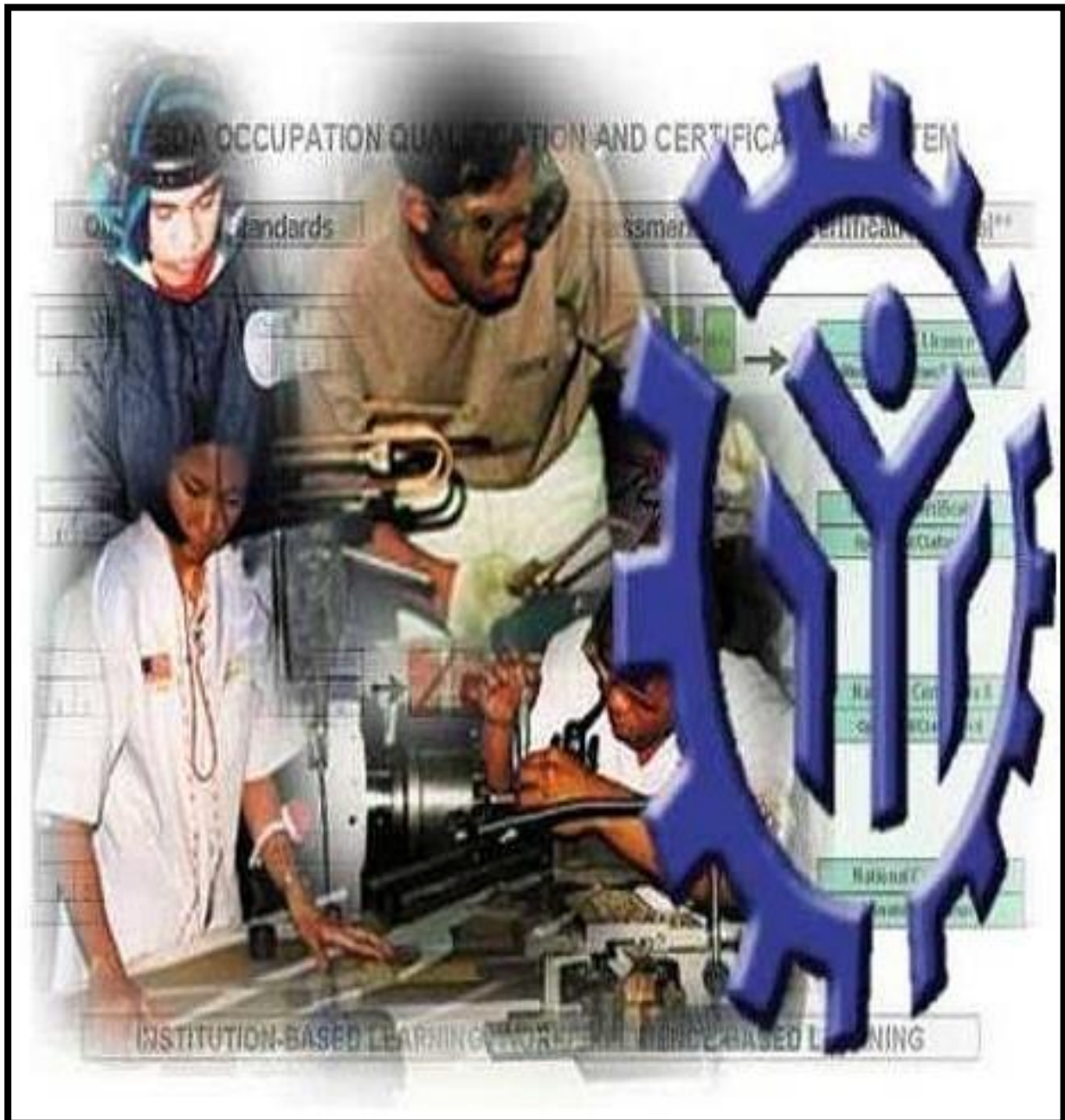# COMPETENCY STANDARDS

SONAR FISHING OPERATION LEVEL III

AGRICULTURE, FORESTRY AND FISHERY SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY

East Service Road, South Luzon Expressway (SLEX), Taguig City, Metro Manila

.

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AGRICULTURE, FORESTRY AND FISHERY SECTOR

SONAR FISHING OPERATION LEVEL III

TRAINING REGULATIONS FOR
SONAR FISHING OPERATION LEVEL III

SECTION 1   SONAR FISHING OPERATION LEVEL III QUALIFICATION

The SONAR FISHING OPERATION LEVEL III Qualification consists of competencies that a person must achieve to operate sonar equipment, optimize and monitor equipment display and locate fishing grounds and stocks of fish.

It also includes competencies of a person must have to be able to practice occupational safety procedures, 7S of Good Housekeeping and observing environmental rules and regulations in waste management in all the activities.

The qualification is packaged from the competency map of the Agriculture, Forestry and Fishery Sector.

The units of competency comprising this qualification include the following:

Code	BASIC COMPETENCIES
400311319	Lead workplace communication
400311320	Lead small teams
400311321	Apply critical thinking and problem solving techniques in the workplace
400311322	Work in a diverse environment
400311323	Propose methods of applying learning and innovation in the organization
400311324	Use information systematically
400311325	Evaluate occupational safety and health work practices
400311326	Evaluate environmental work practices
400311327	Facilitate entrepreneurial skills for micro-small-medium enterprises (MSMES)
Code	**COMMON COMPETENCIES**
MTM834208	Survive at sea in the event of ship abandonment
MTM834209	Minimize the risk of fire and maintain a state of readiness to respond to emergency situations involving fire
MTM834210	Fight and extinguish fires
MTM834211	Take immediate action upon encountering an accident or other medical emergency
MTM834212	Comply with emergency procedures
MTM834213	Take precautions to prevent pollution of the marine environment
MTM834214	Observe safe working practices
Code	**CORE COMPETENCIES**
AFFXXXXX	Operate sonar equipment
AFFXXXXX	Optimize and monitor equipment display
AFFXXXXX	Locate fishing grounds and stocks of fish

A person who has achieved this Qualification is competent to be:

- Sonar Fishing Operator

SECTION 2   COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common and core units of competency required in **SONAR FISHING OPERATION LEVEL III.**

BASIC COMPETENCIES

UNIT OF COMPETENCY : LEAD WORKPLACE COMMUNICATION

UNIT CODE   : 400311319

UNIT DESCRIPTOR   : This unit covers the knowledge, skills and attitudes   required to lead in the effective dissemination and discussion of ideas, information, and issues in the workplace. This includes preparation of written communication materials.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Communicate information about workplace processes	1.1 Relevant *communication method* is selected based on workplace procedures 1.2 Multiple operations involving several topics/areas are communicated following enterprise requirements 1.3 Questioning is applied to gain extra information 1.4 Relevant sources of information are identified in accordance with workplace/ client requirements 1.5 Information is selected and organized following enterprise procedures	1.1. Organization requirements for written and electronic communication methods 1.2. Effective verbal communication methods 1.3. Business writing 1.4. Workplace etiquette	1.1 Organizing information 1.2 Conveying intended meaning 1.3 Participating in a variety of workplace discussions 1.4 Complying with organization requirements for the use of written and electronic communication methods 1.5 Effective business writing 1.6 Effective clarifying and probing skills 1.7 Effective questioning techniques (clarifying and probing)

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	1.6 Verbal and written reporting is undertaken when required 1.7 Communication and negotiation skills are applied and maintained in all relevant situations		
2. Lead workplace discussions	2.1 Response to workplace issues are sought following enterprise procedures 2.2 Response to workplace issues are provided immediately 2.3 Constructive contributions are made to *workplace discussions* on such issues as production, quality and safety 2.4 Goals/ objectives and action plans undertaken in the workplace are communicated promptly	2.1 Organization requirements for written and electronic communication methods 2.2 Effective verbal communication methods 2.3 Workplace etiquette	2.1 Organizing information 2.2 Conveying intended meaning 2.3 Participating in variety of workplace discussions 2.4 Complying with organization requirements for the use of written and electronic communication methods 2.5 Effective clarifying and probing skills
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3 Dialogue is initiated with appropriate personnel 3.4 Communication problems and issues are raised as they arise 3.5 Identify barriers in communication to be	3.1 Organization requirements for written and electronic communication methods 3.2 Effective verbal communication methods 3.3 Workplace etiquette 3.4 Communication problems and issues 3.5 Barriers in communication	3.1 Organizing information 3.2 Conveying intended meaning 3.3 Participating in a variety of workplace discussions 3.4 Complying with organization requirements for the use of written and electronic communication methods 3.5 Effective clarifying and probing skills

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	addressed appropriately		3.6 Identifying issues 3.7 Negotiation and communication skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Methods of communication	May include: 1.1. Non-verbal gestures 1.2. Verbal 1.3. Face-to-face 1.4. Two-way radio 1.5. Speaking to groups 1.6. Using telephone 1.7. Written 1.8. Internet
2. Workplace discussions	May include: 2.1. Coordination meetings 2.2. Toolbox discussion 2.3. Peer-to-peer discussion

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Dealt with a range of communication/information at one time 1.2 Demonstrated leadership skills in workplace communication 1.3 Made constructive contributions in workplace issues 1.4 Sought workplace issues effectively 1.5 Responded to workplace issues promptly 1.6 Presented information clearly and effectively written form 1.7 Used appropriate sources of information 1.8 Asked appropriate questions 1.9 Provided accurate information
2. Resource Implications	The following resources should be provided: 2.1 Variety of Information 2.2 Communication tools 2.3 Simulated workplace
3. Methods of Assessment	Competency in this unit may be assessed through: Case problem

	3.1. Third-party report
	3.2. Portfolio
	3.3. Interview
	3.4. Demonstration/Role-playing
4. Context for Assessment	4.1. Competency may be assessed in the workplace or in a simulated workplace environment

UNIT OF COMPETENCY : LEAD SMALL TEAMS

UNIT CODE : 400311320

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes to lead small teams including setting, maintaining and monitoring team and individual performance standards.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Provide team leadership	1.1 **Work requirements** are identified and presented to team members based on company policies and procedures 1.2 Reasons for instructions and requirements are communicated to team members based on company policies and procedures 1.3 **Team members' and leaders' concerns** are recognized, discussed and dealt with based on company practices	1.1 Facilitation of Team work 1.2 Company policies and procedures relating to work performance 1.3 Performance standards and expectations 1.4 Monitoring individual's and team's performance vis a vis client's and group's expectations	1.1 Communication skills required for leading teams 1.2 Group facilitation skills 1.3 Negotiating skills 1.4 Setting performance expectation
2. Assign responsibilities	2.1. Responsibilities are allocated having regard to the skills, knowledge and aptitude required to undertake the assigned task based on company policies.	2.1 Work plan and procedures 2.2 Work requirements and targets 2.2 Individual and group	2.1 Communication skills 2.2 Management skills 2.3 Negotiating skills 2.4 Evaluation skills 2.5 Identifying team member's

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.2. Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible	expectations and assignments 2.3 Ways to improve group leadership and membership	strengths and rooms for improvement
3. Set performance expectations for team members	3.1 Performance expectations are established based on client needs 3.2 Performance expectations are based on individual team members knowledge, skills and aptitude 3.3 Performance expectations are discussed and disseminated to individual team members	3.1 One's roles and responsibilities in the team 3.2 Feedback giving and receiving 3.3 Performance expectation	3.1 Communication skills 3.2 Accurate empathy 3.3 Congruence 3.4 Unconditional positive regard 3.5 Handling of Feedback
4. Supervise team performance	4.1 **Performance is monitored** based on defined performance criteria and/or assignment instruction 4.2 Team members are provided with *feedback,* positive support and advice on strategies to overcome any deficiencies based on company practices	4.1 Performance Coaching 4.2 Performance management 4.3 Performance Issues	4.1 Communication skills required for leading teams 4.2 Coaching skill

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	4.3 *Performance issues* which cannot be rectified or addressed within the team are referred to appropriate personnel according to employer policy		
	4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs and satisfaction		
	4.5 Team operations are monitored to ensure that employer/client needs and requirements are met		
	4.6 Follow-up communication is provided on all issues affecting the team		
	4.7 All relevant documentation is completed in accordance with company procedures		

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work requirements	May include: 1.1. Client Profile 1.2. Assignment instructions
2. Team member's concerns	May include: 2.1 Roster/shift details
3. Monitor performance	May include: 3.1 Formal process 3.2 Informal process
4. Feedback	May include: 4.1 Formal process 4.2 Informal process
5. Performance issues	May include: 5.1 Work output 5.2 Work quality 5.3 Team participation 5.4 Compliance with workplace protocols 5.5 Safety 5.6 Customer service

EVIDENCE GUIDE

1.	Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Maintained or improved individuals and/or team performance given a variety of possible scenario 1.2 Assessed and monitored team and individual performance against set criteria 1.3 Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf 1.4 Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed 1.5 Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members
2.	Resource	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Materials relevant to the proposed activity or task
3.	Methods of Assessment	Competency in this unit may be assessed through: 3.1 Written Examination 3.2 Oral Questioning 3.3 Portfolio
4.	Context for Assessment	4.1 Competency may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center.

