

**Implementation  
and  
Effect of Major Oil Recovery System Exercises**

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# **Implementation and Effect of Major Oil Recovery System Exercises**

## **Introduction**

When an oil spill has occurred in a country the Response Organization has used the lessons learned to make the response operation more effective. To build up and maintain a Response Organisation is rather expensive. Unfortunately in most countries the flow of funding to maintain the Response Organisation has a tendency to decrease proportional with the years gone by since the last major oil spill.

An other way of thinking is - the longer time since the accident happened, the closer we are to the next.

After a major accident, most organisations responsible for oil spill response operations will make an effort to make the response more efficient. That is often done by increasing the amount of equipment. That is often necessary and important. Equally important is to have sufficient trained personnel to operate the equipment. To achieve that more training and exercises are necessary.

In Norway about 5000 people has received some kind of training related to oil spill response operations on various levels. Most of the personnel have work related to the sea, but personnel, who have general response experience, like the fire brigades and civil defence has also participated in the training programme.

The Response Organisation in a country is normally the body responsible for training and exercises and should as such put together a comprehensive training and exercise program every year.

One type of exercise is **Basic Training Programme for Major Oil Recovery Systems** that was implemented in Japan in 1999.

## **PROGRAMME (Frame)**

### **10<sup>th</sup> May MONDAY (classroom and on board)**

#### **Information about the tactical training and:**

- Boom Configuration
- Communication
- Co-operation
- Safety at site
- Presentation of boom
- Presentation of bag
- Presentation of skimmer

### **11<sup>th</sup> of May TUESDAY (classroom and at sea)**

- Boom Configuration

- On deck instruction and training
- Deployment of boom
- Retrieval

12<sup>th</sup> of May WEDNESDAY (all day at sea)

- system presentation of bag
- System presentation of skimmer
- Installation of boom
- Installation of bag
  
- Deployment of Uniboom
- Basic J-Configuration
- Deployment of skimmer
- Retrieval
- Lunch
- Deployment of boom
- Basic J-Configuration
- Turning of J-Configuration (180 °)
- Deployment of skimmer
- Turning of J-Configuration
- Retrieval

13<sup>th</sup> May THURSDAY (all day at sea)

- Deployment of equipment
- Tactical training of the combat unit
- Lunch
- Tactical performance of the combat unit

### **Basic Equipment Training (classroom) before the exercise**

#### **Equipment**

The personnel who operate the equipment, must be prepared for the operation and must have a knowledge of:

- The main operating function.
- The safety instructions.

The personnel who will operate the skimmer and the boom must approve that they can operate the equipment before the exercise at sea takes part.

The theoretical training can be done in the classroom, and hands-on training on board.

### **Oil Recovery Vessel (ORV)**

ORV will always be the main vessel in the unit, and the team-leaders platform. all equipment that shall be temporary stored on board must be prepared for the operation before the sea exercise start. The oil recovery equipment is operated from this vessel. The ship have to have tank capacity. permanent or temporarily.

**Oil recovery vessels with permanent stored equipment board may do so-called single ship training. All that is needed is a workingboat of some size(24 feet and 120 hp). Most supply vessels are normally equipped with such boats. In wave high more than 2 m this training is not recommended.**

### **Teamleader**

The team leader can be the captain or another skilled person who has background from sea-operations. The person will have the operational command of the unit, and must have a good have to have close communication with the captain of the towing vessel, and give him short orders about speed and courses.

### **Offshore Oil Recovery Operation**

The emergency preparedness relation to acute oil pollution shall ensure that the oil is effectively collected near the source of discharge as quickly as possible, but in a safe distance to avoid the danger of fire or explosion.

**J- Configuration** is a two vessels recovery system under the command of teamleader (leader of the unit), The oil recovery vessel (ORV) is always towing the short end of the boom.

### **Basic training for major oil recovery systems at sea**

## **BEFORE EXERCISES COMMENCE**

This exercise manual is a basic training manual for personnel with experience in manoeuvring vessels. The objective is to train those who have an obligation to be teamleaders during tactical oil pollution operations.

