



Skills for Employment Investment Program (SEIP)

COMPETENCY STANDARD

FOR

SHIP PAINTING

(SHIPBUILDING SECTOR)

**Finance Division, Ministry of Finance
Government of the People's Republic of Bangladesh**

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Copyright

The Competency Standard for Ship Painting a document for the development of curricula, teaching and learning materials, and assessment tools. It also serves as the document for providing training consistent with the requirements of industry in order for individuals who graduated through the established standard via competency-based assessment to be suitably qualified for a relevant job.

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This document is available from:

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List of Abbreviations

General	
BMET	Bureau of Manpower Employment and Training
B-SEP	Bangladesh Skills for Employment and Productivity
BTEB	Bangladesh Technical Education Board
DTE	Directorate of Technical Education
ILO	International Labor Organization
ISC	Industry Skills Council
NPVC	National Pre-Vocation Certificate
NTVQF	National Technical and Vocational Qualifications Framework
PPP	Public Private Partnership
SCDC	Standards and Curriculum Development Committee
SEIP	Skills for Employment Investment Program
TVET	Technical Vocational Education and Training
UoC	Unit of Competency
Occupation Specific	
DFT	Dry film thickness
EPA	Environmental Protection Agency
HAP	Hazardous air pollutants
NESHAP	National emission standards for hazardous air pollutants
OSH	Occupational safety and health
PPE	Personal protective equipment
SOP	Standard Operating Procedure
TBT	Tributyltin
VOC	Volatile organic control
VOCHAP	Volatile organic hazardous air pollutants
WFT	Wet film thickness

Introduction

The Skills for Employment Investment Program (SEIP) Project of the Finance Division of the Ministry of Finance has embarked on a project which aims to qualitatively and quantitatively expand the skilling capacity of identified public and private training providers by establishing and operationalising a responsive skill ecosystem and delivery mechanism through a combination of well-defined set of funding triggers and targeted capacity support.

Among the many components of the project, one is to promote a Market Responsive Inclusive Skills Training Delivery programme. Key priority economic growth sectors identified by the government have been targeted by the project to improve current job skills along with up-skilling of the existing workforce to ensure 'required skills to industry standards'. Training providers are encouraged and supported to work with industry to address identified skills and knowledge to enable industry growth and increased employment through the provision of market responsive inclusive skills training programmes. Priority sectors were identified to adopt a demand driven approach to training with effective inputs from Industry Skills Councils (ISC's), employer associations and employers.

This document is developed to improve skills and knowledge in accordance with the job roles, duties and tasks of the occupation and ensure that the required skills and knowledge are aligned to industry requirements.

The document also details the format, sequencing, wording and layout of the Competency Standard for an occupation which is comprised of Units of Competence and its corresponding Elements.

Overview

A **competency standard** is a written specification of the knowledge, skills and attitudes required for the performance of an occupation, trade or job corresponding to the industry standard of performance required in the workplace.

The purpose of a competency standards is to:

- provide a consistent and reliable set of components for training, recognising and assessing people's skills, and may also have optional support materials
- enable industry recognised qualifications to be awarded through direct assessment of workplace competencies
- encourage the development and delivery of flexible training which suits individual and industry requirements
- encourage learning and assessment in a work-related environment which leads to verifiable workplace outcomes

Competency standards are developed by a working group comprised of national and international subject-matter experts, SEIP, BTEB, ISC, and industry experts to identify the competencies required of an occupation in a particular sector.

Competency standards describe the skills, knowledge and attitude needed to perform effectively in the workplace. Competency standards acknowledge that people can achieve technical and vocational competency in many ways by emphasising what the learner can do, not how or where they learned to do it.

With competency standards, training and assessment may be conducted at the workplace or at training institute or any combination of these.

Competency standards consist of several units of competency. A unit of competency describes a distinct work activity that would normally be undertaken by one person in accordance with industry standards.

Units of competency are documented in a standard format that comprises of:

- unit title
- nominal duration
- unit code
- unit descriptor
- elements and performance criteria
- variables and range statement
- curricular content guide
- assessment evidence guides

Together, all the parts of a unit of competency:

- describe a work activity
- guide the assessor to determine whether the candidate is competent or not yet competent

Approval Sheet

Identification and validation of units of competency and elements for this occupation were made by experts within this sector. A series of meetings were held to accurately capture industry and employer needs and expectations and develop the competency framework that would help to enhance the employability of the youth trained. This process started on 1 May 2018 and concluded with a validation workshop with working group on 5 September 2018.

Experts Involved

Industry and subject-matter experts who provided their valuable inputs to develop this competency standard [May - September 2018]:

Name	Organisation	Designation
Md. Arifur Rahman Kham	Western Marine Shipyard Limited	Director
Md. Shahadat Hossain Talukder	SEIP-AEOSIB	Coordinator - Monitoring and Evaluation
Mohammed Alamgir	Western Marine Shipyard Limited	Deputy Manager - Painting and Coating
Dr. M Reaz H. Khondoker	Military Institute of Science and Technology	Professor
Cdr. Kaosar Rashid	Military Institute of Science and Technology	Associate Professor
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Md. Riyad Kamal	Western Marine Shipyard Limited	Assistant Engineer - Painting and Coating
Md. Shamimur Rahman	Western Marine Shipyard Limited	Foreman - Painting and Coating
Md. Sharif Ahmed	Highspeed Shipbuilding and Engineering Company Limited	Senior Supervisor - Painting
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David King	British Council - SD03	Team Leader
Dr. Tozammel Hossain Khan	British Council - SD03	National Subject Matter Consultant - Shipbuilding Sector

Validation Workshop

Working group formation and competency standard validation workshop participants [held on 5 September 2018].

Name	Organisation	Designation
Md. Fazle Rashid	Western Marine Shipyard Limited	Director and ISC Representative
Md. Shahadat Hossain Talukder	SEIP-AEOSIB	Coordinator - Monitoring and Evaluation
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David King	British Council - SD03	Team Leader
Dr. Tozammel Hossain Khan	British Council - SD03	National Subject Matter Consultant - Shipbuilding Sector

The ensuing sections of this document comprise of a description of the relevant occupation, trade or job with all the key components of a unit of competency, including:

- a chart with an overview of all Units of Competency for the relevant occupation, trade or job including the Unit Codes and the Unit of Competency titles and corresponding Elements
- the Competency Standard that includes the Unit of Competency, Unit Descriptor, Elements and Performance Criteria, Range of Variables, Curricular Content Guide and Assessment Evidence Guide

