



*This document, **Brunei Darussalam National Occupational Skills Standards Blasting-Painting Level 2**, has been formally endorsed as of the following date by the members of the council.*

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# **PART 1                    BASIC CONTENT**

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## **1. INTRODUCTION TO BRUNEI DARUSSALAM NATIONAL OCCUPATIONAL SKILLS STANDARDS (BNOSS)**

Brunei Darussalam National Occupational Skills Standards (BNOSS) is a document that underlines and specifies competencies needed by a skilled worker who is gainfully employed for an occupational area and level, and pathway to achieve the competencies.

A group of expert panels consisting of industrial experts and practitioners of a particular occupational sector need to be identified in developing the standard. With the involvement of these experts in the development of the BNOSS document, measurable benchmarks of skills and performance in the related area can be established in relation to the expectation of employers and the current requirements of the industry. These standards shall be aligned to the Brunei Darussalam Qualifications Framework (BDQF).

BNOSS is a set of standards of performance that an individual is required to achieve when carrying out effectively functions of a particular job. It is used as a reference for the industry, career path of a skilled worker, training purposes and benchmarks for best practices.

## **2. BENEFITS OF BNOSS**

### **To the employers**

- Able to describe the Job description and determine the salary.
- Employers can use the skills standards to establish personnel qualification requirements.
- Assess employee skill levels based on industry standard.
- Match employee skills to the work needed.
- Training gap analysis.
- To advertise job requirement to standards specification.

### **To the employees**

- Able to understand employers expectation of workers competencies in terms of knowledge, skills and attitude towards the specific job scope.
- Able to determine the skills and abilities needed for advancement or transfer industries and determine the right credential needed to upgrade skills.
- Can use BNOSS as guideline to identify the career development pathway in order to succeed in their occupation.

### **To the training organisations**

- BNOSS as a guideline for training organisations to develop their own curriculum.
- Able to develop assessment mechanism and specifications to assess trainees competencies.
- Able to build a cohesive relationship though a like-minded expectation of trainee's competencies and work readiness.

- Enhances the ability and confidence to train consistent with the industry's current expectations and needs.
- Develop new and evaluate existing curriculum and programs based on industry needs.

### **3. BLASTING-PAINTING LEVEL 2**

For Blasting-Painting Level 2, a blaster-painter will acquire the knowledge and skill based on the competent level, to be able to perform surface blasting operations and surface painting operations in a safe manner.

Other soft skill and leadership competent levels are also included as general requirements for all trades.

### **4. ENTRY REQUIREMENTS**

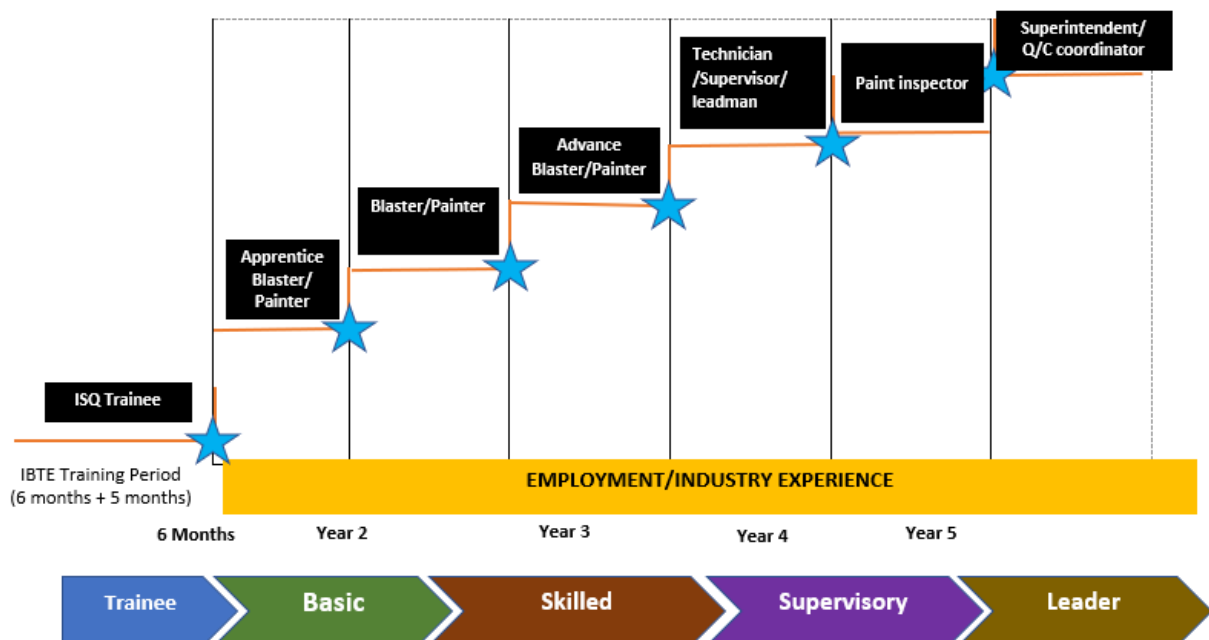
The specific of the qualifications are not limited to the list provided:

- Must be 17 years' old and above;
- Completion of secondary education;
- Able to communicate in English both oral and written;
- Physically and medically fit as certified by a Medical Officer;
- Pass the eyesight, hearing and colour-blindness test;
- Declaration of any disabilities.

## 5. COMPETENCY LEVEL, OCCUPATIONAL STRUCTURE AND CAREER PROGRESSION

<b>SECTOR</b>	Energy
<b>SUB-SECTOR</b>	Support services for petroleum and natural gas mining
<b>OCCUPATION</b>	Blaster-Painter
<b>LEVEL 5</b>	Inspector
<b>LEVEL 4</b>	Technician / Supervisor
<b>LEVEL 3</b>	Advanced Blaster-Painter
<b>LEVEL 2</b>	Blaster-Painter
<b>LEVEL 1</b>	Apprentice Blaster-Painter

### CAREER PATHWAY BLASTER AND PAINTERS



## **6. AWARD OF CERTIFICATE**

This section will guide the process of awarding certificate for every training course conducted by an approved training organisation to ensure the consistency. The guidelines are as follows:

### **6.1 Certificate of Competence**

In order to award Certificate of Competence by an awarding body, Statement of Competence need to be issued by the training organisation after the completion of the course.

The statement of competence should include the following but is not limited to:

- Training organisation's name;
- Course title or competency assessment title;
- Candidate's name;
- Assessment date(s) and training date(s);
- Expiry date;
- Unique Certificate Number;
- Instructor's/Trainer's Name and Signature;
- Assessor's Name and Signature and
- Optional but not required
  - Training Organisation's managing director Name and Signature.

Training organisations are encouraged to inform all concerned including employers and candidates that such Certificates shall not be used as reference of a person's competency or aptitude.

Each certificate awarded to a successful candidate must indicate that the candidate has been assessed and has met the required Learning Outcomes.

## PART 2 COMPETENCE STANDARDS

### 1. COMPETENCY PROFILE CHART (CPC)

Unit of Competency Category	Competence Unit Code	Competence Unit Title
<b>Generic</b>	GEN-02-01	Use of Relevant Technology
	GEN-02-02	Apply Numeracy
	GEN-02-03	Communicate in Workplace
	GEN-02-04	Life Skills for Personal Development
	GEN-02-05	Understand Health, Safety, Environment and Quality Processes in The Oil and Gas Industry
	GEN-02-06	Understand Engineering Science (Understand Engineering Basics)
	GEN-02-07	Understand Oil and Gas Industry Operation (Brunei)
<b>Specialised</b>	BLP-02-01	Apply Health, Safety and Environment including Quality Practices for Blasting and Painting in The Oil and Gas Industry
	BLP-02-02	Understand Blasting and Painting
	BLP-02-03	Perform Surface Blasting Operations
	BLP-02-04	Perform Surface Painting Operations

*\*It is mandatory to include Melayu Islam Beraja and Islamic Religious Knowledge in the qualification*



## 1.1 GENERIC

### DUTY: 1. Use of Relevant Technology

Skill Areas / Competence	Competence Elements
1.1 Understand the Elements of Computer Systems and Their Peripherals in The Workplace	1.1.1 Identify typical computer hardware systems in the workplace
	1.1.2 Identify computer system peripherals
1.2 Understand the Types of Operating Systems and GUI Applications	1.2.1 Describe the common types of operating system found on workplace computer systems
	1.2.2 Explain what a GUI application is
1.3 Be Able to Use Operating Systems to Perform System and File Tasks	1.3.1 Demonstrate correct procedures for operating a computer system
	1.3.2 Demonstrate appropriate use of input and output devices
	1.3.3 Complete system file and folder management operations
1.4 Be Able to Use an Internet Browser	1.4.1 Identify appropriate internet services
	1.4.2 Identify considerations for safe internet use
	1.4.3 Use an internet browser for required tasks
1.5 Be Able to Use Email to Exchange Information and Communicate	1.5.1 Identify terms used with email messaging
	1.5.2 Use email to send / receive messages and attachments
1.6 Be Able to Use Word Processing Software Applications	1.6.1 Identify software applications
	1.6.2 Identify software application file types
	1.6.3 Use word processing software applications to create and format documents
	1.6.4 Use printers to print documents
1.7 Be Able to Use Presentation Software Applications	1.7.1 Use presentation software applications to create and format presentations
	1.7.2 Use software application graphic interfaces

**DUTY: 2. Apply Numeracy**

<b>Skill Areas / Competence</b>	<b>Competence Elements</b>
2.1 Be Able to Use Numeric Expressions in Standard Form to Solve Work Related Problems	2.1.1 Carry out rounding of numbers and measures to an appropriate degree of accuracy
	2.1.2 Calculate values for sums, differences, products and quotients
	2.1.3 Carry out conversion of values in one form to another
	2.1.4 Assess calculation outcomes using approximation and estimation
2.2 Be Able to Use and Convert SI Units in The Workplace	2.2.1 State the fundamental SI units
	2.2.2 Apply appropriate SI unit prefixes to represent values
	2.2.3 Carry out conversion of one SI unit and prefix to another
2.3 Be Able to Use Algebra to Express and Solve Work Related Problems	2.3.1 Apply the laws and properties of indices
	2.3.2 Apply and interpret algebraic notation
	2.3.3 Simplify and manipulate algebraic expressions
	2.3.4 Carry out transposition of formulae to change the subject
	2.3.5 Apply the properties of logarithms in expressions
2.4 Be Able to Use Trigonometry to Solve Problems	2.4.1 Apply Pythagoras's theorem to calculate values in a triangle
	2.4.2 Apply trigonometric ratios to calculate values in shapes

**DUTY: 3. Communicate in Workplace**

<b>Skill Areas / Competence</b>	<b>Competence Elements</b>
3.1 Be Able to Effectively Read Workplace Information	3.1.1 Demonstrate reading of work-related texts, fluently and with good understanding
	3.1.2 Describe the difference between 'skimming' and 'scanning' documentation
	3.1.3 Demonstrate methods of extracting information from written workplace documentation
3.2 Be Able to Effectively Communicate with Others in The Working Environment	3.2.1 Explain the importance of effective communication skills in the workplace
	3.2.2 Describe the benefits of effective communication in relation to organisational performance
	3.2.3 Explain the effects that poor communication can have within a working environment
	3.2.4 Define the extent of when to act on your own initiative to find, clarify and evaluate information, and when to seek help and advice from others

	3.2.5 Demonstrate effective use of Spoken Standard English for the purposes of oral communication in the workplace
3.3 Be Able to Give and Respond to Workplace Instructions and Warnings	3.3.1 Describe the main types of workplace instructions and warnings
	3.3.2 Demonstrate effective interpretation and delivery of appropriate types of oral instructions and warnings relevant to the workplace
3.4 Be Able to Complete Documentation Relevant to The Work Environment and Tasks Required	3.4.1 Describe the types of reports found in the workplace and their purposes
	3.4.2 Produce workplace reports and logbooks to required industry and organisational standards
3.5 Be Able to Prepare and Deliver Presentations	3.5.1 Describe the main characteristics of effective oral presentations
	3.5.2 Describe the use of oral presentations in the workplace
	3.5.3 Carry out oral presentations related to workplace tasks / processes using appropriate supporting visual aids as required
3.6 Be Able to Seek and Apply for Relevant Career Opportunities	3.6.1 Identify appropriate career paths in industry
	3.6.2 Describe the stages of a typical job application process
	3.6.3 Identify resources to support career development with industrial certification
	3.6.4 Describe documents to support career development
	3.6.5 Demonstrate the appropriate completion of required job application documentation
	3.6.6 Undertake relevant job interviews demonstrating identified positive success traits

#### **DUTY: 4. Life Skills for Personal Development**

<b>Skill Areas / Competence</b>	<b>Competence Elements</b>
4.1 Be able to demonstrate effective self-management in the workplace	4.1.1 Recognise personal roles and responsibilities
	4.1.2 Carry out effective management of time
4.2. Be able to demonstrate effective planning and organising in the workplace	4.2.1 Demonstrate effective preparation for tasks
	4.2.2 Carry out effective organisation of resources

4.3 Be able to demonstrate effectively working with others in the workplace	4.3.1 Perform effective work as an individual/team
	4.3.2 Demonstrate the use of feedback for improvement
4.4 Be able to demonstrate problem-solving skills in the workplace	4.4.1 Demonstrate effective identification of problems
	4.4.2 Demonstrate effective problem solving
4.5 Be able to demonstrate initiative and enterprise in the workplace	4.5.1 Demonstrate proactive attitudes
	4.5.2 Produce a range of options for different situations
4.6 Be able to demonstrate progression in the ability to learn in the workplace	4.6.1 Demonstrate understanding of ongoing learning
	4.6.2 Demonstrate the ability to deal with current or changing environments