## COMMUNICATION

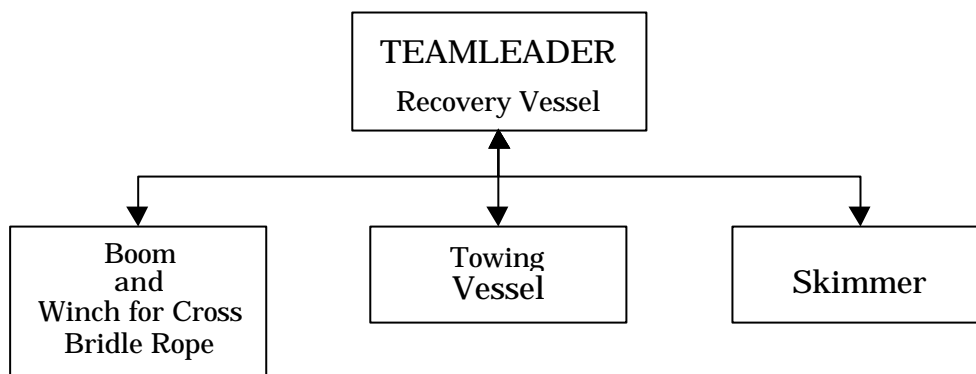
- **The commanding officer is responsible for the communication plan, and all key personnel with communication responsibilities have to have a good knowledge of the plan.**
- **The communication between all key personnel must be checked before the operations starts.**
- **In case of break down an alternative channel must be switched on.**
- **Communication discipline.**
- **Record all orders and operations.**
- **VHF channel 16 should never be used during exercises.**

## Communication Plan Suggestion

**Main Comm. Channel** .....

**Alt. Comm. Channel** .....

We need 4 VHF had set for the operation. Main and alternative communication channel has to be decided with the harbour captain



## EXERCISE 1

### BASIC J-CONFIGURATION

Deploy the boom, and turn the system against the resultant between wind and current, If the wind is strong it will have the dominant influence on the boom.

'The rule of thumb says that oil on water surface is generally moving in the direction and speed of the current and only 3-5% in the direction and speed of the wind.)

**Start the run and increase the speed to 1 knots. Reduce the speed to 0,6 knots. (All speeds are relative to the water)**

- 1.1 The Teamleader on board on the skimming vessel will give various orders to the towing vessel about changing of courses. Beware that the cross bridle has to be 90 ° on the skimming vessel course.
- 1.2 Increase the opening between the two vessels to maximum (collecting configuration). Beware the course of the towing vessel and give necessary slack to the cross bridle.
- 1.3 Deploy the skimmer. Start skimming when the skimmer is in position at the bottom of the boom-system
- 1.4 Reduce the opening between the two vessels (skimming configuration). Tight up the cross bridle to skimming position.

**EXERCISE 2****STRIKE THE BUOY**

Deploy the boom in a position approx. 0,5 N.M. from where the buoy is to be dropped. If the visibility is low, the buoy has to be equipped with radar decoy. Beware wind and current.

**When the boom is deployed and the boom-system is ready in J-configuration:**

- 2.1 Drop the buoy in the water.
- 2.2 Find the buoy on the radar screen
- 2.3 Set the course to the buoy.
- 2.4 Set speed to 1 knot.
- 2.5 The distance between the vessels has to be at a maximum (in collecting configuration).
- 2.6 When the distance to the buoy is 0,1 N.M., reduce the speed to 0,6 kn.
- 2.7 Manoeuvre the boom-system so that the buoy strikes in the middle between the towing vessel and the cross bridle connection point on the boom.

### **EXERCISE 3**

## **THE LONG SLOW TURN (180°)**

(Not recommended in heavy wind and current)

**When the boom is deployed and the boom-system is ready in J-configuration:**

- 3.1 Start towing against the resultant between current and wind.
- 3.2 Notice the course.
- 3.3 Set the speed to 1 knot.
- 3.4 Hold the bearing-angle to the towing vessel constant (adjust speed as necessary)
- 3.5 Start the turn, slowly.
- 3.6 Beware of your configuration.
- 3.7 Keep the cross bridle at a 90° angle on the course of the recovery vessel.
- 3.8 When the turn is completed make a speed correction for wind and current.