Course Structure

SL	Unit Code and Title		Level	Nominal Duration (Hours)
Generic Competencies (4 units of competency required)				
1	SEIP-SBD-SP-01-G	Use basic mathematical concepts		24
2	SEIP-SBD-SP-02-G	Apply occupational health and safety (OHS) practice in the workplace		16
3	SEIP-SBD-SP-03-G	Carry out workplace interaction		16
4	SEIP-SBD-SP-04-G	Operate in a team environment		16
Sub-Total				72
Sector-specific Competencies (2 units of competency required)				
1	SEIP-SBD-SP-01-S	Work effectively in the shipbuilding sector		12
2	SEIP-SBD-SP-02-S	Use hand and power tools		20
Sub-Total				32
Occupation-specific Competencies (5 units of competency required)				
1	SEIP-SBD-SP-01-O	Identify basic ship painting works		24
2	SEIP-SBD-SP-02-O	Carry out surface cleaning		48
3	SEIP-SBD-SP-03-O	Apply primer coat to structure		48
4	SEIP-SBD-SP-04-O	Perform tie and anti-fouling coat to underwater hull		56
5	SEIP-SBD-SP-05-O	Perform top coat to above water hull, superstructure and other areas		80
Sub-Total				256
Total Nominal Learning Hours				360

Competency Chart

Units of Competency	Elements		
<p>Use basic mathematical concepts SEIP-SBD-SP-01-G</p>	<p>Identify calculation requirements in the workplace</p>	<p>Select appropriate mathematical methods/concepts for the calculation</p>	<p>Use tools and instruments to perform calculations</p>
<p>Apply occupational health and safety (OHS) practice in the workplace SEIP-SBD-SP-02-G</p>	<p>Identify OHS policies and procedures</p>	<p>Apply personal health and safety practices</p>	<p>Report hazards and risks</p>
<p>Carry out workplace interaction SEIP-SBD-SP-03-G</p>	<p>Interpret workplace communication and etiquette</p>	<p>Read and understand workplace documents</p>	<p>Participate in workplace meetings and discussions</p>
<p>Operate in a team environment SEIP-SBD-SP-04-G</p>	<p>Identify team goals and work processes</p>	<p>Identify own role and responsibilities within team</p>	<p>Communicate and co-operate with team members</p>
	<p>Practice problem solving within the team</p>		

Sector-specific (Common) Competencies

<p>Work effectively in the shipbuilding sector SEIP-SBD-SP-01-S</p>	<p>Understand basics of shipbuilding</p>	<p>Obtain information about the industry</p>	<p>Identify key machines installed on a ship</p>
<p>Use hand and power tools SEIP-SBD-SP-02-S</p>	<p>Identify and inspect hand and power tools</p>	<p>Use hand tools properly and safely</p>	<p>Operate power tools properly and safely</p>
	<p>Clean and maintain hand and power tools</p>		

Occupation-specific (Core) Competencies

<p>Identify basic ship painting works SEIP-SBD-SP-01-O</p>	<p>Identify basic ship painting requirements</p>	<p>Identify surface areas for cleaning and painting</p>	<p>Identify types of paint and painting processes</p>
<p>Carry out surface cleaning SEIP-SBD-SP-02-O</p>	<p>Prepare for work</p>	<p>Perform surface cleaning</p>	<p>Clean and maintain workplace</p>
<p>Apply primer coat to structure SEIP-SBD-SP-03-O</p>	<p>Prepare for work</p>	<p>Perform primer coat application</p>	<p>Clean and maintain workplace</p>
<p>Perform tie and anti-fouling coat to underwater hull SEIP-SBD-SP-04-O</p>	<p>Prepare for work</p>	<p>Perform tie-coat works</p>	<p>Apply anti-fouling coat</p>
	<p>Carry out rectification work</p>	<p>Clean and maintain workplace</p>	
<p>Perform top coat to above water hull and superstructure and other areas SEIP-SBD-SP-05-O</p>	<p>Prepare for work</p>	<p>Apply top coat</p>	<p>Carry out rectification work</p>
	<p>Clean and maintain workplace</p>		

Units and Elements Table

Generic – Compulsory (4 units of competency required)

Code	Unit of Competency	Elements of Competency	Duration (hours)
SEIP-SBD-SP-01-G	Use basic mathematical concepts	<ol style="list-style-type: none"> 1. Identify calculation requirements in the workplace. 2. Select appropriate mathematical methods/concepts for the calculation. 3. Use tools and instruments to perform calculations. 	24
SEIP-SBD-SP-02-G	Apply occupational health and safety (OHS) practice in the workplace	<ol style="list-style-type: none"> 1. Identify OHS policies and procedures. 2. Apply personal health and safety practices. 3. Report hazards and risks. 4. Respond to emergencies. 	16
SEIP-SBD-SP-03-G	Carry out workplace interaction	<ol style="list-style-type: none"> 1. Interpret workplace communication and etiquette. 2. Read and understand workplace documents. 3. Participate in workplace meetings and discussions. 4. Practice professional ethics at work. 	16
SEIP-SBD-SP-04-G	Operate in a team environment	<ol style="list-style-type: none"> 1. Identify team goals and work processes. 2. Identify own role and responsibilities within team. 3. Communicate and co-operate with team members. 4. Practice problem solving within the team. 	16
Total Hours			72

Sector-specific – Compulsory (2 units of competency required)

Code	Unit of Competency	Elements of Competency	Duration (hours)
SEIP-SBD-SP-01-S	Work effectively in the shipbuilding sector	<ol style="list-style-type: none"> 1. Understand basics of shipbuilding. 2. Obtain information about the industry. 3. Identify key machines installed on a ship. 	12
SEIP-SBD-SP-02-S	Use hand and power tools	<ol style="list-style-type: none"> 1. Identify and inspect hand and power tools. 2. Use hand tools properly and safety. 3. Operate power tools properly and safely. 4. Clean and maintain hand and power tools. 	20
Total Hours			32

Occupation-specific – Compulsory (5 units of competency required)

Code	Unit of Competency	Elements of Competency	Duration (hours)
SEIP-SBD-SP-01-O	Identify basic ship painting works	<ol style="list-style-type: none"> 1. Identify basic ship painting requirements. 2. Identify surface areas for cleaning and painting. 3. Identify types of paint and painting processes. 	24
SEIP-SBD-SP-02-O	Carry out surface cleaning	<ol style="list-style-type: none"> 1. Prepare for work. 2. Perform surface cleaning. 3. Clean and maintain workplace. 	48
SEIP-SBD-SP-03-O	Apply primer coat to hull	<ol style="list-style-type: none"> 1. Prepare for work. 2. Perform primer coat application. 3. Clean and maintain workplace. 	48
SEIP-SBD-SP-04-O	Perform tie and anti-fouling coat to underwater hull	<ol style="list-style-type: none"> 1. Prepare for work. 2. Perform tie-coat works. 3. Apply anti-fouling coat. 4. Perform rectification work. 5. Clean and maintain workplace. 	56
SEIP-SBD-SP-05-O	Perform top coat to above water hull, superstructure and other areas	<ol style="list-style-type: none"> 1. Prepare for work. 2. Apply top coat. 3. Carry out rectification work. 4. Clean and maintain workplace. 	80
Total Hours			256

Generic Competencies

Unit Title:	Use basic mathematical concepts
Unit Code:	SEIP-SBD-SP-01-G
Nominal Hours:	24 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to perform computations using basic mathematical concepts at workplace. It specifically includes identifying general calculation requirements, selecting appropriate mathematical method/concept, and forming and solving mathematical problems in the workplace using appropriate tools and instruments.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify calculation requirements in the workplace	1.1. <u>Calculation requirements</u> are identified from <u>workplace information</u> . 1.2. Mathematical problems are constructed from workplace information.
2. Select appropriate mathematical methods/concepts for the calculation.	2.1. <u>Appropriate method</u> is selected to carry-out calculation requirements. 2.2. Constructed mathematical problems are solved with appropriate method.
3. Use tools and instruments to perform calculations	3.1. <u>Tools and instruments</u> required for computation are identified. 3.2. Calculation is performed using appropriate tools and instruments accurately.