UNIT OF COMPETENCY : **APPLY CRITICAL THINKING AND PROBLEM-SOLVING TECHNIQUES IN THE WORKPLACE**

UNIT CODE : 400311321

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to solve problems in the workplace including the application of problem solving techniques and to determine and resolve the root cause/s of specific problems in the workplace.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Examine specific workplace challenges	1.1 Variances are examined from normal operating **parameters;** and product quality. 1.2 Extent, cause and nature of the specific problem are defined through observation, investigation and *analytical techniques*. 1.3 **Problems** are clearly stated and specified.	1.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations. 1.2 Competence to include the ability to apply and explain, enough for the identification of fundamental causes of specific workplace challenges. 1.3 Relevant equipment and operational processes. 1.4 Enterprise goals, targets and measures. 1.5 Enterprise quality OHS and environmental requirement. 1.6 Enterprise information systems and data collation 1.7 Industry codes and standards.	1.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 1.2 Identifying extent and causes of specific challenges in the workplace.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Analyze the causes of specific workplace challenges	2.1 Possible causes of specific problems are identified based on experience and the use of problem solving tools / analytical techniques. 2.2 Possible cause statements are developed based on findings. 2.3 Fundamental causes are identified per results of investigation conducted.	2.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations. 2.2 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations. 2.3 Relevant equipment and operational processes. 2.4 Enterprise goals, targets and measures. 2.5 Enterprise quality OSH and environmental requirement. 2.6 Enterprise information systems and data collation. 2.7 Industry codes and standards.	2.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 2.2 Identifying extent and causes of specific challenges in the workplace. 2.3 Providing clear-cut findings on the nature of each identified workplace challenges.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Formulate resolutions to specific workplace challenges	3.1 All possible options are considered for resolution of the problem. 3.2 Strengths and weaknesses of possible options are considered. 3.3 Corrective actions are determined to resolve the problem and possible future causes. 3.4 **Action *plans*** are developed identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures	3.1 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 3.2 Relevant equipment and operational processes 3.3 Enterprise goals, targets and measures 3.4 Enterprise quality OSH and environmental requirement 3.5 Principles of decision making strategies and techniques 3.6 Enterprise information systems and data collation 3.7 Industry codes and standards	3.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 3.2 Identifying extent and causes of specific challenges in the workplace. 3.3 Providing clear-cut findings on the nature of each identified workplace challenges. 3.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
4. Implement action plans and communicate results	4.1 Action plans are implemented and evaluated. 4.2 Results of plan implementation and recommendations are prepared. 4.2 Recommendations are presented to appropriate personnel. 4.3 Recommendations are followed-up, if required.	4.1 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 4.2. Relevant equipment and operational processes 4.3 Enterprise goals, targets and measures 4.4 Enterprise quality, OSH and environmental requirement 4.5 Principles of decision making strategies and techniques 4.6 Enterprise information systems and data collation 4.7 Industry codes and standards	4.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 4.2 Identifying extent and causes of specific challenges in the workplace. 4.3 Providing clear-cut findings on the nature of each identified workplace challenges. 4.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.

RANGE OF VARIABLES

VARIABLES	RANGE
1. Parameters	May include: 1.1 Processes 1.2 Procedures 1.3 Systems
2. Analytical techniques	May include: 2.1. Brainstorming 2.2. Intuitions/Logic 2.3. Cause and effect diagrams 2.4. Pareto analysis 2.5. SWOT analysis 2.6. Gant chart, Pert CPM and graphs 2.7. Scattergrams
3. Problem	May include: 3.1. Routine, non – routine and complex workplace and quality problems 3.2. Equipment selection, availability and failure 3.3. Teamwork and work allocation problem 3.4. Safety and emergency situations and incidents 3.5. Risk assessment and management
4. Action plans	May include: 4.1. Priority requirements 4.2. Measurable objectives 4.3. Resource requirements 4.4. Timelines 4.5. Co-ordination and feedback requirements 4.6. Safety requirements 4.7. Risk assessment 4.8. Environmental requirements

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1. Examined specific workplace challenges. 1.2. Analyzed the causes of specific workplace challenges. 1.3. Formulated resolutions to specific workplace challenges. 1.4. Implemented action plans and communicated results on specific workplace challenges.
2. Resource Implications	2.1. Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios / case studies / what ifs will be required as well as bank of questions which will be used to probe the reason behind the observable action.
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1. Observation 3.2. Case Formulation 3.3. Life Narrative Inquiry 3.4. Standardized test The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components. These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened.
4. Context for Assessment	In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.

UNIT OF COMPETENCY **:** **WORK IN A DIVERSE ENVIRONMENT**

UNIT CODE **:** **400311322**

UNIT DESCRIPTOR **:** This unit covers the outcomes required to work effectively in a workplace characterized by diversity in terms of religions, beliefs, races, ethnicities and other differences.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop an individual's cultural awareness and sensitivity	1.1 Individual differences with clients, customers and fellow workers are recognized and respected in accordance with enterprise policies and core values. 1.2 Differences are responded to in a sensitive and considerate manner 1.3 **Diversity** is accommodated using appropriate verbal and non-verbal communication.	1.1 Understanding cultural diversity in the workplace 1.2 Norms of behavior for interacting and dialogue with specific groups (e. g., Muslims and other non-Christians, non-Catholics, tribes/ethnic groups, foreigners) 1.3 Different methods of verbal and non-verbal communication in a multicultural setting	1.1 Applying cross-cultural communication skills (i.e. different business customs, beliefs, communication strategies) 1.2 Showing affective skills – establishing rapport and empathy, understanding, etc. 1.3 Demonstrating openness and flexibility in communication 1.4 Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Work effectively in an environment that acknowledges and values cultural diversity	2.1 Knowledge, skills and experiences of others are recognized and documented in relation to team objectives. 2.2 Fellow workers are encouraged to utilize and share their specific qualities, skills or backgrounds with other team members and clients to enhance work outcomes. 2.3 Relations with customers and clients are maintained to show that diversity is valued by the business.	2.1 Value of diversity in the economy and society in terms of Workforce development 2.2 Importance of inclusiveness in a diverse environment 2.3 Shared vision and understanding of and commitment to team, departmental, and organizational goals and objectives 2.4 Strategies for customer service excellence	2.1 Demonstrating cross-cultural communication skills and active listening 2.2 Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices 2.3 Demonstrating collaboration skills 2.4 Exhibiting customer service excellence

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Identify common issues in a multicultural and diverse environment	3.1 **Diversity-related conflicts** within the workplace are effectively addressed and resolved. 3.2 Discriminatory behaviors towards customers/stakeholders are minimized and addressed accordingly. 3.3 Change management policies are in place within the organization.	3.1 Value, and leverage of cultural diversity 3.2 Inclusivity and conflict resolution 3.3 Workplace harassment 3.4 Change management and ways to overcome resistance to change 3.5 Advanced strategies for customer service excellence	3.1 Addressing diversity-related conflicts in the workplace 3.2 Eliminating discriminatory behavior towards customers and co-workers 3.3 Utilizing change management policies in the workplace

RANGE OF VARIABLES

VARIABLE	RANGE
1. Diversity	This refers to diversity in both the workplace and the community and may include divergence in : 1.1 Religion 1.2 Ethnicity, race or nationality 1.3 Culture 1.4 Gender, age or personality 1.5 Educational background
2. Diversity-related conflicts	May include conflicts that result from: 2.1 Discriminatory behaviors 2.2 Differences of cultural practices 2.3 Differences of belief and value systems 2.4 Gender-based violence 2.5 Workplace bullying 2.6 Corporate jealousy 2.7 Language barriers 2.8 Individuals being differently-abled persons 2.9 Ageism (negative attitude and behavior towards old people)

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate**: 1.1 Adjusted language and behavior as required by interactions with diversity 1.2 Identified and respected individual differences in colleagues, clients and customers 1.3 Applied relevant regulations, standards and codes of practice
2. Resource Implications	**The following resources should be provided:** 2.1 Access to workplace and resources 2.2 Manuals and policies on Workplace Diversity
3. Methods of Assessment	**Competency in this unit may be assessed through**: 3.1 Demonstration or simulation with oral questioning 3.2 Group discussions and interactive activities 3.3 Case studies/problems involving workplace diversity issues 3.4 Third-party report 3.5 Written examination 3.6 Role Plays
4. Context for Assessment	Competency assessment may occur in workplace or any appropriately simulated environment

UNIT OF COMPETENCY : PROPOSE METHODS OF APPLYING LEARNING AND INNOVATION IN THE ORGANIZATION

UNIT CODE : **400311323**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to assess general obstacles in the application of learning and innovation in the organization and to propose practical methods of such in addressing organizational challenges.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Assess work procedures, processes and systems in terms of innovative practices	1.1. R*easons* for innovation are incorporated to work procedures. 1.2. ***Models of innovation*** are researched. 1.3. G*aps or barriers* to innovation in one's work area are analyzed. 1.4. Staff who can support and foster innovation in the work procedure are identified.	1.1 Seven habits of highly effective people. 1.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 1.3 Five minds of the future concepts (Gardner, 2007). 1.4 Adaptation concepts in neuroscience (Merzenich, 2013). 1.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	1.1 Demonstrating collaboration and networking skills. 1.2 Applying basic research and evaluation skills 1.3 Generating insights on how to improve organizational procedures, processes and systems through innovation.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Generate practical action plans for improving work procedures, processes	2.1 Ideas for innovative work procedure to foster innovation using individual and group techniques are conceptualized 2.2 Range of ideas with other team members and colleagues are evaluated and discussed 2.3 Work procedures and processes subject to change are selected based on *workplace requirements* (feasible and innovative). 2.4 Practical action plans are proposed to facilitate simple changes in the work procedures, processes and systems. 2.5 *Critical inquiry* is applied and used to facilitate discourse on adjustments in the simple work procedures, processes and systems.	2.1 Seven habits of highly effective people. 2.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 2.3 Five minds of the future concepts (Gardner, 2007). 2.4 Adaptation concepts in neuroscience (Merzenich, 2013). 2.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	2.1 Assessing readiness for change on simple work procedures, processes and systems. 2.2 Generating insights on how to improve organizational procedures, processes and systems through innovation. 2.3 Facilitating action plans on how to apply innovative procedures in the organization.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Evaluate the effectiveness of the proposed action plans	3.1 Work structure is analyzed to identify the impact of the new work procedures 3.2 Co-workers/key personnel is consulted to know who will be involved with or affected by the work procedure 3.3 Work instruction operational plan of the new work procedure is developed and evaluated. 3.4 Feedback and suggestion are recorded. 3.5 Operational plan is updated. 3.6 Results and impact on the developed work instructions are reviewed 3.7 Results of the new work procedure are evaluated 3.8 Adjustments are recommended based on results gathered	3.1 Five minds of the future concepts (Gardner, 2007). 3.2 Adaptation concepts in neuroscience (Merzenich, 2013). 3.3 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	3.1 Generating insights on how to improve organizational procedures, processes and systems through innovation. 3.2 Facilitating action plans on how to apply innovative procedures in the organization. 3.3 Communicating results of the evaluation of the proposed and implemented changes in the workplace procedures and systems. 3.4 Developing action plans for continuous improvement on the basic systems, processes and procedures in the organization.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Reasons	May include: 1.1 Strengths and weaknesses of the current systems, processes and procedures. 1.2 Opportunities and threats of the current systems, processes and procedures.
2. Models of innovation	May include: 2.1 Seven habits of highly effective people. 2.2 Five minds of the future concepts (Gardner, 2007). 2.3 Neuroplasticity and adaptation strategies.
3. Gaps or barriers	May include: 3.1 Machine 3.2 Manpower 3.3 Methods 3.4 Money
4. Critical Inquiry	May include: 4.1 Preparation. 4.2 Discussion. 4.3 Clarification of goals. 4.4 Negotiate towards a Win-Win outcome. 4.5 Agreement. 4.6 Implementation of a course of action. 4.7 Effective verbal communication. See our pages: Verbal Communication and Effective Speaking. 4.8 Listening. 4.9 Reducing misunderstandings is a key part of effective negotiation. 4.10 Rapport Building. 4.11 Problem Solving. 4.12 Decision Making. 4.13 Assertiveness. 4.14 Dealing with Difficult Situations.

