaminated clothing or other materials and always wash before eating, drinking or smoking.
- Avoid contact with stagnant or slow moving water.
- Shower after becoming immersed in open water.
- Use footwear to avoid cutting feet.

### **What are the symptoms?**

The first signs of Weils's Disease is a flu like illness within about 3-4 days of the infection. After 6-7 days a severe headache and conjunctivitis with the possibility of meningitis follows. At 8-10 days, kidney failure and the beginnings of jaundice will become obvious. If no treatment is given then severe kidney failure and the spreading of the organism to other major organs such as liver, pancreas and intestines can occur resulting in heart failure.

### **What you must do**

If any of the symptoms develop - inform your General Practitioner of the symptoms and that you are at risk from Leptospirosis.

## **12. HELICOPTER OPERATIONS**

The use of a search and rescue helicopter may reduce the risk to firefighters or remove the risk all together. Request for helicopter assistance will be channelled via Fire Control or Police officer on scene.

However, they carry their own inherent difficulties and the greatest care must be taken to protect rescuers, casualties and the public if a helicopter is to be used.

The following points should therefore be taken into account when requesting helicopter assistance:

### Communications

Unless the Coastguard are in attendance it is unlikely that radio contact with the aircraft is possible. However, there is provision to speak to the Police helicopter and other air support using Brigade UHF hand held radio on channel 6, 69 or 70. The additional facility of VHF marine wave band hand held radios, used by licenced operators on channel 16, will give direct communication to search and rescue helicopter.

Rota down-wash.

Survey the area for loose materials and structures i.e. loose roof sheeting, sand, grit, etc. Also small items of equipment and PPE must be secured with particular attention paid to fire helmet.

Approaching The Aircraft

Never approach the aircraft when it is on the ground unless directed to do so by the aircrew, then follow their instructions precisely and try to remain in sight of the pilot when approaching. Do not approach from the rear, or side.

## 13. GLOSSARY

<b>Body Recovery:</b>	When a casualty is seen lying motionless on the surface of the water and no information is available as to the time of water entry or when a casualty has been submerged beneath the surface of the water for more than 15 minutes.
<b>Buoyancy Aid:</b>	An item that increases buoyancy in water.  Buoyancy:- Floating ability Positive:- Will float on water Negative:- Will sink in water
<b>Eddies:</b>	Water flowing in the opposite direction to the main flow, occurring alongside or behind objects.
<b>Flooding:</b>	Where a river and/or drainage system is not able to cope with the excess of water causing urban or rural damage and threatening the lives of the public or animals.
<b>Helical Flow:</b>	The current, which draws water away from the banks of the river with a circular motion.
<b>IRP:</b>	Inflatable Rescue Path.
<b>Laminar Flow:</b>	Found mainly in the centre of the river and is the motion by which water moves forward.
<b>Life Jacket:</b>	Floatation device specifically designed to be worn by a person to add buoyancy and maintain the airway clear of the water.
<b>Line Safety Officer</b>	Supervises Line Safety Team, reports directly to IC.
<b>Line Safety Team:</b>	Dedicated team working directly to the Line Safety Officer.
<b>Rescue:</b>	The process by which a person is removed from the water and brought to a place of safety.
<b>Rescue Board:</b>	Purpose designed board with inherent buoyancy capable of supporting casualty and rescuer.
<b>Risk Zone:</b>	Wherever possible this should extend to 3m horizontally from the water's edge.
<b>Stopper:</b>	Where water flowing over an object causes a vertical reversal of flow, as with a weir.
<b>Strainers:</b>	Any perforate object placed or trapped in flowing water such as a tree or metal grating which allows the water to flow through it, is referred to as a strainer.
<b>SOP</b>	(Standard Operational Procedure). Designed to identify tactical and operational procedures to secure safe outcomes.
<b>Sub surface:</b>	Below water surface.
<b>Tow Back:</b>	Water from downstream moves back against the flow towards the face of the weir.

- Water Emergency:** A short simple method of obtaining urgent assistance when Fire Service personnel are in difficulty.
- Weirs:** A pre-constructed dam across a river over which water falls to a lower level. As water passes over the edge of the weir, dropping from a high level to a lower one, it forces a space in the surface of the water at the base of the weir. Water from downstream moves back against the flow to fill this space.
- Whitewater:** Churning water that contains up to 40-60% of air. Too thin to swim in, too thick to breath in.
- WRI's:** Water Related Incidents

## Cornwall County Fire Brigade Generic Risk Assessment

<b>Assessor:</b>	StnO Halstead SubO Brown	<b>Location/Job:</b>	IMMERSION SUITS
<b>Date:</b>	10 <sup>th</sup> November 1998	<b>Review Date:</b>	10 <sup>th</sup> October 1999

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Damaged suit/split seals	Hypothermia Drowning	3 x 5 = 15	Operational personnel	Trained personnel servicing suits. Worn in conjunction with life jacket.	1 x 5 = 5
Ingress of water through zip	Hypothermia Drowning	3 x 5 = 15	Operational personnel	Servicing of suits. Training to ensure suit is donned correctly. Refer to BIS.	1 x 5 = 5
Hard work whilst wearing dry suit for miscellaneous rescue operations.	Physiological stress	3 x 3 = 9	Operational personnel	Information BIS Training Regular relief periods	2 x 3 = 6

**Signed:** \_\_\_\_\_

**Date:** \_\_\_\_\_

## Cornwall County Fire Brigade Generic Risk Assessment

<b>Assessor:</b>	StnO Halstead SubO Brown	<b>Location/Job:</b>	LIFE JACKETS
<b>Date:</b>	10 <sup>th</sup> November 1998	<b>Review Date:</b>	10 <sup>th</sup> October 1999

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Failure of inflation	Drowning	5 x 5 = 25	Operational personnel	Dual chamber with both Auto Manual Backup.	2 x 5 = 10
Incorrect operation	Drowning	5 x 5 = 25	Operational personnel	Training to enable personnel to inflate using alternative method.	2 x 5 = 10
Poor fitting jacket	Drowning	5 x 5 = 25	Operational personnel	Training. Refer to BIS. Ensure all straps are done up securely	2 x 5 = 10

**Signed:** .....

**Date:** .....

## Cornwall County Fire Brigade Generic Risk Assessment

<b>Assessor:</b>	StnO Halstead SubO Brown	<b>Location/Job:</b>	WORKING ALONGSIDE WATER
<b>Date:</b>	16 <sup>th</sup> September 2000	<b>Review Date:</b>	16 <sup>th</sup> September 2001

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Falling into water	Drowning Hypothermia Contamination from polluted water	3 x 5 = 15	Operational personnel	Life Jackets. Immersion suits. Awareness Safety lines. Minimum number of personnel. Illumination of scene in poor light. Decontamination. Medical advice.	2 x 5 = 10
Egress being cut off by tide.	Drowning Hypothermia	3 x 5 = 15	Operational personnel	Monitor tide. Liaise with Coastguard Lifejackets. Immersion suits.	2 x 5 = 10

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Unstable ground adjacent to water hazard. Slips, trips, falls	Drowning Physical Injury	$3 \times 5 = 15$	Operational personnel	Assess condition of ground. Safety cordon. Lifejackets. Immersion suits. Lighting at night. safety line.	$2 \times 5 = 10$

**Signed:** .....

**Date:** .....

## Cornwall County Fire Brigade

### Generic Risk Assessment

<b>Assessor:</b>	StnO Halstead SubO Brown Lff Carlisle	<b>Location/Job:</b>	FIREFIGHTING/PUMPING SMALL BOATS
<b>Date:</b>	13 <sup>th</sup> November 1998	<b>Review Date:</b>	13 <sup>th</sup> November 1999

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Falling over-board	Drowning Hypothermia Contamination	3 x 5 = 15	Operational personnel Member of public	Training. PPE. Supervision. Illumination in poor lighting. Safe system of work. Do not work alone.	2 x 5 = 10
Slips, trips, falls	Physical Injury Cuts/contusions	3 x 3 = 9	Operational personnel Members of public	Training . Illumination in poor lighting. Clear working area. PPE. Liaise with and specialist advice.	2 x 3 = 6

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Capsizing vessel	Drowning Hypothermia Contamination	3 x 5 = 15	Operational personnel Members of public	Training Specialist Officer - i.e. stability. PPE. - life jackets. Crews to minimum.	2 x 5 = 10
Tapped by fire	Burns Respiratory Injury	4 x 5 = 20	Operational personnel Members of public	Training. Maintaining a safe egress and supervisory officer. PPE - lifejackets. Use of ships safety equipment.	2 x 5 = 10
On-board machinery cargo	Physical Injury	3 x 4 = 12	Operational personnel Members of public	Specialist advice. Training. PPE. Minimum number of personnel. Safe system of work.	2 x 3 = 6
Working below deck in irespirable atmosphere.	Respiratory Injury Physical Injury	3 x 5 = 15	Operational personnel Members of public	Training and awareness PPE. - BA Crews to minimum.	

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Transferring of personnel and equipment	Physical Injury	3 x 4 = 12	Operational personnel	Training. PPE. Safe system of work. Illumination in poor lighting. Manual handling training. Use of specialist equipment - i.e. lines.	2 x 3 = 6
Working around quayside	Physical Injury	3 x 4 = 12	Operational personnel Members of public	Training/awareness. Parking marshals. Rendezvous point. Cordon.	2 x 3 = 6

**Signed:** .....

**Date:** .....

# Cornwall County Fire Brigade

## Generic Risk Assessment

<b>Assessor:</b>	ADO Sweeney	<b>Location/Job:</b>	ALONGSIDE
<b>Date:</b>	21 <sup>st</sup> June 2001	<b>Review Date:</b>	21 <sup>st</sup> June 2002

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
<p>Approach to vessel; mooring location</p> <p>Restricted access. On site equipment. Construction characteristics of wharfs, quays etc.</p>	Physical Injury	3 x 3 = 9	600 Operational personnel	<p>Risk information (pre- planning) On site expert advice Training Awareness, familiarisation</p>	1 x 2 = 2
<p>Personnel working alongside</p> <p>Slips, trips, falls. General environment Drowning Dockside, quayside services i.e. cranes overhead lines etc.</p>	Physical Injury	3 x 5 = 15	600 Operational personnel	<p>PPE. Training Specialist equipment, lighting Cordons Safety Officer Dock/Quayside facilities</p>	2 x 2 = 4

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
<p>Transfer of personnel and equipment to vessel. Monitoring access and egress.</p> <p>Lifting and movement of equipment and loads. Restricted access on gangways. Lack of communication. Movement of crews and dock workers.</p>	<p>Physical Injury</p>	<p>3 x 5 = 15</p>	<p>600 Operational personnel</p>	<p>PPE. Manual handling regs. Specialist equipment Safety Officer. Team lifting techniques, load reduction. ALP and specialist dockside equipment. Alternative access/egress. Strict boarding control, Roll call check.</p>	<p>2 x 2 = 4</p>

**Signed:** .....

**Date:** .....

## Cornwall County Fire Brigade

### Generic Risk Assessment

<b>Assessor:</b>	ADO Sweeney	<b>Location/Job:</b>	ON BOARD FIRE FIGHTING OFFSHORE
<b>Date:</b>	21 <sup>st</sup> June 2001	<b>Review Date:</b>	21 <sup>st</sup> June 2002

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Control of all on-board personnel  Inability to control movement of fire service personnel	Physical Injury	4 x 3 = 12	600 Operational personnel non-service personnel	Boarding control procedures Limitations on numbers	3 x 2 = 6
Firefighting and Rescue Fire, explosion, chemical hazard, stability, hidden obstruction/holes, O <sup>2</sup> deficiency (holds), smoke, fumes, ships machinery spaces, cargo, raking ladders, gas cylinders, unstable footing, slippery decks, foam, water, HI-EX foam, ventilation, fixed installations,	Physical Injury Respiratory Injury	4 x 4 = 16	600 Operational personnel non-service personnel	Initial reconnaissance party, on board briefing. PPE. Provision of risk information 'ships plans' etc. Specialist advice (on board: onshore) Access to information Ships crew skills Training (only specialised crew)  All personnel have attended a	3 x 4 = 12

<p>evacuation. Language difficulties. Limitation on numbers of personnel and equipment.</p>	<p>Physical Injury Respiratory Injury</p>	<p>4 x 4 = 16</p>	<p>600 Operational personnel non-service personnel</p>	<p>recognised MFF course (internally) - lead Officers : FSC; S&amp;P Ff or equivalent qualification - instruction and training by recognised, qualified staff - Inter service training - specialist officers Dedicated communications network and equipment. Use of ships systems. Utilise human and material resources to best effect. F/F Tug</p>	<p>3 x 4 = 12</p>
<p>Working environment (Firefighting)  Temperature extremes, Heat stress, fatigue, dehydration, welfare.</p>	<p>Physical Injury Respiratory Injury</p>	<p>4 x 4 = 16</p>	<p>600 Operational personnel non-service personnel</p>	<p>Realistic training, PPE, monitoring and supervision. Safety Officer. Feeding, fluids, rest. Relief crews. On board first aid/availability of paramedic care.</p>	<p>3 x 4 = 12</p>

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Working environment (general)  Hypothermia, cold, exposure to elements, frost bits.	Physical Injury	$3 \times 4 = 12$	600 Operational personnel non-service personnel	PPE. (additional dry clothing for each individual) Emergency dry clothing pack. Survival packs. Support and on board vessel facilities. Relief crews. Shelters.	$2 \times 3 = 6$

**Signed:** .....

**Date:** .....

## Cornwall County Fire Brigade

### Generic Risk Assessment

<b>Assessor:</b>	ADO Sweeney	<b>Location/Job:</b>	SEABORNE RESPONSE
<b>Date:</b>	21 <sup>st</sup> June 2001	<b>Review Date:</b>	21 <sup>st</sup> June 2002

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Reception of call Loading of equipment for transfer.	Physical Injury	4 x 4 = 16	600 Operational personnel non-service personel	Pre-departure briefing. Strict boarding procedure. PPE, Specialist crews. Manual handling guidance. Specialist lifting equipment. team lifting techniques. Training, awareness, familiarisation.	2 x 3 = 6
Transfer of personnel and equipment to support vessel.  Vertical ladders, entrapment. Drowning Dockside hazards. Quay hazards.	Physical Injury	4 x 4 = 16	600 Operational personnel non-service personnel	Lifejackets Safety Officer Dockside, quayside equipment Supervision by embarkation marshall Vessels safety equipment Supervision by vessel operator	2 x 3 = 6

HAZARD	HARM	RISK	WHO AT RISK	CONTROL MEASURES	RESIDUAL RISK
Passage Drowning Man overboard (MOB) Marine environment injury Motion sickness Cargo shifts Inclement weather	Physical Injury	$3 \times 5 = 15$	600 Operational personnel	PPE. Training Awareness On board hazards briefing Supervision of vessel operator Limitation on crews Ships safety equipment Cargo lashed by ships crew Seabands.	$2 \times 3 = 6$
Transfer from support vessel to vessel in distress and vice versa Tween vessel crush/impact injury MOB. Movement of vessels Climbing of pilot ladder Hauling equipment aloft.	Physical Injury	$3 \times 5 = 15$	600 Operational personnel	PPE. Training, awareness, familiarisation Ships safety equipment Supervision by support vessel operatives Reduction in size of loads No equipment carried aboard Safe system of work Specialist hauling equipment Limitation on movement of personnel	$2 \times 3 = 6$

<p>Emergency removal of personnel from distressed vessel. Unable to remove personnel off vessel in distress once aboard</p>	<p>Physical Injury</p>	<p>3 x 4 = 12</p>	<p>600 Operational personnel non-service personnel</p>	<p>Support vessel must remain on scene until suitable relief vessel is alongside. Provision of alternative egress points. Ships safety equipment, lifejackets etc. Sea survival training.</p>	<p>1 x 2 = 2</p>
---	------------------------	-------------------	--	---	------------------

**Signed:** \_\_\_\_\_

**Date:** \_\_\_\_\_

## MARINE OPERATIONS ~ The Use of Helicopters For Offshore Operations.

### Summary:-

Based on an agreement reached between United Kingdom SAR organisations and participating coastal Fire Services, this document indicates Best Practice in the role of mobilising CCFB resources via helicopter to incidents on vessels at sea.

### Further Information:-

MOU between MCA and the Fire Service.

DCOL 9/92

BIS docs. - Marine Operations ~ Safe Working on or near Water

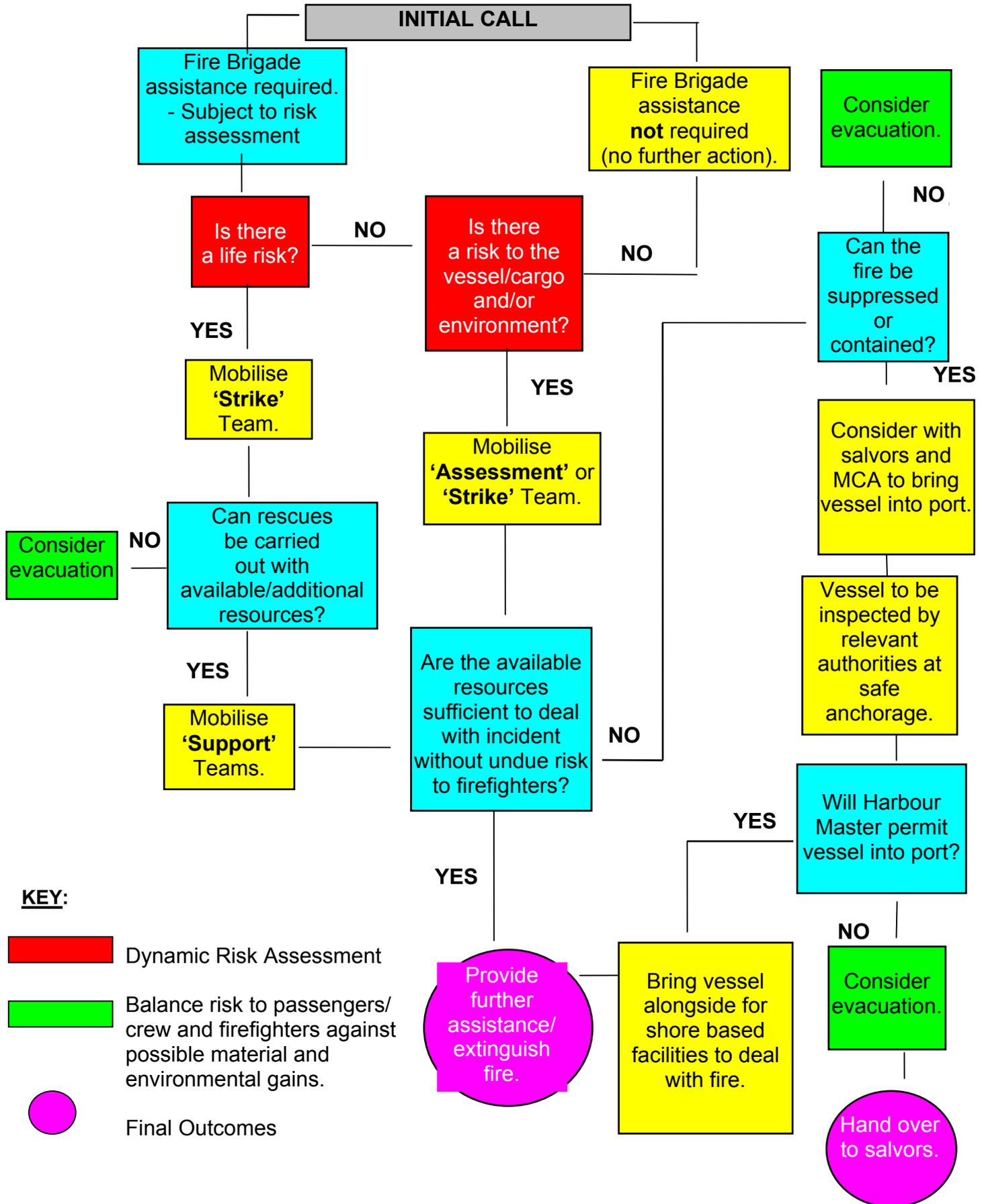
- Marine Operations ~ Ship Firefighting

**February 2001**

<b>Contents</b>	<b>Page</b>
<b><u>KEY INFORMATION:-</u></b>	
	2
STRATEGIC ASSESSMENT	3
INITIAL MOBILISATION	
OPERATIONAL COMMANDER - AIDE	4
MEMOIR	5
SAR Response to Ship Fire with Cornwall County Fire Brigade	
<b><u>PRIMARY INFORMATION:-</u></b>	5
1. INTRODUCTION	5
2. COMMAND AND CONTROL	5
3. RESPONSE CRITERIA	5
4. TEAMS	8
5. EMBARKATION	9
6. EQUIPMENT / COMMUNICATIONS	
7. HELICOPTER LOADS, DISTRIBUTION AND SEATING	9 10
8. PERSONAL EQUIPMENT	10
9. WELFARE OF PERSONNEL	11
10. CLOTHING	11
11. TRAINING FOR HELICOPTER OPERATIONS.	12
<b><u>SUPPORTING INFORMATION:-</u></b>	13
12. TERMS OF REFERENCE	13
13. CRITERIA FOR RESPONSE	14
14. MUTUAL ASSISTANCE	14
15. COMBINED TRAINING AND LIAISON	15
16. TASKING FORM	16
17. NOMINAL ROLL FORM	17
18. OPERATIONAL EQUIPMENT	18
19. EQUIPMENT WEIGHTS	19
20. AIRCRAFT TYPE / LAYOUT	22
21. GLOSSARY	

# KEY INFORMATION - SHEET ONE

## STRATEGIC ASSESSMENT



# KEY INFORMATION - SHEET TWO

## Initial Mobilisation

THE FOLLOWING MUST BE COMPLETED:

**INITIAL COMMAND MEASURES.....**

OBTAIN FULL DETAILS VIA TASKING FORM (*See Appendix 1*)

ALERT APPROPRIATE RESPONSE TEAMS  
(*See Key Information - Sheet 1*)

ADVISE NEAREST PARTICIPATING BRIGADES -  
(*Mutual Assistance, see Section 14*)

DESPATCH OFFICER TO LOCAL MCA CENTRE FOR LIAISON

ENSURE EMBARKATION OFFICER IS APPOINTED

TEAM TO SAR RV - ADVISE MCA

**DEPLOYMENT PROCEDURES...**

TEAM HELO.SAFETY BRIEF AND INCIDENT UP-DATE

ENSURE NOMINAL ROLL COMPLETED (*See Appendix 2*)  
*Shut down all handheld comms. for transfer.*

*'Strike / Support' teams only* - CONFIRM WEIGHTS WITH SAR WINCH OPERATOR

SENIOR FIRE OFFICER e.g OPERATIONS COMMANDER (OC) TO COMMUNICATE WITH PILOT AND SITS NEAR DOOR

OVERFLY VESSEL FOR RISK ASSESSMENT (RA) (*Assessment / Strike teams only*)

- NOT SAFE TO BOARD - RETURN TO RV
- SAFE TO BOARD - 'OC' OR WINCH MAN TO DECK
- FIRE No.2 (*Command Support*) TO DECK

FURTHER RA AND CONFIRMATION THAT FIRE BRIGADE ASSISTANCE IS REQUIRED FROM MASTER

EQUIPMENT TO VESSEL

REMAINING TEAM MEMBERS TO VESSEL

PROVIDE SITREP TO MCA

**ACTIONED  
(Tick)**

# KEY INFORMATION - SHEET THREE

## ‘OPERATIONAL COMMANDER’ AIDE MEMOIR

YOU ARE NOW ON BOARD THE CASUALTY:

**ACTIONED  
(TICK)**

ADVISE MCA OF ARRIVAL AND NUMBERS ONBOARD - INSTIGATE  
‘BOARDING’ AND COMMAND SUPPORT PROCEDURES

LIASE WITH SHIP’S MASTER

ESTABLISH AN EVACUATION / ABANDON SHIP MUSTER POINT AND  
PROCEDURE. BRIEF FIRE TEAM.

ESTABLISH A INCIDENT COMMAND POINT - *normally ship’s BRIDGE*

CHECK COMMUNICATIONS LINKS WITH MCA

SURVEY INCIDENT - CREWS MUST NOT WORK ALONE

CONFIRM STAND-BY VESSEL / SAR AVAILABLE FOR EGRESS

CHECK FIXED INSTALLATIONS AVAILABILITY

CONSIDER LOCATION OF SECTOR COMMAND POINT

DYNAMIC RISK ASSESSMENT RE-EVALUATION. ADVISE IC.

MAXIMISE USE OF SHIP’S PERSONNEL - GUIDES ETC.

PREPARE FOR ‘Strike’ / ‘Support’ TEAMS IF ‘OFFENSIVE’ TACTICS  
BEING CONSIDERED

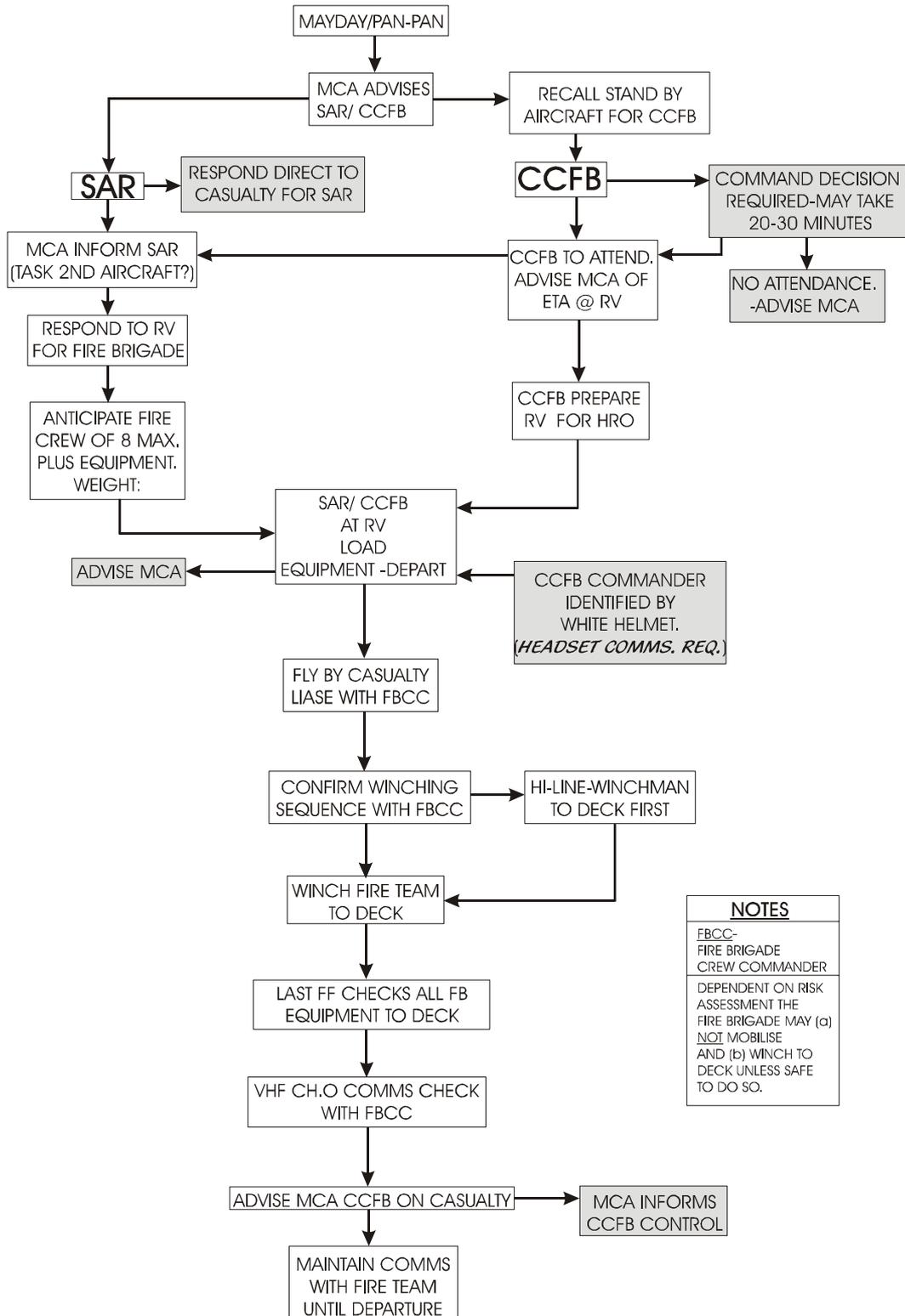
BA TEAMS TO BE MINIMUM OF THREE

ESTABLISH REST AND RECOVERY AREA NEAR EVACUATION /  
ABANDON SHIP MUSTER POINT IF POSSIBLE

MAINTAIN 20 MINUTE BRIEFINGS (INCLUDING ROLL CALLS) WITH ALL  
PERSONNEL / MCA / FIRE SERVICE CONTROL OR LIASION OFFICER AT  
MRC / MRCC

# KEY INFORMATION - SHEET FOUR

## S.A.R Response to Ship on Fire with Cornwall County Fire Brigade



**NOTES**  
 FBCC- FIRE BRIGADE CREW COMMANDER  
 DEPENDENT ON RISK ASSESSMENT THE FIRE BRIGADE MAY (a) NOT MOBILISE AND (b) WINCH TO DECK UNLESS SAFE TO DO SO.

# PRIMARY INFORMATION

## 1. INTRODUCTION

This document summarises 'Best Practice' regarding arrangements for helicopter operations for firefighting, chemical hazards and rescue on vessels at sea and has been compiled via the CACFOA 'Offshore Firefighting Networking Group'. This group comprises representatives from United Kingdom coastal Fire Brigades and SAR organisations including the Maritime Coastguard Agency (MCA), Royal Navy (RN) and Royal Air Force (RAF)

Although the primary use as indicated is for vessels on fire at sea and does not include reference to non SAR helicopter operations e.g police helicopters, some of the practices identified may be suitable for other areas of Fire Service operations.

## 2. COMMAND AND CONTROL

Command and Control for these incidents is based on the principals of the Incident Command System (ICS) as defined in the Fire Service Manual - Volume 2 - Incident Command.(Published 1999)

In that respect the Incident Commander (IC) is in overall charge of the incident and will remain ashore at the local MRC/MRCC. The Operational Commander (OC) will be dispatched to the casualty with his / her 'Command Support'.

These Command Team Officer's will be identified by the appropriate tabards, which also display the relevant role.

