Commercial Diving Competency Standard for Inland/Inshore

Commercial Self Contained Underwater Breathing Apparatus (CSCUBA) Diving Supervisor

and

Surface Supplied Diving Equipment (SSDE) Diving Supervisor

The Workplace Safety and Health Council (WSHC) and The Ministry Of Manpower (MOM)

All rights reserved. This document is provided for explicit use and guidance of MOM Accredited Training Providers as information resource only. Any other use of this document or parts thereof, including reproduction, publication, distribution, transmission, re-transmission or public showing, or storage in a retrieval system in any form, electronic or otherwise, for purposes other than that expressly stated above without the expressed permission of MOM or WSHC is strictly prohibited.
## Version History

<table>
<thead>
<tr>
<th>Version</th>
<th>Effective Date</th>
<th>Changes</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>20 December 2010</td>
<td>First Issued</td>
<td>ICB, WSHC</td>
</tr>
</tbody>
</table>
### TABLE OF CONTENTS

1.0 INTRODUCTION AND SCOPE ......................................................................................................................................................................................... 4
1.1 APPLICATION .............................................................................................................................................................................................. 4
1.1.1 CERTIFICATION .................................................................................................................................................................................. 5
1.1.2 DEFINITIONS .......................................................................................................................................................................................... 5
1.3 PRE-REQUISITES FOR CSCUBA DIVING SUPERVISOR ............................................................................................................................... 10
1.4 WORKING CATEGORIES FOR CSCUBA DIVING SUPERVISORS (0 – 30 METRES) ................................................................. 10
1.5 PRE-REQUISITES FOR SSDE DIVING SUPERVISOR ............................................................................................................................... 10
1.6 WORKING CATEGORIES FOR SSDE DIVING SUPERVISORS (0 – 30 METRES) ........................................................................... 11
1.7 SCOPE OF WORKING CONDITIONS .................................................................................................................................................... 11
2.0 COMPETENCY STANDARD ........................................................................................................................................................................... 12
2.1 CORE COMPETENCY UNITS FOR CSCUBA AND SSDE DIVING SUPERVISOR ............................................................................................. 12
2.1.1 DEFINITIONS .......................................................................................................................................................................................... 5
2.1.2 ADVANCED DIVING THEORY: PHYSICS (CD-CCS-200B-0) ............................................................................................................. 13
2.1.3 ADVANCED DIVING THEORY: PHYSIOLOGY (CD-CCS-200C-0) ........................................................................................................ 13
2.1.4 DIVE PLANNING (CD-CCS-200D-0) ....................................................................................................................................................... 13
2.1.5 DOCUMENTATION AND RECORDS (CD-CCS-200E-0) ...................................................................................................................... 13
2.1.6 LEADERSHIP AND COMMUNICATION (CD-CCS-200F-0) ................................................................................................................ 13
2.2 SPECIFIC COMPETENCY UNITS FOR CSCUBA DIVING SUPERVISOR .............................................................................................. 14
2.2.1 CSCUBA DIVING EQUIPMENT, SYSTEMS, PROCEDURES AND PRACTICES ................................................................................... 14
2.2.2 CONDUCT CSCUBA DIVING OPERATIONS (CD-SCS-201A-0) ......................................................................................................... 14
2.2.3 SPECIFIC COMPETENCY UNITS FOR SSDE DIVING SUPERVISOR .............................................................................................. 14
2.3 SSDE - DIVING EQUIPMENT, SYSTEMS, PROCEDURES AND PRACTICES (CD-SSS-202A-0) .............................................................. 15
2.3.1 SSDE - DIVING EQUIPMENT, SYSTEMS, PROCEDURES AND PRACTICES .................................................................................... 15
2.3.2 CONDUCT SSDE DIVING OPERATIONS (CD-SSS-202B-0) ............................................................................................................... 15
3.0 INLAND/INSHORE DIVING SUPERVISOR COMPETENCY FLOW CHART ................................................................................................. 16
3.1 CORE COMPETENCY UNITS - SUBJECT CONTENT ................................................................................................................................. 16
3.2 CSCUBA DIVING SUPERVISOR SPECIFIC COMPETENCY UNITS - SUBJECT CONTENT ................................................................. 19
3.3 SSDE DIVING SUPERVISOR SPECIFIC COMPETENCY UNITS - SUBJECT CONTENT ................................................................. 20
3.3 DIVING SUPERVISOR PROGRESSION FLOW CHARTS ........................................................................................................................... 22
4.0 INLAND/INSHORE DIVING SUPERVISOR CORE COMPETENCY ............................................................................................................. 25
5.0 INLAND/INSHORE CSCUBA DIVING SUPERVISOR SPECIFIC COMPETENCY UNITS ............................................................................. 57
6.0 INLAND/INSHORE SSDE DIVING SUPERVISOR SPECIFIC COMPETENCY UNITS ................................................................. 65
1.0 INTRODUCTION AND SCOPE

This standard specifies the competencies required for training and certification of diving supervisors for commercial diving operations using Commercial Self Contained Underwater Breathing Apparatus (CSCUBA) and Surface Supplied Diving Equipment (SSDE). The purpose of this Standard is to describe the competency requirements to train dive supervisors to safely and competently plan and supervise diving operations involving CSCUBA and SSDE.

This standard outlines the competency and training requirements for the following two levels of diving supervisor qualification:

- Level 3: Commercial SCUBA Diving Supervisor (No decompression; maximum depth 30m)
- Level 4: SSDE Diving Supervisor (Maximum depth 30m)

This Standard is prepared by the Workplace Safety & Health Council (WSHC) in consultation with the Commercial Diving Association (Singapore). It should be understood by the user of this standard that the requirements contained herein are the minimum acceptable levels.

1.1 Application

This Competency Standard outlines the minimum requirements for commercial diving supervisors to work safely and competently, and to be trained/certified as a Commercial SCUBA (CSCUBA) Diving Supervisor and SSDE Diving Supervisor. This Competency Standard is intended to provide understanding, and describes the theory requirements, practical application of diving knowledge, techniques required to supervise dives while using CSCUBA to a maximum depth of 30m (99fsw) with no decompression diving and the use of SSDE to a maximum depth of 30m (99fsw).

This Standard is the second part (Part 2) of the standards relevant to the training and certification of commercial divers, where the requirements of authorities and industry demand a prescribed standard of training and competence to ensure an adequate degree of safety, performance and economy during diving operations. The objective of this standard is to provide authorities, training providers and trainees with a summary of the minimum competencies required by CSCUBA and SSDE Diving Supervisors, and details the minimum content of a training course for imparting these competencies to a trainee occupational dive supervisor.

The Accreditation Authority may utilize this Standard to:
- approve establishments to run courses and / or assessments to this Standard
- monitor courses to ensure standards are being maintained
- issue or recognize certificates of competence to or from persons who have completed the specified training tasks and are deemed competent to achieve the competencies described in this Standard

Training providers may utilize this Standard to:
- establish the course timetable, content and assessment
- establish training material and training aids / equipment required to conduct a course
- establish means of assessing the trainees for a suitable level of competence on completion of the course
1.1 Certification

Persons requiring commercial diving supervisor certification must meet all performance criteria specified in this standard for the particular level of certification being sought.

Notes:
- This Standard does not apply to the supervision of diving operations conducted within the Offshore Oil & Gas industry
- This Standard may be used to train and assess dive supervisors for any type of diving operation in the type of diving method (CSCUBA, SSDE) the certification is relevant to. However, for certification to be awarded it is necessary for the diving supervisor to be competent at effectively supervising a range of common general diving operations.

1.1.2 Definitions

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident</td>
<td>An undesired event giving rise to death, ill health, injury, damage or other loss</td>
</tr>
<tr>
<td>Acute Illness</td>
<td>An illness characterised by the symptoms having a rapid onset</td>
</tr>
<tr>
<td>AGE</td>
<td>Arterial gas embolism is a major cause of death in diving and the initiating cause (pulmonary barotrauma) usually goes undetected. Arterial Gas Embolism, is caused most often by the expansion of respiratory gases during ascent, it also occurs when the breath is held during ascent from a dive.</td>
</tr>
<tr>
<td>Atmospheric Pressure</td>
<td>The atmosphere exerts a pressure on the earth’s surface in the same way as water exerts pressure, i.e. it is produced by the weight of air above the earth</td>
</tr>
<tr>
<td>Absolute Pressure</td>
<td>Before a diver leaves the surface, he is already under a pressure of 1 Bar or 103000 N/m² -( ATMOSPHERIC PRESSURE) For every metre he descends, the pressure on him will increase by 0.1 Bar. Thus, the total pressure on the diver at any depth will be the pressure of the water at that depth plus atmospheric pressure, 1 Bar.</td>
</tr>
<tr>
<td>ALARP</td>
<td>As Low As Reasonably Practicable - for a risk to be ALARP it must be possible to demonstrate that the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained</td>
</tr>
<tr>
<td>Ambient Pressure</td>
<td>The pressure of the surrounding medium, such as a gas or liquid, which comes into contact with an apparatus or with a reaction.</td>
</tr>
<tr>
<td>BC / BCD</td>
<td>Buoyancy compensator, buoyancy compensator device</td>
</tr>
<tr>
<td>Barotrauma</td>
<td>Barotrauma (Pressure Injury) is physical damage to body tissues caused by a pressure differential between an air space inside the body and the ambient pressure.</td>
</tr>
<tr>
<td>Bottom Time</td>
<td>The total elapsed time from when a diver leaves the surface to the time (next whole minute) at which ascent is commenced, measured in minutes.</td>
</tr>
<tr>
<td>Breathing Gas</td>
<td>The compressed gas intended for respiration by the diver.</td>
</tr>
<tr>
<td>Breathing Tubes</td>
<td>Tubes attached to a regulator that are designed to: a) supply air to the diver b) carry away expired air; c) operate at near ambient pressure</td>
</tr>
<tr>
<td>CDA (S)</td>
<td>Commercial Divers Association (Singapore) – a industry association established in January 2010</td>
</tr>
<tr>
<td>Certification Package</td>
<td>A folder or file that contains signed Certificates which show that the diving equipment has been tested and/or checked by competent</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Combined Dive</td>
<td>The bottom times of more than one dive, added together and treated as a bottom time for a single dive to the deepest depth for the purpose of determining the divers decompression requirements</td>
</tr>
<tr>
<td>Competent Person</td>
<td>A person who has acquired through training, qualification or experience, or a combination of these, the knowledge and skills to enable that person to perform a specified task in a safe and efficient manner</td>
</tr>
<tr>
<td>Chronic Illness</td>
<td>A chronic illness is defined as any disease/illness that develops slowly and lasts a long time</td>
</tr>
<tr>
<td>CSCUBA</td>
<td>Commercial Self Contained Underwater Breathing Apparatus</td>
</tr>
<tr>
<td>CTAG</td>
<td>Curriculum, Training and Assessment Guide</td>
</tr>
<tr>
<td>DDC</td>
<td>Deck decompression chamber (a Pressure Vessel for Human Occupation, certified by a Classification Society, used for divers surface decompression and/or decompression treatment)</td>
</tr>
<tr>
<td>Decompression Illness</td>
<td>A generic term for acute illness resulting from diving decompression. This term covers the condition known as decompression sickness (also known as bends) and arterial gas embolism</td>
</tr>
<tr>
<td>Decompression Table</td>
<td>A specific table of pre-determined depths and times used to calculate the decompression requirements for a particular dive</td>
</tr>
<tr>
<td>Decompression Schedule</td>
<td>A specific decompression procedure for a given combination of depth and bottom time as listed in a decompression table; It is normally described as maximum depth (m)/bottom time (min)</td>
</tr>
<tr>
<td>Decompression Sickness (bends)</td>
<td>The development, during or after diving, of any abnormality which is a direct result of a reduction in the pressure of inert gas dissolved in the body, with the production of gas bubbles. Any organ may be involved and its presentation can vary from the acute to the chronic. (Note: It is common for decompression sickness to show up before or very soon after completion of the dive)</td>
</tr>
<tr>
<td>Decompression Stop</td>
<td>The specific length of time that a diver must hold his ascent at a specified depth to allow for the elimination of sufficient inert gas from the body to allow a safe ascent to the next decompression stop or the surface</td>
</tr>
<tr>
<td>Demand Gas Supply Device</td>
<td>A device that provides breathing gas to the diver via a mechanism which provides a flow of breathing gas when the diver inhales (also known as a regulator)</td>
</tr>
<tr>
<td>Depth Gauge</td>
<td>Used to indicate the depth of a diver. The maximum depth attained during the dive can be measured in either feet of seawater or metres of seawater</td>
</tr>
<tr>
<td>Diving Operation</td>
<td>A diving operation identified in the diving project plan</td>
</tr>
<tr>
<td>Dive Control Position</td>
<td>A single, designated location on the surface, adjacent to / or nearby where a diver enters the water, from which it is possible to monitor all systems and functions which relate to the life support of a diver in the water</td>
</tr>
<tr>
<td>Dive Team</td>
<td>The group of people, including the diving supervisor, diver(s), attendant(s), and other personnel as required, who are: a) present at the dive site b) directly involved in the dive c) responsible for the safe conduct of the diving operation</td>
</tr>
<tr>
<td>Diver</td>
<td>A person who performs diving work underwater or is exposed to pressure greater than 100millebar above atmospheric pressure in association with diving work</td>
</tr>
<tr>
<td>Divers Hose</td>
<td>Hose used in SSDE to carry breathing gas to the diver from a dive control panel (also called “Divers Umbilical”)</td>
</tr>
<tr>
<td>Diving Contractor</td>
<td>Employer of diving supervisor, diver, or other personnel who</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Diving Work</strong></td>
<td>Work in which diving is conducted using underwater breathing apparatus, including work by the dive team in direct support of the diver.</td>
</tr>
<tr>
<td><strong>Diving Supervisor</strong></td>
<td>A person who supervises diving operations, he is responsible for the safety of the diver during any dive operation.</td>
</tr>
<tr>
<td><strong>DMT</strong></td>
<td>Diver Medical Technician (a person who has received specialist medical training in the identification and treatment of diving illnesses, who is normally also a trained diver)</td>
</tr>
<tr>
<td><strong>DMAC</strong></td>
<td>Diving Medical Advisory Committee</td>
</tr>
<tr>
<td><strong>DPP</strong></td>
<td>Diving Project Plan; a detailed step by step plan that identifies each diving operation which makes up the diving project</td>
</tr>
<tr>
<td><strong>Diving Project</strong></td>
<td>The term used for the overall diving job. The diving project is made up of one or more diving operations</td>
</tr>
<tr>
<td><strong>DOM</strong></td>
<td>Diving Operations Manual</td>
</tr>
<tr>
<td><strong>DSV</strong></td>
<td>Diving Support Vessel</td>
</tr>
<tr>
<td><strong>Employer</strong></td>
<td>A corporation or individual employing or engaging a person or persons either under a contract of employment, apprenticeship or traineeship, or for work. This includes self-employed persons</td>
</tr>
<tr>
<td><strong>ERP</strong></td>
<td>Emergency Response Plan</td>
</tr>
<tr>
<td><strong>Exceptional Exposure Dive</strong></td>
<td>A dive where the maximum recommended dive time for a particular depth (sometimes shown by a limiting line in decompression tables) is exceeded by the diver at that depth</td>
</tr>
<tr>
<td><strong>Float Line</strong></td>
<td>A line connecting the diver to a high visibility float on the surface of the water enabling the approximate location of the diver to be known at all times</td>
</tr>
<tr>
<td><strong>FMEA</strong></td>
<td>Failure Mode Effects Analysis: a systematic method of assessing equipment and systems to source any single point failure; and apply risk management to prevent the single point failure from materialising</td>
</tr>
<tr>
<td><strong>FRC</strong></td>
<td>Fast Rescue Craft</td>
</tr>
<tr>
<td><strong>Free-flow system</strong></td>
<td>A breathing method used in SSDE diving operations whereby breathing gas enters the full-face mask or incompressible helmet in a continuous flow and is not controlled by a demand gas supply device</td>
</tr>
<tr>
<td><strong>fsw</strong></td>
<td>feet of sea water (a measurement of water depth)</td>
</tr>
<tr>
<td><strong>Full-face Mask</strong></td>
<td>A face mask that: a) is constructed in a single unit b) encloses the total area of the face, c) incorporates an integral breathing system</td>
</tr>
<tr>
<td><strong>Gauge Pressure</strong></td>
<td>A pressure gauge is normally graduated to read ZERO when the gauge is at atmospheric pressure. This is because a pressure gauge normally records only ‘difference of pressure’; ie the difference between that of the high-pressure source and atmospheric pressure</td>
</tr>
<tr>
<td><strong>Half-face Mask</strong></td>
<td>A mask that covers the eyes and nose only, and does not incorporate an integral breathing system</td>
</tr>
<tr>
<td><strong>Hazard</strong></td>
<td>A hazard is something with the potential to cause harm. This may include water, environmental factors, equipment, methods of diving and other aspects of work organisation</td>
</tr>
<tr>
<td><strong>Hazard Identification</strong></td>
<td>Process of recognizing that a hazard exists and defining its characteristics</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Inland/inshore Diving</td>
<td>Inside territorial waters (normally within 12 miles from shore), including docks, harbours, anchorage, canals, culverts, rivers, estuaries, lakes, reservoirs, dams, flooded tunnels and tanks</td>
</tr>
<tr>
<td>Incident</td>
<td>An event that gave rise to an accident, or had the potential to lead to an accident</td>
</tr>
<tr>
<td>JHA</td>
<td>Job Hazard Analysis, a safety management tool that can be used to define and control the hazards associated with a job or procedure</td>
</tr>
<tr>
<td>Lifeline</td>
<td>A line attached to a diver, which is capable of being used to haul the diver to the surface. It can also be used to for Diver/Tender signalling</td>
</tr>
<tr>
<td>Limiting Line</td>
<td>A line shown in some decompression tables, which indicates time limits (bottom times) beyond which the decompression schedules in use are less safe</td>
</tr>
<tr>
<td>MOM</td>
<td>Ministry of Manpower (Singapore)</td>
</tr>
<tr>
<td>Must</td>
<td>Indicates that compliance with a statement is mandatory</td>
</tr>
<tr>
<td>msw</td>
<td>metres of sea water (a measurement of water depth)</td>
</tr>
<tr>
<td>No Decompression</td>
<td>The maximum time which can be spent at a given depth in order for a safe ascent to be made directly to the surface at a prescribed rate with no decompression stops</td>
</tr>
<tr>
<td>Limiting Line</td>
<td>A line shown in some decompression tables, which indicates time limits (bottom times) beyond which the decompression schedules in use are less safe</td>
</tr>
<tr>
<td>PMS</td>
<td>Planned Maintenance System – a systematic, recorded and verifiable equipment maintenance regime, carried out by a competent person, to ensure that plant and equipment used in diving operations is properly maintained in accordance with the manufacturers recommendations, in order to ensure that it is safe while being used</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>PTW</td>
<td>Permit To Work</td>
</tr>
<tr>
<td>Repetitive Dive</td>
<td>Any dive conducted within 12 hours of a previous dive</td>
</tr>
<tr>
<td>Residual Nitrogen</td>
<td>Nitrogen gas that is still dissolved in a diver's tissues after surfacing</td>
</tr>
<tr>
<td>Risk</td>
<td>A risk is the possibility that someone or something will be harmed by an identified hazard. The extent of the risk includes the numbers of people who might be affected by the risk.</td>
</tr>
<tr>
<td>Risk Assessment</td>
<td>The process of estimating the magnitude of risk and an evaluation of precautions that can be taken to prevent harm and deciding whether or not the level of risk is tolerable.</td>
</tr>
<tr>
<td>SCUBA</td>
<td>Self-Contained Underwater Breathing Apparatus. Open circuit diving equipment that supplies the diver with breathing gas from the cylinder(s) carried by the diver</td>
</tr>
<tr>
<td>Shall</td>
<td>Indicates that compliance with a statement is mandatory</td>
</tr>
<tr>
<td>Shot rope</td>
<td>A rope running vertically from the dive control position and fixed to the worksite or bottom with a weight or attachment</td>
</tr>
<tr>
<td>SHMS</td>
<td>Safety and Health Management System</td>
</tr>
<tr>
<td>Should</td>
<td>Indicates a recommendation</td>
</tr>
<tr>
<td>Single Dive</td>
<td>Any dive conducted more than 12 hours after a previous dive</td>
</tr>
<tr>
<td>SSDE</td>
<td>Surface Supplied Diving Equipment. Diving equipment that supplies breathing gas at the required pressure for depth, through a diver's hose to a diver from plant at the surface</td>
</tr>
<tr>
<td>SS 511</td>
<td>SS 511 Singapore Standards Code of Practice for Diving at Work</td>
</tr>
<tr>
<td>SWL</td>
<td>Safe Working Load, the load which can be safely lifted. This term is</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>TA</td>
<td>Singaporean Diving <strong>Technical Advisory</strong> for Inland / Inshore Commercial Diving Safety &amp; Health</td>
</tr>
<tr>
<td>Tolerable Risk</td>
<td>Risk that has been reduced to a level that can be endured by the organization having regard to its legal obligations and its own OH&amp;S Policy</td>
</tr>
<tr>
<td>Toolbox Talk</td>
<td>A meeting, involving a two-way dialogue, to ensure that everyone clearly understands what the job entails along with its hazards and the precautions to be put in place</td>
</tr>
<tr>
<td>WLL</td>
<td>The Working Load Limit (WLL) is the maximum load that may routinely be applied to an assembly or component in straight tension</td>
</tr>
<tr>
<td>WSHC</td>
<td>Workplace Safety &amp; Health Council - The Workplace Safety and Health (WSH) Council was established on 1 April 2008. The Council works closely with the Ministry of Manpower and other Government agencies, industry, unions and professional associations to develop strategies to raise WSH standards in Singapore</td>
</tr>
</tbody>
</table>
1.3 Pre-Requisites for CSCUBA Diving Supervisor