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Established the reasons why innovative systems are required 1.2 Established the goals of a new innovative system 1.3 Analyzed current organizational systems to identify gaps and barriers to innovation. 1.4 Assessed work procedures, processes and systems in terms of innovative practices. 1.5 Generate practical action plans for improving work procedures, and processes. 1.6 Reviewed the trial innovative work system and adjusted reflect evaluation feedback, knowledge management systems and future planning. 1.7 Evaluated the effectiveness of the proposed action plans.
2. Resource Implications	The following resources should be provided: 2.1 Pens, papers and writing implements. 2.2 Cartolina. 2.3 Manila papers.
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Psychological and behavioral Interviews. 3.2 Performance Evaluation. 3.3 Life Narrative Inquiry. 3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance. 3.5 Sensitivity analysis. 3.6 Organizational analysis. 3.7 Standardized assessment of character strengths and virtues applied.
4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY   :   USE INFORMATION SYSTEMATICALLY

UNIT CODE   :   400311324

UNIT DESCRIPTOR   :   This unit covers the knowledge, skills and attitudes required to use technical information systems, apply information technology (IT) systems and edit, format & check information.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Use technical information	1.1. ***Information*** are collated and organized into a suitable form for reference and use 1.2. Stored information are classified so that it can be quickly identified and retrieved when needed 1.3. Guidance are advised and offered to people who need to find and use information	1.1. Application in collating information 1.2. Procedures for inputting, maintaining and archiving information 1.3. Guidance to people who need to find and use information 1.4. Organize information 1.5. classify stored information for identification and retrieval 1.6. Operate the technical information system by using agreed procedures	1.1. Collating information 1.2. Operating appropriate and valid procedures for inputting, maintaining and archiving information 1.3. Advising and offering guidance to people who need to find and use information 1.4. Organizing information into a suitable form for reference and use 1.5. Classifying stored information for identification and retrieval 1.6. Operating the technical information system by using agreed procedures

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Apply information technology (IT)	2.1. ***Technical information*** system is operated using agreed procedures 2.2. Appropriate and valid procedures are operated for inputting, maintaining and archiving information 2.3. ***Software*** required are utilized to execute the project activities 2.4. Information and data obtained are handled, edited, formatted and checked from a range of internal and external ***sources*** 2.5. Information are extracted, entered, and processed to produce the outputs required by ***customers*** 2.6. Own skills and understanding are shared to help others 2.7. Specified ***security measures*** are implemented to protect the confidentiality and integrity of project data held in IT systems	2.1. Attributes and limitations of available software tools 2.2. Procedures and work instructions for the use of IT 2.3. Operational requirements for IT systems 2.4. Sources and flow paths of data 2.5. Security systems and measures that can be used 2.6. Extract data and format reports 2.7. Methods of entering and processing information 2.8. WWW enabled applications	2.1. Identifying attributes and limitations of available software tools 2.2. Using procedures and work instructions for the use of IT 2.3. Describing operational requirements for IT systems 2.4. Identifying sources and flow paths of data 2.5. Determining security systems and measures that can be used 2.6. Extracting data and format reports 2.7. Describing methods of entering and processing information 2.8. Using WWW applications

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Edit, format and check information	3.1 Basic editing techniques are used 3.2 Accuracy of documents are checked 3.3 Editing and formatting tools and techniques are used for more complex documents 3.4 Proof reading techniques is used to check that documents look professional	3.1 Basic file-handling techniques 3.2 Techniques in checking documents 3.3 Techniques in editing and formatting 3.4 Proof reading techniques	3.1 Using basic file-handling techniques is used for the software 3.2 Using different techniques in checking documents 3.3 Applying editing and formatting techniques 3.4 Applying proof reading techniques

RANGE OF VARIABLES

VARIABLE	RANGE
1. Information	May include: 1.1. Property 1.2. Organizational 1.3. Technical reference
2. Technical information	May include: 2.1. paper based 2.2. electronic
3. Software	May include: 3.1. spreadsheets 3.2. databases 3.3. word processing 3.4. presentation
4. Sources	May include: 4.1. other IT systems 4.2. manually created 4.3. within own organization 4.4. outside own organization 4.5. geographically remote
5. Customers	May include: 5.1. colleagues 5.2. company and project management 5.3. clients
6. Security measures	May include: 6.1. access rights to input; 6.2. passwords; 6.3. access rights to outputs; 6.4. data consistency and back-up; 6.5. recovery plans

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1. Used technical information systems and information technology 1.2. Applied information technology (IT) systems 1.3. Edited, formatted and checked information
2. Resource Implications	**The following resources should be provided:** 2.1. Computers 2.2. Software and IT system
3. Methods of Assessment	**Competency in this unit should be assessed through:** 3.1. Direct Observation 3.2. Oral interview and written test
4. Context for Assessment	4.1. Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY **:** **EVALUATE OCCUPATIONAL SAFETY AND HEALTH WORK PRACTICES**

UNIT CODE **:** **400311325**

UNIT DESCRIPTOR **:** This unit covers the knowledge, skills and attitudes required to interpret–Occupational Safety and Health practices, set OSH work targets, and evaluate effectiveness of Occupational Safety and Health work instructions

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret Occupational Safety and Health practices	1.1 **OSH work practices issues** are identified relevant to work requirements 1.2 OSH work standards and procedures are determined based on applicability to nature of work 1.3 Gaps in work practices are identified related to relevant OSH work standards	1.1. OSH work practices issues 1.2. OSH work standards 1.3. General OSH principles and legislations 1.4. Company/ workplace policies/ guidelines 1.5. Standards and safety requirements of work process and procedures	1.1. Communication skills 1.2. Interpersonal skills 1.3. Critical thinking skills 1.4. Observation skills
2. Set OSH work targets	2.1 Relevant work information are gathered necessary to determine OSH work targets 2.2 **OSH Indicators** based on gathered information are agreed upon to measure effectiveness of workplace OSH policies and procedures 2.3 Agreed OSH indicators are endorsed for approval from appropriate personnel 2.4 **OSH work instructions** are received in accordance with workplace policies and procedures*	2.1. OSH work targets 2.2. OSH Indicators 2.3. OSH work instructions 2.4. Safety and health requirements of tasks 2.5. Workplace guidelines on providing feedback on OSH and security concerns 2.6. OSH regulations Hazard control procedures 2.7. OSH trainings relevant to work	2.1. Communication skills 2.2. Collaborating skills 2.3. Critical thinking skills 2.4. Observation skills

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Evaluate effectiveness of Occupational Safety and Health work instructions	3.1 OSH Practices are observed based on workplace standards 3.2 Observed OSH practices are measured against approved *OSH metrics* 3.3 Findings regarding effectiveness are assessed and gaps identified are implemented based on OSH work standards	3.1. OSH Practices 3.2. OSH metrics 3.3. OSH Evaluation Techniques 3.4. OSH work standards	3.1. Critical thinking skills 3.2. Evaluating skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. OSH Work Practices Issues	May include: 1.1 Workers' experience/observance on presence of work hazards 1.2 Unsafe/unhealthy administrative arrangements (prolonged work hours, no break-time, constant overtime, scheduling of tasks) 1.3 Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/ guidelines
2. OSH Indicators	May include: 2.1 Increased of incidents of accidents, injuries 2.2 Increased occurrence of sickness or health complaints/symptoms 2.3 Common complaints of workers' related to OSH 2.4 High absenteeism for work-related reasons
3. OSH Work Instructions	May include: 3.1 Preventive and control measures, and targets 3.2 Eliminate the hazard (i.e., get rid of the dangerous machine 3.3 Isolate the hazard (i.e. keep the machine in a closed room and operate it remotely; barricade an unsafe area off) 3.4 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one) 3.5 Use administrative controls to reduce the risk (i.e. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule) 3.6 Use engineering controls to reduce the risk (i.e. use safety guards to machine) 3.7 Use personal protective equipment 3.8 Safety, Health and Work Environment Evaluation 3.9 Periodic and/or special medical examinations of workers
4. OSH metrics	May include: 4.1 Statistics on incidence of accidence and injuries 4.2 Morbidity (Type and Number of Sickness) 4.3 Mortality (Cause and Number of Deaths) 4.4 Accident Rate

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1. Identify OSH work practices issues relevant to work requirements 1.2. Identify gaps in work practices related to relevant OSH work standards 1.3. Agree upon OSH Indicators based on gathered information to measure effectiveness of workplace OSH policies and procedures 1.4. Receive OSH work instructions in accordance with workplace policies and procedures 1.5. Compare Observed OSH practices with against approved OSH work instructions 1.6. Assess findings regarding effectiveness based on OSH work standards
2. Resource Implications	**The following resources should be provided:** 2.1 Facilities, materials, tools and equipment necessary for the activity
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1 Observation/Demonstration with oral questioning 3.2 Third party report 3.3 Written exam
4. Context for Assessment	4.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY **:** **EVALUATE ENVIRONMENTAL WORK PRACTICES**

UNIT CODE **:** **400311326**

UNIT DESCRIPTOR **:** This unit covers the knowledge, skills and attitude to interpret environmental Issues, establish targets to evaluate environmental practices and evaluate effectiveness of environmental practices

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret environmental practices, policies and procedures	1.1 ***Environmental work practices*** issues are identified relevant to work requirements 1.2 Environmental Standards and Procedures nature of work are determined based on Applicability to nature of work 1.3 Gaps in work practices related to Environmental Standards and Procedures are identified	1.1 Environmental Issues 1.2 Environmental Work Procedures 1.3 Environmental Laws 1.4 Environmental Hazardous and Non-Hazardous Materials 1.5 Environmental required license, registration or certification	1.1. Analyzing Environmental Issues and Concerns 1.2. Critical thinking 1.3. Problem Solving 1.4. Observation Skills
2. Establish targets to evaluate environmental practices	2.1. Relevant information are gathered necessary to determine environmental work targets 2.2. ***Environmental Indicators*** based on gathered information are set to measure environmental work targets 2.3. Indicators are verified with appropriate personnel	2.1. Environmental indicators 2.2. Relevant Environment Personnel or expert 2.3. Relevant Environmental Trainings and Seminars	2.1. Investigative Skills 2.2. Critical thinking 2.3. Problem Solving 2.4. Observation Skills

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Evaluate effectiveness of environmental practices	3.1. Work environmental practices are recorded based on workplace standards 3.2. Recorded work environmental practices are compared against planned indicators 3.3. Findings regarding effectiveness are assessed and gaps identified are implemented based on environment work standards and procedures 3.4. Results of environmental assessment are conveyed to appropriate personnel	3.1 Environmental Practices 3.2 Environmental Standards and Procedures	3.1 Documentation and Record Keeping Skills 3.2 Critical thinking 3.3 Problem Solving 3.4 Observation Skills

RANGE OF VARIABLES

VARIABLE	R A N G E
1. Environmental Practices Issues	May include: 1.1 Water Quality 1.2 National and Local Government Issues 1.3 Safety 1.4 Endangered Species 1.5 Noise 1.6 Air Quality 1.7 Historic 1.8 Waste 1.9 Cultural
2. Environmental Indicators	May include: 2.1 Noise level 2.2 Lighting (Lumens) 2.3 Air Quality - Toxicity 2.4 Thermal Comfort 2.5 Vibration 2.6 Radiation 2.7 Quantity of the Resources 2.8 Volume

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1. Identified environmental issues relevant to work requirements 1.2. Identified gaps in work practices related to Environmental Standards and Procedures 1.3. Gathered relevant information necessary to determine environmental work targets 1.4. Set environmental indicators based on gathered information to measure environmental work targets 1.5. Recorded work environmental practices are recorded based on workplace standards 1.6. Conveyed results of environmental assessment to appropriate personnel
2. Resource Implications	**The following resources should be provided:** 2.1 Workplace/Assessment location 2.2 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 2.3 Case studies/scenarios relating to environmental protection
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1 Written/ Oral Examination 3.2 Interview/Third Party Reports 3.3 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad) 3.4 Simulations and role-plays
4. Context for Assessment	4.1 Competency may be assessed in actual workplace or at the designated TESDA center.