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Calculations requirements	1.1. Unit 1.2. Area 1.3. Height/ length/ breadth/ thickness 1.4. Diameter 1.5. Weight/density 1.6. Capacity 1.7. Time 1.8. Temperature 1.9. Material/data usage 1.10. Speed 1.11. Costing

Range of Variables	
Variable	Range (may include but not limited to)
2. Workplace information	2.1. Floor environment 2.2. Design sheet 2.3. Specification sheet 2.4. Working chart/drawing 2.5. Standard operating procedure (SOP) 2.6. Job order
3. Appropriate method	3.1. Addition 3.2. Subtraction 3.3. Division 3.4. Multiplication 3.5. Conversion 3.6. Percentage and ratio calculation 3.7. Simple equation
4. Tools and instruments	4.1. Calculator 4.2. Cell phone 4.3. Computer 4.4. Ruler

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Identified calculation requirements from workplace information 1.2. Selected appropriate method to carry out the calculation requirements 1.3. Completed calculations using appropriate tools/instruments
2. Underpinning knowledge	<ol style="list-style-type: none"> 2.1. Numerical concepts 2.2. Basic mathematical methods such as addition, subtraction, multiplication and division and percentage 2.3. Mathematical language, symbols and terminology 2.4. Measuring units
3. Underpinning skills	<ol style="list-style-type: none"> 3.1. Construct simple problems with workplace information 3.2. Solve problems using appropriate method and instruments 3.3. Use appropriate tools and instruments.

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

4. Underpinning attitudes	4.1. Prompt in carrying out activities 4.2. Tidy and punctual 4.3. Respectful of peers, subordinates and seniors in the workplace 4.4. Safely use tools and equipment 4.5. Sincere and honest concerning duties
5. Resource implications	The following resources must be provided: 5.1. Work place (simulated or actual) 5.2. Calculator 5.3. Cell phone 5.4. Computer/laptop/notebook 5.5. Measuring tape 5.6. Ruler 5.7. Projector 5.8. Stationary 5.9. Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: 6.1. Written test 6.2. Oral test 6.3. Observation 6.4. Demonstration 6.5. Portfolio
7. Context of assessment	7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Apply occupational health and safety (OHS) practice in the workplace
Unit Code:	SEIP-SBD-SP-02-G
Nominal Hours:	16 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to apply occupational health and safety (OHS) practices in the workplace. It specifically includes identifying OHS policies and procedures, applying personal health and safety practices, reporting hazards and risks, and responding to emergencies.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify OHS policies and procedures	<p>1.1. <u>OHS policies</u> and safe operating procedures are interpreted.</p> <p>1.2. Safety signs and symbols are identified and followed.</p> <p>1.3. Response, evacuation procedures and other contingency measures are interpreted correctly.</p>
2. Apply personal health and safety practices	<p>2.1. OHS policies and procedures are applied in the workplace including <u>personal protective equipment (PPE)</u>.</p> <p>2.2. Common health issues are recognised.</p> <p>2.3. Common safety issues are identified.</p>
3. Report hazards and risks	<p>3.1. Hazards and risks are identified.</p> <p>3.2. Hazards and risks assessment and controls are interpreted.</p>
4. Respond to emergencies	<p>4.1. Respond to alarms and warning devices.</p> <p>4.2. <u>Emergency response plans and procedures</u> are responded to.</p> <p>4.3. <u>First aid procedures</u> during emergency situations are identified.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. OHS policies	<p>1.1. Organisational OHS polices</p> <p>1.2. International OHS requirements</p> <p>1.3. Fire safety rules and regulations</p>
2. Emergency response plans and procedures	<p>2.1. Firefighting procedures</p> <p>2.2. Earthquake response procedures</p> <p>2.3. Emergency response plans and procedures</p> <p>2.4. Medical and first aid</p>
3. First aid procedure	<p>3.1. Washing of open wound</p> <p>3.2. Washing chemically infected area</p> <p>3.3. Applying bandage</p> <p>3.4. Taking appropriate medicine</p>

Range of Variables	
Variable	Range (may include but not limited to)
4. Personal protective equipment	4.1. Safety glasses 4.2. Ear plugs 4.3. Gloves 4.4. Apron 4.5. Helmet 4.6. Mask 4.7. Safety shoes

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Identified OHS policies and procedures 1.2. Applied personal health and safety practices (including PPE) 1.3. Reported hazards and risks 1.4. Responded to emergencies
2. Underpinning knowledge	<ol style="list-style-type: none"> 2.1. Workplace OHS policies and procedures 2.2. Work safety procedures 2.3. Emergency response procedures: <ol style="list-style-type: none"> 2.3.1. Firefighting 2.3.2. Earthquake response 2.3.3. Accident response 2.4. Types of hazards (biological, chemical and physical) and their effects 2.5. OHS awareness 2.6. Personal protective equipment (PPE)
3. Underpinning skills	<ol style="list-style-type: none"> 3.1. Identifying OHS policies and procedures 3.2. Applying personal health and safety practices 3.3. Reporting hazards and risks 3.4. Responding to emergencies
4. Underpinning attitudes	<ol style="list-style-type: none"> 4.1. Committed to occupational health and safety practices 4.2. Communicates well with peers, subordinates and seniors in workplace 4.3. Prompt in carrying out activities 4.4. Tidy and punctual 4.5. Sincere and honest concerning duties 4.6. Responsible during emergencies