**DUTY: 5. Understand Health, Safety, Environment and Quality Processes in The Oil and Gas Industry**

<b>Skill Areas / Competence</b>	<b>Competence Elements</b>
5.1 Understand How Relevant Legislation and Procedures Apply in The Workplace	5.1.1 Identify roles and responsibilities related to current relevant Health and Safety legislation
	5.1.2 Identify roles and responsibilities related to current relevant environmental legislation
	5.1.3 Describe the use of workplace procedures
	5.1.4 Define the difference between 'policies' and 'rules'
5.2 Understand and Interpret Workplace Health and Safety Information	5.2.1 Describe sources of information relevant to workplace safety
	5.2.2 Interpret information relevant to workplace safety
5.3 Understand Procedures for Dealing with Health and Safety and Environmental	5.3.1 Differentiate between an 'accident' and an 'incident'
	5.3.2 Describe the possible consequences of an accident in the workplace
	5.3.3 State the procedures to be followed in the case of accidents involving injury (including first aid)
	5.3.4 Specify appropriate procedures to be followed when emergency situations occur in the workplace

Situations in The Workplace	5.3.5	State the actions to be taken where situations exceed and individual's level of responsibility for Health and Safety in the workplace
	5.3.6	Specify appropriate responsible persons who Health and Safety matters should be reported to
	5.3.7	Describe the ways in which the environment may be affected by work activities
	5.3.8	Specify the requirements for processing waste from the workplace
	5.3.9	Explain why it is important to report any hazards to the environment that arise from work procedures
5.4 Understand the Procedures for Establishing a Safe Working Environment	5.4.1	Define what is meant by the term 'risk' in relation to Health and Safety in the workplace
	5.4.2	State the procedure for producing risk assessments and method statements
	5.4.3	State the purpose of Personal Protective Equipment (PPE)
	5.4.4	Describe the procedures to remove or minimise risks
	5.4.5	Specify the use and maintenance of PPE (including full body harness) for work operations
	5.4.6	State the first aid facilities that must be available in the work area in accordance with Health and Safety regulations
	5.4.7	Explain why it is important not to misuse first aid equipment / supplies and to replace first aid supplies once used
	5.4.8	Describe safe practices and procedures for the use of equipment and materials in the working environment
	5.4.9	Explain the importance of behavioural safety and a positive safety culture
	5.4.10	Describe conditions linked to common occupational health problems
5.5 Understand the Requirements for Identifying and Dealing with Hazards in The Work Environment	5.5.1	Identify warning signs for the main groups of hazardous substances
	5.5.2	Define what is meant by the term 'hazard' in relation to Health and Safety in the workplace
	5.5.3	Identify main hazard groups associated with work tasks
	5.5.4	Describe general situations which can constitute a hazard in the workplace
	5.5.5	Describe oil, gas and petrochemical specific hazards
	5.5.6	Explain practices and procedures for addressing hazards in the workplace
	5.5.7	Identify the correct type of fire extinguisher for each particular type of fire
	5.5.8	Explain situations where chemical hazards may be encountered
5.6 Understand the Management of Asset Safety	5.6.1	Define asset integrity and process safety
	5.6.2	List the types of asset integrity in oil and gas/petrochemical operations
	5.6.3	Define safety critical elements of equipment and systems

in Oil and Gas / Petrochemical Operations	5.6.4	Define models and system approaches for risk management and control for safety critical elements
	5.6.5	Describe safe procedures for the isolation of live / charged equipment and overrides including electrical hazard
	5.6.6	Define the responsibilities of employers and employees in maintaining asset integrity
5.7 Understand the Hazards Associated with Mechanical Lifting Operations	5.7.1	Define mechanical lifting
	5.7.2	Identify health and safety considerations prior to conducting lifting activities
	5.7.3	Describe types of mechanical lifting equipment
	5.7.4	Describe hazards associated with mechanical lifting
	5.7.5	Define key personnel roles involved with lifting operations
	5.7.6	Define the term Safe Working Load (SWL)
5.8 Understand How to Complete Health and Safety Reporting in The Workplace	5.8.1	Describe Health and Safety-related monitoring and reporting
5.9 Understand How to Complete Quality Defect Reporting in The Workplace	5.9.1	Describe Quality Defect on materials related monitoring and reporting

#### **DUTY: 6. Understand Engineering Science (Understand Engineering Basics)**

<b>Skill Areas / Competence</b>	<b>Competence Elements</b>	
6.1 Understand the Fundamental States of Matter and Measures Relating to Them	6.1.1	Define the three states of matter
	6.1.2	Define typical properties / measures relating to matter
6.2 Be Able to Undertake Engineering Measurement and Work with Derived Units	6.2.1	Describe appropriate measuring systems used for work tasks
	6.2.2	Select appropriate measurement instruments / tools used for work tasks
	6.2.3	Perform accurate measurement and readings of engineering objects / materials and processes
	6.2.4	Calculate derived units of measurement
6.3 Understand the Principles of	6.3.1	Define the main terms in the relationship between motion and force

Fundamental Mechanics to Solve Engineering Tasks / Problems	6.3.2	Describe the principles of linear motion
	6.3.3	Explain the relationship between force, mass and acceleration
	6.3.4	Solve problems on distance-time and velocity-time graphs
	6.3.5	Define the terms work, energy, efficiency and power and the relationship between them
	6.3.6	Define types of energy
	6.3.7	Describe the transformation of energy and conservation of energy
6.4 Understand the Function and Operation of Simple Machines	6.3.8	Solve problems related to work, energy and power
	6.4.1	Describe the function and application of simple machines
6.5 Understand the Principles and Effects of Heat Energy and Temperature	6.4.2	Describe the principle and application of friction to machines
	6.5.1	Explain the concept of temperature and heat energy
	6.5.2	Describe the principle of operation of liquid expansion in a glass thermometer
	6.5.3	Undertake accurate temperature measurements using a thermometer
	6.5.4	Describe the concept of linear expansion
	6.5.5	Describe types of heat transfer
6.6 Understand the Principles of Magnetism and Electricity	6.5.6	Interpret temperature-time graphs for substances to define values
	6.6.1	Describe the principles of magnetism
	6.6.2	Define electrical terms
	6.6.3	Describe electrical circuits and their characteristics
	6.6.4	Sketch electric circuits using standard electrical symbols
6.7 Understand the Difference Between Metals and Non-Metals	6.6.5	Undertake accurate measurements of current and voltage in D.C. circuits
	6.7.1	Describe the properties of metals and their uses
	6.7.2	Describe the properties of non-metals and their uses

#### **DUTY: 7. Understand Oil and Gas Industry Operation (Brunei)**

<b>Skill Areas / Competence</b>	<b>Competence Elements</b>	
7.1 Understand the Background to Oil and Gas Production in Brunei	7.1.1	Outline the history of oil and gas discovery in Brunei including oil and gas milestones
	7.1.2	Identify the roles (including joint ventures) of key stakeholders in the oil and gas industry in Brunei
	7.1.3	Identify the key challenges faced by the Brunei energy sector

7.2 Understand the Formation of Oil and Gas and Oil and Gas Exploration	7.2.1	Describe with the aid of diagrams the formation of oil and gas
	7.2.2	Describe the composition of crude oil and gas
7.3 Understand the Lifecycles of Oil and Gas Fields	7.3.1	Explain the difference between 'upstream' and 'downstream' in oil and gas extraction and processing
	7.3.2	Explain with the aid of diagrams the phases of oil and gas field lifecycles
	7.3.3	Identify the roles of key personnel involved with oil and gas field operations
	7.3.4	Describe with the aid of diagrams the geology elements of a petroleum system
	7.3.5	Describe with the aid of diagrams oil and gas drilling processes
	7.3.6	Describe the elements of a 'field development plan'
	7.3.7	Explain the considerations for operation and maintenance of an oil and gas production process



## 1.2 SPECIALISED

### DUTY: 1. Apply Health, Safety and Environment including Quality Practice for Blasting and Painting in The Oil and Gas Industry

Skill Areas / Competence	Competence Elements
1.1 Be Able to Apply Relevant Health and Safety Legislation and Procedures That Relate to The Workplace	1.1.1 Comply with relevant workplace Health and Safety including quality procedures and obligations
	1.1.2 Work within Health and Safety, quality requirements
	1.1.3 Apply procedures to ensure the safe use, maintenance and storage of materials (including chemicals), tools, plant / machinery and equipment as defined by relevant documentation including material preservation requirements
	1.1.4 Comply with relevant signage
	1.1.5 Apply procedures to ensure safety in the workplace by the correct use of PPE, guards, interlocks, barriers and notices
	1.1.6 Use access equipment correctly
	1.1.7 Demonstrate the use of PPE and full body harness
	1.1.8 Demonstrate safe manual and ergonomic handling techniques
1.2 Be Able to Assess the Workplace for Hazards and Identify Remedial Actions in Accordance with Health and Safety Legislation and Policy	1.2.1 Identify unsafe situations / conditions and take remedial actions
	1.2.2 Assess the workplace and revise work practices to account for hazards that could cause harm
	1.2.3 Undertake health and safety monitoring and reporting
1.3 Be Able Apply Relevant Environmental Legislation and Procedures That Relate to The Workplace	1.3.1 Comply with relevant workplace Environmental procedures and obligations as defined by current legislation and procedures
1.4 Be Able to Assess the Materials for Defect and identify Remedial Actions	1.4.1 Undertake Quality Defect monitoring and reporting

**DUTY: 2. Understand Blasting and Painting**

<b>Skill Areas / Competence</b>	<b>Competence Elements</b>
2.1 Understand the Blaster-Painter Role and The Safety Requirements That Apply to It	2.1.1 Explain the role of the blaster-painter of different levels
	2.1.2 Outline the relevant safety and regulatory requirements that relate to blasting-painting activities
	2.1.3 Describe relevant international legislation that relates to blasting-painting operations
	2.1.4 Identify typical PPE associated with blasting-painting activities and their use
2.2 Understand the Key Blaster-Painter Processes, Equipment, Tools and Accessories	2.2.1 Describe basic surface preparation methods used in blasting-painting operations
	2.2.2 Describe the set up and operation of the main tools and accessories associated with blasting and painting operations
	2.2.3 Describe the purpose, operation and maintenance requirements of air compressors used in blasting-painting activities
	2.2.4 Describe blasting and painting inspection techniques

**DUTY: 3. Perform Surface Blasting Operations**

<b>Skill Areas / Competence</b>	<b>Competence Elements</b>
3.1 Demonstrate an Understanding of The Theory of Blasting	3.1.1 Describe the three main blasting steps involved with surface preparation
	3.1.2 Describe common blasting terms and their application in surface preparation
	3.1.3 Describe the application and suitability of common blasting abrasives for blasting operations
	3.1.4 Describe the range of resources required to prepare surfaces by abrasive blast cleaning
	3.1.5 Explain the principles and use of surface profile assessment techniques to identify damage and irregularities in materials and components
	3.1.6 Identify the main inspection standards used in Blasting
	3.1.7 Demonstrate an awareness of international legislation and regulations relevant to blasting
3.2 Be Able to Carry Out Blasting Operations in Accordance with Defined Task Information	3.2.1 Interpret given information relating to blasting operations and confirm their relevance / accuracy
	3.2.2 Calculate the required quantity of resources for the method of work
	3.2.3 Comply with organisational procedures to minimise the risk of damage to the work and surrounding area
	3.2.4 Carry out blasting operations efficiently and to the required specification
	3.2.5 Carry out post-blasting operations efficiently and to the required specification

	3.2.6 Work safely and good quality at all times
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**DUTY: 4. Perform Surface Painting Operations**

Skill Areas / Competence	Competence Elements
4.1 Demonstrate an Understanding of The Theory of Painting Operations	4.1.1 Explain the purpose of surface coating materials
	4.1.2 Describe the different layers (coats) and their purpose
	4.1.3 Interpret the content of Technical Data Sheets (TDS)
	4.1.4 Describe different paint spraying techniques and their applications
	4.1.5 Identify the appropriate surface coating techniques to be used
	4.1.6 Describe the principles and use of common inspection techniques for painting operations
	4.1.7 Demonstrate an awareness of international legislation and regulations relevant to painting operations
4.2 Be Able to Carry Out Painting Operations in Accordance with Defined Task Information	4.2.1 Interpret given information relating to painting operations and resources and confirm their relevance / accuracy
	4.2.2 Select the required quantity of resources for the method of work
	4.2.3 Comply with organisational procedures to minimise the risk of damage to the work and surrounding area
	4.2.4 Carry out painting operations efficiently to the required specification
	4.2.5 Carry out post-painting operations efficiently and to the required specifications
	4.2.6 Work safely and good quality at all times

## 2 COMPETENCY STANDARDS

### 2.1 GENERIC

Duty	1. Use of Relevant Technology	
Competence	Performance Criteria	
1.1 UNDERSTAND THE ELEMENTS OF COMPUTER SYSTEMS AND THEIR PERIPHERALS IN THE WORKPLACE	1. Identify typical <b>computer hardware systems</b> in the workplace 2. Identify computer system <b>peripherals</b>  <u>Range</u> <b>1.1.1 Computer hardware systems:</b> <ul style="list-style-type: none"> <li>▪ Desktop computers               <ul style="list-style-type: none"> <li>○ Standalone</li> <li>○ Network</li> </ul> </li> <li>▪ Laptop computers</li> <li>▪ Tablets</li> <li>▪ Plant integrated</li> </ul> <b>1.1.2 Peripherals:</b> <ul style="list-style-type: none"> <li>▪ Monitors</li> <li>▪ Scanners</li> <li>▪ Printers</li> <li>▪ Mouse</li> <li>▪ Keyboard</li> <li>▪ Projectors</li> </ul>	
1.2 UNDERSTAND THE TYPES OF OPERATING SYSTEMS AND GUI APPLICATIONS	1. Describe the common types of <b>operating system</b> found on workplace computer systems 2. Explain what a GUI application is  <u>Range</u> <b>1.2.1 Operating systems:</b> <ul style="list-style-type: none"> <li>▪ Windows</li> <li>▪ Linux</li> <li>▪ Macintosh</li> </ul>	
1.3 BE ABLE TO USE OPERATING SYSTEMS TO PERFORM SYSTEM AND FILE TASKS	1. Demonstrate correct <b>procedures</b> for operating a computer system 2. Demonstrate appropriate use of <b>input and output devices</b> 3. Complete system file and folder <b>management operations</b>  <u>Range</u> <b>1.3.1 Procedures:</b> <ul style="list-style-type: none"> <li>▪ Powering a computer system up</li> </ul>	