UNIT OF COMPETENCY : **FACILITATE ENTREPRENEURIAL SKILLS FOR MICRO-SMALL-MEDIUM ENTERPRISES (MSMEs)**

UNIT CODE **:** **400311327**

UNIT DESCRIPTOR **:** This unit covers the outcomes required to build, operate and grow a micro/small-scale enterprise.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop and maintain micro-small-medium enterprise (MSMEs) skills in the organization	1.1 Appropriate ***business strategies*** are determined and set for the enterprise based on current and emerging business environment. 1.2 ***Business operations*** are monitored and controlled following established procedures. 1.3 Quality assurance measures are implemented consistently. 1.4 Good relations are maintained with staff/workers. 1.5 Policies and procedures on occupational safety and health and environmental concerns are constantly observed.	1.1 Business models and strategies 1.2 Types and categories of businesses 1.3 Business operation 1.4 Basic Bookkeeping 1.5 Business internal controls 1.6 Basic quality control and assurance concepts 1.7 Government and regulatory processes	1.1 Basic bookkeeping/ accounting skills 1.2 Communication skills 1.3 Building relations with customer and employees 1.4 Building competitive advantage of the enterprise
2. Establish and maintain client-base/ market	2.1 Good customer relations are maintained 2.2 New customers and markets are	2.1 Public relations concepts 2.2 Basic product promotion strategies 2.3 Basic market and feasibility studies 2.4 Basic business ethics	2.1 Building customer relations 2.2 Individual marketing skills 2.3 Using basic advertising (posters/ tarpaulins, flyers, social media, etc.)

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	identified, explored and reached out to. 2.3 Promotions/Incentives are offered to loyal customers 2.4 Additional products and services are evaluated and tried where feasible. 2.5 ***Promotional/advertising initiatives*** are carried out where necessary and feasible.		
3. Apply budgeting and financial management skills	3.1 Enterprise is built up and sustained through judicious control of cash flows. 3.2 Profitability of enterprise is ensured though appropriate ***internal controls.*** 3.3 Unnecessary or lower-priority expenses and purchases are avoided.	3.1 Cash flow management 3.1 Basic financial management 3.2 Basic financial accounting 3.3 Business internal controls	3.1 Setting business priorities and strategies 3.2 Interpreting basic financial statements 3.3 Preparing business plans

RANGE OF VARIABLES

VARIABLE	RANGE
1. Business strategies	May include: 1.1. Developing/Maintaining niche market 1.2. Use of organic/healthy ingredients 1.3. Environment-friendly and sustainable practices 1.4. Offering both affordable and high-quality products and services 1.5. Promotion and marketing strategies (e. g., on-line marketing)
2. Business operations	May include: 2.1 Purchasing 2.2 Accounting/Administrative work 2.3 Production/Operations/Sales
3. Internal controls	May include: 3.1 Accounting systems 3.2 Financial statements/reports 3.3 Cash management
4. Promotional/ Advertising initiatives	May include: 4.1 Use of tarpaulins, brochures, and/or flyers 4.2 Sales, discounts and easy payment terms 4.3 Use of social media/Internet 4.4 "Service with a smile" 4.5 Extra attention to regular customers

EVIDENCE GUIDE

1. Critical aspects of competency	**Assessment requires evidence that the candidate :**
	1.1 Demonstrated basic entrepreneurial skills
	1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise
	1.3 Demonstrated ability to manage/operate a micro/small-scale business
2. Resource Implications	**The following resources should be provided:**
	2.1 Simulated or actual workplace
	2.2 Tools, materials and supplies needed to demonstrate the required tasks
	2.3 References and manuals
3. Methods of Assessment	**Competency in this unit may be assessed through :**
	3.1 Written examination
	3.2 Demonstration/observation with oral questioning
	3.3 Portfolio assessment with interview
	3.4 Case problems
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting
	4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group

COMMON COMPETENCIES

UNIT OF COMPETENCY **:** **SURVIVE AT SEA IN THE EVENT OF SHIP ABANDONMENT**

UNIT CODE **:** **MTM834208**

UNIT DESCRIPTOR **:** This unit covers the knowledge, skills and attitudes in surviving at sea in the event of ship abandonment.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS

1. Respond to the indicated emergency	1.1 Muster signal is identified and appropriate action to respond to the *identified emergency* is taken based on established procedures.
	1.2 Timing and sequence of individual actions are practiced based on prevailing circumstances and conditions and potential *dangers and threats to survival* are minimized.
	1.3 Life-saving appliances are used in accordance with standards operating procedures.
	1.4 Recommended swimming techniques are practiced with or without wearing a lifejacket.
		1.1 Types of emergency situations and actions to be taken when-
		  1.1.1 called to survival craft stations
		  1.1.2 required to abandon ship
		  1.1.3 in the water
		  1.1.4 aboard a survival craft
		  1.1.5 a person falls overboard (man overboard)
		  1.1.6 Types, uses and location of life-saving appliances
		  1.1.7 Survival craft equipment and how to operate them
		  1.1.8 Value of training and drills
		1.2 Types and uses of personal protective clothing and equipment
			1.1 Donning lifejacket
			1.2 Donning and using an immersion suit
			1.3 Jumping from a height into the water
			1.4 Righting an inverted life raft while wearing a lifejacket
			1.5 Keeping afloat without a lifejacket
			1.6 Taking initial action on boarding survival craft
			1.7 Streaming a drogue or sea-anchor

2. Board a survival craft	2.1 *Survival craft* is boarded and dangers to other survivors are avoided based on recommended method. 2.2 Initial actions after leaving the ship are taken to minimize threats to survival. 2.3 Survival craft equipment and location devices, including radio equipment, are operated based on established procedures and manufacturer's instruction.	2.1 Types and uses of personal protective clothing and equipment 2.2 Type of survival craft equipment	2.1 Jumping from a height into the water 2.2 Righting an inverted life raft while wearing a lifejacket 2.3 Keeping afloat without a lifejacket 2.4 Taking initial action on boarding survival craft 2.5 Streaming a drogue or sea-anchor

RANGE OF VARIABLES

VARIABLE	RANGE
1. Identified emergency	May include: 1.1 Collision 1.2 Fire 1.3 Foundering
2. Dangers and threats to survival	May include: 2.1 Cold water shock 2.2 Hypothermia 2.3 Psychological response to disaster 2.4 Loss of will to live 2.5 Sea sickness
3. Life-saving appliances	May include: 3.1 Life jackets 3.2 Life buoys 3.3 Hard hats 3.4 Immersion suits and other thermal protective aid 3.5 Rocket line throwing appliances 3.6 Pyrotechnic distress signals 3.7 GMDSS survival craft VHF radios
4. Survival Craft	May include: 4.1 Free fall life boats 4.2 Davit launched life boats

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate : 1.1 Responded to indicated emergency 1.2 Boarded survival craft
2. Resource Implications	The following resources should be provided: 2.1 work place with recommended facilities 2.2 tools and equipment appropriate to the activity 2.3 materials relevant to the proposed activity and tasks
3. Methods of Assessment	Competency in this unit must be assessed through: 3.1 Demonstration and questioning of related underpinning knowledge 3.2 Written examination 3.3 Portfolio
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting

UNIT OF COMPETENCY	:	MINIMIZE THE RIS OF FIRE AND MAINTAIN A STATE OF READINESS TO RESPOND TO EMERGENCY SITUATIONS INVOLVING FIRE
UNIT CODE	:	MTM 834209
UNIT DESCRIPTOR	:	This unit covers the knowledge, skills and attitudes in performing fire-prevention and firefighting activities.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Carry out fire minimization procedures	1.1 Fire hazards on board vessel are identified and action is taken to eliminate or minimize them. 1.2 Responsibilities for checking fire prevention equipment and systems are fulfilled and appropriate action is taken to ensure that they are operational. 1.3 An awareness and understanding of the causes of *fire and its minimization* is maintained through participation in fire drills and related instructional programs. 1.4 A state of readiness to respond to fire emergencies is maintained at all times.	1.1 Relevant maritime regulations concerning minimization of the risk of fire on board vessel 1.2 The chemistry of fire and its relationship to materials typically carried on vessels 1.3 Principles underlying the spread of fire and its extinguishment, including the elements of fire and explosion (the fire triangle) 1.4 Types and sources of ignition 1.5 Flammable materials and fire hazards 1.6 Factors that influence the spread of fire 1.7 The importance of constant vigilance in fire prevention and minimization 1.8 The different classes of fire, their characteristics and strategies and equipment	1.1 Implementing of fire prevention and minimization measures and procedures 1.2 Identifying and evaluating fire hazards and taking appropriate courses of action 1.3 Responding to simulated and real emergency situations involving fire 1.4 Assessing the operational capability of fire-detection equipment and systems and taking any required maintenance or replenishment action

		needed for their extinguishment	
		1.9 A basic understanding of the types of fire-detection, fire-fighting equipment and systems used on board vessels, their features, principles of operation and the procedures for their use and maintenance	
		1.10 Relevant regulations and policies related to the maintenance of fire equipment and systems	
		1.11 Precautions and procedures that must be followed when responding to electrical fires	
		1.12 Precautions and procedures that must be followed when responding to uptake and hydrogen fires	
		1.13 Maritime communication techniques applicable to fire	
2. Respond to emergencies involving fire	2.1 Emergency situations involving fire are correctly identified In accordance with established nautical practice. 2.2 Type of fire is identified in accordance with the established classification system for fires. 2.3 Initial action on becoming aware of *fire emergency* is in conformity with established practices and procedures.	2.1 Relevant maritime regulations concerning minimization of the risk of fire on board vessel 2.2 The chemistry of fire and its relationship to materials typically carried on vessels 2.3 Principles underlying the spread of fire and its extinguishment,	2.1 Implementing of fire prevention and minimization measures and procedures 2.2 Identifying and evaluating fire hazards and taking appropriate courses of action

	2.4 Action taken is timely and appropriate for seriousness of the fire emergency.	including the elements of fire and explosion (the fire triangle)	2.3 Responding to simulated and real emergency situations involving fire
	2.5 Action taken on identifying muster signals for a fire emergency is appropriate and complies with established procedures.	2.4 Types and sources of ignition 2.5 Flammable materials and fire hazards	2.4 Assessing the operational capability of fire-detection equipment and systems and taking any required maintenance or replenishment action
	2.6 Appropriate precautions and procedures are implemented when responding to electrical fires.	2.6 Factors that influence the spread of fire 2.7 The importance of constant vigilance in fire prevention and minimization	
	2.7 Appropriate precautions and procedures are implemented when responding to uptake and hydrogen fires.	2.8 The different classes of fire, their characteristics and strategies and equipment needed for their extinguishment	
	2.8 Communications are clear and concise at all times and orders are acknowledged in a timely and seamanlike manner.	2.9 A basic understanding of the types of fire-detection, fire-fighting equipment and systems used on board vessels, their features, principles of operation and the procedures for their use and maintenance	
		2.10 Relevant regulations and policies related to the maintenance of fire equipment and systems	
		2.11 Precautions and procedures that must be followed when responding to electrical fires	
		2.12 Precautions and procedures that must be followed when responding to	

		uptake and hydrogen fires 2.13 Maritime communication techniques applicable to fire	

RANGE OF VARIABLES

VARIABLE	RANGE
1. Fire and its minimization	Fire hazard minimization procedures may include: 1.1. Housekeeping in work areas 1.2. Following of fire safety procedures 1.3. Checking and maintaining shipboard fire prevention systems 1.4. Identification and elimination or minimization of fire hazards 1.5. Precautions when using and storing flammable materials 1.6. Precautions that need to be taken when responding to an electrical fire 1.7. Precautions that need to be taken when responding to uptake and hydrogen fires
2. Fire emergencies	Fire emergencies on board vessel may occur: 2.1. By day or night in both normal and emergency situations 2.2. Under any possible conditions of weather and loading 2.3. While underway 2.4. During berthing and un-berthing operations 2.5. While anchoring or mooring

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate : 1.1 implemented fire prevention and minimization measures and procedures on board vessel 1.2 recognized fire hazards onboard vessel and take appropriate action to eliminate or minimize them 1.3 assessed the operational capability of fire-detection and fire- fighting equipment and systems and initiate any required maintenance or replenishment action 1.4 responded to emergency situations involving fire 1.5 implemented OHS principles and policies when carrying out fire prevention and fire–fighting duties 1.6 communicate effectively with others as required during fire prevention activities and fire emergencies
2. Resource Implications	The following resources should be provided: 2.1 work place with recommended facilities 2.2 tools and equipment appropriate to the activity 2.3 materials relevant to the proposed activity and tasks
3. Methods of Assessment	Competency in this unit must be assessed through: 3.1 Demonstration and questioning of related underpinning knowledge 3.2 Written examination 3.3 Portfolio
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting

UNIT OF COMPETENCY **:** **FIGHT AND EXTINGUISH FIRES**

UNIT CODE **:** **MTM834210**

UNIT DESCRIPTOR **:** This unit covers the knowledge, skills and attitudes in fighting and extinguishing fires