## **EXERCISE 4**

### **NOTICE BEFORE OPERATION**

- Check communication before turning.
- Stop skimming.
- Mann the cross-bridle winch.
- High tension at the cross bridle may cause danger of breakdown.

### **QUICK-TURN TO STARBOARD**

- 4.1 Start skimming in J-Configuration.
- 4.2 Towing vessel turns quickly to starboard.
- 4.3 The distance between the towing vessel and the boom has to be 10 0- 15 meters.
- 4.4 The recovery vessel starts an slow turn to starboard.
- 4.5 When the boom has passed the recovery vessel, the recovery vessel will cross the course of the towing vessel.
- 4.6 The Teamleader gives the new course.

### **Advanced Training for Major Recovery System**

Advanced exercises for major recovery systems is basically co-operations with other units under the command of a groupleader. As many as 5 units can be involved in a group. There are often both the U-configurations and J-configuration in the same group. Generally the most experienced teamleader is selected as a Groupleader, and it is the Response Organisation that will point him out. Basically all of the teamleaders shall be given the possibility to be groupleader in exercises, and they have to be prepared and trained for this important task.

### **Effect of training and exercises**

The criterias that are used for testing the efficiency of oil spill recovery units, are similar to what are used for testing the efficiency of an oil spill response organisation.

- 1. Time of response**
- 2. Handling capacity**
- 3. Professional skill**

### **Response Time**

To be measured separately in 2 parts

1. The time it takes from the vessel is notified; to the time she is loaded with all necessary equipment for the oil recovery operation and is ready to leave the port.
2. The time it takes from the start of boom-deployment, to the first oil or water is pumped into a tank.

A part of the exercise is also to prepare the depot personnel and crew of the ship to handle and load equipment on board. The vessel has to be prepared for placing the equipment on the deck.

### **Handling capacity**

A measure of how much oil the equipment can deal with per time unit under different environmental conditions. Boom and skimmers can now be tested and evaluated in testbasins in a realistic environment, with oil on water and exposed to waves and current.

### **Professional skill**

The level of competence and availability of competent personnel to run an oil spill operation is the key here. The level of competence may be defined through what kind of training that has been given. The availability of competent personnel is depending on how many people with sufficient training and background the organisation can mobilize in an emergency situation.

A requirement for getting approval of a contingency plan, may according to this criterion be that a particular number of personnel may have to go through a certain training programme on oil spill response. **By operational training and exercises of the recovery unit the handling capacity will increase.**

**The benefits of exercises at sea will be:**

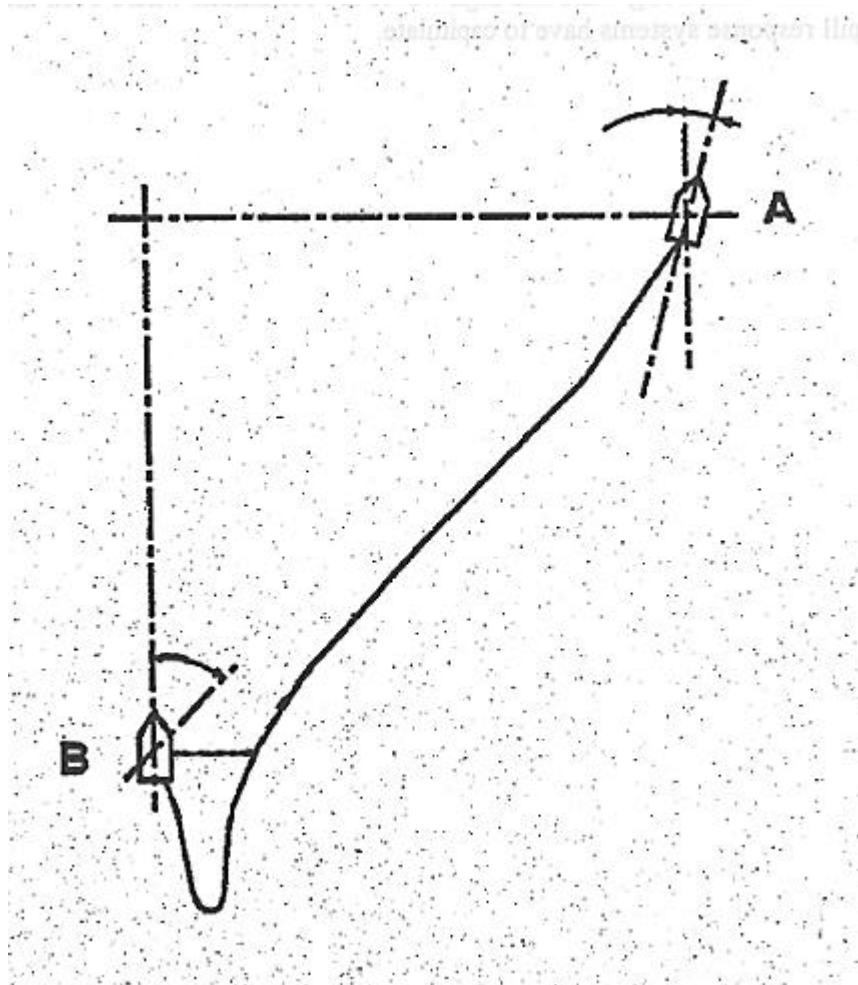
- A trained unit will have a knowledge of the operational challenges.
- The crew and operators. will road the vessel faster.
- The boom will be deployed faster and safer.
- The operators will do the manoeuvring of the skimmer smoother and safer.
- The teamleader will do the manoeuvring of the unit in a more efficient way.
- The unit will co-operate more easily with other units in a joint response operation.