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Personal protective equipment (PPE) 5.3. Firefighting equipment 5.4. Emergency response manual 5.5. First aid kits 5.6. Projector 5.7. Stationary 5.8. Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: 6.1. Written test 6.2. Demonstration 6.3. Oral test 6.4. Observation 6.5. Portfolio
7. Context of assessment	7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Carry out workplace interaction
Unit Code:	SEIP-SBD-SP-03-G
Nominal Hours:	16 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to carry out workplace interaction. It specifically includes workplace communication, etiquette, understanding workplace documents, workplace meetings and discussions, and professional ethics at work.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Interpret workplace communication and etiquette	<p>1.1. Workplace codes of conduct are interpreted as per organisational guidelines.</p> <p>1.2. Appropriate lines of communication are maintained with supervisors and colleagues.</p> <p>1.3. Workplace interactions are conducted in a <u>courteous manner</u> to gather and convey information.</p> <p>1.4. <u>Workplace procedures and matters</u> are comprehended.</p>
2. Read and understand workplace documents	<p>2.1. Workplace documents are interpreted correctly.</p> <p>2.2. Visual information/symbols/signage are understood correctly and followed.</p> <p>2.3. Specific and relevant information are accessed from <u>appropriate sources</u>.</p> <p>2.4. Appropriate medium is used to transfer information and ideas.</p>
3. Participate in workplace meetings and discussions	<p>3.1. Team meetings are attended on time.</p> <p>3.2. Meeting procedures and etiquette are followed.</p> <p>3.3. Active participation is ensured, opinions are expressed and heard.</p> <p>3.4. Inputs are provided and interpreted in line with the meeting purpose.</p>
4. Practice professional ethics at work	<p>4.1. Responsibilities as a team member are performed.</p> <p>4.2. Tasks are performed in accordance with workplace procedures.</p> <p>4.3. Confidentiality is maintained.</p> <p>4.4. Inappropriate and conflicting situations are avoided.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Courteous manner	<p>1.1. Effective questioning</p> <p>1.2. Active listening</p> <p>1.3. Speaking skills</p> <p>1.4. Writing skill</p> <p>1.5. Email etiquette</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
2. Workplace procedures and matters	2.1. Notes 2.2. Arranging a meeting 2.3. Agenda 2.4. Simple reports such as progress and incident reports 2.5. Job sheets 2.6. Operational manuals 2.7. Brochures and promotional material 2.8. Visual and graphic materials 2.9. Standards 2.10. OHS information 2.11. Signs
3. Appropriate sources	3.1. Human Resources (HR) Department 3.2. Managers 3.3. Supervisors 3.4. Management Information System (MIS)

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Interpreted workplace communication and etiquette 1.2. Interpreted workplace instructions and symbols 1.3. Performed active participation in workplace meetings
2. Underpinning knowledge	<ol style="list-style-type: none"> 2.1. Workplace communication and etiquette 2.2. Workplace documents, signs and symbols 2.3. Meeting procedure and etiquette 2.4. Professional ethics
3. Underpinning skills	<ol style="list-style-type: none"> 3.1. Demonstrating workplace communication and etiquette 3.2. Interpreting workplace instructions and symbols 3.3. Demonstrating active participation in workplace meeting 3.4. Applying professional ethics at work
4. Underpinning attitudes	<ol style="list-style-type: none"> 4.1. Prompt in carrying out activities 4.2. Tidy and punctual 4.3. Respectful of peers, subordinates and seniors in the workplace 4.4. Concerned about the work environment 4.5. Sincere and honest concerning duties

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

5. Resource implications

The following resources must be provided:

- 5.1. Workplace (simulated or actual)
- 5.2. Workplace procedures
- 5.3. Standard operating procedure
- 5.4. Workplace documents, signs and symbols
- 5.5. Codes of conduct
- 5.6. Projector
- 5.7. Stationary
- 5.8. Learning manual

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Demonstration
- 6.3. Oral test
- 6.4. Observation
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

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Unit Title:	Operate in a team environment
Unit Code:	SEIP-SBD-SP-04-G
Nominal Hours:	16 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to operate in a team environment. It specifically includes team goals and work processes, roles and responsibilities, team communication and problem solving within the team.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify team goals and work processes	<p>1.1. Roles and objectives of the team are identified and interpreted.</p> <p>1.2. Roles and responsibilities of team members are identified and interpreted.</p>
2. Identify own role and responsibilities within team	<p>2.1. Personal role and responsibilities are identified within the team environment.</p> <p>2.2. Reporting relationships are interpreted within team and external to team.</p>
3. Communicate and co-operate with team members	<p>3.1. Other teammates' tasks are identified and support provided when requested.</p> <p>3.2. The team is encouraged through <u>sharing information</u> or expertise, working together to solve problems, and putting team success first.</p> <p>3.3. Views and opinions of other team members are interpreted and respected.</p>
4. Practice problem solving within the team	<p>4.1. Problems faced at the individual and team level are identified and showed insight into the root-causes of the problems.</p> <p>4.2. A range of solutions and courses of action are identified together with benefits, costs, and risks associated with each.</p> <p>4.3. The good ideas of others to help develop solutions are recognised and advice sought from those who have solved similar problems.</p> <p>4.4. It is looked beyond the obvious and not stopped at the first answers.</p>

Range of Variables	
Variable	Range (may include but not limited to)
1. Sharing information	1.1. Agenda 1.2. Minutes 1.3. Progress and incident reports 1.4. Operational manuals 1.5. Visual and graphic materials 1.6. Emails and SMS 1.7. Phone directory 1.8. Policy, procedure and standards 1.9. OHS information

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	1.1. Team goals and work processes 1.2. Roles and responsibilities 1.3. Finding problems and solving them
2. Underpinning knowledge	2.1. Team goals and work processes 2.2. Roles and responsibilities 2.3. Finding problems and solving them
3. Underpinning skills	3.1. Identifying own role and responsibilities within team 3.2. Communicating and co-operating with team members 3.3. Demonstrating problem solving within the team
4. Underpinning attitudes	4.1. Active on teamwork 4.2. Prompt in carrying out activities 4.3. Tidy and punctual 4.4. Respectful of peers, subordinates and seniors in the workplace 4.5. Sincere and honest concerning duties
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Projector 5.3. Stationary 5.4. Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: 6.1. Written test 6.2. Demonstration 6.3. Oral test 6.4. Observation 6.5. Portfolio

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

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Sector-specific Competencies

Unit Title:	Work effectively in the shipbuilding sector
Unit Code:	SEIP-SBD-SP-01-S
Nominal Hours:	12 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to work effectively in the shipbuilding sector. It specifically includes understanding the basics of shipbuilding, obtaining information about the industry, and identifying key machines installed on a ship.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Understand basics of shipbuilding	<p>1.1. Electrical devices, components and equipment of a ship are identified and described.</p> <p>1.2. Ship construction terminology and GA plan of a ship is interpreted.</p> <p>1.3. <u>Key areas of a ship</u> are identified from general drawing or model ship.</p> <p>1.4. Classification of society and ISO rules are explained.</p>
2. Obtain information about the industry	<p>2.1. Sources of information about industry are identified.</p> <p>2.2. Industry information is collected from multiple sources.</p> <p>2.3. Information is interpreted and applied to day-to-day work activities.</p>
3. Identify key machines installed on a ship	<p>3.1. <u>Key machines</u> installed on a ship are identified.</p> <p>3.2. Identified machines are located on ship.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Key areas of ship	<p>1.1. Bridge</p> <p>1.2. Main hull</p> <p>1.3. Engine room</p> <p>1.4. Cargo holds</p> <p>1.5. Deep Tank</p> <p>1.6. Double Bottom (DB) tank</p> <p>1.7. Bulbous bow</p> <p>1.8. Forecastle</p> <p>1.9. Poop deck</p> <p>1.10. Weather deck</p> <p>1.11. Tween deck</p> <p>1.12. Bulkhead</p> <p>1.13. Collision bulkhead</p>

