

Entry Level Requirements and Basic Introductory Course Outline for New Remotely Operated Vehicle (ROV) Personnel



The International Marine Contractors Association (IMCA) is the international trade association representing offshore, marine and underwater engineering companies.

IMCA promotes improvements in quality, health, safety, environmental and technical standards through the publication of information notes, codes of practice and by other appropriate means.

Members are self-regulating through the adoption of IMCA guidelines as appropriate. They commit to act as responsible members by following relevant guidelines and being willing to be audited against compliance with them by their clients.

There are two core activities that relate to all members:

- ◆ Competence & Training
- ◆ Safety, Environment & Legislation

The Association is organised through four distinct divisions, each covering a specific area of members' interests: Diving, Marine, Offshore Survey, Remote Systems & ROV.

There are also five regional sections which facilitate work on issues affecting members in their local geographic area – Asia-Pacific, Central & North America, Europe & Africa, Middle East & India and South America.

IMCA R 002 Rev. 2

This guidance was prepared by the IMCA Remote Systems & ROV Division Management Committee.

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IMCA R 002 Rev. 2 – May 2009

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I Objectives

The objectives of this document are to set out basic entry level requirements for ROV personnel in the offshore ROV industry and, in particular, for personnel who have no prior relevant offshore industry experience, who therefore have not completed any form of basic introductory course for the industry, and to set out the basis for an introductory course.

In January 1999, IMCA launched its guidance on competence assurance and assessment, covering safety-critical personnel within the IMCA membership. Details of the competence requirements for ROV personnel are contained in the latest revision of IMCA C 005 – *Competence assurance and assessment: Guidance document and competence tables – Remote Systems & ROV Division*. In the entry-level requirements for ROV/Pilot Technician Grade II, contained in that document, it specifies that such personnel should meet the requirements as set out in this document.¹

It should be noted that the information contained within this publication is intended to set out the requirements for new personnel to receive an introductory course in ROV systems. This training should not be construed as achieving any level of competence defined in IMCA C 005. Further, any party wishing to follow the guidance as provided in this publication should not issue any qualification or certification that claims to be 'IMCA-approved'.

This document is not intended to be exhaustive in its description and outline of the technical background, the typical qualifications and character traits that would apply to new personnel to the offshore ROV industry. Nor is the suggested content of the introductory module guaranteed to satisfy the demands of safety awareness in a constantly changing industry that can be dangerous, exciting and rewarding to work in. However, the content can be construed as the minimum acceptable level that should be attained prior to exposure to the offshore operation of an ROV system.

2 Application

This guidance is applicable to any geographic area world-wide and is in addition to any national regulations which must be adhered to.

¹ IMCA C 005 specified 'meets criteria set out in IMCA R 002' - since this document (IMCA R 002 Rev. 2) supersedes that, the criteria to be met are those specified in this revision.

3 Minimum Requirements for Personnel Qualification

Personnel entering the offshore ROV industry must have the appropriate technical experience and/or academic qualifications as listed below. An exception to such experience/qualifications is provided for in 3.1 iii) below:

3.1 Academic Qualifications/Industrial Experience

- i) A nationally-recognised technical or trade qualification (military service qualification and/or an appropriate level national vocational qualification is acceptable) completed in one or more of the following subjects:

- a) electrical
- b) electronic
- c) hydraulics
- d) mechanics

In addition to the above mentioned trade qualification, a minimum of three years, technically relevant, industrial experience (including any accepted training period) in an appropriate discipline, which should have been obtained within the previous four years.

OR

- ii) A nationally-recognised, higher (tertiary) academic qualification (not otherwise covered above) in a relevant technical subject; plus a minimum of one year of technically relevant industrial experience, which can be secured as a feature of the entry into the ROV industry, i.e. a university graduate may go direct to a suitable establishment to secure the minimum of one year of relevant industrial experience, which may be with the employer.

OR

- iii) In certain circumstances, candidates who do not meet the above but have extensive industrial experience, supported by evidence and references, may be acceptable.

