



Australian Diver Accreditation Scheme

ADAS Life Support Technician Certification Scheme

Minimum Requirements for Certification



The Australian Diver Accreditation Scheme (ADAS) is the Australian national occupational diver accreditation and certification scheme. It was developed by the Commonwealth Government in 1988 to ensure that Australian occupational divers are appropriately trained and assessed as competent to safely undertake underwater work. ADAS certification is awarded to applicants who demonstrate that they meet the competencies detailed in the relevant ADAS Competence Standard and have completed the required assessment and certification process.

ADAS certification is conditional upon the certified person operating safely and sensibly within the law at all times, or where there is no specific legislation, in compliance with recognised standards and/or codes of practice.

ADAS is a Registered Training Organisation under the national Australian Quality Training Framework and all ADAS courses are accredited under the national Australian Qualifications Framework.

Diving operations in support of offshore oil and gas operations in Australian waters are subject to legislation to regulate the safety of underwater operations (The Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGGS Act)).

These Regulations mandate that divers and supervisors must be accredited under the Australian Diver Accreditation Scheme in order to undertake offshore diving operations.

A feature of these regulations is a legislated key role for diving supervisors and the detailing of their responsibilities in safeguarding the health and safety of divers.

Non-compliance by supervisors with the provisions of these regulations is now an offence with prescribed penalties.

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The information contained herein is given for guidance only and endeavours to reflect best industry practice. For the avoidance of doubt no legal liability shall attach to any guidance and/or recommendation and/or statement herein contained.

Contents

ADAS Offshore Diving Supervisor Certification Scheme	2
1. Introduction	4
2. Scheme Background	4
3. Scope	5
4. Terminology, Responsibilities and Career Structure.....	5
4.1 Assistant Life Support Technician.....	5
4.2 Life Support Technician.....	6
4.3 Life Support Supervisor.....	6
4.4 Onshore-Based Life Support Personnel.....	6
5. Life Support Technician Career Structure.....	7
5. Life Support Technician Examination.....	8
5.1 Content.....	8
5.2 Examination Procedures and Fees.....	8
5.3 Examination Results	9
5.4 Failure.....	9
5.5 Certificates.....	9
6. Logbooks.....	10
7. Terminal Objectives for Assistant Life Support Technician Courses.....	10
A. Plant & Equipment	
7. Terminal Objectives for Assistant Life Support Technician Courses.....	11
B. Physiology	
C. Gas Systems	
D. Documentation and Record Keeping	
E. Practical Experience under Direct Supervision	
7.1 Optional Legislation Sections	12

ADAS Life Support Technician Certification

1. Introduction

This document sets out the requirements of the ADAS Life Support Technician Certification Scheme.

2. Scheme Background

Divers living in saturation conditions require constant monitoring and control by trained personnel outside the deck compression chamber. The oxygen content of their breathing gas, the concentration of carbon dioxide in the atmosphere, the pressure, temperature and humidity of their environment all need to be monitored regularly and functions such as catering and sanitary disposal need to be controlled from the outside.

The history of commercial diving saw a very rapid expansion in the use of saturation diving techniques, with increasingly sophisticated equipment and larger chamber complexes being developed to meet the need for large numbers of divers to work at greater depths.

This greatly increased the responsibilities of those who control the chamber environment and, consequently, the knowledge that they should have of the physics, physiology and medical aspects of supporting personnel in high-pressure environments.

In the past, when there were small numbers of divers diving to relatively shallow depths for short periods of time, other divers normally controlled chamber complexes under the overall control of the diving supervisor. Many of them had naval training and a good basic understanding of the needs, disciplines and requirements of the work. In the 1970s and 1980s, the rapid expansion in offshore oil exploration and production created a demand for more divers, at greater depths, for longer periods of time. This led to the development of a group of personnel commonly called life support technicians, who operate the saturation chamber complex under the control of a diving or life support supervisor.

Life support technicians come from a variety of different backgrounds, including highly skilled technicians from other industries, qualified nurses, former divers and some specially trained for the role. No industry-wide standard existed when AODC started work in 1983 on a scheme to regularise this section of the underwater industry. The scheme formally commenced on 1 August 1984 and provided for a 'grandfather' period, during which time all existing LST personnel were expected to pass the AODC examination. This period ended on 31 July 1986, since when the administrative arrangements for the LST scheme have been brought into line with the Diving Supervisors Certification Scheme.