## 3. RESPONSE CRITERIA

- Request from MCA for assistance.
- Request from another source that is approved and supported by the MCA.
- Approved by Fire Brigade Principal Officer - where there is an immediate risk to life or high risk of an incident developing that will have a serious environmental impact.

**HELICOPTER 'STRIKE' TEAMS ACTING IN ISOLATION WITH LIMITED RESOURCES SHOULD NOT INITIATE 'OFFENSIVE' TACTICS. HOWEVER, FOLLOWING A DYNAMIC RISK ASSESSMENT (DRA) THE OPERATIONS COMMANDER MAY INITIATE LIMITED ACTIONS e.g SNATCH RESCUES**

The defined task will be to provide actions and make provisions for when additional resources become available.

## 4. TEAMS :-

### 'ASSESSMENT' TEAM

When appropriate, e.g. only limited information is available, no immediate risk to life - an assessment team may be initially dispatched to carry out risk assessment before committing additional resources.

#### Composition

- Minimum of two Officers with the relevant competencies...the 'assessment' team may form part of a larger 'multi agency' response
- The team should wear full PPE i.e immersion suit and lifejacket and carry a minimum of equipment as follows:-
  - Welfare packs ( 2kgs )
  - Marine band radios.. two (1kg )
  - Heavy duty torch (1 kg )
  - Thermal Image camera (8kg)
  - Command Wallet / Notebooks / Dictaphone(2kg)

#### Purpose

- To provide professional advice on matters relating to fire.
- Provide first impression information.
- Transmit a full situation report via Coastguard coordinating station.
- To provide the Fire Brigade Principal Officer with risk assessment information to enable decision on further deployment to be made at the strategic level.

### **'STRIKE' TEAM:**

Normally mobilised when full information is available and / or immediate threat to life on the casualty

#### **NOTE:-**

**Any subsequent teams can only be 'Support' team(s) who's composition must be determined by the OC in liaison with the IC (shorebased), taking into account the balance of need i.e personnel or equipment.**

#### Composition

Minimum team of six, with pre designated equipment bags - One - Two - Three (see Sections 6 and Appendix 3).

Minimum of two Officers with relevant competencies if no 'Assessment' team previously mobilised.

This will provide an Operations Commander and / Command Support.

The final decision for deployment of personnel to the casualty will rest with the OC in consultation with the pilot of the aircraft.

The 'Strike' team consists of only Fire Service personnel

#### Purpose

- Carry out a risk assessment (as per the 'Assessment' team if not previously deployed).
- Collect information - see *KEY INFORMATION sheets*
- Transmit a full situation report via the coordinating MCA.
- Make provision for: Command and Control, Safety, Welfare and Communications.
- To provide the Fire Brigade Principal Officer with a risk assessment to enable decision on further deployment to be made at the strategic level.
- Request necessary resources to enable the incident to be dealt with effectively. The resources requested should be prioritised to enable proper logistical planning by onshore organisation.

## 'SUPPORT' TEAM(S)

When all assessments have been concluded the OC may take the decision that some 'Offensive' tactics are necessary. Support teams will need to be mobilized to ensure these actions can be carried out with maximum safety and appropriate resource support.

Further resources may be committed via a seaborne transfer.

'Support teams' may be mobilised from other participating Brigades.

The OC must ensure that suitable, safe means of egress are available from the casualty for all those persons who will eventually be onboard. This may include the use of helo, standby vessels or the casualties own evacuation equipment.

Ultimately the number of personnel onboard the casualty will be down to local agreements.

### Composition

At the discretion of the OC in liaison with the IC (shorebased), taking into account the balance of need i.e personnel or equipment.

Account must be taken of helo carrying capacity. Maximum payload of 2500lbs/ 1125kgs.(See Appendix 5 re aircraft 'types' and configuration)

### Purpose

- to support 'Strike' team
- to carry out tactical firefighting and rescues as determined by the OC

## **5. EMBARKATION**

In all circumstances a nominal roll form (Appendix 2) should be completed to record all personnel taken offshore. Copies of this should be FAXED to HM Coastguard, HM Customs and the HM Immigration Office which covers the Service/Brigade where the incident has occurred. With HM Coastguard being the central coordinator in cases of repatriation, if this becomes necessary.

In the case of firefighters returning to shore, their Fire Control Centers must fax their names to HM Coastguard to ensure nominal rolls are always current.

Prior to departure / embarkation all crews must have received a pre flight safety brief. This must include details on the aircraft to be used, appropriate use of PPE .e.g. eye, ear protection, methods of approach, seating and equipment location, disembarkation and emergency procedures.

The pilot may require illumination of the landing zone when collecting or returning crews, this may be done by the use of two fire appliance's headlights directed in a vee shape on the landing zone. Night vision goggles may be used by the aircrew in these circumstances, strong torches etc should never be shone directly at the aircraft.

NB. The Coastguard may be mobilised to secure the landing site.

## 6. EQUIPMENT / COMMUNICATIONS

The teams, personnel and equipment should meet the following:

- Current standards for the safety and protection of personnel during transportation, transfer and activities on board vessels in need of assistance.
- Current standards for the safety and protection of personnel during firefighting and associated activities.
- Enable personnel to communicate to the relevant rescue co-ordination centre.
- To ensure agreement on commonality of specified equipment, load bags will be identified and contain equipment as shown in Appendix 3.
- Approved loading bags must be used that meet the following criteria:-

Maximum dimensions.....  
Sling heights.....  
Base specification....  
Method of clearly displaying contents.  
Identify safe working load (SWL), and be tested and recorded.  
( *Suggested specification for load bags is shown in Appendix 6* )

All portable radio equipment including cellphones, taken on board a helicopter must be switched OFF and must not be operated inside the helicopter.

Radio communications for the Fire Service Crew whilst on board the helicopter will be provided by the helicopter crew.

Communications with the aircraft will only normally be available via VHF Marine wave band radio's. Crews operating on the ground, without assistance from a member of the aircraft's crew, should always maintain communications with the helicopter.

## 7. HELICOPTER LOADS, DISTRIBUTION AND SEATING

Maximum loads may differ for different types of helicopter. In all cases the maximum load will be at the direction of the helicopter loadmaster or pilot.

Loads must be secured within the aircraft by the aircraft 'loadmaster'.

Fire Services should have available prepared equipment lists with weights in lbs/kgs to cover all the equipment likely to be utilised. Weight calculation charts should also be incorporated and account must be taking of Manual Handling regulations.

Appendix 3 details equipment loads for 'Strike' team. Further specific loads for 'Support' teams will depend on the nature of the incident. However, it is anticipated that equipment dumps will be prepared at helicopter landing sites.

The distribution of loads and seating of personnel is the responsibility of the pilot. Suggested seating plans are shown in Appendix 5.

The seating arrangements should be such that the Fire Service Commander is able to:

- Carry out visual reconnaissance...
- Egress the aircraft to the deck of the casualty first...
- Link to the aircraft communications systems.

**NB.**

**Equipment carried by waterborne response may be subject to helo transfer and therefore should comply with the above criteria.**

## 8. RECOMMENDED STANDARDS OF PERSONAL EQUIPMENT

### Lifejacket

Lifejackets must be approved to meet the current standards required by military and CAA for airborne use.

NB.

Local procedures should be in place with the 'carrier' to ensure lifejackets cannot auto inflate during transit

### Immersion / Transit Suits

Immersion / Transit suits must be approved to meet the current standards required by military and CAA for airborne use.

Immersion / transit suits for helicopter use are the minimum requirement for travelling by helicopter and are to be worn at all times during transportation.

### Head Protection

A Fire Brigade helmet with chin strap fastening and built in visor is the minimum standard.

### Ear Protection

Appropriate ear protection should be made available to all personnel prior to embarkation, and guidance given on their use.

### Ancillary Equipment

All personnel should be afforded the appropriate level of personal protection and safety equipment which may include:

- The provision of a supplementary air device.
- Safety belt with pouch, personal line and karabiner.
- Cylume chemical lights.(to be worn at night on board vessel)
- Torch.

## 9. WELFARE OF PERSONNEL

To be able to provide personnel with such equipment as they need to sustain them for a reasonable period of time offshore, should arrangements not be available on board the vessel or standby vessel(s), welfare packs should be provided.

The exact nature of welfare packs is not stipulated, however, the following should be considered:

- Hot packs
- Drinking Water
- High Energy Bars
- Toilet Paper
- Face Wipes
- Hand Cleaner
- Sea Sickness pills / Seabands

Personnel who require to take seasickness tablets ( subject to advice from Brigade Occupational Health ) must ensure these are taken before embarkation (some tablets may cause drowsiness and this needs to be taken into account). Sea wrist bands provide some protection from seasickness and may be considered an alternative to seasick tablets.

All personal equipment and food could, if required, be carried in a personal holdall which the individual could retain during the flight and winching operation  
This equipment must be limited in weight to the extent that it will not increase equipment levels beyond the maximum weight limits allowed for helicopter transport

Consideration must also be given to immigration provision, where firefighters may land in a foreign country and may have welfare needs prior to repatriation. (See also Section 5)

## 10. CLOTHING

If personnel are committed to a fire or Hazmat situation of any significant size it would be desirable to provide them with a complete change of clothing as their own may have become wet through penetration of water or excessive sweating. The clothing must be compact, windproof and easily carried but must provide warmth and comfort to the wearer.

Consider the following:-

- Thermal Underwear
- Overalls/One Piece Suit
- Socks

## 11. TRAINING FOR HELO OPERATIONS.

Training for operations needs to be developed via local training needs analysis. However in consultation with MCA and CAA the following should be considered:

### **GROUND TRAINING**

- brief on aircraft statistics
- approaching the aircraft, hazards e.g 'downwash', debris, PPE
- boarding aircraft to include identification of Fire Commander (OC),
- seating plan and moving around the aircraft
- communication
- preparation to winch
- winch procedure - including 'high line'
- loading and storage of Fire Brigade equipment
- indication of ditching/crash procedures
- bracing position
- post impact procedure
- emergency exits
- escape procedure

### **AIR (FLYING) TRAINING**

- take off and landing procedures
- winching from and to the aircraft ~ crew and equipment including 'high line'
- communication with aircraft including ground to air signals

## **SEA SURVIVAL TRAINING**

Brigades carry out sea survival training to maintain the relevant competencies and this includes the use of:

- lifejackets
- immersion suits
- life rafts
- lifting from the water

### **ADDITIONAL TRAINING PROVIDED MAY INCLUDE:**

- Welfare e. g use of ear defenders, anti nausea provisions, etc
- wet winching drills, i.e. whilst wearing full PPE will be recovered by helicopter from the water by winch after exiting life raft.

# SUPPORTING INFORMATION

## 12. CACFOA 'OFFSHORE FIREFIGHTING NETWORKING GROUP' - TERMS OF REFERENCE

On behalf of offshore firefighting practitioners, to draw together offshore incident procedures including training and equipment.

To liaise with the MCA who are the overall coordinating authority, Royal Navy and Royal Air Force Search and Rescue regarding the appropriate 'at sea' response.

Specific areas considered by the working group included:

- Criteria for authorisation and alerting Fire Services responses.
- Minimum training.
- Composition of offshore teams.
- Standard list of operational equipment to meet the needs of the respective roles of the above teams.
- Minimum standards of PPE
- Response and assembly times
- Mutual assistance between the participating Fire Services
- Welfare of personnel
- Combined training and liaison arrangements

## 13. CRITERIA FOR RESPONSE

The MCA will seek the help of the CCFB after receiving a request for Fire Brigade assistance from the Master of a vessel at sea. It is considered that the Brigade may respond to calls for assistance particularly where life is at risk. The decision to attend or not will be made by the Chief Fire Officer or his/her nominated representative.

The Brigade has declared availability to MCA. Any changes to 'declared assets' will be communicated to MCA immediately

The Chief Fire Officer and his/her representative will require specific information before committing the resources of the Brigade. The form detailed in Appendix One should be used for this purpose. In the first instance HM Coastguard should attempt to complete those items asterisked and in bold print. This should also be faxed to the Fire Control by the coordinating HM Coastguard station. Subsequent information can be added when required by the Coastguard.

Although the helicopter approach to a vessel in difficulty is by far the fastest response, it cannot be guaranteed that the helicopter can remain on scene indefinitely, however it will remain "on station" over the casualty vessel after disembarking the fire team(s) until a vessel is alongside to provide safe egress for the party.

The OC must maintain communications with the pilot via "Falmouth Whiskey". Should seaborne transport not be immediately available on the scene, the OC should request of the pilot that a relief helicopter be provided and maintained on stand-by until seaborne support arrives

To ensure the safety of firefighters on board a casualty vessel that is either on fire or disabled, firefighters should not be allowed on board a casualty vessel unless a satisfactory risk assessment has been completed..and suitable egress is available. Suitable means of egress to include:Helicopter, RNLI lifeboat and ships life saving equipment, tug, rig support vessel or similar is on scene or in contact with the Coastguards and en route to the incident. If no line of safe retreat is to be identified by the RA, then boarding of vessel will not occur.

In order to provide early notification to neighboring Fire Services of an incident at sea, the Brigade attending such an incident would take steps to notify participating Fire Services as soon as possible after the initial call. Arrangements should also be set up to notify adjacent Fire Services of relevant “Informative and Stop Messages”.

In the event of the MCA being unable to agree the attendance of the CCFB to an incident at sea they would obviously attempt to obtain the services of an adjacent Fire Service (second Fire Service). In such circumstances the second Fire Service should contact CCFB to establish why they had declined to make an attendance.

## 14. MUTUAL ASSISTANCE

Intention of Mutual Assistance: There is a general agreement between participating Fire Services that when requested, they will supplement each other resources. This agreement is intended to cover eventualities when the demands of an incident at sea exceed the resources of the first Fire Service.

Application: the Principal Officer of the host Brigade will advise neighboring Brigades that participate in the mutual assistance agreement, of the host Brigades intentions so resources can be made available at the earliest opportunity to reinforce. The MCA must also be advised as the requirement for helicopter transfer between Brigades will be required.

Before any attempts are made to react to a request for mutual assistance, the host Fire Service must seek the agreement of the respective Fire Brigade Principal Officer(s).

## 15. COMBINED TRAINING AND LIAISON

All Fire Brigades participating in offshore incidents that involve the use of helicopters as a primary mode of transport should carry out training with the appropriate ‘carrier’ and also with other key agencies e.g MCA and ‘mutual assistance Brigades

Training should include testing of command and control procedures, mobilising procedures, communication functions and the ability to respond to a request for mutual aid. Brigades must ensure that when mutual aid training is carried out, personnel are made aware of any relevant differences in practices and procedures.

# 16. MCA TASKING FORM

**THIS FORM SHOULD BE HELD AND COMPLETED BY THE LOCAL MRC/MRCC**

INFORMATION REQUIRED FROM MCA (Initially that information in bold and asterisked MUST BE SENT). DO NOT DELAY IF INFORMATION IS INCOMPLETE.

FAX TO FIRE BRIGADE : <b>01872 274440</b>						TIME:-	
1. MCA CO-ORDINATING RESCUE CENTRE							
<b>2. NATURE OF EMERGENCY AND COMPARTMENT INVOLVED*</b>							
<b>3. POSITION OF VESSEL - COURSE*</b>							
<b>4. VESSEL NAME*</b>						<b>DWT/GT*</b>	
<b>5. TYPE OF VESSEL*</b>		<b>6. TOTAL NUMBER OF PERSONS ABOARD*</b>			<b>CREW*</b>	<b>PASSENGERS*</b>	
Owner/Agent:		<b>Are Persons Trapped or Missing Aboard*</b>			Yes	No	
<b>Nature of Cargo*:</b>		Nationality of Master/Crew:					
		Interpreter Required			Yes	No	
7. Hazards that could affect Fire Brigade operations				<b>8. WIND/SEA STATE AND AREA FORECAST*</b>			
9. Ship's Fire		Capacity Tons/	10. Fixed Fire		Yes		No
Pumps Operative		Hour	Installations. Has it been Operated?				
Yes	No		Type	CO2	Halon	Sprinkler	Others Specify
11. Communications facilities on board vessel:			Yes	No	12. Stability problems:		
<b>13. HELICOPTERS AVAILABLE*</b>		<b>SEA KING (RN/MCA)</b>		<b>SEA KING RAF</b>		<b>SIKORSKY</b>	
<b>Lift Capability at Time of Tasking:</b>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Landing Site for Helicopters:							
14. Vessels Available for Transportation:			Name			Type	
Loading Point:							
Other Vessels going to Assist:							
Additional Information							



## 18. OPERATIONAL EQUIPMENT

The following are standardised minimum loads :

### BAG 1 ~ 'STRIKE TEAM'

	KGS	LBS
2BA - 1 with Comms c/w Cylinders	27.5	60.3
1 BA Control Board Complete	5.0	11.25
1 Thermal Image Camera	8.0	18.00
1 small pelican case of spare batteries, Alan Keys and BA Service kit	5.5	12.00
3 Torches (Wolflite)	2.0	4.4
2 Hose - 45mm x 15m	17.8	40
Spare radio batteries	0.5	1.2
9 Bulkhead Thermometer	4.5	9.9
1 wheel valve spanner	1.0	2.2
2 BA spare cylinders	7.8	17.5
Fall Arrest device	2.0	4.4
Command Wallet (sector command)		
	<i>Total</i>	

### **RADIOS WILL BE CARRIED IN INDIVIDUAL VALISES**

### BAG 2 ~ 'STRIKE TEAM'

	KGS	LBS
2 BA sets c/w cylinders	27.4	60.28
1 30m line	6.0	13.5
2 hose 45mm x 15m	17.5	40.00
3 torches (Wolflites)	2.0	4.4
1 large axe	3.0	6.7
1 branch (Elkhart)	2.5	5.6
1 First Aid Box	5.8	12.7
1 Boarding Control Board	6.0	13.2
1 in line shut off valve	3.3	6.6
2 BA spare cylinders	7.8	17.5
1 Transfer line	3.0	6.6
Mini gas XL gas monitor	2.0	4.4
Command Wallet (ops command)	2.0	4.4
	<i>Totals</i>	

The Brigade need to be aware that the OC may request additional operational equipment via 'Support teams' and that due to its weight will have an implication on helo loads.

Therefore their is available prepared equipment lists with weights in Kgs/lbs to cover that equipment likely to be utilised for offshore operations.

## 19. EQUIPMENT WEIGHT CHART(Example)

Any further equipment required by the Offshore team, will be identified following the Operational Commander's tactical risk assessment. (This detail must be available for other participating Brigades and carriers should it be so required).

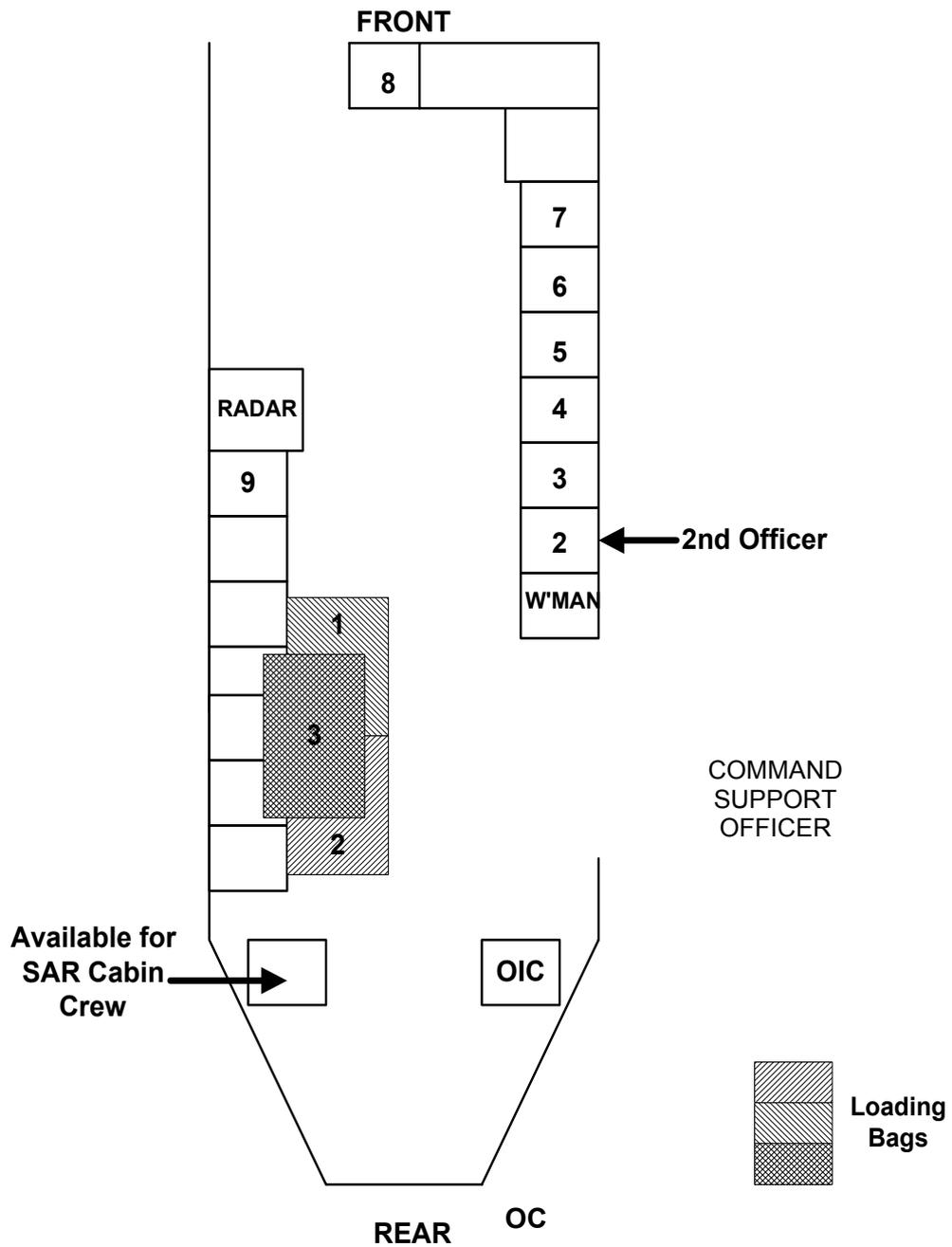
Examples as follows:-

<b>Contents</b>		<b>Kilo's</b>	<b>Pounds</b>
1	<i>BAG AND BOX (optional</i>	10	22
2	<i>45mm x 25M Hose</i>	18	40
1	<i>3 Way Dividing Breeching</i>	4	9
4	<i>Torches - Heavy duty</i>	7	15
2	<i>CABA SETS complete</i>	30	67
2	<i>Branches (Elkhart)</i>	5	8
1	<i>15M Line</i>	3	7
1	<i>BA Service Kit</i>	3	7
1	<i>Stability Board</i>	4	4
1	<i>Ship's Log</i>	1	2
1	<i>Guide Line</i>	2	5
1	<i>Shifter Wrench</i>	1	2
2	<i>Welfare pack e.g Hot Cans etc</i>	22	46
1	<i>Box rags</i>	12	26
10	<i>Spare Overalls</i>	10	22
10	<i>PVC coats</i>	12	26
2	<i>Large Axes</i>	5	8
1	<i>30M Line</i>	6	14
4	<i>Cans fresh water</i>		
4	<i>Branches - 'Fogfighter'</i>		
1	<i>Snatch Block</i>		
1	<i>Wrecking Bar</i>		
1	<i>Fall Arrest Device / Body harness</i>		
1	<i>Ship / Shore couplings</i>		
1	<i>Cellar nozzle</i>		
1	<i>PPV Fan</i>		

**Account must be taken of available aircraft payloads and manual handling restrictions.**

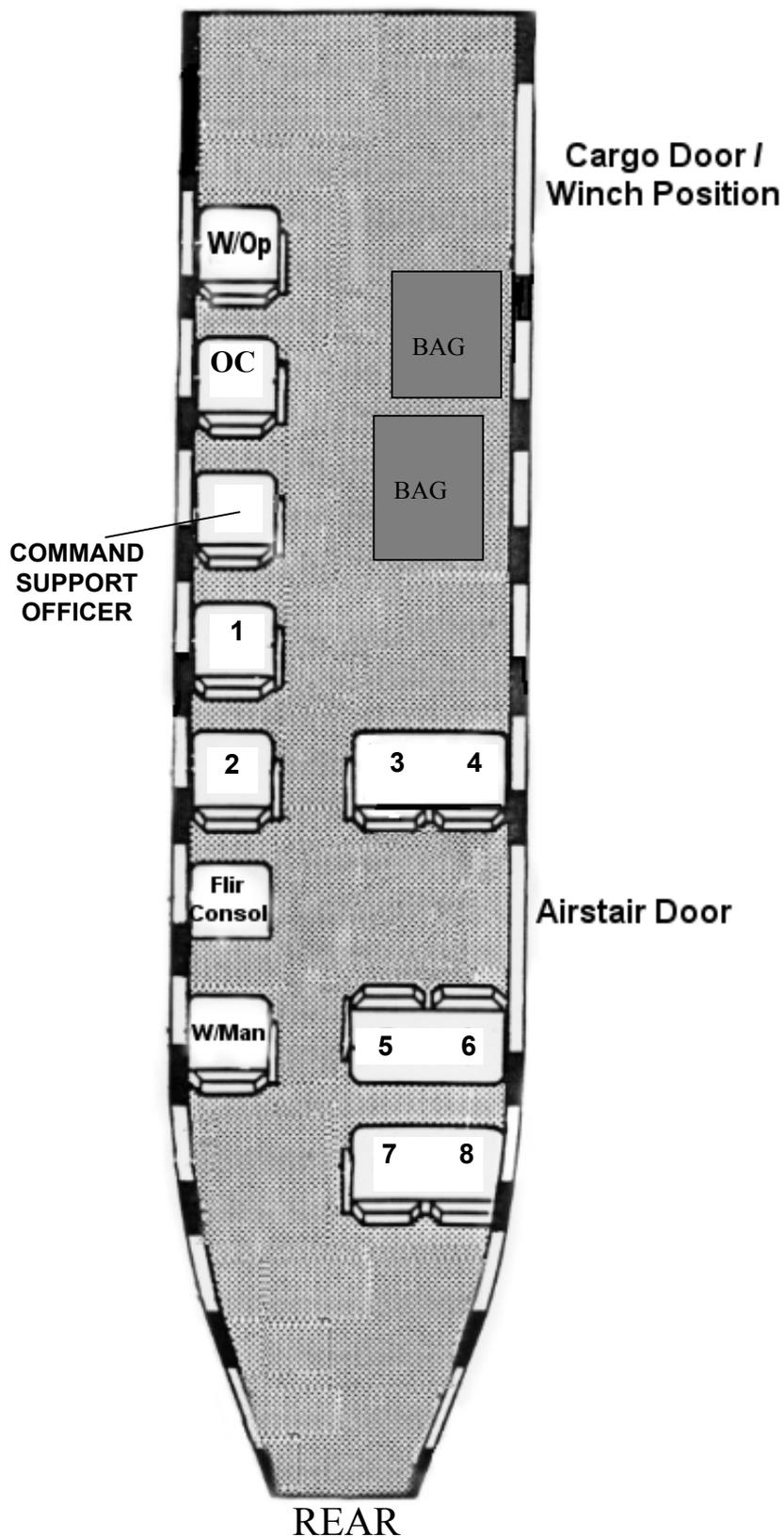
## 20 AIRCRAFT TYPE AND LAYOUT (3)

### SEA KING (RAF)

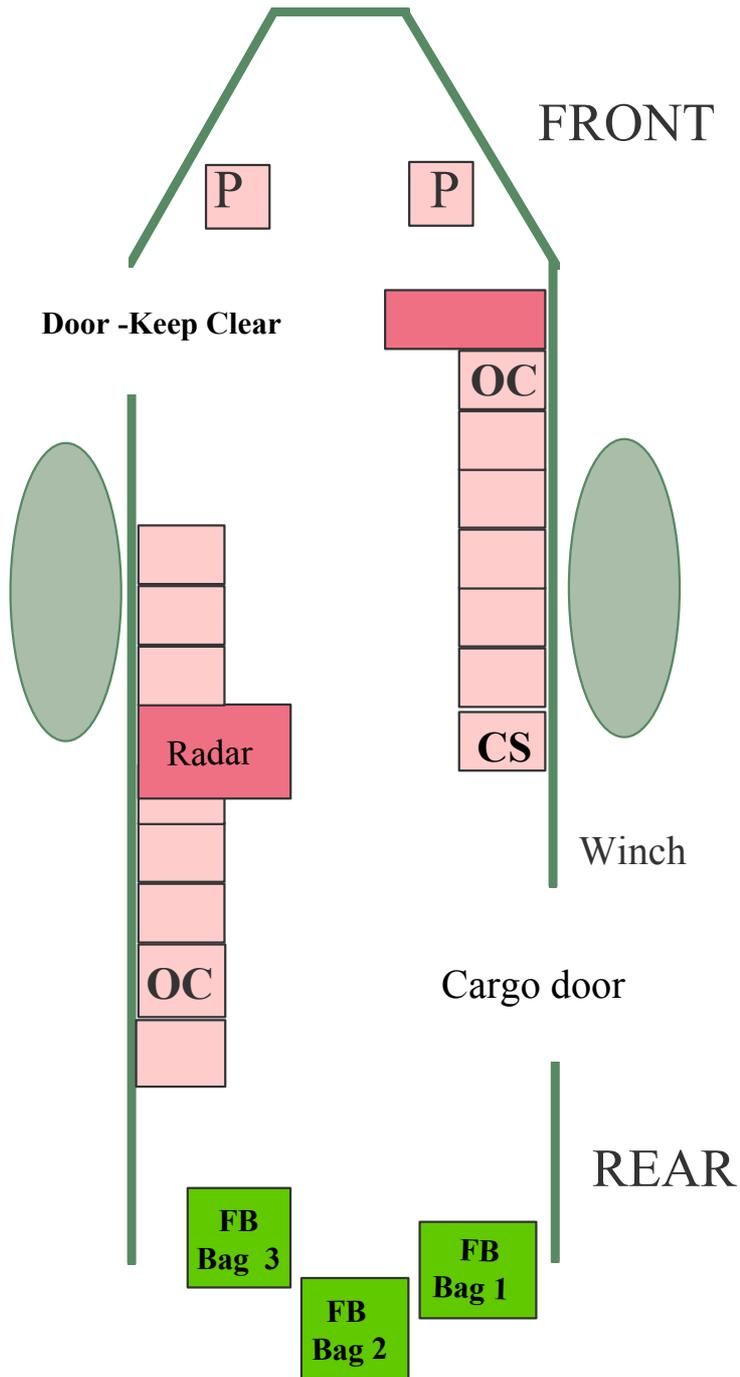


# SIKORSKY S61 (MCA)

FRONT



# SEA KING MK 5 (RN)



(The Fire Brigade Operations Commander may be seated in either of the seats shown OC as determined by pilot. (The OC will be provided with a headset for communications.)