3.2 Personal Attributes

The following character traits are considered necessary, based on the nature of the work environment in the ROV industry:

- ◆ enthusiasm;
- ◆ team player;
- ◆ good oral and written communication skills in English (because this is the predominant language for manuals and technical information);
- ◆ demonstrated self-motivation;
- ◆ practical ability;
- ◆ common sense.

It is anticipated that personnel would be assessed at interview for these and any other attributes considered appropriate. A typical 'other attribute' would be a demonstrated ability to work 'away from home'.

3.3 Medical Requirements

More specific requirements may be put in place by individual companies and some countries, but the following would be generally required:

- ◆ physical fitness and no physical disabilities that would prevent employment offshore
- ◆ overall good health and ability to pass a recognised offshore medical

3.4 Matrix of Minimum Requirements

Requirement		✓															
Technical requirements – one of the following:																	
1	<p>Tick one box a-d and box e before ticking the main right-hand column</p> <table border="1"> <tr> <td>a</td> <td>A nationally-recognised technical qualification</td> <td></td> </tr> <tr> <td>b</td> <td>A nationally-recognised trade qualification</td> <td></td> </tr> <tr> <td>c</td> <td>A military service qualification</td> <td></td> </tr> <tr> <td>d</td> <td>An appropriate level national vocational qualification</td> <td></td> </tr> <tr> <td>e</td> <td>a minimum of three years technically relevant industrial experience (including any accepted training period) in an appropriate discipline, which should have been obtained within the previous four years.</td> <td></td> </tr> </table> <p>One of the above qualifications must be completed in one or more of the following relevant technical subjects:</p> <ul style="list-style-type: none"> ◆ electrical ◆ electronics ◆ hydraulics ◆ mechanics 	a	A nationally-recognised technical qualification		b	A nationally-recognised trade qualification		c	A military service qualification		d	An appropriate level national vocational qualification		e	a minimum of three years technically relevant industrial experience (including any accepted training period) in an appropriate discipline, which should have been obtained within the previous four years.		
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2	A nationally-recognised, higher (tertiary) academic qualification in a relevant technical subject plus a minimum of one year of technically relevant industrial experience,																
3	In certain circumstances, candidates who do not meet the above two criteria but who have extensive industrial experience, supported by evidence and references, may be applicable																
Personal qualities – all elements required																	
1	Good state of physical fitness and no physical disabilities that would prevent employment offshore																
2	Ability to pass a recognised offshore medical																
3	<p>Additionally, all of the following character traits are considered necessary, based on the nature of the work environment in the ROV industry:</p> <ul style="list-style-type: none"> ◆ enthusiasm ◆ team player ◆ good oral and written communication skills in English (because this is the predominant language for manuals and technical information) ◆ demonstrated self-motivation ◆ practical ability ◆ common sense 																

4 ROV Familiarisation Basic Introductory Module

Personnel new to the offshore ROV industry will normally be selected by the ROV contractor based on the criteria in this document. IMCA recommends that individuals who do not meet the criteria set out in this document do **not** embark on an independent path to gain entry to the offshore ROV industry. IMCA, and/or its member companies can be approached by such individuals for an assessment of their suitability before engaging on any activity, e.g. training, that would involve personal expense. There is little purpose for an individual without these entry level qualifications attending an ROV training course, as they will still not meet industry requirements. Training establishments should not identify personnel as 'graduates' of a course based on this document if the individuals concerned did not meet the entry level requirements.

It is recommended that new personnel to the ROV industry attend an introductory module before their first trip offshore. This can be provided by a recognised training establishment, or alternatively by the ROV contractor. It should be noted that it is not a prerequisite that new personnel attend an introductory module prior to their first offshore trip, provided that they have completed an appropriate safety induction course and been assessed as 'safety aware' in the context of ROV operations by a competent person, typically the operations manager of an ROV contractor.

The aim of the introductory module is to give course participants offshore safety awareness rather than provide them with detailed information on ROV systems. It is not considered essential at this stage of the introduction process for them to receive detailed training in the deployment, maintenance, repair and operation of ROV systems.

