

PLANNING, MOBILISATION AND IMPLEMENTATION

Each phase of the lifting operation should be planned in advance, discussed with the personnel involved, and in particular the divers who will be carrying out most of the work. In the task of lifting and recovery, no matter how small the operation, the importance of planning cannot be over emphasized, but in order to achieve the best results, full details of the work must be available. The following is a 'short' list of the basic information required for a typical salvage recovery task:

- 1) An exact location of the object to be recovered: i.e. Decca or Hi-Fix position; visual transit marks; sextant angles; object is already buoyed or marked on the surface. Appropriate chart position: echo sounder trace etc.
- 2) The attitude of the object on the bottom.
- 3) The nature of the seabed on which the object rests. Is it such that the object may be part buried? Is there any overburden, sitting etc, which may affect 'break-out' of the object, and will any prior water jetting or airlifting be necessary before recovery?
- 4) The nature of the object itself: are there any plans or drawings available which will help establish its centre of gravity, capacity of hollow spaces or internal compartments and materials used in construction?
- 5) The age and structural strength of the object: its potential stability afloat or on the surface and its ability to withstand a surface tow or wave action.
- 6) Is any strengthening required underwater prior to the lift, or can any particular part or parts be moved in a separate lift to reduce the weight of the main lift?
- 7) If the object is a vessel, is it carrying any cargo, fuel oil, hazardous materials etc?
- 8) What suitable attachment points are available for lifting?
- 9) What is the depth of water involved, tidal rise and fall, tidal stream, shipping movements, seabed obstructions such as sewer outfalls, telegraph cable, moorings, pipelines etc?
- 10) Within whose jurisdiction, from a maritime point of view, does the area come? Will it be necessary to have a notice to mariners warning issued for the area during work?
- 11) What particular safety or health precautions are going to be required for
 - a) surface workers
 - b) the divers
- 12) Is there any doubt over the ownership of the object? Is there likely to be any clash with local authority for any reason?
- 13) What arrangements are necessary regarding disposal of the object once it has been raised? At what point in the salvage operation do my responsibilities cease?
- 14) What local knowledge or assistance is there?
- 15) What is the weather pattern for the area on average, for the period being considered for lifting?
- 16) What personnel will be required, what equipment, how many lifting bags and from when to when?
- 17) Insurance. Who pays if it goes wrong?

Experience has shown that the following parts or points on a vessel are of sufficient strength to be used to assist a buoyant lift:

- a) Hawser pipes, but on steel vessels only.
- b) Scupper holes, but on steel vessels only.
- c) Propeller shafts.
- d) Rudder posts.
- e) Portholes or scuttles, depending on their position and on steel vessels only.
- f) Engine mountings.
- g) Anchor windlass and cargo winches.
- h) Propeller shaft 'A' frames and brackets.
- i) Gantries, Samson posts and derrick mountings.

LOW TEMPERATURE OPERATION

Although the fabric used for the manufacture of the air bag has a temperature operating range of **-40° C** to 100° C, when using the air bags at -40 C it is strongly recommended that the air bags are not unfolded until they are totally submerged in the water.