The pre-requisites to be a CSCUBA Diving Supervisor are:

- The trainee must be in possession of a valid certificate of medical fitness
- Be at least 21 years of age
- Be able to add, subtract, multiply and divide whole numbers, decimals and fractions
- Be able to calculate percentages; and transpose and solve simple formulas, e.g. gas laws
- Understand written and verbal communications in English, and be able to communicate easily with other persons
  *Note: This is particularly important where trainees or instructors are of differing nationalities.*
- Be trained and qualified as a CSCUBA Diver; with a minimum of 1 years experience and a minimum of 150 dives logged as a CSCUBA Diver
  - Claims to such experience must be supported with a portfolio of certified and/or formally logged supporting evidence.
- Able to demonstrate sufficient maturity, leadership and management skills through provision of a letter of suitability for training as a diving supervisor provided by a recognized commercial diving employer.
- Hold a certificate from a recognized diving first aid course (this may be included in the training / assessment process)
- Trained in management of risks (MOM Accredited Risk Assessment course)
- Attended and passed the CSCUBA Diving Supervisor Course
- Acted as a trainee CSCUBA Diving Supervisor for a minimum period of 6 months
- While acting as a trainee CSCUBA Diving Supervisor and under the direct supervision and observation of a qualified CSCUBA Diving Supervisor:
  - Supervise 50 CSCUBA dives (a minimum of 20 hours logged)
  - Supervise a minimum of 5 emergency scenario drills and/or incidents involving decompression illness, pressure injury and lost diver

1.4 Working Categories for CSCUBA Diving Supervisors (0 – 30 Metres)

These categories include but are not limited to:

- Underwater inspection and Photography
- Environmental management
- Scientific Diving
- Aquaculture
- Aquariums
- Underwater film production
- Police and emergency services rescue response

*Note: All dives are to be No Decompression diving.*

1.5 Pre-Requisites for SSDE Diving Supervisor

The pre-requisites to be a SSDE Diving Supervisor are:

- The trainee must be in possession of a valid certificate of medical fitness
- Be at least 21 years of age
- Be able to add, subtract, multiply and divide whole numbers, decimals and fractions
- Be able to calculate percentages; and transpose and solve simple formulas, e.g. gas laws
• Understand written and verbal communications in English, and be able to communicate easily with other persons.  
  Note: This is particularly important where trainees or instructors are of differing nationalities.

• Be qualified as a CSCUBA Diving Supervisor. If trainee is a qualified SSDE Diver, he must complete both the CSCUBA and SSDE Diving Supervisor Competency Units.

• Be trained and qualified as a SSDE diver; with a minimum of 1 years’ experience and a minimum of 150 dives logged as a SSDE Diver
  – Claims to such experience must be supported with a portfolio of certified and / or formally logged supporting evidence.

• Be able to demonstrate sufficient maturity, leadership and management skills through provision of a letter of suitability for training as a diving supervisor provided by a recognized commercial diving employer.

• Hold a certificate from a recognized diving first aid course (this may be included in the training / assessment process)

• Be trained in management of risks (MOM Accredited Risk Assessment course)

• Attended and passed the SSDE Diving Supervisor Course

• Upon completion of the SSDE Diving Supervisor Course, the trainee must act as a trainee supervisor for a minimum period of 6 months.

• While acting as a trainee SSDE diving supervisor and under the direct supervision and observation of a qualified SSDE diving supervisor:
  – Supervise 100 SSDE dives (a minimum of 75 hours logged) of which at least 25 dives are to be of a depth greater than 15 metres
  – Supervise 10 dives using CSCUBA equipment (if proceeding direct from SSDE diver to SSDE supervisor)
  – Supervise a minimum of 5 emergency scenario drills and/or incidents involving decompression illness, pressure injury and trapped diver

1.6  Working Categories for SSDE Diving Supervisors (0 – 30 Metres)

These categories include but are not limited to:

• All activities outlined in Section 1.4 to a maximum depth of 30 meters
• Underwater engineering and construction
• Decompression diving, including in-water and DDC decompression

1.7  Scope of Working Conditions

The scope of environmental working conditions for the diving supervisor is dependent on the geographic location where the work is to be carried out. Under this competency standard the training and assessment shall be undertaken within the waters and facilities available in and around Singapore.

This environment provides for the many variables that the trainee diving supervisor must be familiar with and competent to supervise diving activities in, such as: Good visibility; Poor Visibility; Tides and Currents; rivers and reservoirs; warm water; water salinity / bouyancy; fresh water; marine life hazards; underwater hazards – pressure differentials; fishing nets; subsea structures, confined space / overhead obstructions, varied surface weather conditions; soft and hard sea bed condition.

Each of these environmental variables, when used during the training and assessment of diving supervisors, replicates the equivalent conditions for those of an occupational diving project worksite.
2.0 COMPETENCY STANDARD

The Competency Standard for Diving Supervisor consists of 11 Competency Units. The Competency Units describe the requirements for a competent diving supervisor and can be broadly classified into 2 groups:

- 6 Core Competency Units: Units which develop the trainees’ basic foundation and competence in commercial diving work. These Units are common to both CSCUBA and SSDE.
- 5 Specific Competency Units: Units which develop the trainees’ knowledge and competence with equipment and procedures specific to either CSCUBA or SSDE.

The Standards are structured so that the trainee CSCUBA or SSDE Diving Supervisor has to complete the 6 Core Competency Units. Thereafter, the trainee may progress to complete the Specific Competency Units for a CSCUBA Diving Supervisor (2 Units) or a SSDE Diving Supervisor (3 Units). The Diving Supervisor Competency Flow Charts in Section 3.3 outline the progression route to gain competency.

To prove competency, the trainee diving supervisor is required to meet the performance criteria for each of Competency Units, which are stated in Sections 4 to 6. The training and assessment methods and conditions are set out in the Curriculum, Training and Assessment Guides.

2.1 Core Competency Units for CSCUBA and SSDE Diving Supervisor

The Core Competency Units for CSCUBA and SSDE Diving Supervisors are shown in the table below. The competency elements and performance criteria for the Core Competency Units are stated in Section 4.

<table>
<thead>
<tr>
<th>Core Competency Unit</th>
<th>Competency Unit Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legislation and Standards</td>
<td>CD-CCS-200A-0</td>
</tr>
<tr>
<td>Advanced Diving Theory: Physics</td>
<td>CD-CCS-200B-0</td>
</tr>
<tr>
<td>Advanced Diving Theory: Physiology</td>
<td>CD-CCS-200C-0</td>
</tr>
<tr>
<td>Dive Planning</td>
<td>CD-CCS-200D-0</td>
</tr>
<tr>
<td>Documentation and Records</td>
<td>CD-CCS-200E-0</td>
</tr>
<tr>
<td>Leadership and Communication</td>
<td>CD-CCS-200F-0</td>
</tr>
</tbody>
</table>

2.1.1 Legislation and Standards (CD-CCS-200A-0)

The purpose of this element of competency is to enable the trainee diving supervisor to describe the roles and responsibilities of the diving supervisor and to demonstrate a detailed knowledge and thorough understanding of the regulatory framework as outlined in legislation and Technical Advisory documents for Singapore. This shall include the contents of the SS 511 Code of Practice for Commercial Diving; Technical Advisory document for Inland / Inshore Commercial Diving; Work Place Safety and Health Act 2006; Workplace Safety and Health (Risk Management) Regulations; Workplace Safety and Health (Incident Reporting) Regulations and Maritime Port Authority (MPA) Regulations and Notices. The diving supervisor shall be able to describe the regulatory framework for occupational commercial diving within Singapore and abide by the legal and recommended practice requirements associated with working as a diving supervisor so that the diving project shall be conducted in a safe manner and meet legal and recommended requirements at all times.
2.1.2 Advanced Diving Theory: Physics (CD-CCS-200B-0)

The purpose of this element is to enable the trainee diving supervisor to describe the risk control measures used to minimize the risks to the diver working underwater by ensuring the safety of personnel in a hyperbaric environment, in changing pressures, related to buoyancy, light, sound and thermal conductivity, and perform calculations relating to breathing gases (air), buoyancy and lifting items underwater. The diving supervisor shall possess a detailed knowledge and thorough understanding of the appropriate laws of physics and how they are applied in certain circumstances, including the relationship between pressure and volume and the potential physiological effects of this relationship on the diver, the principles of buoyancy, the behavior of gases under pressure, and properties of heat, light, and sound underwater.