Range of Variables	
Variable	Range (may include but not limited to)
2. Key machines	2.1. Marine engine 2.2. Panel board 2.3. Generator 2.4. Transformer 2.5. Air compressor 2.6. Life boat engine 2.7. Heat exchanger 2.8. Radar 2.9. Motor 2.10. Echo sounder 2.11. Gyro-compass 2.12. Magnetic compass 2.13. Steam boiler 2.14. Pumps 2.15. Winch and windlass 2.16. Crane 2.17. Propeller unit 2.18. Air conditioner 2.19. Refrigeration plant 2.20. Purifier/centrifuged 2.21. Laundry unit

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Identified key areas of a ship 1.2. Interpreted terminology and plans 1.3. Located key machinery
2. Underpinning knowledge	<ol style="list-style-type: none"> 2.1. Electrical devices, components and equipment 2.2. Key areas of a ship 2.3. Key ship machinery 2.4. Shipbuilding terminology
3. Underpinning skills	<ol style="list-style-type: none"> 3.1. Identifying key areas of a ship 3.2. Interpreting terminology and plans 3.3. Locating key machinery

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

4. Underpinning attitudes

- 4.1. Cleanliness and tidiness
- 4.2. Commitment to occupational health and safety
- 4.3. Environmental concerns
- 4.4. Eagerness to learn
- 4.5. Timeliness and orderliness
- 4.6. Respect for rights of peers and seniors in workplace

5. Resource implications

The following resources must be provided:

- 5.1. Workplace (simulated or actual)
- 5.2. Personal protective equipment (PPE)
- 5.3. Sketches
- 5.4. Drawings
- 5.5. Layouts
- 5.6. Plans
- 5.7. Machinery and equipment
- 5.8. Projector
- 5.9. Stationary
- 5.10. Learning manual

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Oral test
- 6.3. Observation
- 6.4. Demonstration
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

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Unit Title:	Use hand and power tools
Unit Code:	SEIP-SBD-SP-02-S
Nominal Hours:	20 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to use hand and power tools in the workplace. It specifically includes identifying and inspecting hand and power tools for usability, using and operating tools properly and safely, and cleaning and maintaining hand and power tools after use.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify and inspect hand and power tools	<p>1.1. Appropriate hand and power tools are identified.</p> <p>1.2. Application of hand and power tools is recognised.</p> <p>1.3. Usability of hand and power tools are checked and verified.</p>
2. Use hand tools properly and safely	<p>2.1. Appropriate <u>hand tools</u> are selected.</p> <p>2.2. Safety precautions are ensured before using hand tools.</p> <p>2.3. Unsafe or faulty hand tools are identified and marked for repair.</p> <p>2.4. <u>Measuring tools</u> are checked and calibrated before use.</p> <p>2.5. Use hand tools properly and safely to perform work activity.</p>
3. Operate power tools properly and safely	<p>3.1. Appropriate <u>power tools</u> are selected.</p> <p>3.2. Power supply outlet and electrical cord are inspected and confirmed safe for use in accordance with established workplace safety requirements.</p> <p>3.3. Safety precautions are ensured before using power tools in accordance with manufacturer's operating specification.</p> <p>3.4. Proper sequence of operation applied for using power tools.</p> <p>3.5. Unsafe or faulty power tools are identified and marked for repair.</p> <p>3.6. Operate power tools properly and safely to perform work activity.</p>
4. Clean and maintain hand and power tools	<p>4.1. Dust and foreign matters are removed from hand and power tools in accordance to workplace standards.</p> <p>4.2. Condition of hand and power tools are checked after use and reported.</p> <p>4.3. Appropriate lubricant is applied after use and prior to storage.</p> <p>4.4. Measuring tools are checked and calibrated after use.</p> <p>4.5. Defective hand and power tools are inspected and repaired or replaced.</p> <p>4.6. Hand and power tools are stored and secured in accordance with workplace requirements.</p>

Range of Variables	
Variable	Range (may include but not limited to)
1. Hand tools	1.1. Hacksaw 1.2. Hammer 1.3. Files 1.4. Pliers 1.5. Punches 1.6. Screwdrivers 1.7. Wrench box 1.8. Hand tap 1.9. Wire cutters 1.10. Hand drill 1.11. Hand grinder
2. Power tools	2.1. Drills 2.2. Grinders 2.3. Cutting 2.4. Saws 2.5. Soldering iron 2.6. Welding
3. Measuring tools	3.1. Meters 3.2. Testers 3.3. Megger 3.4. Measuring tape 3.5. Calliper 3.6. Steel rule 3.7. Protractor 3.8. Tri-square

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Identified and selected appropriate hand and power tools for work to be performed 1.2. Identified and used measuring and testing tools appropriate to work activity 1.3. Followed safety precautions when using hand and power tools 1.4. Operated power tools safely and pursuant to manufacturer's operating specification 1.5. Performed cleaning and maintenance of hand and power tools after use and prior to storing

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
2. Underpinning knowledge	2.1. Information on types of hand and power tools, their functions and use 2.2. Procedures for safely using hand and power tools
3. Underpinning skills	3.1. Identifying hand, power and measuring tools 3.2. Following safety precautions when using hand, power and measuring tools 3.3. Using hand and measuring tools correctly and safely in accordance with manufacturer's operating specification 3.4. Operating power tools correctly and safely in accordance with manufacturer's operating specification 3.5. Cleaning and maintaining hand and power tools after use 3.6. Applying appropriate lubricant on hand and power tools after use and prior to storing
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Committed to occupational health and safety practices
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Personal protective equipment (PPE) 5.3. Hand tools 5.4. Power tools 5.5. Measuring tools 5.6. Projector 5.7. Stationary 5.8. Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: 6.1. Written test 6.2. Oral test 6.3. Observation 6.4. Demonstration 6.5. Portfolio
7. Context of assessment	7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. 7.2. Assessment must be done by a suitably qualified/certified assessor.

