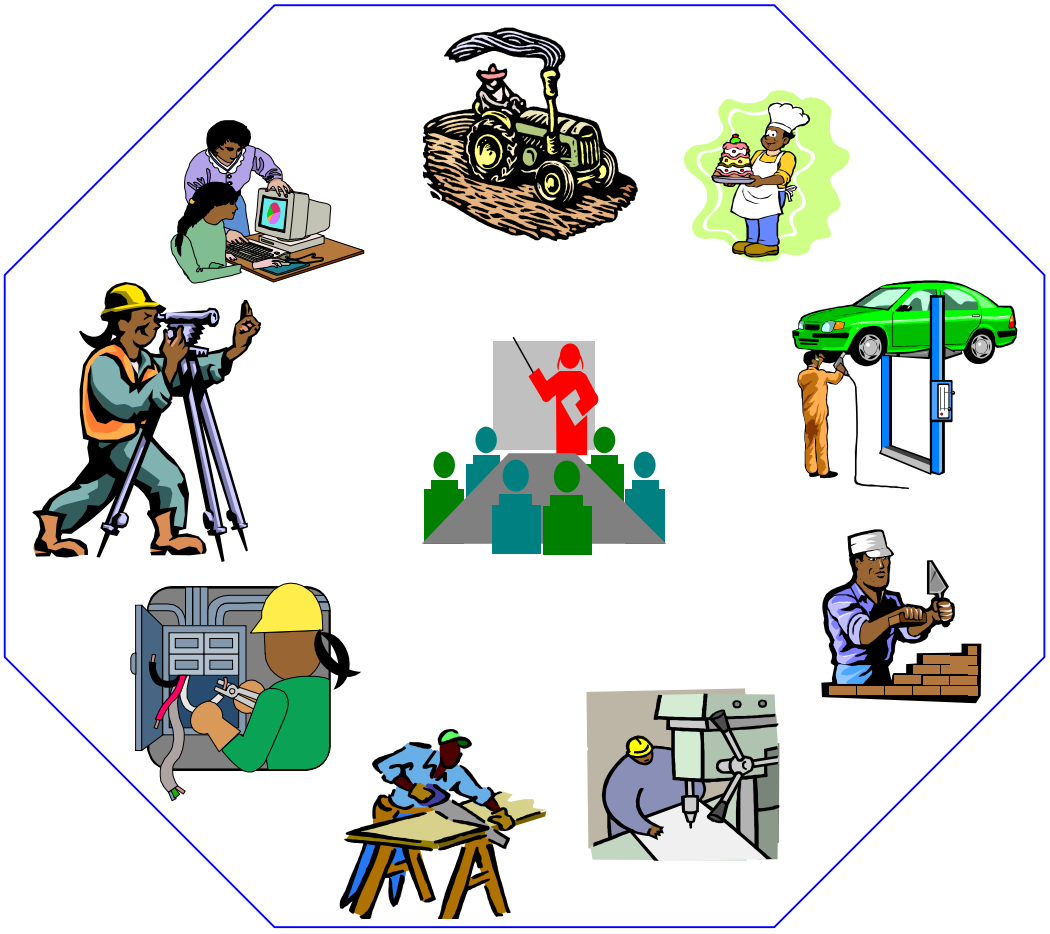
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

PULP AND PAPERMAKING OPERATIONS SUPERVISION

NTQF Level IV



Ministry of Education
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Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopian Occupational Standards (EOS) are - a core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF).They are national Ethiopia standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopian Occupational Standard comprised of Units of Competence.

A Unit Title describes a distinct work activity. It is documented in a standard format that comprises:

- Reference to Industry Sector, Occupational title, NTQF level
- Unit code
- Unit title
- Unit descriptor
- Unit of Competence
- Elements and performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit Title guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the respective occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the respective level including the Unit Codes and Unit of Titles
- contents of each Unit Title(competence standard)
- occupational map providing the Technical and Vocational Education and Training (TVET) providers with information and important requirements to consider when designing training programs for this standards, and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Pulp and Papermaking Operations Supervision		
Occupational Code: IND PPS		
NTQF Level IV		
IND PPS4 01 0613 Troubleshoot and Rectify Boiler Plant Systems	**IND PPS4 02 0613** Troubleshoot and Rectify Power Generation System	**IND PPS4 03 0613** Troubleshoot and Rectify Pulping Processes
IND PPS4 04 0613 Troubleshoot and Rectify Stock Preparation Systems	IND PPS4 05 0613 Troubleshoot and Rectify Waste Paper Operation	IND PPS4 06 0613 Troubleshoot and Rectify Chemical Recovery Operations
IND PPS4 07 0613 Identify, Assess and Control OHS Risk In Own Work	IND PPS4 08 0613 Oversee Quality Assurance Process	IND PPS4 09 0613 Apply Statistics to Processes in Manufacturing
IND PPS4 10 0613 Contribute to the Implementation of Emergency Procedures	IND PPS4 11 0613 Calculate and Analyse Production and Financial Performance	IND PPS4 12 0613 Perform Standard Calibration
IND PPS4 13 0613 Implement a Competitive Manufacturing System	IND PPS4 14 0613 Troubleshoot and Optimize Production Processes	IND PPS4 15 0613 Plan and Organize Work Activities
IND PPS4 16 0613 Migrate to New Technology	IND PPS4 17 0613 Establish Quality Standards	IND PPS4 18 0613 Develop Teams and Individuals
IND PPS4 19 0613 Utilize Specialized Communication Skills	IND PPS4 20 0613 Manage and Maintain Small/Medium Business Operations	IND PPS4 21 0613 Apply Problem Solving Techniques and Tools

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Troubleshoot and Rectify Boiler Plant Systems**
Unit Code	**IND PPS4 01 0613**
Unit Descriptor	This unit describes the outcomes required to troubleshoot and rectify boiler plant systems in the pulp and paper industry.

Element	Performance Criteria
1 Identify and diagnose causes of faults	1.1. Causes of faults are identified and diagnosed within Occupational Health and Safety (OHS) regulations, environmental and safe working ***productivity requirements***/practices, standard operating Procedures (SOP), and housekeeping requirements. 1.2. Abnormal plant conditions and system alarms are interpreted to determine fault type and location. 1.3. Physical inspections of plant, ***boiler types*** and processes are made to identify faults. 1.4. Cause and source of fault is identified and located. 1.5. Faulty plant is isolated, if possible, and confirmed with production and maintenance. 1.6. Diagnosis is confirmed by access and reference to relevant historical data. 1.7. Diagnoses are communicated to relevant personnel by ***sensory and situational information***.
2. Rectify faults	2.1. Faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 2.2. ***Pre-operational checks***, shutdown and isolation procedures are implemented as required. 2.3. Faulty ***equipment***, ***materials and supplies*** is repaired, ***maintained*** or replaced. 2.4. Take an ***action*** for adjustments to process and systems of normal operations. 2.5. Normal operation is ***communicated*** to relevant personnel. 2.6 ***Electronic control systems*** are checked for trouble shooting operation.
3. Record and report operational data	3.1. Operational data is recorded and reported within OHS ***regulations***, environmental and safe working ***documentation, procedures and reports*** requirements/practices, SOP, and housekeeping requirements. 3.2. Variations from standard specification and boiler operation

	faults are documented. 3.3. Troubleshooting process and corrective actions are recorded. 3.4. Relevant information is communicated to appropriate personnel.