2.1.3 Advanced Diving Theory: Physiology (CD-CCS-200C-0)

The purpose of this element is to enable the trainee diving supervisor to describe the risk control measures used to minimize the risks to the diver working underwater by ensuring the safety of personnel in a hyperbaric environment. The diving supervisor shall possess a detailed knowledge and thorough understanding of the physiological effects that pressure has on the body. The diving supervisor shall understand medical diving hazards, physiology, safety procedures associated with the physiological effects on the diver, physiological effects of decompression, and treatment of decompression and pressure related injuries as well as the importance of recognition and prevention of diving related ailments.

2.1.4 Dive Planning (CD-CCS-200D-0)

The purpose of this unit of competency is to enable the trainee diving supervisor to plan a dive operation, including applying legislation, diving procedures and technical guidance, identifying the scope of the operation, identifying the risks and hazards of the dive operation and apply mitigating actions, understanding the requirement for permits and checks to be completed accurately and correctly prior to diving, organising physical and human resources and preparing a written dive plan. The trainee diving supervisor will be able to establish an emergency response plan and manage such an emergency response if required.

2.1.5 Documentation and Records (CD-CCS-200E-0)

The purpose of this unit of competency is to enable the trainee diving supervisor to have a detailed understanding of the legal requirement to maintain accurate and detailed records during the diving operation; including Permits to Work; dive record sheets; decompression record sheet; daily dive log book work activity record; personal divers log book; personal diving supervisors log book. The trainee diving supervisor shall be able to complete various project report formats, consisting of; daily project report; end of project report; basic inspection report.

2.1.6 Leadership and Communication (CD-CCS-200F-0)

The purpose of this unit of competency is to enable the trainee diving supervisor to have the leadership and communication skills required to conduct a diving operation safely by the dive team and as a team leader, by applying organisational policies and procedures associated with managing people. The trainee diving supervisor will define the strategies for communicating effectively as a dive supervisor. These include resolving conflicts, monitoring performance and providing feedback, selecting a communication style appropriate to the task and situation and be able to present information concisely and clearly.
2.2 Specific Competency Units for CSCUBA Diving Supervisor

The Specific Competency Units for CSCUBA Diving Supervisor are shown in the table below. The competency elements and performance criteria for the Specific Competency Units are stated in Section 5.

<table>
<thead>
<tr>
<th>Specific Competency Unit</th>
<th>Competency Unit Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCUBA Diving Equipment, Systems, Procedures and Practices</td>
<td>CD-SCS-201A-0</td>
</tr>
<tr>
<td>Conduct CSCUBA Diving Operations</td>
<td>CD-SCS-201B-0</td>
</tr>
</tbody>
</table>

2.2.1 CSCUBA Diving Equipment, Systems, Procedures and Practices (CD-SCS-201A-0)

The purpose of this element of competency is to enable the trainee diving supervisor to supervise the application and use of all the relevant equipment and all the dive procedures and practices relating to the CSCUBA equipment, ensure the CSCUBA equipment is used correctly and safely; the CSCUBA equipment is maintained and serviced and to kept up to date with developments of new plant and equipment and procedures for their use.

2.2.2 Conduct CSCUBA Diving Operations (CD-SCS-201B-0)

The purpose of this element of competency is to enable the trainee diving supervisor to supervise and coordinate all aspects of a CSCUBA dive operation according to the dive plan, including the communication of essential information for the safe execution of the operation by briefings and debriefings; monitoring and reporting progress, managing change to any procedure or operation that requires variations, identifying and responding to emergency situations and completing the operation according to organizational procedures.

2.3 Specific Competency Units for SSDE Diving Supervisor

The Specific Competency Units for SSDE Diving Supervisor are shown in the table below. The competency elements and performance criteria for the Specific Competency Units are stated in Section 6.

<table>
<thead>
<tr>
<th>Specific Competency Unit</th>
<th>Competency Unit Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct SSDE Diving Operations</td>
<td>CD-SSS-202B-0</td>
</tr>
<tr>
<td>Supervision of Deck Decompression Chamber Operations (Optional for CSCUBA Diving Supervisor)</td>
<td>CD-SSS-202C-0</td>
</tr>
</tbody>
</table>
2.3.1 SSDE - Diving Equipment, Systems, Procedures and Practices (CD-SSS-202A-0)

The purpose of this element of competency is to enable the trainee diving supervisor to supervise the application and use of all the relevant equipment and all the dive procedures and practices relating to the SSDE equipment, ensure the SSDE equipment is used correctly and safely; the SSDE equipment is maintained and serviced and to keep up to date with developments of new plant and equipment and procedures for their use.

2.3.2 Conduct SSDE Diving Operations (CD-SSS-202B-0)

The purpose of this element of competency is to enable the trainee diving supervisor to supervise and coordinate all aspects of a SSDE dive operation according to the dive plan, including the communication of essential information for the safe execution of the operation by briefings and debriefings; monitoring and reporting progress, managing change to any procedure or operation that requires variations, identifying and responding to emergency situations and completing the operation according to organizational procedures.

2.3.3 Supervision of Deck Decompression Chamber Operations (CD-SSS-202C-0) - Optional for CSCUBA Diving Supervisor

The diving supervisor shall have an understanding of operational requirements and procedures when supervising the use of the deck decompression chamber.

The purpose of this element of competency is to enable the trainee diving supervisor to describe compression chamber operations and use, describe potential risk and risk mitigation measures during the use of a decompression chamber, and to supervise the use of a twin lock (two compartment) decompression chamber. The trainee diving supervisor will be able to list all support equipment required for the safe operation of the compression chamber, maintain maintenance records and chamber logs accurately and describe and manage the range of emergency situations that may occur while using the chamber.

To attend this unit the trainee supervisor must have completed and passed the units:- CD-SCD-102C-0 Deck decompression Chamber procedures and CD-SCD-102D-0 Deck Decompression Chamber Operator.
3.0 INLAND/INSHORE DIVING SUPERVISOR COMPETENCY FLOW CHART

3.1 Core Competency Units - Subject Content

<table>
<thead>
<tr>
<th>Legislation and Standards</th>
<th>Advanced Diving Theory: Physics</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-CCS-200A-0</td>
<td>CD-CCS-200B-0</td>
</tr>
</tbody>
</table>

Shall have a detailed knowledge of the following:
- Roles and Responsibilities of the diving supervisor
- SS 511 – Code of Practice for Diving at Work
- Technical Advisory – Inland / Inshore Commercial Diving Safety and Health
- Workplace Safety and Health Act (WSHA) 1st March 2006
  - Workplace Safety and Health (Risk Management) Regulations
  - Workplace Safety and health (Incident Reporting) Regulations
  - Maritime Port Authority (MPA) regulations and notices
  - Basic Marine Signals and chart symbols

Shall have a detailed knowledge of the following:
- Diving Physics- Gas Laws
  - Boyle’s Law
  - Charles’s Law
  - Henry’s Law
  - Dalton’s Law
- Archimedes Principle
  - Basic Buoyancy Calculations
- Affects of light and visibility underwater
- Sound Underwater
- Air Consumption Calculations for normal and emergency use
  - Calculate surface air supply quantity required for the dive
  - Calculate the surface emergency air quantity required for the dive
  - Calculate compressor deliver capacities
  - Calculate the divers bailout endurance
### Advanced Diving Theory: Physiology

**CD-CCS-200C-0**

Shall have a detailed knowledge of the following:

- **Physiology of Diving**
  - Body Anatomy and Systems
  - Effects of breathing various gases at elevated pressures
  - Temperature effects – thermal balance for the diver
  - Pressure Injury and effects to the body
    - Barotraumas; Ear; Sinus; Lung;
    - Arterial gas Embolism
- **Gas Toxicity**
  - Oxygen (Chronic / Acute)
  - Hypercapnia
  - Carbon Monoxide
  - Hydrocarbons
  - Nitrogen Narcosis
- **Decompression Physiology**
  - Principles governing compression and decompression, the uptake, distribution, and elimination of gases
  - Effects of breathing various gases at elevated pressures
  - Use of appropriate decompression tables
- **Management of Diving Emergencies**
  - Causes manifestations and treatment of decompression illness
  - In water diver emergencies
  - Emergency response planning
- **Marine Animals**
  - Types of marine life that can injury a diver
  - The signs and symptoms of marine life injuries
  - Treatment protocols of marine life injuries
- **Flying after diving**
  - Effects of and Restrictions of flying after diving

### Dive Planning

**CD-CCS-200D-0**

Shall have a detailed knowledge of the following:

- **Plan for Diving**
  - Roles and Responsibilities of the dive team members and others supporting the dive operation
  - Impact of Risk Management process in planning of the dive operation
  - Identify the scope of the dive operation, based on client and project requirements
  - Resources for the dive operation
  - Consideration of legislative and guidance during dive planning
  - Client requirements
  - Comply with company diving procedures
- **Determine Team Size and Duties**
  - Team size
- **Identify Hazards Relating to Diving Operations**
  - Identification of equipment hazards for diving operations
  - Identification of environmental hazards for diving operations
  - Identification of operational hazards for diving operations
  - Hazards during emergency response
- **Prepare Dive Plan**
  - The Dive Plan
  - Emergency Response Planning
  - Dive Briefing / Toolbox meetings
  - Dive Check Lists
    - Pre dive Checks
    - Post Dive Checks
  - Use of Decompression Tables
    - No decompression diving
    - Decompression diving
    - Omitted decompression
    - Decompression treatment requirements
  - Accident / Incident Investigation
  - Permit to Work systems
- **Apply Risk Management in Diving Operations**
  - FMEA, Audits, HAZIDS/ Job Safety Assessment / Risk Assessment for the dive operation
  - Management of change
Shall have a detailed knowledge of the following:
- Permit to Work systems
- Record keeping
  - Diver certification and medicals
  - Daily Dive Logs
  - Personal Dive Records and log books
  - Project documentation
- Report writing

Shall have a detailed knowledge of the following:
- Organisation policies / communication charts
- Communication requirement
  - Motivation and Communication
  - Recording of communications
    - Verbal and written
  - Importance of a shift change hand over
  - Importance of a shift hand over Dive briefing
- Resolving Conflicts
- Management of grievances
- Application of disciplinary action
- Presentation of information; concisely and clearly
- Communication with client and relevant authorities
- Leadership / management
  - Managing a team
- Communicate effectively with key stakeholders
- Performance monitoring
  - Providing feedback to team members and management
3.2 CSCUBA Diving Supervisor Specific Competency Units - Subject Content

**CSCUBA Diving Equipment, Systems, Procedures and Practices**  
**CD-SCS-201A-0**

Shall have a detailed knowledge of the following:
- The CSCUBA Diver Competency requirements for CSCUBA Diving Equipment Systems, Procedures and Practices
- CSCUBA Equipment Standards and Minimum requirements
- Safe Access and Egress of the water
- CSCUBA Equipment limitations
- CSCUBA diver personnel diving equipment
- Manufacturer equipment details and resources
- Planned Maintenance of CSCUBA diving equipment
  - Planned Maintenance systems and records
  - Personnel Diving equipment
    - Full Face Masks
    - Bailout cylinders
    - Regulators
    - Divers Umbilical’s/ Life Line
    - Emergency Locator device
    - LP and HP Hoses
    - Compressors
    - Communication systems
- Actions to be taken in an emergency situation

**Conduct CSCUBA Diving Operations**  
**CD-SCS-201B-0**

Shall be able to demonstrate the following:
- A detailed knowledge of the CSCUBA Diver Diving Competencies
- Supervise and coordinate a CSCUBA diving operation in accordance with the dive plan
- Record of relevant permit to dive and pre-dive documentation
- Conduct a dive briefing and debriefing
- Respond to emergencies in accordance with established emergency response plans
- Document all aspects of the diving operation from initiation to completion in accordance with Legislative and Company requirements
- Supervise the application and use of tools used sub sea
  - Hand tools
  - Hydraulic tools
  - Underwater cutting equipment
3.3 SSDE Diving Supervisor Specific Competency Units - Subject Content

**SSDE – Diving Equipment, Systems, Procedures and Practices**
CD-SCS-202A-0

**Conduct SSDE Diving Operations**
CD-SCS-202B-0

Shall have a detailed knowledge of the following:
- The SSDE Diver Competency requirements for SSDE Diving Equipment Systems, Procedures and Practices
- Equipment Standards and Minimum requirements
- Diver Access and Egress of the water
- CSCUBA Replacement diving systems
- Surface Supplied Diving Equipment / systems
- Equipment limitations
- SSDE diver personnel diving equipment
- Manufacturer equipment details and resources
- Planned Maintenance of SSDE diving equipment
  - Planned Maintenance systems and records
  - Personnel Diving equipment
    - Helmets / Masks
    - Bailout cylinders
    - Regulators
    - Divers Umbilical's
    - LP and HP Hoses
  - Compressors
  - Control panels
  - Communication systems
  - Cylinders (HP and LP Supplies)

Shall be able to demonstrate the following:
- A detailed knowledge of the SSDE Diver Competency requirements for SSDE Diving.
- Supervise and coordinate a diving operation in accordance with the dive plan, organizational policies and procedures
- Record of relevant permit to dive and pre dive documentation
- Conduct a dive briefing and debriefing
- Identify and analyse problems and emergencies
- Respond the emergencies in accordance with established emergency response plans
- Document all aspects of the diving operation from initiation to completions in accordance with requirements
- Supervise the application and use of tools used subsea
  - Hand tools
  - Hydraulic tools
  - Underwater cutting equipment
Shall have a detailed knowledge of and be able to demonstrate by supervision the following:

- Components of a compression chamber and its operation/use
- DDC Operating procedures and Supervise chamber checks prior to diving, during DDC use and post DDC use
- Potential risks associated with and risk control measures for operating the decompression chamber
- Risk Assessment for the use of the DDC
- DDC equipment support services and their operation
  - Air supplies – main and emergency (Low Pressure and High Pressure)
  - Medical Lock
  - Lighting
  - Communication systems
  - Oxygen / Mix Gas supplies
  - Pipe work, Gauges, valves, regulators
  - Analysation of chamber atmosphere and air / gas supplies
  - Fire Fighting equipment
  - Built in Breathing systems
- DDC Records and chamber logs
- Use of Hyperbaric chamber for surface decompression and decompression treatment procedures
- DDC Maintenance
- DDC Certification Register
- Emergency procedures
3.3 Diving Supervisor Progression Flow Charts

CSCUBA Diver \(\rightarrow\) CSCUBA Diving Supervisor Progression Flow Chart

1. **CSCUBA DIVER**
   - Trained and qualified as a CSCUBA diver with:
     - Minimum 1 year experience
     - Minimum of 150 dives logged as CSCUBA diver

2. **Attend and pass the CSCUBA Diving Supervisor Course Core and Specific Competency Units**

3. **Act as a trainee supervisor for a minimum period of 6 months:**
   - Supervise 50 dives (minimum of 20 hours logged)
   - Supervise at least 5 emergency scenario drills and/or incidents involving decompression illness, pressure injury and trapped diver