	<ul style="list-style-type: none"> <li>▪ Logging into an operating system</li> <li>▪ Logging out from an operating system</li> <li>▪ Shutting a computer system down</li> </ul> <p><b>1.3.2 Input and output devices:</b></p> <ul style="list-style-type: none"> <li>▪ QUERTY keyboard</li> <li>▪ Mouse</li> <li>▪ Touch screen</li> <li>▪ Digital camera</li> <li>▪ Scanners</li> <li>▪ Printers</li> </ul> <p><b>1.3.3 Management operations:</b></p> <ul style="list-style-type: none"> <li>▪ Folders <ul style="list-style-type: none"> <li>○ Create</li> <li>○ Rename</li> <li>○ Delete</li> </ul> </li> <li>▪ Files <ul style="list-style-type: none"> <li>○ Create</li> <li>○ Copy</li> <li>○ Move</li> <li>○ Rename</li> <li>○ Delete</li> </ul> </li> <li>▪ View files/directories</li> <li>▪ Complete file search</li> </ul>
<p>1.4 BE ABLE TO USE AN INTERNET BROWSER</p>	<ol style="list-style-type: none"> <li>1. Identify appropriate <b>internet services</b></li> <li>2. Identify <b>considerations</b> for safe internet use</li> <li>3. Use an internet browser for required <b>tasks</b></li> </ol> <p><b><u>Range</u></b></p> <p><b>1.4.1 Internet services:</b></p> <ul style="list-style-type: none"> <li>▪ Internet Service Providers (ISPs)</li> <li>▪ Webmail accounts (IMAP, POP3 and Microsoft Exchange)</li> </ul> <p><b>1.4.2 Considerations:</b></p> <ul style="list-style-type: none"> <li>▪ Viruses</li> <li>▪ Phishing</li> <li>▪ Fraud</li> <li>▪ Legal</li> </ul>

	<p><b>1.4.3 Tasks:</b></p> <ul style="list-style-type: none"> <li>▪ Search for defined topics</li> <li>▪ Use hyperlinks</li> <li>▪ Create favourites</li> <li>▪ Use browsing history</li> <li>▪ Use Uniform Resource Locators (URLs)</li> </ul>
<p>1.5 BE ABLE TO USE EMAIL TO EXCHANGE INFORMATION AND COMMUNICATE</p>	<p>1. Identify <b>terms</b> used with email messaging</p> <p>2. Use email to <b>send / receive messages</b> and attachments</p> <p><b>Range</b></p> <p><b>1.5.1 Terms:</b></p> <ul style="list-style-type: none"> <li>▪ Inbox, Outbox, Sent, Drafts</li> <li>▪ Attachments</li> <li>▪ Forward, Reply</li> <li>▪ Cc, Bcc</li> </ul> <p><b>1.5.2 Send/receive messages:</b></p> <ul style="list-style-type: none"> <li>▪ Subject/title inclusion</li> <li>▪ Recipients</li> <li>▪ Manage emails (folders)</li> </ul>
<p>1.6 BE ABLE TO USE WORD PROCESSING SOFTWARE APPLICATIONS</p>	<p>1. Identify <b>software applications</b></p> <p>2. Identify software application <b>file types</b></p> <p>3. Use word processing software applications to <b>create and format documents</b></p> <p>4. Use printers to <b>print</b> documents</p> <p><b>Range</b></p> <p><b>1.6.1 Software applications:</b></p> <ul style="list-style-type: none"> <li>▪ Word processing</li> <li>▪ Presentation</li> </ul> <p><b>1.6.2 File types:</b></p> <ul style="list-style-type: none"> <li>▪ .doc, .xls, .pdf, .jpg, .ppt</li> </ul> <p><b>1.6.3 Create and format documents:</b></p> <p>Using:</p> <ul style="list-style-type: none"> <li>▪ Text <ul style="list-style-type: none"> <li>○ Font style, font size, text enhancement, copy/cut, move</li> </ul> </li> <li>▪ Paragraph <ul style="list-style-type: none"> <li>○ Alignment, spacing, indenting</li> </ul> </li> <li>▪ Page</li> </ul>

	<ul style="list-style-type: none"> <li>○ Size, orientation, margins, header/footer, numbering, headings (with different levels)</li> <li>▪ Document <ul style="list-style-type: none"> <li>○ New page</li> <li>○ Section break</li> <li>○ Footnotes</li> <li>○ Tables</li> <li>○ Spell checking/grammar</li> <li>○ Printing</li> <li>○ Saving</li> </ul> </li> </ul> <p><b>1.6.4 Print:</b></p> <ul style="list-style-type: none"> <li>▪ To a dedicated printer</li> <li>▪ Print sections and/or specified pages</li> </ul>
<p>1.7 BE ABLE TO USE PRESENTATION SOFTWARE APPLICATIONS</p>	<ol style="list-style-type: none"> <li>1. Use presentation software applications to <b><i>create and format presentations</i></b></li> <li>2. Use software application <b><i>graphic interfaces</i></b></li> </ol> <p><b><u>Range</u></b></p> <p><b>1.7.1 Create and format presentations:</b></p> <p>Using:</p> <ul style="list-style-type: none"> <li>▪ Text <ul style="list-style-type: none"> <li>○ Font style, font size, text enhancement,</li> </ul> </li> <li>▪ Slide <ul style="list-style-type: none"> <li>○ Animation</li> <li>○ Sequencing</li> <li>○ Video/sound</li> <li>○ Style/format</li> </ul> </li> <li>▪ Presentation <ul style="list-style-type: none"> <li>○ Retrieve</li> <li>○ Edit</li> <li>○ Save</li> <li>○ Sequence</li> </ul> </li> </ul> <p><b>1.7.2 Graphic interface:</b></p> <ul style="list-style-type: none"> <li>▪ Ribbon</li> <li>▪ Mini-toolbar</li> <li>▪ Quick access buttons</li> <li>▪ Short-cuts</li> </ul>

Duty	<b>2. Apply Numeracy</b>
<b>Competence</b>	<b>Performance Criteria</b>
2.1 BE ABLE TO USE NUMERIC EXPRESSIONS IN STANDARD FORM TO	1. Carry out rounding of numbers and measures to an appropriate <b><i>degree of accuracy</i></b>

<p>SOLVE WORK RELATED PROBLEMS</p>	<p>2. Calculate <b>values</b> for sums, differences, products and quotients</p> <p>3. Carry out <b>conversion</b> of values in one form to another</p> <p>4. Assess calculation outcomes using approximation and estimation</p> <p><b><u>Range</u></b></p> <p><b>2.1.1 Degree of accuracy:</b></p> <ul style="list-style-type: none"> <li>▪ Significant figures</li> <li>▪ Decimal places</li> </ul> <p><b>2.1.2 Values:</b></p> <ul style="list-style-type: none"> <li>▪ Integers</li> <li>▪ Decimals</li> <li>▪ Simple fractions (proper and improper)</li> <li>▪ Mixed numbers – both positive and negative</li> <li>▪ Ratio</li> <li>▪ Proportion (direct and indirect)</li> <li>▪ Percentage (error, efficiency, increase, decrease)</li> </ul> <p><b>2.1.3 Conversion:</b></p> <ul style="list-style-type: none"> <li>▪ Fraction</li> <li>▪ Decimal</li> <li>▪ Percentage</li> </ul>
<p>2.2 BE ABLE TO USE AND CONVERT SI UNITS IN THE WORKPLACE</p>	<p>1. State the fundamental <b>SI units</b></p> <p>2. Apply appropriate SI unit <b>prefixes</b> to represent values</p> <p>3. Carry out conversion of one SI unit and prefix to another</p> <p><b><u>Range</u></b></p> <p><b>2.2.1 SI units:</b></p> <ul style="list-style-type: none"> <li>▪ Length (metres - m)</li> <li>▪ Time (seconds - s)</li> <li>▪ Temperature (kelvin – k)</li> <li>▪ Mass (kilograms – kg)</li> </ul> <p><b>2.2.2 Prefixes:</b></p> <ul style="list-style-type: none"> <li>▪ milli</li> <li>▪ centi</li> <li>▪ kilo</li> </ul>
<p>2.3 BE ABLE TO USE ALGEBRA TO EXPRESS</p>	<p>1. Apply the laws and properties of <b>indices</b></p> <p>2. Apply and interpret algebraic notation</p> <p>3. <b>Simplify and manipulate</b> algebraic expressions</p>



<p>AND SOLVE WORK RELATED PROBLEMS</p>	<p>4. Carry out <b>transposition</b> of formulae to change the subject</p> <p>5. Apply the properties of logarithms in <b>expressions</b></p> <p><b><u>Range</u></b></p> <p><b>2.3.1 Indices:</b></p> <ul style="list-style-type: none"> <li>▪ Simplify algebraic expressions</li> <li>▪ Solve numeric expressions</li> </ul> <p><b>2.3.3 Simplify and manipulate:</b></p> <ul style="list-style-type: none"> <li>▪ Substitution</li> <li>▪ Collecting like terms</li> <li>▪ Multiplying a single term over a bracket</li> <li>▪ Taking out common factors</li> <li>▪ Expanding products of two or more binomials</li> <li>▪ Factorising quadratic expressions</li> <li>▪ Simplifying expressions involving sums, products and powers</li> </ul> <p><b>2.3.4 Transposition:</b></p> <ul style="list-style-type: none"> <li>▪ One or more terms</li> <li>▪ Indices and roots</li> </ul> <p><b>2.3.5 Expressions:</b></p> <ul style="list-style-type: none"> <li>▪ Algebraic</li> <li>▪ Indicial</li> <li>▪ Converting between logarithmic and index form</li> </ul>
<p>2.4 BE ABLE TO USE TRIGONOMETRY TO SOLVE PROBLEMS</p>	<p>1. Apply Pythagoras's theorem to calculate values in a triangle</p> <p>2. Apply <b>trigonometric ratios</b> to calculate <b>values</b> in shapes</p> <p><b><u>Range</u></b></p> <p><b>2.4.2 Trigonometric ratios:</b></p> <ul style="list-style-type: none"> <li>▪ Sine</li> <li>▪ Cosine</li> <li>▪ Tangent</li> </ul> <p><b>Values:</b></p> <ul style="list-style-type: none"> <li>▪ Angle</li> <li>▪ Length</li> <li>▪ Area</li> </ul>

Duty	3. Communicate in Workplace
Competence	Performance Criteria
<p>3.1 BE ABLE TO EFFECTIVELY READ WORKPLACE INFORMATION</p>	<ol style="list-style-type: none"> <li>1. Demonstrate reading of work-related texts, fluently and with good understanding</li> <li>2. Describe the difference between 'skimming' and 'scanning' documentation</li> <li>3. Demonstrate <b>methods</b> of extracting information from written workplace <b>documentation</b></li> </ol> <p><b><u>Range</u></b></p> <p><b>3.1.3 Methods:</b></p> <ul style="list-style-type: none"> <li>▪ Skimming</li> <li>▪ Scanning</li> </ul> <p><b><i>Documentation (including):</i></b></p> <ul style="list-style-type: none"> <li>▪ Safety instructions</li> <li>▪ Job instructions</li> <li>▪ Material specifications</li> <li>▪ Planning documentation</li> <li>▪ Drawing instructions</li> <li>▪ Finishing specifications</li> <li>▪ Quality control documents</li> <li>▪ Test schedules</li> <li>▪ Reference tables/charts</li> <li>▪ Operation sheets</li> <li>▪ Manufacturers' instructions</li> <li>▪ National, international and organisational standards</li> <li>▪ Process specifications</li> <li>▪ Work procedure specifications</li> </ul>
<p>3.2 BE ABLE TO EFFECTIVELY COMMUNICATE WITH OTHERS IN THE WORKING ENVIRONMENT</p>	<ol style="list-style-type: none"> <li>1. Explain the importance of effective communication skills in the workplace</li> <li>2. Describe the benefits of effective communication in relation to <b>organisational performance</b></li> <li>3. Explain the effects that poor communication can have within a <b>working environment</b></li> <li>4. Define the extent of when to act on your own initiative to find, clarify and evaluate information, and when to seek help and advice from others</li> <li>5. Demonstrate effective use of <b>Spoken Standard English</b> for the purposes of oral communication in the workplace</li> </ol>