**CS** ~ Command Support Officer.

## 21. Glossary of terms

**BA** .....Breathing Apparatus\_

**CACFOA**.....Chief and Assistant Chief Fire Officers Association.

**CASUALTY**....MCA terminology indicates that this is a stricken vessel (the vessel in trouble).

**CARRIER**....The SAR organisation providing transportation i.e RN; RAF; MCA

**COMMAND SUPPORT**....A Fire Brigade Officer nominated to assist the OC.

**DECLARED RESPONSE**....A statement of Fire Service resources currently made available to MCA.

**EVACUATION SIGNAL**...the Fire Brigade emergency evacuation signal is repeated blasts on an  
of 'Acme Thunderer' whistle.

**EMBARKATION OFFICER**...A Fire Brigade Officer nominated to monitor embarkation details  
of personnel and equipment being conveyed offshore

**INCIDENT COMMANDER (FIRE)**....Senior Fire Brigade officer ( *shorebased* ) in overall  
command of the incident

**MCA**....Maritime and Coastguard Agency ( inc. Coastguard )

**MRC**....Maritime Rescue Centre

**MRCC**...Maritime Rescue Coordination Centre

**OPERATIONS COMMANDER (OC)**....The Senior Fire Brigade Officer onboard the casualty.

**RESCUE CO-ORDINATION CENTRE (RCC)**....Air operations coordinated from RAF Kinloss,

**SAR FACILITY**....Any unit, command, device or system used for SAR operations

**SEARCH AND RESCUE (SAR)**....The employment of available personnel and facilities in  
rendering aid to persons in distress.

**SOSREP**... Secretary of State's Representative

# Standard Operational Procedure

## OFFSHORE HELICOPTER OPERATIONS WITH CORNWALL COUNTY FIRE BRIGADE

### Summary:-

Arrangements regarding the provision of helicopter training and operational procedures with CCFB and 771 SAR Squadron, RNAS Culdrose, Cornwall.

Version 5 ~ 1<sup>st</sup> July 2001

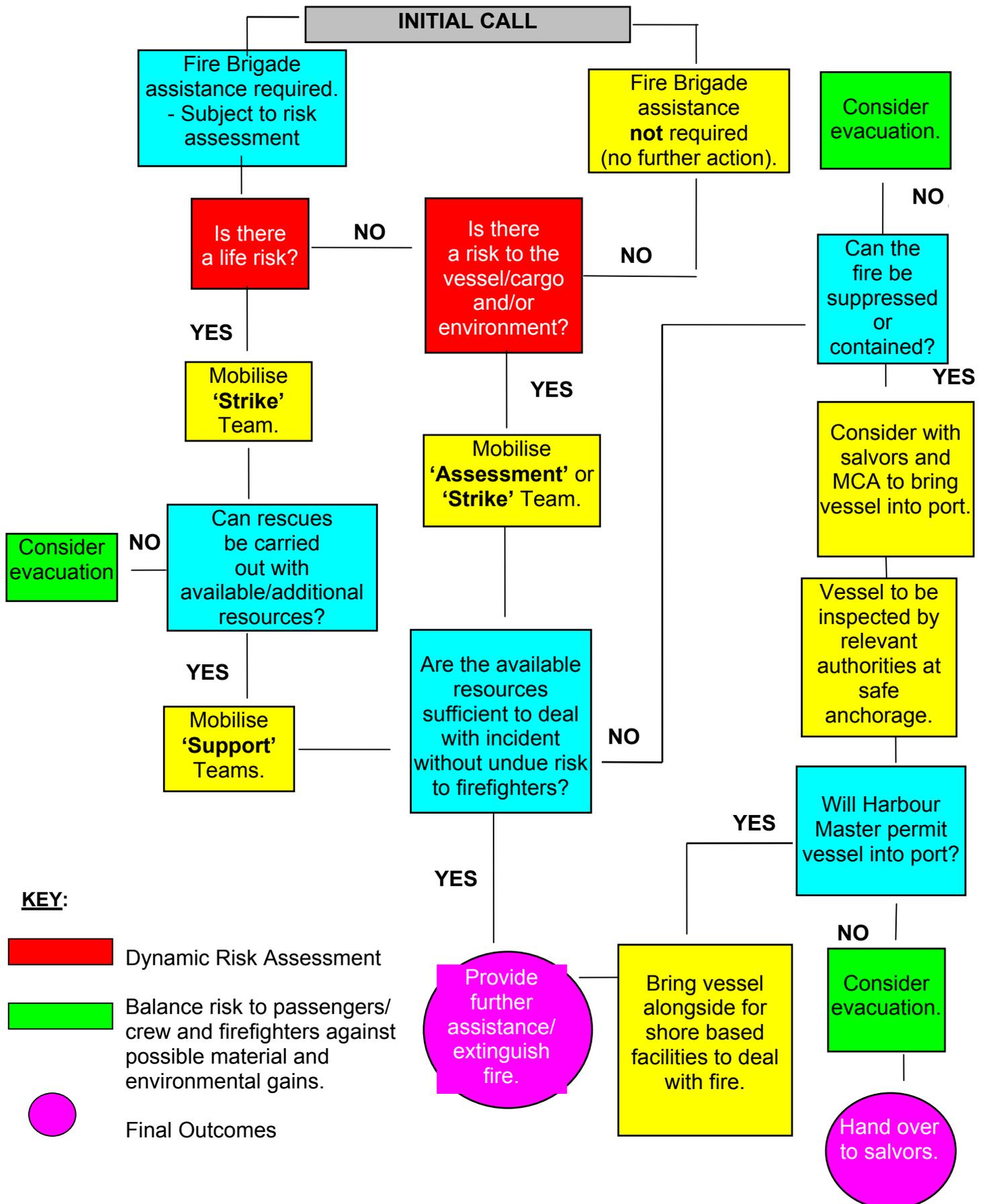
### Further Information:-

Draft CACFOA inter agency SOP - 'The Use of Helicopters For UK Fire Brigades - Offshore Operations.

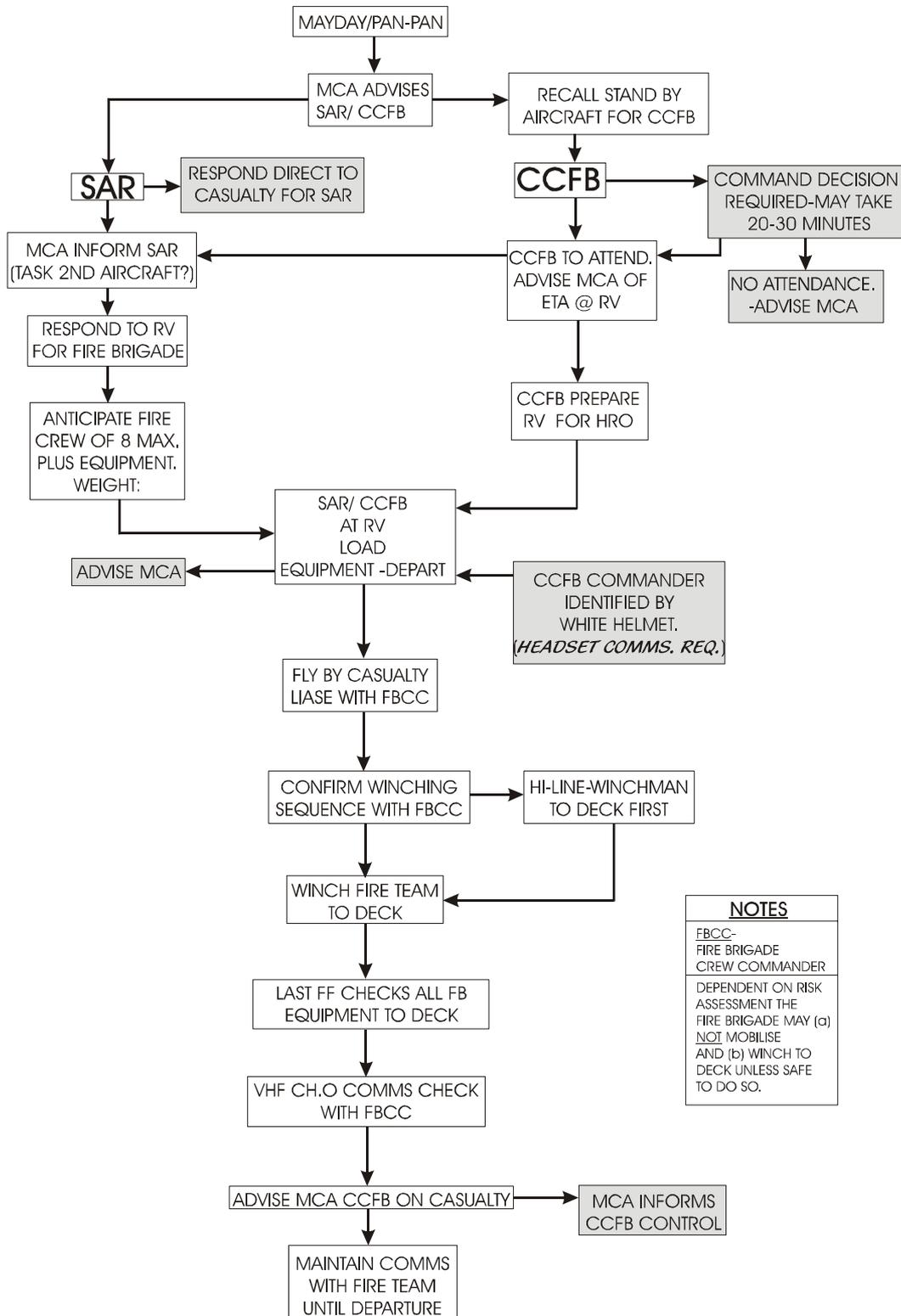
Contents	Page
<b>INDEX:-</b>	1
<b>KEY INFORMATION</b>	
STRATEGIC ASSESSMENTS	2
SAR RESPONSE	3
<b><u>PRIMARY INFORMATION:-</u></b>	
1. INTRODUCTION	4
2. CONFIDENTIALITY	4
3. PLANNING PERMISSIONS	4
4. LICENSING	4
5. USE	4
6. SECURITY	5
7. WELFARE ARRANGEMENTS	5
8. HEALTH AND SAFETY	5
9. COMMUNICATION	6
10. INDEMNITY	6
11. COSTS	6
12. TRAINING NEEDS	6
13. PERIODIC TRAINING	7
14. AGREEMENT	7
<b><u>SUPPORTING INFORMATION:-</u></b>	
APPENDIX A - RNAS Health and Safety brief.	8
APPENDIX B - Communications	9
APPENDIX C - Insurance	10
APPENDIX D - Training	12
APPENDIX E - Teams	14
APPENDIX F - Helo. operations	16
APPENDIX G- Tasking Form	17
GLOSSARY OF TERMS	18

# KEY INFORMATION

## STRATEGIC ASSESSMENT



# S.A.R response to Ship on Fire with Cornwall County Fire Brigade ~11/2000 ~



**NOTES**

FBCC- FIRE BRIGADE CREW COMMANDER

DEPENDENT ON RISK ASSESSMENT THE FIRE BRIGADE MAY (a) NOT MOBILISE AND (b) WINCH TO DECK UNLESS SAFE TO DO SO.

# PRIMARY INFORMATION

## 1. INTRODUCTION

The purpose of this agreement is to identify the methods that Cornwall County Fire Brigade and RNAS Culdrose have in place to effectively train a dedicated cadre of Fire Brigade ship firefighting personnel in the use of helicopters for offshore operations..

Although primarily detailing arrangements regarding training at RNAS Culdrose, Cornwall, included in Appendix E is agreed 'Best Practice' in the transportation of Fire Brigade crews to and from 'live' incidents and exercises.

This guidance is based on national procedures as indicated on the front cover of this SOP.

Training will be predominantly delivered by personnel from 771 Squadron , RNAS Culdrose, within the confines of the airfield.

## 2. CONFIDENTIALITY

The Fire Authority shall treat all information on the workings of RNAS Culdrose as strictly confidential and shall ensure that no such information from the RN or otherwise is passed to any third party without the written consent of the RN.

The RN has consented to the Fire Authority providing information to insurance companies for the purposes of their ascertaining the risk involved in such training and operations to individuals.

## 3. PLANNING PERMISSIONS

Any proposed development for which planning consent is required must be approved and agreed to by all interested parties, i.e., Fire Authority, RN Agencies including MOD Defence Lands Office.

## 4. LICENSING

The Fire Authority agreed to pay any fees negotiated for use of on site facilities which may include showers, catering, classrooms which may be made available at other locations within the establishment.

## 5. USE

CCFB agree to train RN firefighting personnel attached to the base as part of this agreement (subject to local negotiations).

- CCFB may wish to offer joint training with members of other Fire Authorities or civilian organisations at this facility. They will not do so without prior consultation and agreement with the appropriate Base authorities.
- Any helicopter training undertaken must be led and supervised by a recognised 'lead' instructor from the RN.
- CCFB will need to bring on to the base speciality firefighting appliances and equipment to facilitate the needs of the training, which will only remain on the Base for the duration of the training period.

- An agreed programme of training will be provided to the RN prior to commencement so as not to conflict with Squadron activities.

## **6. SECURITY**

- Names of all personnel who are to attend courses at the facility will be lodged with the Base prior to their attendance.
- At all times, CCFB personnel or their authorised representatives will be subject to the discipline of the Base.
- The Base authorities have autonomous power to cancel any courses programmed or in operation without prior consultation with CCFB for security reasons.

## **7. WELFARE ARRANGEMENTS**

All course members will be classed as non entitled civilians and will be charged the appropriate rate for food and accommodation where this may apply.

## **8. HEALTH AND SAFETY**

- CCFB will comply with all relevant Health and Safety legislation while they are operating at RNAS Culdrose.
- Copies of the respective Health and Safety policy documents are to be exchanged between the CCFB and 771 Squadron to satisfy each organisation that all appropriate arrangements are in place.
- All CCFB personnel are to be provided with the RNAS Health and Safety Brief for contractors and visitors (see Appendix A).
- CCFB will provide 771 Squadron with a Health and Safety brief outlining their:
  - method statement for their activities
  - foreseeable hazards and risks (risk assessments for training and manual handling - see Appendix B)
  - clear lines of responsibility and communications, i.e., command and control.
- All equipment including personal protective equipment (PPE) will be provided by the CCFB. Only specific approved MOD PPE will be loaned to the CCFB, for the duration of the training e.g., safety harnesses for helicopter transfer.
- Emergency medical care facilities will be provided by RNAS Culdrose in the event of a serious injury sustained by any CCFB personnel whilst undertaking helicopter training.

## **9. COMMUNICATION**

There will be a need to exercise Fire Brigade radio communication frequencies whilst on site. Details of such frequencies will be provided to the appropriate persons within RNAS Culdrose if so required.

## 10. INDEMNITY

The RN and their servants will not be held responsible for any direct or indirect actions of personnel engaged in training that contravenes the instructions being provided by RN staff.

Both CCFB and MOD organisations provide specific insurance indemnity, details of which are indicated in Appendix C.

## 11. COSTS

- Costs associated with the implementation of the arrangements set out in this SOP lay where they fall.
- Neither party shall be liable for the costs of the other unless as otherwise agreed, e.g., inter-service training from the CCFB on a repayment basis.

## 12. TRAINING NEEDS

CCFB undertakes its own 'in house' Marine Operations continuation training for offshore firefighting personnel on a regular basis as identified by CCFB training needs analysis. This training includes:

- general water safety
- ship construction
- tactical ship firefighting
- sea survival training
- helicopter familiarisation

To meet the RN training needs analysis of 771 Squadron the following has been identified to ensure competence and compliance with RN helicopter operations.

- i. ground training
- ii. 'abandon aircraft' drills
- iii. air training
- iv. sea survival training

(for details see Appendix D)

In conjunction with the above, CCFB will ensure that prior to any operational tasking all crews designated for flying operations will be given a standard helicopter safety brief before embarkation.

It has been agreed via risk assessment, that there is no requirement for CCFB personnel to undertake helicopter underwater escape drills, i.e., 'dunker' training due to the infrequent exposure to the limited potential risk.



# SUPPORTING INFORMATION

APPENDIX A

## RNAS CULDROSE - 771 SQUADRON

### HEALTH & SAFETY BRIEFING FOR VISITING PERSONNEL (6/01)

#### Health and Safety

All personnel are to be advised that squadrons are dangerous places to be, for those unfamiliar with them. Therefore for your own safety the following brief must be given.

#### Fire

In the event of the fire alarm sounding, all personnel are to leave the building immediately by the nearest fire exit (which are clearly marked) and muster in the main car park which is adjacent to the east end of the hanger (this is to be pointed out).

#### SAR Scramble

If the SAR alarm sounds (Very different to the fire alarm) Personnel are to keep clear of:

1. The line area and hard standing.
2. The stair well and hallway.
3. The main entrance to the SOB

#### Mobile phones

The use of mobile phones within the squadron building within 30 meters of an aircraft is forbidden (radhaz etc).

#### Toilets

Toilets are located adjacent to the Reg Office and outside the training office for Gents, and outside the Opps room or in the WRNS Crewroom for ladies.

#### Smoking

Smoking may only take place in the smoking room which is located opposite the issue centre.

#### Refreshments

Tea and Coffee making facilities are provided in the ACRB and maintainers Kitchen, arrangements to be made with duty AV/SUP for victuals. There are also vending machines in the line area.

#### Contractors

Personnel are to be advised of any maintenance contractors working in the building who may constitute a hazard (e.g. Overhead work, floor repairs, Hot works etc.)

APPENDIX B

#### COMMUNICATIONS:

**Cornwall County Fire Brigade. .systems availability:-**

- UHF Radio Frequencies (Main scheme)

Brigade Channel Number	Frequency TX	Frequency RX
Channel 1	457.0375	457.0375
Channel 2	462.5875	457.0875
Channel 3	457.4875	457.4875
Channel 4	457.1875	457.1875
Channel 5	462.6375	457.1375
Channel 6	457.2375	457.2375
Channel 7	462.5375	455.9875
Channel 8	455.9875	455.9875

- Cellphone ~ subject to coverage.
- UHF ~ handheld Fire Brigade radio wavelengths, for Command and Control on the casualty, and possible direct link to shore if within a five mile radius of shore and a CCFB 'repeater'
- VHF/FM Marine Band radios ~ call sign 'Falmouth Whiskey', Channel 0.

## EXTRACT FROM 'MOD' SEARCH & RESCUE TRAINING - INSURANCE POLICY

Willis Corroon have arranged insurance to cover liability arising from search and rescue training flights performed by the MOD on behalf of or in conjunction with civilian organisations. This coverage was placed at the request of the MOD.

The insurance will pay claims made by third parties against either the MOD or the civilian organisations in the event that they are legally liable for an accident happening during search and rescue training flights and involving the subject aircraft.

Cover starts from the time a civilian passenger has boarded the aircraft to the time the passenger disembarks at the completion of the training flight, and includes persons being transported by winch. The term "civilian organisation" means its employees, volunteers, agents or servants and any authority council or board assuming ultimate responsibility for such organisations.

The insurance also allows the civilian organisation to make claims against the MOD in the event that a person belonging to the civilian organisation is injured because of the negligence of the MOD. The policy limit for this insurance is £50,000,000 in any one occurrence. This means that irrespective of the number of people injured or the extent of the damage to property not more than £50,000,000 will be paid for all claims arising out of the one occurrence.

The insurance would not cover damage to the carrying aircraft or any damage caused purely by the noise of the aircraft i.e. livestock being frightened by low aircraft.

Some examples of claims that would be covered by this policy are as follows:

- a) During a training flight the helicopter causes damage to cars by causing stones to fly and fences to be blown down by rotor wash.
- b) The policy would pay for the cost to repair the damage caused to the cars and fences.
- c) During a training flight over a ship the helicopter is caught by a gust of wind and hits the ship causing substantial damage and injury.
- d) The policy would pay for the cost to repair the damage to the ship and also any compensation awarded to the injured persons.
- e) During a training flight a civilian is being transported by winch. Due to a faulty winch mechanism the person falls and is injured.
- f) The policy would pay compensation awarded to injured person.
- g) It must be remembered that the policy responds only to the Legal Liability of either the MOD or the civilian organisation and therefore before any claims are paid the negligence of either the MOD or the civilian organisation must be proven.

## INSURANCE EXTRACTS (CCFB)

### Pension Rights Of Personnel Involved In Fire Fighting And Rescue At Sea

Fire fighting and rescue at sea will only be carried out by those members of the Brigade who have volunteered for such duties. A list of volunteers will be held at station 3.1 Falmouth and Fire Control.

Personnel involved in fire fighting and rescue at sea will be deemed to be “on duty” and as such will have all of their pension rights protected should they suffer an accident during such operations.

A member of the Brigade who suffers an injury on duty, due to or arising out of fire fighting at sea, is covered by an insurance policy taken out by the County Council.

Members of the Brigade who have taken out private Life or Accident insurance cover should consult their own insurance companies and where necessary, request them to give an endorsement to the effect that their cover, e.g. accident, life or endowment insurance, will not be prejudiced by injuries or death caused during conveyance by helicopter or seagoing craft.

The insurance companies should be informed that such activities are considered to be part of the normal work of firefighters. Any problems in connection with private insurance should be reported to Brigade Headquarters with full details. Information submitted will be treated as confidential.

#### Personal Accident Cover - Offshore Fire Fighting

INSURANCE COMPANY: ZURICH MUNICIPAL

LIMIT OF LIABILITY:

The Capital Sum: £303,000

THE ACTIVITIES:

The cover is provided for personnel participating in offshore fire fighting, waterborne or airborne, and in a maximum of 20 practices a year, all on behalf of the insured.

Maximum of 20 personnel on any one craft at any one time.

COMPENSATION:

Compensation under this scheme is only provided if an individual suffers what is termed a permanent partial disablement or permanent total disablement.

This is to say, if a person sustains broken limbs, cuts, bruises or similar injuries which heal fully in the normal way, no compensation would be payable.

NOTE: This insurance scheme is additional to the normal conditions of service and the Firefighters` Pension Scheme. Personnel undertaking such duties will be deemed to be “on duty” and as such, entitled to the normal benefits.

The scales of entitlement to benefits under this scheme are detailed below.

The policy is based on a capital sum of £303,000 and the percentage of the capital sum payable depends on the nature of the injury - see attached scales of compensation.

For example in the case of a very serious injury such as complete loss of sight in both eyes, the capital sum of £303,000 would be paid in full.

In the case of complete loss of use of a hand, 20% of the capital sum £60,600 would be payable.

The policy provides cover for personnel in the event of injury during the currency of the policy, whilst the persons insured are engaged anywhere in the world in the activities as set out in the Schedule (not included).

## **TRAINING**

To be carried out every two years at RNAS Culdrose:-

### **GROUND TRAINING**

- brief on aircraft statistics
- approaching the aircraft, including hazards
- boarding aircraft to include identification of CCFB Commander (OC), seating plan
- moving around aircraft
- communication
- preparation to winch
- winch procedure - including 'high line'
- loading and storage of Fire Brigade equipment

### **ABANDON AIRCRAFT DRILLS** (practical and theory using video etc)

- indication of ditching/crash procedures
- bracing position
- post impact procedure
- emergency exits
- escape procedure
- Sea survival equipment familiarisation

### **AIR TRAINING** (dry drills only within the confines of the airfield)

- take off and landing procedures
- winching from and to the aircraft ~ crew and equipment including 'high line'
- communication with aircraft including ground to air signals

### **SURVIVAL TRAINING**

CCFB carry out sea survival training in-house and this includes the use of:

- lifejackets
- immersion suits
- life rafts
- lifting from the water

### **Additional training provided by RNAS Culdrose should be:**

- wet winching drills, i.e. whilst wearing full PPE will be recovered by helicopter from the water by winch after exiting life raft.  
ONLY TO BE CARRIED OUT ON INITIAL INDUCTION TRAINING TO OFFSHORE OPERATIONS.
- Transfer of team(s) and equipment from designated RV to vessel offshore ( annual exercise, subject to availability and cost)

## EXTRACT FROM CCFB TRAINING COURSE INFORMATION BIS

TRAINING DEPARTMENT COURSE INFORMATION SHEET	No
---	----

<b>COURSE &amp; CODE:</b>	Helicopter Familiarisation
<b>VENUE:</b>	771 Squadron ~ RNAS Culdrose. (Transport from 3.1 Falmouth @0900)
<b>DURATION:</b>	3 hours every two years (0930 - 1230) .Subject to change if advised by 771.
<b>STUDENTS:</b>	Offshore ship firefighting personnel.
<b>OBJECTIVES:</b>	<ul style="list-style-type: none"> <li>To meet the training requirements of an agreed SOP (Standard Operational Procedure) as specified by CACFOA and RNAS Culdrose.</li> </ul>
<b>MEALS:</b>	Not required
<b>PPE REQUIREMENTS:</b>	Full firefighting PPE . Immersion suits, lifejackets, ear defenders .
<b>DRESS:</b>	Working rig.
<b>VALIDATION:</b>	Assessment of competence by RNAS instructor
<b>ATTENDANCE NUMBERS:</b>	Maximum ~ 8
<b>INSTRUCTORS:</b>	Lead Officers from Offshore cadre and RNAS personnel
<b>PRIOR LEARNING:</b>	Brigade 4 day MTC / 1 day refreshers
<b>RISK ASSESSMENT:</b>	RA062/ RA083/ RA089

## CCFB OFFSHORE FIREFIGHTING TEAMS

(Reviewed October 2000)

The Teams are 'directed' by the CCFB Marine Operations Group (MOG).

### Key contacts

#### **Senior Staff Officer @ Brigade Headquarters, Truro:**

Divisional Officer Mervyn Kettle

Tel: 01872 273117

Fax: 01872 222883

#### **Divisional Commander @ Falmouth Fire Station:**

Divisional Officer John Sweeney

Tel: 01326 212412

Fax: 01326 311153

## OPERATIONAL RESPONSE

- All decisions for CCFB to be mobilised to an offshore incident will be taken by a CCFB Principal Officer on receipt of enquiry from MCA.
- Mobilising arrangements will be co-ordinated by the MRCC Falmouth who will liaise directly with CCFB's Fire Control.
- The mobilising of SAR assets will be via these lines of communication only - see Tasking Form in Appendix H
- Aircraft will respond to Falmouth School playing fields, opposite Falmouth Fire Station to RV with CCFB teams which will be confirmed as one of the following:
  - **'Assessment' team** (2 officers plus kit ~ 75lb. Primarily for air recon. only)
  - **'Strike Team'** (min. 6, max. 8 and equipment ~ Bag 1 and 2)
  - **'Support' Team(s)** (minimum 8 and equipment)

( *Individual teams must not be split between more than one aircraft* )
- Crew Commanders of teams should be provided with comms. headset for communication with aircrew.
- The Crew Commander will normally leave the aircraft first - and return last.
- When all CCFB team have left aircraft, ensure all equipment is lowered to deck and confirm with CCFB when complete.
- **The Crew Commander of the 'Strike Team' ( first response team onboard) will maintain contact with aircraft via VHF Channel '0' as necessary.**
- All Fire Brigade communications to be switched off within aircraft.

NOTE:-

- Auto-inflation devices removed from CCFB lifejackets and placed into individuals personal Troll Bag until on vessel.
  - PPE is carried in personal 'kit' valises. These are identified with the team members name or number and should go to the deck with him / her.
  - Head and ear protection currently provided by RN and must be worn.(8 sets on permanent loan at Falmouth Fire station.
- Any subsequent teams to fly will require head protection from RN - this must be carried by aircraft when departing RNAS, normally maximum 8 per flight).
- Ear defenders as provided by CCFB also to be worn.
  - Firefighters will wear 'Cylume' light sticks at night to assist with location.

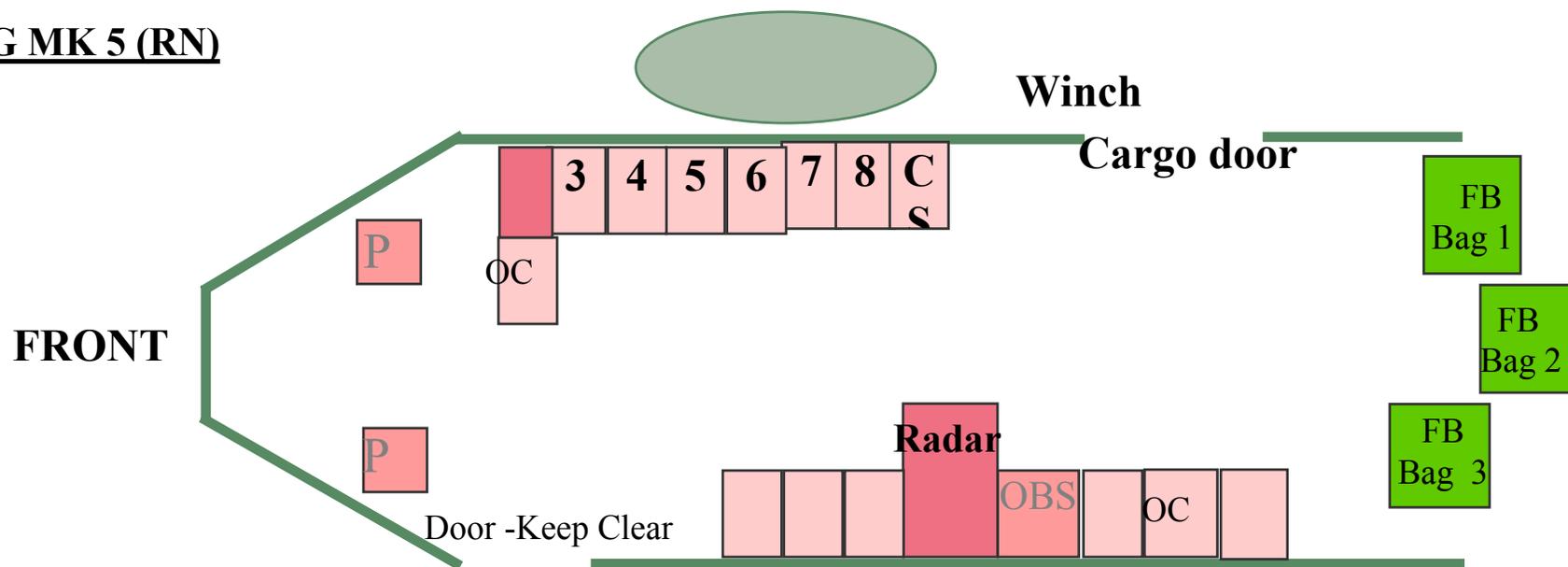
**Equipment Weights:**

Team of 6 firefighters ~ approximately 1230 lbs

Bag 1	187 lbs	?? kg	}	
2	178 lbs		}	
3	286 lbs		}	<i>(15<sup>th</sup> May 2000 ~ currently under review)</i>
4	284 lbs		}	
5	278 lbs		}	
6	288 lbs		}	

All equipment bags and personal (PPE) kit bags, will be provided with a single karibiner for allowing ease of securing within the aircraft and act as a single point for winching.