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

Accreditation Requirements

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Occupation-specific Competencies

Unit Title:	Identify basic ship painting works
Unit Code:	SEIP-SBD-SP-01-O
Nominal Hours:	24 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to identify basic ship painting works. It specifically includes identifying basic painting requirements, identifying surface areas for cleaning and painting, and identifying types of paint and painting processes.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify basic painting requirements	<p>1.1. Principles of ship painting are identified and described.</p> <p>1.2. Class rules and environmental requirements are identified.</p> <p>1.3. Common ship painting <u>terminology</u> is identified and interpreted.</p>
2. Identify surface areas for cleaning and painting	<p>2.1. <u>Ship surface</u> for painting is identified.</p> <p>2.2. <u>Methods for preparing surface</u> are identified.</p> <p>2.3. <u>Confined spaces</u> requiring painting are identified.</p>
3. Identify types of paint and painting processes	<p>3.1. <u>Types of paint</u> are identified.</p> <p>3.2. Painting procedure and precautions are identified.</p> <p>3.3. Painting <u>application methods</u> are identified.</p>

Range of Variables	
Variable	Range <i>(may include but not limited to)</i>
1. Terminology	<ul style="list-style-type: none"> 1.1. Primer (epoxy) 1.2. Tie coat 1.3. Enamel (anti-fouling) 1.4. Solvent 1.5. Adhesive 1.6. Thinner 1.7. Abrasive blasting 1.8. De-rusting 1.9. Volatile Organic Control (VOC) 1.10. VOC data sheet/specification 1.11. Hazardous Air Pollutant (HAP) 1.12. Volatile Organic Hazardous Air Pollutant (VOHAP) 1.13. Wet Film Thickness (WFT) 1.14. Dry Film Thickness (DFT) 1.15. Environmental Protection Agency (EPA) 1.16. National Emission Standards for Hazardous Air Pollutants (NESHAP) 1.17. Paint Pull-Off Test 1.18. Holiday defects 1.19. Salt Contamination Test
2. Ship surface	<ul style="list-style-type: none"> 2.1. External parts: <ul style="list-style-type: none"> 2.1.1. Underwater 2.1.2. Boot top zone 2.1.3. Topside (above boot top) 2.1.4. Deck and super structure 2.2. Internal parts: <ul style="list-style-type: none"> 2.2.1. Cargo hold 2.2.2. Engine room 2.2.3. Oil tank 2.2.4. Accommodation, chartroom, galley 2.3. Confined spaces: <ul style="list-style-type: none"> 2.3.1. DB tank 2.3.2. Ballast tank 2.3.3. Deep tank 2.3.4. Chain locker 2.3.5. Fore and after peak

Range of Variables	
Variable	Range <i>(may include but not limited to)</i>
3. Methods for preparing surfaces	3.1. Hand scraping 3.2. Wire scraping 3.3. Chipping 3.4. Hand grinding 3.5. Rotary wire brushing 3.6. Abrasive blasting 3.7. Mechanical descaling 3.8. Flame cleaning 3.9. Chemical cleaning 3.10. High pressure water jet
4. Confined spaces	4.1. Free from gas 4.2. Free for oil, grease and fat 4.3. Free from chemicals 4.4. Clean and dry
5. Types of paint	5.1. Primer (epoxy, non-epoxy) 5.2. Acrylic and epoxy paints 5.3. Heat resistant paints 5.4. Chemical resistant paints 5.5. Abrasive resistant paints 5.6. Anti-fouling paints 5.7. Non-skid paints 5.8. Reflecting paints 5.9. Vinyl paints 5.10. Chlorinated rubber paints 5.11. Polyurethane paints 5.12. Fire protection paints 5.13. Thermal paints 5.14. Varnishes (interior/exterior)
6. Application methods	6.1. Brushing 6.2. Rolling 6.3. Air spraying

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment must evidence that the candidate: 1.1. Identified and described basic ship painting works 1.2. Identified and interpreted common terminology 1.3. Identified ship surface and preparation methods 1.4. Identified types of paint and application methods
2. Underpinning knowledge	2.1. Principles ship painting 2.2. Common terminology 2.3. Class rules and environmental requirements 2.4. Surface areas of a ship 2.5. Surface preparing methods 2.6. Types of paints 2.7. Application methods
3. Underpinning skills	3.1. Identifying basic ship painting works 3.2. Interpreting common terminology 3.3. Identifying ship surface and preparation methods 3.4. Identifying types of paint and application methods 3.5. Identifying painting procedure
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Concerned about the work environment 4.8. Committed to occupational health and safety practices 4.9. Respectful of peers, subordinates and seniors in the workplace
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Personal protective equipment (PPE) 5.3. Tools and equipment 5.4. Paints 5.5. Drawings and specifications 5.6. Projector 5.7. Stationery 5.8. Learning manual

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Oral test
- 6.3. Observation
- 6.4. Demonstration
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

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Unit Title:	Carry out surface cleaning
Unit Code:	SEIP-SBD-SP-02-O
Nominal Hours:	48 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to carry out surface cleaning. It specifically includes preparing for work, performing surface cleaning, and cleaning and maintaining workplace.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Prepare for work	<p>1.1. Job specifications and instructions are read and interpreted.</p> <p>1.2. Appropriate <u>personal protective equipment (PPE)</u> is identified and selected.</p> <p>1.3. Appropriate <u>tools and equipment</u> are identified and selected.</p> <p>1.4. Appropriate <u>materials</u> are identified and selected.</p> <p>1.5. Selected tools, equipment and materials are prepared as per job requirement.</p>
2. Perform surface cleaning	<p>2.1. Shop cleaning and priming for new shipbuilding is performed as per job requirements.</p> <p>2.2. Hull cleaning is performed using high pressure water jet.</p> <p>2.3. Surface preparation of external hull areas is carried out using abrasive blasting.</p> <p>2.4. Hull cleaning is performed using air pressure prior to paint application.</p> <p>2.5. Internal hull areas are cleaned.</p> <p>2.6. Confined spaces are cleaned as per job requirement.</p>
3. Clean and maintain workplace	<p>3.1. Tools and equipment are cleaned and maintained as per standard operating procedure.</p> <p>3.2. Tools and equipment are safely and securely stored.</p> <p>3.3. Workplace is cleaned and waste material disposed of.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Personal protective equipment (PPE)	<p>1.1. Safety harness</p> <p>1.2. Safety goggles</p> <p>1.3. Ear plugs</p> <p>1.4. Gloves</p> <p>1.5. Apron (with respiratory air-fed blast hood)</p> <p>1.6. Chemical resistant gas mask</p> <p>1.7. Safety shoes</p> <p>1.8. External air feed</p> <p>1.9. Gas mask with torch light</p>

Range of Variables	
Variable	Range (may include but not limited to)
2. Tools and equipment	<p>2.1. Hand tools:</p> <ul style="list-style-type: none"> 2.1.1. Ladder 2.1.2. Platform 2.1.3. Chipping hammer 2.1.4. Chisel 2.1.5. Wire brush 2.1.6. Rust picker 2.1.7. Scrappers and blades 2.1.8. Scrubbing brushes 2.1.9. Extension poles <p>2.2. Power tools:</p> <ul style="list-style-type: none"> 2.2.1. Grinder 2.2.2. Needle gun 2.2.3. Sand blaster 2.2.4. Rotary wire brush 2.2.5. Rotary discs 2.2.6. Bristle blaster 2.2.7. Air duster 2.2.8. Air blower <p>2.3. Measuring tools:</p> <ul style="list-style-type: none"> 2.3.1. Coat thickness gauge 2.3.2. Wet film thickness gauge 2.3.3. Surface profile gauge 2.3.4. Holiday detector 2.3.5. Salt contamination meter 2.3.6. Pull-off test machine 2.3.7. Surface temperature gauge 2.3.8. Hygrometer <p>2.4. Equipment:</p> <ul style="list-style-type: none"> 2.4.1. Shot blasting machine 2.4.2. Airless spray painting machine 2.4.3. Oil-free air compressor 2.4.4. Vacuum cleaner 2.4.5. High pressure water jet
3. Materials	<ul style="list-style-type: none"> 3.1. Base paint 3.2. Curing agent 3.3. Paint thinner 3.4. Cleaning solvents 3.5. Emery paper 3.6. Cotton wastage