Variable	Range
Productivity requirements	may include: • energy efficiency • waste minimisation • evaporation minimisation, including landfill and waste water reduction • environmentally safe waste disposal • consideration of resource utilisation, including fibre efficiency • minimising delays • chemical recovery maximisation • meeting key performance indicators • line speed • handovers • quality checks • meeting output targets i.e. net tonnes per employee per annum • machine/process time availability i.e. time the machine or process is making product • machine/process production rate
Boiler types	may include: • fire tube • water tube • and may be operated in conjunction with other steam driven plant and operations including: • paper making machines • turbines • digesters • evaporators • heating plant
Sensory and Situational information	may include: • visual • sound • feel • touch • smell • vibration • temperature • traffic • pedestrians • location of equipment and product
Pre-operational checks	may include: • low water level alarm

	• high water level alarm • low water level alarm lockout • hydrostatic test • burner management system • safety valve test
Equipment	may include: • boiler and auxiliary plant • boiler heating systems • steam distribution system • fuel and fuel delivery system plant • dust removal and combustion waste • fuel management system • extraction systems • water distribution systems • compressed air systems • steam temperature control plant • chemical dosing system • water treatment system • flame detection equipment • hand and power tools • computer systems • electronic screens and alarms • process control systems • analogue and digital instrumentation • fully automated, semi-automated, manually operated plant and equipment appropriate to steam generation operations
Materials and supplies	may include: • chemicals • coal • oil • gas • additives • air • water • wood waste • steam • recovery process products and power
Maintenance	may include • operator level maintenance as per site agreements • operator maintenance schedules • maintenance systems • maintenance suppliers • proactive maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)
Actions	may include: • process adjustments

	• reporting to authorised person • rectifying problem within level of responsibility
Communication	may include: • internal/external customers and suppliers • team members • production/service coordinators • maintenance services • operational management • statutory authorities • written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Electronic control systems	may include: • Digital Control System (DCS) • touch screens • robotics
regulation	may include: • OHS and environmental requirements (local, state and commonwealth) • activity or task specific high risk licensing requirements • appropriate boiler/pressure vessel operator certification • confined space standards and regulations
Documentation, procedures and reports	may include: • SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems • enterprise policies and procedures • job sheets • manufacturer's specifications • maintenance documentation • statutory requirements • Materials Safety Data Sheets (MSDS) • operator's log • process and instrument diagrams

Evidence Guide	
Critical Aspects of	Assessment requires evidence that the candidate:

Competence	• the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in troubleshooting and rectifying boiler plant system
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Procedures, regulations and legislative requirements relevant to steam generation operations including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping • Relevant forms of communication • Steam generation system, processes and associated services sufficient to troubleshoot including: ➢ plant layout ➢ theory of operation ➢ causes and effects of adjustments made to steam generation plant and processes ➢ relationships between steam generation system, processes and associated services • An appropriate range of troubleshooting methods • Types, causes and effects of plant shutdowns • Impact and effect of inappropriate responses to shutdown • Plant start-up and shutdown procedures • Plant operation and control mechanisms • Boiler water treatment system and reasons for treatment • Application of high risk equipment as required • Sensory information that indicates a deviation from standard operating parameters • Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control boiler plant operations, within level of responsibility
Underpinning Skills	Demonstrates skills to: • Identify, access and interpret relevant historical and operational data and information • Use required forms of communication in troubleshooting and rectifying boiler plant systems • Read and interpret required documentation, procedures and reports within level of responsibility • Access, navigate and enter computer-based information • Interpret instruments, gauges and data recording equipment • Communicate effectively with personnel to assist with analysis and resolution of operational problems • Assist others to identify and resolve operational problems in the workplace

	• Identify and actions systems, quality and equipment faults within level of responsibility • Identify causes and effects of faults and corrective action on associated processes • Identify and respond to causes of shutdowns • Determine quality faults, effects and causes • Select and use appropriate troubleshooting methods • Use troubleshooting guides and processes • Take timely corrective action to maximise safety, quality and productivity • Undertake necessary calculations to aid troubleshooting as required • Identify and monitor process control points • Maintain situational awareness in the work area • Perform tests and interpret and record results as required • Confirm and maintain required production throughput after restart • Initiate isolations in accordance with SOP • Conducts routine checking procedures during plant and systems operation • Maintain plant operation within specification • Use measuring equipment as required • Operate high risk equipment as required • Analyse and use sensory information to adjust process to maximise safety, quality and productivity • Use electronic and other control systems to control equipment and processes as required
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Unit Title	Troubleshoot and Rectify Power Generation System
Unit Code	IND PPS4 02 0613
Unit Descriptor	This unit describes the outcomes required to troubleshoot and rectify power generation systems in the pulp and paper industry.

Element	Performance Criteria
1.Identify and diagnose causes of faults	1.1 Causes of faults are identified and diagnosed within Occupational Health and Safety (OHS) regulations, environmental and safe working ***productivity requirements*** requirements/practices, standard operating procedures (SOP), and housekeeping requirements. 1.2. Abnormal plant conditions and system alarms are interpreted to determine fault type and location. 1.3. Physical inspections ***equipment*** s of plant and processes are made to identify faults. 1.4. Cause and source of fault is identified and located. 1.5. Relevant historical data is accessed/referred to, to confirm diagnosis. 1.6. Diagnoses are communicated to relevant personnel. 1.7. The availability of ***materials and supplies*** are checked. 1.8. ***Electronic control system*** is checked.
2. Rectify faults	2.1. Faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 2.2. Shutdown and isolation procedures are implemented as required. 2.3. Faulty equipment is repaired or replaced. 2.4. Adjustments to process and systems are made to restore normal operations. 2.5. Restoration to normal operation is verified and communicated to relevant personnel.
3. Rectify power quality and distribution faults	3.1. ***Management and operation of power generation*** /Power quality and distribution faults are rectified within OHS, SOP, environmental and safe working requirements and practices. 3.2. Power quality faults/variations are identified by observation, systematic sampling and testing. 3.3. Measurements are taken and tests conducted according to established enterprise procedures and SOP. 3.4. Power quality is adjusted whilst generator is on-line to correct variations from specification.

4. Record and report operational data	4.1. Operational data is recorded and reported within OHS ***regulations***, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 4.2. Variations from required production output and systems operation faults are ***documented***. 4.3. Troubleshooting process and corrective ***actions*** are recorded 4.4. Relevant information is ***communicated*** through ***sensory information*** in different ***forms of communication*** to appropriate personnel.

Variable	**Range**
Productivity requirements	may include : • energy efficiency • waste minimisation • evaporation minimisation, including landfill and waste water reduction • environmentally safe waste disposal • consideration of resource utilisation, including fibre efficiency • minimising delays • chemical recovery maximisation • meeting key performance indicators • line speed • handovers • quality checks • meeting output targets i.e. net tonnes per employee per annum • machine/process time availability i.e. time the machine or process is making product • machine/process production rate
Equipment	• boilers • high and low voltage transformers • steam or gas turbine driven alternators • switchboards • water systems and auxiliary plant • circuit breakers • AC/DC generation and distribution systems • protective equipment • measuring and recording equipment • computer systems • electronic screens and alarms • process control systems • analogue and digital instrumentation • fully automated, semi-automated, manually operated plant and equipment appropriate to the power generation process
Materials and supplies	may include: • water, air, steam, electricity and gas

Electronic control systems	may include: • Digital Control System (DCS), touch screens and robotics
Management and operation of power generation	may include: • availability of required supplies • electricity generation • regulation and distribution systems
Regulation	may include: • OHS and environmental requirements (local, state and commonwealth) • activity or task specific high risk licensing requirements • operator endorsement requirements • local power authority rules and regulations
Documentation	may include: • SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • enterprise policies and procedures • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems • operational logs and reports • maintenance logs • Materials Safety Data Sheets (MSDS) • process and instrument diagrams
Actions	may include: • process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Communications	may include interaction with: • internal/external customers and suppliers • team members • production/service coordinators • maintenance services • operational management and statutory authorities
Forms of communication	may include: • written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access

Evidence Guide

Critical Aspects of Competence	Assessment requires evidence that the candidate: • the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in troubleshooting and rectifying power generation systems
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Procedures, regulations and legislative requirements relevant to power generation system operation including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping • Relevant forms of communication • Detailed knowledge of power generation system, processes and associated services sufficient to troubleshoot including: ➢ plant layout ➢ theory of operation ➢ causes and effects of adjustments made to power generation plant and processes ➢ relationships between power generation system, processes and associated services • An appropriate range of troubleshooting methods • Sampling and testing processes for plant and system operations, and process steam supply monitoring - purpose, standards and procedures as per site agreements • Types, causes and effects of power generation plant shutdowns • Effect of steam quality on turbine operation • Operational tolerances of the turbine system and the effect of operating outside these tolerances • AC/DC generation principles • Output control and regulation principles • Power factor characteristics, effects and correction techniques • Electrical isolation procedures • Principles of operation of transformers and circuit protection systems • Power distribution systems • Application of high risk equipment, as required • Sensory information that indicates a deviation from standard operating parameters • Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control power generation systems, within level of responsibility