	<p><b><u>Range</u></b></p> <p><b>3.2.2 Organisational performance:</b></p> <ul style="list-style-type: none"> <li>▪ Operationally</li> <li>▪ Safety management</li> <li>▪ Interpersonal/morale</li> </ul> <p><b>3.3.3 Working environment:</b></p> <ul style="list-style-type: none"> <li>▪ Operationally</li> <li>▪ Safety management and risk</li> <li>▪ Interpersonal working relationships</li> </ul> <p><b>3.3.5 Spoken Standard English:</b></p> <ul style="list-style-type: none"> <li>▪ Audible</li> <li>▪ Intelligible</li> <li>▪ Appropriate to work setting</li> <li>▪ Expresses required information</li> <li>▪ Is structured</li> <li>▪ Meets the needs of the recipient(s)</li> <li>▪ Provides opportunity for feedback/questions as appropriate</li> <li>▪ Polite</li> </ul>
<p>3.3 BE ABLE TO GIVE AND RESPOND TO WORKPLACE INSTRUCTIONS AND WARNINGS</p>	<ol style="list-style-type: none"> <li>1. Describe the main <b>types</b> of workplace instructions and warnings</li> <li>2. Demonstrate effective interpretation and delivery of appropriate <b>types</b> of oral instructions and warnings relevant to the workplace</li> </ol> <p><b><u>Range</u></b></p> <p><b>3.3.1 Types:</b></p> <ul style="list-style-type: none"> <li>▪ Safety related <ul style="list-style-type: none"> <li>○ Mandatory</li> <li>○ Prohibition</li> <li>○ Warning</li> <li>○ Emergency information</li> </ul> </li> <li>▪ Task related</li> <li>▪ Organisation-based</li> <li>▪ Interpersonal/supervisory</li> </ul> <p><b>3.3.2 Types:</b></p> <ul style="list-style-type: none"> <li>▪ Safety related <ul style="list-style-type: none"> <li>○ Mandatory</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Prohibition</li> <li>○ Warning</li> <li>○ Emergency information</li> <li>▪ Task related</li> <li>▪ Organisation-based</li> <li>▪ Interpersonal/supervisory</li> </ul>
<p>3.4 BE ABLE TO COMPLETE DOCUMENTATION RELEVANT TO THE WORK ENVIRONMENT AND TASKS REQUIRED</p>	<ol style="list-style-type: none"> <li>1. Describe the <b>types of reports</b> found in the workplace and their purposes</li> <li>2. Produce workplace reports and logbooks to required industry and organisational <b>standards</b></li> </ol> <p><b><u>Range</u></b></p> <p><b>3.4.1 Types of reports:</b></p> <ul style="list-style-type: none"> <li>▪ Safety</li> <li>▪ Accident/Incident</li> <li>▪ Equipment maintenance</li> <li>▪ Work progress/completion</li> <li>▪ Inspection</li> <li>▪ Logbooks</li> </ul> <p><b>3.4.2 Standards:</b></p> <ul style="list-style-type: none"> <li>▪ Using industry conventions</li> <li>▪ Using organisational protocols</li> <li>▪ Using appropriate Standard English</li> <li>▪ Using clear structure and layout</li> </ul>
<p>3.5 BE ABLE TO PREPARE AND DELIVER PRESENTATIONS</p>	<ol style="list-style-type: none"> <li>1. Describe the main <b>characteristics</b> of effective oral presentations</li> <li>2. Describe the <b>use</b> of oral presentations in the workplace</li> <li>3. Carry out oral presentations related to workplace tasks / processes using appropriate <b>supporting visual aids</b> as required</li> </ol> <p><b><u>Range</u></b></p> <p><b>3.5.1 Characteristics:</b></p> <ul style="list-style-type: none"> <li>▪ Selecting appropriate information</li> <li>▪ Organising information effectively</li> <li>▪ Planning for different audiences</li> <li>▪ Using persuasive language and tone</li> </ul> <p><b>3.5.2 Use:</b></p> <ul style="list-style-type: none"> <li>▪ Work task reporting</li> <li>▪ Safety briefing</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Project presentations</li> <li>▪ Training</li> </ul> <p><b>3.5.3 Supporting visual aids:</b></p> <ul style="list-style-type: none"> <li>▪ Presentation software</li> <li>▪ Reference documentation</li> <li>▪ Supporting delivery materials (handouts)</li> </ul>
<p>3.6 BE ABLE TO SEEK AND APPLY FOR RELEVANT CAREER OPPORTUNITIES</p>	<ol style="list-style-type: none"> <li>1. Identify appropriate career paths in industry</li> <li>2. Describe the stages of a typical job <b>application process</b></li> <li>3. Identify <b>resources</b> to support career development with industrial certification</li> <li>4. Describe <b>documents</b> to support career development</li> <li>5. Demonstrate the appropriate completion of required job application documentation</li> <li>6. Undertake relevant job interviews demonstrating identified positive <b>success traits</b></li> </ol> <p><b><u>Range</u></b></p> <p><b>3.6.2 Application process:</b></p> <ul style="list-style-type: none"> <li>▪ Update/Create CV</li> <li>▪ Complete a Cover Letter.</li> <li>▪ Complete Job Applications.</li> <li>▪ Job Application Screening (employer)</li> <li>▪ Complete aptitude tests</li> <li>▪ Complete interview(s)</li> <li>▪ Screening/references</li> <li>▪ Job Offer</li> </ul> <p><b>3.6.3 Resources:</b></p> <ul style="list-style-type: none"> <li>▪ Internet</li> <li>▪ Trade publications</li> <li>▪ Organisation bulletins</li> <li>▪ Professional bodies/organisations</li> <li>▪ Industry research papers</li> <li>▪ Mentors</li> <li>▪ Networking</li> <li>▪ Job descriptions</li> <li>▪ Person specification</li> <li>▪ Awarding organisations</li> </ul> <p><b>3.6.4 Documentation:</b></p> <ul style="list-style-type: none"> <li>▪ Curriculum Vitae (CV)</li> <li>▪ Personal statement</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Cover letter</li> <li>▪ References</li> </ul> <p><b>3.6.6 Success traits:</b></p> <ul style="list-style-type: none"> <li>▪ Thorough job knowledge</li> <li>▪ Appearance (clothing)</li> <li>▪ Mannerisms</li> <li>▪ Attentiveness</li> <li>▪ Positive responses</li> <li>▪ Demeanour and ethics</li> </ul>
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Duty	4. Life Skills for Personal Development
Competence	Performance Criteria
4.1 BE ABLE TO DEMONSTRATE EFFECTIVE SELF-MANAGEMENT IN THE WORKPLACE	<ol style="list-style-type: none"> <li>1. Recognise <i>personal roles and responsibilities</i></li> <li>2. Carry out effective <i>management of time</i></li> </ol> <p><b><u>Range</u></b></p> <p><b>4.1.1 Personal roles and responsibilities:</b></p> <ul style="list-style-type: none"> <li>▪ Able to demonstrate self-control in challenging situations</li> <li>▪ Able to engage in learning activities</li> <li>▪ Able to demonstrate commitment to work and learning</li> <li>▪ Able to undertake responsibility for effort and actions</li> </ul> <p><b>4.1.2 Management of time:</b></p> <ul style="list-style-type: none"> <li>▪ Able to demonstrate punctuality</li> <li>▪ Able to allocate appropriate time to activities</li> <li>▪ Able to meet deadlines</li> <li>▪ Able to prioritise tasks</li> </ul>
4.2 BE ABLE TO DEMONSTRATE EFFECTIVE PLANNING AND ORGANISING IN THE WORKPLACE	<ol style="list-style-type: none"> <li>1. Demonstrate effective <i>preparation</i> for tasks</li> <li>2. Carry out effective <i>organisation of resources</i></li> </ol> <p><b><u>Range</u></b></p> <p><b>4.2.1 Preparation:</b></p> <ul style="list-style-type: none"> <li>▪ Able to identify the objectives of a task</li> <li>▪ Able to gather resources to meet task objectives</li> <li>▪ Able to use appropriate planning tools (e.g. checklist, Gantt chart)</li> <li>▪ Able to prepare for contingencies</li> </ul> <p><b>4.2.2 Organisation of resources:</b></p> <ul style="list-style-type: none"> <li>▪ Able to identify critical tasks</li> <li>▪ Able to arrange tasks in a logical order</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Able to allocate resources to complete tasks</li> <li>▪ Able to use relevant information to complete tasks</li> </ul>
<p>4.3 BE ABLE TO DEMONSTRATE EFFECTIVELY WORKING WITH OTHERS IN THE WORKPLACE</p>	<ol style="list-style-type: none"> <li>1. Perform effective <b><i>work as an individual/team</i></b></li> <li>2. Demonstrate the use of <b><i>feedback for improvement</i></b></li> </ol> <p><b><u>Range</u></b></p> <p><b>4.3.1 Work as an individual/team:</b></p> <ul style="list-style-type: none"> <li>▪ Able to demonstrate willingness to take up responsibilities</li> <li>▪ Able to partake in discussions with team members</li> <li>▪ Able to provide support to the team</li> <li>▪ Able to work together with others towards common team goals</li> </ul> <p><b>4.3.2 Feedback for improvement:</b></p> <ul style="list-style-type: none"> <li>▪ Able to provide positive feedback</li> <li>▪ Able to identify areas for improvement</li> <li>▪ Able to accept and learn from mistakes</li> <li>▪ Able to encourage team member to improve</li> </ul>
<p>4.4 BE ABLE TO DEMONSTRATE PROBLEM-SOLVING SKILLS IN THE WORKPLACE</p>	<ol style="list-style-type: none"> <li>1. Demonstrate effective <b><i>identification of problems</i></b></li> <li>2. Demonstrate effective <b><i>problem solving</i></b></li> </ol> <p><b><u>Range</u></b></p> <p><b>4.4.1 Identification of problems:</b></p> <ul style="list-style-type: none"> <li>▪ Able to evaluate problems</li> <li>▪ Able to analyse problems</li> <li>▪ Able to gather information relating to problems</li> <li>▪ Able to relate knowledge to problems</li> </ul> <p><b>4.4.2 Problem solving:</b></p> <ul style="list-style-type: none"> <li>▪ Able to generate strategies to solve problems</li> <li>▪ Able to explore different solutions</li> <li>▪ Able to apply strategies according to situation</li> <li>▪ Able to monitor and reflect on results</li> </ul>
<p>4.5 BE ABLE TO DEMONSTRATE INITIATIVE AND ENTERPRISE IN THE WORKPLACE</p>	<ol style="list-style-type: none"> <li>1. Demonstrate <b><i>proactive attitudes</i></b></li> <li>2. Produce a <b><i>range of options for different situations</i></b></li> </ol> <p><b><u>Range</u></b></p> <p><b>4.5.1 Proactive attitudes:</b></p> <ul style="list-style-type: none"> <li>▪ Able to anticipate potential problems</li> <li>▪ Able to act quickly to resolve problems</li> <li>▪ Able to recognise and use opportunities</li> <li>▪ Able to initiate possible solutions</li> </ul>

	<p><b>4.5.2 Range of options for different situations:</b></p> <ul style="list-style-type: none"> <li>▪ Able to generate innovative ideas to solve problems</li> <li>▪ Able to identify problems that may occur</li> <li>▪ Able to apply suitable ideas into action</li> <li>▪ Able to apply appropriate skills to given situations/tasks</li> </ul>
<p>4.6 BE ABLE TO DEMONSTRATE PROGRESSION IN THE ABILITY TO LEARN IN THE WORKPLACE</p>	<p>1. Demonstrate <b>understanding of ongoing learning</b></p> <p>2. Demonstrate the ability to deal with <b>current or changing environments</b></p> <p><b>Range</b></p> <p><b>4.6.1 Understanding of ongoing learning:</b></p> <ul style="list-style-type: none"> <li>▪ Able to demonstrate motivation to learn new ideas</li> <li>▪ Able to undertake mentoring and coaching activities</li> <li>▪ Able to demonstrate independent learning</li> <li>▪ Able to demonstrate efforts to improve knowledge</li> </ul> <p><b>4.6.2 Current or changing environments:</b></p> <ul style="list-style-type: none"> <li>▪ Able to apply knowledge into work activities</li> <li>▪ Able to use a range of media to learn</li> <li>▪ Able to adapt to a changing environment</li> <li>▪ Able to accept challenges positively</li> </ul>

Duty	5. Understand Health, Safety, Environment and Quality Processes in The Oil and Gas Industry	
<b>Competence</b>		<b>Performance Criteria</b>
<p>5.1 UNDERSTAND HOW RELEVANT LEGISLATION AND PROCEDURES APPLY IN THE WORKPLACE</p>	<p>1. Identify <b>roles</b> and responsibilities related to current relevant <b>Health and Safety legislation</b></p> <p>2. Identify roles and responsibilities related to current relevant <b>environmental legislation</b></p> <p>3. Describe the use of <b>workplace procedures</b></p> <p>4. Define the difference between ‘policies’ and ‘rules’</p> <p><b>Range</b></p> <p><b>5.1.1 Roles:</b></p> <ul style="list-style-type: none"> <li>▪ Employers</li> <li>▪ Employees</li> <li>▪ Organisations</li> </ul> <p><b>Health and Safety legislation:</b></p>	



	<ul style="list-style-type: none"> <li>▪ Workplace Safety and Health Order 2009</li> <li>▪ Workplace Safety and Health Regulations 2014</li> <li>▪ Fire Safety Order 2016</li> <li>▪ Employment Order 2009</li> <li>▪ National Standard Operating Procedure (NaSOP) for Disaster Management</li> <li>▪ Working at heights Regulations (2005)</li> </ul> <p><b>5.1.2 Environmental legislation:</b></p> <ul style="list-style-type: none"> <li>▪ Environment Order 2009</li> <li>▪ Environment Protection and Management Order 2015</li> </ul> <p><b>5.1.3 Workplace procedures:</b></p> <ul style="list-style-type: none"> <li>▪ Safety management</li> <li>▪ Environmental management</li> <li>▪ Incident reporting and investigation</li> <li>▪ Proactive intervention</li> </ul>
<p>5.2 UNDERSTAND AND INTERPRET WORKPLACE HEALTH AND SAFETY INFORMATION</p>	<ol style="list-style-type: none"> <li>1. Describe <b>sources of information</b> relevant to workplace safety</li> <li>2. Interpret <b>information</b> relevant to workplace safety</li> </ol> <p><b><u>Range</u></b></p> <p><b>5.2.1 Sources of information:</b></p> <ul style="list-style-type: none"> <li>▪ Location of information</li> <li>▪ Access arrangements</li> </ul> <p><b>5.2.2 Information:</b></p> <ul style="list-style-type: none"> <li>▪ Workplans</li> <li>▪ Organisational/ company policies and procedures</li> <li>▪ Project/ Site safety plan</li> <li>▪ Emergency plan</li> <li>▪ Training manuals</li> <li>▪ Legislation/ regulations/ codes of practice</li> <li>▪ Standard Operating Procedures (S.O.P.)</li> </ul>
<p>5.3 UNDERSTAND PROCEDURES FOR DEALING WITH HEALTH AND SAFETY AND ENVIRONMENTAL</p>	<ol style="list-style-type: none"> <li>1. Differentiate between an ‘accident’ and an ‘incident’.</li> <li>2. Describe the possible <b>consequences</b> of an accident in the workplace</li> </ol>