On 18 January 2007, ADAS signed a Memorandum of Understanding with IMCA under which both organisations accept that their respective offshore qualifications are equivalent and accept that the certifications issued by each organisation are proof of meeting the requirements to undertake supervision subject to any specific national legal requirements.

ADAS has since signed similar MOU with the Canadian national certification scheme (the Diver Certification Board of Canada) and the Netherlands national certifying authority, the Netherlands National Diving Centre.

3. Scope

The scheme covers all personnel engaged on life support duties from new entrants through to the most senior grade. A career progression is laid out, with promotion to senior grades based on experience and ability. It also applies to certain onshore-based life support personnel.

4. Terminology, Responsibilities and Career Structure

The term 'Life Support Technician' has been chosen as being descriptive of the wide range of duties and responsibilities undertaken by these personnel. Other terms such as Chamber Operator or Panel Operator are used by some companies. Alternatives can be used, provided that the terminology is easily understood and that the responsibilities defined for the different grades are similar to those described below.

4.1. Assistant Life Support Technician

This is the most junior grade and refers to a person gaining experience.

Before being sent offshore as an assistant LST, entrants must:

- a) undergo an ADAS approved basic course to the Terminal Objectives set down in Section 7; and
- b) produce documentary evidence of satisfactorily completing such a course.

An assistant LST should not be allowed to carry out any tasks unless properly supervised.

After working for at least 2400 logged panel hours as an assistant LST, a person may be nominated by their company to sit the ADAS Life Support Technician examination. Up to 720 panel hours can be gained by 144 hands-on hours' experience on a class A simulator or up to 480 panel hours can be gained by 96 hands-on hours' experience on a class B simulator.

Closed bell divers with ADAS-recognised certificates who have sat and passed an Assistant Life Support Technician examination set by an approved training establishment would only be required to log 360 panel hours, provided that they produce signed logbooks verifying their diving experience and have demonstrated competence as an offshore closed bell diver in accordance with IMCA C 003 – *Guidance document and competence tables: Diving Division*. Where a simulator is available, up to 108 panel hours can be gained by 22 hands-on hours' experience on a class A simulator or up to 72 panel hours can be gained by 15 hands-on hours' experience on a class B simulator.

Passing the ADAS Life Support Technician examination will indicate that an assistant LST has the basic theoretical knowledge necessary for promotion to LST, but they should only be promoted if his company is satisfied as to their competence. Note: At least half the required panel hours should have been obtained in the two years prior to the application to sit the examination being made.

4.2. Life Support Technician

This is the main grade and covers qualified and experienced personnel.

An LST should have demonstrated their practical capabilities as an assistant LST (as in 4.1 above) and should have passed the ADAS Life Support Technician examination.

They are able to carry out all the normal tasks of a life support nature, but there should always be a diving or life support supervisor on duty and in control.

4.3. Life Support Supervisor

This is the most senior grade. Before becoming eligible for promotion to life support supervisor, an LST should, since having qualified as such, have demonstrated competence as a life support technician in accordance with IMCA C 003 – *Guidance document and competence tables: Diving Division*, have logged at least 2400 panel hours working as an LST, and have received training in aspects of leadership.

They should be appointed in writing by their company on the basis of their experience, character and ability to accept responsibility. A bell diving supervisor is also qualified to act as a life support supervisor, although they may not have previously worked as a life support technician.

They should have specific responsibility for the control of the saturation complex.

Dependent on national regulation and the management structure of the company, they may be subject to direct supervision by a more senior person.

4.4. Onshore-Based Life Support Personnel

An assistant LST who has only worked in an onshore hyperbaric centre may be considered eligible to sit the ADAS Life Support Technician examination provided that they have completed at least 90% of the required 2400 panel hours (i.e. 2160 hours) in operation of an occupied chamber when under pressure (with at least 50% mixed gas experience).

Only those life support personnel who have experience using mixed gas will be eligible to sit the ADAS Life Support Technician examination.