Underpinning	Demonstrates skills to:

Skills	• Identify, access and interpret relevant historical and operational data and information • Use required forms of communication in troubleshooting and rectifying power generation systems • Read and interpret required documentation, procedures and reports within level of responsibility • Access, navigate and enter computer-based information • Interpret instruments, gauges and data recording equipment • Communicate effectively with personnel to assist with analysis and resolution of operational problems • Assist others to identify and resolve operational problems in the workplace • Identify and action systems, quality and equipment faults within level of responsibility • Identify causes and effects of faults and corrective action on associated processes • Select and use appropriate troubleshooting methods • Take timely corrective action to maximise safety, quality and productivity • Undertake necessary calculations to aid troubleshooting as required • Identify and monitor process control points • Maintain situational awareness in the work area • Perform tests and interprets and records results as required • Use measuring equipment as required • Identify and respond appropriately to shutdown causes • Initiate and apply isolations and lockouts as required • Maintain required power outputs consistently to specification • Conduct routine checking procedures during plant and systems operation • Use tools and equipment • Operate high risk equipment as required • Analyse and use sensory information to adjust process to maximise safety, quality and productivity • Use electronic and other control systems to control equipment and processes as required
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Troubleshoot and Rectify Pulping Processes**
Unit Code	**IND PPS4 03 0613**
Unit Descriptor	This unit describes the outcomes required to troubleshoot and rectify pulping processes in the pulp and paper industry.

Element	Performance Criteria
1. Identify and analyse causes of faults	1.1. Causes of faults are identified and analysed within Occupational Health and Safety (OHS) regulations, environmental and safe working ***productivity requirements*** /practices, Standard Operating Procedures (SOP), and housekeeping requirements. 1.2. Alarms are interpreted to determine fault type and location. 1.3. Sampling and testing results are interpreted to identify variations from specifications or schedule. 1.4. Cause and source of fault is identified and located using appropriate diagnostic procedures. 1.5. Relevant sources of information are accessed and interpreted to assist analysis. 1.6. ***Operational parameters*** are checked according to the schedule.
2. Rectify plant faults	2.1. Plant faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 2.2. Operator level ***equipments, electronic control systems,*** and on-line adjustments are conducted. 2.3. Plant is shut down and isolation procedures are implemented prior to fault rectification. 2.4. Faulty plant is isolated, by-passed, repaired or replaced as required. 2.5. Plant is returned to normal operation. 2.6. Verification is ***communicated*** to relevant personnel. 2.7 ***Storage levels*** and ***pulping processes*** are checked. 2.8 Operator level ***Maintenance*** is carried out.
3. Rectify product quality faults	3.1. Product quality faults are rectified within OHS ***regulations,*** environmental and safe working requirements/practices, SOP, and housekeeping requirements. 3.2. Quality faults or variations are identified by observation, systematic sampling and testing.

	3.3. Test results are interpreted and operations adjusted to correct faults. 3.4. Faults and causes are rectified if appropriate, or recommendations made for further action. 3.5. Out-of-specification product is managed. 3.6 Relevant ***materials and supplies*** are checked.
4. Record and report process performance and product quality data	4.1. Process performance and product quality data is recorded and reported within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 4.2. Variations from specification of product are documented. 4.3. Process variation and faults are recorded. 4.4. ***Actions*** undertaken to troubleshoot and rectify faults are recorded and ***documented***. 4.5. Relevant information is ***communicated*** through ***sensory*** to appropriate personnel in different ***forms of communications***.

Variable	**Range**
Productivity requirements	may include: • energy efficiency • waste minimisation • evaporation minimisation, including landfill and waste water reduction • environmentally safe waste disposal • consideration of resource utilisation, including fibre efficiency • minimising delays • chemical recovery maximisation • meeting key performance indicators • line speed • handovers • quality checks • meeting output targets i.e. net tonnes per employee per annum • machine/process time availability i.e. time the machine or process is making product • machine/process production rate
Operational parameters	may include: • flows • temperatures • pressures • through put • consistencies • amps • set points

	• valve settings • levels • interlocks
Equipment	may include: • power and steam systems • hydraulic and electrical systems • chemical delivery and processing • conveyors and pump distribution equipment • pneumatic systems • process plant • materials handling equipment • hand and power tools • computer systems • electronic screens and alarms • process control systems • analogue and digital instruments • fully automated, semi-automated, manually operated plant and equipment appropriate to pulping operations
Electronic control systems	may include: • Digital Control System (DCS) • touch screens • robotics
Communication	may include • internal or external • customers and suppliers • team members • maintenance services • operational management • statutory authorities
Storage levels	may include: • vats • chests • silos • tanks • bins • piles
Pulping processes	may include: • bleaching plant operations • refining • chip preparation • cleaning or washing systems • chemical preparation and treatment • pulp lapping production • stock distribution and storage • digester operations • mechanical pulping systems

	• Products of these processes may include: ➢ bleached or unbleached pulp ➢ fluff pulp ➢ crumbed pulp ➢ baled, rolled or sheet pulp ➢ slashed pulp
Maintenance	may include: • operator level maintenance as per site agreement • operator maintenance schedules • calibrating test equipment • maintenance systems • maintenance suppliers • proactive maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)
regulation	may include: • OHS and environmental requirements (local, state and commonwealth) • activity or task specific high risk (and non-high risk) load shifting licensing requirements • relevant endorsed licences • hazardous chemical handling • air and gas discharges • safety instructions
Materials and supplies	may include: • woodchips • pulp • steam • water • chemicals • power
Actions	may include: • process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Documentation	may include: • SOP • work instructions or purchase orders • environmental sustainability requirements/practices • plant manufacturing operating manuals • quality procedures • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems • log sheets and shift reports • work orders

	• delivery or distribution documentation • tally or production records • incident reports • Materials Safety Data Sheets (MSDS) • process and instrumentation diagrams
Sensory	may include: • visual • sound • feel • touch • smell • vibration • temperature
Forms of communications	may include: • written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in troubleshooting and rectifying pulping processes
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Procedures, regulations and legislative requirements relevant to pulping operations including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping • Use and handling requirements of chemicals used; their purpose, effects, MSDS and SOP • Relevant forms of communication • Detailed knowledge of pulping plant, processes and associated services sufficient to troubleshoot including: • plant layout • theory of operation • causes and effects of adjustments made to pulping plant and processes

	• relationships between pulping plant, processes and associated services • An appropriate range of troubleshooting methods • Sampling and testing process for plant and system operations, and process monitoring - purpose, standards and procedures as per site agreements • Causes and effects of unplanned shutdown and appropriate responses • Maintenance system as it applies to pulping operations • Application of high risk (and non-high risk) load shifting equipment as required • Sensory information that indicates a deviation from standard operating parameters • Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control pulping operations, within level of responsibility
Underpinning Skills	Demonstrates skills in: • Uses required forms of communication in troubleshooting and rectifying pulping processes • Communicates effectively with personnel to assist with analysis and resolution of operational problems • Reads and interprets required documentation, procedures and reports • Accesses, navigates and enters computer-based information • Interprets instruments, gauges and data recording equipment • Identifies and actions systems, quality and equipment faults within level of responsibility • Assists others to identify and resolve operational problems in the workplace • Identifies causes and effects of faults and corrective action on associated processes • Selects and uses appropriate troubleshooting methods • Takes timely corrective action to maximise safety, quality and productivity • Undertakes necessary calculations to aid troubleshooting as required • Identifies, accesses and interprets relevant historical and operational data and information • Takes samples, conducts tests, interprets and records results if required • Uses measuring equipment as required • Maintains situational awareness in the work area • Handles emergencies or crash shutdowns • Operates high risk (and non-high risk) load shifting equipment as required • Uses electronic and other control systems to control equipment and processes as required

	• Analyses and uses sensory information to adjust process to maximise safety, quality and productivity
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Troubleshoot and Rectify Stock Preparation Systems**
Unit Code	**IND PPS4 04 0613**
Unit Descriptor	This unit describes the outcomes required to troubleshoot and rectify stock preparation systems in the pulp and paper industry.