<p>SITUATIONS IN THE WORKPLACE</p>	<ol style="list-style-type: none"> <li>3. State the procedures to be followed in the case of accidents involving injury (including first aid)</li> <li>4. Specify <b>appropriate procedures</b> to be followed when emergency situations occur in the workplace</li> <li>5. State the actions to be taken where situations exceed and individual's level of responsibility for Health and Safety in the workplace</li> <li>6. Specify appropriate <b>responsible persons</b> who Health and Safety matters should be reported to.</li> <li>7. Describe the ways in which the environment may be <b>affected by work activities</b></li> <li>8. Specify the <b>requirements</b> for processing waste from the workplace</li> <li>9. Explain why it is important to report any hazards to the environment that arise from work procedures</li> </ol> <p><b><u>Range</u></b></p> <p><b>5.3.2 Consequences</b></p> <ul style="list-style-type: none"> <li>▪ Fatality</li> <li>▪ Temporary disability</li> <li>▪ Permanent disability</li> <li>▪ Minor injury</li> </ul> <p><b>5.3.4 Appropriate procedures:</b></p> <ul style="list-style-type: none"> <li>▪ Procedures for summoning emergency services</li> <li>▪ Information that emergency services require</li> <li>▪ Alarm and evacuation procedures</li> <li>▪ Designated escape routes</li> <li>▪ Firefighting procedures</li> <li>▪ Application of first aid</li> </ul> <p><b>5.3.6 Responsible persons:</b></p> <ul style="list-style-type: none"> <li>▪ Employer</li> <li>▪ Employees</li> <li>▪ Safety Officers</li> <li>▪ Health &amp; Safety Inspectors</li> </ul> <p><b>5.3.7 Affected by work activities:</b></p> <ul style="list-style-type: none"> <li>▪ Land contamination</li> <li>▪ Air pollution</li> <li>▪ Pollution of water courses</li> </ul> <p><b>5.3.8 Requirements:</b></p>
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	<ul style="list-style-type: none"> <li>▪ Recycling</li> <li>▪ Hazardous waste</li> </ul>
<p>5.4 UNDERSTAND THE PROCEDURES FOR ESTABLISHING A SAFE WORKING ENVIRONMENT</p>	<ol style="list-style-type: none"> <li>1. Define what is meant by the term 'risk' in relation to Health and Safety in the workplace</li> <li>2. State the procedure for producing risk assessments and method statements</li> <li>3. State the purpose of Personal Protective Equipment (PPE)</li> <li>4. Describe the <b>procedures to remove or minimise risks</b></li> <li>5. Specify the <b>use and maintenance of PPE</b> (including full body harness) for work operations</li> <li>6. State the first aid facilities that must be available in the work area in accordance with Health and Safety regulations</li> <li>7. Explain why it is important not to misuse first aid equipment/supplies and to replace first aid supplies once used</li> <li>8. Describe safe practices and <b>procedures</b> for the use of <b>equipment and materials</b> in the working environment</li> <li>9. Explain the importance of behavioural safety and a positive safety culture.</li> <li>10. Describe <b>conditions</b> linked to common occupational health problems</li> </ol> <p><b><u>Range</u></b></p> <p><b>5.4.4 Procedures to remove or minimise risks</b></p> <ul style="list-style-type: none"> <li>▪ As Low As Reasonably Practicable (ALARP) principle</li> <li>▪ Hazard Identification Risk Assessment (HIRA)</li> <li>▪ Hierarchy of control measures <ul style="list-style-type: none"> <li>○ Elimination</li> <li>○ Substitution</li> <li>○ Engineering Control</li> <li>○ Administration Control</li> <li>○ Personal Protective Equipment (PPE)</li> </ul> </li> <li>▪ Risk management <ul style="list-style-type: none"> <li>○ Strategy</li> <li>○ Identify hazards</li> <li>○ Assess associated risk</li> <li>○ Use approved control measures to eliminate/minimise risks</li> <li>○ Monitor and review control measures</li> </ul> </li> </ul>

#### **5.4.5 PPE (use)**

- Footwear
- Head protection
- Hand gloves
- Protective clothing
- Hearing protection
- Eye protection
- Full body harness (fall arrest/fall restraint - including lanyards and inertia reels – covering inspection, wear and usage)

#### **5.4.5 PPE (maintenance)**

- Cleaning and decontamination
- Correct storage
- Regular checks for damage
- Repair/replacement of work malfunction or damaged equipment/parts
- Disposal of single use equipment

#### **5.4.8 Procedures**

- Qualified persons
- Safe isolation procedures
- Permits to work
- Selection and checking correct plant, power tools, hand tools or equipment
- Toolbox talks
- Maintenance and inspection activities
- Safety Management Systems
- Safe Systems of Work (SSoW)
- Shift handover procedures
- Housekeeping
- Storage and containment
- Health surveillance
- Safe Manual handling techniques

#### **5.4.8 Equipment and materials**

- Access equipment
- Plant/Machinery
- Portable power tools
- Signs and guarding

	<ul style="list-style-type: none"> <li>▪ Tools and materials storage facilities</li> <li>▪ Hazardous substances</li> </ul> <p><b>5.4.10 Conditions</b></p> <ul style="list-style-type: none"> <li>▪ Skin disease</li> <li>▪ Cancer</li> <li>▪ Hearing loss</li> <li>▪ Sight impairment</li> <li>▪ Respiratory illness</li> <li>▪ Musculoskeletal disorder</li> <li>▪ Physiological disorder</li> </ul>
<p>5.5 UNDERSTAND THE REQUIREMENTS FOR IDENTIFYING AND DEALING WITH HAZARDS IN THE WORK ENVIRONMENT</p>	<ol style="list-style-type: none"> <li>1. Identify warning signs for the main groups of hazardous substances.</li> <li>2. Define what is meant by the term ‘hazard’ in relation to Health and Safety in the workplace</li> <li>3. Identify main <b>hazard groups</b> associated with work tasks</li> <li>4. Describe <b>general situations</b> which can constitute a hazard in the workplace</li> <li>5. Describe oil, gas and petrochemical <b>specific hazards</b></li> <li>6. Explain practices and procedures for addressing <b>hazards in the workplace</b></li> <li>7. Identify the correct type of fire extinguisher for each particular type of fire</li> <li>8. Explain situations where <b>chemical hazards</b> may be encountered</li> </ol> <p><b><u>Range</u></b></p> <p><b>5.5.3 Hazard groups:</b></p> <ul style="list-style-type: none"> <li>▪ Electric</li> <li>▪ Psychosocial</li> <li>▪ Ergonomic</li> <li>▪ Biological</li> <li>▪ Chemical</li> <li>▪ Physical</li> </ul> <p><b>5.5.4 General situations:</b></p> <ul style="list-style-type: none"> <li>▪ Temporary supplies</li> <li>▪ Trailing leads/hoses</li> <li>▪ Slippery or uneven surfaces</li> <li>▪ Presence of dust, fumes and/or gases</li> </ul>

- Handling and transporting equipment or materials (manual and mechanised handling)
- Chemical use and storage (including contaminants and irritants)
- Fire and flame
- Working at height
- Excessive noise
- Vibration
- Lone working
- Hazardous malfunctions of equipment
- Improper use, maintenance and storage of tools and equipment
- Improper use, maintenance of guarding and machinery

**5.5.5 Specific hazards:**

- Explosion
- High pressure release of gas
- Hydrogen Sulphide (H<sub>2</sub>S) creation
- Structural failure
- Adverse weather damage
- Suspended loads on cranes (including man loading)
- Use of helicopters and supply vessels (offshore)
- High pressure systems

**5.5.6 Hazards in the workplace:**

- Trailing leads/hoses
- Slippery or uneven surfaces
- Presence of dust, fumes and/or gases
- Handling and transporting equipment or materials (manual and mechanised handling)
- Chemical use and storage (including contaminants and irritants)
- Fire and flame
- Working at height
- Confined spaces
- Hazardous malfunctions of equipment
- Improper use and storage of tools and equipment
- Radiation
- Lack of guarding on machinery

	<ul style="list-style-type: none"> <li>▪ Lack/damage emergency stop systems</li> <li>▪ Scaffold collapse</li> <li>▪ Failure and wear of scaffold components</li> <li>▪ Non-qualified operatives</li> <li>▪ Falling objects</li> <li>▪ Electrocution</li> <li>▪ Noise</li> <li>▪ Heat stress</li> <li>▪ Eye injuries</li> <li>▪ Oil, gas and petrochemical specific</li> </ul> <p><b>5.5.8 Chemical hazards:</b></p> <ul style="list-style-type: none"> <li>▪ Painting and cleaning</li> <li>▪ Drilling operations</li> <li>▪ Well completion and maintenance</li> <li>▪ Hazard freeing</li> <li>▪ Asbestos lagging</li> <li>▪ Naturally occurring radioactive materials (NORM)</li> </ul>
<p>5.6 UNDERSTAND THE MANAGEMENT OF ASSET SAFETY IN OIL AND GAS / PETROCHEMICAL OPERATIONS</p>	<ol style="list-style-type: none"> <li>1. Define asset integrity and process safety</li> <li>2. List the types of <b>asset integrity</b> in oil and gas/petrochemical operations</li> <li>3. Define <b>safety critical elements</b> of equipment and systems</li> <li>4. Define <b>models and system approaches</b> for risk management and control for safety critical elements</li> <li>5. Describe safe procedures for the isolation of live/charged equipment and overrides</li> <li>6. Define the responsibilities of employers and employees in maintaining asset integrity</li> </ol> <p><b><u>Range</u></b></p> <p><b>5.6.2 Asset integrity:</b></p> <ul style="list-style-type: none"> <li>▪ Structural integrity</li> <li>▪ Well integrity</li> <li>▪ Fire and explosion prevention</li> <li>▪ Refuge and evacuation</li> </ul> <p><b>5.6.3 Safety critical elements:</b></p> <ul style="list-style-type: none"> <li>▪ Pressure relief valves</li> <li>▪ Emergency shutdown systems</li> <li>▪ Fire and gas detection systems</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Fire-fighting equipment</li> </ul> <p><b>5.6.4 Models and system approaches:</b></p> <ul style="list-style-type: none"> <li>▪ Bowtie diagrams</li> <li>▪ Swiss cheese model</li> <li>▪ Hazard Effect Management Plan (HEMP)</li> </ul>
<p>5.7 UNDERSTAND THE HAZARDS ASSOCIATED WITH MECHANICAL LIFTING OPERATIONS</p>	<ol style="list-style-type: none"> <li>1. Define mechanical lifting</li> <li>2. Identify health and safety considerations prior to conducting lifting activities</li> <li>3. Describe <b>types</b> of mechanical lifting equipment</li> <li>4. Describe <b>hazards</b> associated with mechanical lifting</li> <li>5. Define key <b>personnel roles</b> involved with lifting operations</li> <li>6. Define the term Safe Working Load (SWL)</li> </ol> <p><b><u>Range</u></b></p> <p><b>5.7.3 Types:</b></p> <ul style="list-style-type: none"> <li>▪ Forklifts</li> <li>▪ Lifting trolleys</li> <li>▪ Cranes (fixed and mobile)</li> </ul> <p><b>5.7.4 Hazards:</b></p> <ul style="list-style-type: none"> <li>▪ Load stability</li> <li>▪ Load security</li> <li>▪ Load handling</li> </ul> <p><b>5.7.5 Personnel roles:</b></p> <ul style="list-style-type: none"> <li>▪ Competent lifting person</li> <li>▪ Crane operator</li> <li>▪ Banksman</li> <li>▪ Rigger/slinger</li> </ul>
<p>5.8 UNDERSTAND HOW TO COMPLETE HEALTH AND SAFETY REPORTING IN THE WORKPLACE</p>	<ol style="list-style-type: none"> <li>1. Describe Health and Safety related <b>monitoring and reporting</b></li> </ol> <p><b><u>Range</u></b></p> <p><b>5.8.1 Monitoring and reporting:</b></p> <ul style="list-style-type: none"> <li>▪ Formal/ informal</li> <li>▪ Compliant/non-compliant</li> <li>▪ Verbal</li> <li>▪ Written <ul style="list-style-type: none"> <li>○ Safety inspection report</li> <li>○ Safety checklist</li> <li>○ Incident/ Accidental reports</li> </ul> </li> </ul>



<p>5.9 UNDERSTAND HOW TO COMPLETE QUALITY DEFECT REPORTING IN THE WORKPLACE</p>	<p>1. Describe Quality Defect on materials related <b><i>monitoring and reporting</i></b></p> <p><b><u>Range</u></b></p> <p><b>5.9.1 Quality Defect</b></p> <p><b>5.9.1 Monitoring and reporting:</b></p> <ul style="list-style-type: none"> <li>▪ Compliant/non-compliant</li> <li>▪ Written <ul style="list-style-type: none"> <li>○ Specification</li> <li>○ inspection report</li> <li>○ Checklist</li> </ul> </li> </ul>
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Duty	6. Understand Engineering Science (Understand Engineering Basics)
Competence	Performance Criteria
<p>6.1 UNDERSTAND THE FUNDAMENTAL STATES OF MATTER AND MEASURES RELATING TO THEM</p>	<p>1. Define the <b><i>three states of matter</i></b></p> <p>2. Define typical <b><i>properties / measures</i></b> relating to matter</p> <p><b><u>Range</u></b></p> <p><b>6.1.1 Three states of matter:</b></p> <ul style="list-style-type: none"> <li>▪ Gas</li> <li>▪ Liquid</li> <li>▪ Solid</li> </ul> <p><b>6.1.2 Properties/measures:</b></p> <ul style="list-style-type: none"> <li>▪ Mass</li> <li>▪ Weight</li> <li>▪ Volume</li> <li>▪ Density</li> <li>▪ Relative density</li> <li>▪ Pressure</li> </ul>
<p>6.2 BE ABLE TO UNDERTAKE ENGINEERING MEASUREMENT AND WORK WITH DERIVED UNITS</p>	<p>1. Describe appropriate <b><i>measuring systems</i></b> used for work tasks</p> <p>2. Select appropriate <b><i>measurement instruments / tools</i></b> used for work tasks</p> <p>3. Perform accurate <b><i>measurement</i></b> and readings of engineering objects / materials and processes</p> <p>4. Calculate <b><i>derived units</i></b> of measurement</p> <p><b><u>Range</u></b></p>