Over the last years response organisations consider it important to tell the public that if an oil spill occurs close to the shore, then oil will reach the coast. It is not realistic to expect that all the oil may be recovered at the sea, despite the fact that we posses good equipment. Bad weather with strong wind and high waves are conditions where even the most advanced oil spill response systems have to capitulate.

**EXERCISE 1**

A = TOWING VESSEL

B = SKIMMING VESSEL

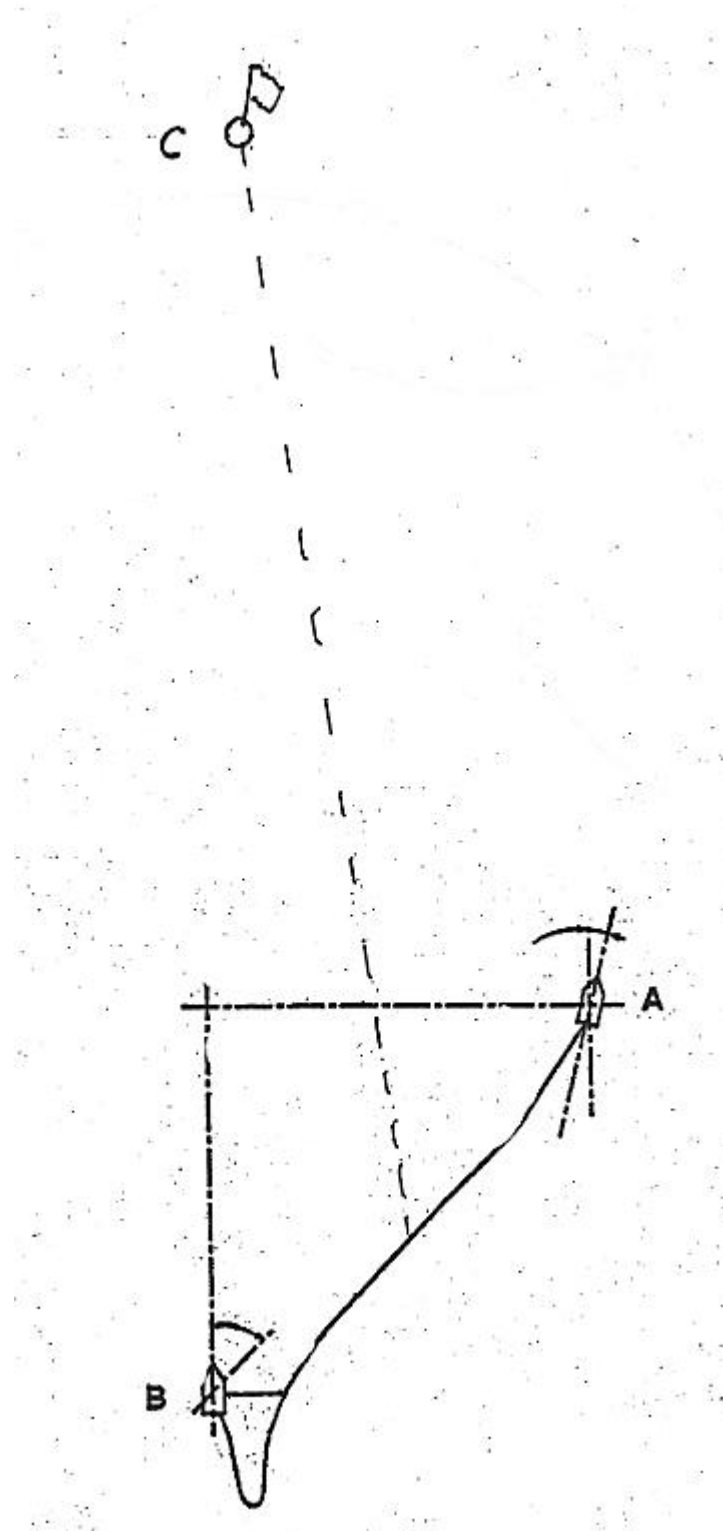