Element	Performance Criteria
1. Identify and analyse causes of systems and quality faults	1.1. Causes of systems and quality faults are identified and analysed within Occupational Health and Safety (OHS) regulations, environmental and safe working ***Productivity requirements***/practices, Standard Operating Procedures (SOP), and housekeeping requirements. 1.2. Alarm systems and observations are interpreted to determine fault type and location. 1.3. Routine inspections of plant and processes are made to identify faults. 1.4. Sampling and testing results are interpreted to identify variations from operating parameters. 1.5. Cause and source of problem is identified and located. 1.6. Relevant sources of information are accessed and interpreted to assist analysis. 1.7. Information is communicated to relevant personnel.
2. Rectify systems and equipment faults	2.1. ***Systems*** and equipment faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 2.2. ***Equipment*** and ***Electronic control systems*** is shut down and isolated prior to fault rectification if required. 2.3. Faulty equipment is by-passed where the process allows. 2.4. Faulty equipment is repaired or replaced as required. 2.5. Corrective adjustments are made to equipment. 2.6. Operator level ***maintenance*** is undertaken as required. 2.7. Restoration to normal operation is verified and communicated to relevant personnel. 2.8 ***Hazards and risks involved in stock preparation*** are considered.
3. Rectify product quality faults	3.1. Product quality faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements.

	3.2. Product quality faults or variations are identified by observation inspection and testing. 3.3. Samples for a range of tests are taken. 3.4 The availability and quality of ***materials and supplies*** are checked. 3.5. Test results are interpreted and processes are adjusted to correct variations from specification.
4. Record and report process performance and product quality data	4.1. Process performance and product quality data is recorded and reported within OHS ***regulations***, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 4.2. Variations from specifications are ***documented***. 4.3. Performance variations are documented. 4.4. Corrective ***actions*** are recorded. 4.5. Out-of-specification product is dealt with. 4.6. Information is ***communicated*** through ***sensory information*** indifferent ***forms of communication*** to appropriate personnel.

Variable	**Range**
Productivity requirements	may include: • energy efficiency • waste minimisation • evaporation minimisation, including landfill and waste water reduction • environmentally safe waste disposal • consideration of resource utilisation, including fibre efficiency • minimising delays • chemical recovery maximisation • meeting key performance indicators • line speed • handovers • quality checks • meeting output targets i.e. net tonnes per employee per annum • machine/process time availability i.e. time the machine or process is making product • machine/process production rate
Systems	may include: • refining systems • blending system • proportioning system • broke system • stock chests • water chests

	• cleaning system • water recovery system • chemical and additive plants • bale handler • broke baler • wire coiler
Equipment	may include: • refiners • pumps • valves • chests • agitators • pulpers • screens • cleaners • showers • disc deckers • consistency controllers • screw press • water recovery equipment • computer systems • electronic screens and alarms • process control systems • fully automated, semi-automated, manually operated plant and equipment appropriate to stock preparation systems
Electronic control systems	may include: • Digital Control System (DCS) • touch screens • robotics
Maintenance	may include: • operator level maintenance as per site agreements • operator maintenance schedules • maintenance systems • maintenance suppliers • pro-active maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)
Hazards and risks involved in stock preparation	may include: • steam and/or gas leaks • fires • nip points • compressed air • hot surfaces • electrical • entanglement • slip hazards/falls • energy

	• pressures • chemicals • fumes • confined spaces • dust
Materials and supplies	may include: • water • stock • compressed air • chemicals • additives • steam • baled pulp
regulation	may include: • OHS and environmental requirements (local, state and commonwealth) • activity or task specific high risk (and non-high risk) load shifting licensing requirements
Documentation	may include: • SOP • site policy and procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • confined space requirements • vendor documentation • reference manual • grade specifications • quality procedures • oil or chemical spills and disposal guidelines • plant isolation documentation • housekeeping • safe work documentation e.g. plant clearance, job safety analysis, permit systems • maintenance logs • job sheets • operating log • production instructions • Materials Safety Data Sheets (MSDS) • process and instrument diagrams
Actions	may include: • process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Communication	may include interaction with: • team members • production/service co-ordinators

	• internal/external customers and suppliers • maintenance services • operational management • statutory authorities
Forms of communications	may include: • written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. standard operating procedures, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Sensory information	may include: • visual • sound • feel • touch • smell • vibration • temperature

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in troubleshooting and rectifying of stock preparation systems
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Procedures, regulations and legislative requirements relevant to stock preparation systems including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping • Use and handling requirements of chemicals used; their purpose, effects, MSDS and SOP • Relevant forms of communication • Detailed knowledge of stock preparation plant, processes and associated services sufficient to troubleshoot including: ➢ plant layout ➢ theory of operation ➢ causes and effects of adjustments made to stock preparation plant and processes ➢ relationships between stock preparation plant, processes and associated services

	• An appropriate range of troubleshooting methods • Sampling and testing process for plant and system operations, and process monitoring - purpose, standards and procedures as per site agreements • Causes and effects of unplanned shutdown and appropriate responses • Mill maintenance system as it applies to stock preparation plant and processes • Application of high risk (and non-high risk) load shifting equipment, as required • Sensory information that indicates a deviation from standard operating parameters • Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control stock preparation systems, within level of responsibility
Underpinning Skills	Demonstrates skills in: • Identifies, accesses and interprets relevant historical and operational data and information • Uses required forms of communication in troubleshooting and rectifying stock preparation systems • Communicates effectively with personnel to assist with analysis and resolution of operational problems • Reads and interprets required documentation, procedures and reports • Interprets instruments, gauges and data recording equipment • Accesses, navigates and enters computer-based information • Identifies and actions systems, quality and equipment faults within level of responsibility • Assists others to identify and resolve operational problems in the workplace • Identifies causes and effects of faults and corrective action on associated processes • Takes samples, conducts tests, interprets and records results • Selects and uses appropriate troubleshooting methods • Takes timely corrective action to maximise safety, quality and productivity • Undertakes necessary calculations to aid troubleshooting as required • Uses measuring equipment as required • Maintains situational awareness in the work area • Operates high risk (and non-high risk) load shifting equipment as required • Analyses and uses sensory information to adjust process to maximise safety, quality and productivity • Uses electronic and other control systems to control equipment and processes as required

Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Troubleshoot and Rectify Waste Paper Operation**
Unit Code	**IND PPS4 05 0613**
Unit Descriptor	This unit describes the outcomes required to troubleshoot and rectify waste paper operations in the pulp and paper industry.

Element	Performance Criteria
1. Identify and analyse causes of faults	1.1. Causes of faults are identified and analysed within Occupational Health and Safety (OHS***) regulations***, environmental and safe working ***Productivity requirements***/practices, Standard Operating Procedures (SOP), and housekeeping requirements. 1.2. Alarms are interpreted to determine fault type and location. 1.3. Sampling and testing results are interpreted to identify variations from specifications or schedule. 1.4. Causes and sources of fault are identified and located. 1.5. Relevant sources of information are accessed and interpreted to assist analysis.
2. Rectify plant faults	2.1. Plant faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 2.2. Operator level on-line adjustments are conducted as required. 2.3. Plant is ***shut down*** and isolation procedures are implemented prior to fault rectification. 2.4. Faulty plant ***equipment*** is isolated, by-passed, repaired/***maintained*** or replaced as required. 2.5. Plant is returned to normal operation. 2.6. Verification is ***communicated*** through ***sensory*** in different ***forms of communication*** to relevant personnel.
3. Rectify product quality faults	3.1. Product quality faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 3.2. Quality faults or variations are identified by observation, systematic sampling and testing. 3.3. Test results are interpreted and operations are adjusted to correct faults. 3.4. Faults and causes are rectified if appropriate or recommendations made for further action.