	<p><b>6.2.1 Measuring systems:</b></p> <ul style="list-style-type: none"> <li>▪ Metric (length and mass)</li> <li>▪ Imperial (length and mass)</li> <li>▪ Time (Hours, minutes, seconds, milliseconds)</li> </ul> <p><b>6.2.2 Measurement instruments/tools:</b></p> <ul style="list-style-type: none"> <li>▪ Measuring tape</li> <li>▪ Steel ruler</li> <li>▪ Outside micrometre (0 – 100 mm)</li> <li>▪ Inside micrometre (0 – 100 mm)</li> <li>▪ Vernier calliper (0.05 – 300 mm and/or 1/128” to 12”)</li> <li>▪ Beam balance</li> <li>▪ Stopwatch</li> </ul> <p><b>6.2.3 Measurement:</b></p> <ul style="list-style-type: none"> <li>▪ Length</li> <li>▪ Width/thickness</li> <li>▪ Mass</li> <li>▪ Time</li> </ul> <p><b>6.2.4 Derived units:</b></p> <ul style="list-style-type: none"> <li>▪ Volume (cubic metres)</li> <li>▪ Area (square metres)</li> <li>▪ Speed (metres/second)</li> </ul>
<p>6.3 UNDERSTAND THE PRINCIPLES OF FUNDAMENTAL MECHANICS TO SOLVE ENGINEERING TASKS / PROBLEMS</p>	<ol style="list-style-type: none"> <li>1. Define the <b>main terms</b> in the relationship between motion and force</li> <li>2. Describe the principles of linear motion</li> <li>3. Explain the relationship between force, mass and acceleration</li> <li>4. Solve problems on distance-time and velocity-time graphs.</li> <li>5. Define the terms work, energy, efficiency and power and the relationship between them.</li> <li>6. Define <b>types of energy</b></li> <li>7. Describe the transformation of energy and conservation of energy</li> <li>8. Solve problems related to work, energy and power</li> </ol> <p><b><u>Range</u></b></p> <p><b>6.3.1 Main terms:</b></p> <ul style="list-style-type: none"> <li>▪ Distance and displacement</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Speed</li> <li>▪ Velocity</li> <li>▪ Acceleration</li> <li>▪ Force</li> </ul> <p><b>6.3.6 Types of energy:</b></p> <ul style="list-style-type: none"> <li>▪ Chemical</li> <li>▪ Mechanical</li> <li>▪ Electrical</li> <li>▪ Light</li> <li>▪ Nuclear</li> <li>▪ Magnetic</li> </ul>
<p>6.4 UNDERSTAND THE FUNCTION AND OPERATION OF SIMPLE MACHINES</p>	<ol style="list-style-type: none"> <li>1. Describe the function and application of <b>simple machines</b></li> <li>2. Describe the principle and application of friction to machines</li> </ol> <p><b><u>Range</u></b></p> <p><b>6.4.1 Simple machines:</b></p> <ul style="list-style-type: none"> <li>▪ Lever</li> <li>▪ Pulley</li> <li>▪ Gear</li> <li>▪ Wheel and axle</li> <li>▪ Inclined plane, screw and wedge</li> </ul>
<p>6.5 UNDERSTAND THE PRINCIPLES AND EFFECTS OF HEAT ENERGY AND TEMPERATURE</p>	<ol style="list-style-type: none"> <li>1. Explain the concept of temperature and heat energy</li> <li>2. Describe the principle of operation of liquid expansion in a glass thermometer</li> <li>3. Undertake accurate temperature measurements using a thermometer</li> <li>4. Describe the concept of <b>linear expansion</b></li> <li>5. Describe types of <b>heat transfer</b></li> <li>6. Interpret temperature-time graphs for substances to define <b>values</b></li> </ol> <p><b><u>Range</u></b></p> <p><b>6.5.4 Linear expansion:</b></p> <ul style="list-style-type: none"> <li>▪ Temperature coefficients</li> <li>▪ Effects</li> </ul> <p><b>6.5.5 Heat transfer:</b></p> <ul style="list-style-type: none"> <li>▪ Conduction</li> <li>▪ Convection</li> <li>▪ Radiation</li> </ul>

	<p><b>6.5.6 Values:</b></p> <ul style="list-style-type: none"> <li>▪ Melting point</li> <li>▪ Boiling point</li> <li>▪ Sensible heat</li> <li>▪ Latent heat</li> </ul>
<p>6.6 UNDERSTAND THE PRINCIPLES OF MAGNETISM AND ELECTRICITY</p>	<ol style="list-style-type: none"> <li>1. Describe the principles of <b>magnetism</b></li> <li>2. Define <b>electrical terms</b></li> <li>3. Describe <b>electrical circuits</b> and their <b>characteristics</b></li> <li>4. Sketch electric circuits using standard <b>electrical symbols</b></li> <li>5. Undertake accurate <b>measurements</b> of current and voltage in D.C. circuits</li> </ol> <p><b>Range</b></p> <p><b>6.6.1 Magnetism:</b></p> <ul style="list-style-type: none"> <li>▪ Natural magnets</li> <li>▪ Poles</li> <li>▪ Attraction and repulsion</li> <li>▪ Lines of force</li> <li>▪ Magnetic and non-magnetic substances</li> </ul> <p><b>6.6.2 Electrical terms:</b></p> <ul style="list-style-type: none"> <li>▪ Potential difference (voltage)</li> <li>▪ Electron flow (current)</li> <li>▪ Resistance</li> </ul> <p><b>6.6.3 Electrical circuits:</b></p> <ul style="list-style-type: none"> <li>▪ Closed circuit</li> <li>▪ Open circuit</li> <li>▪ Short-circuit</li> <li>▪ Series connection</li> <li>▪ Parallel connection</li> </ul> <p><b>6.6.3 Characteristics:</b></p> <ul style="list-style-type: none"> <li>▪ Functionality</li> <li>▪ High current</li> <li>▪ No current</li> <li>▪ Design current</li> <li>▪ Common voltage</li> <li>▪ Common current</li> </ul> <p><b>6.6.4 Electrical symbols:</b></p> <ul style="list-style-type: none"> <li>▪ Battery</li> <li>▪ Lamp</li> <li>▪ Switch</li> <li>▪ Resistor</li> <li>▪ Fuse</li> </ul>

	<p><b>6.6.5 Measurements:</b></p> <ul style="list-style-type: none"> <li>▪ Using an ammeter</li> <li>▪ Using a voltmeter</li> </ul>
6.7 UNDERSTAND THE DIFFERENCE BETWEEN METALS AND NON-METALS	<ol style="list-style-type: none"> <li>1. Describe the properties of <b>metals</b> and their uses</li> <li>2. Describe the properties of <b>non-metals</b> and their uses</li> </ol> <p><b>Range</b></p> <p><b>6.7.1 Metals:</b></p> <ul style="list-style-type: none"> <li>▪ Corrosion</li> <li>▪ Corrosion protection</li> <li>▪ Density</li> <li>▪ Strength</li> <li>▪ Conduction of heat</li> <li>▪ Conduction of electricity</li> <li>▪ Magnetic</li> </ul> <p><b>6.7.2 Non-metals:</b></p> <ul style="list-style-type: none"> <li>▪ Deterioration/Degradation</li> <li>▪ Density</li> <li>▪ Strength</li> <li>▪ Conduction of heat</li> <li>▪ Conduction of electricity</li> <li>▪ Non-Magnetic</li> </ul>

Duty	7. Understand Oil and Gas Industry Operation (Brunei)
Competence	Performance Criteria
7.1 UNDERSTAND THE BACKGROUND TO OIL AND GAS PRODUCTION IN BRUNEI	<ol style="list-style-type: none"> <li>1. Outline the history of oil and gas discovery in Brunei including oil and gas milestones</li> <li>2. Identify the roles (including joint ventures) of <b>key stakeholders</b> in the oil and gas industry in Brunei</li> <li>3. Identify the key challenges faced by the Brunei energy sector</li> </ol> <p><b>Range</b></p> <p><b>7.1.2 Key stakeholders:</b></p> <ul style="list-style-type: none"> <li>▪ Brunei government</li> <li>▪ Oil companies</li> </ul>
7.2 UNDERSTAND THE FORMATION OF OIL AND GAS AND OIL AND GAS EXPLORATION	<ol style="list-style-type: none"> <li>1. Describe with the aid of diagrams the <b>formation</b> of oil and gas</li> <li>2. Describe the composition of crude oil and gas</li> </ol> <p><b>Range</b></p> <p><b>7.2.1 Formation:</b></p> <ul style="list-style-type: none"> <li>▪ Organic decay</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Hydrocarbons</li> <li>▪ Sedimentary basins</li> <li>▪ Crude oil depth</li> <li>▪ Gas depth</li> <li>▪ Types of oil and gas</li> </ul>
<p>7.3 UNDERSTAND THE LIFECYCLES OF OIL AND GAS FIELDS</p>	<ol style="list-style-type: none"> <li>1. Explain the difference between ‘upstream’ and ‘downstream’ in oil and gas extraction and processing</li> <li>2. Explain with the aid of diagrams the <b>phases</b> of oil and gas field lifecycles</li> <li>3. Identify the roles of <b>key personnel</b> involved with oil and gas field operations</li> <li>4. Describe with the aid of diagrams the geology elements of a <b>petroleum system</b></li> <li>5. Describe with the aid of diagrams oil and gas <b>drilling processes</b></li> <li>6. Describe the elements of a <b>‘field development plan’</b></li> <li>7. Explain the considerations for operation and maintenance of an oil and gas production process</li> </ol> <p><b><u>Range</u></b></p> <p><b>7.3.2 Phases:</b></p> <ul style="list-style-type: none"> <li>▪ Exploration</li> <li>▪ Appraisal (including logging and coring)</li> <li>▪ Development</li> <li>▪ Production</li> <li>▪ Abandonment</li> </ul> <p><b>7.3.3 Key personnel:</b></p> <ul style="list-style-type: none"> <li>▪ Geophysicist</li> <li>▪ Geologist</li> <li>▪ Petro-physicist</li> <li>▪ Reservoir engineer</li> <li>▪ Production technologist</li> <li>▪ Well engineer</li> <li>▪ Operators</li> </ul> <p><b>7.3.4 Petroleum system:</b></p> <ul style="list-style-type: none"> <li>▪ Source rock</li> <li>▪ Reservoir rock (Types and their development)</li> <li>▪ Seal rock</li> <li>▪ Trap</li> <li>▪ Migration</li> <li>▪ Overburden</li> </ul> <p><b>7.3.5 Drilling processes:</b></p> <ul style="list-style-type: none"> <li>▪ Offshore</li> </ul>

	<ul style="list-style-type: none"><li>▪ Onshore</li></ul> <p><b>7.3.6 Field development plan:</b></p> <ul style="list-style-type: none"><li>▪ Costing</li><li>▪ Platform design</li><li>▪ Plant design</li></ul>
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## 2.2 SPECIALISED

Duty	1. Apply Health, Safety and Environment including Quality Practice for Blasting and Painting in The Oil and Gas Industry	
Competence		Performance Criteria
<p>1.1 BE ABLE TO APPLY RELEVANT HEALTH AND SAFETY LEGISLATION AND PROCEDURES THAT RELATE TO THE WORKPLACE</p>	<ol style="list-style-type: none"> <li>1. Comply with relevant workplace Health and Safety including quality procedures and obligations as defined by:               <ol style="list-style-type: none"> <li>a. <i>current legislation</i></li> <li>b. <i>organisational procedures</i></li> </ol> </li> <li>2. Work within Health and Safety, quality <i>requirements</i></li> <li>3. Apply procedures to ensure the safe use, maintenance, preservation and storage of materials (including chemicals), tools, plant / machinery and equipment as defined by relevant <i>documentation</i> including material preservation requirements</li> <li>4. Comply with relevant <i>signage</i></li> <li>5. Apply procedures to ensure safety in the workplace by the correct use of PPE, guards, interlocks, barriers and notices</li> <li>6. Use access equipment correctly</li> <li>7. Demonstrate the use of <i>PPE</i> and <i>full body harness</i></li> <li>8. Demonstrate <i>safe manual and ergonomic handling techniques</i></li> </ol> <p><b><u>Range</u></b></p> <p><b>1.1.1 Current legislation:</b></p> <ul style="list-style-type: none"> <li>▪ Workplace Safety and Health Order 2009</li> <li>▪ Workplace Safety and Health Regulations 2014</li> <li>▪ Fire Safety Order 2016</li> <li>▪ Employment Order 2009</li> <li>▪ National Standard Operating Procedure (NaSOP) for Disaster Management</li> </ul> <p><b>1.1.1 Organisational procedures:</b></p> <ul style="list-style-type: none"> <li>▪ Safety rules and arrangements</li> <li>▪ Work management procedures</li> <li>▪ Waste management procedures</li> </ul> <p><b>1.1.2 Requirements:</b></p> <ul style="list-style-type: none"> <li>▪ Risk assessments</li> <li>▪ Method Statements</li> <li>▪ Safe Systems of Work</li> <li>▪ Permits to Work</li> </ul>	