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Operate portable fire-fighting equipment	1.1 *Type of fires* is correctly identified in accordance with accepted fire-fighting practice. 1.2 Correct portable fire-fighting equipment is selected and used to fight specific classes of fires. 1.3 Class F fires are correctly extinguished with a fire blanket in accordance with accepted fire-fighting practice. 1.4 Correct techniques are applied for the use of hose lines to extinguish fires on board a vessel. 1.5 Where applicable, correct techniques are applied for the setting up of foam making equipment to extinguish B Class fires on board a vessel.	1.1 The different types of fire, their characteristics and strategies and equipment needed to extinguish them 1.2 Principles underlying the spread of fire and how it is extinguished 1.3 Knowledge of relevant maritime regulations 1.4 The chemistry of fire and its relationship to materials 1.5 typically carried on vessels 1.6 Principles and procedures for the use of self-contained breathing apparatus (SCBA) when fighting fires 1.7 Fire-fighting clothing, outfits and personal safety equipment used when fighting a fire onboard a vessel 1.8 Types fire-fighting appliances, equipment and systems used on board vessels, their features, principles of	1.1 Applying fire prevention measures and procedures 1.2 Identifying firefighting problems and determining appropriate courses of action 1.3 Participating as a member of an interior search and rescue and fire-fighting team on board a vessel 1.4 Determining the operational capability of fire-fighting appliances, equipment and systems

		operation and the procedures for their use and maintenance 1.9 Fixed fire prevention and extinguishing installations used on vessels and their principles of operation 1.10 Fire-fighting techniques, agents and precautions applicable to different types of fire on board a vessel 1.11 Maritime communication techniques applicable to fire-fighting activities onboard a vessel 1.12 Typical problems that can occur with shipboard fire-fighting equipment and operations and appropriate remedial action and solutions 1.13 Sources of information on shipboard fire prevention and extinguishment	
2. Carry out fire-fighting operations	2.1 Fire is extinguished using appropriate procedures, techniques, equipment and fire-fighting agents. 2.2 Correct portable fire-extinguisher(s) are selected and used for the class of fire involved in a fire emergency. 2.3 Appropriate *safety clothing, appliances and equipment* is used and safety precautions and procedures are applied when fighting fires in accordance with regulatory requirements,	2.1 Knowledge of relevant maritime regulations 2.2 The chemistry of fire and its relationship to materials typically carried on vessels 2.3 Fire-fighting clothing, outfits and personal safety equipment used when fighting a fire onboard a vessel 2.4 Types fire-fighting appliances,	2.1 Applying fire prevention measures and procedures 2.2 Identifying firefighting problems and determining appropriate courses of action 2.3 Participating as a member of an interior search and rescue and fire-fighting

	vessel's procedures and established fire-fighting practice. 2.4 The timing and sequence of individual actions when fighting fires onboard a vessel are appropriate to the prevailing circumstances and conditions. 2.5 Search and rescue operations in a smoke filled environment are correctly conducted as a member of a fire-fighting team in accordance with accepted fire- fighting practice. 2.6 Interior fires are extinguished using appropriate fire- fighting equipment and procedures as a member of a fire-fighting team in accordance with accepted fire- fighting practice. 2.7 Lifeline signals are correctly used during interior fire- fighting operations.	equipment and systems used on board vessels, their features, principles of operation and the procedures for their use and maintenance 2.5 Fixed fire prevention and extinguishing installations used on vessels and their principles of operation 2.6 Fire-fighting techniques, agents and precautions applicable to different types of fire on board a vessel 2.7 Maritime communication techniques applicable to fire-fighting activities onboard a vessel 2.8 Typical problems that can occur with shipboard fire- fighting equipment and operations and appropriate remedial action and solutions. 2.9 Sources of information on shipboard fire prevention and extinguishment	team on board a vessel 2.4 Determining the operational capability of fire-fighting appliances, equipment and systems

RANGE OF VARIABLES

VARIABLE	RANGE
1. Type of fire	Standard types of fires may include: 1.1 Class A 1.2 Class B 1.3 Class C
2. Fire-fighting equipment	Fire-fighting equipment, appliances and systems may include: 2.1 Portable fire extinguishers including foam, water, CO 2 , dry chemical and wet foam 2.2 Fire blankets 2.3 CO2 fixed systems 2.4 Foam installations including semi-portable and fixed systems 2.5 Sprinkler systems 2.6 Fire pumps (main and emergency fire pump) 2.7 Fire hoses, hydrants, branches and international shore connection
3. Fire on board a vessel	Fire emergencies on board vessel may occur: 3.1 By day or night in both normal and emergency situations 3.2 Under any possible conditions of weather and loading 3.3 While underway 3.4 During berthing and un-berthing operations 3.5 While anchoring or mooring 3.6 While in port 3.7 While moored or at anchor
4. Safety clothing, appliances and equipment	Safety clothing and equipment may include: 4.1 Fire-resistant clothing 4.2 Self-contained breathing apparatus (SCBA) 4.3 Masks 4.4 Eye and ear protection

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate :	
	1.1 participated in simulated on-boar d fire-fighting activities	
	1.2 participated in search and rescue and fire-fighting teams	
	1.3 applied OHS principles and policies when carrying out fire-fighting duties communicated effectively with others as required during fire emergencies	
2. Resource Implications	The following resources should be provided:	
	2.1 work place with recommended facilities	
	2.2 tools and equipment appropriate to the activity	
	2.3 materials relevant to the proposed activity and tasks	
3. Methods of Assessment	Competency in this unit must be assessed through:	
	3.1 Demonstration and questioning of related underpinning knowledge	
	3.2 Written examination	
	3.3 Portfolio	
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting	

UNIT OF COMPETENCY **:** **TAKE IMMEDIATE ACTION UPON ENCOUNTERING AN ACCIDENT OR OTHER MEDICAL EMERGENCY**

UNIT CODE **:** **MTM 834211**

UNIT DESCRIPTOR **:** This unit covers the knowledge, skills and attitudes in taking immediate action upon encountering an accident or other medical emergency.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS

1. Determine the need of casualty	1.1 **Patient** condition is determined in accordance with established first aid procedures and the nature of injury or illness is established.
	1.2 Probable cause, nature and extent of injuries are identified and appropriate action is taken to prevent further harm to the victim and to self.
	1.3 The position of the patient is adjusted to optimize personal comfort for the medical condition or injury concerned.
	1.4 Where there are doubts over the seriousness of the injury or illness and how to treat the patient, assistance is sought from senior officers or shore-based medical advisers.
		1.1 First aid procedures
		1.2 Shipboard procedures for:
		  1.6.1 conducting an initial patient first aid assessment
		  1.6.2 managing injuries
		  1.6.3 managing medical emergencies
		  1.6.4 carrying out resuscitation techniques
		1.3 Techniques for care of wounds
		1.4 Ways in which disease can spread on board a vessel and ways of preventing the spread
		1.5 Maritime communication techniques related to health care and receiving radio medical advice from shore- based advisers
		1.6 Marine publications containing information on first aid and medical treatment on board a vessel
			1.1 Providing first-aid on board a vessel
			1.2 Identifying and problems and emergencies and taking appropriate courses of action
			1.3 Applying aseptic and other precautionary techniques when carrying out first-aid procedures on board a vessel

2. Administer first-aid to the victim	2.1 Appropriate first aid procedures are used to treat the identified injury or illness in	2.1 Relevant OH&S and health legislation and policies 2.2 Duties and responsibilities of	2.1 Providing first-aid on board a vessel 2.2 Identifying and problems

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	accordance with the first- aider's limits of responsibility. 2.2 Aseptic techniques are applied during any wound dressing. 2.3 Hygiene measures are used that are appropriate for the degree of illness or injury. 2.4 Cardio-pulmonary resuscitation techniques are correctly applied where required. 2.5 Condition of the patient is regularly monitored both visually and through appropriate measures of bodily signs. 2.6 Health precautions and disease prevention measures are implemented in accordance with regulatory requirements and company procedures. 2.7 Appropriate action is taken if there are signs of a deterioration in the condition of the patient. 2.8 Where necessary, assistance is provided in the preparation and transporting of the victim.	the designated first aid officer on board a vessel 2.3 First aid procedures 2.4 Shipboard procedures for: 1.6.5 conducting an initial patient first aid assessment 1.6.6 managing injuries 1.6.7 managing medical emergencies 1.6.8 carrying out resuscitation techniques 2.5 Techniques for care of wounds 2.6 Ways in which disease can spread on board a vessel and ways of preventing the spread 2.7 Legal issues related to the administration of drugs and medicines on board a vessel 2.8 Knowledge of body structures and functions relevant to possible injury, illnesses and disease that may be encountered on board a vessel 2.9 Maritime communication techniques related to health care and receiving radio medical advice from shore- based advisers 2.10 Marine publications containing information on first aid and medical treatment on board a vessel	and emergencies and taking appropriate courses of action 2.3 Applying aseptic and other precautionary techniques when carrying out first-aid procedures on board a vessel

RANGE OF VARIABLES

VARIABLE	RANGE
1. Patient	May include patient having: 1.1 Heart attack 1.2 Stroke 1.3 Asthma attack 1.4 Diabetes
2. Injuries	Injuries on board a vessel may include: 2.1 External bleeding 2.2 An amputation 2.3 A foreign body in the eye 2.4 A penetrating chest wound 2.5 A nose bleed 2.6 Internal bleeding 2.7 Fractures, sprains, strains and dislocations 2.8 Electric shock 2.9 Asphyxia

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate : 1.1 identified and prioritized the need for medical first aid in life-threatening medical emergencies 1.2 administered first aid on board a vessel 1.3 communicated effectively with others during medical emergencies and health care
2. Resource Implications	The following resources should be provided: 2.1 work place with recommended facilities 2.2 tools and equipment appropriate to the activity 2.3 materials relevant to the proposed activity and tasks
3. Methods of Assessment	Competency in this unit must be assessed through: 3.1 Demonstration and questioning of related underpinning knowledge 3.2 Written examination 3.3 Portfolio
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting

UNIT OF COMPETENCY : COMPLY WITH EMERGENCY PROCEDURES

UNIT CODE : MTM834212

UNIT DESCRIPTOR : This unit deals with the knowledge and skills required to take appropriate initial action on becoming aware of an emergency on board a commercial vessel in conformance with the established emergency response procedures.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Take action on becoming aware of an emergency	1.1 **Emergency situations** are recognized and identified. 1.2 Responses to an emergency situation followed the established vessel's emergency response procedures. 1.3 Correct actions are taken on discovery of an actual or potential emergencies/emergency situation in accordance with established vessel's emergency response procedures. 1.4 Information given on raising alarm is prompt, accurate, complete and clear.	1.1 Types of emergencies 1.2 Knowledge of relevant maritime regulations 1.3 Relevant OH&S legislation and policies 1.4 Navigational emergencies for vessels and appropriate action and solutions 1.5 Indications of various types of emergency situations and the action to be followed when various types of actual or potential emergency situations are identified 1.6 Emergency alarm signals and systems in use on vessels and procedures to be followed when an emergency alarm is raised 1.7 Escape routes and internal and external communications	1.1 Applying navigational emergencies for vessels and appropriate action and solutions 1.2 3.2 Applying appropriate action in various types of actual or potential emergency situations 1.3 Using emergency alarm signals and systems 1.4 Using various shipboard items to be used for damage control purposes such as mattresses, canvas and clothing

		systems and alarms on board a vessel 1.8 Emergency alarm signals and systems in use on vessels and procedures to be followed when an emergency alarm is raised 1.9 Escape routes and internal and external communications systems and alarms on board a vessel	
2. Follow established emergency procedures	2.1 Vessel's contingency plans for emergency response are known and are implemented in real and simulated emergency situations. 2.2 Escape routes and internal and external communications and alarm systems are used in real and simulated emergency situations in accordance with regulatory requirements and established procedures. 2.3 Emergency communications and alarm signals and systems are understood and required action implemented in accordance with emergency procedures and regulatory requirements. 2.4 Planned damage control procedures for dealing with damage to the vessel and its hull are implemented in accordance with company procedures and regulatory requirements.	2.1 Types of emergencies 2.2 Shipboard contingency plans 2.3 Knowledge of relevant maritime regulations 2.4 Relevant OH&S legislation and policies 2.5 Navigational emergencies for vessels and appropriate action and solutions 2.6 Indications of various types of emergency situations and the action to be followed when various types of actual or potential emergency situations are identified 2.7 Emergency alarm signals and systems in use on vessels	2.1 Applying navigational emergencies for vessels and appropriate action and solutions 2.2 Applying appropriate action in various types of actual or potential emergency situations 2.3 Using emergency alarm signals and systems 2.4 Using various shipboard items to be used for damage control purposes such as mattresses, canvas and clothing

		and procedures to be followed when an emergency alarm is raised	
		2.8 Ways of controlling damage during a flooding emergency, including the use of various shipboard items that can be used for damage control purposes such as mattresses, canvas and clothing	
		2.9 Maritime communication techniques used during navigational emergencies of actual or potential emergency situations are identified	
		2.10 Emergency alarm signals and systems in use on vessels and procedures to be followed when an emergency alarm is raised	
3. Follow procedures for the use of various life-saving equipment	3.1 Participation in life saving drills confirms readiness to correctly carry out life-saving procedures and use *life-saving equipment*. 3.2 Procedures for the use of various shipboard life-saving appliances are followed in accordance with regulatory requirements, manufacturer's	3.1 Emergency alarm signals and systems in use on vessels and procedures to be followed when an emergency alarm is raised 3.2 Escape routes and internal and external communications systems and	3.1 Applying navigational emergencies for vessels and appropriate action and solutions 3.2 Applying appropriate action in various types of actual or

		alarms on board a vessel	potential emergency situations
	instructions and company procedures.	3.3 Ways of controlling damage during a flooding emergency, including the use of various shipboard items that can be used for damage control purposes such as mattresses, canvas and clothing	3.3 Using emergency alarm signals and systems
			3.4 Using various shipboard items to be used for damage control purposes such as mattresses, canvas and clothing
		3.4 Maritime communication techniques used during navigational emergencies of actual or potential emergency situations are identified	
		3.5 Emergency alarm signals and systems in use on vessels and procedures to be followed when an emergency alarm is raised	
		3.6 Escape routes and internal and external communications systems and alarms on board a vessel	