**SEA KING MK 5 (RN)**



**ACCESS**

1. Access/egress from the aircraft will always be under the control of the aircrew...
2. The Fire Operational Commander (OC)..identified by a 'red tabard', will board the aircraft first and don the communications headset whilst onboard. The seating plan shows where the OC may be located...
3. Equipment loaded...team board...
4. The Fire Command Support (second in command) will sit as shown CS on plan

**WINCHING**

1. The OC will replace head protection and winch to the deck first followed by the CS....both will carry their (PPE) kit bags and communications.
  2. When on deck, confirm risk assessment, advise pilot of decision's....
  3. Remainder of team winch to deck with (PPE) kit bags...
  4. Equipment winched to deck...
  5. Maintain comms on Ch.0.
- (Returning to the aircraft will be the reverse of the above)

**TASKING FORM****THIS FORM SHOULD BE HELD AND COMPLETED BY THE LOCAL MRC/MRCC**

INFORMATION REQUIRED FROM MCA (Initially that information in bold and asterisked MUST BE SENT). DO NOT DELAY IF INFORMATION IS INCOMPLETE.

FAX TO RELEVANT BRIGADE/FIRE AND RESCUE SERVICE						TIME:-	
MCA CO-ORDINATING RESCUE CENTRE							
<b>NATURE OF EMERGENCY AND COMPARTMENT INVOLVED*</b>							
<b>POSITION OF VESSEL - COURSE*</b>							
<b>VESSEL NAME*</b>						<b>DWT/GT*</b>	
<b>TYPE OF VESSEL*</b>		<b>TOTAL NUMBER OF PERSONS ABOARD*</b>			<b>CREW*</b>	<b>PASSENGERS*</b>	
Owner/Agent:		<b>Are Persons Trapped or Missing Aboard*</b>			Yes	No	
<b>Nature of Cargo*:</b>		Nationality of Master/Crew:					
		Interpreter Required			Yes	No	
Hazards that could affect Fire and Rescue operations:				<b>WIND ON SCENE, SEA STATE ON SCENE AND AREA FORECAST*</b>			
Ship's Fire Pumps Operative		Capacity Tons/ Hour	Fixed Fire Installations. Has it been Operated?		Yes		No
Yes	No		Type	CO2	Halon	Sprinkler	Others Specify
Communications facilities on board vessel:			Yes	No	Stability problems:		
HELICOPTERS AVAILABLE*		SEA KING(RN/MCA)		SEA KING RAF		SIKORSKY	
Lift Capability at Time of Tasking:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landing Site for Helicopters:							
Vessels Available for Transportation:			Name			Type	
Loading Point:							
Other Vessels going to Assist:							
ADDITIONAL INFORMATION (e.g. 'Details of Fire Operations Commander'):							

## GLOSSARY OF TERMS

BA	Breathing Apparatus
EQUIPMENT BAGS	Containers with firefighting equipment
RNAS	Royal Naval Air Station
MOD	Ministry of Defence
CACFOA	Chief and Assistant Chief Fire Officers Association
CCFB	Cornwall County Fire Brigade
OC	Operations Commander (Fire)
SOP	Standard Operational Procedure
MCA	Maritime and Coastguard Agency
MRCC	Maritime Rescue Co-ordination Centre
MOG	Marine Operations Group
TROLL BAG	Firefighters personal equipment belt
(PPE) KIT BAGS	Firefighters personal waterproof equipment bags

CHIEF & ASSISTANT CHIEF FIRE OFFICERS  
ASSOCIATION  
(SOUTH WEST REGION)

OPERATIONS WORKING PARTY  
~WATER SAFETY GROUP~

**‘SAFE’  
WORKING ON  
OR  
NEAR WATER**

DRAFT RESEARCH REPORT  
10<sup>th</sup> January 2001

# CONTENTS

<b><u>SECTION</u></b>	<b><u>SUBJECT</u></b>	<b><u>PAGE</u></b>
	Foreword / Terms of Reference / Acknowledgements	
1.	Introduction	6
2.	South West Policy Statement	7
3.	Executive Summary	8
4.	Hazards associated with Water Related Incidents	9
5.	Health and Safety	12
6.	Standard Operational Procedures (SOP)	13
7.	Sub Surface Rescues	21
8.	Ice Rescues	22
9.	Mud/Sand/Clay Rescues	23
10.	Vehicle Incidents	25
11.	Post Incident Considerations	27
12.	Equipment Requirement	29
13.	Training Policy and Plan	32
14.	Recommendations	34
15.	Summary	36
	Appendices	37

## APPENDICES

	<b><u>SUBJECT</u></b>	<b><u>PAGE</u></b>
A.	United Kingdom Fire Service Survey	37
B.	Maintaining Currency of the Document	38
C.	Equipment Costs	39
D.	Risk Assessments	40
E.	Glossary	41
F.	Bibliography	43

## FOREWORD

The guidance contained within this document, if followed, will ensure that a systematic process is undertaken in determining the approach to dealing with 'water related incidents' (WRI's). There are advantages, disadvantages, limitations and new developments that are on-going. It is not intended that the guidance remains static. This CACFOA South West Regional approach and framework document was instigated via CACFOA (SW) Operations Working Party ~ Water Safety Group'.

The 'Water Safety Group' (WSG) will continue to meet as dictated by CACFOA (SW) Operations Working Party to consider:

- Current research and development programmes and provide input where appropriate.
- Research findings.
- Reports and experience reported through the Network.

When an amendment or addition is considered it will be implemented and the relevant pages amended including the date reference in the footer. Amendments will be circulated, subject to consultation within CACFOA (SW) Operations Working Party.

## TERMS OF REFERENCE

At a meeting of Chief Fire Officers in the South West on 19<sup>th</sup> December 2000 it was agreed that we attempt to work together on determining standard 'water safety' equipment needs and specifications for the South West.

The sole terms of reference were stated as 'to agree equipment needs for water associated operations and the specification for the same'. However, the WSG felt that to deal with this item in isolation left unanswered questions on key aspects of water safety, therefore the additional terms of reference have been included by the group:

- Carry out a full risk assessment of incidents involving water related incidents (WRI)
- Research the use of appropriate equipment for WRI's in other UK Fire Services and abroad.
- Taking into account any national implications identified via CACFOA, DETR, etc.
- Collate the resulting research material to formulate short and long term options for the SW.
- Make recommendations on equipment and training.
- Provide costings.
- Produce a generic Operational Policy Document that meets the need of South West Fire Service's.

## ACKNOWLEDGEMENTS

- CACFOA South West Chief Officers Group
- CACFOA South West Operations Working Party
- Avon Fire Brigade
- Cornwall County Fire Brigade
- Devon Fire and Rescue Service
- Dorset Fire and Rescue Service
- Gloucestershire Fire Service
- Somerset Fire Brigade
- Wiltshire Fire Brigade
- Greater Manchester County Fire Service
- Institute of Naval Medicine, Portsmouth

## 1. INTRODUCTION

In recent years, South West Fire Service's have responded to numerous incidents involving people or animals in difficulty on or in water, mud and ice. The rescues have been affected by improvisation of fire fighting equipment or commandeering whatever other equipment is available.

Experience has shown that nationally, Fire Service fatalities and injuries resulting from the exposure to WRI's have occurred directly or indirectly as a result of: -

- Inadequate understanding of the hazards and risk.
- The lack of training.
- Limited suitable operational equipment.
- Limited availability of suitable PPE to support and protect operational personnel when operating within this hostile and dangerous environment.

The Fire Service does not have a statutory duty to respond and apply resources to incidents of this type. However, the Fire Service are the prime rescue service across a wide diversity of hazardous situations that the public may be exposed to.

Many of our activities do involve working in, on or near water. This may be during training or when attending operational incidents e.g. 'working from open water' - which can have it's own inherent risks!

It is recognised by the Service nationally that there is a strong public expectation for the Fire Service to attend incidents with the purpose of saving life or rendering humanitarian services... and historically that is what we have done.

*Current climate conditions are known to be changing and the potential for increased exposure to water related incidents will increase. This has been clearly identified both nationally and internationally. Therefore we must be prepared to deal with this type of incident on a more frequent basis in the future.*

## 2. SOUTH WEST POLICY STATEMENT

The Fire Service attends a number of incidents each year where personnel are potentially at risk from injury or loss of life due to working in close proximity to water.

Operational personnel must be aware of the dangers presented at such incidents and ensure that the safety of all concerned in these activities is maintained through pre-planning together with operational dynamic risk assessment.

Although the primary water risk within the Region stems from coastal and estuarial waters, a number of other risk areas exist such as:

- Offshore.
- Fast and/or deep running rivers.
- Spate conditions e.g. Flooding.
- Reservoirs.
- Ponds and lakes.
- Quarries.
- Mine shafts.
- Local flooding.
- Slurry pits.
- Canals

These risk areas in turn can be sub-divided into categories of tasks and for each exposing the firefighter to some degree of hazard. Although these are numerous they mainly fall under the following headings:

- Working alongside water.
- Working on/being transported on water.
- Pumping from open water.
- Water rescues.
- Mud/sand rescues.
- Ice rescues.

Other areas of activity, such as line rescue operations, confined space, sewer and slurry pit rescues, will also subject firefighters to similar hazards, but due to the nature of such risks additional control measures will be required to protect the individual from contamination, infection or asphyxiation.

**The Fire Service recognises the public's expectations and accepts the moral responsibility of providing a predetermined and designated call for assistance. Therefore we will provide an appropriate level of response to all distress calls received in these criteria where the public are at risk.**

### 3. EXECUTIVE SUMMARY

This document provides guidance to Chief Fire Officers for the safe and effective approach in dealing with inland water related incidents (WRI's)

The guidance sets out a compliance framework providing systematic and logical processes to follow. Dealing with WRI's is by nature a hazardous activity where it is unlikely that total safety can ever be guaranteed.

Following this guide will, however, enable a position of compliance to be achieved.

The document provides a guide through the key risk control measures necessary to ensure the safe delivery of training. This includes risk assessment and competence of staff and use of operational equipment.

Guidance is provided on the provision, use and management of operational equipment\_including PPE.

Analysis of previous incidents in the South West Region indicate that there is a need to train and equip the firefighters appropriately in safe working at WRI's so as to ensure their own personal safety, and meet the expectations of the public.

The outcomes shown in this report in terms of costings are, not surprisingly high, and may need to be tailored to suit any available funding but it is essential to allocate sufficient resources to provide the best level of equipment and training possible

In broad terms, the costings primarily consider:

- Equipment
- Training

CACFOA South West (Operations Working Party) should act to continue development in this area, as a joint initiative can lead to a reduction in procurement costings.

Additional savings may be found by joint Best Value initiatives through shared resources from other agencies such as MCA, RNLI, EA and the RSPCA.

Further guidance may be available to Brigades in the near future via the Home Office and 'DETR.

## 4. HAZARDS ASSOCIATED WITH WRI'S

- 4.1 'WRI's' are in themselves a generic term and can comprise of incidents involving- 'still' and /or 'fast flowing 'water, e.g., ponds, quarries, lakes, beaches and estuarial waters, weirs and areas of mud and slurry. There are other variables that can be added to those basic water types such as remote locations, steep banking, cliffs and restricted access.

Climatic extremes further add to the complexity of these incidents and can significantly change the required approach, for example, extreme cold resulting in water courses forming ice and presenting a new set of hazards to crews.

The physical arena confronting the initial crews is then exacerbated by the nature of the emergency and what is involved. Some examples might be; submerged cars, boats, aircraft, people or animals requiring rescue or environmental protection issues.

It follows that crews will also face situations where by necessity they will have to work from or very near 'open' water.

- 4.2 Throughout all the possible scenarios that may be encountered runs the fundamental element of time. The urgency of the situation will dictate the response selected by the Incident Commander based on the following key elements: -

- Dynamic Risk Assessment
- The 'safe person' concept
- A generic approach to water related incidents.

These three elements are supported by the Incident Command System, and together will form the basis of the Incident Commanders tactical decision making.

In order to work safely alongside water and to enter water for rescue purposes with the minimum of risk to themselves, it is essential that personnel appreciate the hazards that water presents.

*(It is worth considering that, according to statistics from the USA, 10 percent of people drowned each year are professional rescuers!)*

- 4.3 Firefighters spend a proportion of their duties involved in activities working near water. Normally, this involves pumping from ponds, lakes and rivers, but on occasions they will be called upon to rescue persons and animals from water, sometimes in hazardous, time-critical situations.

It is essential therefore, that personnel appreciate the hazards associated with WRI's. These may be briefly summarised as: -

- Current, flow, undertow, eddies, whirlpools, weirs, stoppers.
- Weight, temperature.
- Depth.
- Water clarity.
- Pollution/Contamination/Biological risks.
- Mud, Silt, Roots, Weeds and Rocks.
- Entrapment, debris/trees, fencing, cars, shopping trolleys - strainers.
- Panic of casualty.
- Riverbank quayside conditions (slips, trips, and falls).

- Surface vessel movements and water borne debris.
- Impacts from casualties and animals.
- Sprains and strains caused by pulling and lifting from unnatural positions.
- Drowning/fatigue.
- Danger from action of bystanders.
- Equipment falling in.
- Electrical hazards - overhead power lines, etc.
- Inadequate lighting.

**4.4** The Operational Procedures Section of this document outlines the actions to be taken by crews to minimise the risk posed as a consequence of the above hazards. However, special consideration should be given to the following: -

#### 4.4.1 Current/Flow

There are two types of current generated as water flows along a river: - helical flow and laminar flow.

- Helical Flow is the flow, which causes the banks of the river to be undercut. The hazard provided by this current is that an object in moving water will tend to be swept away from the bank into the centre of the river.
- Laminar Flow does not provide a particular hazard in itself, but it is worth noting that it causes water near to the surface to move more quickly than water near the riverbed.

Furthermore, at a bend in the river, water on the outside of the curve will travel faster than that on the inside.

#### 4.4.2 Fast Flowing Rivers:

In any fast flowing water stream, various currents and eddies will be formed by obstructions in or under the water, thus changing the direction and speed of the flow. These eddies can have adverse effects on a rescuer and must be considered in the dynamic risk assessment. Remember that waves on the sea tend to move and the water stays still but in a river the waves remains in one place and the water moves. Therefore, eddies and currents can often be detected by the presence of such static waves.

#### 4.4.3 Weirs/Stoppers

The hazards presented by these currents to a person or object in the water is that they will be drawn upstream towards the face of the weir by the tow back then forced under the surface, to be flushed out further downstream. In many cases the person or object is again caught by the tow back and circulated in a similar manner, rapidly becoming disorientated.

#### 4.4.4 Weight of Water

The weight of water exerted against an object is directly related to the speed of the flow. A flow of 1m per second exerts a force of almost 8kgs on a person's legs (in depth of approximately 1 metre). If the flow doubles to 2m per second the force quadruples to 32kgs.

**N.B. Double the water speed = quadruple the weight.**

Thus standing in fast flowing water is extremely difficult.

#### 4.4.5 Strainers

The main hazard associated with a strainer is that a person or object may be drawn against it and trapped by the weight of water passing through it.

#### 4.4.6 Entrapment

A similar hazard to strainers exists where fast moving water flows against a solid object such as a bridge pillar. Although most objects will tend to be flushed around the obstacle, a swimmer or boat that hits side on can be pinned against it with considerable force.

Rocks or other debris below the water surface may cause entrapment hazards to personnel wading in the water. This is particularly hazardous in flowing water where the weight of water may also cause a loss of balance.

**4.5** The local environment could have a profound effect on the situation and the following hazards should be considered in the operational risk assessment: -

- Fast flowing rivers and changes in water flow due to tidal conditions, heavy rain, and flash flooding may increase the risk. Conditions could change quickly and dramatically due to these effects.
- In tidal situations, local tide times and heights should be ascertained either locally or through Fire Control at the earliest opportunity.
- Particularly in quarries and around the coastline the bottom may shelve away very quickly, changing the depth of water from a few millimetres to 30 metres or more.
- Underwater obstructions and hazards may be unseen and personnel must take the utmost care when moving through water. It is best to adopt a shuffle as when wearing BA and some form of additional support such as a ceiling hook may be of use.
- Darkness will significantly increase the risk to rescuers and additional lighting should be provided. Rescuers should carry a lit torch or light stick to enable the shore crew to see them. High visibility jackets may also be worn under lifejackets to increase visibility.

**4.6** All open water is potentially hazardous and the risk to the firefighter may be increased by the presence of contaminants. The sources of such contamination are numerous, but stem mainly from the following: -

- Outflows from slurry pits and sewage/water treatment plants.
- Run-off from agricultural and industrial sites.
- Leaking fuel from submerged vehicles.
- Blue green algae (usually in summer months).
- Water borne diseases.

## **5. HEALTH AND SAFETY**

### **5.1 Risk assessments**

See Appendix D.

### **5.2 Basic safety rules:**

There are a number of Health and Safety rules, which have been taken into account and form the basis of the recommendations for the provision of equipment, PPE and training, in the recommendations section.

The basic safety rules when attending WRI's are as follows:

- Dynamic Risk Assessment (DRA) and Crew safety is always the priority.
- Always wear a buoyancy aid / Lifejacket.
- Always wear appropriate headgear.
- Always deploy 'spotters'.
- Always deploy safety crews.
- Always keep it simple; water rescue should never be complicated.
- Always use the correct equipment.
- Never wade above the knees.
- Never put your feet down if swept away.
- When working in, on or near the water use only approved safety lines and harnesses.
- Never rely on the casualty to help in his/her own rescue.
- Always be pro-active - identify risks and where possible remove or reduce.

### **5.3 Contamination**

Biological contamination should be prevented wherever possible by taking the following actions: -

- Only enter the water if absolutely necessary.
- Wear immersion/dry suits.
- Personnel with open wounds should not enter the water.
- After the incident and before eating, drinking, or smoking, personnel should wash their hands using soap and water or detergent. Antiseptic wipes where available should also be used once hands have been washed.
- Cuts and grazes should be cleaned and covered.

The foregoing shows that any water can provide hazards to firefighters. These can all be avoided by avoiding contact with the water in the first place.

## 6. STANDARD OPERATIONAL PROCEDURES

### 6.1 Introduction:

The Fire Service will rely on Incident Commanders (IC's) applying the generic procedures encompassed within this report. The Incident Command System will support these generic procedures in line with the principles of dynamic risk assessment and the safe person concept.

Additionally, current, relevant and high quality information will be communicated to all operational personnel to provide them with the information enabling them to assess risks as far as is reasonably practicable.

Each situation involving the above activities will present its own difficulties and problems, therefore this document cannot be prescriptive. However, its contents should be viewed as the absolute minimum and IC's will determine the course of action according to the individual circumstances of the situation. *Nevertheless, the following items must be used as a framework of minimum safety.*

- In all instances the health, safety and welfare of Fire Service personnel is of paramount importance.
- IC's must ensure that all elements of the Incident Command System are followed.
- A risk assessment is to be undertaken prior to setting priorities and allocating tasks.
- Where the rescue of animals is involved, undue risk to human life should not be taken.
- Risk must be proportional to benefit at all times.

### 6.2 Attendance:

The emergency response provided by the Fire Service to water related incidents is essentially modular and can be illustrated as two progressive levels.

**Level 1** All WRI's that require an initial attendance of either a Supervisory Officer and/or crew with knowledge, basic training, limited PPE, safe working practices and procedures covered in this document.

**Level 2** Persons Reported - Level 1 supported by attendance of crews with enhanced training and equipment.

Water rescues may require a larger attendance than other Emergency Special Service Calls (SSC's), to provide both resources for the rescue and to provide a greater degree of safety to personnel.

**NB. IC's should consider the involvement of other services such as:**

- The Coastguard
- RNLI
- Police Underwater Search Unit
- Ambulance/Paramedics
- Royal Society for the Prevention of Cruelty to Animals (RSPCA)
- Environment Agency (EA)
- Emergency Planning Departments

However, it should be advised that an anticipated early emergency response may not be forthcoming and the relevant mobilising centre needs to advise the IC as a matter of urgency of any delays anticipated.

Drivers of all Fire Service vehicles must continually assess their ability to proceed to incidents taking into account information obtained relevant to local environmental conditions.

### **6.3 Helicopter operations**

The use of a search and rescue helicopter may reduce the risk to firefighters or remove the risk all together. Request for helicopter assistance will be channelled via Fire Control or Police officer on scene.

However, they carry their own inherent difficulties and the greatest care must be taken to protect rescuers, casualties and the public if a helicopter is to be used.

The following points should therefore be taken into account when requesting helicopter assistance:

#### **6.3.1 Communications**

Unless the Coastguard are in attendance it is unlikely that radio contact with the aircraft is possible. However, there is provision to speak to the Police helicopter and other air support using Brigade UHF hand held radio on channel 6, 69 or 70. The additional facility of VHF marine wave band hand held radios, used by licenced operators on channel 16, will give direct communication to search and rescue helicopter.

#### **6.3.2 Rota down-wash.**

Survey the area for loose materials and structures i.e. loose roof sheeting, sand, grit, etc. Also small items of equipment and PPE must be secured with particular attention paid to fire helmet.

#### **6.3.3 Approaching The Aircraft**

Never approach the aircraft when it is on the ground unless directed to do so by the aircrew, then follow their instructions precisely and try to remain in sight of the pilot when approaching. Do not approach from the rear, or side.

## 6.4 Actions on Arrival

The Dynamic Risk Assessment (DRA) process must be carried out on arrival.

The IC at a WRI may be faced with many difficult decisions and the greatest difficulty may be in stopping ill conceived and reckless rescue attempts being made (where a rescuer may become a victim).

Firm control must be exercised to ensure that unauthorised personnel do not venture into the water.

Any witnesses should be interviewed to ascertain what has happened, how many people are involved, where the casualty was last seen, etc.

Then a logical plan of action, taking into account all possible hazards, must be devised and initiated as quickly as possible, with the safety of personnel as the overriding factor.

**'When a person has disappeared below the surface of the water little can be achieved without specialist equipment or personnel. A clear distinction must be drawn as to when a rescue attempt becomes a body recovery'.**

## 6.5 Key Operational Considerations

This procedure is dependent on applying a prioritised approach to water rescues, Talk, Reach, Throw, Row are the preferred options, with entry to water as a very last resort.

Any attempt to rescue people or animals from waterways or associated hazards without the aid of specialist PPE and ancillary equipment should be carried out from the safety of firm ground (bank) or a structure (bridge or jetty).

Also:

- Only the minimum number of personnel should be used to undertake the task.
- Weather conditions and the duration of the incident may increase the requirement to rotate crews.
- At night, lighting of the scene is a priority.
- Always deploy upstream spotters above the location of the rescue operations, ideally on both sides of the river.
- Consider alternative measures to cater for a sudden change of situation i.e. prepare a secondary plan of action.

- Talk** It is important that contact is made with the casualty as quickly as possible. Keep talking to them, explain what you are going to do, what you want them to do and keep encouraging them.
- Reach** Either with your hand, or equipment from the appliance - e.g. ceiling hook, chimney rods, inflated fire hose then pull the casualty to firm ground. By lying down, you can increase the distance reached and also prevent yourself being pulled in.
- Throw** Use a purpose designed throw line and/or BA Guide Line. Throw one end out to the casualty. Do not weight the bag or the thrown end as it may injure the casualty.
- Row** If a boat is available then care must be taken to ensure that it does not capsize during the rescue. If it is powered, approach the casualty bow on and as soon as the contact is made switch off if safe to do so. It may then be better to row the boat to shore towing the casualty rather than try to pull the casualty aboard.

Remember never to stand up in a small boat and be aware of underwater obstructions particularly if using an inflatable boat.

- Go** *Only if all these fail, as a very last resort should suitably trained personnel enter the water to attempt to facilitate a rescue.*

*Where the Incident Commander is faced with a rescue situation (after considering all other courses of action) it is determined that the only possible approach is to commit personnel to the water to carry out a swimming rescue, the following control measures must be in place.*

**For 'still' water:**

- A Line Safety Officer should be appointed to control each rescue swimmers floating line.
- All personnel must be fully briefed regarding the rescue procedure and the role of each individual.
- Effective communications must be established between the IC the rescue swimmer and all safety personnel.

**For 'fast flowing' water:**

- The risks associated specifically with swimming rescues from flowing water are extremely high. Only personnel who have received enhanced training and are provided with the appropriate WRI PPE should attempt to perform this type of rescue.
- If personnel wade in rivers they should take care not to trap their feet in rocks or other debris, which may cause them to lose their balance, fall and be prevented from standing due to the force of the water flowing over them.  
As a general rule, never wade in water, which is above knee high.
- Anyone entering the water should be dressed in the appropriate PPE

- Firefighters provided with a life jacket and suitable communications should be deployed as spotters upstream to warn of any surface debris heading towards the rescue scene. The spotters must maintain regular communication with the IC. Their position should be such as to allow adequate time for rescuers to get clear of the rescue scene before the hazard arrives.
- Downstream, a boom of inflated fire hose (or similar), the boat, or personnel with throwing lines, should be positioned as a safety measure for any rescuer who may accidentally enter the water and be carried along with the flow. (When using throwing lines, the number of safety personnel should reflect the number of casualties and rescuers in the danger area, but in any case must be a minimum of two).

In situations where it has been determined that a swimming rescue will be attempted, buoyancy aids such as inflated fire hose or composite BA cylinder, etc., must be used to attempt to stabilise the casualty.

**A floating line and harness must be attached to the rescue swimmer.**

Raising a hand directly above the head is a recognised method for a rescue swimmer to indicate they are in difficulty and/or need removing from the water. All personnel must understand this signal and the action to take should it be given.

Entry into the water must be done slowly to minimise cold-water shock and reduce the chance of injury. The person entering the water should have a means of gauging the depth, e.g. ceiling hook.

**N.B. RAPID IMMERSION IN COLD WATER CAN COMPROMISE GOOD SWIMMERS ALMOST IMMEDIATELY.**

## **6.6 Safety of Personnel:**

This is paramount and IC's must ensure that:

- They do not enter the water unless absolutely necessary.
- Lifejackets and/or suitable buoyancy aids are worn by all firefighters working on or near the water, i.e., the "Risk Zone" (which, extends 3 metre horizontally from the water).
- Use appropriate PPE whenever possible to prevent cold shock, hypothermia, and contamination (even in summer water temperature can debilitate rescuers within a relatively short time).
- A Safety Officer is appointed as soon as practicably possible.
- The IC gives consideration to any personnel in or near the water using a safety line.
- All non-essential personnel must stay out of the risk area.
- Panic of a Casualty: - A drowning person when physically contacted by an in-water rescuer may attempt to climb on top of the rescuer; overcoming the rescuers buoyancy and submerging them both.
- Physical contact with a struggling casualty should be avoided whenever possible. Offer a buoyancy aid, line, etc. Tow casualty to safety.

**Fire fighting PPE affords mechanical and limited thermal protection and is slightly positively buoyant in water (mainly due to the air both inside the fabric/material and air pockets trapped between the material and wearer). Water entering fire boots will equalise and will not have a detrimental sinking effect.**

## **6.7 Water Emergency**

In the event of Fire Service personnel accidentally falling into water and finding themselves in difficulty a standard message has been formulated to provide immediate assistance at the incident. Similar to the BA and fireground emergencies the message can be sent by anyone from the incident by contacting Fire Service Control and stating "Water Emergency". On receipt of the message Fire Service Control will mobilise the following:

- Level 2 attendance.
- Search & Rescue (SAR) Helicopter.
- Duty Officer.
- Ambulance.
- Accident Investigation Officer.

This new procedure is designed to be in line with existing messages and procedures. It provides a short, simple method of obtaining urgent assistance when firefighters are in difficulty.

## **6.8 Breathing Apparatus (BA) for Sub Surface Rescue.**

**Fire Service BA must not be used under water.** Personnel are not trained and the equipment is not designed for such use. It may be considered necessary to fit a BA face mask (with air supply) to a casualty trapped below the surface of the water to afford extra time to rescuers. However, firefighters must be able to achieve this without wearing BA themselves.

**All activities of this type must be strictly controlled.**

## **6.9 Lines:**

Approved rescue lines and harnesses should be employed whenever possible and always in fast flowing rivers.

Where the IC commits a crew member as the rescuer, the line should be attached to a detachable rescue harness and not to the lifejacket. Safety lines must be attended at all times by a Line Safety Team (LST) and not attached to a shore side anchor point.

The LST will be supervised by the Line Safety Officer (LSO), whose responsibilities are:

- The Rescue swimmer safety:
- Be positioned to have overall control of the rescue swimmers line.
- To maintain visual and verbal contact with the rescue swimmer.
- Before the rescue swimmer enters the water ensure sufficient personnel are available to retrieve the rescue swimmer.
- Initiate emergency action if necessary.

The only task allocated to the LSO (whilst the rescue swimmer is in the water) will be to ensure safety of the swimmer and control of the safety line.

Although it is not essential for the LSO to have direct contact with the safety line they must be in sole control of any personnel holding it.

Verbal and visual contact must be maintained at all times between the LSO and the rescue swimmer. If either of these break down at any point during the rescue attempt, the LSO must initiate emergency action by withdrawing the rescue swimmer (if necessary by physically removing).

Members of the LST should position themselves upstream of the rescuer on one of the riverbanks. If the rescuer then loses his or her footing the current will swing the rescuer to the riverbank and relative safety.

Under no circumstances should the LST work in parallel to the current as this could cause the rescuer to be held into the current and be drowned in the flow.