	3.5. ***Waste paper operations*** and ***Materials and supplies*** are under taken. 3.5. Out-of-specification product is managed.
4. Record and report system performance and product quality data	4.1. System performance and product quality data is recorded and reported within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 4.2. Process variations and faults are recorded. 4.3. Stock production and machine operation faults are recorded. 4.4. ***Actions*** undertaken to troubleshoot and rectify faults are recorded/***documented***. 4.5. Relevant information is communicated to appropriate personnel.

Variable	**Range**
Regulation	may include: • OHS and environmental requirements (local, state and commonwealth) • activity or task specific high risk (and non-high risk) load shifting licensing requirements
Productivity requirements	may include: • energy efficiency • waste minimisation • evaporation minimisation, including landfill and waste water reduction • environmentally safe waste disposal • consideration of resource utilisation, including fibre efficiency • minimising delays • chemical recovery maximisation • meeting key performance indicators • line speed • handovers • quality checks • meeting output targets i.e. net tonnes per employee per annum • machine/process time availability i.e. time the machine or process is making product • machine/process production rate
Shutdown	may be caused by: • product change • mechanical failures • crash shut • full storage or low supply storage • maintenance shut • process failures

Equipment	may include: • broke handling systems • fork trucks and front end loaders • cranes • communication equipment and 2-way radios • computer systems • electronic screens and alarms • process control systems • analogue and digital instruments • fully automated, semi-automated, manually operated plant and equipment appropriate to waste paper operations
Maintenance	may include: • operator level maintenance as per site agreement • operator maintenance schedules • maintenance systems • maintenance suppliers • proactive maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)
Sensory information	may include: • visual • sound • feel • touch • smell • vibration • temperature
Forms of communications	may include: • written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Waste paper operations	may include: • pulping • screening • de-watering • reject systems
Materials and supplies	may include: • waste paper • air • chemicals • broke • steam • water and electricity

Actions	may include: • process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Documentation	may include: • SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems • Material Safety Data Sheets (MSDSs) • furnish sheets • tally sheets • process and instrument diagrams

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in troubleshooting and rectifying waste paper operations
Underpinning Knowledge and Attitudes	Demonstrates knowledge of - • Procedures, regulations and legislative requirements relevant to waste paper operation including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping • Relevant forms of communication • Detailed knowledge of waste paper system, processes and associated services sufficient to troubleshoot including: ➢ plant layout ➢ theory of operation ➢ causes and effects of adjustments made to waste paper plant and processes ➢ relationships between waste paper plant system, processes and associated services • An appropriate range of troubleshooting methods • Sampling and testing process for plant and system operations, and process monitoring - purpose, standards and procedures as per site agreements • Purpose and operation of reject systems

	• Purpose and operation of water systems • Purpose and effects of process variables on production and quality • Plant operation and control mechanisms • Application of high risk (and non-high risk) load shifting equipment as required • Sensory information that indicates a deviation from standard operating parameters • Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control waste paper operation, within level of responsibility
Underpinning Skills	Demonstrates skills to: • Identify, access and interpret relevant historical and operational data and information • Use required forms of communication in troubleshooting and rectifying waste paper operations • Read and interpret required documentation, procedures and reports • Access, navigate and enter computer-based information • Interpret instruments, gauges and data recording equipment • Communicate effectively with personnel to assist with analysis and resolution of operational problems • Assist others to identify and resolve operational problems in the workplace • Identify and actions systems, quality and equipment faults within level of responsibility • Identify causes and effects of faults and corrective action on associated processes • Select and use appropriate troubleshooting methods • Take timely corrective action to maximise safety, quality and productivity • Undertake necessary calculations to aid troubleshooting as required • Use troubleshooting guides and diagnostic procedures • Demonstrate that stock quality is consistently within specification • Maintain situational awareness in the work area • Take samples, conducts tests, interprets and records results if required • Operate high risk (and non-high risk) load shifting equipment, as required • Analyse and use sensory information to adjust process to maximise safety, quality and productivity • Use electronic and other control systems to control equipment and processes as required

Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Troubleshoot and Rectify Chemical Recovery Operations**
Unit Code	**IND PPS4 06 0613**
Unit Descriptor	This unit describes the outcomes required to troubleshoot and rectify chemical recovery operations in the pulp and paper industry.

Element	Performance Criteria
1. Identify and analyse causes of faults	1.1. Causes of faults are identified and analysed within Occupational Health and Safety (OHS) ***regulations***, environmental and safe working ***productivity requirements***/practices, Standard Operating Procedures (SOP), and housekeeping requirements. 1.2. Warning devices are interpreted to determine fault type and location. 1.3. Samples for a range of tests are taken. 1.4. Quality faults and variations are identified by observation, systematic sampling and testing. 1.5. Sampling and testing results are interpreted to identify variations from specifications or schedule. 1.6. Causes and sources of ***chemical recovery process*** problems or equipment faults are identified, located and analysed. 1.7. Relevant sources of information are accessed and interpreted to assist analysis.
2. Rectify process problems and equipment faults	2.1. Process problems and equipment faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 2.2. Operator level on-line adjustments are conducted. 2.3. Plant ***electronic control systems*** shut down and isolation procedures are implemented prior to fault rectification. 2.4. Hazardous conditions are identified, appropriate action is taken and the conditions communicated to relevant personnel. 2.5. Faulty ***equipment*** is isolated or bypassed, repaired/***maintained*** or replaced as required. 2.6. Plant and equipment are returned to normal operation as required. 2.7. Action taken is communicated to relevant personnel.
3. Rectify product quality faults	3.1. Product quality is rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements.

	3.2. Out-of-specification product is controlled. 3.3. Faults and causes are rectified if appropriate, or recommendations made for further action. 3.4 ***Materials and supplies*** are checked. 3.5. Further tests are conducted as required.
4. Report and record system performance and product quality data	4.1. System performance and product quality data is reported and recorded within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 4.2. Variations from process specification are recorded. 4.3. ***Actions*** undertaken to troubleshoot and rectify faults are recorded. 4.4. Details of hazardous conditions or situations are ***documented*** as required. 4.5. Relevant information is ***communicated*** through ***sensory*** in different ***forms of communications*** to appropriate personnel.

Variable	**Range**
Regulation	may include: • OHS and environmental requirements (local, state and commonwealth) • activity or task specific high risk (and non-high risk) load shifting licensing requirements • hazardous chemical handling
Productivity requirements	may include: • energy efficiency • waste minimisation • evaporation minimisation, including landfill and waste water reduction • environmentally safe waste disposal • consideration of resource utilisation, including fibre efficiency • minimising delays • chemical recovery maximisation • meeting key performance indicators • line speed • handovers • quality checks • meeting output targets i.e. net tonnes per employee per annum • machine/process time availability i.e. time the machine or process is making product • machine/process production rate
Chemical recovery processes	may include: • evaporator operations

	• condensate stripper • lime mud treatment • Wet Air Oxidation (WAO) • caustic sing plant operations • recovery boiler operations • Direct Alkali Reduction System (DARS) operations • foul gas and condensate incineration • white liquor • green liquor • black liquor • condensates • non-condensable gases • thick liquor • spent liquor • quench liquor • weak wash • anthraquinone (AQ) • caustic • magnesium oxide • sulphur
Electronic control systems	may include: • Digital Control System (DCS) • touch screens and robotics
Equipment	may include: • power or steam generation • pneumatic systems • water supply systems and equipment • process plant • pumps and transfer equipment • mechanical, hydraulic and electrical systems • process monitoring and management equipment • mobile equipment (e.g. skid steer, forklift, elevated work platform, loaders) • computer systems • electronic screens and alarms • process control systems • analogue and digital instruments • fully automated, semi-automated, manually operated plant and equipment appropriate to chemical recovery operations
Maintenance	may include: • operator level maintenance as per site agreement • maintenance systems • operator maintenance schedules • maintenance suppliers • proactive maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)