RANGE OF VARIABLES

VARIABLE	RANGE
1. Emergency situations	May include: 1.1 Collision with another vessel 1.2 Explosion on board vessel 1.3 Fire on board vessel 1.4 Impairment of integrity of hull and ingress of water 1.5 Loss of steering control 1.6 Lost of motive power 1.7 Foundering
2. Potential emergencies	May occur: 2.1 By day or night 2.2 Under any possible conditions of weather and loading 2.3 While underway 2.4 During berthing and un-berthing operations 2.5 While anchoring or mooring
3. Regulatory requirements	May include: 3.1 SOLAS convention 3.2 IMO STCW Codes and Convention 3.3 Relevant domestic and international OH&S
4. Life-saving equipment	May include: 4.1 Life jackets 4.2 Exposure and immersion suits

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate:
	1.1 undertook appropriate action in the event of emergency situations
	1.2 followed established procedures and regulatory requirements during emergency responses' procedures
	1.3 followed procedures for the use of various life-saving equipment
	1.4 participated in drills in preparation for the implementation of emergency responses
	1.5 communicated effectively with others during emergency responses' procedures
2. Resource Implications	The following resources should be provided:
	2.1 simulated workplace environment
	2.2 workplace standards, procedures, policies, guidelines
	2.3 tools and equipment relevant to work activities
3. Methods of Assessment	Competency in this unit may be assessed through:
	3.1 Observation/simulated practical demonstration in responding to emergency situations onboard a commercial vessel, and/or
	3.2 Simulation/role plays to test the candidate's knowledge and skills in complying with emergency procedures
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting

UNIT OF COMPETENCY : **TAKE PRECAUTIONS TO PREVENT POLLUTION OF THE MARINE ENVIRONMENT**

UNIT CODE : **MTM834213**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes in taking precautions towards protection of the marine environment.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Practice compliance with legislative requirements for protection of the marine environment	1.1 Relevant regulations and procedures for the *protection of the marine environment* are identified. 1.2 Appropriate action is taken in day-to-day work to ensure compliance with relevant regulations and procedures for the protection of the marine environment as required. 1.3 Appropriate action is taken where incidences of non-compliance or potential non-compliance are identified in accordance with regulations and procedures. 1.4 Any breach of regulations and procedures concerning protection of the marine environment is rectified and/or reported as required within the limits of the crew's/ officer's responsibility.	1.1 Relevant legislation, codes of practice, policies and procedures to protect the marine environment 1.2 Impact of shipping on the marine environment and the effects of operational or accidental pollution on it 1.3 Basic environmental protection procedures 1.4 Complexity and diversity of the marine environment 1.5 Requirements under local and/or international legislation and conventions for reporting incidents related to breaches of the statutory codes and measures for the protection of the marine environment	1.1 Completing activities aimed at compliance with relevant regulatory requirements for protection of the marine environment 1.2 Identifying and evaluating problems related to compliance with relevant regulations for environmental protection and determining an appropriate courses of action 1.3 Following anti-pollution procedures
2. Practice anti-pollution procedures	2.1 *Anti-pollution procedures* applicable to vessel operations are followed in the course of day-to-day work.	2.1 Basic environmental protection procedures 2.2 Pollution control problems and related measures	2.1 Completing activities aimed at compliance with relevant regulatory requirements

	2.2 Appropriate **preventive measures** are undertaken to prevent pollution of the marine environment in accordance with regulations and procedures.	to protect the marine environment 2.3 Requirements under local and/or international legislation and conventions for reporting incidents related to breaches of the statutory codes and measures for the protection of the marine environment	for protection of the marine environment 2.2 Identifying and evaluating problems related to compliance with relevant regulations for environmental protection and determining an appropriate courses of action 2.3 Following anti-pollution procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Protection of the marine environment	Protection of the marine environment may be observed: 1.1. By day or night in both normal and emergency situations 1.2. Under any possible conditions of sea and weather 1.3. While underway 1.4. During berthing and un-berthing operations 1.5. While anchoring or mooring
2. Anti-pollution procedures	Anti-pollution procedures include checking of items and equipment such as: 2.1. Pumps 2.2. Valves 2.3. Emission control equipment 2.4. Water management equipment including: cooling water, ballast water and bilge systems 2.5. Waste storage and recycling equipment
3. Preventive measures	Preventative measures to protect the marine environment may include: 3.1. Prevention of spillages of cargo 3.2. Prevention of spillage s of fuel and oil 3.3. Control of polluting emissions of gas and smoke 3.4. Effective management of waste, pollution and recycling processes
4. Regulations	Applicable regulations includes: 4.1. MARPOL Convention 4.2. IMO STCW Code and Convention related to the protection of marine environment 4.3. Relevant international and/or local legislation related to

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate :
	1.1 practiced compliance with legislative requirements for protection of the marine environment
	1.2 practiced preventative and remedial anti-pollution procedures as per relevant regulations and procedures
	1.3 identified typical pollution control problems and take appropriate action
	1.4 communicate effectively with others concerning measures to protect the marine environment
2. Resource Implications	The following resources should be provided:
	2.1 work place with recommended facilities
	2.2 tools and equipment appropriate to the activity
	2.3 materials relevant to the proposed activity and tasks
3. Methods of Assessment	Competency in this unit must be assessed through:
	3.1 Demonstration and questioning of related underpinning knowledge
	3.2 Written examination
	3.3 Portfolio
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting

UNIT OF COMPETENCY : **OBSERVE SAFE WORKING PRACTICES**

UNIT CODE : **MTM834214**

UNIT DESCRIPTOR : This unit deals with the knowledge and skills required to observe established maritime safe working practices.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify and follow workplace procedures for hazard identification and risk control	1.1 Safety regulations and established vessel's safety and hazard control practices and procedures are obtained, interpreted and applied to day-to-day work activities. 1.2 Workplace procedures for Occupational Health and Safety and related work instructions for controlling risks onboard a vessel are followed. 1.3 Workplace procedures for dealing with shipboard accidents, fire and emergencies are known and followed. 1.4 Hazards in the workplace are identified and appropriate action is taken to report them and to minimize or eliminate risk to personnel, vessel and the environment. 1.5 Where relevant, procedures and precautions necessary for entry into a pump room, fuel tanks or other confined spaces on a vessel are followed. 1.6 Personal protection clothing and equipment is used in accordance with established shipboard safety practices and procedures. 1.7 Appropriate assistance is provided in the event of a shipboard emergency to secure the vessel and its machinery and	1.1 Knowledge of relevant maritime and OHS regulations 1.2 The provisions of OHS Acts, regulations and codes of practice relevant to the workplace, including the rights and responsibilities of the workplace parties under OHS Acts, regulations and codes of practice; 1.3 The ways in which OHS is managed in the workplace, and activities required under OHS legislation, for example: 2.4.1 policies 2.4.2 procedures 2.4.3 plant and equipment maintenance 2.4.4 hazard identification 2.4.5 risk assessment and control 2.4.6 OHS instruction	1.1 Applying OHS in the workplace, and activities required under OHS legislation, 1.2 Applying order of ways to control risks (known as the hierarchy of control) 1.3 Designating personnel responsible for OHS onboard a vessel 1.4 Communication skills

	equipment and to maintain the safety of the vessel and persons involved. 1.8 Established emergency and contingency plans are followed in the event of a shipboard emergency.	2.4.7 training and provision of OHS 2.7 Workplace OHS procedures relevant to the work being undertaken, including procedures for: 2.7.1 recognizing and reporting on hazards, for example, work area inspections 2.7.2 work operations to control risks, for example, permit to work systems and isolation procedures 2.7.3 responding to accidents, fires and emergencies 2.7.4 raising OHS issues 2.7.5 employee participation in OHS management, for example, consultative or OHS committees 2.8 The meaning of OHS symbols found on signs and labels in the workplace 2.9 Designated personnel responsible for OHS onboard a vessel	
2. Contribute to arrangements for the management of occupational health and	2.1 Occupational Health and Safety issues and identified safety hazards are raised with designated personnel in	2.1 The provisions of OHS Acts, regulations and codes of practice	2.1 Applying OHS in the workplace, and activities

safety	accordance with workplace procedures and relevant occupational health and safety legislation. 2.2 Contributions to occupational health and safety management in the workplace are made within workplace procedures and provisions of relevant legislation. 2.3 Occupational health and safety issues are raised with designated personnel in accordance with workplace procedures and relevant occupational health and safety legislation.	relevant to the workplace, including the rights and responsibilities of the workplace parties under OHS Acts, regulations and codes of practice; 2.5 Hazards that exist in the workplace 2.6 The preferred order of ways to control risks (known as the hierarchy of control); 2.8 The meaning of OHS symbols found on signs and labels in the workplace 2.9 Designated personnel responsible for OHS onboard a vessel 2.10 Effects of sleep, schedules, and the circadian rhythm on fatigue 2.11 Effects of physical stressors on seafarers 2.12 Effects of environmental stressors in and outside the ship and their impact 2.13 Effects of schedule changes on seafarer fatigue	required under OHS legislation, 2.2 Applying order of ways to control risks (known as the hierarchy of control) 2.3 Designating personnel responsible for OHS onboard a vessel 2.4 Communication skills
3. Take necessary actions to control fatigue	3.1 Fatigue symptoms are recognized and identified. 3.2 Corrective actions are taken on discovery of fatigue in accordance	3.1 Effects of sleep, schedules, and the circadian rhythm on fatigue 3.2 Effects of physical	3.1 Applying OHS in the workplace, and activities required under OHS legislation

	with established company procedures. 3.3 Fatigue management practices are observed at all times. 3.4 Reports related to incidence of fatigue are communicated to appropriate authority in accordance with established company procedures.	stressors on seafarers 3.3 Effects of environmental stressors in and outside the ship and their impact 3.4 Effects of schedule changes on seafarer fatigue	3.2 Applying order of ways to control risks (known as the hierarchy of control) 3.3 Designating personnel responsible for OHS onboard a vessel 3.4 Communication skills
4. Complete occupational health and safety records	4.1 Occupational health and safety records for self are completed in accordance with workplace requirements. 4.2 Legal requirements for the maintenance of records of occupational injury and diseases are followed.	4.1 Type of records and documentation 4.2 Knowledge of relevant maritime and OHS regulations 4.3 ISM Code Safety Management System procedures (where applicable) 4.4 Hazards that exist in the workplace 4.5 The preferred order of ways to control risks (known as the hierarchy of control); 4.6 The meaning of OHS symbols found on signs and labels in the workplace 4.7 Designated personnel responsible for OHS onboard a vessel 4.8 Effects of sleep, schedules, and the circadian rhythm on fatigue	4.1 Applying OHS in the workplace, and activities required under OHS legislation, 4.2 Applying order of ways to control risks (known as the hierarchy of control) 4.3 Designating personnel responsible for OHS onboard a vessel 4.4 Communication skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Emergencies	May include: 1.1 Loss of propulsion 1.2 Loss of electrical power 1.3 Loss of steerage 1.4 Flooding of vessel 1.5 Fire or explosion 1.6 Loss of refrigeration 1.7 Loss of water making ability 1.8 Fuel oil, lubrication oil, steam and gas leaks 1.9 Overheating and over speed of machinery, governors, emergency trips
2. Hazards in the workplace	May include: 2.1 Moving heavy loads in an unsafe work environment 2.2 Unsecure machinery, components or repair equipment 2.3 Slippery deck 2.4 Welding equipment 2.5 Sharp tools and implements 2.6 Power tools 2.7 Moving and rotating machinery 2.8 Flammable liquids, vapors and fuel 2.9 Using equipment beyond safe working limits 2.10 Poor housekeeping procedures 2.11 Electrical wiring and systems 2.12 Hot pipes and valves (steam, fuel oil, lubricating oil)