Water will flow deeper and faster on the outside of a bend and slower and shallower on the inside of the bend. This can be used to the advantage of the rescuer in getting near to the casualty but by remaining in shallow water.

#### **6.10 Risk Zone:**

Most accidents result in drowning after a casualty slips, trips, or falls from the bank from within 3 metres horizontally from the water's edge, ie., the 'risk zone'. To reduce the risk and provide a safer working area, all personnel required to work within the risk zone must be dressed in the minimum standard of Personal Protective Equipment consisting of:

- Full Firefighting Kit
- Life Jacket
- For 'lone' workers, e.g., pump operators who are working within the 'risk zone' a 'Restricting Line' should be provided (this should be anchored and restricted to a length that prevents falling into water).

**N.B. The fire helmet should be removed unless there is a possibility of falling debris, in which case the chin strap should be unfastened (this is to prevent a neck injury in the event of accidental immersion).**

A safe route should be identified and marked from the nearest access point to the scene of operations (Traffic tape may be used to indicate this route).

Any significant hazard that may cause injury i.e. trip hazards, should be clearly marked and identified to all personnel working in the vicinity.

#### **6.11 Contact with the casualty**

It is important to make contact with the casualty as quickly as possible. Keep talking to them, explain what you are going to do, what you want them to do and keep encouraging them.

*Where possible it should be the aim of the rescuer to stay dry and not enter the water. Therefore, the talk, reach, throw principals already described should be adhered to.*

Be aware of the local environment (See Section 4).

Never let the casualty make direct physical contact with you.

If the casualty cannot use their arms, turn them on to their back and allow the shore team to tow you back using your safety line.

Offer the casualty a suitable flotation device and allow them to hold on to it as a buoyancy aid.

If the casualty is not conscious the airway must be maintained and where a neck injury is suspected then the head, neck and back must be supported throughout the rescue.

Resuscitation should be commenced as soon as practically possible.

## **6.12 Standard Operational Procedures - Summary**

- Start dynamic risk assessment on receipt of call.
- Use preplanning information/local knowledge.
- Consider equipment requirements.
- Consider personnel requirements.
- Consider access/egress.
- Gather information.
- Review dynamic assessment.
- Formulate plan.
- Initiate plan.
- Establish risk.
- Consider specialist assistance.
- Prepare secondary plan of action.
- Post incident consideration

## 7. SUB SURFACE RESCUES/RECOVERY

The risks associated with sub surface rescue attempts are considered to be excessive. It is not possible to reduce this risk to tolerable levels for firefighters. Because of this firefighters MUST NOT attempt sub surface rescues. However, there are certain situations, which may be considered as sub surface but because of their type, or location adequate control measures can be put into place to reduce the risk to within tolerable levels. Examples of this would be:

- **A person is in difficulty on the bottom of a deep swimming pool because hair or a finger is trapped in a grate.**  
Although rescue personnel may have to "duck dive" below the surface of the water to effect the rescue, safety crews can control the safety of the rescuer. The rescuer can be seen from the side of the water. The water environment is also considered to have few uncontrollable hazards and therefore this type of activity would be considered to be acceptable.
- **In open water where a casualty is in difficulty below the surface of the water.**  
If the rescuer is able to stand upright in the water with the water at no more than shoulder level and is only required to place the head and shoulders beneath the surface of the water to attempt rescue, this will also be regarded as an acceptable practice. Simply by standing upright at any time in the water, the rescuer is again in a tolerable risk situation.
- **Where a rescuer is in open water attempting to recover a casualty who has just gone beneath the surface of the water.**  
If the casualty is located touching part of the rescuers body, with rescuers head above water, an attempt can be made to recover the casualty provided the rescuer is able to do so without submerging totally below the surface of the water and the activity is rigidly controlled.
- **Where a vehicle has entered the water and submerged below the surface with occupants known to be trapped inside.**  
If firefighters are able to work from a horizontal surface of the vehicle (i.e. roof, bonnet or boot) to affect the rescue without totally submerging below the surface of the water this would be regarded as an acceptable practice provided correct levels of PPE and rigid control measures are in force.

**NB: Sub surface rescues in open water MUST ONLY be attempted when firefighters actually witness the casualty disappearing below the surface of the water. This activity must only be continued up to a maximum period of 10 minutes after the casualty is known to have disappeared below the surface.**

## 8. ICE RESCUES

- 8.1** Incidents involving persons falling through ice are rare, however, research indicates that where persons do fall through ice, then the risk of loss of life is extremely high. Additionally, the risk to the would-be rescuer is equally high, if they are not properly trained or equipped.

Total cold-water immersion, or part immersion will, after an extremely short period of time, (about 4 minutes) render the victim into an almost helpless state. They will probably only have sufficient strength and co-ordination to cling to the broken, floating ice.

The problems and dangers faced by attending fire crews are:

- These incidents occur usually in the more remote areas and often provide difficult access to the rescuer.
- The Level 1 attendance will have limited equipment available to assist them to affect a safe rescue.
- Walking on the ice might easily result in the rescuer requiring to be rescued should the ice continue to break.
- People who have fallen though ice tend to be surrounded by broken ice that prevents the rescuer approaching directly up to them

## **8.2 Procedures for ice rescues**

All ice rescues will automatically receive a Level 2 response, the inflatable rescue path (IRP) should be considered as the primary tool for this type of incident. Both ambulance and police controls shall be informed.

The principles of Talk, Reach, Throw, Row and Go apply, urgent consideration must be given to the use of throw lines and inflated hose to assist in stabilising the casualty.

The IC of the first attending appliance shall confirm with control the most suitable access route for supporting rescue vehicles.

The casualty may not be able to affect their own rescue; therefore, a Level 2 trained firefighter will have to make their way out to the casualty utilising the IRP.

The rescuer should ideally be a lighter member of the crew they shall always be a swimmer and confident in water. A safety line shall be attached to the rescuer.

## 9. MUD/SAND/CLAY RESCUES

9.1 People or animals may find themselves trapped in or on these unstable surfaces either when the surface is so soft that they simply sink to a point where movement becomes impossible, or they break through a layer of a relatively firm surface into a soft solution.

**IN ANY EVENT, THE SURFACE PRESENTED TO A RESCUE TEAM WILL BE BOTH SOFT AND TREACHEROUS.**

- Time spent on reconnaissance is never wasted. Consider the most effective route to the casualty. The route the casualty took might not be the best route for access and recovery. Poor conditions or difficult terrain may require additional personnel or equipment.
- All rescue activities should be controlled and coordinated by the IC from a safe working area on firm ground. A minimum number of personnel required to complete the task should be committed to the immediate area around the casualty. Access to a casualty may be difficult due to the soft surface of the mud, making walking impossible, the only effective method is to spread the weight as widely as possible across the surface.
- IRP's, ladders, inflated fire hose, salvage sheets and boarding may all be useful tools for providing a safe working platform around the casualty. The boat may also be of value if the mud is adjacent to water.
- Initial activities should be directed to stabilisation of the casualty using lines and safe preparation for extrication. A safety line should be attached to all personnel working in mud. Each line should be under the control of an individual LSO.
- A BA set should be provided for the benefit of the casualty and account needs to be taken of any local tidal conditions.
- The area should be well lit. Artificial lighting must be provided to illuminate access routes and work areas where natural light is poor.
- An equipment recovery area should be set up on safe ground as part of the incident control area. Items of equipment should be immediately returned to the recovery area after use.

### 9.2 Rescue

There are only two principal rescue methods available - water injection or digging out.

#### 9.2.1 Water Injection

An IRP should be laid out on the surface adjacent to the casualty to provide a stable working platform for the rescuers.

- A safety line and/or suitable strops should be passed around the casualty (under the arms where possible) to give support and prevent further sinking.
- A mud lance is placed down the sides of the casualty and around the body in a circular motion, this loosens the clinging mud/sand and breaks the suction effect.
- As the lance is being used, other members, working from the IRP, should attempt to pull the casualty clear to firm ground.

### 9.2.2 Digging Out

“Digging” is self-explanatory. However, considerable care should be exercised when working close to the casualty. It is likely that the casualty will be partially numbed by the mud and may not feel any contact with the spade. Serious injury may be caused that would not become apparent until the condition of the casualty abruptly worsens, or they are evacuated and cleaned up.

### 9.3 Animal Rescues

Determine the condition of the animal and urgency of action, ie., need for a vet or RSPCA.

The majority of incidents will involve farm animals, i.e., the release of a cow that has fallen into a slurry pit or a horse that has stumbled into a river. This type of rescue is potentially hazardous and the IC on arrival at the scene must put strict control measures in place.

It must be considered that in many instances animals manage to get to safety unaided after falling into water. Provided that the lives of firefighters are not unduly risked, attempts should always be made to rescue animals.

## 10. VEHICLES IN THE WATER

This information is designed to assist the Incident Commander to make an informed judgement on the appropriate actions to take and control measures which may be necessary at incidents where vehicles are positioned in, on or near water.

It is not a definitive guide.

It may also be necessary to use additional skills and techniques to deal with the incident, such as those related to Road Traffic Accidents on a roadway.

Incidents involving vehicles submerged in water may vary quite dramatically because of: -

- The type of vehicle - Car, LGV, Articulated, Laden/Unladen.
- The type of water hazard - Still, Flowing, Temperature, Depth, Flood condition.

### 10.1 Vehicle Behaviour

Initially, (even with all windows open) the average car will float for at least 45 seconds. The electrical system (lights, wipers, radio and power window) will usually still work even when a vehicle is full of water.

- Once a vehicle is full of water a number of factors will determine what happens next, such as, the nature of the riverbed, the surface current, weight and distribution of passenger or load.
- In flowing water if the vehicle is side on to the current on a solid riverbed a roll is almost inevitable. Even in slow currents a vehicle will be rolled a considerable distance if unimpeded.
- On a soft bottom, (mud, sand or small rocks) if the vehicle lands on its wheels, each tyre will create an eddy, scooping mud, sand, etc. out, so that the vehicle will settle onto its chassis.
- If a vehicle comes to rest more or less straight in line with the current, water pressure will sink the upstream end of the vehicle deeper than the downstream end.
- An eddy will be created on the downstream side of the vehicle providing rescue crews with a calm area of water to work from. However, strict control must be exercised over crews working in this area, as there is the potential for the vehicle to roll in the direction of rescuers.
- Anchoring a line to each side of it may reduce the risk of the vehicle rolling.
- If the vehicle is wedged against an obstacle the area of eddy is usually a safer area for crews to work from. Consideration should be given to the fact that the object/condition causing the vehicle to be wedged may move or change, thus allowing the vehicle to move whilst rescue operations are in progress.

## **10.2 Associated Hazards**

- Slippery vehicle surface.
- Sudden uncontrollable movement of the vehicle.
- Entrapment of rescuers inside vehicle.
- Snags, sharp edges.
- Once the body panels of a vehicle are wet, they may be extremely slippery to personnel attempting to stand or place equipment on.
- Even in still water, movement of the vehicle load (passengers, etc.) or access onto the vehicle by rescuers may cause the vehicle to move.
- In flowing water use of a window punch or axe to break glass, enabling access, can cause drastic decompression. Do not use such tools to break a downstream window as this may cause a loss of internal pressure resulting in all the glass breaking and the possibility of occupants and rescuers being flushed downstream.

Where the vehicle is totally submerged below the surface of the water but rescue personnel are able to stand either on the vehicle or equipment bridged between the bank and the vehicle, this will not be regarded as sub surface activities.

Extreme care must be taken by anyone entering a submerged or partially submerged vehicle as the weight of water or vehicle fittings may cause entrapment inside the vehicle.

The vehicle may have sustained impact damage prior to, or as a result of, entry into the water. Glass or damage to body panels may have created numerous sharp hazards.

## **10.3 Rescue Considerations**

Effective and continuous communications will play an essential part in the success of the actions taken. Firefighters must be fully briefed on the tasks they are to perform, including the aims and any control measure, which will be in place. Casualties need to be reassured and instructed on what to do to assist with any rescue attempt, in addition to being advised of the activities being undertaken by firefighters to rescue them.

When the vehicle is close enough to the bank side, it may be possible to wade through the water or to bridge ladders or use the Inflatable Rescue Path (IRP) to gain access to, or onto it.

If the occupants of the vehicle have managed to self-rescue and position themselves on top of the vehicle it may be possible to use rescue boards, inflated fire hose, throwing lines or a bridged ladder to stabilise or remove them.

Where the incident involves a vehicle submerged below the surface of the water and it is determined from a reliable source (Police or witness) that the vehicle has been in the water for a considerable time (in excess of 15 minutes), the Incident Commander should await the arrival of the specialist equipment to examine the vehicle and should not commit personnel prior to its arrival.

## 11. POST INCIDENT CONSIDERATIONS

### 11.1 Post Immersion Care:

Even in the most minor cases the casualty should not be allowed to walk out with the rescue team. Sudden release and attempts to stand may induce post rescue collapse with possible fatal results. For this reason the casualty should be evacuated on the stretcher in as near a horizontal position as possible.

The Institute of Naval Medicine, Portsmouth, has provided the following information.

Survival times of people on the surface of the water, maximum water temperature of 15°C (59°F) can be categorised as follows:

Effect	Maximum Time Period	Outcome
Cold Water Reflex	2-3 minutes	Drowning
Swimming Fatigue	2-15 minutes	Drowning
Hypothermia	15-30 minutes	Death

**N.B. Wearing a life jacket will not stop the above effects.**

Cold-water immersion cools the body 27 times faster than static dry air temperature; this is multiplied by a further factor of 10 when swimming.

In cold water a good, strong swimmer will quickly be reduced to a non-swimmer because of the effects of immersion hypothermia.

Summer inland water temperatures are known to average between 10° and 15°C.

All personnel who have been immersed in cold water should be taken to a warm environment as soon as possible.

Fire Service personnel should be removed from operational duties until they are thoroughly warmed, have dry clothing and their welfare has been suitably addressed.

Beware of hypothermia. Symptoms are shivering, slurred speech, lack of co-ordination and cold to the touch. If there is any doubt, seek medical attention. Remember, shivering ceases in the more advanced stages of hypothermia and so the lack of such shivering in isolation cannot be relied upon as to the welfare of the individual.

Non Fire Service personnel, who are either casualties or rescuers, should be advised to seek medical advice. Any person who has been revived or was near to drowning should be conveyed to hospital. Secondary drowning can take place up to 72 hours later.

### 11.2 Further considerations

- Decontamination of personnel/personal hygiene.
- Equipment retrieval.
- Equipment cleaning and testing on scene.
- Cleaning and testing of equipment at station.
- Remedial measures - reinstatement of fences, etc.

Personal hygiene is important where crews have been in contact with open water, mud or similar. All personnel must wash and shower as soon as is practically possible after the incident and all equipment should be cleaned, tested and serviced in accordance with the periodic maintenance schedule.

Critical Incident Defusing should be considered for personnel involved.

A de-brief of the incident should be undertaken to determine if there are any significant findings in relation to:

- Personal injury or trauma.
- Procedures.
- Equipment.
- Training.
- Inter Service liaison.
- Risk Assessment and safety systems.

### **11.3 Biological Contamination**

The diseases most likely to be encountered are Hepatitis A, Gastro-enteritis and Weil's disease caused by a variety of bacteria and virus.

#### **Weil's Disease**

This disease is carried in the urine of rats and other small rodents and is particularly prevalent in canals and rivers.

#### **What can you do to protect yourself?**

- Cover all cuts and broken skin with waterproof plasters before and during work.
- Wear protective clothing.
- Wash hands after handling any animal or any contaminated clothing or other materials and always wash before eating, drinking or smoking.
- Avoid contact with stagnant or slow moving water.
- Shower after becoming immersed in open water.
- Use footwear to avoid cutting feet.

#### **What are the symptoms?**

The first signs of Weils's Disease is a flu like illness within about 3-4 days of the infection. After 6-7 days a severe headache and conjunctivitis with the possibility of meningitis follows. At 8-10 days, kidney failure and the beginnings of jaundice will become obvious. If no treatment is given then severe kidney failure and the spreading of the organism to other major organs such as liver, pancreas and intestines can occur resulting in heart failure.

#### **What you must do**

If any of the symptoms develop - inform your General Practitioner of the symptoms and that you are at risk from Leptospirosis.

## 12. EQUIPMENT - REQUIREMENTS

### 12.1 Equipment

The following is the **minimum requirement** considered viable to maintain the safe person concept for firefighters dealing with WRI's

#### **Pumping Appliances – Level 1 Attendance**

- 4 x Life Jackets
- 4 x Thermal Under Suit
- 2 x Dry Suit
- 2 x Throw Lines
- 2 x Harnesses & Safety Lines
- Loud Hailer
- Hose Inflation Kit
- Snap Light

#### **Special Units – Level 2 Attendance**

- 5 x Buoyancy Aids
- 5 x Life Jackets
- 5 x Dry Suits
- 5 x Throw Lines
- 5 x Helmets
- 5 x Safety Knife
- 2 x Inflatable Rescue Paths (IRP's)
- Thermal Under Suit (Personal Issue)
- Stretcher (and/or rescue board)
- Mud Lance
- Rescue Pack
- Jason's Cradle
- Boat

### 12.2 Description

#### 12.2.1 Life Jacket

A life jacket is designed to ensure a wearer is kept buoyant and face up therefore maintaining an airway if unconscious. This is for crew safety and not for entering the water for rescue purposes.

#### 12.2.2 Buoyancy Aid

Designed to assist competent swimmers from a Level 2 trained crew in rescue situations. The aid gives the wearer maximum movement and comfort and should be fitted with a quick release mechanism. This does not turn the wearer onto the back if unconscious.

#### 12.2.3 Dry Suit

Dry suits provide environmental protection and improved thermal protection in conjunction with the thermal under suit.

#### 12.2.4 Thermal Under Suit

A one piece boiler suit, fleece lined for thermal protection against hypothermia.

#### 12.2.5 Throw Lines

A modern lightweight, conspicuous floating line provided as a safety/rescue facility.

#### 12.2.6 Loud Hailer

A portable voice amplification device for aiding communication in noisy conditions.

#### 12.2.7 Harnesses & Lines – Level 1

For the maintenance of physical contact and/or restricting lines for personnel.

#### 12.2.8 Rescue Pack – Level 2

An integrated system of lines, harnesses and associated equipment for various rescue techniques for WRI's.

#### 12.2.9 Hose Inflation Kit

Simple manufactured hose coupling adaptors providing the facility for inflating multiple lengths of delivery hose to be effective as a floatation aid or even a mini boom on water, ice, mud or sand.

#### 12..2.10 Snap Lights

A single use pencil sized, chemical fluorescent light for identifying personnel in dark conditions.

#### 12.2.11 Helmet

Suitable protective headwear for in and around water hazards where fire helmets are unsuitable.

#### 12.2.12 Boat

Boats must be provided to meet the needs of individual Brigades based on a risk assessment of the water hazards within that Brigade's area. Boats provide the most suitable safety measures for crews working in or near water.

#### 12.2.13 Inflatable Rescue Path (IRP)

Nationally accepted as the easiest and safest means of effecting rescues from ice, mud and sand. They also provide an excellent stable platform for working on inland water. They provide:-

- Rapid inflation, deployment and mobility.
- Rapid extension and 'link up'.
- Compatible with existing cylinders/regulators.
- Has anti slip net, inflation relief valves, grab lines, belay lines, link up connections and carrying valise.
- Folds down to 1m x 0.5m.

12.2.14 Mud Lance

Enables water at high pressure to be injected around the casualty trapped in impacted sand, mud, etc., thus disturbing the free surface and allowing the casualty to be released.

12.2.15 'Jason's Cradle'

A device for the horizontal lifting of a casualty from water onto a boat or an IRP.

12.2.16 Safety Knife

A floating knife provided for quick self-release in emergency situations.

12.2.17 Stretcher

Light weight construction, capable of supporting a casualty when on unstable services.

## 13. TRAINING - POLICY AND PLANNING

The training implications of introducing a water rescue capability are undoubtedly onerous. It is essential that every Wholetime and Retained firefighter receives training commensurate with activities expected of them on arrival at a water incident, and therefore different levels of training and subsequent expertise will be necessary.

There are now several dedicated water rescue training providers in the UK. Courses are tailored to suit the Fire Service's needs. They form the basis of training for many emergency services rescue teams. This leads to an internationally recognised certificate of competence.

The Rescue Techniques taught are very suitable and adaptable to still water, fast flowing water, flooding, mud and ice rescue. Whilst these courses are regarded as specialist they have a great deal in common with other rescue techniques that Fire Service personnel are trained in.

There are four areas of training appropriate and are identified as follows:

### 13.1 Safe Working Near Water

Designed for all uniformed personnel (Level 1 attendance) who may be called upon to respond to WRI's. Through a mixture of classroom and river based input the following topics are covered:

- Hazards, features and Dynamic Risk Assessment.
- Hydrology.
- PPE.
- Personal safety and rescue.
- Use of throw lines.
- Basic accident procedures.
- Adaptation of standard Fire Service equipment.
- Scene assessment and protection.
- Land Based Rescues.

This stage can be delivered on station consisting of theory and practical over two 2 hour sessions by suitably qualified watch based or Training Department instructors (Water Rescue Instructor).

### 13.2 Officer Training

Suitable training appropriate for the flexible duty officers or those with a supervisory role.

The topics will include:

- Safe working near water (Level 1 attendance) training.
- Incident assessment and command.

- Flood management.
- Appreciation of rescue techniques.

*(Personnel qualified to Water Rescue Instructor can deliver this training.)*

### **13.3 Enhanced Water Rescue Techniques**

Designed for specialist crews (Level 2 attendance) who may be called upon to perform rescues using specialist equipment.

Topics covered will include enhancement of:

- Hydrology.
- Hazard identification and risk assessment.
- Swimming in moving water.
- Basic boat handling skills.
- Contact and in-water rescues.
- Crossing techniques.
- Introduction to technical rescue equipment.
- Introduction to rope systems.
- Medical considerations.
- Scene management and incident command.

### **13.4 Instructor Training**

This course can be undertaken at one of the many registered centres around the UK who have the appropriately qualified staff.

It follows that a number of identified personnel would need to undertake the Water Rescue Instructor course as a starting point. They would then deliver the 'Safe Working Near Water (Level 1 attendance)' training to all stations on a rolling programme and 'Enhanced Water Training Techniques (Level 2 attendance)' to the specialist stations.

### **13.5 Training Costings (approximate - January 2001)**

An instructor course costs £2000 based on details provided by the Outreach Organisation, who are one of a number of training providers. Additional on costs will include in-house training and resources.

## **14. RECOMMENDATIONS**

To ensure the Health Safety & Welfare of firefighters of those Brigades in the South West when dealing with Water Related Incidents (WRI's), and giving consideration to the safe person concept, the following recommendations are submitted for consideration:

### **Recommendation 1 - Attendance at WRI's**

The Fire Services in the South West should continue to respond to WRI's. This response should be based on the two level approach as detailed in this report.

- Level One:- First attending crews who have received basic safe working near water training.
- Level Two:- Supporting crews with enhanced training and specialist equipment.

### **Recommendation 2 - Existing Practices**

The practice of improvising existing Fire Service equipment for WRI's should be risk assessed and the hazards removed by the provision of appropriate and purpose designed equipment as detailed in this report.

### **Recommendation 3 - Operational Procedures**

The Fire Service in the South West must immediately implement the operational procedures identified in the report as the minimum standard required to safeguard personnel involved in WRI's. The concept of Talk, Reach, Throw, Row and Go must be the foundation of an operational approach to WRI's.

Any fundamental change of the operational procedures must be referred back to the CACFOA Operations Working Party for their consideration.

### **Recommendation 4 - Equipment and Appliances**

The issues surrounding the provision of equipment and appliances to deal with WRI's is a complex and costly one. The equipment identified within this report should be considered as the minimum standard required to safeguard personnel involved in WRI's.

In line with the two level approach the appropriate equipment and appliances must be sourced for both first attendance crews and supporting crews.

### **Recommendation 5 - Training**

All personnel who may be exposed to the hazards associated with WRI's must receive water safety awareness training commensurate with the information detailed in this report.

The Fire Services in the South West Region must implement the four areas of training identified in this report.

#### **Safe Working Near Water**

Designed for all uniformed personnel (Level 1 attendance) who may be called upon to respond to WRI's.

### **Officer Training**

Suitable training appropriate for flexible duty officers or those with a supervisory role.

### **Enhanced Water Rescue Techniques**

Designed for specialist crews (Level 2 attendance) who may be called upon to perform rescues using specialist equipment.

### **Instructor Training**

To deliver the 'Safe Working Near Water' (Level 1 attendance) training to all stations on a rolling programme and 'Enhanced Water Training Techniques' (Level 2 attendance) to the specialist stations.

This recommendation needs to be further developed by the CACFOA South West Personnel and Training Group.

### **Recommendation 6 - Health & Safety**

The Fire Services in the South West must have in place a procedure for post incident health monitoring for those personnel who have been involved in WRI's. Those procedures detailed within the CACFOA South West Region Hazmat Procedural Document should be considered.

### **Recommendation 7 – Liaison With Other Agencies**

CACFOA South West must be proactive in pre-planning and implementation of joint agency operational procedures for WRI's.

The recent South West regional approach in implementing the Incident Command System (ICS) identifies links with other agencies in an attempt to maintain the safety of non-fire service personnel at incidents. This inter agency approach should be continued for WRI's. For example, some of the other agencies would include the following:

- Search and Rescue organisations.
- Emergency Planning Departments.
- Other Emergency Services.
- Environment Agency, etc.

### **Recommendation 8 – Future Development**

A water safety strategy must not be developed in isolation within individual Brigades. In line with Best Value initiatives, it is recommended that CACFOA South West further develops a joint strategy for dealing with WRI's. The requirements of the following must dovetail into the common goals that are identified and associated within this report.

- Procurement.
- Specialist working groups.
- Rope Rescue.
- Training.
- Hazmat.
- Communications.
- Sharing of information.

Policy and procedure must be reviewed on a three yearly basis as identified in Appendix B.

## **15. SUMMARY**

From the research undertaken it is clear that a surprisingly high proportion of UK Fire Services have been pro-active in enhancing their water rescue capabilities. Many now have some basic provision on front line appliances supported by specialist crews with a greater level of training and equipment, e.g., inflatable boats and rescue paths.

The recommendations contained within this report are by no means exhaustive and further joint research may need to be undertaken along with further analysis of the extent to which the CACFOA South West Region needs to extend the provisions detailed in this report. However, it does address the issues that will need to be immediately overcome.

## UK FIRE BRIGADE SURVEY

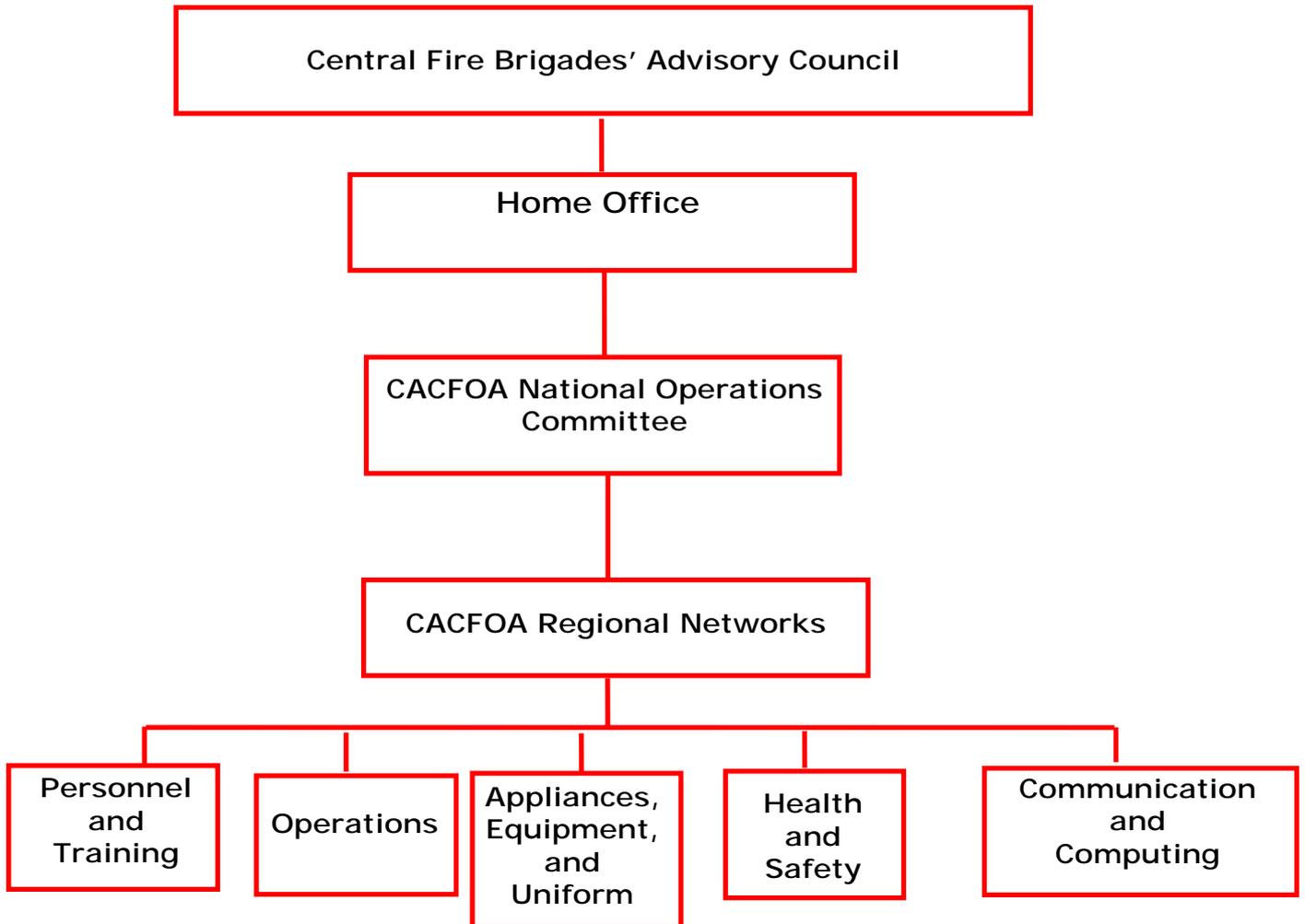
BRIGADE	BOATS			IRP's
	INFLATABLES	MOTORS	RIB	
AVON	2	✓		1
BEDFORDSHIRE	2	✓		1
BERKSHIRE			1	
BUCKINGHAMSHIRE			1	2
CAMBRIDGESHIRE	4	✓		2
CESHIRE	2			
CUMBRIA				1
CORNWALL	0	0	1	0
DEVON	0	0	0	5
DORSET	0	0	0	0
ESSEX	4	✓		10
GLOUCESTERSHIRE	1	✓	2	0
HAMPSHIRE				3
HEREFORD & WORCESTER	3	✓	1	
HERTFORDSHIRE	1	✓		2
KENT	2	✓		2
LANCASHIRE	1			1
LEICESTERSHIRE				3
GMCFS	2	✓		5
MERSEYSIDE	2	✓		6
NORFOLK	3	✓		
NORTHANTS				2
OXFORDSHIRE	1	✓		
SHROPSHIRE	1	✓		2
SOMERSET	1	✓	0	3
STAFFORDSHIRE	3			
SUFFOLK			2	
SURREY	1			
SUSSEX (EAST)				2
SUSSEX (WEST)			2	
TYNE & WEAR			1	
WARWICKSHIRE	1	✓		
WEST MIDLANDS	1	✓		1
WILTSHIRE	1*	✓*	0	3
YORKSHIRE (NORTH)			1	1
YORKSHIRE (WEST)				4
CLWYD				2
MID WALES	2	✓	1	
SOUTH WALES			1	3
STRATHCLYDE	6	✓		7

\* Cooper Avon Industrial Fire Brigade

## MAINTAINING CURRENCY OF THE DOCUMENT

This document will need to be reviewed on a three yearly basis and in the light of experience and development.