Materials and supplies	may include: • steam • compressed air • chemicals • water • power
Actions	may include: • process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Documentation	may include: • SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • work instructions and orders • incident reports • log sheets and shift reports • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation (e.g. plant clearance, job safety analysis, permit systems) • Emergency Operational Procedures (EMOs) • process and instrument diagrams • non-conformance reports
Communication	may include interaction with: • team members • internal or external customers and suppliers • maintenance services • production/services co-ordinator • operational management and statutory authorities
Sensory	may include: • visual • sound • feel • touch • smell • vibration and temperature
Forms of communications	may include: • written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in troubleshooting and rectifying chemical recovery operations
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Procedures, regulations and legislative requirements relevant to chemical recovery operations including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping • Use and handling requirements of chemicals used; their purpose, effects, MSDS and SOP • Relevant forms of communication • Detailed knowledge of chemical recovery plant, processes and associated services sufficient to troubleshoot including: ➢ plant layout ➢ theory of operation ➢ causes and effects of adjustments made to chemical recovery plant and processes ➢ relationships between chemical recovery plant, processes and associated services • An appropriate range of troubleshooting methods • Sampling and testing processes for plant and system operations, and process monitoring - purpose, standards and procedures as per site agreements • Causes and effects of unplanned shutdown and appropriate responses • Maintenance system as it applies to chemical recovery operations • Application of high risk (and non-high risk) load shifting equipment as required • Sensory information that indicates a deviation from standard operating parameters • Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control the chemical recovery, within level of responsibility
Underpinning Skills	Demonstrates skills to: • Identify, access and interpret relevant historical and operational data • Use required forms of communication in troubleshooting and rectifying chemical recovery operations

	• Communicate effectively with personnel to assist with analysis and resolution of operational problems • Prepare detailed written information • Read and interpret required documentation, procedures and reports • Interpret instruments, gauges and data recording equipment • Assists others to identify and resolve operational problems in the workplace • Access, navigate and enter computer-based information • Identify and actions systems, quality and equipment faults within level of responsibility • Identify causes and effects of faults and corrective action on associated processes • Select and use appropriate troubleshooting methods • Take timely corrective action to maximise safety, quality and productivity • Undertake necessary calculations to aid troubleshooting as required • Take samples, conducts tests, interprets and records results if required • Use measuring equipment as required • Maintain situational awareness in the work area • Handle emergencies or crash shutdowns • Operate high risk (and non-high risk) load shifting equipment as required • Analyse and use sensory information to adjust process to maximise safety, quality and productivity • Use electronic and other control systems to control equipment and processes as required
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Identify, Assess and Control OHS Risk in Own Work**
Unit Code	**IND PPS4 07 0613**
Unit Descriptor	This unit specifies the workplace performance required by a technician or specialist in addressing OHS risk, to ensure their own safety, as well as that of others who may be affected by their work.

Element	Performance Criteria
1. Identify hazards and assess risk associated with a product or system of work	1.1. The ***life cycle*** of the product or system of work is ***mapped***. 1.2. Identify hazards at each stage of the life cycle. 1.3. Systematically analyse the hazards to identify risk of injury, illness or damage arising from the hazard. 1.4. Identify factors contributing to the ***risk***. 1.5. Assess and evaluate the ***product*** or ***system of work*** against provisions of relevant ***OHS legislation***, ***standards***, ***codes of practice/compliance*** codes or ***guidance material***. 1.6. Consult potential users of the product or system of work.
2. Control the risk of a product or system of work	2.1. Develop ***risk controls*** based on the ***hierarchy of control.*** 2.2. Where there is a ***high consequence OHS risk***, design ***fail-to-safe*** action into the product or system of work to minimise the impact of possible failure or defect. 2.3. Monitor product or work system development as it evolves to identify new ***hazards*** and to manage any developing risk. 2.4. Use a ***risk register*** to document ***residual risk*** and recommended actions to minimise risk. 2.5. Recognise personal professional limitations and seek ***expert advice*** as required. 2.6. Communicate the risk management process and resultant risk register to those who may use or interact with the product or system of work. 2.7. Document hazard identification***,*** risk assessment and risk control processes and make available to those who may be affected.
3. Identify hazards and assess risks in own work	3.1. Identify and access ***sources of OHS*** information. 3.2. Identify and eliminate hazards, reporting residual risk in line with ***organisational procedures***. 3.3. Use a risk register to document residual risk and actions to minimise risk based on the hierarchy of control.

4. Control risk in own work	4.1. Ensure work practices follow documented ***work procedures***. 4.2. Ensure work planning and conduct takes account of residual risk register. 4.3. Identify and address and/or report deficiencies in risk controls in line with organisational procedures. 4.4. Maintain ***OHS records*** as required. 4.5. Recognise personal professional limitations and seek expert advice as required.

Variable	**Range**
Life cycle	May include but not limited to: • design and development • manufacture, construction, assembly • import, supply, distribution • sale, hire or lease • storage • transport • installation, erection and commissioning • use, operation, consumption • maintenance, servicing, cleaning, adjustment, inspection, repair, modification, refurbishment, renovation • recycling, resale • decommissioning, dismantling, demolition, discontinuance, disposal
Map	it includes: • people who may use or interface with the product or system of work • the range of uses of the product or system of work, both intended and unintended
Risk:	it includes: • in relation to any hazard, means the probability and consequences of injury, illness or damage resulting from exposure to a hazard
Product	may include: • development • production • modification of physical objects, such as: ➢ plant ➢ equipment ➢ tool ➢ fittings ➢ fixtures ➢ consumables
System of work	may include: • work process

	• work practice or procedure • the way work is organised such as: ➢ team and supervision structure ➢ reporting lines ➢ roster ➢ geographical location
OHS legislation	It includes: • commonwealth, state and territory OHS Acts and regulations
Standards	include: • documents produced by national bodies, OHS regulators or industry bodies, that prescribe preventative action to avert occupational deaths, injuries and diseases • Standards are of an advisory nature only, except where a law adopts the standard and thus makes it mandatory • Standards may be called up as evidence in court or other enforcement action
Codes of practice/compliance	May include: • documents generally prepared to provide advice to employers and workers, of an acceptable way of achieving standards • may provide information for use by unions, employers, management, health and safety committee members and representatives, safety officers and others requiring guidance • Codes of practice/compliance codes may: ➢ be incorporated into regulations ➢ not relate to a standard ➢ be called up as evidence in court or other enforcement action
Guidance material:	may include: • is an advisory technical document, providing detailed information for use by unions, employers, management, health and safety committee members and representatives, safety officers and others requiring guidance • advises on 'what to do' and 'how to do it' • has no legal standing
Risk controls	May include: • the devices and methods to: • where practicable, eliminate the hazard • where this is not practicable, minimise the risk associated with the hazard
Hierarchy of control	may include: • the preferred order of control measures for OHS risks: ➢ elimination controlling the hazard at the source ➢ substitution e.g. replacing one substance or activity at the source ➢ engineering e.g. installing guards on machinery ➢ administration policies and procedures for safe work practices

	➢ Personal Protective Equipment (PPE) e.g. respirators, ear plugs
High consequence OHS risk	includes: • high impact events that usually occur rarely such as explosions, fires, building collapses and plant malfunctions, but may result in very serious injury, death or multiple death situations
Fail-to-safe	includes: • design features of equipment that ensure a failure or defect, or another factor such as loss of power, results in the equipment being left in a safe condition
hazard :	• a source or situation with the potential for harm in terms of human injury or ill-health, damage to property, the environment, or a combination of these
Risk register	may include: • a list of hazards, their location and people exposed • a range of possible scenarios or circumstances under which these hazards may cause injury or damage • nature of injury or damage caused • the results of the risk assessment • possible control measures and dates for implementation
Residual risk	may include: • the risk which remains after controls have been implemented
Expert advice	may include: • persons either internal or external to the organisation including: ➢ safety professionals ➢ ergonomists ➢ occupational hygienists ➢ audiologists ➢ safety engineers ➢ toxicologists ➢ occupational health professionals • other persons providing specific technical knowledge or expertise in areas related to OHS including: ➢ risk managers ➢ health professionals ➢ injury management advisors ➢ legal practitioners with experience in OHS ➢ engineers (such as design, acoustic, mechanical, civil) ➢ security and emergency response personnel ➢ workplace trainers and assessors ➢ maintenance and tradespersons
Sources of OHS information	may include • persons, organisations and references where knowledge about OHS may be obtained • These sources may be internal, including: ➢ hazard, incident and investigation reports ➢ workplace inspections