4. **CSCUBA DIVING SUPERVISOR**
Trained and qualified as a SSDE diver with:
- Minimum of 1 year experience
- Minimum of 150 dives logged as a SSDE Diver

Attend and pass the SSDE Diving Supervisor Course Specific Competency Units:
- SSDE, Systems, Procedures and Practices
- Conduct SSDE Diving Operations
- Deck Decompression Chamber Procedures
- Supervision of Decompression Chambers

Act as a trainee supervisor for a minimum period of 6 months:
- Supervise 100 dives (minimum of 75 hours logged) of which at least 25 dives are to be of a depth greater than 15 metres
- Supervise at least 5 emergency scenario drills and/or incidents involving decompression illness, pressure injury and trapped diver
SSDE Diver → SSDE Diving Supervisor Progression Flow Chart

SSDE DIVER – with DDC Operator certification

Trained and qualified as a SSDE Diver with:
- Minimum of 1 year experience
- Minimum of 150 dives logged using SSDE diving equipment and systems

Attend and pass the CSCUBA and SSDE Diving Supervisor Course Core and Specific Competency Units

Act as a trainee supervisor for a minimum period of 6 months:
- Supervise 100 dives (minimum of 75 hours logged) of which at least 25 dives are to be of a depth greater than 15 metres
- Supervise 10 dives using CSCUBA equipment
- Supervise at least 5 emergency scenario drills and/or incidents each for CSCUBA and SSDE involving decompression illness, pressure injury and trapped diver

SSDE DIVING SUPERVISOR
4.0 INLAND/INSHORE DIVING SUPERVISOR CORE COMPETENCY UNITS

<table>
<thead>
<tr>
<th>Competency Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legislation and Standards</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary of this Competency Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>This Competency Unit consists of the following elements:</td>
</tr>
<tr>
<td>1. Interpret the Singapore Standard SS 511 Code of Practice for Diving at Work</td>
</tr>
<tr>
<td>2. Interpret the Singapore Technical Advisory for Inland/Inshore Commercial Diving Safety and Health</td>
</tr>
<tr>
<td>3. Interpret the Singapore Workplace Safety and Health Act (WSHA) and other supporting legislations</td>
</tr>
</tbody>
</table>

The purpose of this element of Diving Supervisor Core Competency is to enable the trainee diving supervisor to understand the role and responsibilities of the diving supervisor and to have a detailed knowledge and understanding of the regulatory diving operations requirements that are detailed in Singaporean Statutory Legislation and the Diving Technical Advisory documents.

<table>
<thead>
<tr>
<th>Assumed Skills and Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>The required skills and knowledge criteria for this unit are as follows:</td>
</tr>
<tr>
<td>Personnel are required to:</td>
</tr>
<tr>
<td>• have attended the MOM Approved Risk Management course; and hold a recognized certificate of training and competence for first aid at work.</td>
</tr>
<tr>
<td>• add, subtract, multiply and divide whole numbers, decimals and vulgar fractions;</td>
</tr>
<tr>
<td>• calculate percentages; and transpose and solve simple formulas, e.g. gas laws;</td>
</tr>
<tr>
<td>• have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation</td>
</tr>
<tr>
<td>• be able to understand written and verbal communications (using English), and be able to communicate easily with other persons</td>
</tr>
<tr>
<td>• be able to access relevant legal information online</td>
</tr>
</tbody>
</table>
Competency Unit Code
CD-CCS-200A-0

Competency Level
Inland/Inshore Diving Supervisor
(CSCUBA and SSDE)

Competency Unit Title
Legislation and Standards

Description of Competency Element

Competency Element Title
1. Interpret the Singapore Standard SS 511, Code of Practice for Diving at Work

Performance Criteria
A competent diving supervisor must be able to perform the following:
1.1 Describe the role and responsibilities of the diving supervisor
1.2 State the relevant provisions of the Singapore Standard SS 511, Code of Practice for Diving at Work, with regards to the responsibilities of:
   - A diver, a diver’s tender and a standby diver at a dive site.
   - The diving contractor
   - Other personnel and parties associated with the diving operation.

Underpinning Knowledge
A competent diving supervisor needs a detailed knowledge and understanding of:
- The legal roles and responsibilities of the diving supervisor
- The fundamental difference between the role of the dive supervisor and that of dive team members
- The relationship between standards; regulations; code of practice; regulatory authorities; technical advisory documents
- The regulatory framework of Singapore
- The paragraphs of the Singapore Standard SS 511, Code of Practice for Diving at work, that are applicable to his diving operation, diving plant and equipment
- A sound knowledge of the legal responsibilities of being a diver, a divers tender, and a standby diver on a dive site
- A sound knowledge of the legal responsibilities of the diving contractor, diving supervisor and other personnel / companies that maybe associated with the diving operation.
- The operational and emergency contingency plans applicable to his duties
- The legal limitations of different types of diving and diving equipment for commercial diving works
- Minimum manning levels of a dive team and the role of each team member in normal and emergency situations
- The legal requirement for a Planned Maintenance System for diving equipment
- The requirement for a Permit to Work for diving operations

Range and Context
The diving supervisor shall have a detailed understanding of the responsibilities and legislative requirements of:
- The diver
- The standby diver
- The Diver’s Tender
- The diving supervisor
- The client
- The diving contractor
Other personnel and companies who are involved in the diving operation.

The diving supervisor shall understand the legislative requirements for:
- A Permit to Work system
- Risk Assessments
- Incident reporting and Investigations
- A Safety Management System
- The Dive Plan
- Toolbox Talks
- Project Briefings
- Dive Briefings
- Equipment Planned Maintenance Systems
- Emergency Response requirements / plans

The diving supervisor shall understand the legislative requirements for:
- Safe systems of work
- Duty of Care
- Safe plant and equipment
- Arrangements ensuring safe use of hazardous substances
- Instruction, information and training for safety and safe working
- Safe access and egress to the workplace
- Emergency Plans and procedures
- Clean and healthy environment
- Safe place of work
- Taking care of his health and safety and that of other persons working with him, or in the vicinity of the worksite
- Co-operating with the employer in ensuring health and safety

Evidence Sources

Listed below are a few examples of the type of evidence that would provide a guide as to whether a diving supervisor is meeting the core standards required for him to be considered competent;

Work activities
- has participated in a group activities identifying the requirements of the Code of Practice and other regulations that affect the diving operation
- has completed and supervised Project/Dive Task Briefings outlining the legislative requirements

Written reports
- List the Dive Team composition required for the level of diving and outline the roles and responsibilities of dive team members in normal and emergency situations
- Outline the contents of the Singapore Standard SS 511, Code of Practice for Diving at work.
- A multi choice examination should be established with questions related to the items listed in the Underpinning Knowledge section
<table>
<thead>
<tr>
<th>Competency Unit Code</th>
<th>Competency Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-CCS-200A-0</td>
<td>Inland/Inshore Diving Supervisor (CSCUBA and SSDE)</td>
</tr>
</tbody>
</table>

### Description of Competency Element

#### Competency Element Title
2. Interpret the Singapore Technical Advisory for Inland/Inshore Commercial Diving Safety and Health

#### Performance Criteria
A competent diving supervisor must be able to perform the following:
2.1 Interpret the Singapore Technical Advisory for Inland/Inshore Commercial Diving Safety and Health.

#### Underpinning Knowledge
A competent diving supervisor needs a **detailed knowledge** of the following as outlined in the Technical Advisory document:
- The diver’s responsibilities
- The diver tender’s duties
- The Standby Diver’s duties
- Managing Risks in commercial diving work
- The minimum personnel required for carrying out a diving operation
- The minimum equipment required for carrying out a diving operation
- Maintenance requirement for diving equipment
- The requirement for Dive Planning
- The use of pre and post dive checklists
- Training and certification requirements
- Emergency management and contingency plans;

#### Range and Context
The diving supervisor shall fully understand his duties as a supervisor

The diving supervisor shall:
- Ensure the diver / dive team are fit and there is no medical or other reason why they cannot dive
- Ensure that the personal diving equipment is working correctly and is suitable for the planned dive
- Ensure the dive plan is completed and documented and the risks have been assessed and mitigated as reasonably practical and documented as a formal risk assessment
- Ensure that all dive team members understand the dive plan / dive project plan and are competent to carry out the planned task
- Ensure the dive team member fully understand their roles and responsibilities
- Ensure routine and emergency procedures are established
- Document and report any equipment faults, other potential hazards, near misses or accidents
- Maintain dive logbooks; divers log books; dive records up to date
The diving supervisor shall understand the requirement for dive planning, including:

- The planned method of performing the task
- The duties of every person involved in the task
- The diving equipment to be used
- Equipment check lists (pre dive/ post dive)
- The method of safe deployment and recovery for diver and standby diver
- The diving procedures to be used, including the planned bottom times & decompression profiles
- Specific task hazards and the measures to mitigate (reduce/remove) those hazards
- The Emergency Response Plan (what we do if things go wrong)
- Equipment Planned Maintenance Systems

Evidence Sources
Listed below are a few examples of the type of evidence that would provide a guide as to whether a diving supervisor is meeting the core standards required for him to be considered competent;

Work activities
- Has participated in a group activities identifying the requirements of the Code of Practice and other regulations that affect the diving operation
- Has completed and supervised Project/Dive Task Briefings outlining the legislative requirements

Written reports
- Outline the contents of the Singapore Technical Advisory for Inland/Inshore Commercial Diving Safety and Health.
- A multi choice examination should be established with questions related to the items listed in the Underpinning Knowledge section
**Competency Unit Code**
CD-CCS-200A-0

**Competency Level**
Inland/Inshore Diving Supervisor (CSCUBA and SSDE)

**Competency Unit Title**
Legislation and Standards

---

**Description of Competency Element**

**Competency Element Title**
3. Interpret the Singapore Workplace Safety and Health Act (WSHA) and Other Supporting Regulations

**Performance Criteria**

A competent diving supervisor must be able to perform the following:

3.1 Explain legislation requirements of the Singapore Workplace Safety and Health Act (WSHA) with regards to diving operations

3.2 Explain legislation requirements of the Workplace Safety and Health (Incident Reporting) Regulations with regards to diving operations

3.3 Explain legislation requirements of the Workplace Safety and Health (Risk Management) Regulations with regards to diving operations

3.4 Explain Maritime Port Authority (MPA) regulations with regards to diving operations

**Underpinning Knowledge**

Any person at work, including an employee, must comply with their obligations under the Workplace Safety and Health Act (WSHA) 1st March 2006 that cover commercial diving activities. A competent diving supervisor needs a detailed knowledge of:

- Adhere to safe working procedures and principles introduced at the workplace
- Not endanger themselves or others working around them through unsafe behavior
- Not tamper with any safety device or undertake any willful or reckless acts
- Always correctly use any personal protective equipment provided at work
- The requirement for a Risk Assessment for each and every diving task and who should carry out the Risk Assessment
- The requirement for incident reporting and who should conduct incident investigations
- Company Safety Management system and structure, including safety management policies

**Range and Context**

Understanding the extent of The Workplace Safety and Health Act (WSHA) 1st March 2006, the structure of the regulative system for work place safety and health and where it is applicable to:

Annex A:

- Any premises which is a factory. This would include any inlet, outlet, reservoir or other body of water that is associated with the factory
- Any ship in a harbour where the following is carried out;
- Cleaning of any tanks bilges or holds in the ship
- Construction, reconstruction, repair, fitting, furnishing or breaking up
- Any dock, wharf or quay where loading, unloading or bunkering of a ship is carried out by persons other than the crew of the ship
- Any premises, other than domestic premises, in which a steam boiler, steam receiver or
The following premises within which persons are employed are considered to be factories:

- Any yard, including any dock, wharf, jetty, quay and the area within its boundaries, where the construction, reconstruction, repair, refitting, finishing or breaking up of ships is carried out. This includes the water next to any such yard where similar shipbuilding activities are carried out by the occupier of that yard or by other on his behalf.

The competent diving supervisor shall understand the requirements for the employer to provide:

- Safe systems of work
- Safe plant and equipment
- Arrangements ensuring safe use of hazardous substances
- Instruction, information and training for safety and safe working
- Safe access and egress to the workplace
- Clean and healthy environment
- Safe place of work
- Emergency response procedures and plans

The competent diving supervisor shall understand the risk assessment and risk management process and requirements under the Risk Management Regulations; MOM Approved Risk Management Training Certification

*MOM Accredited Risk Assessment / Risk Management Course must be completed to demonstrate an understanding of the Risk Assessment requirements and the Risk Assessment process.*

The competent diving supervisor shall understand the incident reporting process and requirements under the Incident Reporting Regulations.

The competent diving supervisor shall understand the relevant provisions of the Maritime Port Authority (MPA) regulations, and marine notices and signals

- Marine signals; buoys; maritime charts; MPA notifications; MPA procedures and requirements

The competent diving supervisor understands his obligations to supervise the diving operation and to:

- Take care of his health and safety and that of other persons working with him, or in the vicinity of the worksite
- To co-operate with the employer in ensuring health and safety

**Evidence Sources**

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

**Work activities**

- Supervise and lead in a group Risk Assessment Process
- Conduct a job specific dive briefing and tool box talk meeting

**Written reports**

- Outline the contents of the Workplace Safety and Health Act (WSHA) 1st March 2006
- Outline the contents and requirements of the Risk Management Regulations
- Outline the contents and requirements of the Incident Reporting Regulations
- Outline the Marine Port Authority requirements; and identify the marine flags; signals and chart symbols
- Explain the arrangements of a company safety management system and outline the companies organizational policies and procedures
|   | A multi choice examination should be established with questions related to the items listed in the Underpinning Knowledge section |
**Competency Unit:** Advanced Diving Theory: Physics

**Summary of this Competency Unit**

This Competency Unit consists of the following element:
1. Apply Advanced Diving Physics

**Assumed Skills and Knowledge**

The assumed skills and knowledge for this unit are as follows:
- add, subtract, multiply and divide whole numbers, decimals and fractions;
- calculate percentages; and transpose and solve simple formulas, e.g. gas laws;
- use a calculator
- have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation
- be able to understand written and verbal communications (using English), and be able to communicate easily with other persons
<table>
<thead>
<tr>
<th>Competency Unit Code</th>
<th>CD-CCS-200B-0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competency Level</td>
<td>Inland/Inshore Diving Supervisor (CSCUBA and SSDE)</td>
</tr>
</tbody>
</table>

**Competency Unit Title:** Advanced Diving Theory: Physics

**Description of Competency Element**

**Competency Element Title:**
1. Apply Advanced Diving Physics

**Performance Criteria**

A competent diving supervisor must be able to perform the following:

1.1 Apply basic mathematic skills in simple equations & algebra as found in physics calculations involving gases, liquids, and solids, in metric and imperial measurements.
1.2 Explain the relationship of the behavior of gases in changing pressures and temperatures.
1.3 Perform calculations on gas laws.
1.4 Explain the partial pressure of gases, the solubility of gases in a solution and the solubility effect of gases on a diver.
1.5 Describe the effect of visibility and light underwater.
1.6 Describe the effect of sound underwater.
1.7 Describe the concept and principles of buoyancy and how this affects the diver and requirements when lifting an object underwater.
1.8 Describe the principles of thermal balance and the effects on the diver and the divers equipment
1.9 Calculate the air supply requirements for a diver at work using CSCUBA and SSDE.
1.10 Calculate the emergency air supply requirements for the diver’s surface supplied and diver’s bailout cylinder.
1.11 Calculate a compressor’s delivery capacity for diver and deck decompression chamber air supply requirements.

