



DIVING MANAGEMENT

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PREFACE

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AMENDMENTS RECORD SHEET

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1. INTRODUCTION

This "Diving Operations Management Guidelines" states the fundamental principles of the management of contracted diving services and assist management of OPU/JVs in fulfilling their responsibilities to maintain high standards of health and safety in their activities.

PETRONAS will follow the main international developments in diving to ensure reliable input to future project developments and to identify those aspects with significant potential impact on underwater activities.

2. **THE MANAGEMENT OF DIVING SERVICES IN PETRONAS GROUP OF COMPANIES**

The range of activities which require to be executed by divers underwater is wide.

Whilst every effort is being made to design out / remove the need for diving via alternative approaches such as remotely controlled systems, it is anticipated that diving will still be required for the foreseeable future. Underwater activities in PETRONAS Group of Companies are predominantly in the Exploration and Production area, and smaller scale activities occur in other areas, mainly in connection with ships, buoys, jetties and underwater pipelines.

Diving is an unusual activity which requires personnel to significantly change their physiology to go to work (inert gas solution in body tissues, thermal characteristics, voice, narcotic effects of raised gas partial pressure may all be involved) and from which state it may be impossible to return safely to atmospheric pressure without a delay of up to a few hours, or in some cases up to three or four days in deeper and/or larger scale operations.

Diving requires considerable specialised knowledge, skill and experience, and may be conveniently divided into the following activities:

- Transfer of the diver(s) to the work site and continuous maintenance of all life support functions and emergency arrangements
- The procedures required to permit safe return to atmospheric pressure without adverse physiological effects.
- The activities concerned with the underwater work required.

Diving should therefore be undertaken only by professional contractors with scope of work, controls and deliverables required being managed by the OPU/JV..

OPU/JV employees should not dive as part of their work.

It is difficult to generalise on the level of risk for various types of diving. However, it is apparent that the number of serious accidents has been higher in shallower waters i.e. from the surface down to 50 m than in deeper diving.

3. **DIVING OPERATIONS - FUNDAMENTAL PRINCIPLES OF MANAGEMENT**

In following the above guidelines with respect to operational diving activities, OPU/JV should:

- Seek to minimise the need for exposure of personnel to hyperbaric (i.e. raised pressure/underwater) environments.
- Contract all diving work as a service.
- Invite bids only from those diving contractors with a good record of capability, health and safety in all aspects of diving.
- Apply as a minimum contractual standard the UK legislation for diving operations (and require contractors to adopt the guidance, recommendations and instructions contained in the UK Health and Safety Executive Diving Safety Memoranda) as the underwater service industry consensus of the "state-of-the-art" for diving operations.
- Require contractors to utilise underwater service industry accepted techniques to monitor and protect the health of divers. In this context "monitor" means to record both the time/depth exposure of divers and any chemical and physical factors which may be hazardous to health.
- Inspect/audit the personnel, equipment, procedures and controls against contract conditions.
- Require contracts to demonstrate proper functioning of critical systems.
- Require all diving operations to be carried out under appropriate Work Permit procedures.