The following network arrangement can provide a pathway and forum to enable the experiences of WRI's to reach relevant groups and stimulate revisions to this guidance.



Where changes to this guidance document are deemed necessary the above structure will be used to bring recommendations to the attention of CACFOA (South West) Operations Committee. Where it is considered expedient an issue can be referred directly to the Chair of the committee

**EQUIPMENT COSTS (Current)**

These costs are based on information available at time of completion of this report.

<b>Pumping Appliance (Level 1)</b>	<b>Unit Cost £</b>	<b>No. Required</b>	<b>Total £</b>
Life Jacket	£50	4	£200
20m Throw Lines	£20	2	£40
Hose Inflation Kit	£150	1	£150
Dry Suits	£350	2	£700
Thermal Undergarment	£35	4	£140
Loud Hailer	£50	1	£50
Snap Light	-	12	£6
Harness	£100	2	£200
Lines (50m)	£60	2	£120
<b>Total</b>			<b>£1606</b>

<b>Special Units (Level 2)</b>	<b>Unit Cost £</b>	<b>No. Required</b>	<b>Total £</b>
5m Inflatable Rescue Path	£1250	2	£2500
Buoyancy Aid (c/w harness)	£80	5	£400
Life Jacket	£50	5	£250
Rescue Pack	£600	1	£600
Stretcher (or similar)	£200	1	£200
Dry Suit	£350	5	£1750
Thermal Undergarment	£35	Personal Issue	
20m Throw Line	£20	5	£100
Jason's Cradle	£450	1	£450
Mud Lance	£150	1	£150
Safety Knife	£10	5	£50
Helmet	£20	5	£100
Inflatable Boat	-	1	-
<b>Total</b>			<b>&gt;£6550</b>

## **RISK ASSESSMENTS**

Addendum to follow with proposed South West Generic Risk Assessments

## GLOSSARY

<b>Body Recovery:</b>	When a casualty is seen lying motionless on the surface of the water and no information is available as to the time of water entry or when a casualty has been submerged beneath the surface of the water for more than 15 minutes.						
<b>Buoyancy Aid:</b>	An item that increases buoyancy in water.						
	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Buoyancy:-</td> <td>Floating ability</td> </tr> <tr> <td>Positive:-</td> <td>Will float on water</td> </tr> <tr> <td>Negative:-</td> <td>Will sink in water</td> </tr> </table>	Buoyancy:-	Floating ability	Positive:-	Will float on water	Negative:-	Will sink in water
Buoyancy:-	Floating ability						
Positive:-	Will float on water						
Negative:-	Will sink in water						
<b>Eddies:</b>	Water flowing in the opposite direction to the main flow, occurring alongside or behind objects.						
<b>Flooding:</b>	Where a river and/or drainage system is not able to cope with the excess of water causing urban or rural damage and threatening the lives of the public or animals.						
<b>Helical Flow:</b>	The current, which draws water away from the banks of the river with a circular motion.						
<b>IRP:</b>	Inflatable Rescue Path.						
<b>Laminar Flow:</b>	Found mainly in the centre of the river and is the motion by which water moves forward.						
<b>Life Jacket:</b>	Floatation device specifically designed to be worn by a person to add buoyancy and maintain the airway clear of the water.						
<b>Line Safety Officer</b>	Supervises Line Safety Team, reports directly to IC.						
<b>Line Safety Team:</b>	Dedicated team working directly to the Line Safety Officer.						
<b>Rescue:</b>	The process by which a person is removed from the water and brought to a place of safety.						
<b>Rescue Board:</b>	Purpose designed board with inherent buoyancy capable of supporting casualty and rescuer.						
<b>Risk Zone:</b>	Wherever possible this should extend to 3m horizontally from the water's edge.						
<b>Stopper:</b>	Where water flowing over an object causes a vertical reversal of flow, as with a weir.						

<b>Strainers:</b>	Any perforate object placed or trapped in flowing water such as a tree or metal grating which allows the water to flow through it, is referred to as a strainer.
<b>Sub surface:</b>	Below water surface.
<b>Tow Back:</b>	Water from downstream moves back against the flow towards the face of the weir.
<b>Water Emergency:</b>	A short simple method of obtaining urgent assistance when Fire Service personnel are in difficulty.
<b>Weirs:</b>	A pre-constructed dam across a river over which water falls to a lower level. As water passes over the edge of the weir, dropping from a high level to a lower one, it forces a space in the surface of the water at the base of the weir. Water from downstream moves back against the flow to fill this space.
<b>Whitewater:</b>	Churning water that contains up to 40-60% of air. Too thin to swim in, too thick to breath in.
<b>WRI's:</b>	Water Related Incidents

## BIBLIOGRAPHY

Author/ Publisher	Title	Reference
HMSO	Health and Safety in the Fire Service	FSC 5/1995
HMSO	The Principles of Operational Training	FSC 5/1996
HMSO	Standards of Occupational Competence	FSC 8/96
HMSO	Training for Competence and Fire Service Qualifications	FSC 6/98
HMSO	A Competence Framework for the Fire Service	FSC 15/1997
HMSO	Training for Competence and National Vocational Qualifications	FSC 8/1999
HMSO	Fire Brigade Operational and Training Activities: Management of Physiological stress	DCOL 8/1997/ DFL 8/1997 Item O:
HMSO	Health and Safety Guidance for the Fire Service Guidance Volume 3, A Guide to Operational Risk Assessment.	DCOL 12/1998/DFL 11/1998
HMSO	Fire Service Manual Incident Command Systems	DCOL 5/1999: Item B/DFL 3/1999
HMSO	The Confined Space Regulations	
HMSO	The Health and Safety at Work Act 1974	
HMSO	Electricity at Work Regulations 1989	
HSE Books	Management of Health and Safety at Work Regulations 1999 and the accompanying Approved Code of Practice	
HMSO	Workplace (Health Safety and Welfare) Regulations 1992	
HMSO	Manual Handling Operations Regulations 1992	
HMSO	Managing Health and Safety, Five Steps to Success	
HSE Books	HSG 65 Successful Health and Safety Management	
HMSO	Provision and Use of Work Equipment Regulations, 1998, ACOP and Guidance	
HMSO	The Construction (Design and Management) Regulations 1994 and Approved Code Of Practice	
HMSO	Health and Safety (Safety Signs and Signalling) Regulations 1996	
HMSO	The Lifting Operations and Lifting Equipment Regulations 1998	
HMSO	The Provision and Use of Workplace Equipment Regulations 1998	
HMSO	Health and Safety: A Fire Service Guide to Operational Risk Assessments	
HMSO	Health and Safety: A Fire Service Guide - Dynamic Management of Risk at Operational Incidents, HMSO 1998	
HMSO	Diving at Work Regulations 1997	DCOL 3/2000
Dr. H. Raafat	Risk Assessment Methodology published by University of Portsmouth.	Module RA3
HMSO	Fire Service Manual Volume 4 - Training	

# Standard Operational Procedure

## Offshore Incidents Involving UK Fire Brigades. Part One ~ The Use Of Helicopters.

### Summary:-

Inter Agency agreement reached between United Kingdom SAR organisations and participating coastal Fire Services for the adoption of best practice in the role of mobilising UK Fire Brigade resources via helicopter to firefighting, rescue and chemical hazards on vessels at sea.

### Further Information:-

MOU between MCA and the Fire Service.

DCOL 9/92

**Version 4 (Final Draft)- May 2000**

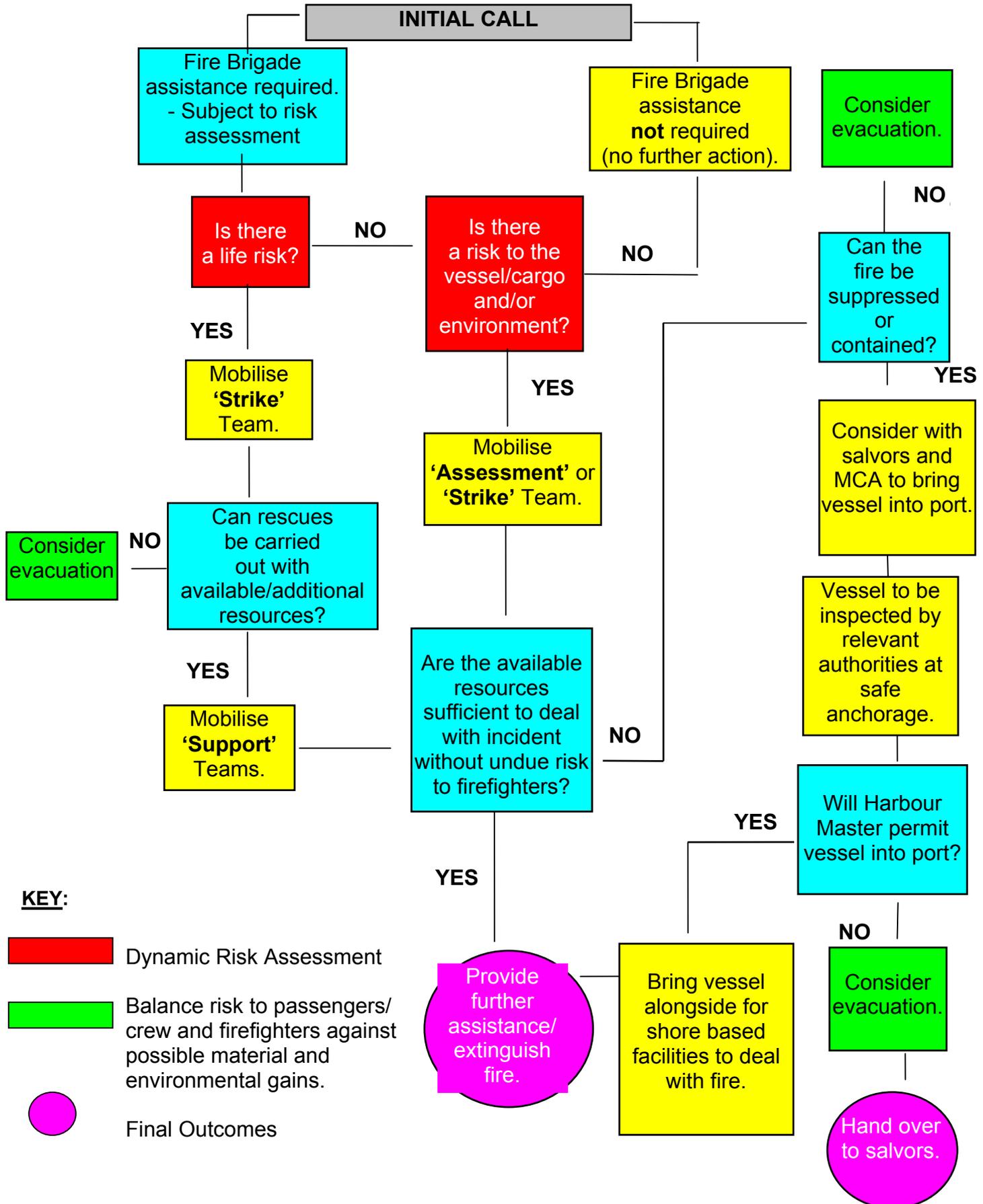
Contents	Page
<b><u>KEY INFORMATION:-</u></b>	2
	3
STRATEGIC ASSESSMENT	4
INITIAL MOBILISATION	
OPERATIONAL COMMANDER - AIDE	
MEMOIR	5
<b><u>PRIMARY INFORMATION:-</u></b>	5
1. Introduction	5
2. Command and Control	5-7
3. Response Criteria	7
4. Teams	7
5. Embarkation	8
6. Equipment / Communications	
7. Helicopter Loads, Distribution and Seating	8-9
	9
8. Personal Equipment	9-10
9. Welfare of Personnel	10
10. Clothing	
11. Training for Helicopter Operations	11
<b><u>SUPPORTING INFORMATION:-</u></b>	11-12
12. Terms of Reference	12
13. Criteria for Response	12
14. Mutual Assistance	
15. Combined Training and Liaison	13
	14
Appendix 1...Tasking Form	15
Appendix 2... Nominal Roll Form	16
Appendix 3... Operational Equipment	17-19
Appendix 4... Equipment Weights	20-22
Appendix 5... Aircraft	23
Appendix 6... Load Bags (Specification)	
Appendix 7... Glossary	

Implementation Date:

Review Date (Two Yearly):

# KEY INFORMATION - SHEET ONE

## STRATEGIC ASSESSMENT



# KEY INFORMATION - SHEET TWO

## Initial Mobilisation

THE FOLLOWING MUST BE COMPLETED:

### INITIAL COMMAND MEASURES.....

OBTAIN FULL DETAILS VIA TASKING FORM (*See Appendix 1*)

ALERT APPROPRIATE RESPONSE TEAMS  
(*See Key Information - Sheet 1*)

ADVISE NEAREST PARTICIPATING BRIGADES -  
(*Mutual Assistance, see Section 14*)

DESPATCH OFFICER TO LOCAL MCA CENTRE FOR LIAISON

ENSURE EMBARKATION OFFICER IS APPOINTED

TEAM TO SAR RV - ADVISE MCA

### DEPLOYMENT PROCEDURES...

TEAM HELO.SAFETY BRIEF AND INCIDENT UP-DATE

ENSURE NOMINAL ROLL COMPLETED (*See Appendix 2*)  
*Shut down all handheld comms. for transfer.*

'*Strike / Support*' teams only - CONFIRM WEIGHTS WITH SAR WINCH OPERATOR

SENIOR FIRE OFFICER e.g OPERATIONS COMMANDER (OC) TO COMMUNICATE WITH PILOT AND SITS NEAR DOOR

OVERFLY VESSEL FOR RISK ASSESSMENT (RA) (*Assessment / Strike teams only*)

- NOT SAFE TO BOARD - RETURN TO RV
- SAFE TO BOARD - 'OC' OR WINCH MAN TO DECK
- FIRE No.2 (*Command Support*) TO DECK

FURTHER RA AND CONFIRMATION THAT FIRE BRIGADE ASSISTANCE IS REQUIRED FROM MASTER

EQUIPMENT TO VESSEL

REMAINING TEAM MEMBERS TO VESSEL

PROVIDE SITREP TO MCA

**ACTIONED  
(Tick)**

# KEY INFORMATION - SHEET THREE

## ‘OPERATIONAL COMMANDER’ AIDE MEMOIR

YOU ARE NOW ON BOARD THE CASUALTY:

**ACTIONED  
(TICK)**

ADVISE MCA OF ARRIVAL AND NUMBERS ONBOARD - INSTIGATE  
‘BOARDING’ PROCEDURE

LIASE WITH SHIP’S MASTER

ESTABLISH AN EVACUATION / ABANDON SHIP MUSTER POINT AND  
PROCEDURE. BRIEF FIRE TEAM.

ESTABLISH A COMMAND POINT - *normally ship’s BRIDGE*

CHECK COMMUNICATIONS LINKS WITH MCA

SURVEY INCIDENT - CREWS MUST WORK IN PAIRS

CONFIRM STAND-BY VESSEL / SAR AVAILABLE FOR EGRESS

CHECK FIXED INSTALLATIONS AVAILABILITY

CONSIDER LOCATION OF FORWARD CONTROL POINT

DYNAMIC RISK ASSESSMENT RE-EVALUATION

MAXIMISE USE OF SHIP’S PERSONNEL - GUIDES ETC.

PREPARE FOR ‘Strike’ / ‘Support’ TEAMS IF ‘OFFENSIVE’ TACTICS  
BEING CONSIDERED

BA TEAMS TO BE MINIMUM OF THREE

ESTABLISH REST AND RECOVERY AREA NEAR EVACUATION /  
ABANDON SHIP MUSTER POINT IF POSSIBLE

MAINTAIN 20 MINUTE BRIEFINGS (INCLUDING ROLL CALLS) WITH ALL  
PERSONNEL / MCA / FIRE SERVICE CONTROL OR LIASION OFFICER AT  
MRC / MRCC

# PRIMARY INFORMATION

## 1. INTRODUCTION

This document summarises 'Best Practice' regarding arrangements for helicopter operations for firefighting, chemical hazards and rescue on vessels at sea and has been compiled via the CACFOA 'Offshore Firefighting Networking Group'. This group comprises representatives from United Kingdom coastal Fire Brigades and SAR organisations including the Maritime Coastguard Agency (MCA), Royal Navy (RN) and Royal Air Force (RAF)

Although the primary use as indicated is for vessels on fire at sea and does not include reference to none SAR helicopter operations e.g police helicopters, some of the practices identified may be suitable for other areas of Fire Service operations.

## 2. COMMAND AND CONTROL

Command and Control for these incidents is based on the principals of the Incident Command System (ICS) as defined in the Fire Service Manual - Volume 2 - Incident Command.(Published 1999)

In that respect the Incident Commander (IC) is in overall charge of the incident and will remain ashore at the local MRC/MRCC. The Operational Commander (OC) will be dispatched to the casualty with his / her 'Command Support'.

These Command Team Officer's will be identified by the appropriate tabards, which also display the relevant role.

## 3. RESPONSE CRITERIA

- Request from MCA for assistance.
- Request from another source that is approved and supported by the MCA.
- Approved by Fire Brigade Principal Officer - where there is an immediate risk to life or high risk of an incident developing that will have a serious environmental impact.

**HELICOPTER 'STRIKE' TEAMS ACTING IN ISOLATION WITH LIMITED RESOURCES SHOULD NOT INITIATE 'OFFENSIVE' TACTICS. HOWEVER, FOLLOWING A DYNAMIC RISK ASSESSMENT (DRA) THE OPERATIONS COMMANDER MAY INITIATE LIMITED ACTIONS e.g SNATCH RESCUES**

The defined task will be to provide actions and make provisions for when additional resources become available.

## 4. TEAMS :-

### 'ASSESSMENT' TEAM

When appropriate, e.g. only limited information is available, no immediate risk to life - an assessment team may be initially dispatched to carry out risk assessment before committing additional resources.

#### Composition

- Minimum of two Officers with the relevant competencies...the 'assessment' team may form part of a larger 'multi agency' response

- The team should wear full PPE i.e immersion suit and lifejacket and carry a minimum of equipment as follows:-
  - Welfare packs ( 2kgs )
  - Marine band radios.. two (1kg )
  - Heavy duty torch (1 kg )
  - Thermal Image camera (8kg)
  - Command Wallet / Notebooks / Dictaphone(2kg)

### Purpose

- To provide professional advice on matters relating to fire.
- Provide first impression information.
- Transmit a full situation report via Coastguard coordinating station.
- To provide the Fire Brigade Principal Officer with risk assessment information to enable decision on further deployment to be made at the strategic level.

## ‘STRIKE’ TEAM:

Normally mobilised when full information is available and / or immediate threat to life on the casualty

### NOTE:-

**Any subsequent teams can only be ‘Support’ team(s) who’s composition must be determined by the OC in liaison with the IC (shore-based), taking into account the balance of need i.e. personnel or equipment.**

### Composition

Minimum team of six, with pre designated equipment bags - One - Two - Three (*see Sections 6 and Appendix 3*).

Minimum of two Officers with relevant competencies if no ‘Assessment’ team previously mobilised.

This will provide an Operations Commander and / Command Support.

The final decision for deployment of personnel to the casualty will rest with the OC.

The ‘Strike’ team consists of only Fire Service personnel

### Purpose

- Carry out a risk assessment (as per the ‘Assessment’ team if not previously deployed).
- Collect information - *see KEY INFORMATION sheets*
- Transmit a full situation report via the coordinating MCA.
- Make provision for: Command and Control, Safety, Welfare and Communications.
- To provide the Fire Brigade Principal Officer with a risk assessment to enable decision on further deployment to be made at the strategic level.
- Request necessary resources to enable the incident to be dealt with effectively. The resources requested should be prioritised to enable proper logistical planning by onshore organisation.

## ‘SUPPORT’ TEAM(S)

When all assessments have been concluded the OC may take the decision that some ‘Offensive’ tactics are necessary. Support teams will need to be mobilized to ensure these actions can be carried out with maximum safety and appropriate resource support.

Further resources may be committed via a seaborne transfer.

‘Support teams’ may be mobilised from other participating Brigades.

The OC must ensure that suitable, safe means of egress are available from the casualty for all those persons who will eventually be onboard. This may include the use of helo, standby vessels or the casualties own evacuation equipment.

Ultimately the number of personnel onboard the casualty will be down to local agreements.

### Composition

At the discretion of the OC in liaison with the IC (shorebased), taking into account the balance of need i.e personnel or equipment.

Account must be taken of helo carrying capacity. Maximum payload of 2500lbs/ 1125kgs.(See Appendix 5 re aircraft 'types' and configuration)

### Purpose

- to support 'Strike' team
- to carry out tactical firefighting and rescues as determined by the OC

## 5. EMBARKATION

In all circumstances a nominal roll form (Appendix 2) should be completed to record all personnel taken offshore. Copies of this should be FAXED to HM Coastguard, HM Customs and the HM Immigration Office which covers the Service/Brigade where the incident has occurred. With HM Coastguard being the central coordinator in cases of repatriation, if this becomes necessary.

In the case of firefighters returning to shore, their Fire Control Centers must fax their names to HM Coastguard to ensure nominal rolls are always current.

Prior to departure / embarkation all crews must have received a pre flight safety brief. This must include details on the aircraft to be used, appropriate use of PPE .e.g. eye, ear protection, methods of approach, seating and equipment location, disembarkation and emergency procedures.

The pilot may require illumination of the landing zone when collecting or returning crews, this may be done by the use of two fire appliance's headlights directed in a vee shape on the landing zone. Night vision goggles may be used by the aircrew in these circumstances, strong torches etc should never be shone directly at the aircraft.

NB. The Coastguard may be mobilised to secure the landing site.

## 6. EQUIPMENT / COMMUNICATIONS

The teams, personnel and equipment should meet the following:

- Current standards for the safety and protection of personnel during transportation, transfer and activities on board vessels in need of assistance.
- Current standards for the safety and protection of personnel during firefighting and associated activities.
- Enable personnel to communicate to the relevant rescue co-ordination centre.
- To ensure agreement on commonality of specified equipment, load bags will be identified and contain equipment as shown in Appendix 3.
- Approved loading bags must be used that meet the following criteria:-

Maximum dimensions.....

Sling heights.....

Base specification....

Method of clearly displaying contents.

Identify safe working load (SWL), and be tested and recorded.

( Suggested specification for load bags is shown in Appendix 6 )

All portable radio equipment including cellphones, taken on board a helicopter must be switched OFF and must not be operated inside the helicopter.

Radio communications for the Fire Service Crew whilst on board the helicopter will be provided by the helicopter crew.

Communications with the aircraft will only normally be available via VHF Marine wave band radio's. Crews operating on the ground, without assistance from a member of the aircraft's crew, should always maintain communications with the helicopter.

## 7. HELICOPTER LOADS, DISTRIBUTION AND SEATING

Maximum loads may differ for different types of helicopter. In all cases the maximum load will be at the direction of the helicopter loadmaster or pilot.

Loads must be secured within the aircraft by the 'loadmaster'.

Fire Services should have available prepared equipment lists with weights in lbs/kgs to cover all the equipment likely to be utilised. Weight calculation charts should also be incorporated and account must be taking of Manual Handling regulations.

Appendix 3 details equipment loads for 'strike' team. Further specific loads for 'support' teams will depend on the nature of the incident. However, it is anticipated that equipment dumps will be prepared at helicopter landing sites.

The distribution of loads and seating of personnel is the responsibility of the pilot. Suggested seating plans are shown in Appendix 5.

The seating arrangements should be such that the Fire Service Commander is able to:

- Carry out visual reconnaissance...
- Egress the aircraft to the deck of the casualty first...
- Link to the aircraft communications systems.

**NB.**

**Equipment carried by waterborne response may be subject to helo transfer and therefore should comply with the above criteria.**

## 8. RECOMMENDED STANDARDS OF PERSONAL EQUIPMENT

### Lifejacket

Lifejackets must be approved to meet the current standards required by military and CAA for airborne use.

**NB.**

Local procedures should be in place with the 'carrier' to ensure lifejackets cannot auto inflate during transit

### Immersion / Transit Suits

Immersion / Transit suits must be approved to meet the current standards required by military and CAA for airborne use.

Immersion / transit suits for helicopter use are the minimum requirement for travelling by helicopter and are to be worn at all times during transportation.

### Head Protection

A Fire Brigade helmet with chin strap fastening and built in visor is the minimum standard.

### Ear Protection

Appropriate ear protection should be made available to all personnel prior to embarkation, and guidance given on their use.

### Ancillary Equipment

All personnel should be afforded the appropriate level of personal protection and safety equipment which may include:

- The provision of a supplementary air device.
- Safety belt with pouch, personal line and karabiner.
- Cylume chemical lights.(to be worn at night on board vessel)
- Torch.

## 9. WELFARE OF PERSONNEL

To be able to provide personnel with such equipment as they need to sustain them for a reasonable period of time offshore, should arrangements not be available on board the vessel or standby vessel(s), welfare packs should be provided.

The exact nature of welfare packs is not stipulated, however, the following should be considered:

- Hot packs
- Drinking Water
- High Energy Bars
- Toilet Paper
- Face Wipes
- Hand Cleaner
- Sea Sickness pills / Seabands

Personnel who require to take seasickness tablets ( subject to advice from Brigade Occupational Health ) must ensure these are taken before embarkation (some tablets may cause drowsiness and this needs to be taken into account). Sea wrist bands provide some protection from seasickness and may be considered an alternative to seasick tablets.

All personal equipment and food could, if required, be carried in a personal holdall which the individual could retain during the flight and winching operation

This equipment must be limited in weight to the extent that it will not increase equipment levels beyond the maximum weight limits allowed for helicopter transport

Consideration must also be given to immigration provision, where firefighters may land in a foreign country and may have welfare needs prior to repatriation. (*See also Section 5*)

## 10. CLOTHING

If personnel are committed to a fire or chemical situation of any significant size it would be desirable to provide them with a complete change of clothing as their own may have become wet through penetration of water or excessive sweating. The clothing must be compact, windproof and easily carried but must provide warmth and comfort to the wearer.

Consider the following:-

- Thermal Underwear
- Overalls/One Piece Suit
- Socks

## 11. TRAINING FOR HELO OPERATIONS.

Training for operations needs to be developed via local training needs analysis. However in consultation with MCA and CAA the following should be considered:

### **GROUND TRAINING**

- brief on aircraft statistics
- approaching the aircraft, hazards e.g 'downwash', debris, PPE
- boarding aircraft to include identification of Fire Commander (OC),
- seating plan and moving around the aircraft
- communication
- preparation to winch
- winch procedure - including 'high line'
- loading and storage of Fire Brigade equipment
- indication of ditching/crash procedures
- bracing position
- post impact procedure
- emergency exits
- escape procedure

### **AIR (FLYING) TRAINING**

- take off and landing procedures
- winching from and to the aircraft ~ crew and equipment including 'high line'
- communication with aircraft including ground to air signals

### **SEA SURVIVAL TRAINING**

Brigades carry out sea survival training to maintain the relevant competencies and this includes the use of:

- lifejackets
- immersion suits
- life rafts
- lifting from the water

### **ADDITIONAL TRAINING PROVIDED MAY INCLUDE:**

- Welfare e. g use of ear defenders, anti nausea provisions, etc
- wet winching drills, i.e. whilst wearing full PPE will be recovered by helicopter from the water by winch after exiting life raft.

## SUPPORTING INFORMATION

## 12. CACFOA 'OFFSHORE FIREFIGHTING NETWORKING GROUP' - TERMS OF REFERENCE

On behalf of offshore firefighting practitioners, to draw together offshore incident procedures including training and equipment.

To liaise with the MCA who are the overall coordinating authority, Royal Navy and Royal Air Force Search and Rescue regarding the appropriate 'at sea' response.

Specific areas considered by the working group included:

- Criteria for authorisation and alerting Fire Services responses.
- Minimum training.
- Composition of offshore teams.
- Standard list of operational equipment to meet the needs of the respective roles of the above teams.
- Minimum standards of PPE
- Response and assembly times
- Mutual assistance between the participating Fire Services
- Welfare of personnel
- Combined training and liaison arrangements

## 13. CRITERIA FOR RESPONSE

The MCA will seek the help of the relevant Fire Service after receiving a request for Fire Service assistance from the Master of a vessel at sea. It is considered that Fire Services/Brigades may respond to calls for assistance particularly where life is at risk. The decision to attend or not will be made by the appropriate Chief Fire Officer or his/her nominated representative.

Those Fire Services/Brigades that participate should declare availability to MCA. Any changes to 'declared assets' must be communicated to MCA immediately

The Chief Fire Officer Firemaster or his/her representative will require specific information before committing the resources of his Fire Service. The form detailed in Appendix One should be used for this purpose. In the first instance HM Coastguard should attempt to complete those items asterisked and in bold print. This should also be faxed to the Fire Service by the coordinating HM Coastguard station. Subsequent information can be added when required by the Coastguard.