	<p><b>1.1.3 Documentation</b></p> <ul style="list-style-type: none"> <li>▪ Organisational policy</li> <li>▪ Supplier information</li> <li>▪ Manufacturer’s instructions/data sheets</li> </ul> <p><b>1.1.4 Signage</b></p> <ul style="list-style-type: none"> <li>▪ Information</li> <li>▪ Warning</li> <li>▪ Prohibition</li> <li>▪ Mandatory instruction</li> </ul> <p><b>1.1.7 PPE (use)</b></p> <ul style="list-style-type: none"> <li>▪ Footwear</li> <li>▪ Head protection</li> <li>▪ Hand gloves</li> <li>▪ Protective clothing</li> <li>▪ Hearing protection</li> <li>▪ Eye protection</li> <li>▪ Full body harness (fall arrest/fall restraint - including lanyards and inertia reels)</li> </ul> <p><b>1.1.7 Full body harness:</b></p> <ul style="list-style-type: none"> <li>▪ Visual inspection of full body harness before work starts <ul style="list-style-type: none"> <li>○ Report faults to supervisor</li> <li>○ Replace faulty with new before starting work</li> </ul> </li> <li>▪ Put on and wear correctly</li> <li>▪ Use correctly to include: <ul style="list-style-type: none"> <li>○ Implementation of hook point</li> </ul> </li> <li>▪ How to ensure 100% tie – off</li> </ul> <p><b>1.1.7 Safe manual and ergonomic handling techniques:</b></p> <ul style="list-style-type: none"> <li>▪ Moving</li> <li>▪ Lifting/carrying</li> <li>▪ Using hand tools</li> <li>▪ Loading and unloading</li> <li>▪ Bending and twisting</li> <li>▪ Stacking</li> </ul>
<p>1.2 BE ABLE TO ASSESS THE WORKPLACE FOR HAZARDS AND IDENTIFY</p>	<p>1. Identify unsafe situations / conditions and take remedial actions</p>

<p>REMEDIAL ACTIONS IN ACCORDANCE WITH HEALTH AND SAFETY LEGISLATION AND POLICY</p>	<p>2. Assess the workplace and revise work practices to account for <b>hazards</b> that could cause harm</p> <p>3. Undertake health and safety monitoring and <b>reporting</b></p> <p><b>Range</b></p> <p><b>1.2.1 Hazards</b></p> <ul style="list-style-type: none"> <li>▪ Material hazards (including chemical)</li> <li>▪ Tool hazards</li> <li>▪ Equipment hazards</li> <li>▪ Machinery/plant hazards</li> </ul> <p><b>1.2.3 Monitoring and reporting:</b></p> <ul style="list-style-type: none"> <li>▪ Formal/ informal</li> <li>▪ Compliant/non-compliant</li> <li>▪ Verbal</li> <li>▪ Written <ul style="list-style-type: none"> <li>○ Safety inspection report</li> <li>○ Safety checklist</li> <li>○ Incident/ Accidental reports</li> </ul> </li> </ul>
<p>1.3 BE ABLE TO APPLY RELEVANT ENVIRONMENTAL LEGISLATION AND PROCEDURES THAT RELATE TO THE WORKPLACE</p>	<p>1. Comply with relevant workplace Environmental procedures and obligations as defined by current <b>legislation</b> and procedures</p> <p><b>Range</b></p> <p><b>1.3.1 Current legislation:</b></p> <ul style="list-style-type: none"> <li>▪ Environment Order 2009</li> <li>▪ Environment Protection and Management Order 2015</li> </ul>
<p>1.4 BE ABLE TO ASSESS THE MATERIALS FOR DEFECT AND IDENTIFY REMEDIAL ACTIONS</p>	<p>1. Undertake Quality Defect <b>monitoring and reporting</b></p> <p><b>Range</b></p> <p><b>1.4.1 Quality Defect</b></p> <p><b>1.4.1 Monitoring and reporting:</b></p> <ul style="list-style-type: none"> <li>▪ Compliant/non-compliant</li> <li>▪ Written <ul style="list-style-type: none"> <li>○ Specification</li> <li>○ inspection report</li> <li>○ Checklist</li> </ul> </li> </ul>

Duty	2. Understand Blasting and Painting
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Competence	Performance Criteria
<p>2.1 UNDERSTAND THE BLASTER-PAINTER ROLE AND THE SAFETY REQUIREMENTS THAT APPLY TO IT</p>	<ol style="list-style-type: none"> <li>1. Explain the role of the blaster-painter of different levels</li> <li>2. Outline the relevant <b><i>safety and regulatory requirements</i></b> that relate to blasting-painting activities</li> <li>3. Describe relevant <b><i>international legislation</i></b> that relates to blasting-painting operations</li> <li>4. Identify typical <b><i>PPE</i></b> associated with blasting-painting activities and their use</li> </ol> <p><b><u>Range</u></b></p> <p><b>2.1.1 Role:</b></p> <ul style="list-style-type: none"> <li>▪ Surface preparation:</li> <li>▪ Cleaning</li> <li>▪ Degreasing</li> <li>▪ Abrasive blasting</li> <li>▪ Application of surface coatings:</li> <li>▪ Manual application (brush, roller)</li> <li>▪ Spraying</li> </ul> <p><b>2.1.2 Safety and regulatory requirements:</b></p> <ul style="list-style-type: none"> <li>▪ Brunei - Health, Safety &amp; Environment Manual</li> <li>▪ Brunei - Safety at Workplace</li> <li>▪ Brunei - Workplace Safety and Health Order 2009</li> <li>▪ Other local (including employer and manufacturer), national regulations and requirements</li> </ul> <p><b>2.1.3 International legislation:</b></p> <ul style="list-style-type: none"> <li>▪ Health and Safety at Work Act (HASAWA)</li> <li>▪ Control of Substances Hazardous to Health (COSHH)</li> <li>▪ Health Safety and Welfare Regulations</li> <li>▪ Use of Work Equipment Regulation</li> <li>▪ Personal Protective Equipment (PPE) at Work Regulation</li> </ul>

	<p><b>2.1.4 PPE:</b></p> <ul style="list-style-type: none"> <li>▪ Coveralls</li> <li>▪ Safety helmets</li> <li>▪ Safety boots</li> <li>▪ Eye protection</li> <li>▪ Hearing protection</li> <li>▪ Gauntlets</li> <li>▪ Blast suits</li> <li>▪ Air-fed masks</li> <li>▪ Vapour masks</li> <li>▪ Barrier cream/tape</li> <li>▪ Gloves</li> <li>▪ Blast helmets</li> <li>▪ High-visibility vests</li> </ul>
<p>2.2 UNDERSTAND THE KEY BLASTER-PAINTER PROCESSES, EQUIPMENT, TOOLS AND ACCESSORIES</p>	<ol style="list-style-type: none"> <li>1. Describe <b>basic surface preparation</b> methods used in blasting-painting operations</li> <li>2. Describe the set up and operation of the <b>main tools and accessories</b> associated with blasting and painting operations</li> <li>3. Describe the purpose, operation and maintenance requirements of <b>air compressors</b> used in blasting-painting activities</li> <li>4. Describe blasting and painting <b>inspection techniques</b></li> </ol> <p><b><u>Range</u></b></p> <p><b>2.2.1 Basic surface preparation methods:</b></p> <ul style="list-style-type: none"> <li>▪ Manual methods</li> <li>▪ Mechanical methods</li> <li>▪ Abrasive blasting <ul style="list-style-type: none"> <li>○ Dry grit blasting</li> <li>○ Wet slurry blasting</li> </ul> </li> </ul> <p><b>2.2.2 Main tools and accessories:</b></p> <ul style="list-style-type: none"> <li>▪ Air compressor</li> <li>▪ EQ wet Abrasive Blast machine</li> </ul>

- UHP cleaning /Wet Blasting
- Air breathing tank
- Blasting pot
- Needle gun
- Air sander
- Bristle blaster
- Air power wire brush
- Power source
- Anti-static earthing lines
- Hoses
- Lines
- Joints
- Remote control
- Dead man's handle
- Couplers
- Painting accessories:
  - Brushes
  - Rollers
  - Spray guns
- Consumables
  - Water
  - Cleaning materials
  - Abrasives
  - Surface coatings
- Inspection tools

**2.2.3 Air compressor:**

- Power source
- Capability
  - Pressure range
  - Capacity
  - Delivery rate (volume)
- Safety considerations

	<ul style="list-style-type: none"> <li>▪ Pre-start-checks</li> <li>▪ Gauges</li> <li>▪ Maintenance requirements <ul style="list-style-type: none"> <li>○ Daily</li> <li>○ Monthly</li> <li>○ Annual</li> <li>○ Surface coatings</li> </ul> </li> </ul> <p><b>2.2.4 Inspection methods:</b></p> <ul style="list-style-type: none"> <li>▪ Basic quality control standards, techniques and procedures</li> <li>▪ Tolerances</li> <li>▪ Measurements</li> <li>▪ Environmental conditions (such as dew point, relative humidity)</li> <li>▪ Surface profile assessment</li> <li>▪ Replica tape</li> <li>▪ Thickness gauges</li> <li>▪ Dry Film Thickness (DFT)</li> <li>▪ Wet Film Thickness (WFT)</li> </ul>
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Duty	3. Perform Surface Blasting Operations
Competence	Performance Criteria
3.1 DEMONSTRATE AN UNDERSTANDING OF THE THEORY OF BLASTING	<ol style="list-style-type: none"> <li>1. Describe the <b>three main blasting steps</b> involved with surface preparation</li> <li>2. Describe <b>common blasting terms</b> and their application in surface preparation</li> <li>3. Describe the application and suitability of <b>common blasting abrasives</b> for blasting operations</li> <li>4. Describe the range of <b>resources</b> required to prepare surfaces by abrasive blast cleaning</li> <li>5. Explain the principles and use of <b>surface profile assessment techniques</b> to identify damage and irregularities in materials and components</li> <li>6. Identify the main <b>inspection standards</b> used in Blasting</li> <li>7. Demonstrate an awareness of international <b>legislation and regulations</b> relevant to blasting</li> </ol>

**Range**

**3.1.1 Three main Blasting steps:**

- Treatment
- Cleaning
- Verification

**3.1.2 Common Blasting terms:**

- Substrate
- Abrasives
- Solvent washing/degreasing
- Surface contaminants
- Performance masking
- Hand power tool cleaning
- Ambient conditions
- Material safety data sheet
- Surface contaminants

**3.1.3 Common blasting abrasives:**

- Garnet
- Plastic
- Steel shot
- Aluminium slag

**3.1.4 Resources:**

- Equipment
- Tools
- Consumables
- People
- Time
- Safety specific

**3.1.5 Surface profile assessment techniques:**

- Replica tape
- Thickness gauges

	<p><b>3.1.6 Inspection standards:</b></p> <ul style="list-style-type: none"> <li>▪ Swedish Standard (SA)</li> <li>▪ SSPC</li> <li>▪ National Association for Corrosion Engineers (NACE)</li> <li>▪ ISO</li> </ul> <p><b>3.1.7 Legislation and regulations:</b></p> <ul style="list-style-type: none"> <li>▪ HASAWA</li> <li>▪ COSHH (such as Approved Codes of Practice (ACOP)</li> <li>▪ Management of Health and Safety at Work Regulations</li> <li>▪ Provision of and Use of Work Equipment Regulations</li> <li>▪ Noise at Work Regulations</li> <li>▪ Control of Vibration at Work Regulations</li> <li>▪ Confined Spaces Regulations</li> <li>▪ Special Waste Regulations</li> <li>▪ Pollution Prevention and Control Regulations</li> <li>▪ Water Resources Act</li> </ul>
<p>3.2 BE ABLE TO CARRY OUT BLASTING OPERATIONS IN ACCORDANCE WITH DEFINED TASK INFORMATION</p>	<ol style="list-style-type: none"> <li>1. Interpret given <b>information</b> relating to blasting operations and confirm their relevance / accuracy</li> <li>2. Calculate the required <b>quantity of resources</b> for the method of work</li> <li>3. Comply with organisational procedures to <b>minimize the risk of damage</b> to the work and surrounding area</li> <li>4. Carry out <b>blasting operations</b> efficiently and to the required specification</li> <li>5. Carry out <b>post-blasting operations</b> efficiently and to the required specification</li> <li>6. Work safely and good quality at all times</li> </ol> <p><b><u>Range</u></b></p> <p><b>3.2.1 Information:</b></p> <ul style="list-style-type: none"> <li>▪ Job specifications</li> <li>▪ Risk assessments</li> <li>▪ Method statements</li> </ul>



- Standard operating procedures (SoP)
- Manufacturers' information
- Blast cleaner's instructions
- Safety specific (including PPE)
- Housekeeping

**3.2.2 Quantity of resources:**

- Equipment
- Tools
- Consumables
- People
- Time
- Safety specific

**3.2.3 Minimise the risk of damage:**

- Identify hazards:
- Sparks
- Dust/debris
- Hearing damage
- Hand/arm vibration
- Working at heights
- Confined spaces
- Protect work from damage
- Dispose of waste in accordance with organisational procedures

**3.2.4 Blasting operations:**

- Use appropriate PPE
- Inspect area to be blasted
- Carry out appropriate masking
- Carry out degreasing/solvent wash
- Carry out hand and power tool cleaning
- Set up Blasting equipment
- Prepare abrasives