LIFE SUPPORT TECHNICIAN CAREER STRUCTURE

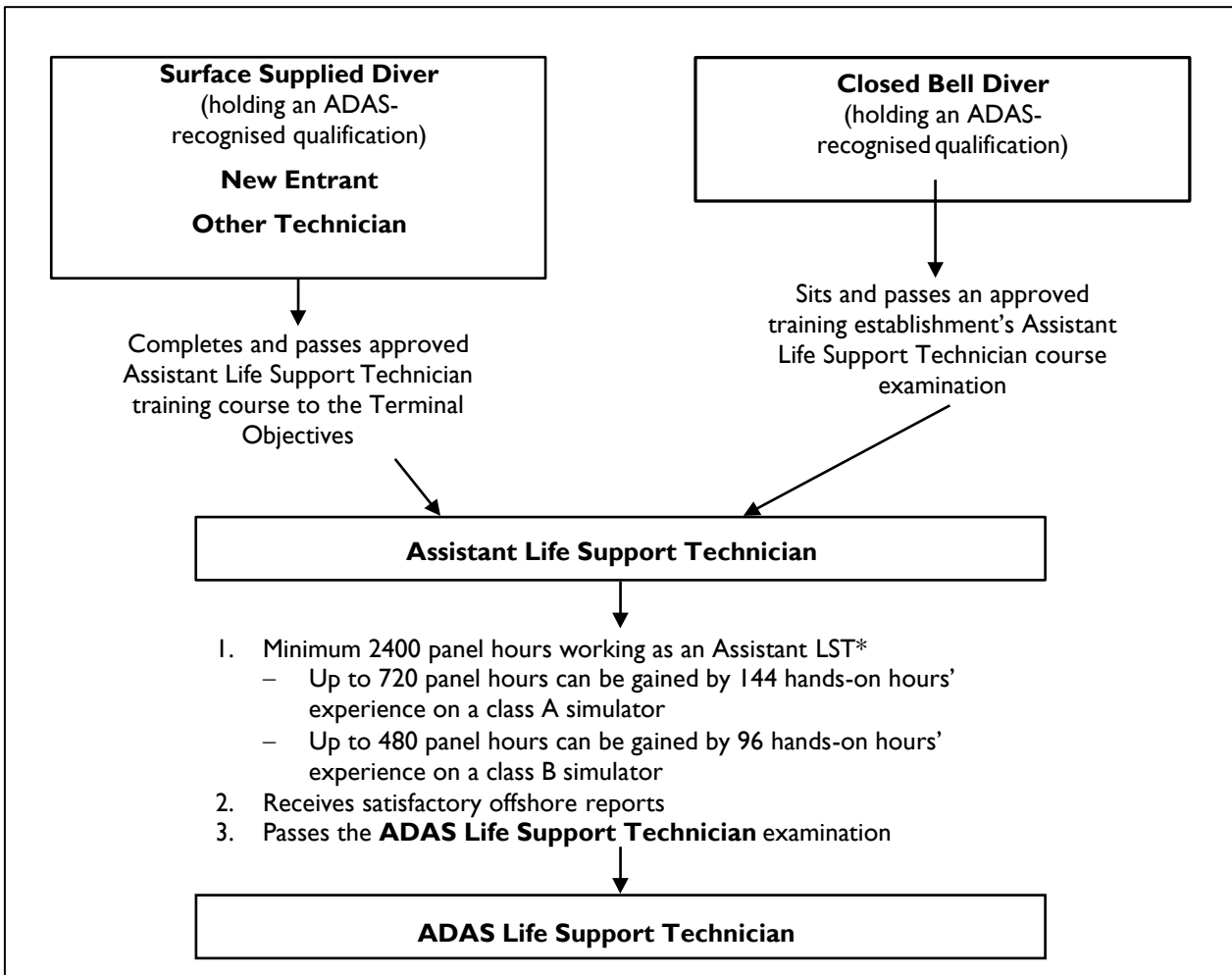


Figure 1

*If entry is as a closed bell diver with an ADAS-recognised Bell Diver certificate and an approved ALST training course certificate, who has signed logbooks verifying diving experience and who has demonstrated competence as an offshore closed bell diver in accordance with IMCA C 003 – *Guidance document and competence tables: Diving Division*, the minimum is 360 panel hours working as an Assistant LST. Where a simulator is available, up to 108 panel hours can be gained by 22 hands-on hours' experience on a class A simulator or up to 72 panel hours can be gained by 15 hands-on hours' experience on a class B simulator. Contact the ADAS Certification Schemes Co-ordinator for further details.