Although the helicopter approach to a vessel in difficulty is by far the fastest response, it cannot be guaranteed that the helicopter can remain on scene indefinitely. To ensure the safety of firefighters on board a casualty vessel that is either on fire or disabled, firefighters should not be allowed on board a casualty vessel unless a satisfactory risk assessment has been completed..and suitable egress is available. Suitable means of egress to include:Helicopter, RNLI lifeboat and ships life saving equipment, tug, rig support vessel or similar is on scene or in contact with the Coastguards and en route to the incident. If no line of safe retreat is to be identified by the RA, then boarding of vessel will not occur.

In order to provide early notification to neighboring Fire Services of an incident at sea, the Fire Service attending such an incident would take steps to notify participating Fire Services as soon as possible after the initial call. Arrangements should also be set up to notify adjacent Fire Services of relevant "Informative and Stop Messages".

In the event of the MCA being unable to agree the attendance of the local Fire Service (first Fire Service) to an incident at sea they would obviously attempt to obtain the services of an adjacent Fire Service (second Fire Service). In such circumstances the second Fire Service should contact the first to establish why they had declined to make an attendance.

## 14. MUTUAL ASSISTANCE

Intention of Mutual Assistance: There is a general agreement between participating Fire Services that when requested, they will supplement each other resources. This agreement is intended to cover eventualities when the demands of an incident at sea exceed the resources of the first Fire Service.

Application: the Principal Officer of the host Brigade will advise neighboring Brigades that participate in the mutual assistance agreement, of the host Brigades intentions so resources can be made available at the earliest opportunity to reinforce. The MCA must also be advised as the requirement for helicopter transfer between Brigades will be required.

Before any attempts are made to react to a request for mutual assistance, the host Fire Service must seek the agreement of the respective Fire Brigade Principal Officer(s).

## 15.COMBINED TRAINING AND LIAISON

Fire Brigades participating in offshore incidents that involve the use of helicopters as a primary mode of transport should carry out training with the appropriate 'carrier' and also with other key agencies e.g MCA and 'mutual assistance Brigades

Training should include testing of mobilising procedures, communication functions and the ability to respond to a request for mutual aid. Brigades must ensure that when mutual aid training is carried out, personnel are made aware of any relevant differences in command and control procedures, key equipment and communication systems

Amended August 2001

## Appendix One

### **TASKING FORM**

**THIS FORM SHOULD BE HELD AND COMPLETED BY THE LOCAL MRCC/MRSC**

TO BE FAXED TO THE RELEVANT FIRE BRIGADE ON COMPLETION OF SECTIONS 1 TO 12. **DO NOT DELAY IF INFORMATION IS INCOMPLETE.** CONFIRM RECEIVED.

TIME SENT: .....

INITIAL INFORMATION REQUIRED	RESPONSE
1. Location of MCA Rescue Centre inc. tel/fax. No's	
2. Nature of Emergency	

3. Compartment Involved e.g. Hold/Engine Room	
4. Location of Vessel and Course	
5. Name and Type of Vessel	
6. Tonnage, Length, Beam and Freeboard	
7. Approx. Number of Persons on Board	
8. Are any Persons Unaccounted For (Yes or No)	Location
9. Ships Fire Pumps Operative	
10. Stability Problems	
11. Sea/Wind State on Scene	
12. Area Forecast	
<b>SUPPLEMENTARY INFORMATION TO BE FORWARDED AS AVAILABLE</b>	
13. Owner/Agent	
14. Nature and Quantity of Cargo	
15. Hazards that could affect Fire Brigade Operations	
16. Nationality of Master of Vessel	
17. Interpreter Required (Yes or No)	(State Language)
18. Fixed Fire Installations on Board e.g CO2, Halon, Sprinkler, Foam, Other (Specify)	
19. Has the above been operated (Yes or No)	Details
<b>ADDITIONAL INFORMATION FOR FIRE BRIGADE</b>	
20. Type/MK of Helicopter being dispatched	
21. Landing site for Helicopter(s)	
22. ETA of Helicopters(s)	
23. Vessels available for Transportation/Safety	
24. Loading Point	
<b>ANY OTHER INFORMATION PLEASE CONTINUE ON ADDITIONAL SHEETS</b>	

**Appendix Two**

**NOMINAL ROLL FORM**

When crews are committed offshore, a nominal roll must be completed and passed to Fire Control and MCA. Any updates must be forwarded also.

FIRES AT SEA 'PERSONNEL' - INCIDENT/EXERCISE BRIGADE:
--



## OPERATIONAL EQUIPMENT

The following are standardised minimum loads and will be the expected equipment to arrive when requested from any participating Officer.. regardless of Brigade. See also Appendix Six

### BAG 1 ~ 'STRIKE TEAM'

	KGS	LBS
BAG AND BOX (optional)	10	22
2 CABA SETS c/w LIGHTWEIGHT CYLINDERS	30	67
BA CONTROL BOARD	5	10
THERMAL IMAGE CAMERA	8	18
FIRST AID KIT	1	2.2
2 HEAVY DUTY TORCHES	3	7
2 HANDHELD RADIOS (VHF) AND WATERPROOF COVERS	2	5
SPARE BATTERIES FOR RADIOS	5	10
TOTAL	65	142

### BAG 2 ~ 'STRIKE TEAM'

BAG AND BOX (optional)	10	22
2 CABA SETS c/w LIGHTWEIGHT CYLINDERS	30	67
BOARDING CONTROL BOARD (design to be agreed)	7	16
4 'HEAVY DUTY' TORCHES	4	9
4 HANDHELD RADIOS (VHF) AND WATERPROOF COVERS	6	14
GUIDE TAPE or 'TRANSIT' LINE	4	9
TOTAL	61	134

### BAG 3 ~ 'STRIKE TEAM'

BAG AND BOX (optional)	10	22
2 CABA SETS c/w LIGHTWEIGHT CYLINDERS	30	67
2 FIELD TELEPHONES(optional)	4	9
CABLE REEL (for above - optional)	7	15
WELFARE PACK (See Section 9)	15	34
BA GUIDE LINE	2	5
TOTAL	68	150

**Brigades need to be aware that the OC may request additional operational equipment via 'Support teams' and that due to its weight will have an implication on helo loads.**

**Brigades should therefore have available prepared equipment lists with weights in Kgs/lbs to cover that equipment likely to be utilised for offshore operations.**

## **EQUIPMENT WEIGHT CHART(Example)**

Any further equipment required by the Offshore team needs to be evaluated by the Operational Commander. He / she must be provided with the appropriate information so the correct assessment can be taken. This detail must be available for participating Brigades and carriers.

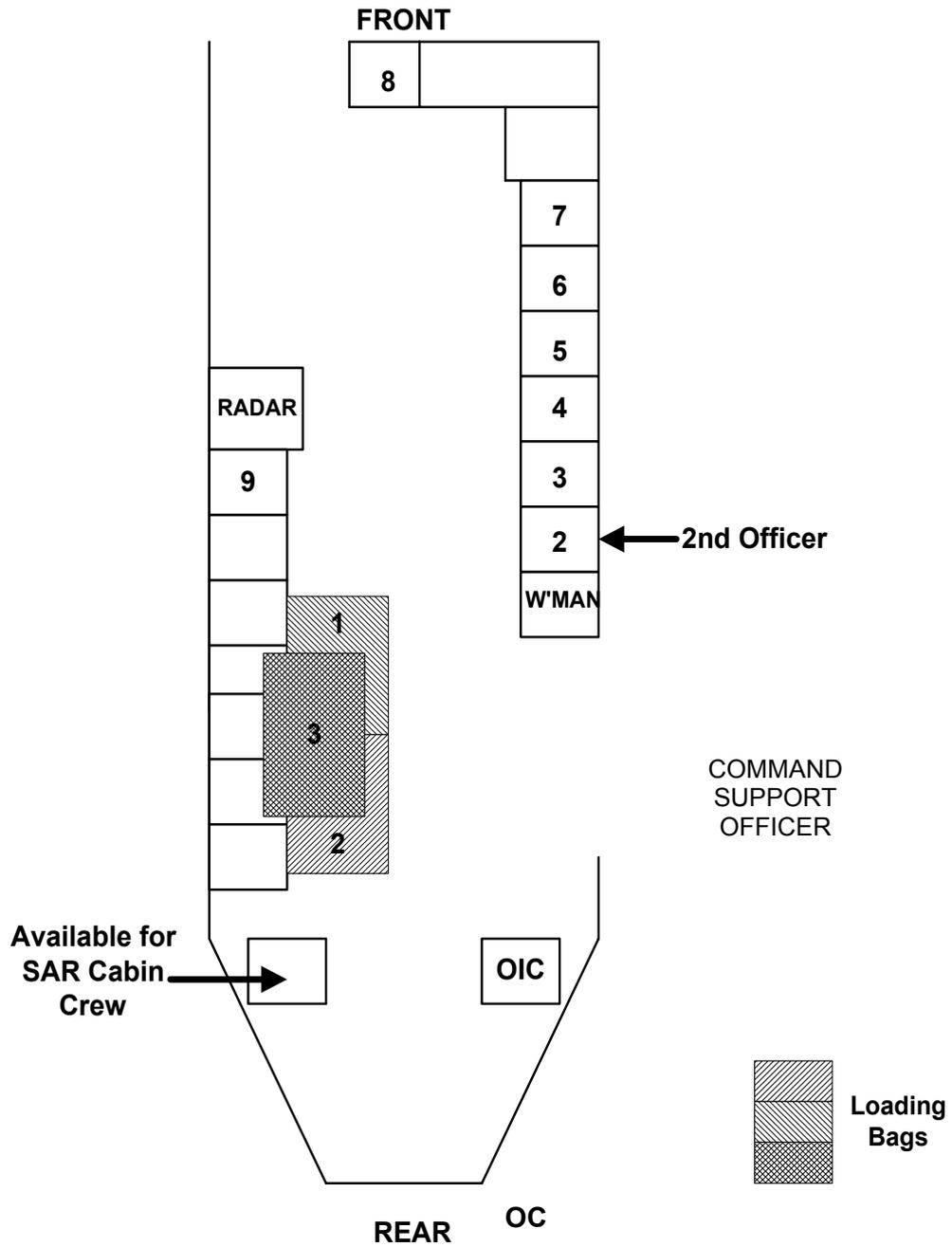
Examples as follows:-

<b>Contents</b>	<b>Kilo's</b>	<b>Pounds</b>
1 BAG AND BOX (optional)	10	22
2 45mm x 25M Hose	18	40
1 3 Way Dividing Breeching	4	9
4 Torches - Heavy duty	7	15
2 CABA SETS complete	30	67
2 Branches (Elkhart)	5	8
1 15M Line	3	7
1 BA Service Kit	3	7
1 Stability Board	4	4
1 Ship's Log	1	2
1 Guide Line	2	5
1 Shifter Wrench	1	2
2 Welfare pack e.g Hot Cans etc	22	46
1 Box rags	12	26
10 Spare Overalls	10	22
10 PVC coats	12	26
2 Large Axes	5	8
1 30M Line	6	14
4 Cans fresh water		
4 Branches - 'Fogfighter'		
1 Snatch Block		
1 Wrecking Bar		
1 Fall Arrest Device / Body harness		
1 Ship / Shore couplings		
1 Cellar nozzle		
1 PPV Fan		

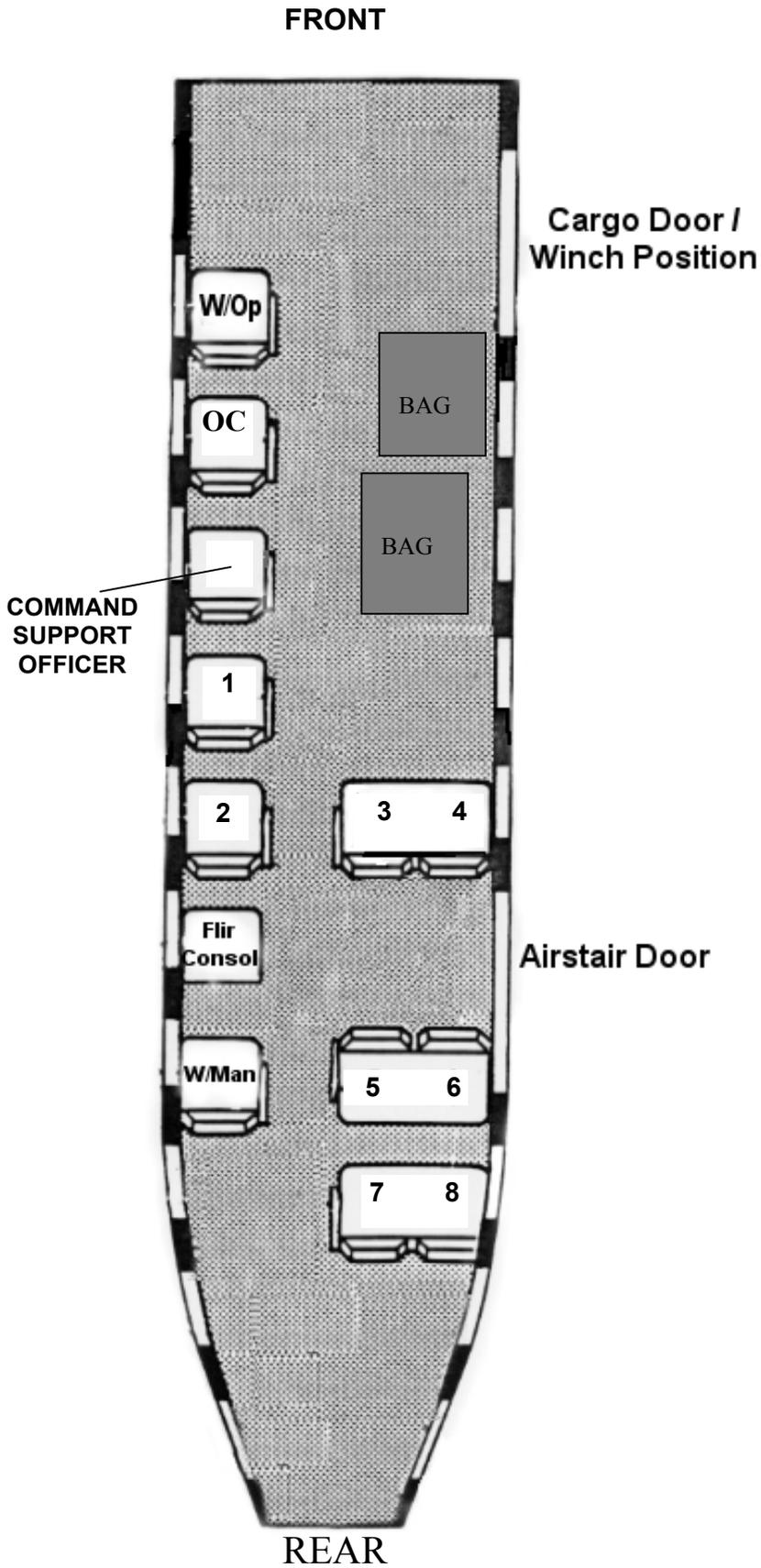
**Account must be taken of available aircraft payloads and manual handling restrictions.**

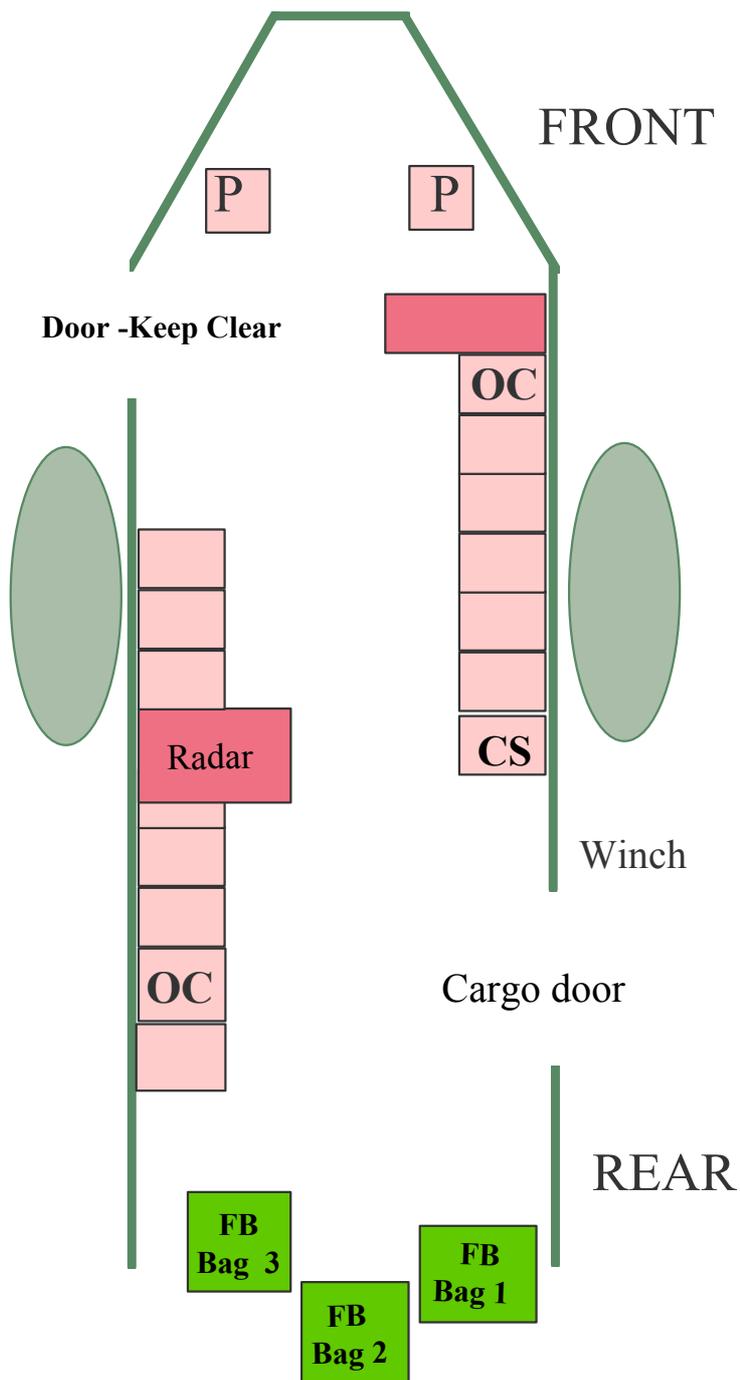
**AIRCRAFT TYPE AND LAYOUT**

**SEA KING (RAF)**



**SIKORSKY S61 (MCA)**



**SEA KING MK 5 (RN)**

(The Fire Brigade Operations Commander may be seated in either of the seats shown OC as determined by pilot. (The OC will be provided with a headset for communications.)

**CS** ~ Command Support Officer.

# **SUGGESTED SPECIFICATION FOR HELICOPTER LOADING BAGS**

## **GENERAL**

The primary role of the helicopter loading bags is to transport equipment via helicopter and / or sea going tug to incidents offshore in a compact and easily manageable bag, that has been approved for use by helicopter crews.

The loading bags should be constructed of best grade materials and be manufactured to the latest European / British standards and best industry practice with regard to the following:

Materials of construction  
Methods of manufacture  
Resistance to wear  
Proofing against corrosion or deterioration from sea water.

## **MATERIALS**

7oz Pu Nylon Outer covering / 10mm Plastozote Foam sandwich / 4oz Pu Nylon inner  
PVC Nylon base / Glass fibre tray / 8mm Heavy duty zip closure  
50mm Heavy duty webbing / Stainless steel rings with carabiner

## **COLOUR**

The overall colour of the bag is to be High Visibility Orange  
The rubbing band and Webbing straps are to be coloured black  
Handle straps to be coloured yellow. / The fibre glass base tray to be coloured red. \_

## **ZIPS**

The zips used should be watertight and resistant to the effects of salt water  
The zip closure around the top three sides of the bag is to be 8mm heavy duty type, opening from left to right.  
The zip closure for the drag / securing strap side pouch is to be 6mm heavy duty type opening from left to right.

## **STEEL RING AND CARABINER**

Stainless steel rings to be 60mm with working load of 150kg. To extend above the bag by 330mm on webbing straps (excluding rings).  
The Carabiner is to be a heavy duty type with a matching working load as that of the steel rings. The Carabiner is to be attached to the side of the bag by a 3m x 50mm webbing strap for the purposes of dragging or securing the bag.

## **BASE**

The base of the Helicopter loading bag is to be constructed of two parts, an inner and outer.  
The outer base (Bottom tray) is to be constructed with large radii corners to avoid damage to helicopter flooring with sharp angular corners. Size is to be 635mm x 915 nominal 8 gauge manufactured from glass fibre.

The inner part of the base is to be constructed of 6mm ply measuring 610mm x 870mm.  
The bases are to be secured through the bottom of the bag and through the webbing straps by pop rivets or other suitable fixings.

## **HANDLES**

Six yellow webbing covered rope handles 300mm long on 800mm centres, boxed stitched on either side of the eyelet. One handle to be sited on each short side of bag and two handles on the longer sides of the bag.

One 50mm x 3m webbing strap for securing or dragging purposes to be secured to one end in a suitable zipped pouch / pocket.

### **RUBBING BAND**

A 200mm Rubbing band stitched to the bottom of the bag manufactured from black PVC Nylon

### **WEBBING STRAPS**

All 50mm webbing is to be of 150kg working load

### **LABEL POUCHES**

Two A4 size clear label pouches on the top of the loading bag with facility for easy insertion and removal of A4 size labels.

### **SEAMS**

All seams are to be double stitched

### **SIZES**

The dimensions of the helicopter loading bag are :

Length - 915mm

width - 635mm

height - 635mm

60mm Stainless Steel rings secured to the webbing straps 330mm above the top of bag. Carabiner attached to a 3m x 50mm webbing strap.

Rubbing band 200mm

Top zip closure 8mm

Securing strap pocket zip 6mm

### **LETTERING AND INSIGNIA**

The lettering 'ANYWHERE' FIRE BRIGADE " to be stencilled / dyelined on one of the longer sides of the bag to a size of 50mm..

An 'sponsorship' badge approx. 200mm mounted approx. 100mm above the lettering.

The relevant Manual handling regulations symbol to be attached in a highly visible section of the bag.

### **NOTE**

The requirements of this specification are to be regarded as minima (or maxima as the case may be) and nothing herein is to be construed as tending to prevent the purchaser from specifying stricter or additional requirements in any direction to meet special circumstances.

Items offered must be of a suitable manufacturer. Where the word "Approved" is used this means approved by 'Anywhere' Fire Brigade.

The materials used will be in accordance with the requirements as stated in the specification and to be of the best quality available for the purpose.

They will also be subject to approval by 'Anywhere' Fire Brigade.

It is most important that where the appointed contractor has a query on any part or paragraph of the specification that this shall be discussed, and that any approved variation be agreed in writing prior to

the commencement of any work on the helicopter loading bags.

There being no variation in the specification without the approval of the Brigade Marine Operations Group and Chief Fire Officer.

## Glossary of Terms

- BA** .....Breathing Apparatus\_
- CACFOA**.....Chief and Assistant Chief Fire Officers Association.
- CASUALTY**....MCA terminology indicates that this is a stricken vessel (the vessel in trouble).
- CARRIER**....The SAR organisation providing transportation i.e RN; RAF; MCA
- COMMAND SUPPORT**....A Fire Brigade Officer nominated to assist the OC.
- DECLARED RESPONSE**....A statement of Fire Service resources currently made available to MCA.
- DEFENSIVE TACTICS**...crews not committed into the 'high risk' area
- EVACUATION SIGNAL**...the Fire Brigade emergency evacuation signal is repeated blasts on an 'Acme Thunderer' whistle.
- EMBARKATION OFFICER**...A Fire Brigade Officer nominated to monitor embarkation details of personnel and equipment being conveyed offshore
- INCIDENT COMMANDER (FIRE)**....Senior Fire Brigade officer ( *shorebased* ) in overall command of the incident
- MCA**....Maritime and Coastguard Agency ( inc. Coastguard )
- MRC**....Maritime Rescue Centre
- MRCC**...Maritime Rescue Coordination Centre
- OPERATIONS COMMANDER (OC)**....The Senior Fire Brigade Officer onboard the casualty.
- OFFENSIVE TACTICS**...Crews committed into the 'high risk' area, carry out rescues etc.
- RESCUE CO-ORDINATION CENTRE (RCC)**....Air operations coordinated from RAF Kinloss,
- SAR FACILITY**....Any unit, command, device or system used for SAR operations
- SEARCH AND RESCUE (SAR)**....The employment of available personnel and facilities in rendering aid to persons in distress.
- SOSREP**... Secretary of State's Representative
- .

*Thanks is extended in particular to Cornwall, Hampshire and Kent Fire Brigade's who provided considerable information in the research and production of this document.*

# Standard Operational Procedure

## Offshore Incidents Involving UK Fire Brigades.

### Part Two ~ Command and Control

#### Summary:-

The adoption of a standard system for the command of fires and other emergency incidents offshore, to ensure a safe system of work.

Final draft – 10<sup>th</sup> August 2001

#### Further Information:-

Part One ~ The Use of Helicopters.

Fire Service Manual - Operations ~ Marine Incidents.

- Operations ~ Incident Command

DCOL 9/1992. Item 14

MOU between CACFOA / HM Coastguard.

Contents	Page
<b>INDEX:-</b>	
<b>KEY INFORMATION SHEETS:-</b>	
Aide memoir's- Command and Control Roles	2
<b>PRIMARY INFORMATION:-</b>	
1. Terms of Reference	9
2. Definitions	9
3. Responsibility	9
4. Mobilising and Liaison	10
5. Command and Control	11
<b>SUPPORTING INFORMATION:-</b>	
<b>Appendices :</b>	
A. Boarding Control Board	16
B. Command Board	17
C. Standard Messages	18
D. Tasking Form	19
E. Nominal Roll Form	20
F. Ships plans	21
G. Glossary	22
H. Bibliography	

# Command & Control Roles ~

## Key Information Sheets (1 of 7)

### PRINCIPAL OFFICER (PO)

THE PO WHO WILL PROBABLY BE LOCATED WITHIN THE FIRE SERVICE COMMAND CENTRE, MUST CONSIDER THE FOLLOWING:-

#### PRE-INCIDENT

.... SEE SECTION 4

#### DURING INCIDENT

- CONSULTATION WITH MCA AND NEIGHBOURING FIRE BRIGADES
- CONSIDER IMPLICATIONS OF SERIOUS ENVIRONMENTAL IMPACT, IN CONSULTATION WITH OTHER AGENCIES.
- INTRODUCE STRATEGIC COMMAND?
- WELFARE IMPLICATIONS OF CREWS AND FAMILIES FOR LONG DURATION INCIDENTS
- MEDIA
- CONSULTATION WITH GOVERNMENT AGENCIES/ ELECTED MEMBERS
- STAFFING COMMAND CENTRE
- BRIGADE RESOURCING
- CONSULTATION WITH BRIGADE INSURERS
- IMMIGRATION ISSUES

#### POST INCIDENT

DEBRIEF INTERNAL/EXTERNAL..FEED BACK.

- WELFARE INCLUDING REPATRIATION
- COST RECOVERY ETC
- PUBLIC ENQUIRIES
- ACCIDENT INVESTIGATION

#### ACTION

# Command & Control Roles ~

## Key Information Sheets (2 of 7)

### INCIDENT COMMANDER

THE IC, WHO MAY BE LOCATED AT THE MCA CENTRE OR APPROPRIATE FIRE BRIGADE COMMAND CENTRE, NEEDS TO CONSIDER THE FOLLOWING:-

- NOMINATE COMMAND SUPPORT TEAM
- LIAISE WITH PO AND MCA
- REVIEWING TACTICAL/STRATEGIC PLANS AND RESOURCE MANAGEMENT
- CONFIRMATION OF INTER AGENCY TACTICS/STRATEGY IN CLOSE CONSULTATION WITH OC
- CONTROL MEDIA IN CONJUNCTION WITH OTHER AGENCIES AT COMMAND CENTRE
- RESOURCING THE NEEDS OF THE OPERATIONAL COMMANDER
- ANTICIPATING FUTURE NEEDS

### ACTION

# Command & Control Roles ~

## Key Information Sheets (3 of 7)

### OPERATIONAL COMMANDER (OC)

### ACTION

THE OC, WHO IS THE 'OFFSHORE' COMMANDER, NEEDS TO CONSIDER THE FOLLOWING:-

- CONFIRM WITH THE SHIP'S MASTER THAT THE BRIGADE'S ASSISTANCE IS REQUIRED AND RECORD THIS REQUEST.
- BE GUIDED BY THE PROFESSIONAL ADVICE AVAILABLE AND CONDUCT HIS/HER OWN DYNAMIC RISK ASSESSMENT
- ADVISE MRCC AND IC OF ARRIVAL AND NUMBERS ONBOARD.
- LIAISE WITH SHIP'S MASTER AND/OR FIRST OFFICER AND ENGINEER AS SOON AS POSSIBLE.
- ESTABLISH AN EVACUATION/ABANDON SHIP MUSTER POINT AND PROCEDURE. BRIEF FIRE TEAM.
- ESTABLISH A COMMUNICATIONS POINT – (NORMALLY SHIP'S BRIDGE).
- CHECK COMMUNICATION LINKS WITH MRCC/MRSC, COMMAND SUPPORT CENTRE, SUPPORT VESSELS AND CREW.
- SURVEY INCIDENT - CREWS MUST WORK IN PAIRS.
- ENSURE SUITABLE EGRESS AVAILABLE AT ALL TIMES.
- CHECK FIXED INSTALLATIONS AVAILABILITY.
- DYNAMIC RISK ASSESSMENT RE-EVALUATION.
- MAXIMISE USE OF SHIP'S PERSONNEL - GUIDES ETC.
- PREPARE FOR SUPPORT TEAMS IF 'OFFENSIVE' TACTICS ARE BEING CONSIDERED.
- ESTABLISH REST AND RECOVERY AREA NEAR EVACUATION /ABANDON SHIP MUSTER POINT IF POSSIBLE. (ADVISE PILOT OF HELO, LOCATION OF EVACUATION POINT)
- MAINTAIN 45 MINUTE BRIEFINGS WITH ALL PERSONNEL/MRCC/COMMAND SUPPORT CENTRE OR LIAISON OFFICER AT MRCC.