**Underpinning Knowledge**

A competent diving supervisor shall have a detailed knowledge of:

- Basic Math’s and an understanding of formula used in diving operations
- Formulas for Boyle’s Law; Henry’s Law; Dalton’s Law; Charles Law and General Gas Law
- Archimedes Principle and how the state of buoyancy is determined; Positively Buoyant; Neutrally Buoyant; Negatively Buoyant
- The means of heat transference – Conductivity; Radiance; Convection
- Breathing Rates of a diver and the formulas to calculate the air consumption of a diver under normal and emergency circumstances and calculate the air quantity required and available for the diving operation.
- HP and LP compressor High Pressure and Low Pressure delivery rates and capabilities
- The effects of raised elevations of partial pressures of Oxygen, Carbon Dioxide, Carbon Monoxide on the diver, and the gas limits permitted in the diver’s breathing gas (air)
- The effects of light underwater
- The effects of sound underwater

**Range and Context**

**Gas Laws and how they affect the diver:**

- Boyle’s Law - For a fixed amount of a gas kept at a fixed temperature, $P \text{[pressure]}$ and $V \text{[volume]}$
[volume] are inversely proportional (while one increases, the other decreases)

- Perform calculations showing the volume change changes with changing depths
- Dalton’s Law - the total pressure exerted by a gaseous mixture is equal to the sum of the partial pressures of each individual component in a gas mixture
- Perform calculations determining the partial pressure of gases in different mixes at different depths
- Henry’s Law - At a constant temperature, the amount of a given gas dissolved in a given type and volume of liquid is directly proportional to the partial pressure of that gas in equilibrium with the absolute pressure.
- Describe the solubility effects of gases in solution within a diver’s tissues and liquids and the need for decompression
- Charles Law - At constant pressure, the volume of a given mass of an ideal gas increases or decreases by the same factor as its temperature on the absolute temperature scale (i.e. the gas expands as the temperature increases).
- General Gas Law - The product of the initial pressure, initial volume, and new temperature (absolute scale) of an enclosed gas is equal to the product of the new pressure, new volume, and initial temperature
- Perform calculations showing the pressure changes with changes in temperature and volume (General Gas Law)

**Buoyancy**

- Archimedes Principle- Any object, wholly or partially immersed in a fluid, is buoyed up by a force equal to the weight of the fluid displaced by the object
- Perform calculations determining the buoyancy of various objects at different depths
- Describe the effects of salt water and fresh water on buoyancy

**Formulas and calculations (Metric and Imperial equivalents)**

- Perform calculations determining a diver’s over-bottom pressure requirements for demand type breathing helmets and masks
- Perform calculations determining the amount of air in a high pressure bottle or flask – Free Gas Volume
- Perform calculations converting metric and imperial measurements as applied to diving
- Air consumption of a diver at surface and at depth
- Air consumption of a diver in an emergency
- Bailout duration
- High Pressure and Low Pressure compressor deliver rates (pressure and volume)
- Temperature change- and change in pressure (Charles Law)
- Have an understanding of the gas laws formula
- Boyle’s Law; Henry’s Law; Dalton’s Law; Charles’s Law and General Gas Law
- An understanding of the body cavities affected by pressure and the results of the change of pressure within those cavities
- Archimedes Principle and how the state of buoyancy is determined: Positively Buoyant; Neutrally Buoyant; Negatively Buoyant.
- The means of heat transference – Conductivity; Radiance; Convection
- High Pressure and Low Pressure delivery rates and the capabilities of compressors.
- Divers calculated breathing rates during normal and emergency dives

**Evidence Sources**

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

**Work activities**

- Discuss with in work group the effect of all aspects of physics have on the diver and clearly identify the safe systems of work to be implemented by the diving supervisor to manage the risks
Written reports

- Outline the following Gas laws and outline their relationship to the divers activities
  - Boyle’s Law
  - Charles’s Law
  - Henry’s Law
  - Dalton’s Law

- State Archimedes Principle and outline how it affects the diver and moving an object under water

- Apply mathematical concepts accurately in calculations relating to buoyancy and lifting requirements, including use of appropriate equations, basic units and conversion factors

- Describe how visibility affects the diver operations

- Calculate the surface air requirement for a diver to work at a given depth

- Apply mathematical concepts accurately in calculations relating to the calculations of:
  - Calculate the endurance of a surface supplied air supply (HP air quads)
  - Calculate the emergency air requirements for surface supplied air diving
  - Calculate the endurance of the divers bailout cylinder taking into consideration temperature change, ambient pressure and breathing rate
  - Calculate the compressor delivery rate in pressure and quantity (PSI / ft³ or Bar / m³)

- A multi choice examination should be established with questions related to the performance criteria
### Competency Unit: Advanced Diving Theory: Physiology

#### Summary of Competency Unit

This Competency Unit consists of the following element:

1. **Apply Advanced Diving Physiology.**

The diving supervisor shall a **detailed understanding** of the physiological effects that pressure has on the body, medical diving hazards and decompression and the importance of the recognition and prevention of diving related injuries.

#### Assumed Skills and Knowledge

The assumed skills and knowledge for this unit are as follows.

- have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation
- be able to understand written and verbal communications (using English), and be able to communicate easily with other persons
## Competency Unit Code
CD-CCS-200C-0

## Competency Level
Inland/inshore Diving Supervisor (CSCUBA and SSDE)

## Competency Unit Title:
Advanced Diving Theory: Physiology

### Description of Competency Element

#### Competency Element Title:
1. Apply Advanced Diving Physiology

#### Performance Criteria

A competent diving supervisor must be able to perform the following:

1.1 Describe the anatomy of the human body and the basic functions of parts that are affected by pressure while diving.
1.2 Explain the effects of respired gases on the body.
1.3 Explain the direct and mechanical effects of pressure on a diver (barotraumas).
1.4 Explain the indirect effects of pressure on a diver.
1.5 Use the correct decompression tables for single and repetitive dives.
1.6 Describe the problems associated with maintaining the diver in thermal balance.
1.7 Recognize diving related injuries and ailments.
1.8 Recognize marine life related injuries.
1.9 Demonstrate the prevention of diving related injuries, marine life injuries and ailments.
1.10 Demonstrate the management of a diving casualty.
1.11 Describe the effects of flying after diving and the limitations of flying after diving.
1.12 List the contents of the diving medical equipment required on site.
1.13 Describe the hazards associated with marine environment and marine life.

#### Underpinning Knowledge

A competent individual needs to know and understand:

- Identify all the body systems cavities that are affected by pressure and the results of the change of pressure within those cavities.
- The relevant anatomy and physiology of the human body, in particular the respiratory, circulatory, and central nervous systems.
- The effects on the diver of breathing various gases at relevant pressures; chronic and acute toxicity.
- The principles governing compression and decompression and the uptake, distribution, and elimination of gases, and be able to use the appropriate decompression tables.
- The causes, manifestations, and treatment of pressure-related diseases (pulmonary barotraumas, gas embolism) and the effects of pressure on body cavities.
- The causes, manifestations, and treatment of decompression illness.
- The Physiology of the thermal balance for the diver.
- How to care for and manage a diving emergency in the field.
- The importance of proper evacuation procedures.
- The limitations of flying and/or going to altitude after diving.
- Hazards of marine environment and marine life.

#### Range and Context

**Body Systems:**

- Respiratory
- Circulatory
- Skeletal
### Barotraumas (Direct and Indirect)
- Pressure Related Injuries: Ears and Reversed Ears, Sinuses, Squeeze; Pulmonary; Interstitial; Mediastinal; Subcutaneous Emphysema (s); Pneumothorax / Tension Pneumothorax Arterial Gas Embolism (AGE)
- Recognition of Pressure related injuries

### Gas Toxicity
- Identify the effects of relevant gases on the body (gas toxicity)
  - Oxygen
  - Nitrogen
  - Carbon Dioxide
  - Carbon Monoxide
    - Recognition of gas toxicity – **ACUTE** and **CHRONIC**
    - Signs and Symptoms
    - Treatment for gas toxicity

### Decompression Illness (DCI)
- Manifestations of DCI
- Recognition of DCI signs and symptoms
- Type 1 - Pain Only
- Type 2 – Central Nervous System (CNS)
- Treatment protocols and procedures of DCI
- Neurological examination

### Management and Prevention of Diving Related Injuries
- Correct actions and procedures while diving
- Identification of diving related ailments and injuries
- Management of diving related injuries
- Actions to be taken by the diving team in an emergency
- Marine life related hazards and injuries
  - Sea snake; Venomous Fish; Chicken fish; stone fish; shell fish; various ray (s); Jelly fish – various species; Corals and coral burn; Antidote requirements

### Evidence Sources
Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

### Work activities
- Discuss with in work group the effect of all aspects of physiology on the diver and clearly identify the safe systems of work to be implemented by the diving supervisor to manage the risks

### Written reports
- A multi choice examination should be established with questions related to the performance criteria
**Competency Unit:** Dive Planning

**Summary of Competency Unit**

This Unit consists of the following elements:
1. Plan for Diving
2. Determine Team Size and Duties
3. Identify Hazards Relating to Diving Operations
4. Prepare Dive Plan
5. Apply Risk Management in Diving Operations

The purpose of this element of Diving Supervisor Core Competency is to enable the trainee diving supervisor to plan a dive operation, including applying legislation, diving procedures and approved codes of practice, identifying the scope of the operation, identifying the risks and hazards of the dive operation and applying mitigating actions, understanding the requirement for permits to work and dive checks to be completed accurately and correctly prior to diving, organizing physical and human resources and preparing a written dive plan.

**Assumed Skills and Knowledge**

Students are assumed to:
- have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation
- be able to identify the risks and hazards associated with commercial diving operations
- understand the terminology used during commercial diving activities
- be able to understand written and verbal communications (using English), and be able to communicate easily with other persons

| Competency Unit Code | Competency Level |
### Competency Unit Title
**Dive Planning**

### Description of Competency Element

#### Competency Element Title:
1. Plan for Diving

#### Performance Criteria

A competent diving supervisor must be able to perform the following:

1.1 Describe the roles and responsibilities of the dive team members and others supporting the dive operation with regards to the dive planning process
   - Divers
   - Diving Supervisor
   - Standby Divers
   - Tender
   - Technician
   - Site owners
   - The client
   - The diving contractor

1.2 Describe the impact of the risk assessment process, findings and mitigating actions on dive planning

1.3 Identify the scope of the dive operation, based on client and project requirements with reference to the relevant diving code of practice and guidance documents.

1.4 Plan for the relevant human resources and equipment for the dive operation.

1.5 Apply relevant legislation and standards to the planning of the dive operation.

1.6 Comply with Company diving procedures for diving operations

#### Underpinning Knowledge

A competent individual needs a **detailed knowledge and understanding:**

- The general requirements to plan a diving operation
- Company Safety Management system and the structure / roles and responsibilities of relevant positions in the company structure
- Structure of the dive team and supporting personnel both onsite and offsite and human resource requirements
- Equipment resources
  - The Primary and Emergency air supplies required for the planned dive task
  - Personal diving equipment
  - Project specific diving equipment (work tools)
  - The nearest available DDC in the event of a diving emergency
- Roles and Responsibilities of personnel as outlined in SS 511 and Technical Advisory for Inland/inshore Commercial diving - companies; contractor and clients associated with the dive operation
- Risk Management processes
- Legal responsibilities and duty of care required under Workplace Health & Safety Act
- Actions that may be taken by authorities against the diving supervisor / contractor / client if they fail to implement their duties and responsibilities correctly

#### Range and Context

- Site owners requirement to provide information of items that may be hazardous to the diver, dive team during the project
- Formal Risk Assessment and safety management system required to cover diving activities
- Permit to work requirements for the planned dive task
- Lock Out / Tag out requirements for the planned dive task
- General structure and content of the dive plan
- The environmental conditions and their influence on the divers and dive boat (if applicable)
- Overview of emergency requirements and planning

**Evidence Sources**

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

**Work activities**
- Discuss within the work group the general requirements and contents of a dive plan

**Written reports**
- A multi choice examination should be established with questions related to the performance criteria
## Description of Competency Element

### Competency Element Title
2. Determine Team Size and Duties

### Performance Criteria

A competent diving supervisor must be able to perform the following:

2.1 Describe the minimum team size for CSCUBA and/or SSDE diving operations.
2.2 Describe the optimum team size for CSCUBA and/or SSDE diving operations.
2.3 List the minimum requirements for tending/diver; standby divers/divers working.
2.4 Describe the tasks and situations that will require additional manning levels.
2.5 Describe how rest periods may affect the manning level of a dive team.
2.6 Describe how dive locations may require additional dive team members and how the additional team members could be utilized.
2.7 Describe the effects of not having suitable manning levels and dive team members.
2.8 Participate in planning a dive project and establishing a dive team for the project requirement.
2.9 Describe the manning requirements required to manage an emergency.

### Underpinning Knowledge

A competent individual needs a detailed knowledge and understanding of the:

- Company Safety Management system manning levels for safe diving operations
- SS 511 and Technical Advisory for Inland/inshore Commercial diving
- Diving team members roles and responsibilities
- Equipment requirements for the team members

### Range and Context

- Minimum dive team consisting of:
  - 1 x Diving Supervisor
  - 1 x Diver
  - 1 x Diver tender
  - 1 x Standby diver
  - 1 x Standby divers tender
- The supervisor shall not dive while supervising a diving project
- Environmental aspects that affect the team size
- Project/operational, equipment aspects that affect the team size
- Manning requirements and consideration for emergency planning and actions

### Evidence Sources

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

#### Work activities

- Preparation of the dive plan and select the dive team members to carry out the work task (this may be a desk top exercise)
• Planning for emergency's and ensuring the manning levels are sufficient for such scenarios and requirements (this maybe a desk top exercise)

**Written reports**
• A multi choice examination should be established with questions related to the performance criteria
Description of Competency Element

**Competency Element Title**
3. Identify Hazards Relating to Diving Operations

**Performance Criteria**
A competent diving supervisor must be able to perform the following:

3.1 Describe the hazards when conducting diving operations.
3.2 Identify the environmental hazards when conducting diving operations.
3.3 Identify the equipment hazards when conducting diving operations.
3.4 Identify the operational hazards when conducting diving operations.
3.5 Identify the hazards to consider during an emergency response.
3.6 Identify the control measures for all hazards identified with the diving operation.