5. Life Support Technician Examination

Before applying to sit the examination, candidates must meet all the eligibility criteria set out in Section 4 and have progressed in accordance with Figure 1.

5.1. Content

An examination in the theoretical aspects of life support has been devised to test personnel judged by their company to be ready for promotion to life support technician. The compulsory examination is made up of three sections:

- a) Physics
- b) Physiology
- c) Chamber & LST Practices

Additionally, the examination will contain a legislation section, which will relate to Australian legislation. Depending on the part of the world in which the LST wishes to work, optional sections may be sat separately from the compulsory examination if appropriate. Candidates must achieve a minimum pass mark of 75% overall and a minimum of 70% for each sub-section to successfully pass the exam.

5.2. Examination Procedures and Fees

Application to sit an examination must be made in writing by the candidate's sponsoring company using the relevant application form (LST) which must be signed by the company's nominated signatory (who will normally be the operations or safety manager or someone of equal or higher standing within that company) and be accompanied by copies of all the documents specified on that form.

At least half the required panel hours should have been obtained in the two years prior to the application being made. Applicants who do not comply with these requirements may be referred to the ADAS Certification Schemes Co-ordinator for a decision by the Assessment Panel and it should be understood that additional training and/or offshore experience may be required.

Applications must reach the ADAS Certification Schemes Co-ordinator at least fourteen days before the proposed date of examination. Acceptance to sit an examination is valid for one year from the date acceptance is given and, should a candidate not have sat the examination within that year, they will be required to make a new application.

All candidates will be charged the current fee for each examination and for any resit. Changes to the fees will be announced as they occur.

Supervision of examinations and the marking of papers will only be carried out by ADAS.

5.3. Examination Results

Companies will be informed as to whether their candidates have passed or failed the examinations. No marks will be revealed and under no circumstances will examination papers be returned to candidates or their sponsors after an examination.

5.4. Failure

The posts of diving supervisor and life support technician (LST) are safety critical and it is essential that candidates for these positions are able to demonstrate convincingly that they have the necessary aptitude, knowledge and skills to fulfil the roles.

- Candidates will only be allowed to sit the ADAS examination three times: an initial exam and then two subsequent resits. Candidates who fail all three attempts will be required to wait a period of two years from the date of the last failure to allow them to gain more experience before being allowed to re-enter the scheme. Once the two-year waiting period has elapsed, candidates will then be required to re-take the full supervisor or LST training programme again as detailed in the current version of ADAS offshore diving supervisor and life support technician certification schemes, including re-attending an ADAS-approved trainee diving supervisor/assistant life support technician (ALST) training programme and fulfilling all the practical training requirements before reapplying in full again for the exam;
- Should a candidate be unsuccessful on the first occasion, he/she will be allowed an initial resit which can be booked 30 days after sitting the first exam. The delay is to allow the candidate sufficient time to study before resitting the exam;
- Should the candidate be unsuccessful following the first resit, he/she will not be permitted to re-sit the exam for a second time until a period of one-year elapses. This is to ensure that the candidate has plenty of time improve his/her skills and to learn and master all the required information and before trying the exam again.

ADAS keeps a record of all candidates who attempt examination modules and circulates such information to its international partners in the various mutual recognition schemes.

5.5. Certificates

Individually numbered ADAS certificates bearing a photograph of the holder will be issued to successful candidates.

Certificates will be endorsed as necessary to show which, if any, legislation modules have been passed.

The original certificate should be in the possession of the holder at all times whilst working as a Life Support Technician.

Any loss or theft of a certificate should be reported to ADAS as soon as possible after the event. A charge will be made for issuing replacement certificates.

The certificate does not exempt the bearer from complying with the requirements and standards in force in the country in which he is working.

6. Logbooks

A Life Support Technician Logbook can be used by all grades of life support personnel and, if maintained correctly, will give full details of an individual's experience as well as a brief daily work record. The logbook should be used to establish that required times have been spent at the relevant grades before promotion is considered.

7. Terminal Objectives for Assistant Life Support Technician Courses

On entering the industry, an individual should undergo an ADAS approved training course which includes at least the items in A-D below. The minimum course duration is 60 hours, including the course examination but excluding time spent on any optional legislation section(s). It is suggested that prior assessment of the candidates is necessary to establish their capability to benefit from the course, and also to measure improvement after it.