# Command & Control Roles ~

## Key Information Sheets (4 of 7)

### COMMAND SUPPORT OFFICER (CSO)

### ACTION

WILL ACT IN A COMMAND SUPPORT ROLE TO THE OC. THE DUTIES INCLUDE:

- THE SETTING UP AND MAINTAINING THE COMMAND WALLET.
- ESTABLISHING AND MAINTAINING COMMUNICATION LINK WITH MRCC/MRSC.
- CO-ORDINATING AND MAINTAINING COMMUNICATIONS WITH THE OPERATIONS COMMANDER, BOARDING CONTROL OFFICER, SECTOR COMMANDERS AND OTHER COMMAND TEAM MEMBERS.
- FACILITATING THE FLOW OF INFORMATION/MESSAGES TO AND FROM THE OPERATIONS COMMANDER.
- RECORDING INFORMATION.
- UPDATING AND MAINTAINING INCIDENT INFORMATION BOARDS THROUGHOUT THE INCIDENT.
- MAINTAINING A PLAN OF THE INCIDENT, INDICATING SECTOR OFFICERS, SECTORS AND CREWS LOCATION.
- MAINTAINING AN OVERVIEW OF ALL RESOURCES AND EQUIPMENT AT THE INCIDENT.
- ESTABLISHING APPROPRIATE RESOURCE CONTROLS (HOLDING AREAS, BRIEFING AREAS, RELIEF AREAS, EQUIPMENT POOLS, ETC.)
- MAINTAINING LIAISON WITH THE SHIPS COMMUNICATION OFFICER WHERE AVAILABLE.

# Command & Control Roles ~

## Key Information Sheets (5 of 7)

### FIRE BRIGADE MCA LIAISON OFFICER

#### ACTION

WILL BE MOBILISED TO ATTEND THE MRCC/MRSC

- WILL ACT AS THE LINK BETWEEN THE BRIGADE AND OTHER SERVICES INVOLVED IN THE INCIDENT AND ENSURE THAT EFFECTIVE COMMUNICATIONS ARE ESTABLISHED.
- WILL NOT MAKE TACTICAL / STRATEGIC DECISIONS
- KEEPS RECORDS

### STABILITY OFFICER

#### ACTION

A STABILITY OFFICER WILL BE DESIGNATED FOR MOST INCIDENTS. HE/SHE MAY NOT ATTEND THE INCIDENT AT THE OUTSET BUT WILL NEED TO CONSIDER THE FOLLOWING:-

- IN CO-OPERATION WITH THE SHIP'S DUTY OFFICER / SHIPS AGENT / SALVAGE MASTER (IF AVAILABLE), MAINTAIN THE STABILITY OF THE VESSEL
- THE RESPONSIBILITY FOR A SHIP'S STABILITY FALLS UPON THE SHIP'S MASTER AND HIS/HER OFFICERS.
- IN THEIR ABSENCE THE RESPONSIBILITY MAY FALL ON THE OPERATIONS COMMANDER. IN THESE CIRCUMSTANCES THE OPERATIONS COMMANDER SHOULD TAKE ADVICE FROM THE MASTER OF THE SALVAGE TUG OR ANY ASSISTING VESSELS AND/OR THE BRIGADE STABILITY OFFICER.
- IDENTIFY:- STATE OF SHIPS RESERVE BUOYANCY / DEGREE OF LIST / PROBABLE RATES OF MOVEMENT/WHETHER SHIPS TANKS ARE FULL.
- KEEP FIREFIGHTING AND BOUNDARY COOLING WATER TO A MINIMUM.
- REDUCE WATER LEVELS FROM HIGH UP IN THE VESSEL
- BE AWARE OF FREE SURFACE EFFECT IN LARGE UNDIVIDED AREAS.
- CONSIDER NECESSITY TO PUMP WATER AROUND SHIP (BALLAST)

# Command & Control Roles ~

## Key Information Sheets (6 of 7)

### EMBARKATION OFFICER

### ACTION

THE EMBARKATION OFFICER WILL BE LOCATED 'LANDBASED', AT THE DESIGNATED 'EMBARKATION POINT' AND WILL:-

- ENSURE SAFETY BRIEF RECEIVED BY TEAMS
- CHECKING SUITABILITY OF PPE
- NOMINATE A LOADMASTER WHO IS RESPONSIBLE FOR LOADING EQUIPMENT BAGS AND CHECKING WEIGHTS
- CO-ORDINATE ALL LANDBASED SUPPORT OPERATIONS WITH REGARD TO PERSONNEL AND EQUIPMENT
- ESTABLISH AND MAINTAIN COMMUNICATIONS WITH BRIGADE CONTROL/ MRCC
- GATHER AND RECORD RELEVANT INFORMATION I.E TASKING FORM REGARDING INCIDENT.
- COLLECTION OF NOMINAL ROLL BOARDS AND OFFICER TALLIES
- ISSUING AND RECORDING EMBARKATION TALLIES.
- COMPLETING NOMINAL ROLES OF DEPLOYED PERSONNEL AND PASSING TO FIRE CONTROL AND MCA.
- LISTING OF ALL EQUIPMENT SENT TO CASUALTY AND SPECIALIST EQUIPMENT AVAILABILITY.

## Command & Control Roles ~ Key Information Sheets (7 of 7)

### BOARDING CONTROL OFFICER:-

### ACTION

THIS WILL BE AN 'ONBOARD' ROLE AND THEREFORE WILL FORM A PART OF THE FIRST TEAM DEPLOYED. THIS FUNCTION IS PARAMOUNT IN ENSURING THE SAFETY OF FIRE BRIGADE PERSONNEL ENGAGED ON THE CASUALTY. ROLES INCLUDE:-

- MAINTAIN A RECORD SHOWING THE LOCATION OF PERSONNEL.
- CONTROL INCOMING RESOURCES UNTIL REQUIRED BY OC.
- PROVIDE INITIAL ONBOARD SAFETY BRIEF.
- ENSURE SEA SURVIVAL PPE THAT IS NOT REQUIRED IS LOCATED AT DEDICATED MUSTER POINTS.
- COLLECT THE TALLIES OF PERSONNEL BOARDING THE VESSEL AND SUBSEQUENT RELIEF CREWS AND TO RETURN TALLIES ON DISEMBARKING.
- TO MAINTAIN A NOMINAL ROLL IN THE EVENT OF AN EVACUATION OF THE VESSEL AND TO REPORT TO THE OC WHETHER ALL PERSONS ARE ACCOUNTED FOR.
- TO UPDATE THE CP WHEN PERSONNEL NUMBERS CHANGE ON THE BOARDING CONTROL BOARD, SO THAT A MESSAGE CAN BE INSTIGATED TO THE MCA.

# PRIMARY INFORMATION

## 1. TERMS OF REFERENCE

The CACFOA Marine Operations Group – Offshore Sub-Committee on Command and Control were tasked with looking at the following key command and control issues:

- Identifying criteria for an Offshore incident
- Mobilising
- Air-born /Sea borne approach
- Control measures for safety of personnel
- Introduction of the Incident Command System (ICS)
- Evacuation
- Involvement of non Fire service Agencies

It is not possible to set out detailed arrangements for calls to offshore incidents due to the variety of circumstances which can arise.

The purpose of this document is to provide guidance on the procedures to be adopted and considerations to be borne in mind upon the receipt of a request for assistance offshore.

It should be borne in mind by all concerned that when the Brigade is to be involved in incidents at sea, the speed and scale of mobilising response will normally be different from land operations.

## 2. DEFINITIONS

An off-shore incident can be defined as:

*An incident on a vessel at sea or in tidal waters that cannot be boarded from dry land. This will include those vessels which are afloat, aground or at anchor in tidal waterways or on the shore.*

## 3. RESPONSIBILITY.

The Maritime Coastguard Agency (MCA) has a statutory duty under the Coastguard Act 1925 for the initiation and co-ordination of civil maritime search and rescue (SAR) within the United Kingdom Search and Rescue Region (UKSARR).

For incidents “at sea” Fire Brigades will ensure that its assistance has been expressly requested by the owners, agents or Master/Captain of the ship through the MCA. The Senior Fire Officer in attendance should confirm upon arrival that the Brigade’s assistance is still required. This is important for, under Section 45a (1) of the Merchant Shipping Act 1894, responsibility for the safety of a ship at sea rests with the Master/Captain and the owner.

Although the MCA has no authority to become involved in salvage operations, Rescue Centres do have a monitoring and reporting role in connection with actual or potential oil pollution at sea, and a remit to inform the Secretary of State’s Representative (SOSREP) of any event likely to cause pollution, so that he/she can exercise his/her powers under current legislation.

**Firefighting and rescue teams when on board are under the direct command of the Senior Fire Brigade Officer, who will take recognizance of whoever is in command of the vessel.**

**A Senior Fire Officer accepting responsibility for firefighting activities must ensure a record is made of that decision and passed to the MCA.**

Section 3.1(dd) of the Fire Services Act 1947 with regard to the Power of Fire Authorities States:-

“ to employ the Fire Brigade maintained by them or use any equipment so maintained, at sea (whether or not within the territorial sea of the United Kingdom)”

This new paragraph ensures that deployment at sea has a clear legal base within existing UK legislation, but does not extend the Statutory power or duties of the Fire Authority. The amendment strengthens the advice contained within DCOL 9/1992, and removes any ambiguity over Fire Authorities’ discretionary powers to attend incidents at sea, beyond territorial waters.

## **4. MOBILISING AND LIASON**

### **4.1 The Memorandum Of Understanding between CACFOA and HMCG. (MCA)**

The purpose of this Memorandum is to codify the arrangements which generally prevail between the Coastguard Agency and local Fire Authorities to establish, where appropriate, fire-fighting, chemical hazard, and rescue teams as Declared Facilities for search and rescue (SAR).

It does not create any contractual relationship and the Coastguard Agency should liaise with individual Fire Authorities to establish the extent to which these arrangements are to apply.

Declared Facilities are facilities which are designated as being available for civil maritime SAR according to a specific standard or set criteria.

Each authority declaring facilities is responsible for:

- Declaring the standard of capability and availability for each facility:
- Maintaining each facility to the declared standard
- Informing HM Coastguard when there is any change in the declared standard of availability for each facility.
- Informing HM Coastguard of any reason for not making available any facility which is declared and which has been requested by HMCoastguard

### **4.2 Mobilising**

The Brigade Principal officer (PO), on receipt of:-

(a) initial call details and (b) ‘Tasking form’ (See Appendix ‘D’) will then consider the strategy options for a possible response.

These options may include:-

- adequate information available
- risk versus benefit
- transport availability
- ability to evacuate
- weather/sea conditions
- environmental impact
- financial implications to Brigade
- assistance from other Brigades
- operational availability of Brigade personnel and equipment
- welfare issues

As an 'aid to civil power', military resources may be made available to fly teams from neighbouring Brigades to assist

### **4.3 Fire Brigade Control ~ Actions**

On receipt of the initial call from the MCA, Fire Control will commence a log for the incident and advise the Brigade Principal Officer. Fire Control should confirm with the MCA that the 'Tasking Form' is being despatched.

A procedure must be in place within Fire Control to ensure the appropriate mobilisation actions are taken and recorded

## **5. COMMAND AND CONTROL**

The principals of Strategy and Tactics should be as identified in Fire Service Manuals ~ Operations Marine Incidents / Incident Command

It must be remembered that Command and Control is of the utmost importance and is required for all incidents.

It is essential that a system of Command and Control is initiated and that it be constantly reviewed

This will ensure that all personnel and equipment are accounted for at all times irrespective of location and mode of transport to and from the incident.

The PO must be aware of the implications of a prolonged incident, which may impair the ability of the Brigade to react elsewhere.

### **5.1 Initial Actions**

A Fire Brigade 'Liaison' Officer must be sent to the nearest MRCC/MRSC at the outset of an incident, and work closely with a dedicated MCA/Fire Liaison Officer.

The Liaison Officer's will act as the link between the Fire Brigade and the other services to facilitate effective communications and response.

When it is known that teams will be deployed a 'Functional Sector Commander (Welfare)' should be introduced landbased to consider issues for well being.

### **5.2 Response Teams**

There are two means of approach for offshore incidents as follows:-

- Airborne Response. ( See HELOSOP re 'Assessment' / 'Strike' / 'Support' Teams)
- Seaborne Response

On receipt of a call for assistance, a procedure should be in place to 'put on alert' the appropriate teams. This will pre-empt a confirmation from the PO, but in the event of a "no-go" decision, it is easier to stand crews down.

### 5.3 Embarkation and Transfer

Prior to embarkation the following procedures should be actioned:-

- Nominate Embarkation officer (shore-based)
- Nominate Specialist Officers eg. Command Support; Stability; etc
- Issue PPE
- Incident brief/update
- Record nominal role details (Appendix 'E') and fax Brigade Control and MCA
- Commence Boarding Board procedures
- Issue Personnel welfare kit
- Set up load weights record/specification system (airborne)
- Pre-embarkation safety brief

### 5.4 Senior Levels of Command (Fire).

The Principal Officer (PO) will maintain 'Strategic/Gold' command liaison with the IC.

The Incident Commander (IC) will remain landbased at an overall 'Tactical/Silver' level of Command and may move to the MRCC/MRSC along with additional Command Support. (This may include a Command Vehicle).

The Operations Commander (OC) will go offshore on the casualty vessel as the 'on scene Tactical' decision maker.

### 5.5 Identification of the onboard 'Command team'

Command Team officers will operate in accordance with the principles of the Fire Service Manual Volume 2 ~ Incident Command.

Where possible key roles should be identified as follows:

- Operations Commander ~ Red Tabard/surcoat
- Command Support ~ Red and White Chequered Tabard/surcoat
- Sector Commander ~ Red and Yellow Tabard/surcoat
- Safety Officer ~ Blue and Yellow Tabard/surcoat

#### **NOTE;-**

Sector Commander's need to have the facility for identifying Functional Roles e.g Stability Officer; in front and rear of tabard/surcoat.

### 5.6 On arrival

*A DRA must be carried out by OC upon arriving on the scene prior to boarding casualty vessel*

Once aboard the vessel the OC should make contact with the Master (or in the absence of the Master- a 'responsible' person) and confirm Fire Brigade assistance is still required.

Confirmation of this must be recorded with Fire Control via MCA.

The OC will liaise with the Master prior to sending assistance message.

**NOTE:**

**For the purposes of offshore incidents the tactical mode initially is 'Defensive', until the OC initiates 'Offensive' tactics.**

**This nominated 'Offensive' area will then be determined as the 'inner cordon'.**

**5.7 Onboard-'Command Point'.**

The siting of a Command Point (CP) is determined by the OC in consultation with ship's Officers. This will normally be the vessel's bridge.

The CP should take account of providing for a good vantage point from where the weather decks and most of the superstructure could be clearly viewed, also that communications systems would be readily available along with ships plans and OC Command Wallet.

High visibility 'route' lines should be laid between specific operational areas eg: from Sector Command (SC) points to the Boarding Control /Evacuation point.

**5.8 Boarding Control**

A Boarding Control Officer with Boarding Control Board (see Appendix A) must be nominated, clearly identified and provided with a suitable communications link to the Command Point.

Once the Boarding Control Position has been established, all personnel accessing and egressing the vessel must have their personal details and location clearly identified on the board.

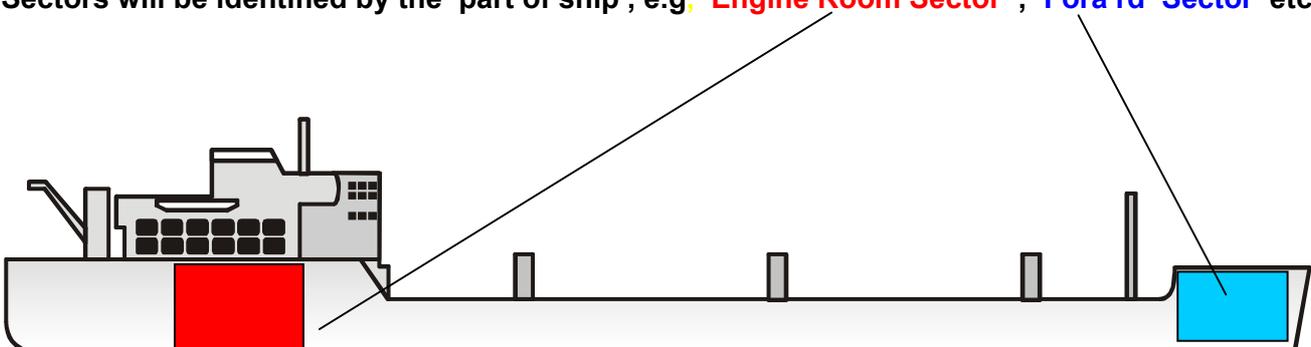
**All personnel should be provided with individual nominal role tallies for this purpose.**  
(See Appendix 'A')

**5.9 Sector Commands.**

The Sector Command points are reference points for the Operational Commander, from which the relevant SC's will command. ( as for land based incidents )

Once resources are in place, eg., 'Support' teams or adequate combined fire/ships teams, it may then be possible to 'Sectorise' the incident.

**Sectors will be identified by the 'part of ship', e.g. 'Engine Room Sector' ; 'Fora'rd Sector' etc.**



The terms 'Bridgehead' and 'Forward Command', are not recommended for ship firefighting due to the possibility of confusion with the ships crew

The Sector acts as a Cordon Control Point and monitors personnel within it. It is not responsible for total command and control of the vessel, this remains at the Command Point (CP) where overall monitoring takes place

## 5.10 Cordon Control.

At all incidents a level of 'inner cordon control' must be put in place.

This should take account of being able to identify the names and location of ALL personnel within the 'inner cordon'.

## 5.11 Communications.

The MCA is responsible for co-ordinating all information received by any means, from any source.

It has access to all marine channels, including those used by harbour launches, pilot boats, tugs, Customs launches, MCA vessels, ships at sea and rescue aircraft.

It is imperative therefore that 'key' messages are passed to the MCA usually via the MCA network.

The following equipment may be used for ship to shore or onboard communications:-

Marine Band Radio:	Messages should preferably be passed through MCA using marine radio on the transport vessel or vessel requiring assistance.
Cellphone:	Individual cellphones, with International Call Dialling may be available to key officers and used in circumstances where other facilities are unavailable, however key 'agencies' must not be left out of the 'loop' by using this method
UHF Hand Portable Radio:	Inter Fire Brigade local communication eg., OC to SC
'Hard' Wires	Sound powered phones using hard wire around the vessel.

## 5.12 Messages.

The use of Fire Brigade 'standard messages' ( See Appendix 'C' for examples) should be as follows:-

Assistance; – the request for additional resources should state:

- Number of Firefighters and Officers required
- The items and number of equipment required
- Other agency support e.g paramedic
- The level of urgency should be indicated ( to assist the IC /MCA with tasking resources).

Assistance messages should be separate from informative messages to ensure immediate and prompt action.

Informative (Situation Report (SITREP):-

This message, transmitted every 45 minutes, should give a full update of the current situation and should include some or all of the following:-

- Exact location of fire/hazard
- Extent of fire / hazard and what was involved
- Casualties involved or persons missing
- Passive Fire Containment e.g structural
- Status of ship's utilities / services
- Status of motive power
- Stability

- Availability of fixed firefighting installations
- Firefighting media and equipment in use
- Tactical mode and options
- Record of key tactical decision making

Audit/Debrief:-The transmission of information must be carried out by formally writing and recording some / all of the above.

This information may be archived in accordance with individual Brigade policies.

All written records need to be collated by the Command Support Officer and held within a Command Wallet and/or at MCA /Fire Control.

### **5.13 'Support' Teams and Equipment**

Will be as prescribed by the Operations Commander following an operational assessment.

### **5.14 Other agencies.**

Consideration must be given to non-fire brigade agencies who may have an interest in any outcomes from an off-shore incident for example potential crime scene.

For all offshore incidents it is essential that there is recognition between all agencies involved for a co ordinated approach for the agreed strategy to be implemented.



## Command Board

To assist the OC with the collation of operational information. May form part of a 'Command Wallet'.

The board should be 'schematic' and provide the following details (minimum):-

**Time of arrival / assistance confirmed...**

**Numbers onboard and location...**

**Location of fire/incident...**

**Location of any other hazards...**

**Tactical Mode...**

**Time of last Tactical Mode message...**

**Incident elapsed time...**

**Name's / location of key personnel eg ships master / Fire Brigade command team...**

**Identification of Sector's (if applicable)...**

**Location of boarding / evacuation / abandon ship points...**

**Location of communications point (normally ship's bridge)...**

**Record of communication channels...**

**Names/Call signs of stand by vessel /aircraft....**

**Type and state of fixed installations i.e firemain etc...**

**Fire brigade equipment in use...**

**State of ship's pumps...**

**Stability state...**

**Weather Conditions ~ current / predicted**

### Standard Messages (Examples)

#### **Assistance :**

*“From Operations Commander on board (Name of casualty vessel) ~ Request sixteen (16) additional fire-fighters and two (2) further officers. ~ Eight (8) Compressed Air Breathing Apparatus sets complete with radio communications. ~ Thirty two (32) compressed Air Breathing Apparatus cylinders and one set Breathing Apparatus Entry Control equipment. ~ Cleaning and servicing kit for forty (40) Breathing Apparatus sets. Priority is for eight (8) Fire-fighters, one (1) Officer, nine (9) Compressed Air Breathing Apparatus sets as soon as possible. ~ Advise ETA for priority items and mode of transport ~ Tactical Mode Defensive (Delta).”*

#### **Assistance :**

*“From Operations Commander on board (Name of casualty vessel) ~ Request eight (8) lengths 38mm hose. ~ two (2) hand controlled branches. ~ two (2) Thermal Imaging Cameras. ~ one (1) Oxygen Resuscitator and spare ~ Tactical Mode Defensive (Delta).”*

#### **Assistance :**

*“From Operations Commander on board (Name of casualty vessel) ~ Request immediate attendance of Medivac helicopter and paramedic for two members of ship’s crew suffering from severe smoke inhalation and burns to hands and arms. Advise earliest ETA ~ Tactical Mode Defensive (Delta).”*

#### **Informative Message (SITREP):**

*“From Operations Commander on board (Name of casualty vessel) ~ Severe fuel oil fire located in bottom deck midship auxiliary engine room approximately 10m x 20m. Master has closed the bulkhead and watertight doors plus vent shaft which has contained the fire within the compartment of origin ~ The fixed foam installation for this compartment has been used. No second shot available. Ship’s crew accounted for. No casualties. ~ Attempts by ship’s crew to isolate fuel oil supply to this area have been unsuccessful so far. ~ Tactical Mode Defensive (Delta).”*

#### **Informative Message (SITREP):**

*“From Operations Commander on board (Name of casualty vessel) ~ The Master has handed over to the Brigade responsibility for fire-fighting operations at 1432 hours BST. ~ Ship’s fire main and engines still operational. Stability is good. Two jets, six breathing apparatus wearers and thermal image camers in use. ~ MCA please advise on available ports and destinations. ~ Tactical Mode ‘Offensive’ (Oscar).”*

## **TASKING FORM**

**THIS FORM SHOULD BE HELD AND COMPLETED BY THE LOCAL MRCC/MRSC**

TO BE FAXED TO THE RELEVANT FIRE BRIGADE ON COMPLETION OF SECTIONS 1 TO 12. **DO NOT DELAY**  
**IF INFORMATION IS INCOMPLETE.** CONFIRM RECEIVED.

TIME SENT: .....

INITIAL INFORMATION REQUIRED	RESPONSE
1. Location of MCA Rescue Centre inc. tel/fax. No's	
2. Nature of Emergency	
3. Compartment Involved e.g. Hold/Engine Room	
4. Location of Vessel and Course	
5. Name and Type of Vessel	
6. Tonnage, Length, Beam and Freeboard	
7. Approx. Number of Persons on Board	
8. Are any Persons Unaccounted For (Yes or No)	Location
9. Ships Fire Pumps Operative	
10. Stability Problems	
11. Sea/Wind State on Scene	
12. Area Forecast	
<b>SUPPLEMENTARY INFORMATION TO BE FORWARDED AS AVAILABLE</b>	
13. Owner/Agent	
14. Nature and Quantity of Cargo	
15. Hazards that could affect Fire Brigade Operations	
16. Nationality of Master of Vessel	
17. Interpreter Required (Yes or No)	(State Language)
18. Fixed Fire Installations on Board e.g CO2, Halon, Sprinkler, Foam, Other (Specify)	
19. Has the above been operated (Yes or No)	Details
<b>ADDITIONAL INFORMATION FOR FIRE BRIGADE</b>	
20. Type/MK of Helicopter being dispatched	
21. Landing site for Helicopter(s)	
22. ETA of Helicopters(s)	
23. Vessels available for Transportation/Safety	
24. Loading Point	
<b>ANY OTHER INFORMATION PLEASE CONTINUE ON ADDITIONAL SHEETS</b>	



## MARKING OF TACTICAL INITIATIVES ON SHIPS PLANS

The standard approach to the marking of ships plans introduces a systematic way to record information and allow smoother information exchange.

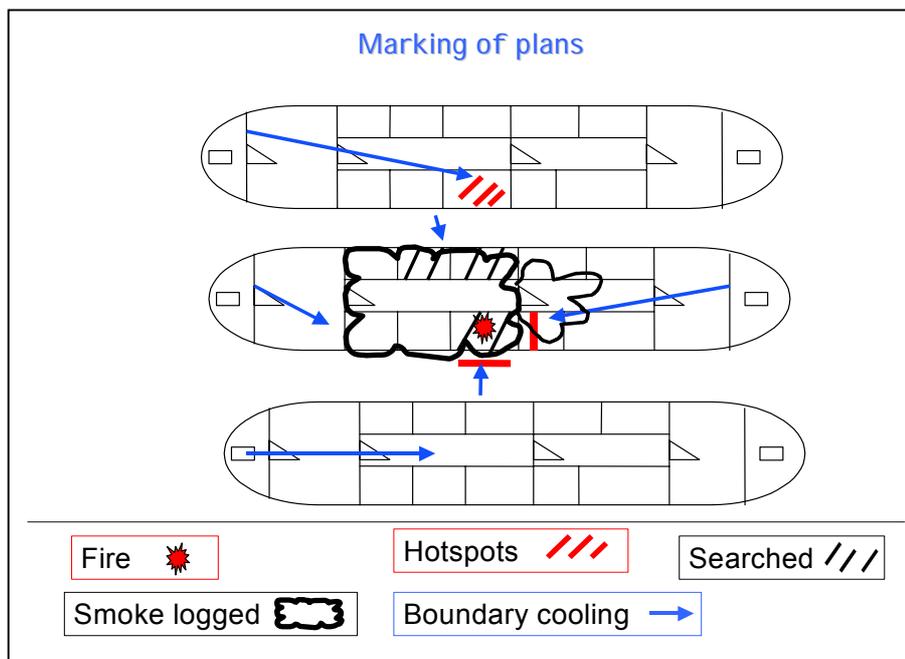
This is a process that is adaptable for harbour or offshore incidents. It promotes a culture of two-way information exchange

(This system has been adapted from the Royal Navy 'damage control' system and Scottish Brigades 'search co-ordination').

This can be used with any ship's plans...the condition, size and quality may differ depending on the circumstances. (*Additional symbols may be introduced at a later date*). The only physical requirements are: coloured pens... Red, Blue and Black.

The order that the plans are completed will depend on the incident, but the following are areas that will assist command and control.

- Identify fire and mark on plan (If known) 
- Close doors and show smoke logged area 
- Check 6 sides and show hot spots 
- Show boundary cooling 
- Show further smoke logging and or extent of smoke boundary. 
- Show areas searched 



NOTE: - A fire within a ship may spread in 6 directions. The transfer of heat via conduction and radiation can be severe, these areas should be conspicuously marked on the plans.

Use of suitable plans: -

- It can be used by an Ops/Incident commander to assess priorities and resources...
- Normally managed by the Command Support team officers...
- It can be used by Sector officers to brief and debrief...
- It can be used by command support to confirm the sector/ops commander have the same information...
- Attendance of cross border crews will be able to understand and relate to information...
- The information shown above may take some time to assimilate....
- If crews are purely defensive it will show them where there are dangers from spread due to conduction.

## GLOSSARY

Boarding Control Officer	A nominated person onboard the vessel responsible for monitoring the movement of personnel on and off the vessel.
CACFOA	Chief & Assistant Chief Fire Officers Association.
Command Support	Obtains and collates information for OC.
CP	Command Point (normally ship's bridge).
Command Wallet	A folder holding key operational information used for recording and collating tactical information.
DRA	Dynamic Risk Assessment.
HELOSOP	CACFOA Marine Operations Group, Part 1 SOP.
Incident Commander	Senior Fire Brigade Officer (land-based), in charge of the incident
Liaison Officer	A nominated officer who responds to the appropriate MCA offices as Fire Brigade initial co-ordinator.
MRCC	Maritime Rescue Co-Ordination Centre.
MRSC	Maritime Rescue Sub Centre.
MCA	Maritime Coastguard Agency.
Operational Commander	Onboard Fire Commander.
PO	Principal Officer.
Route Lines	A conspicuous Fire Brigade line used to identify specific routes between key positions on the vessel.
SITREP	Situation Report, eg., informative messages.

**Bibliography**

Author/ Publisher	Title	Reference
HMSO	The Health and Safety at Work Act 1974	HSE
HMSO	Workplace (Health Safety and Welfare) Regulations 1992	
HMSO	Manual Handling Operations Regulations 1992	
HMSO	Managing Health and Safety, Five Steps to Success	
HSE Books	HSG 65 Successful Health and Safety Management	
HMSO	The Provision and Use of Workplace Equipment Regulations 1998	
Trevor A. Kletz:	Hazop and Hazan. Notes on the identification and Assessment of Hazard	
HMSO	Health and Safety in the Fire Service	FSC 5/1995
HMSO	The Confined Space Regulations	
HMSO	Fire Service Manual's: Incident Command Systems / Marine Incidents	DCOL 5/1999: Item B/DFL 3/1999
HMSO	Health and Safety Guidance for the Fire Service Guidance Volume 3, A Guide to Operational Risk Assessment.	DCOL 12/1998/DFL 11/1998
HMSO	Physics and chemistry for firefighters in the fire service manual series	DCOL 7/1998/DFL 5/1998 Item E
HMSO	Standards of Occupational Competence	FSC 8/96
CACFOA	Memorandum of Understanding With HM Coastguard	
HMSO	Guidance to Brigades carrying out Offshore ship firefighting	DCOL9/1992
HMSO	Fire Service Manual Volume 4 - Training	

*Special thanks to Cornwall, Hampshire, Humberside, Kent, Lincolnshire and Suffolk Fire Brigades in the production of this document.*