**Underpinning Knowledge**
A competent individual needs a detailed knowledge and understanding of the:
- The relevant chapters and paragraphs in SS 511 and Technical Advisory for Inland/inshore Commercial diving
- Identification of the risks & hazards during the planning and operational phases of the diving operation
- Mitigation actions required to reduce the risks & hazard to ALARP
- Means of implementing the mitigation actions to reduce the risks & hazard to ALARP

**Range and Context**
- Hazards
  - Limited air supply; no emergency backup supply
  - Limited communications- for both general work instructions and emergency requirements
  - No head protection
  - Life line / umbilical entanglement - management and attachment to the diver
  - Mouth regulator / full Face mask
  - Emergency bailout / SCUBA cylinders duration limits
  - Air supply failure
- Entry / Exit of the water from the dive platform / vessel
- Environment Hazards
  - Sea State
  - Wind
  - Rain
  - Fog / Haze / surface visibility
  - Tide / Current
  - Underwater visibility
  - Contaminated Water
- Equipment hazards
  - Equipment failure; compressor; air supply; helmet / regulator; umbilical
  - High pressure hoses, fittings, pressure vessels, pressure cylinders, regulators
  - Low Pressure hoses, fittings, pressure vessels, pressure cylinders, regulators
  - Use of 'whip checks'
- Electrical hazards; wires; electrical supplies
- Manual Handling of heavy equipment
- Fire hazards

- Operational hazards
  - Work site hazards
    - Trips / slips / falls
    - Concurrent work activities
    - Machinery / engines/ exhausts fumes
    - Fire hazards
    - Lifting using cranes or other mechanical devices
    - Rigging suitability and certification
    - Rigging use
    - Use of Down lines and messenger lines
  - Marine shipping, other vessels in area of operation
  - Lock out / tag out requirements- ships engines / propellers
  - Pressure differentials (Delta P)
  - Suction / discharge points
  - Overhead environments
  - Restricted access points
  - Hazards that become evident during the work process and how to manage them

- Emergency Response (ERP) hazards
  - ERP procedures suitable for operation; and tested to ensure key personnel are in position and contactable
  - Sufficient manning to manage the emergency

- Emergency Drills

**Evidence Sources**

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

**Work activities**

- Develop a dive plan and identify the hazards of the dive operation (maybe a simulated desk top exercise)
- Planning for emergency’s and ensuring the manning levels are sufficient for such scenarios and requirements
- Using a training scenario – identify the hazards to be considered in the dive plan

**Written reports**

- A multi choice examination should be established with questions related to the performance criteria
Description of Competency Element

### Competency Element Title
4. Prepare Dive Plan

### Performance Criteria
A competent diving supervisor must be able to perform the following:

4.1 Explain the statutory requirements and advantages of having a dive plan for the diving operation.
4.2 Explain the methodology of developing a dive plan.
4.3 Outline the problems which may occur when there is no dive plan.
4.4 Identify the parties that the dive plan should be communicated to.
4.5 List the contents of a dive plan.
4.6 Prepare a dive plan for a diving operation.

### Underpinning Knowledge
A competent individual needs a **detailed knowledge and understanding** of the:
- The relevant chapters and paragraphs of the SS 511 and Technical Advisory for Inland/inshore Commercial diving
- Risk Management tools:- Risk Assessments; HIRA; HAZIDS/ JSA/ tool box talks; management of change procedures
- Hazards and Risks associated with CSCUBA and SSDE diving operations
- Company Diving operations manual(s)
- Organisation charts and communication flow chart
- Permit to Work procedure
- Emergency Procedures

### Range and Context
- The contents of a dive plan and how it is written / documented
  - The planned method of performing the task
  - The duties of every person involved in the task
  - The diving equipment to be used
  - Equipment check list (pre dive and post dive)
  - The breathing gases to be used, including the amount / gas quantity
  - Access / Egress - Safe deployment and recovery for the diver and standby diver
  - Diving procedures to be used, including the planned bottom times and decompression profiles
  - Step by step work procedures
  - Equipment and tools required for the task
  - Specific task hazards and measurements to mitigate the hazards
  - The emergency response plan
- Risk Assessment for all operational hazards
- Accident Investigation procedure and requirements
Evidence Sources

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

Work activities
- Develop a dive plan (may be a simulated desk top exercise)
- Develop an emergency response procedure (maybe a simulated desk top exercise)

Written reports
- A multi choice examination should be established with questions related to the performance criteria
- Write a dive plan
5. Apply Risk Management in Diving Operations

Performance Criteria

A competent diving supervisor must be able to perform the following:
5.1 Explain the hierarchy of controls in relation to a diving operation or dive task.
5.2 Explain the methodology of risk management and how it is applied to a diving operation.
5.3 Identify various risk management tools:
   - FMEA
   - Audits
   - HAZIDS
   - Risk Assessment
   - Job Safety Assessment
   - Tool Box Talks
   - Management of change
5.4 Explain the purpose of the risk management tools in PC 5.3.
5.5 Explain how the risk management tools in PC 5.3 are used.

Underpinning Knowledge

A competent individual needs to know and understand:
- The relevant chapter and paragraphs of the SS 511 and Technical Advisory for Inland/inshore Commercial diving
- Risk Management tools: FMEA, Audits, HIRA, HAZIDS/Risk Assessment, JSA/tool box talks, management of change procedures
- MOM Risk Management training and certified
- Diving operations manual and contents
- Organisation charts and communication flow chart
- Permit to Work procedure

Range and Context

Risk Management Tools
- Failure Mode Effect Analysis- an overview of what the FMEA is and how it is carried out and implemented as a safety management tool
- Audits – equipment and safety management system audits and their purpose
- Risk Assessment – Hierarchy of controls and how the method is applied to a diving operation
- Quantitative and Qualitative Risk assessment processes and their advantages and disadvantages
- Onsite risk management tools – Job Safety Assessment/ tool box talks and how to use them to their full advantage
- Managing change – any change needs to be managed – identify the level of change management required and the procedure required to manage the change
- Lessons learnt when Risk Management had been carried out effectively
<table>
<thead>
<tr>
<th>Evidence Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.</td>
</tr>
</tbody>
</table>

**Work activities**
- Develop a Risk Management protocol of a diving operation (may be a simulated desk top exercise)

**Written reports**
- A multi choice examination should be established with questions related to the performance criteria
**Competency Unit:** Documentation and Records

<table>
<thead>
<tr>
<th>Summary of Competency Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>This Competency Unit consists of the following element:</td>
</tr>
<tr>
<td>1. Apply Documentation and Records</td>
</tr>
</tbody>
</table>

The purpose of this element is to enable the trainee diving supervisor to have a detailed understanding of the legal requirements for maintaining accurate and detailed records during the diving operation. This includes Permits-to-Work, dive record sheets, decompression record sheet, daily dive log, book work activity record, personal divers log book, and diving supervisors log book.

<table>
<thead>
<tr>
<th>Assumed Skills and Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>The assumed skills and knowledge for this unit are as follows:</td>
</tr>
<tr>
<td>• be able to maintain accurate and clear records (written and verbal)</td>
</tr>
<tr>
<td>• have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation</td>
</tr>
<tr>
<td>• be able to understand written and verbal communications (using English), and be able to communicate easily with other persons</td>
</tr>
<tr>
<td>Competency Unit Code</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>CD-CCS-200E-0</td>
</tr>
</tbody>
</table>

**Competency Unit Title:**
Documentation and Records

**Description of Competency Element**

**Competency Element Title:**
1. Apply Documentation and Records

**Performance Criteria**

A competent diving supervisor must be able to perform the following:

1.1 Describe the requirement of company diving procedures, manuals and management systems.
1.2 Describe Permit-to-Work requirements and procedures.
1.3 Explain the importance for accurate records to be maintained.
1.4 Demonstrate clear and concise record keeping of dives and associated work.
1.5 Describe the requirement for pre-dive records; dive records, written and recorded; post dive records; chamber records.
1.6 Complete personal dive logs and supervisor log book records
1.7 Describe the planned maintenance system and records
1.8 Describe the procedures for incident/accident investigation and documentation of such records.
1.9 Maintain daily project reports accurately.
1.10 Complete a basic dive report.
1.11 Record and report incorrect activities, including faulty equipment, incorrect procedures, near misses, accident/incident occurrences

**Underpinning Knowledge**

A competent individual needs a detailed knowledge and understanding of:

- Company Safety Management system and the structure of the system, how it relates to the diving manuals and documentation
- Diving Procedures
- Daily progress reports and their content
- Check Lists for diving equipment
- Check list for personal diving equipment
- Check lists for operational actions
- Diving equipment Planned Maintenance systems
- Diving Supervisor log book record
- Supervisors responsibility to sign divers log books and training / competence records
- Reporting systems and report contents

**Range and Context**

A competent individual needs to know and understand:

- The way in which the Company records diving activities
- Diving Procedures Manual
- Emergency and Contingency Manual
- Diving Tables, (examples; USN and DCIEM, No-Deco Dives, Standard Air Deco Dives, In-Water Deco Dives, Sur-D-O2 Dives) - use and record keeping
- Accident and Incident Recording system
- Therapeutic Treatment Schedule
- Diving equipment Planned Maintenance System
- Permit to Work System
- Diving operations record keeping
- Diver certification and medicals
  - Dive Records- dive logs sheets and activity recording
  - Records by use of DVD/ Video recording (Black box recording)
  - Chamber Records
  - Personal Dive Records and log books / supervisor log book
  - Training Records

**Evidence Sources**

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

**Work activities**

- Carry out a desk top exercise dive to demonstrate knowledge of the way in which the dive tables are used, and decompression stops are calculated
- Demonstrate how to complete dive logs; dive record; pre-dive check list; post dive check list
- Demonstrate how to complete a project report

**Written reports**

- A multi choice examination should be established with questions related to the performance criteria
- Complete a dive record sheet
<table>
<thead>
<tr>
<th><strong>Competency Unit:</strong> Leadership and Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of Competency Elements</strong></td>
</tr>
<tr>
<td>This Competency Unit consists of the following element: 1. Apply Leadership and Communication</td>
</tr>
<tr>
<td>The purpose of this element is to enable the trainee diving supervisor to have a detailed understanding of the legal requirement for maintaining leadership and communication with his dive team, the client and any other who may affect him or be affected by his actions during the diving operation.</td>
</tr>
<tr>
<td><strong>Assumed Skills and Knowledge</strong></td>
</tr>
<tr>
<td>The assumed skills and knowledge for this unit are as follows:</td>
</tr>
<tr>
<td>• be able to understand written and verbal communications (using English), and be able to communicate easily with other persons</td>
</tr>
<tr>
<td>• have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation</td>
</tr>
</tbody>
</table>
Competency Unit Code
CD-CCS-200F-0

Competency Level
Inland/Inshore Diving Supervisor
(CSCUBA and SSDE)

Competency Unit Title
Leadership and Communication

Description of Competency Element

Competency Element Title
1. Apply Leadership and Communication

Performance Criteria

A competent diving supervisor must be able to perform the following:
1.1 Explain company organisation and communication flow-charts
1.2 Describe the company’s HSE policies and his responsibilities in implementing and maintaining those policies at the work site
1.3 Explain the philosophy of ‘lead by example’ and setting the standard of operations and safety
1.4 Apply organisational policies and procedures
1.5 Demonstrate awareness of relevant areas of legislation in selection of dive team members
1.6 Apply organisational disciplinary procedures and handling grievances
1.7 State the elements of supervising
1.8 Explain the principles of man-management, motivation and communication
1.9 Demonstrate various means to communicate with the dive team and personal who are involved with the dive task and key stake holders
1.10 Understand conflict resolution within the work team
1.11 Describe the written and verbal communications requirements of a diving project
1.12 Describe alternative means of communications – email; marine signals; visual
1.13 Monitor performance and provide feedback to team members
1.14 Apply leadership in emergency and stress situations, including symptom recognition, preventative measures, courses of action and transfer of experience
1.15 Describe the reasons to present information clearly and concisely
1.16 Identify common problems with regards to procedural / human resources and equipment and outline possible solutions
1.17 Manage grievances within the dive team and between the company and client
1.18 Apply of disciplinary action
1.19 Explain the importance of shift change and verbal / written communications during the handover
1.20 Explain the importance of the shift handover and dive briefing and clear and concise communications

Underpinning Knowledge

A competent individual needs a **detailed knowledge and understanding** of:
- Company Safety Management system and the structure of the system- organisation charts
- Organization of project specific management and communication lines
- Leadership and motivational skills
- Project communications – Team Briefing; Diver Briefing; Daily Reports
- Conflict management
- Grievance procedures
- Disciplinary procedures
- The Company Emergency Response Plan
- The importance of presenting information clearly and concisely
Range and Context

- development of diving plans
- check that all the ‘official, statutory’ documentation is on site, and that the dive team know where it is
- the elements of leadership
- the elements of communication – written, verbal and other means for communication
- develop positive control of a dive team and the dive site area
- take responsibility for development of diving plans
- Brief the dive team on their duties and roles and responsibilities. Ask questions to confirm that they know their duties
- Listen to team members questions and concerns and manage them with respect and the priority required
- Prioritisation of actions required for maintaining a good team environment
- brief the divers on their tasks, and any hazards identified as part of the dive task
- communication of the planned dive task JHA
- confirmation that the dive team understand the risks and the mitigating measures
- check and confirm that all the risk Management tools such as risk assessments / JHA are in place and have been communicated to the team
- roles and responsibilities of the dive team members in an emergency
- review of the Emergency Response Plan
- check the arrangements for Emergency Medical assistance are available and communication lines established
- manage and lead in a controlled fashion during any emergency situation; remain confident and assured at all times
- performance monitoring of the dive team
- provide positive and lessons learnt to dive team members
- means of communicating with the client

Evidence Sources

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

Work activities

- Demonstrate clear and precise communications to the dive team and others involved with the dive task / project
- During this unit various leadership work group activities should be used where by implementing leadership and managing skills as well as conflict resolution between dive team members; diving supervisor and client representative; diving supervisor and contractor; these scenarios maybe simulated role play exercises

Written reports

- A multi choice examination should be established with questions related to the performance criteria
5.0 INLAND/INSHORE CSCUBA DIVING SUPERVISOR SPECIFIC COMPETENCY UNITS

<table>
<thead>
<tr>
<th>Competency Unit:</th>
<th>CSCUBA Diving Equipment, Systems, Procedures and Practices</th>
</tr>
</thead>
</table>

**Summary of Competency Elements**

This Competency Unit consists of the following element:


The purpose of this element is to enable the trainee diving supervisor to have a detailed understanding of the use, operation and maintenance of CSCUBA diving equipment, systems, procedures and practices necessary for the safe use of the diving equipment during a CSCUBA diving operation.