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment must evidence that the candidate: 1.1. Prepared for work 1.2. Performed surface cleaning 1.3. Carried out cleaning of confined spaces 1.4. Cleaned and maintained workplace
2. Underpinning knowledge	2.1. Tools and equipment 2.2. Materials 2.3. Shop cleaning 2.4. Surface cleaning 2.5. Standard operating procedure 2.6. Maintenance procedure
3. Underpinning skills	3.1. Collecting tools, equipment and materials 3.2. Preparing tools and equipment for surface cleaning 3.3. Performing surface cleaning 3.4. Cleaning and maintaining workplace
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Concerned about the work environment 4.8. Committed to occupational health and safety practices 4.9. Respectful of peers, subordinates and seniors in the workplace
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Personal protective equipment (PPE) 5.3. Tools and equipment 5.4. Materials 5.5. Standard operating procedure 5.6. Projector 5.7. Stationery 5.8. Learning manual

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1.** Written test
- 6.2.** Oral test
- 6.3.** Observation
- 6.4.** Demonstration
- 6.5.** Portfolio

7. Context of assessment

- 7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2.** Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

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Unit Title:	Apply primer coat to structure
Unit Code:	SEIP-SBD-SP-03-O
Nominal Hours:	48 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to apply primer coat to structure. It specifically includes preparing for work, performing primer coat application, and cleaning and maintaining workplace.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Prepare for work	<p>1.1. Job specifications and instructions are read and interpreted.</p> <p>1.2. Appropriate personal protective equipment (PPE) is identified and selected.</p> <p>1.3. Appropriate <u>tools and equipment</u> are identified and selected.</p> <p>1.4. Appropriate <u>materials</u> are identified and selected.</p> <p>1.5. Selected tools, equipment and materials are prepared as per job requirement.</p>
2. Perform primer coat application	<p>2.1. Work area is set-up as per job requirement.</p> <p>2.2. <u>Types of coating</u> are identified and selected as per technical data sheet.</p> <p>2.3. Surface is cleaned and dried to remove grease, oil and salt contamination.</p> <p>2.4. Adequate ventilation is established as per standard operating procedure.</p> <p>2.5. Humidity, temperature and dew point are identified and ensured as per job requirement.</p> <p>2.6. Primer coat on internal and external areas is applied as per job specification.</p> <p>2.7. Overcoating and wet film thickness (WFT) are checked as per technical data sheet.</p>
3. Clean and maintain workplace	<p>3.1. Tools and equipment are cleaned and maintained as per standard operating procedure.</p> <p>3.2. Tools and equipment are safely and securely stored.</p> <p>3.3. Workplace is cleaned and waste material disposed of.</p>

Range of Variables	
Variable	Range (may include but not limited to)
1. Tools and equipment	1.1. Tools: 1.1.1. Ladder 1.1.2. Platform 1.1.3. Paint brushes 1.1.4. Spatula 1.1.5. Rollers 1.1.6. Extension poles 1.2. Equipment: 1.2.1. Airless sprayer/gun 1.2.2. Spray hoses 1.2.3. Spray tips 1.2.4. Spray nozzles 1.2.5. Pumps 1.2.6. Stirrers 1.2.7. Air dusters 1.2.8. Scaffold
2. Materials	2.1. Base paint 2.2. Curing agent 2.3. Solvent 2.4. Thinner
3. Types of coating	3.1. Primer/tie coat 3.2. Anti-fouling 3.3. Convertible coating 3.4. Non-convertible coating 3.5. Water-based coating 3.6. Oil-based coating 3.7. Pigments and extenders 3.8. Solvent 3.9. Thinner

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment must evidence that the candidate: 1.1. Prepared for work 1.2. Set-up work area 1.3. Prepared surface for primer coat application 1.4. Identified types of coating 1.5. Applied primer coat following standard operating procedure
2. Underpinning knowledge	2.1. Tools and equipment 2.2. Materials 2.3. Surface preparation 2.4. Types of coating 2.5. Primer application method 2.6. Standard operating procedure 2.7. Maintenance procedure
3. Underpinning skills	3.1. Preparing for work 3.2. Setting-up work area 3.3. Carrying out surface preparation 3.4. Applying primer to internal and external areas 3.5. Applying primer to confined spaces 3.6. Measuring coating thickness (DFT, WFT)
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Concerned about the work environment 4.8. Committed to occupational health and safety practices 4.9. Respectful of peers, subordinates and seniors in the workplace
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Personal protective equipment (PPE) 5.3. Tools and equipment 5.4. Materials 5.5. Plans, drawings, specifications 5.6. Standard operating procedure 5.7. Stationery 5.8. Learning manual

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Oral test
- 6.3. Observation
- 6.4. Demonstration
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Perform tie and anti-fouling coat to underwater hull
Unit Code:	SEIP-SBD-SP-04-O
Nominal Hours:	56 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to perform tie and anti-fouling coat to underwater hull. It specifically includes preparing for work, performing tie-coat works, applying anti-fouling coat, carrying out rectification work, and cleaning and maintaining workplace.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Prepare for work	<p>1.1. Job specifications and instructions are read and interpreted.</p> <p>1.2. Appropriate personal protective equipment (PPE) is identified and selected.</p> <p>1.3. Appropriate <u>tools and equipment</u> are identified and selected.</p> <p>1.4. Appropriate <u>materials</u> are identified and selected.</p> <p>1.5. Selected tools, equipment and materials are prepared as per job requirement.</p>
2. Perform tie-coat works	<p>2.1. Underwater hull surface is cleaned and prepared for tie coating application.</p> <p>2.2. Tie-coat works are carried out for bonding with primer and anti-fouling paint.</p> <p>2.3. Clean tie coat and check surface before applying anti-fouling paint.</p>
3. Apply anti-fouling coat	<p>3.1. Anti-fouling coat is applied as per technical data sheet.</p> <p>3.2. Overcoating time, humidity and temperature are monitored and maintained as per standard operating procedure.</p> <p>3.3. Standard curing time and temperature are monitored and maintained to ensure required paint hardness and bonding.</p> <p>3.4. Works are performed at optimum condition according to standard operating procedure.</p>
4. Carry out rectification work	<p>4.1. Paint defects are identified properly to ensure correct method of rectification.</p> <p>4.2. Paint rectification is performed as per standard operating procedure.</p> <p>4.3. Rectified anti-fouling surface is inspected to ensure quality assurance compliance.</p>
5. Clean and maintain workplace	<p>5.1. Tools and equipment are cleaned and maintained as per standard operating procedure.</p> <p>5.2. Tools and equipment are safely and securely stored.</p> <p>5.3. Workplace is cleaned and waste material disposed of.</p>