It is expected that, having completed the course, an assistant life support technician will be conversant with the basic terminology of diving and the theory of various diving techniques. They should also have a necessary knowledge of the following:

A. Plant and Equipment

- ◆ The construction and purpose of valves, fittings, gauges, regulators, hoses and pipe work and how to carry out normal operations, maintenance and basic repairs
- ◆ This includes the difference between various thread forms and the reasons for their use
- ◆ The principles of chamber life support systems with priority on pre-operational checklists, monitoring during use, routine maintenance and basic repairs. This includes understanding the possible emergencies which could occur and what actions should be taken
- ◆ The operation, function testing and selection of gas supplies of BIBS and dump systems, including routine maintenance and repairs
- ◆ Pre- and post-dive checks of a chamber complex using checklists
- ◆ The safe operation and design of hyperbaric sanitary systems, in particular safety interlock systems
- ◆ The operation and design of medical locks, including various types of interlocks and safety devices. The correct procedures to be used and dangers involved with TUP
- ◆ The principles of operation of various items of equipment used in a typical diving system, such as compressors, gas reclaim systems and transfer pumps
- ◆ The use of various types of fire suppression systems including regular maintenance and checks
- ◆ The various substances and materials which are prohibited inside a chamber, such as medical preparations, combustible materials, etc.

B. Physiology

- ◆ The respiratory, circulatory, basic skeletal and nervous systems of the body
- ◆ The problems of maintaining divers in thermal balance and in particular the symptoms and treatment of hypo- and hyperthermia
- ◆ The effects on the body and limits of various gases under pressure, in particular oxygen and carbon dioxide
- ◆ The effects of pressure on the body and the principles of decompression and therapeutic procedures
- ◆ The causes and symptoms of decompression sickness, barotrauma and HPNS
- ◆ The need for hygiene during saturation, the problems of bacterial growth in a chamber and methods of control, detection and treatment
- ◆ The contents, requirements and maintenance of various types of diving medical kits.

C. Gas Systems

- ◆ The physical properties of liquids and gases and specifically the relationship as appropriate between depth, volume, pressure, temperature, partial pressure and solubility of gases
- ◆ The need for purity of gases and the effects of impurities
- ◆ Typical gas schematics including symbols, logic and functions
- ◆ Carrying out chamber operational procedures by calculation
- ◆ The principles of gas mixing and changes of mixture for heliox and nitrox
- ◆ The basic properties of gases and potential problems encountered in their use
- ◆ The principles and use of various types of gas analysers
- ◆ Methods of identifying gas impurities likely to be found in hyperbaric atmospheres
- ◆ The importance of oxygen cleanliness and the methods used to achieve it
- ◆ Chamber emergency problems
- ◆ The reasons for gas stratification and methods used to prevent it.

D. Documentation and Record Keeping

Demonstrate an ability to:

- ◆ Explain typical pressurisation and decompression procedures covering various options
- ◆ Explain typical tables for saturation, bounce and air diving
- ◆ Understand the need for, and help to prepare, procedures for chamber operations and life support systems.

E. Practical Experience under Direct Supervision

- ◆ Maintain a legible and accurate record of all aspects of a saturation dive
- ◆ Maintain a gas status board showing gas reserves and mixtures
- ◆ Analysis of stored gases and chamber atmosphere with various types of equipment
- ◆ Calibration of gas analysers
- ◆ Transferring diving gases around a system and putting diving gases on line to chambers and control panels including the BIBS
- ◆ Monitoring the chamber for depth, temperature and humidity using various types of equipment. Calibrating the equipment

- ◆ Effective operation of helium speech unscramblers, telephone emergency signals and other communications systems
- ◆ Compression and decompression of a diving system using different schedules
- ◆ Operating a system of chamber management and housekeeping including routine schedules (such as meals, sanitation systems, medical locks, etc.).

7.1. Optional Legislation Sections

Assistant life support technicians will be expected to demonstrate an understanding of the main points of current legislation in the country concerned which is relevant to diving; the main duties of employer and employee; the specific duties and responsibilities of all members of the diving team; the requirements of and procedures for testing, examining and certifying equipment; the requirements of diving operation logs; and of all relevant codes, guidance notes, safety notices and memoranda published by the relevant national governing bodies.