In this document 'outline knowledge' means that the person should be familiar with the subjects in outline terms and able to demonstrate such outline knowledge of the subject matter by answering suitably worded questions.

The introductory module should be based on the topics listed below, and can be further adapted or developed by ROV contractors and/or training establishments to suit specific company needs.

4.1 Overall Safety and Environmental Awareness

- ◆ Offshore hazard identification and risk assessment;
- ◆ Safe working practices on offshore installations, facilities and vessels, with special reference to ROV operations – including awareness of high voltage (HV) electrical and high pressure (HP) hydraulic systems;
- ◆ Safe workshop practice;
- ◆ Knowledge of company accident reporting arrangements;
- ◆ Familiarity with appropriate safety legislation/guidance;
- ◆ 'Permit to work' systems;
- ◆ Personal protective equipment, upkeep and replacement;
- ◆ Personal safety awareness;
- ◆ Travel arrangements/crew changes;
- ◆ Regional security issues;
- ◆ Company quality assurance and control (QA/QC) standards.

The course should cover each topic in sufficient depth for the participants to have an adequate 'outline' appreciation of each topic. It should cover the types of hazards encountered, the need for 'permit to work' systems, and the particular hazards associated with ROV equipment – HV and HP systems, ROV launch and recovery, movement of systems and suspended loads (where to stand and where not to stand). It should include use of personal protective equipment.

4.2 Introduction to ROV Systems – Outline Knowledge

4.2.1 Typical Offshore Operations, Installations, Facilities and Vessels (for ROV Operations)

The course content should cover the range of installations, facilities and vessel types likely to be encountered, including but not limited to:

- ◆ fixed platforms/jackets;
- ◆ floating production vessels;
- ◆ subsea equipment and pipelines;
- ◆ semi-submersibles;
- ◆ jack-up drilling rigs;
- ◆ pipelay barges;
- ◆ DP vessels;
- ◆ trenching (pipeline, flowline, submarine and power);
- ◆ dive support vessels;
- ◆ ROV survey vessels;
- ◆ drill ships;
- ◆ construction barges (heavy lift vessels);
- ◆ trenching support.

The course should cover the characteristics and appearance of the various types of installation or vessels and the kind of operations, other than ROV operations, conducted from each.

There should also be an awareness of the operational hazards encountered at the different locations and worksites, e.g. hydrocarbon gas, hydrogen sulphide, equipment movement and restricted areas.

The course content should include a brief overview of respective roles of the various personnel working at these locations e.g. the vessel Master, Offshore Installation Manager (OIM), client representative, tool pusher, offshore medic, radio officer, safety officer, safety representative etc.

4.2.2 Remotely Operated Vehicle (ROV) Systems

The course should cover the background to the use of ROV systems:

- ◆ how they have developed;
- ◆ typical ROV operations e.g. drill support, platform inspection, pipeline inspection, trenching and construction support.

The course should cover the different classification of ROV systems – from the most basic through to the most sophisticated. It should include outline information on the launch and recovery of ROVs and the typical tasks they can perform:

- ◆ observation;
- ◆ survey;
- ◆ inspection;
- ◆ construction;
- ◆ intervention;
- ◆ trenching (plough and ROV)

and provide an insight into the limitations that may be inherent within the classification, e.g. an inspection class ROV cannot routinely perform intervention tasks.

The course should also cover ROV tooling and sensor fits. It is important that an operational ROV system and online support equipment should be available for demonstration purposes as a feature of the course. This will allow new personnel to more fully appreciate the various aspects of ROV systems and associated equipment.

4.2.3 Lifting Equipment (Maintenance and Operation)

Lifting equipment used by an ROV is normally specific to the system. Hence the syllabus should only cover, in general terms, the major types of lifting equipment, which are likely to be encountered, their means of slinging, timescales for re-certification, visual awareness of defects likely to occur and an awareness of the re-certification requirements for shackles and other rigging and lifting equipment.

4.2.4 Duties of the Members of an ROV Crew

The course content should cover the typical qualifications and competence of the ROV crew based on the class of the ROV system, team size and roles and responsibilities of each member of the team.