**Assumed Skills and Knowledge**

The assumed skills and knowledge for this unit are as follows:

- add, subtract, multiply and divide whole numbers, decimals and fractions
- calculate percentages; and transpose and solve simple formulas, e.g. gas laws
- have the experience and training to assemble, check, use and maintain CSCUBA diving equipment for a diving operation
- have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation
- be able to understand written and verbal communications (using English), and be able to communicate easily with other persons
# Description of Competency Element

<table>
<thead>
<tr>
<th>Competency Element Title:</th>
<th>CSCUBA Diving Equipment, Systems, Procedures and Practices</th>
</tr>
</thead>
</table>

## Performance Criteria

A competent diving supervisor must be able to perform the following:

1.1 Supervise the maintenance and use of common types of CSCUBA equipment.
1.2 Use CSCUBA checklists.
1.3 Describe contents of a dive briefing and shift hand over.
1.4 Prepare operational and contingency plans when using CSCUBA equipment.
1.5 Describe safe means to enter and exit the water.
1.6 Supervise the use of CSCUBA equipment in the tethered mode, using a life line.
1.7 Supervise the correct use of personal diving equipment, i.e. diving suit, buoyancy device, fins, mask/regulator; bailout cylinder, knife, harness.
1.8 Describe the principles of effective communication when using hard wire communications, diver line signals and diver hand signals.
1.9 Supervise the use of High pressure (HP) and low pressure (LP) compressors.
1.10 Supervise the use of HP and LP air supplies.
1.11 Describe emergency response actions when using CSCUBA equipment.

## Underpinning Knowledge

A competent individual needs a detailed knowledge and understanding of the:

- Basic engineering and theory of operation for the various articles of self-contained breathing equipment, including reserve systems
- Correct assembly and use of CSCUBA equipment components
- Correct use of personal diving equipment
- Limitations of CSCUBA diving and equipment for commercial diving works
- Requirements of operational and emergency contingency plans
- Various Full Face masks available for use and how to use them
- Use of diving ladders to enter and exit the water
- Diver recovery in the event of an emergency
- Equipment Manufacturers data and information resources
- Planned Maintenance Systems; and maintenance requirements of compressors and personal diving equipment; trained and certified in the regulator / mask manufacturers maintenance procedures and be certified

## Range and Context

**CSCUBA Equipment and Systems:**
- Personal Diving Equipment (fins, knife, suit, BOB, harness etc)
- Regulators and Full Face Masks
- Communications systems: Hard wire; though water and line pulls

**Planned Maintenance Systems (PMS)**
- Certification Register
- Competency to carry out Maintenance on diving equipment
  - Compressors
- Cylinders
- Regulators
- Hoses
- Personal dive equipment; regulators and masks
- PMS Records

- Methods of entering and exiting the water
- Recovery of an injured diver from the water
- Initial First Aid Treatment of a Diving Casualty
- Emergency Response Plan and Procedures

### Evidence Sources

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

### Work activities

- Work group discussion outlining the safe operational procedures using CSCUBA equipment

### Written reports

- A multi choice examination should be established with questions related to the performance criteria
### Competency Unit: Conduct CSCUBA Diving Operations

#### Summary of Competency Elements

This Competency Unit consists of the following elements:
1. Conduct CSCUBA Dive Operations
2. Manage Emergency Procedures when Using CSCUBA

The purpose of this Competency Unit is to enable the trainee diving supervisor to be able to competently conduct CSCUBA diving operations in both sheltered and open water of varying depths, with varying bottom conditions, to a maximum of 30msw.

Note: Decompression Chamber dives and/or recreational dives shall not be considered equivalent experience in conducting diving operations.

#### Assumed Skills and Knowledge

The required skills and knowledge criteria for this unit are as follows:
- be able to understand CSCUBA diving equipment terminology and equipment uses
- be able to give clear instructions to CSCUBA divers
- be able to assess diver competency have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation
- be able to understand written and verbal communications in English
- be able to communicate easily with other persons
**Competency Unit Code**  
CD-SCS-201B-0  

**Competency Level**  
Inland/Inshore Diving Supervisor (CSCUBA)

**Competency Unit Title:**  
Conduct CSCUBA Diving Operations

### Description of Competency Element

#### Competency Element Title:

1. Conduct CSCUBA Dive Operations

#### Performance Criteria

A competent diving supervisor must be able to perform the following  
*(Note: all training tasks should be carried out in a controlled environment)*

1.1 Supervise the set-up of basic CSCUBA equipment for use and complete pre-dive checks of the equipment.
1.2 Conduct a formal dive briefing
1.3 Establish a dive plan
1.4 Carry out risk assessment in preparation for the diving activity
1.5 Supervise divers in the ability to perform basic knots and rigging skills.
1.6 Supervise divers in a confined water or controlled environment, including the following skills:
   - Buoyancy Exercises
   - Sharing Air source (Buddy breathing - when using mouth piece regulator only)
   - Navigation skills
   - Rescue Skills
1.7 Carry out PC 1.6 in a controlled open water environment.
1.8 Supervise an overhead/penetration dive (confined area-space diving).
1.9 Supervise divers in the safe use of various full face masks (AGA, EXO, KMB) c/w hard wire communications and though water communications.
1.10 Supervise the use of buoyancy control devices; wet suit and dry suit (for use in contaminated water environment).
1.11 Supervise the duties of a diver’s tender and ensure the tender understands the roles and responsibilities of the tender.
1.12 Supervise the duties of a standby diver and ensure the diver understands the roles and responsibilities of the standby diver.
1.13 Supervise user maintenance procedures for CSCUBA equipment, prepare equipment for use, dismantle and reassemble self contained equipment.
1.14 Supervise divers/diver’s tender in diving operations where line signals are the primary means of communication.
1.15 Supervise diver/diver’s tender in diving operations where the diver’s intercom is the primary means of communication.

#### Underpinning Knowledge

A competent individual needs a **detailed knowledge and understanding** of:

- Use of CSCUBA equipment
- Use of mouth piece regulators
- Use of full face masks
- Life line signals and hard wire / though water communications
- Operational requirements of CSCUBA equipment
- Basic Maintenance of CSCUBA equipment
- Limitations of CSCUBA equipment
- Hazards associated with the use of CSCUBA equipment
- Risk Management of all hazards involved with the dive operation
- Dive Plan and dive briefings
- Emergency situations and procedures
- Nitrogen Narcosis – signs and symptoms and affects on the diver

**Range and Context**

The diving supervisor skills and knowledge shall include the following:
- Explaining the setting up of CSCUBA equipment ready for use
- Equipment checks and pre-dive checks of the equipment and post dive checks
- Basic knots and rigging skills used by divers
- Use of the equipment within a confined water / controlled environment
  - Buoyancy Exercises
  - Sharing Air source (Buddy Breathing)
  - Rescue Skills
  - Navigation skills
- Explaining the hazards of overhead / penetration dive(s)
- Explaining the use of mouth Piece Regulators
- Explaining the use of full face masks (AGA, EXO,KMB) c/w hard wire communications and though water communications
- Explaining the use of buoyancy control devices; wet suit and dry suit
- Duties of divers tender
- Duties of stand by diver
- Explaining maintenance procedures for CSCUBA equipment
- Use of line signals (which are the primary means of communication)

**Evidence Sources**

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

**Work activities**
- Demonstrate the correct supervision and use of CSCUBA diving equipment while on the dive site and conducting dives
- Supervise Emergency Drills using CSCUBA equipment
- Supervise a dive team during all diving activities
- Instruct tender; diver and stand by diver in normal dive scenarios and drills
- Maintenance of CSCUBA equipment
- Complete Dive Logs, Dive Reports, Dive Plans, Diver Briefing, Dive Task JHA

**Written reports**
- A multi choice examination should be established with questions related to the items listed in the Underpinning Knowledge section
- Complete equipment and pre dive / post dive check lists
- Complete personal dive log book
Description of Competency Element

Competency Element Title:
2. Manage Emergency Procedures when Using CSCUBA

Performance Criteria

A competent diving supervisor must be able to perform the following:
(Note: all training tasks should be carried out in a controlled environment)

2.1 Supervise emergency drills (in confined and open water environments) using CSCUBA equipment and demonstrate a complete knowledge of the procedures to be followed in case of:
- Uncontrolled Ascent
- Equipment malfunction, loss of air, loss of communications
- Trapped Diver
- Umbilical Entanglement
- Unconscious / injured diver in the water recovery
- Contaminated air supply
- Vomiting Underwater
- No visibility

2.2 Explain how to conduct emergency ascent procedures.
(Note: Emergency ascents can be very hazardous, divers are not asked to perform it; describing it is sufficient.)

2.3 Conduct a simulated rescue of an unconscious/injured diver using CSCUBA equipment.

Underpinning Knowledge

A competent individual needs a detailed knowledge and understanding of:
- Use of CSCUBA equipment
- Use of mouth piece regulators
- Use of full face masks
- Life line signals and hard wire / though water communications
- Operational requirements of CSCUBA equipment
- Basic Maintenance of CSCUBA equipment
- Limitations of CSCUBA equipment
- Hazards associated with the use of CSCUBA equipment
- Risk Management of all hazards involved with the dive operation
- Dive Plan and dive briefings
- Emergency situations and procedures
- Nitrogen Narcosis – signs and symptoms and affects on the diver

Range and Context

The diving supervisor skills and knowledge shall include the following:
- Duties of stand by diver
- Conducting emergency drills (in confined and open water environments) using CSCUBA equipment
  - Uncontrolled Ascent (Note: Confined/pool water activity only)
  - Equipment malfunction; - Loss of air; loss of communications
  - Trapped Diver
- Umbilical Entanglement
- Unconscious / injured diver in the water recovery
- Contaminated air supply
- Vomiting Underwater
- No visibility
- Explaining the use of Buddy Breathing (“octopus breathing”) techniques while using mouth piece regulator (discussion only)
- Explaining emergency ascent procedures
- Conducting simulated rescue of an unconscious / injured diver using CSCUBA equipment while acting as diver; divers tender and stand by diver

**Evidence Sources**

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

**Work activities**
- Demonstrate the correct supervision and use of CSCUBA diving equipment while on the dive site and conducting dives
- Supervise Emergency Drills using CSCUBA equipment
- Supervise a dive team during all diving activities
- Instruct tender; diver and stand by diver in emergency dive scenarios and drills
- Complete Dive Logs, Dive Reports, Dive Plans, Diver Briefing, Dive Task JHA

**Written reports**
- A multi choice examination should be established with questions related to the items listed in the Underpinning Knowledge section
- Complete equipment and pre dive / post dive check lists
- Complete personal dive log book
### 6.0 INLAND/INSHORE SSDE DIVING SUPERVISOR SPECIFIC COMPETENCY UNITS

<table>
<thead>
<tr>
<th>Competency Unit</th>
<th>SSDE – Diving Equipment, Systems, Procedures and Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of Competency Elements</strong></td>
<td></td>
</tr>
<tr>
<td>This Competency Unit consists of the following element:</td>
<td></td>
</tr>
<tr>
<td>1. Supervise SSDE, Systems, Procedures and Practices</td>
<td></td>
</tr>
<tr>
<td>The purpose of this element is to enable the trainee diving supervisor to have a detailed understanding of the use, operation and maintenance of SSDE diving equipment, compressors, diving systems, procedures and practices necessary for the safe use of the diving equipment during a SSDE diving operation.</td>
<td></td>
</tr>
<tr>
<td><strong>Assumed Skills and Knowledge</strong></td>
<td></td>
</tr>
<tr>
<td>The assumed skills and knowledge for this unit are as follows:</td>
<td></td>
</tr>
<tr>
<td>- add, subtract, multiply and divide whole numbers, decimals and fractions</td>
<td></td>
</tr>
<tr>
<td>- calculate percentages; and transpose and solve simple formulas, e.g. gas laws</td>
<td></td>
</tr>
<tr>
<td>- have the experience and training to assemble, check, use and maintain SSDE diving equipment for a diving operation</td>
<td></td>
</tr>
<tr>
<td>- have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation</td>
<td></td>
</tr>
<tr>
<td>- be able to understand written and verbal communications (using English), and be able to communicate easily with other persons</td>
<td></td>
</tr>
</tbody>
</table>
Competency Unit Code: CD-SSS-202A-0
Competency Level: Inland/Inshore Diving Supervisor (SSDE)

Competency Unit Title:
SSDE Diving Equipment, Systems, Procedures and Practices

Description of Competency Element

<table>
<thead>
<tr>
<th>Competency Element Title:</th>
<th>1. Supervise SSDE, Systems, Procedures and Practices</th>
</tr>
</thead>
</table>

Performance Criteria

A competent diving supervisor must be able to perform the following:
1.1 Supervise a dive team using SSDE.
1.2 Describe safe means to enter and exit the water using SSDE.
1.3 Prepare operational and contingency plans when using SSDE equipment.
1.4 Supervise the correct use of personal diving equipment, i.e. diving suit, buoyancy device fins, mask/regulator, bailout cylinder, knife, harness.
1.5 Supervise the set-up and use of CSCUBA Replacement diving systems; the limitations and system components.
1.6 Supervise the maintenance and use of SSDE and ensure the records are documented correctly.

Underpinning Knowledge

A competent individual needs a detailed knowledge and understanding of the supervision requirements for:
- the principles and responsibilities of being a diver, the diver's tender, and a standby diver on a SSDE dive site
- The basic construction and theory of operation for the various articles of SSDE, including reserve systems
- The 'set up' of SSDE equipment and its use
- Limitations of SSDE diving and equipment for commercial diving works
- Requirements of operational and emergency contingency procedures and plans
- Various Full Face masks and helmets available for use and how to use them
- Use of diving ladders to enter and exit the water and injured diver recovery in the event of a emergency
- Equipment Manufacturers data and information resources
- Planned Maintenance Systems; and maintenance requirements of compressors, Cylinders, Umbilicals, control panels, gauges and personal diving equipment
- Planned Maintenance Systems; and maintenance requirements of compressors and personal diving equipment; trained and certified in the mask / helmet manufacturers maintenance procedures and be certified

Range and Context

SSDE and Systems:
- Personal Diving Equipment (fins, knife, suit, BOB, harness etc)
- Regulators and Full Face Masks, Helmets
- Communications systems: Hard wire
- Diver Hat mounted TV/light systems
- Recording devices

Planned Maintenance Systems (PMS)
- Certification Register
- Competency to carry out Maintenance on diving equipment & personal diving equipment
<table>
<thead>
<tr>
<th>to manufacturer competence and certification requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• PMS Records</td>
</tr>
</tbody>
</table>

**Methods of entering and exiting the water**  
Recovery of an injured diver from the water  
Initial First Aid Treatment of a Diving Casualty  
Emergency Response Plan and Procedures

### Evidence Sources

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

#### Work activities
- Work group discussion outlining the safe operational procedures using SSDE equipment

#### Written reports
- A multi choice examination should be established with questions related to the performance criteria
**Competency Unit:** Conduct SSDE Diving Operations

<table>
<thead>
<tr>
<th>Summary of Competency Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>This Competency Unit consists of the following elements:</td>
</tr>
<tr>
<td>1.  Conduct SSDE Diving Operations</td>
</tr>
<tr>
<td>2.  Conduct SSDE Diving Emergency Drills and Procedures</td>
</tr>
</tbody>
</table>

The purpose of this element is to enable the trainee diving supervisor to be able to competently conduct SSDE diving operations in both sheltered and open water of varying depths, with varying bottom conditions, to a maximum of 30msw.

(Note: Decompression Chamber dives and / or recreational dives shall not be considered equivalent experience in conducting diving operations.