3. Participative arrangements	May include:
	3.1 Formal and informal meetings which include occupational health and safety
	3.2 Occupational health and safety committees
	3.3 Other committees, for example, consultative, planning and purchasing
	3.4 Health and safety representatives

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidences that the candidate: 1.1 identified and followed workplace procedures for hazard identification and risk control 1.2 contributed to arrangements for the management of OHS onboard a vessel 1.3 understood and taken necessary actions to control fatigue
2. Resource Implications	The following resources should be provided: 2.1 simulated workplace environment 2.2 workplace standards, procedures, policies, guidelines 2.3 tools and equipment relevant to work activities
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Observation/simulated practical demonstration in the application of safe working practices and safety hazard control onboard a vessel 3.2 Simulation/role plays to test the candidate's knowledge and skills in the application of safe working practices and hazard control and safety hazard control on a commercial/or training vessel
4. Context of Assessment	4.1 Assessment may be conducted in the workplace or in simulated work environment

UNIT OF COMPETENCY	:	DEMONSTRATE SECURITY AWARENESS PRACTICES
UNIT CODE	:	MTM 834215
UNIT DESCRIPTOR	:	This unit covers the knowledge, skills and attitudes in demonstrating security awareness practices.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify and follow workplace procedures for hazard identification and risk control	1.1 Requirements relating to enhanced maritime security are identified. 1.2 All critical factors relevant to the security and safety of a *maritime workplace* are monitored continuously during work operations. 1.3 Relevant information concerning the security and safety of a maritime workplace is recognized and interpreted and timely action is taken in accordance with workplace procedures. 1.4 Changes to work environment and related risks are monitored and managed to ensure a safe outcome to workplace operations. 1.5 A security-related contingency plan of action is studied and interpreted and where necessary appropriate action is taken. 1.6 Reports on matters related to vessel security are prepared and submitted to designated personnel in accordance with the ship security plan and company and maritime regulatory requirements.	1.1 Relevant security and safety regulations, rules, policies and procedures 1.2 Relevant security personnel on a vessel or at a port facility 1.3 Communication procedures and protocols on matters related to vessel and port security 1.4 Security and safety problems that may be identified when maintaining and managing situation awareness and action that can be taken to overcome them 1.5 Security and safety hazards and risks that may be identified in the maritime workplace and ways of controlling those hazards and associated risks	1.1 Applying the above knowledge to the management of situation awareness during workplace operations 1.2 Reading and interpreting instructions, procedures and other information relevant to the maintenance of vessel and port security 1.3 Working as a team with others on matters relevant to the maintenance of vessel and port security 1.4 Selecting and using appropriate communications equipment 1.5 Interpreting and applying security and safety practices and regulations 1.6 Communicating with others on matters related to vessel and port security 1.7 Modifying activities dependent on differing workplace contingencies, risk situations and environments
2. Contribute to arrangements for the management	2.1 Factors that may adversely affect the security and	2.1 IMO ISPS Code applicable to vessels and ports	2.1 Reading and interpreting instructions,

of occupational health and safety	safety of a maritime workplace are identified. 2.2 Risks to vessel or port security and safety are recognized and reported to *relevant security personnel* and appropriate action is taken to control the risk in accordance with workplace procedures and security requirements. 2.3 *Persons posing potential security risks* are recognized and reported to relevant security personnel and appropriate action is taken to control the risk in accordance with workplace procedures and security requirements. 2.4 All relevant indications of a *security situation* are recognized and appropriate action is taken to alert relevant personnel and/or take appropriate action in accordance with workplace procedures and regulatory requirements.	2.2 Procedures for maintaining security awareness 2.3 Relevant security and safety regulations, rules, policies and procedures 2.4 Relevant security personnel on a vessel or at a port facility 2.5 Communication procedures and protocols on matters related to vessel and port security	procedures and other information relevant to the maintenance of vessel and port security 2.2 Working as a team with others on matters relevant to the maintenance of vessel and port security 2.3 Selecting and using appropriate communications equipment 2.4 Interpreting and applying security and safety practices and regulations 2.5 Communicating with others on matters related to vessel and port security 2.6 Identifying and solving problems associated with the maintenance of vessel and port security and to report security issues and take appropriate action based on available information
3. Take necessary actions to control fatigue	3.1 Security instruction programs are participated in as per company and regulatory requirements. 3.2 Requirements and processes for security awareness and vigilance are identified. 3.3 *Security and emergency drills* are participated in accordance with the ship security plan and company and maritime regulatory requirements. 3.4 Inputs to improve/enhance security training programs and drills are provided, where necessary..	3.1 Types of security instruction programs 3.2 Different requirements and processes for security awareness 3.3 Types of security and emergency drills 3.4 Communication procedures and protocols on matters related to vessel and port security 3.5 Security and safety hazards and risks that may be identified in the maritime workplace and ways of controlling those hazards and associated risks	3.1 3.2 Interpreting and applying security and safety practices and regulations 3.3 Communicating with others on matters related to vessel and port security 3.4 Modifying activities dependent on differing workplace contingencies, risk situations and environments 3.5 Identifying and solving problems associated with the maintenance of vessel and port security and to report security

| | | | issues and take appropriate action based on available information |
| | | | 3.6 Monitoring and anticipating security problems and risks and taking appropriate action |

RANGE OF VARIABLES

VARIABLE	RANGE
1. Maritime workplace	Workplace may include: 1.1. Vessels
2. Relevant security personnel	May include: 2.1. Ship security officer 2.2. Port security officer 2.3. Company security officer 2.4. Master or skipper of the vessel
3. Persons posing potential security risks	May include: 3.1. Unknown persons photographing vessels or facilities 3.2. Unknown persons attempting to gain access to vessels or facilities 3.3. Unknown persons loitering in the vicinity of vessels or port facilities 3.4. Unknown persons telephoning to ascertain security, personnel or standard operating procedures on a vessel or at a port facility 3.5. Vehicles or small vessels with personnel in them loitering and perhaps taking photographs or drawing diagrams of vessels or facilities 3.6. General aviation aircraft operating in proximity of vessels or facilities 3.7. Unauthorized vendors attempting to sell merchandise 3.8. Persons carrying suspicious parcels which could be bombs 3.9. Unknown persons acting suspiciously 3.10. Unknown persons seeking information from vessel personnel or their families about vessels or port facilities via either face-to-face discussion or email 3.11. Unauthorized workers attempting to gain access to a vessel or port facilities to repair, replace, service or install equipment
4. Security situation	May include: 4.1. Piracy/hijacking 4.2. Armed robbery 4.3. Bomb threat 4.4. Unidentified objects/explosives on vessel 4.5. Damage to or destruction of port facility

5. Security and emergency drills	Security and emergency drills may relate to incidents such as: 5.1. Damage to or destruction of the vessel or port facility (e.g. by explosive devices, arson, sabotage or vandalism) 5.2. Hijacking or seizure of a vessel or of persons on board 5.3. Tampering with cargo or essential vessel equipment or systems or vessel's stores 5.4. Unauthorized access to or use of the vessel (including presence of stowaways) 5.5. Smuggling of weapons or equipment (including weapons of mass destruction)

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate : 1.1 contributed to the enhancement of maritime security through heightened awareness 1.2 recognized security threats 1.3 understood the need for and methods of maintaining security awareness and vigilance
2. Resource Implications	The following resources should be provided: 2.1 work place with recommended facilities 2.2 tools and equipment appropriate to the activity 2.3 materials relevant to the proposed activity and tasks
3. Methods of Assessment	Competency in this unit must be assessed through: 3.1 Demonstration and questioning of related underpinning knowledge 3.2 Written examination 3.3 Portfolio
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting

CORE COMPETENCY

UNIT OF COMPETENCY : **OPERATE SONAR EQUIPMENT**

UNIT CODE **:** **AFFXXXXXX**

UNIT DESCRIPTOR **:** The unit deals with the knowledge, skills and attitudes required to operate a sonar system as part of a team and under supervision. It includes the requirement to configure the system, build and maintain the continuous collection, collation and analysis of information to track existing contacts or identify new contacts.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
1. Configure sonar system	1.1 Instructions are received from supervisor in accordance with **standard operating procedures** (SOPs) 1.2 **Serviceability** of **sonar system** is confirmed and any faults are reported to supervisor 1.3 Sonar display is **Optimize d** for operator use 1.4 **Outside environmental conditions** are determined and system is Optimize d accordingly 1.5 **Environmental tools** are used appropriately	1.1 Basic oceanography theory 1.2 Basic navigation 1.3 Publications and logs 1.4 Relevant registered publications 1.5 Relevant sops 1.6 Sonar organization 1.7 Sonar records 1.8 Sonar systems	1.1 Interpreting design 1.2 Confirming net specifications 1.3 Drawing net specification 1.4 Providing advice to clients 1.5 Listing required materials and supplies 1.6 Communication skills 1.7 Mensuration 1.8 Apply Organizational doctrine 1.9 Calculate range predictions 1.10 Interpret environmental data 1.11 Optimize sonar equipment

2. Compile and maintain a sonar picture	2.1 Information is collated and analyzed to identify and discriminate sonar contacts	2.1 Basic oceanography theory	2.1 Interpreting design
		2.2 Publications and logs	2.2 Confirming net specifications
	2.2 Information is continuously collected, collated and analyzed to track contacts or to identify new contacts	2.3 Relevant registered publications	2.3 Drawing net specification
		2.4 Relevant sops	2.4 Providing advice to clients
		2.5 Sonar organization	2.5 Listing required materials and supplies
	2.3 Acoustic information is collected from *other equipment/sources* in accordance with Organizational procedures	2.6 Sonar records	2.6 Communication skills
		2.7 Sonar systems	2.7 Mensuration
			2.8 Apply Organizational doctrine
	2.4 Sonar contact details are reported, displayed and disseminated to stakeholders in accordance with Organizational procedures		2.9 Calculate range predictions
			2.10 Interpret environmental data
			2.11 Optimize sonar equipment
	2.5 Threats are responded to in accordance with Organizational doctrine		
	2.6 *Problems or issues* beyond own operator capability are reported immediately to supervisor		

3. Finalize operations	3.1 Sonar system operation is **transferred** to new operator as required or is ceased as directed by supervisor	3.1 Basic oceanography theory	3.1 Interpreting design
		3.2 Publications and logs	3.2 Confirming net specifications
		3.3 Relevant registered publications	3.3 Drawing net specification
	3.2 System is secured and stowed in accordance with SOPS	3.4 Relevant sops	3.4 Providing advice to clients
		3.5 Sonar organization	3.5 Listing required materials and supplies
	3.3 Documentation is secured and stowed in accordance with standard Organizational procedures	3.6 Sonar records	3.6 Communication skills
		3.7 Sonar systems	3.7 Mensuration
			3.8 Apply Organizational doctrine
			3.9 Calculate range predictions
	3.4 Report is made to supervisor on completion in accordance with SOPs		3.10 Interpret environmental data
			3.11 Optimize sonar equipment

RANGE OF VARIABLES

Variables	Range
1. Standard operating procedures	May Include: 1.1 Philippine Standards 1.2 Job guides, pamphlets and other publications 1.3 Manufacturers' handbooks, industry specifications and technical instructions 1.4 Occupational health and safety regulations 1.5 Organizational policies and procedures 1.6 Relevant local government by laws 1.7 Relevant state/territory or federal legislation or regulations 1.8 Written and verbal orders and job instructions

2. Sonar system may include	May Include:
	
	2.1 Associated platform specific sonar systems:
	   2.1.1 decoy equipment
	   2.1.2 operating manuals and publications
	   2.1.3 environmental tools
	   2.1.4 sonar display
	2.2 Fire control systems for underwater targets
	2.3 Underwater telephone

3. Serviceability of sonar system includes	May Include: 3.1 Daily System Operability Tests (DSOTs)
4. Optimizing a sonar display	May Include: 4.1 Setting up for best performance 4.2 Setting up to operator requirements
5. Outside environmental conditions	May Include: 5.1 Biographical 5.2 Man-made interference (deliberate and non-deliberate) 5.3 Oceanographical 5.4 Topographical
6. Environmental tools	May Include: 6.1 Expendable bathy thermograph 6.2 Tactical environment support system
7. Other Equipment/sources	May Include: 7.1 Data system 7.2 Electronic support 7.3 Underwater telephone, sono buoys 7.4 Visual
8. Problems or issues	May Include: 8.1 Mechanical failure