**EXERCISE 2**

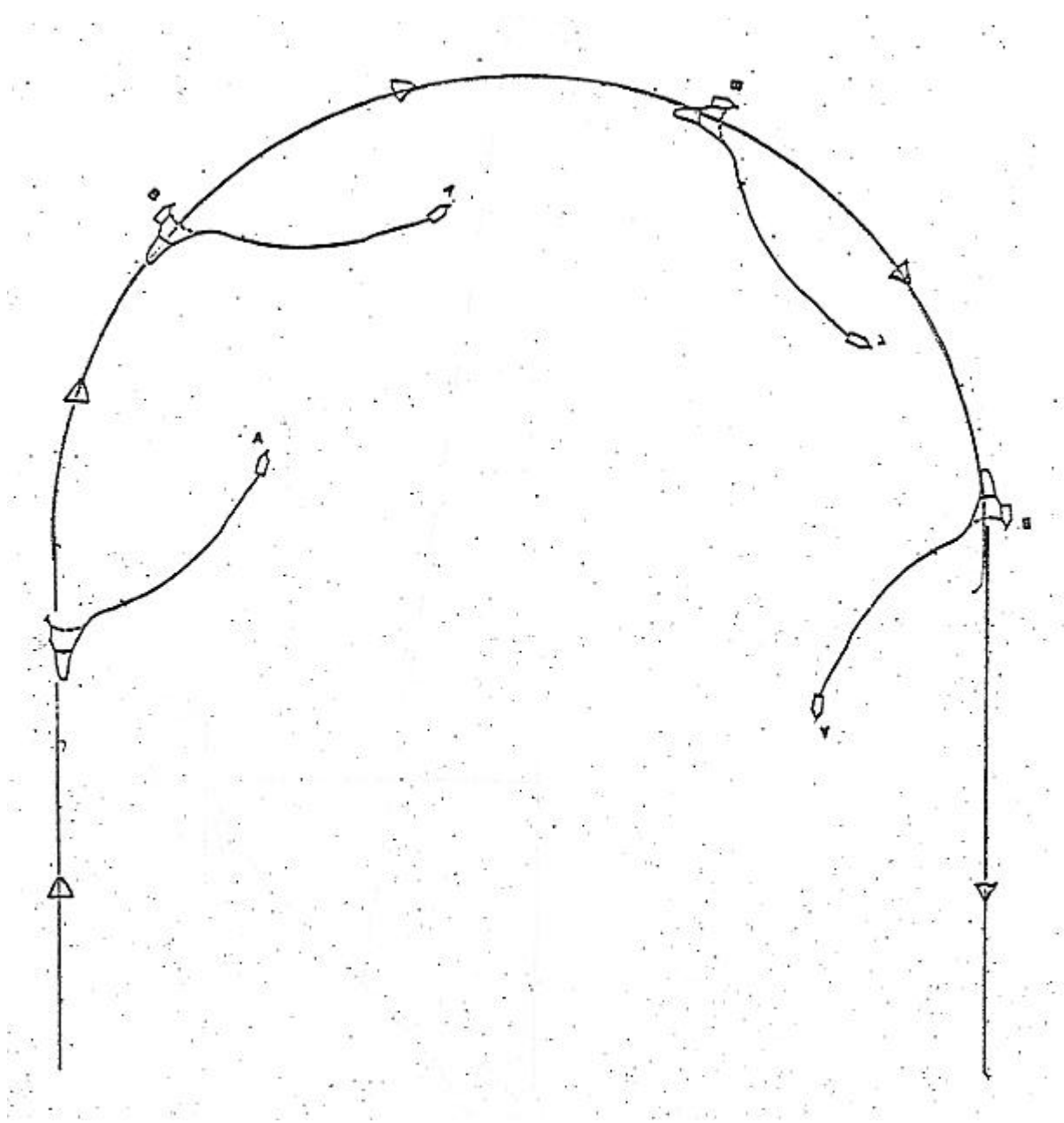
A = TOWING VESSEL

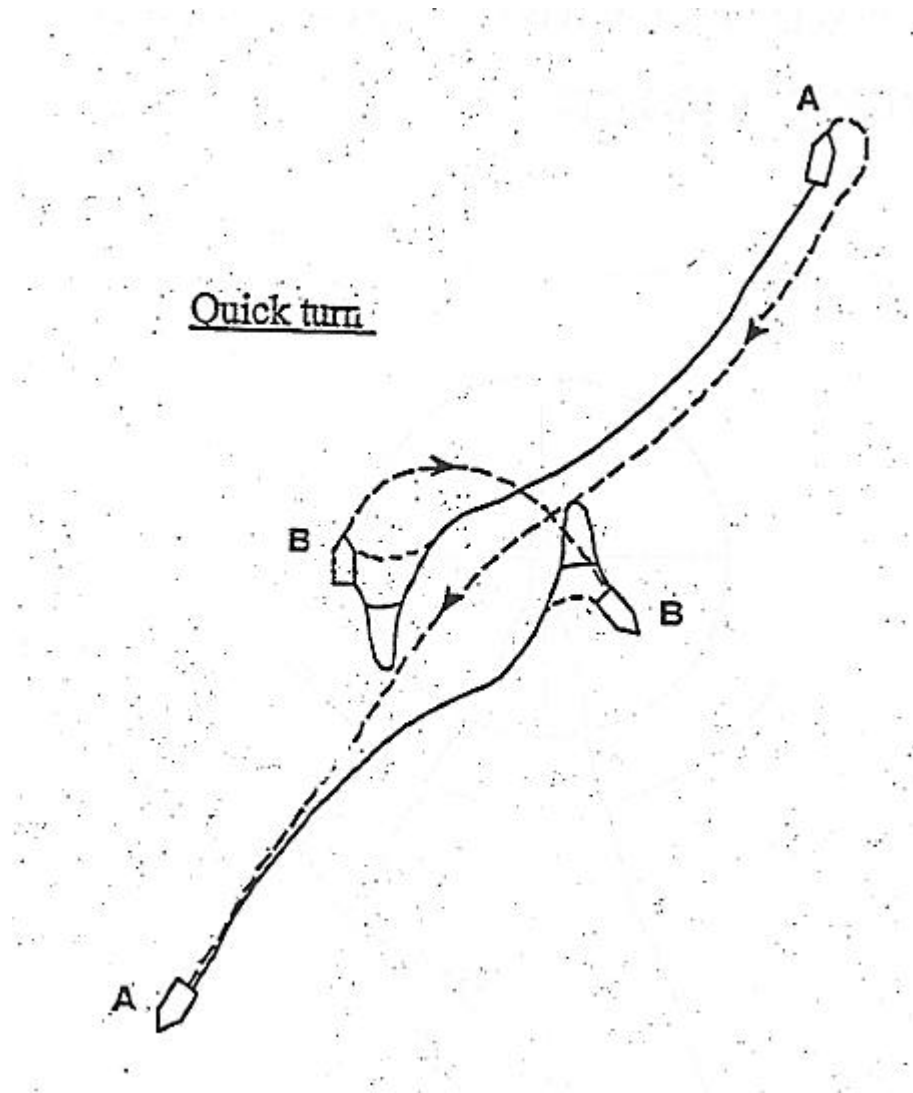
B = SKIMMING VESSEL

C = BUOY



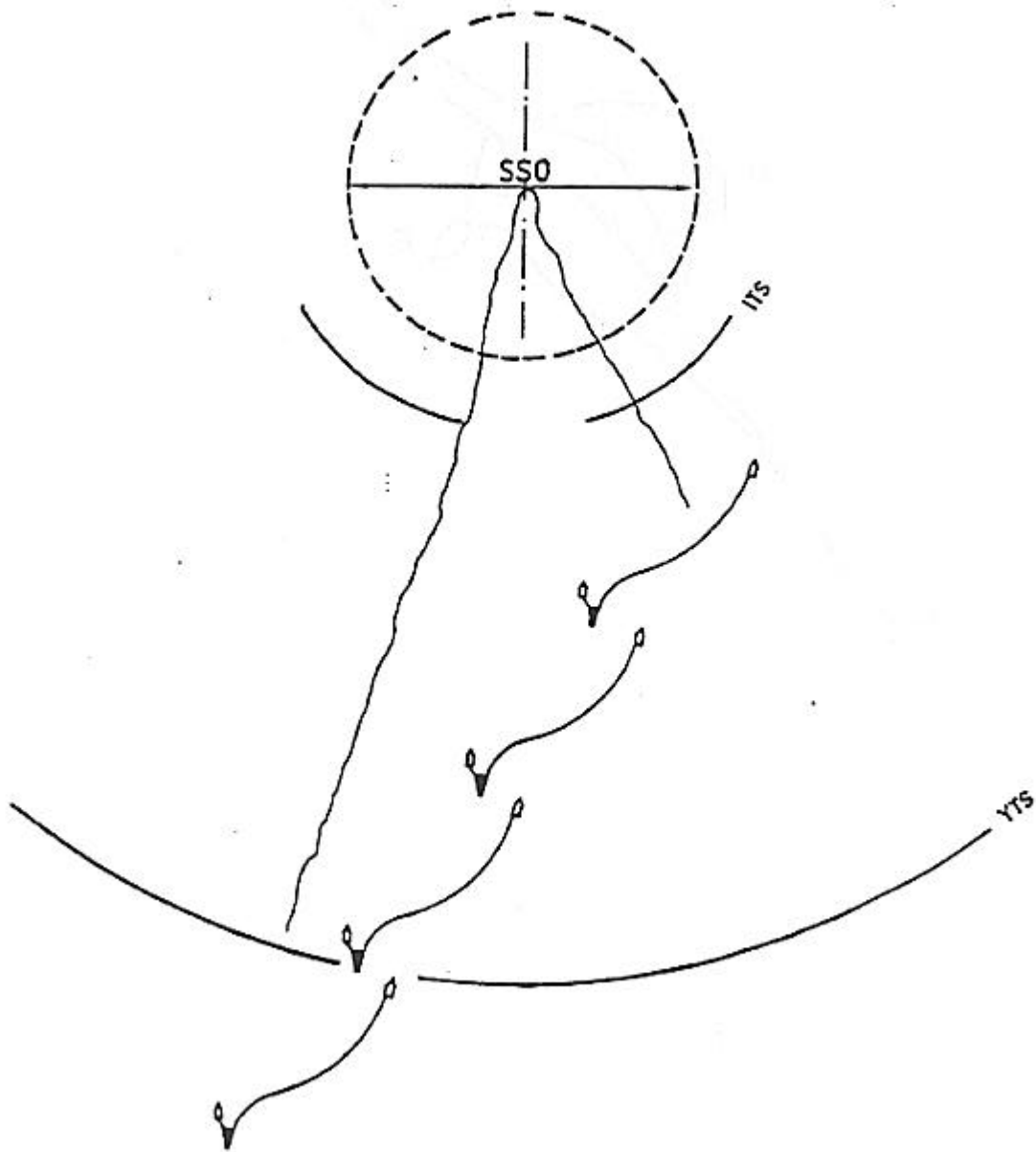