	<ul style="list-style-type: none"> <li>▪ Load the system</li> <li>▪ Blast substrate in accordance with specification</li> <li>▪ Monitor and maintain supply</li> <li>▪ Inspect substrate using inspection tool</li> <li>▪ Rectify imperfection where appropriate using agreed methods</li> </ul> <p><b>3.2.5 Post-blasting operations:</b></p> <ul style="list-style-type: none"> <li>▪ Disconnect blasting equipment</li> <li>▪ Inspect and clean blasting equipment</li> <li>▪ Complete appropriate hand-over procedures and documentation</li> <li>▪ Reinstate the work area in accordance with company and environmental policies</li> </ul>
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Duty	4. Perform Surface Painting Operations
Competence	Performance Criteria
4.1 DEMONSTRATE AN UNDERSTANDING OF THE THEORY OF PAINTING OPERATIONS	<ol style="list-style-type: none"> <li>1. Explain the <i>purpose of surface coating</i> materials</li> <li>2. Describe the <i>different layers</i> (coats) and their purpose</li> <li>3. Interpret the content of <i>Technical Data Sheets</i> (TDS)</li> <li>4. Describe different <i>paint spraying techniques</i> and their applications</li> <li>5. Identify the appropriate <i>surface coating techniques</i> to be used</li> <li>6. Describe the principles and use of <i>common inspection techniques</i> for painting operations</li> <li>7. Demonstrate an awareness of international <i>legislation and regulations</i> relevant to painting operations</li> </ol> <p><b><u>Range</u></b></p> <p><b>4.1.1 Purpose of surface coating:</b></p> <ul style="list-style-type: none"> <li>▪ Protection</li> <li>▪ Appearance</li> </ul> <p><b>4.1.2 Different layers:</b></p> <ul style="list-style-type: none"> <li>▪ Primer</li> <li>▪ Single coat</li> <li>▪ Multi coat</li> </ul>

**4.1.3 Technical Data Sheet (TDS):**

- Chemical and physical properties
- Chemical Resistance
- Water Resistance
- Ease of Application
- Adhesion to Substrate
- Cohesive Strength
- Flexibility and Elongation
- Impact Resistance
- Abrasion Resistance
- Temperature Resistance
- Dielectric Strength
- Safety issues
- Application techniques

**4.1.4 Paint spraying techniques:**

- Airless
- Air powered

**4.1.5 Surface coating techniques:**

- Manual (brush, roller)
- Spray (airless, air powered)

**4.1.6 Inspection techniques:**

- Dry Film Thickness testing (DFT)
- Wet Film Thickness testing (WFT)
- Pinhole Holiday Test
- Troubleshooting

**4.1.7 Legislation and regulations:**

- Statutory requirements
- HASAWA

	<ul style="list-style-type: none"> <li>▪ COSHH (such as Approved Codes of Practice (ACOP))</li> <li>▪ Management of Health and Safety at Work Regulations</li> <li>▪ Provision of and Use of Work Equipment Regulations</li> <li>▪ Noise at Work Regulations</li> <li>▪ Control of Vibration at Work Regulations</li> <li>▪ Confined Spaces Regulations</li> <li>▪ Special Waste Regulations</li> <li>▪ Pollution Prevention and Control Regulations</li> <li>▪ Water Resources Act</li> </ul>
<p>4.2 BE ABLE TO CARRY OUT PAINTING OPERATIONS IN ACCORDANCE WITH DEFINED TASK INFORMATION</p>	<ol style="list-style-type: none"> <li>1. Interpret given <b>information</b> relating to painting operations and resources and confirm their relevance / accuracy</li> <li>2. Select the required <b>quantity of resources</b> for the method of work</li> <li>3. Comply with organisational procedures to <b>minimise the risk of damage</b> to the work and surrounding area</li> <li>4. Carry out <b>painting operations</b> efficiently to the required specification</li> <li>5. Carry out <b>post-painting operations</b> efficiently and to the required specifications</li> <li>6. Work safely at all times</li> </ol> <p><b><u>Range</u></b></p> <p><b>4.2.1 Information:</b></p> <ul style="list-style-type: none"> <li>▪ Job specifications</li> <li>▪ Current legislation</li> <li>▪ Risk assessments</li> <li>▪ Method statements</li> <li>▪ Standard operating procedures (SoP)</li> <li>▪ Manufacturers' information</li> <li>▪ Blast cleaner's instructions</li> <li>▪ Safety specific (including PPE)</li> <li>▪ Housekeeping</li> </ul> <p><b>4.2.2 Quantity of resources:</b></p>

- Equipment
- Tools
- Consumables
- People
- Time
- Safety specific

**4.2.3 Minimise the risk of damage:**

- Identify hazards:
  - Dust/debris
  - Hearing damage
  - Hand/arm vibration
  - Working at heights
  - Confined spaces
- Protect work from damage
- Dispose of waste in accordance with organisational procedures

**4.2.4 *Painting operations:***

- Use appropriate PPE
- Inspect paint and equipment before use
- Carryout appropriate masking
- Blow, clean and sand down the painting area
- Mix industrial paint to defined specification
- Spray (or manually apply) surface coating to relevant area
- Assess coating finish/coverage using relevant methods
- Apply touch-ups and fine stencilling where appropriate

**4.2.5 *Post-painting operations:***

- Disconnect painting equipment
- Inspect and clean painting equipment

	<ul style="list-style-type: none"><li>▪ Complete appropriate hand-over procedures and documentation</li><li>▪ Reinstate the work area in accordance with company and environmental policies.</li></ul>
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## **PART 3                    TRAINING STANDARDS**

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### **1. CURRICULUM DESIGN**

The design of the curriculum needs to be based from the competency standards.

### **2. TRAINING DELIVERY**

#### **1. CLASS SIZE (RATIO: TRAINER VS TRAINEES)**

- Ratio: Trainer vs. Trainees, Classroom and Practical
- Classroom (Theory) – 1 Trainer : 16 Trainees
- Practical – 1 Trainer : 8 Trainees

#### **2. COURSE CONTENT**

- 70% Practical, 30% Theory

#### **3. EVALUATION**

- Competence based assessment on Practical of Synoptics Assessment only (Competent & Not yet competent)
- Evaluation of competence is based on %. 80% is the minimum passing as competent

#### **4. ASSESSMENT**

- Assessment will be conducted by an assessment team comprising 1 assessor from RTO (where applicable), 1 independent external assessor from the industry and 1 verifier from the awarding body.
- The assessment team will be led by the independent external assessor.

### **3. TRAINING HOURS**

The minimum nominal training hours is 550.

### **4. TRAINERS QUALIFICATION**

Training provider staff who tutor Blasting-Painting Level 2 qualification must:

- Have a valid certificate of competence with respect to the training they are conducting with at least 3 years' extensive and relevant work experience in that field or activity as qualified trainer;
- Valid recognised training AMPP (NACE) or TWI level 2 minimum with 1 renew or technical teaching qualification (i.e., Certificate of teaching, Train the Trainer, etc.);
- Have a valid recognised training or teaching qualification (i.e., Certificate of teaching, Train the Trainer, etc.);
- Have a valid HSE-related training certificate or equivalent experience where relevant;
- Be included within the training Organisation's training development plan or training matrix for trainers to maintain trainer competency;

- Awareness concerning the provisions of the of the Workplace Safety and Health Order, 2009 and its regulations;
- No Conflict of Interest (COI);
- Not allowed to internally certify their own Trainers.

## 5. ASSESSORS QUALIFICATION

Specifically, assessors must:

- Minimum of 3 years as an assessor or equivalent
- Hold an industry’s recognised national assessor’s award/ qualification and be a discipline expert in the areas being assessed;
- Should have minimum qualifications and hands on experience of a training instructor/trainer;
- Training course instructor/trainer should NOT be the assessor/ verifier for the same training course being undertaken;
- NOTES:
  - Recognition of Prior Learning/Achievement will be considered;
  - Verifier is a process verifier within the training organization or a third-party verifier.

## 6. TOOLS, EQUIPMENT AND CONSUMABLES (MATERIALS)

All training providers are also required to provide at their training premises (including classrooms and practice grounds) facilities and equipment which must be maintained to a required standard and in full compliance with applicable laws of Brunei Darussalam and where appropriate, equipment should be routinely tested and inspected in accordance with applicable legislation and standards. This is to ensure that all training premises, facilities and equipment are safe and fit for purpose with suitable levels of hygiene in place\*

\*Training Standards 1-8: Aligned Requirements amongst SHENA, IBTE and MOE

TOOLS		EQUIPMENT		MATERIAL	
Description	Min. Qty	Description	Min. Qty	Description	Min. Qty
Screw driver sizes various	1 lot	Airless Spray Pump 60:1	1 unit	Grit blastrite (2 tonnes)	1 lot
Pipe wrench	1 pc	Compressor 750 cfm	1 unit	Epoxy primer 80L Epoxy mid coat 100L Polyurethane TC 80 L Cleaner 100 L Thinner 50 L	1 lot
3/16” connector		Blast Pot 600lb complete with dead man valve and ball valve	3 units	Misc. Items (white board, papers, stationaries)	1



Plier	1 unit	Air Drier 600cfm	1 unit	Spray tip 215 Spray tip 421 Spray tip 415 Reversible Type	1 lot
Adjustable spanner	1 unit	Air Manifold	2 units	Swivel connector	3 pcs
Crow feet clamps	6 pcs	Hoses 5k psi spray line, 3 ply Blast line, 3/4 Airline, 1/4 Air fed line complete with fittings, Deadman trigger, 3/8 twin line for Deadman	3 units	5000 psi 2-way spray pump connector for 2 spray hose	1 pc
Grease copper slip	2 cans	Trial Piece ASTM STD (Fabrication with various pattern)	4 units		
Earthing wire	1 roll	Inspection Set comprises: 1. WFT gauge 16 pcs 2. DFT gauge 1 unit 3. Cross hatch cut 1 unit 4. Surface profile gauge 1 unit 5. RH meter 1 unit 6. Surface thermometer 1 unit 7. Nozzle pressure gauge 1 unit	1 set		
Boss clamp	20 pcs	Paint Agitator	1 unit		
Hose Whip check	13 pcs				
R pin	1 box				
Blasting Nozzle	3 pcs				

## 7. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Where required, the personal protective equipment (PPE) requirements shall be ascertained and to ensure that each candidate is provided with the same for the duration of the training course. The PPE shall be applicable for the type of course, of suitable standard and be well maintained at all times.

<b>PPE</b>		
<b>Description</b>	<b>Qty</b>	<b>Standards and Specification</b>
Leather Blasting Gloves	4	EN ISO-14877 EN -388
Air fed Blasting helmet	3	EN 271:1995 AS/NZS 1716:2003
High Cut pull on boots	16	BS EN ISO 20345 AS/NZS 2210 ASTM F2413
Fire proof Coverall one standardised colour	32	NFPA 2112
Goggles	16	BS EN 166 AS/NZS 1337
Ear plugs (1 Box - 50 pairs)	1	EN 352 AS/NZS 1270 (Class 5)
Impact Gloves	16	BS EN 388 AS/NZS 2161
Blasting Suit Leather Suit	3	APH BSI
Blasting Helmet Shield	(Only shield) 100	Compliance to Air fed helmet Spec
Dust Mask	20 boxes (20pcs per box)	N-95
Disposal Coverall for spray painting	32 pcs	EN 13982-1 Type 5
Gloves for spray painting GRIP	4 dozen	BS EN 388 AS /NZS 2161
Half Spray Mask Respirator	16 complete with filters	BS EN 140 EN 14387 (filters)
Safety Helmets	16	EN397

## 8. TRAINING FACILITIES

- Classroom
  - Size : minimum 27m sq.
  
- Workshop and training grounds
  - Size : where workshop and training grounds minimum size or area is specified;
  - Proper signages.
  
- Basic amenities
  - Basic necessities (not limited to. surau (male and female) toilet (male and female), resting areas, male and female changing room, first aid, etc.) must be provided;

<b>NO. OF TRAINEES:</b>	16	
<b>REQUIREMENT SIZE IN:</b>	<b>MIN. SIZE IN METERS (M)</b>	<b>MIN. REQUIREMENT SIZE IN SQ. METERS</b>
Building (Permanent)	As approved by ABCi	As approved by ABCi
Trainee working space	20 x 15	225
Store room	5 x 5	25
Class Room	-	27
Equipment Lay down Area	12 x 12	100
Storage Area	5 x 5	25
<b>GRAND TOTAL IN SQ. METERS:</b>	<b>402</b>	

### Storage of Painting Materials

- All painting materials including paint, solvents, thinners, additives and cleaners shall be stored in a non-enclosed area remote from sources of heat and combustion and protected from direct sunlight.
- All paint materials shall have Materials Safety Data Sheets (MSDSs) or Safe Handling of Chemicals (SHOC) information shall be made available for all painting materials.
- Materials shall be stored in a spill container that can retain at least 30% of the total volume of the material.

## **PART 4                      GLOSSARY**

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### **A**

#### **ASSESSOR**

accredited individual authorized to evaluate or assess competencies of a candidate applying for certification.

### **D**

#### **DUTY**

the tasks to be performed by an individual as a regular part of the individual's job.

### **I**

#### **INSTITUTIONAL ASSESSMENT**

an assessment undertaken by the institution for its trainees to determine their achievement of the learning outcomes in the module of instructions in given unit of competency or clusters of competencies.

### **L**

#### **LEARNING OUTCOMES**

the set of knowledge, skills and/or competencies an individual has acquired and/or is able to demonstrate after completion of a learning process, either formal, non-formal or informal.

### **O**

#### **OCCUPATION**

a set of jobs whose main tasks and duties are characterized by a high degree of similarity.

### **P**

## **PERFORMANCE CRITERIA**

evaluative statements that specify what is to be assessed and the required level of performance or competency.

## **R**

## **RECOGNITION OF PRIOR LEARNING (RPL)**

the process in which the individual's previous learning outside the formal system which contributes to the achievement of current competency/ies can be assessed against the relevant unit of competency and given recognition through the issuance of appropriate certificate.

## **T**

## **TASK**

a discrete, assignable unit of work that has an identifiable beginning and end, containing two or more steps which when performed, leads to a product, service or decision. This is normally performed within a specified period of time.

## **TRAINING STANDARDS**

the information and important requirements to consider when designing training programs corresponding to a national qualification; this includes information on curriculum design, training delivery, trainee entry requirements, training tools and equipment, and trainer qualifications.

## **PART 5                      ACKNOWLEDGEMENTS**

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