	➢ incident investigations ➢ minutes of meetings ➢ Job Safety Analysis (JSAs) and Risk Assessments (RAs) ➢ organizational data such as insurance records, enforcement notices and actions, workers compensation data, OHS performance data ➢ reports and audits ➢ Material Safety Data Sheets (MSDSs) and registers ➢ employees handbooks ➢ employees including questionnaire results ➢ OHS advisors ➢ manufacturers' manuals and specifications • external, including: ➢ regulatory bodies and OHS Acts regulations, codes and guidance material ➢ other relevant legislation ➢ Safe Work Australia documents ➢ databases such as national and state injury data ➢ OHS specialists and consultants ➢ newspapers and journals, trade/industry publications ➢ internet sites ➢ industry networks and associations including unions and employer groups ➢ OHS professional bodies ➢ specialist advisors ➢ research information
Organisational procedures	May including: • hazard, incident and injury reporting • hazard identification, risk assessment and control and monitoring • consultation and participation • incident investigation • quality system documentation
Work procedures	may include: • Standard Operating Procedures • permit to work • operator or manufacturer manuals • procedures for selecting, fitting, using and maintaining personal protective equipment
OHS records	may include: • hazard, incident and investigation reports • workplace inspection reports • incident investigation reports • first aid records • minutes of meetings • job safety analyses (JSAs) and risk assessments • Material Safety Data Sheets (MSDSs) and registers

	• employees handbooks • plant and equipment operation records including those relevant to registered plant • maintenance and testing reports • training records • environmental monitoring records • health surveillance records

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • To demonstrate competence in this unit, a candidate must be able to provide evidence of addressing the OHS risks specific to their technical or specialist workplace role, both in relation to their own health and safety, and to the health and safety of others who may be affected by their work • Evidence gathered by an assessor to determine competence will include: ➢ written or verbal responses to scenarios and case studies ➢ provision of workplace examples ➢ evidence from workplace supervisor reports ➢ portfolio of workplace documentation ➢ Evidence of workplace performance over time must be obtained to inform a judgment of competence
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • The difference between hazard and risk • Sources of OHS information both internal and external to the organisation • Nature of common workplace hazards such as chemicals, noise, manual handling work postures, underfoot hazards and moving parts of equipment • Regulatory requirements relevant to the particular industry/type of work site • Requirements for hazard identification and hazard identification processes • Principles of risk assessment particularly risk analysis • Examples of safety benchmarks • The hierarchy of control and its application • Principles of 'safe design' processes • Legislative requirements for record keeping and reporting • Personal Protective Equipment (PPE) requirements including selection, use, storage and maintenance • Workplace specific information including: ➢ in depth knowledge of hazards of the particular work environment and how they may cause harm ➢ hazard identification procedures relevant to the hazards in the workplace ➢ work procedures

	• Organisational procedures related to OHS including:
	  ➢ hazard, incident and injury reporting
	  ➢ hazard identification, risk assessment and control
	  ➢ consultation and participation
	  ➢ incident investigation
	• record keeping

Underpinning Skills	Demonstrates skills to: • Use technical skills to access OHS information • Use language and literacy skills to comprehend and interpret OHS legislation, guidance material and benchmarks • Communicate with potential users of the product or system of work, other technicians/ specialists, managers and expert advisers • Suggest scenarios and analyse the scenarios to identify hazards and analyse risk • Assimilate information from a range of sources • Relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Oversee Quality Assurance Process**
Unit Code	**IND PPS4 08 0613**
Unit Descriptor	This unit describes the outcomes required to oversee quality assurance process in the pulp and paper industry.

Element	Performance Criteria
1. Monitor inspection and test records	1.1. Inspection and test ***records are monitored*** within Occupational Health and Safety (OHS***)*** regulations, environmental and safe working requirements/practices, Standard Operating Procedures (SOP), and housekeeping requirements. 1.2. Inspection and test records are monitored to verify product quality and to identify performance trends. 1.3. Status reports contain a description of proposals to introduce improved processes and procedures. 1.4. identify performance trends and ***communicate*** with proper personnel's in different ***forms of communication***.
2. Review product samples	2.1. Product samples are reviewed within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 2.2. Product samples are reviewed to ensure inspection and/or test data accurately reflects output. 2.3. Post collection procedures are implemented according to standard operating procedures.
3. Implement process changes	3.1. Process changes are implemented within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 3.2. Process changes are introduced and controlled so that quality assurance requirements are accomplished.
4. Create and/or update operating instructions	4.1. ***Company instructions*** are created and/or updated within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 4.2. Operating instructions are written so that they comprehensively ***document*** the details required for competent performance. 4.3. Operating instructions are validated under operating conditions to verify their suitability.

Variable	Range
Records are monitored	may include: • by manual and/or electronic methods in standard format • will typically involve the use and presentation of verbal and written information; the latter in standard format
Communications	may include interaction with: • internal/external customers and suppliers • team members • production/service co-ordinators • maintenance services • operational support personnel • operational management and statutory authorities
Forms of communication	may include: • written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Company instructions	May include will be provided for sampling and in-process inspection and testing activities
Document	may include: • SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • enterprise policies and procedures • ISO9000 • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in overseeing quality assurance processes
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Procedures, regulations and legislative requirements relevant to overseeing quality assurance processes including OHS, environmental including relevant sustainability

	requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping • Basic problem-solving techniques consistent with level of responsibility • Actual or potential problems evident from trend analysis • Appropriate course/s of action to rectify problems • Purpose of review process • Post collection and procedure for handling samples • Importance of change control • Controls associated with a procedure change • Purpose of SOP • Actual or potential problems if SOP or their equivalent are non existent • Potential environmental impact of out-of-standard performance to their customers
Underpinning Skills	Demonstrates skills to: • Use required forms of communication to oversee quality assurance processes • Read and interpret required documentation, procedures and reports • Prepare process and product status report recommending changes to improve processes and procedures • Create and/or update SOP or their equivalent • Access, navigate and enter computer-based information • Identify and action problems within level of responsibility • Assemble in-process inspection/test and other quality data in prescribed format • Interpret results of in-process inspections and/or tests • Identify trends of in-process inspection and/or test results • Record sample review results in prescribed format • Identify risks associated with samples and how they may be minimised • Implement a change in the process • Identify the actual or potential risks associated with uncontrolled changes in procedures
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Apply Statistics to Processes in Manufacturing**
Unit Code	**IND PPS4 09 0613**
Unit Descriptor	This unit covers the knowledge and skills required to apply statistical theory and principles to the analysis and control of processes in manufacturing.

Element	Performance Criteria
1. Collect process data.	1.1. ***Sampling scheme*** is interpreted. 1.2. Measurements are obtained in accordance with standard ***procedures***. 1.3. ***Data is handled*** as required.
2. Interpret data	2.1. Data is plotted on appropriate ***control chart***. 2.2.***Random*** and ***non-random*** patterns of results are distinguished. 2.3. Results outside the ***control limits*** are identified. 2.4. Situations requiring action are recognised. 2.5. Appropriate action is taken in accordance with standard procedures. 2.6. ***Cost of non-conformance*** is determined.
3. Calculate control limits.	3.1. Relevant stakeholders are consulted to determine ***appropriate limits***. 3.2. Relevant methods are used to calculate/revise control limits. 3.3. Limits are plotted on control chart. 3.4. Impact of limit is explained to relevant stakeholders.