### EXERCISE 3



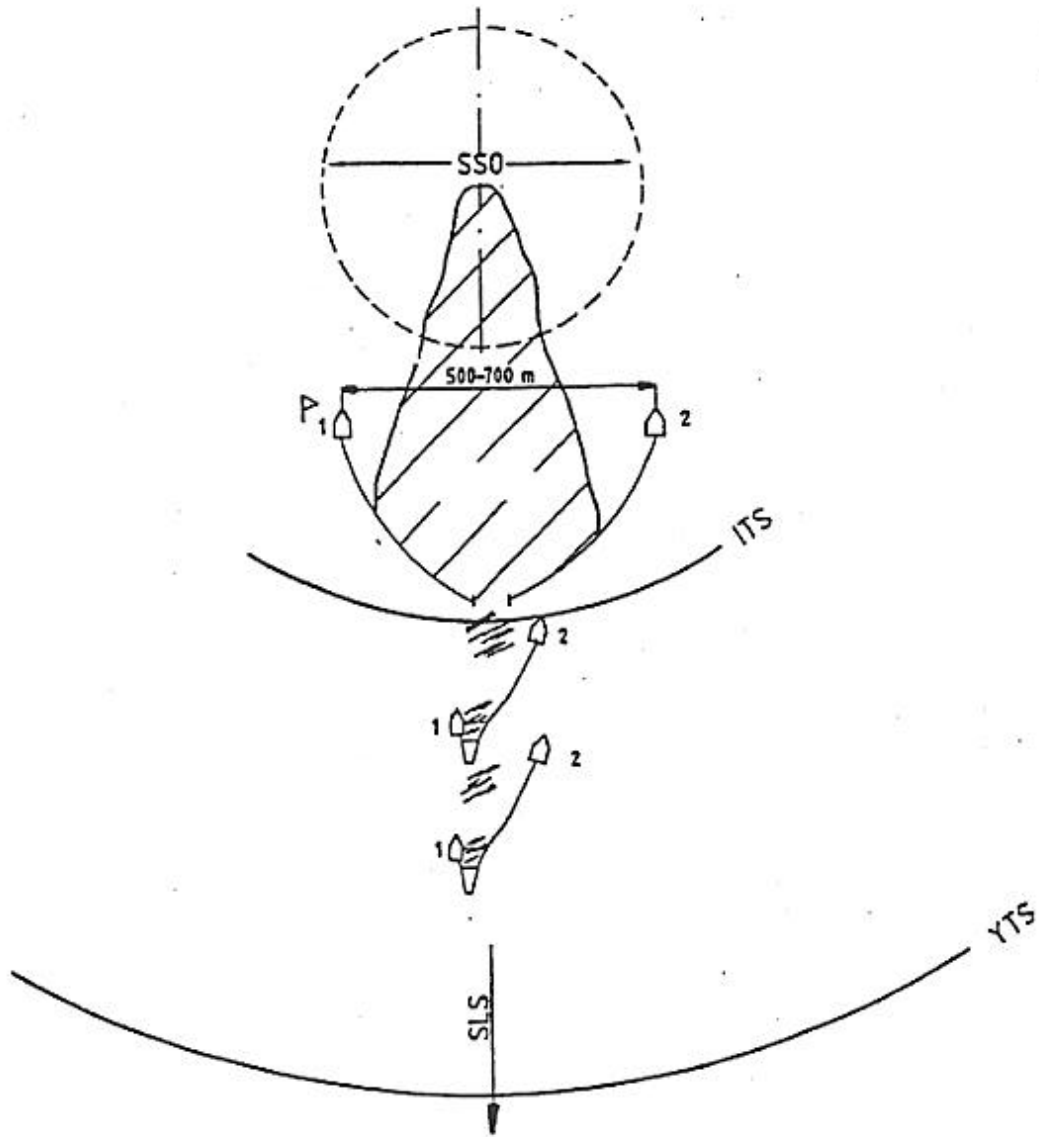
**EXERCISE 4**

(Fig)

### Advanced Training for Major Recovery System







(Fig)

Advanced Training for Major Recovery System