<table>
<thead>
<tr>
<th>Assumed Skills and Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>The required skills and knowledge criteria for this unit are as follows:</td>
</tr>
<tr>
<td>- be able to understand SSDE diving equipment terminology and equipment uses</td>
</tr>
<tr>
<td>- be able to give clear instructions to SSDE divers</td>
</tr>
<tr>
<td>- have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation</td>
</tr>
<tr>
<td>- be able to assess diver competency</td>
</tr>
<tr>
<td>- be able to understand written and verbal communications in English, and be able to communicate easily with other persons</td>
</tr>
</tbody>
</table>
### Competency Unit Code
CD-SSS-202B-0

### Competency Level
Inland/Inshore Diving Supervisor (SSDE)

### Competency Unit Title:
Conduct SSDE Diving Operations

## Description of Competency Element

### Competency Element Title:
Conduct SSDE Diving Operations

### Performance Criteria

A competent diving supervisor must be able to perform the following:

*(note: all training tasks should be carried out in a controlled environment)*

1.1 Explain the duties and responsibilities of a diver, and a standby diver on a SSDE dive site
1.2 Ensure the safe use and daily user maintenance on the SSDE equipment
1.3 Explain the procedures involved in preparing operational and contingency plans
1.4 Supervise the use of SSDE; system preparation, set up; pre dive checks; post dive checks
1.5 Ensure the safe use of LP and HP air supplies
1.6 Ensure safe means to enter and exit the water
1.7 Supervise the set up of CSCUBA Replacement diving systems; the limitations and system components
1.8 Supervise basic diver skills and proficiency of the equipment within a confined water / controlled environment
   - Buoyancy Exercises
   - Bailout use
   - Rescue Skills
   - Navigation skills
1.9 Supervise divers to perform PC 1.8 in an controlled open water environment
1.10 Ensure the proficient use of various full face masks and helmets (AGA, EXO, KMB) c/w hard wire communications and limitations of secondary and emergency systems currently in use
1.11 Ensure the proficient use of buoyancy control devices, wet suit and dry suit and hot water suit
1.12 Supervise the roles and responsibilities of the tender
   - Dress in the diver and undress the diver
   - Umbilical management and handling
   - Reporting to diving supervisor
1.13 Demonstrate user maintenance procedures for SSDE equipment, prepare equipment for use, dismantle and reassemble equipment
1.14 Explain the roles of a diver / diver’s tender in diving operations where line signals are the primary means of communication
1.15 Explain the roles of as a diver / diver’s tender in diving operations where a divers intercom is the primary means of communication
1.16 Supervise a simulated in-water decompression

### Underpinning Knowledge

A competent individual needs to knowledge and understanding of:

- A complete knowledge of the principles and responsibilities of being a Diving Supervisor on a SSDE dive site
- The basic construction and theory of operation for the SSDE systems, including reserve systems
- The ‘set up’ of SSDE equipment and its use
- Personal diving equipment
- Limitations of SSDE diving and equipment for commercial diving works
- Requirements of operational and emergency contingency plans
- Various masks and helmets available for use and how to use them
- Use of diving ladders to enter and exit the water and in the event of an emergency
- Methods of recovering an injured / unconscious diver
- Planned Maintenance Systems; and maintenance requirements of compressors, cylinders, umbilicals, control panels, gauges and personal diving equipment

### Range and Context

- Duties and responsibilities of being a Diving Supervisor on a SSDE dive site
- Supervision of daily user maintenance on the SSDE equipment
- Operational and contingency plans
- Supervision of SSDE; system preparation, set up; pre dive checks; post dive checks
- Supervision of LP and HP air supplies
- Supervision of the diver entering and exiting the water in normal and emergency circumstances
- Check CSCUBA Replacement and surface supplied diving systems; - set up and use
- Supervise personal diving equipment checks and use
- Knowledge of basic skills using the equipment with in a confined water / controlled environment
  - Buoyancy Exercises
  - Bailout use
  - Rescue Skills
  - Navigation skills
- Supervision of diving in a controlled open water environment
- Explain the use of various full face masks and Helments (AGA, EXO,KMB) c/w hard wire communications and limitations of secondary and emergency systems.
- Buoyancy control devices; wet suit and dry suit and hot water suit
- Duties of a divers tender:-
  - Dress in the diver and undress the diver
  - Umbilical management and handling
  - Reporting to diving supervisor
  - Line signals
- Maintenance procedures for SSDE equipment.
- Equipment for use, dismantle and reassemble equipment
- In water decompression-simulated only

### Evidence Sources

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

#### Work activities

- Supervision of setting up SSDE equipment ready for use
- Supervision of handling personal diving equipment
- Explanation of using HP and LP supplies correctly
- Planning the Dive and implementing the plan
- Managing Risk of the dive by documented assessment
- Instructing divers on entering and exiting the water safely

#### Written reports

- A multi choice examination should be established with questions related to the items listed in the Underpinning Knowledge section
- Complete equipment and pre dive / post dive check lists
Complete personal dive log book

**Competency Unit Code**  
CD-SSS-202B-0  
**Competency Level**  
Inland/Inshore Diving Supervisor (SSDE)

**Competency Unit Title:**  
Conduct SSDE Diving Operations

**Description of Competency Element**

**Competency Element Title:**  
2. Conduct SSDE Diving Emergency Drills and Procedures

**Performance Criteria**

A competent diving supervisor must be able to perform the following:  
*(note: all training tasks should be carried out in a controlled environment)*

2.1 Conduct diver emergency drills (in confined and open water environments) using SSDE  
and demonstrate a complete knowledge of the procedures to be followed in case of  
- Uncontrolled Ascent  
- Equipment malfunction;- Loss of air; loss of communications  
- Trapped Diver  
- Umbilical Entanglement  
- Unconscious / injured diver in the water recovery  
- Contaminated air supply  
- Vomiting Underwater  
- No visibility

2.2 Describe emergency ascent procedures  
*(Note: Emergency ascents can be very hazardous, divers are not asked to perform it; describing it is sufficient.)*

2.3 Explain and supervise simulated rescue of an unconscious / injured diver using SSDE  
equipment while acting as surface personnel  
2.4 Explain the signs and symptoms of nitrogen narcosis and its effects on the diver

**Underpinning Knowledge**

A competent individual needs to knowledge and understanding of:  
- A complete knowledge of the principles and responsibilities of being a Diving Supervisor  
on a SSDE dive site  
- The basic construction and theory of operation for the SSDE systems, including reserve  
systems  
- The “set up” of SSDE equipment and its use  
- Personal diving equipment  
- Limitations of SSDE diving and equipment for commercial diving works  
- Requirements of operational and emergency contingency plans  
- Various masks and helmets available for use and how to use them  
- Use of diving ladders to enter and exit the water and in the event of a emergency  
- Methods of recovering an injured / unconscious diver  
- Planned Maintenance Systems; and maintenance requirements of compressors,  
cylinders, umbilicals, control panels, gauges and personal diving equipment
### Range and Context

- Duties and responsibilities of being a Diving Supervisor on a SSDE dive site
- Supervision of daily user maintenance on the SSDE equipment
- Operational and contingency plans
- Supervision of SSDE; system preparation, set up; pre dive checks; post dive checks
- Supervision of LP and HP air supplies
- Supervision of the diver entering and exiting the water in normal and emergency circumstances
- Check CSCUBA Replacement and surface supplied diving systems; - set up and use
- Supervise personal diving equipment checks and use
- Emergency drills (in confined and open water environments) using SSDE:
  - Uncontrolled Ascent
  - Equipment malfunction; - Loss of air; loss of communications
  - Trapped Diver
  - Umbilical Entanglement
  - Unconscious / injured diver in the water recovery
  - Contaminated air supply
  - Vomiting Underwater
  - No visibility
- Emergency ascent procedures
  *(Note: Emergency ascents can be very hazardous, divers are not asked to perform it; describing it is sufficient.)*
- Rescue drills of an unconscious / injured diver using SSDE equipment
- Equipment for use, dismantle and reassemble equipment

### Evidence Sources

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

#### Work activities

- Supervision of setting up SSDE equipment ready for use
- Supervision of handling personal diving equipment
- Planning the Dive and implementing the plan
- Managing Risk of the dive by documented assessment
- Instructing divers on entering and exiting the water safely
- Conduct emergency drills for the diver; tender and stand by diver

#### Written reports

- A multi choice examination should be established with questions related to the items listed in the Underpinning Knowledge section
- Complete equipment and pre dive / post dive check lists
- Complete personal dive log book
## Competency Unit: Supervision of Deck Decompression Chamber Operations

### Summary of Competency Elements

This Competency Unit consists of the following elements:

1. Supervise Deck Decompression Chamber (DCC) Operation
2. Supervise Emergency Procedures and Actions when Using the DDC

The diving supervisor shall have a detailed understanding of operational requirements and procedures to supervise the use of a deck decompression chamber. The supervisor shall be able to complete the supervisor elements of the chamber preparation and checks; and manage the risks of a chamber dive to 50msw by operating the DDC and by supervising a trained operator. The supervisor will be able to respond effectively to emergency situations which may occur while the chamber is under pressure and on completion of the chamber dive. The supervisor will be able to manage and supervise the chamber during a therapeutic treatment of an injured diver.

Note: The DDC competency units may be attended as stand-alone units whereby on successful completion a DDC Supervisor certificate may be attained. In such circumstances the Core Competencies of the Diving Supervisor training must be completed prior to completing the DDC units.

### Assumed Skills and Knowledge

The assumed skills and knowledge for this unit are as follows:

- add, subtract, multiply and divide whole numbers, decimals and vulgar fractions
- calculate percentages; and transpose and solve simple formulas, e.g. gas laws
- have the training and skills necessary to lead a diving team of a suitable size for the planned diving operation
- have a thorough understanding of diving physics and diving physiology and how they each affect the diver while under pressure
- be able to understand written and verbal communications (using English), and be able to communicate easily with other persons.
<table>
<thead>
<tr>
<th>Competency Unit Code</th>
<th>Competency Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-SSS-202C-0</td>
<td>Inland/Inshore Diving Supervisor (SSDE)</td>
</tr>
</tbody>
</table>

**Competency Unit Title:**
Supervision of Deck Decompression Chamber (DCC) Operations

**Description of Competency Element**

**Competency Element Title:**
1. Supervise Deck Decompression Chamber (DCC) Operation

**Performance Criteria**

A competent diving supervisor must be able to perform the following:

1.1 Describe the uses and limitations of the deck decompression chamber (DCC).
1.2 Establish the checklist for the DDC and carryout pre-use checks of the DDC.
1.3 Establish the checklist for the supporting equipment and carry out pre-use checks of the equipment.
1.4 Conduct pressurisation and decompression of the chamber in a controlled manner.
1.5 Operate the DDC during decompression and treatment of a decompression illness.
1.6 Maintain accurate records and logs of chamber use.
1.7 Use of the medical lock for passing in/out items in the chamber.
1.8 Use of the BIBS system.
1.9 Describe the fire risk and control measures when using the DDC.
1.10 Describe oxygen toxicity and its management (chronic and acute).
1.11 Describe the cleaning requirements of the DDC and components.
1.12 Ensure the correct decompression tables are used (surface decompression and therapeutic treatment tables).

**Underpinning Knowledge**

A competent individual needs a **detailed knowledge and understanding** of:

- Decompression tables
- DDC Cleaning Methods
- Items not permitted in the DDC
- Fire Risks and prevention procedures
- Boyle’s Law
- Henry’s law
- Dalton’s Law
- Charles’s Law
- Gas quantity requirements and calculations
- Effects of pressure on the human body
- Able to maintain accurate Record keeping
- Low and High pressure hoses/pipe work
- HP/LP Air and gas supplies
- Compressors
- Regulators, Valves and fittings
- Oxygen Cleaning requirements
- DDC components
- Operating procedures
Emergency operating procedures

Range and Context

Responsibilities of DDC personnel
- DDC Operator
- DDC Tender
- Diver Medic
- Hyperbaric diving physician

DDC and Systems:
- Built in Breathing System (BIBS) and dump system
- DDC depth gauges
- DDC fire extinguisher
- DDC communications systems, primary and secondary
- DDC mounted diver monitoring system (if fitted)
- DDC lights, pipe work, valves, viewports
- DDC first aid kit

Planned Maintenance Systems (PMS)
- DDC Certification Register
- Competency to carry out Maintenance on DDC equipment
- DDC PMS Records

Evidence Sources

Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.

Work activities
- Establish DDC pre dive and post dive check lists for the DDC and supporting equipment
- Demonstrate accurate record keeping
- Supervise the use of the DDC during pressurization and decompression of the chamber

Written reports
- A multiple-choice examination should be established with questions related to the items listed in the Underpinning Knowledge section
- Complete DDC pre dive / post dive check lists
- Complete chamber log book and dive record
Competency Unit Title:
Supervision of Deck Decompression Chamber Operations

Description of Competency Element

Competency Element Title:
2. Supervise Emergency Procedures and Actions when Using the DDC

Performance Criteria

A competent diving supervisor must be able to perform the following:
2.1 Manage the DDC in emergency situations:
- Loss of pressure
- Loss of air supply pressure
- Loss of communications
- Carbon dioxide build-up
- Loss of oxygen supply
- Oxygen Toxicity
- Carbon Dioxide poisoning
- Fire in a DDC or in DDC control area

Underpinning Knowledge

A competent individual needs a detailed knowledge and understanding of:
- Decompression tables
- Effects of pressure on the human body
- Able to maintain accurate Record keeping
- Operating procedures
- Emergency operating procedures

Range and Context

Responsibilities of DDC personnel
- DDC Operator
- DDC Tender
- Diver Medic
- Hyperbaric diving physician

DDC and Systems:
- Built in Breathing System (BIBS) and dump system
- DDC depth gauges
- DDC fire extinguisher
- DDC communications systems, primary and secondary
- DDC mounted diver monitoring system (if fitted)
- DDC lights, pipe work, valves, viewports
- DDC first aid kit
- Methods of transporting an injured diver
- Handling of an injured diver in the DDC
- Initial First Aid Treatment of a Diving Casualty
- Emergency Response Plan and Procedures for DDC emergency scenarios
  - Loss of Pressure
  - Loss of air supply pressure
  - Loss of Communications
  - Carbon Dioxide build up
  - Loss of Oxygen supply
  - Fire in a DDC or in DDC control area
- Determination of the correct Therapeutic Treatment Table
- Neurological; examination of a diving casualty

<table>
<thead>
<tr>
<th>Evidence Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed below are a few examples about the kinds of evidence that would provide a guide as to whether an individual is meeting the standards required to be competent.</td>
</tr>
</tbody>
</table>

**Work activities**
- Supervise the use of the DDC during pressurization and decompression of the chamber
- Supervise correct actions during emergency scenario(s) simulated examples:
  - Loss of Pressure
  - Loss of air supply pressure
  - Loss of Communications
  - Carbon Dioxide build up
  - Loss of Oxygen supply
  - Fire in a DDC or in DDC control area

**Written reports**
- A multiple-choice examination should be established with questions related to the items listed in the Underpinning Knowledge section
- Complete DDC pre dive / post dive check lists
- Complete chamber log book and dive record