	8.2 Outside environmental conditions 8.3 Power failure 8.4 System failure 8.5 Tactical considerations
9. Transferring sonar system operation	May Include: 9.1 Comprehensive hand over of current situation and system configuration

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Determined net specifications 1.2 Sourced out tools, materials and supplies 1.3 Secured written agreement
2. Resource Implications	The following resources MUST be provided: 2.1 Actual and simulated workplace 2.2 Materials, tools, and equipment needed to perform the required task 2.3 References and manuals 2.4 PPEs 2.5 First aid kit
3. Methods of Assessment	Competency in this unit should be assessed through: 3.1 Demonstration/ observation with oral questioning 3.2 Written exam
4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions

UNIT OF COMPETENCY : **OPTIMIZE AND MONITOR EQUIPMENT DISPLAY**

UNIT CODE **:** **AFFXXXXXX**

UNIT DESCRIPTOR **:** The unit deals with the knowledge, skills and attitudes required to optimize equipment display in order to display and allow interpretation of navigational information. It also includes monitoring the equipment display for irregularities and taking steps to return the equipment display to optimal performance.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
1. Set up equipment display	1.1 Access to appropriate *function* is gained in accordance with the shift supervisor tasking and *organizational policies and procedures* 1.2 Tactical display is set up in accordance with required function and shift supervisor tasking 1.3 *Tactical information* appropriate to required function is accessed and displayed in accordance with Organizational policies and procedures 1.4 *Operational data* from *other sources* are used to set up *equipment* display and to build tactical picture	1.1 IFF system operation and settings 1.2 operational data relevant to required function 1.3 Organizational policies and procedures 1.4 procedure for equipment index error checks 1.5 requirements of a tactical display over the range of functions 1.6 roles and responsibilities of other equipment operators 1.7 selection criteria for equipment range scale 1.8 equipment alarms and meaning 1.9 tactical information relevant to required function 1.10 theory of radar 1.11 theory of sonar 1.12 types of equipment degradation and effect on equipment	1.1 accurately analyse and validate tactical information 1.2 accurately identify and respond to degradation in equipment display 1.3 apply a range of problem solving strategies to work outcomes 1.4 clearly articulate information and advice 1.5 consistently evaluate and monitor own performance 1.6 effectively communicate with operations room personnel and adequately receive and interpret instructions 1.7 manage own tasks within timeframes 1.8 operate equipment display settings accurately based on tasking and required function

| 2. Apply settings to equipment display | 2.1 Appropriate range scale is selected and set, in accordance with the needs of the tactical situation
2.2 *Equipment video* is selected and displayed to support the compilation of the tactical picture
2.3 IFF system equipment is prepared to support the compilation of the tactical picture
2.4 Equipment index error checks are performed in accordance with Organizational policies and procedures | 2.1 IFF system operation and settings
2.2 operational data relevant to required function
2.3 Organizational policies and procedures
2.4 procedure for equipment index error checks
2.5 requirements of a tactical display over the range of functions
2.6 roles and responsibilities of other equipment operators
2.7 selection criteria for equipment range scale
2.8 equipment alarms and meaning
2.9 tactical information relevant to required function
2.10 theory of sonar
2.11 types of equipment degradation and effect on equipment | 2.1 accurately analyse and validate tactical information
2.2 accurately identify and respond to degradation in equipment display
2.3 apply a range of problem solving strategies to work outcomes
2.4 clearly articulate information and advice
2.5 consistently evaluate and monitor own performance
2.6 effectively communicate with operations room personnel and adequately receive and interpret instructions
2.7 manage own tasks within timeframes
2.8 operate equipment display settings accurately based on tasking and required function |

3. Monitor equipment performance and respond to equipment degradation	3.1 Equipment are monitored for *degradation* and rectification action is recommended to shift supervisor 3.2 Liaison is undertaken with other equipment operators to achieve optimum equipment performance 3.3 *Equipment alarms* are recognized and responded to in accordance with Organizational policies and procedures	3.1 IFF system operation and settings 3.2 operational data relevant to required function 3.3 Organizational policies and procedures 3.4 procedure for equipment index error checks 3.5 requirements of a tactical display over the range of functions 3.6 roles and responsibilities of other equipment operators 3.7 selection criteria for equipment range scale 3.8 equipment alarms and meaning 3.9 tactical information relevant to required function 3.10 theory of sonar 3.11 types of equipment degradation and effect on equipment	3.1 accurately analyse and validate tactical information 3.2 accurately identify and respond to degradation in equipment display 3.3 apply a range of problem solving strategies to work outcomes 3.4 clearly articulate information and advice 3.5 consistently evaluate and monitor own performance 3.6 effectively communicate with operations room personnel and adequately receive and interpret instructions 3.7 manage own tasks within timeframes 3.8 operate equipment display settings accurately based on tasking and required function

RANGE OF VARIABLES

Variables	Range
1. Function may include	May Include: 1.1 Action picture supervisor 1.2 Air picture supervisor 1.3 Anti submarine/anti surface air controller 1.4 Sonar operator 1.5 Surface operator 1.6 Track supervisor
2. Organizational policies and procedures may include	May Include: 2.1 Instructions 2.2 Operating manuals 2.3 Orders 2.4 Relevant Philippine Standards 2.5 Relevant Commonwealth Acts 2.6 Relevant Maritime Laws 2.7 Security policy and procedure 2.8 Standard Operating Procedures
3. Tactical information may include	May Include: 3.1 Contact of interest 3.2 Critical contacts of interest 3.3 Land tracks 3.4 Navigation plan 3.5 Operational areas 3.6 Sub-surface tracks 3.7 Surface tracks
4. Operational data may include	May Include: 4.1 Air lanes 4.2 Combat air patrol stations 4.3 Cryptographic information 4.4 Data link information 4.5 Exercise area data 4.6 Handover gates 4.7 Local notice to mariners 4.8 Reference points 4.9 R/V information 4.10 Equipment tracking sectors
5. Other sources may include	May Include: 5.1 Electronic messaging 5.2 Signals 5.3 Visual observations 5.4 Voice messages
6. Equipment may include	May Include: 6.1 Sonar

	6.2 Underwater Current Indicator (CI)
	6.3 GPS
	6.4 Fish Finder
7. Equipment video may include	May Include:
	7.1 Processed
	7.2 Raw
	7.3 Synthetic
8. Degradation may include	May Include:
	8.1 Electronic attack
	8.2 Environmental factors
	8.3 Mutual interference
	8.4 Systems defects
9. Equipment alarms may include	May Include:
	9.1 Screen text alerts
	9.2 Warning bells

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 apply settings to equipment display in accordance with the requirements of the intended function 1.2 Optimize and monitor an equipment display 1.3 Accurately recognize and respond to equipment degradation.
2. Resource Implications	The following resources MUST be provided: 2.1 Actual and simulated workplace 2.2 Display equipment typically used in a functioning operations room 2.3 Organizational policies and procedures relevant to a functioning operations room. 2.4 References and manuals 2.5 PPEs 2.6 First aid kit
3. Methods of Assessment	Competency in this unit should be assessed through: 3.1 Demonstration/ observation with oral questioning 3.2 Written exam
4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions

UNIT OF COMPETENCY : **LOCATE FISHING GROUNDS AND STOCKS OF FISH**

UNIT CODE : **AFF XXXXX**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to position operation to optimize fishing opportunity and detect and identify fish concentrations and suitable fishing environments

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range Statement	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Position operation to optimize fishing opportunity	1.1 Position of vessel is accurately determined within the limitations of equipment and *methods* available.. 1.2 Vessel is positioned at decided location at correct time for fishing operations. 1.3 Vessel position is maintained within areas of *safe operation.* 1.4 Vessel is positioned to take account of all relevant *environmental factors.* 1.5 All *sources of relevant information* are obtained to aid decision making. 1.6 Area of operation is altered in response to available information to optimize fishing opportunity. 1.7 Vessel position complies with all relevant state, territory and federal regulations. 1.8 Safety measures are observed and practiced according to Occupational	1.1 Calculation of the times required for movement 1.2 Effects of environmental factors 1.3 Factors affecting the fishing operation 1.4 Fishing gear types and their effect on the environment maintenance of plant 1.5 Interpretation of information from electronic systems 1.6 Operation and adjustment of fish-finding equipment 1.7 Operation of position fixing equipment and methods 1.8 Relevance of environmental factors 1.9 Sources of information and the means of accessing them 1.10 Visual indications of fish concentrations	1.1 Fixing position on navigational charts or electronic plotters 1.2 Forecasting weather 1.3 Using hydro-acoustic equipment 1.4 Using information from radio direction finder 1.5 Using other electronic devices to gather information 1.6 Using ranges and bearings from radar. **Literacy skills:** ▪ Keeping and reviewing records. **Numeracy skills:** • Accessing and interpreting information, such as graphs and tables showing abundance • Calculating time, speed and distance.

		Health and Safety (OHS) procedures.	1.11 OSHS on care and maintenance of plant	
2.	Detect and identify fish concentrations and suitable fishing environments	2.1 **Electronic aids** are operated to optimize available information. 2.2 **Available indications** are interpreted to extract all available relevant information.. 2.3 Size, density, position and movement of fish concentrations are accurately determined within the limitations of available information 2.4 Relevant environmental factors are accurately determined within the limitations of available information 2.5 Fishing environment selected is appropriate to target species and fishing gear. 2.6 Safety procedures are followed according to Occupational Safety and Health Standards	2.1 Types of fertilizers 2.2. Farming schemes 2.3 Computation of fertilizer rates 2.4 Crop requirements 2.5 Methods of fertilizer application 2.6 Different mango plant stages 2.7 Avoidance of cross contamination 2.8 GAP on fertilizer application 2.9 OSHS on fertilizer application	2.1 Selecting fertilizers 2.2 Computing fertilizer rates 2.3 Mathematical skills 2.4 Employing methods of fertilizer application 2.5 Applying preventive measures 2.6 Applying GAP on fertilizer application 2.7 Applying OSHS on fertilizer application 2.8 Communication skills

RANGE OF VARIABLES

VARIABLE	RANGE

1. Methods	Methods may include:
	
	  1.1. Electronic
	  1.2. Visual

2. Safe operations	Equipment may include : 2.1 Within the range and level of exposure to prevailing and anticipated weather conditions appropriate to the vessel: 2.2 Condition 2.3 Crew 2.4 Power 2.5 Size.
3. Environmental factors	Environmental factors may include: 3.1 Bottom type 3.2 Current 3.3 Light levels 3.4 Lunar phase 3.5 Physical obstacles (e.g. Other vessels and mooring lines) 3.6 Tide 3.7 Time of day, month and year 3.8 Water depth 3.9 Water temperature, salinity, color and clarity 3.10 Weather 3.1 1 Wind speed and direction
4. Sources of relevant information	Sources of relevant information may include: 4.1 Own vessel's performance records, including crew experience 4.2 Other vessel's performance records 4.3 Research data 4.4 Industry information 4.5 Research papers.
5. Electronic aids	Electronic aids may include: 5.1 Echo sounder 5.2 Position determining devices 5.3 Sonar 5.4 Temperature sensors and information 5.5 Current Indicator (CI)
6. Available indications	Available indications may include: 6.1 Electronic 6.2 Visual

EVIDENCE GUIDE

1. Critical Aspects of Competency	**Assessment requires evidence that the candidate:** 1.1 Locate fishing grounds and concentrations of target species of fish and to position the fishing operation or vessel 1.2 Obtain, correct and plot position lines and positions on navigational and fishing charts 1.3 Use accepted methodologies to detect fish concentrations 1.4 Match the configuration of fishing gear to the target environment and species. Assessment must confirm knowledge of: 1.5 Requirements, regulations, recommendations and fisheries information for best potential fishing outcome 1.6 All relevant environmental considerations.
2. Resource Implications	**The following resources should be provided:** 2.1 Electronic aids for locating fish 2.2 Navigational and fishing charts 2.3 Real or realistically simulated fishing operation
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1. Direct Observation with oral questioning 3.2. Demonstration with oral questioning 3.3. Written examination
4. Context of Assessment	4.1. Competency may be assessed individually in the actual workplace or through accredited institution

SECTION 3: TRAINING ARRANGEMENTS

TRAINEE ENTRY REQUIREMENTS

Trainees or students wishing to gain entry into this course must possess the following requirements:
- Good communication
- Basic arithmetic skills; and
- Certificate of Completion for completing 10 years of basic education or Alternative Learning System (ALS) with grade 10 equivalent holder

TRAINER'S QUALIFICATIONS FOR SONAR FISHING OPERATION LEVEL III

The trainer shall have the following qualifications:
- Must have two (2) years industry experience relevant to sonar fishing operation within the last five (5) years
- Must have training of trainers certificate **OR** must be a practicing trainer for two (2) years within the last five (5) years

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