Range of Variables	
Variable	Range <i>(may include but not limited to)</i>
1. Tools and equipment	1.1. Tools: 1.1.1. Ladder 1.1.2. Platform 1.1.3. Spatula 1.1.4. Extension poles 1.1.5. Paint brushes 1.1.6. Roller brushes 1.2. Equipment: 1.2.1. Airless sprayer 1.2.2. Spray hoses 1.2.3. Spray gun 1.2.4. Spray tips 1.2.5. Spray tip guards 1.2.6. Spray nozzles 1.2.7. Stirrers 1.2.8. Air dusters 1.2.9. Scaffold
2. Materials	2.1. Anti-fouling paint 2.2. Solvent 2.3. Thinner

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: 1.1. Prepared for work 1.2. Prepared underwater surface for anti-fouling coat application 1.3. Carried out tie and anti-fouling coat application 1.4. Monitored standard bonding time and temperature 1.5. Carried out rectification work 1.6. Cleaned and maintained workplace
2. Underpinning knowledge	2.1. Tools and equipment 2.2. Materials 2.3. Tie and anti-fouling paint 2.4. Standard bonding time and temperature 2.5. Paint defects 2.6. Rectification works 2.7. Maintenance procedure

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

3. Underpinning skills	3.1. Preparing underwater surface for tie coat application 3.2. Carrying out tie and anti-fouling coat application 3.3. Monitoring standard bonding time and temperature 3.4. Identifying painting defects 3.5. Performing rectification work 3.6. Cleaning and maintaining workplace
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Committed to occupational health and safety practices 4.8. Respectful of peers, subordinates and seniors in the workplace
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Personal protective equipment (PPE) 5.3. Tools and equipment 5.4. Materials 5.5. Plans, drawings, specifications 5.6. Standard operating procedure 5.7. Stationery 5.8. Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: 6.1. Written test 6.2. Oral test 6.3. Observation 6.4. Demonstration 6.5. Portfolio
7. Context of assessment	7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Perform top coat to above water hull, superstructure and other areas
Unit Code:	SEIP-SBD-SP-05-O
Nominal Hours:	80 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to perform top coat to above water hull, superstructure and other areas. It specifically includes preparing for work, applying top coat, carrying out rectification work, and cleaning and maintaining workplace.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Prepare for work	<p>1.1. Job specifications and instructions are read and interpreted.</p> <p>1.2. Appropriate personal protective equipment (PPE) is identified and selected.</p> <p>1.3. Appropriate <u>tools and equipment</u> are identified and selected.</p> <p>1.4. Appropriate <u>materials</u> are identified and selected.</p> <p>1.5. Selected tools, equipment and materials are prepared as per job requirement.</p>
2. Apply top coat	<p>2.1. Surface is cleaned and prepared for top coat application to above water hull, superstructure, and <u>other areas</u>.</p> <p>2.2. Top coat works are carried out for bonding with primer coat as per technical data sheet.</p> <p>2.3. Overcoating time, humidity and temperature are monitored and maintained as per standard operating procedure.</p> <p>2.4. Standard curing time and temperature are monitored and maintained to ensure required paint hardness and bonding.</p> <p>2.5. Works are performed at optimal condition according to standard operating procedure.</p> <p>2.6. Precautionary measures are undertaken for work in confined spaces as per standard operating procedure.</p>
3. Carry out rectification work	<p>3.1. Paint defects are identified properly to ensure correct method of rectification.</p> <p>3.2. Paint rectification is performed as per standard operating procedure.</p> <p>3.3. Rectified anti-fouling surface is inspected to ensure quality assurance compliance.</p>
4. Clean and maintain workplace	<p>4.1. Tools and equipment are cleaned and maintained as per standard operating procedure.</p> <p>4.2. Tools and equipment are safely and securely stored.</p> <p>4.3. Workplace is cleaned and waste material disposed of.</p>

Range of Variables	
Variable	Range <i>(may include but not limited to)</i>
1. Tools and equipment	<p>1.1. Tools:</p> <ul style="list-style-type: none"> 1.1.1. Ladder 1.1.2. Platform 1.1.3. Spatula 1.1.4. Extension poles 1.1.5. Paint brushes 1.1.6. Roller brushes <p>1.2. Equipment:</p> <ul style="list-style-type: none"> 1.2.1. Airless sprayer 1.2.2. Spray hoses 1.2.3. Spray gun 1.2.4. Spray tips 1.2.5. Spray tip guards 1.2.6. Spray nozzles 1.2.7. Stirrers 1.2.8. Air dusters 1.2.9. Scaffold
2. Materials	<ul style="list-style-type: none"> 2.1. Base paint 2.2. Curing agent 2.3. Solvent 2.4. Thinner
3. Other areas	<ul style="list-style-type: none"> 3.1. Deck 3.2. Mast 3.3. Derrick 3.4. Winch 3.5. Chain locker 3.6. DB tank 3.7. Cargo hold 3.8. Engine room 3.9. Oil tank 3.10. Fore and after peak tank

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment must evidence that the candidate: 1.1. Prepared for work 1.2. Prepared surfaces for top coat application 1.3. Carried out top coat application 1.4. Monitored standard bonding time and temperature 1.5. Carried out rectification work 1.6. Cleaned and maintained workplace
2. Underpinning knowledge	2.1. Tools and equipment 2.2. Materials 2.3. Cleaning methods 2.4. Surface preparation 2.5. Painting methods 2.6. Standard bonding time and temperature 2.7. Paint defects 2.8. Rectification works 2.9. Maintenance procedure
3. Underpinning skills	3.1. Preparing for work 3.2. Setting-up work area 3.3. Performing top coat application 3.4. Monitoring standard bonding time and temperature 3.5. Identifying painting defects 3.6. Performing rectification work 3.7. Cleaning and maintaining workplace
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Concerned about the work environment 4.8. Committed to occupational health and safety practices 4.9. Respectful of peers, subordinates and seniors in the workplace

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Personal protective equipment (PPE) 5.3. Tools and equipment 5.4. Materials 5.5. Paint 5.6. Plans, drawings, specifications 5.7. Standard operating procedure 5.8. Stationery 5.9. Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: 6.1. Written test 6.2. Oral test 6.3. Observation 6.4. Demonstration 6.5. Portfolio
7. Context of assessment	7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. 7.2. Assessment must be done by a suitably qualified/certified assessor.

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