Variable	Range
Sampling scheme	may include: • sampling for attributes or sampling for variables • batch, continuous or custom made products • number of items/samples • size of sample • timing of sampling • location of sampling points • type of sample • number/type of measurements to be done on each sample • sampling equipment • measurement/testing equipment/methods

Procedures	may include: • Procedures includes all work instructions, standard operating procedures, formulas/ recipes, batch sheets, temporary instructions and similar instructions provided for the smooth running of the plant. They may be written, verbal, computer based or in some other form. • For the purposes of this Training Package, ' procedures' also includes good operating practice as may be defined by industry codes of practice (e.g. Good Manufacturing Practice (GMP), Responsible Care) and government regulations.
Handle data	may include: • calculating means, ranges, mean of means, standard deviation (using appropriate calculation aids) • entering data into a software package • recording data either in writing or electronically • other required manipulations of the data
Control chart	may include: • run • tally • mean/range • attributes • other relevant charts
Random	may include: • Random variation is the term used in statistical control to refer to those variations for which no cause can be found.
Non-random	may include: • Non-random, also called identifiable cause, or assignable cause or special cause is those variations for which a cause can be found and so the cause of the variation eliminated. Non-random variation may also be used to predict possible breaches of the control limits.
Control limits	may include: • Control limits, also referred to as process capability are those limits within which the process will operate if it is 'under control'.
Cost of non-conformance	may include: • reprocessing/rework • expediting • unplanned service • excess inventory • complaint handline • downtime • returns • scrap • labour costs • material costs • infrastructure costs/overhead • utility costs

Appropriate limits	may include: • 1 sigma warning limits • 2 sigma warning limits • 3 sigma control limits and 6 sigma limits

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • methods of calculating means, standard deviations and the like and their purpose in statistical control • the standard distribution curve and confidence limits • Identify results outside the control limits • Analyse and solving problems
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • sampling techniques • purpose of sampling and measurement • random, systematic, stratified sampling • relevance, reliability and representativeness of samples/data collected • purpose of replication of data for statistical control • samples, populations, finite and infinite populations and the differences • the causes of variation in a process • the meaning of broad/ narrow frequency distributions/ range/standard deviations and skewed distributions in process terms • types of control charts and their applications to different types of process/product and for different purposes • process causes of variation and typical cause types of non-random variation • non-process (e.g. measurement) causes of variation • recognition of stable and unstable processes • causes of stability/instability in the process • calculation of control limits/process capability and the applications of different control limits
Underpinning Skills	Demonstrates skills in: • analysis • communication • documenting • calculations and use of statistics
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Contribute to the Implementation of Emergency Procedures**
Unit Code	**IND PPS4 10 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to contribute to the implementation of planning and response procedures for emergencies.

Element	Performance Criteria
1. Identify potential emergencies	1.1. Apply knowledge of OHS ***hazards*** and ***standards*** to identify causes of potential ***emergencies***. 1.2. Seek input of ***stakeholders*** in identifying potential emergencies. 1.3. Identify and liaise with appropriate ***specialist advisors*** and ***emergency agencies*** to identify causes of potential emergencies. 1.4. Develop a ***risk register*** to identify potential emergencies and their causes.
2. Identify options for initial response	2.1. Categorise major types of emergencies. 2.2. Identify actions required to contain or limit potential emergencies. 2.3. Identify actions required to limit impact on personnel, property and the environment. 2.4. Identify requirements for liaison with emergency agencies. 2.5. Prioritise actions to be taken during emergencies.
3. Plan initial response procedures	3.1. Identify ***resources*** available and required for immediate response. 3.2. Check ***emergency equipment*** to ensure serviceability, accessibility, cleanliness and correct location. 3.3. Document actions required for a number of major types of emergency, taking account of standards, current industry practice, specialist advice and input by emergency agencies. 3.4. Identify training needs and appropriate providers
4. Implement initial response procedures	4.1. Document and display actions for initial response. 4.2. Understand and implement own role in emergency response.
5. Contribute to post event activities	5.1. Identify and support other personnel in the ***second response phase***. 5.2. Make contributions to debriefing processes.

6. Monitor emergency response and address deficiencies	6.1. Monitor responses to emergencies for efficiency and timeliness, in consultation with stakeholders and, as appropriate, specialist advisors and agencies. 6.2. Document, and promptly and appropriately report results of monitoring to managers and key personnel. 6.3. Identify areas for organisational and personal improvement and make recommendations for improvement in response to analysis of response taken.

Variable	**Range**
Hazards	may include: • sources of potential harm in terms of human injury, ill health, damage to property, damage to the environment, or a combination of these, including: ➢ biological ➢ chemical ➢ environment ➢ mechanical and/or electrical ➢ physical ➢ psychosocial ➢ radiological ➢ nuclear
Standards	may include: • Ethiopian Standards • industry-specific standards • international standards
Emergencies	may include: • emergencies requiring evacuation • explosion and bomb alerts • external emergencies and natural disasters, such as: ➢ flood ➢ storm ➢ traffic accident ➢ fire ➢ explosion ➢ hazardous substance spill ➢ chemical spill • internal emergencies, such as: ➢ loss of power ➢ loss of water supply ➢ structural collapse • security emergencies, such as: ➢ armed robberies ➢ intruders ➢ disturbed persons • serious injury events

Stakeholders	may include: • community • employees • health and safety, and other employee representatives • managers • OHS committee • supervisors
Specialist advisors	may include internal or external advisors in: • safety • chemicals • engineering • security • emergency response
Emergency agencies	may include: • fire • police • ambulance • government departments • hazardous materials response teams (Hazmat) • OHS authorities
Risk register	may include: • lists of hazards • location of hazards • range of possible scenarios or circumstances under which an emergency could occur, including natural disasters • outcomes of any risk assessment or risk ranking
Resources	may include: • emergency response personnel and equipment • first aid personnel and equipment • emergency services personnel
Emergency equipment	may include: • clothing items such as coloured hats and vests • communication equipment • evacuation alarms • evacuation equipment, especially for people with a disability • fire extinguishers and equipment • torches
Second response phase	may include: • actions required if building cannot be re-occupied • containment of personnel in evacuation area • first aid • support/counselling of personnel involved or affected

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • identification of a potential emergency

	• contribution to the implementation of procedures for preparing and responding to an emergency • evaluation of the effectiveness of the implementation strategies • Knowledge of basic emergency prevention controls typically installed in a workplace.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • basic emergency prevention controls typically installed in a workplace, such as: ➢ emergency alerting systems ➢ emergency protection systems ➢ fire and smoke alarms, and fire extinguishers ➢ required safety wear ➢ security systems • emergency alerting systems and signals used in the workplace and their meanings • enterprise physical site and work areas • enterprise reporting procedures in an emergency • essential actions of self and others in an emergency • hazards and precautions to be taken during an emergency • hazards arising from evacuation • information needs of emergency response personnel during reporting, arrival and response to an emergency • OHS information needs of work unit or work team • internal and external sources of OHS information and data • organisational policies and procedures for OHS and acting in an emergency situation • organisational structure, roles and responsibilities • powers of safety representatives and other authorised OHS personnel to cease work immediately if an immediate danger to OHS exists • principles and priorities for evacuation, checking and accounting for people • principles of fire protection and emergency response • relevant state/territory and commonwealth OHS legislation, codes of practice, associated standards and guidance material • roles, responsibilities and authority of OHS personnel • types of emergency responses typically used in workplaces.
Underpinning Skills	Demonstrates skills in: • culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities across all levels of an organisation • interpersonal skills to issue instructions in an authoritative manner during unusual circumstances • literacy skills to prepare reports for a range of target groups • observation skills to evaluate the impact characteristics and composition of the workforce have on managing OHS

	• organisational and time management skills to sequence tasks and meet timelines • research and data analysis skills to assess resources required to systematically manage OHS and to analyse relevant workplace information and data • research and data analysis skills to evaluate interactions between employees, their activities, equipment, environment and work systems • technology skills to access internal and external OHS data
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Calculate and Analyse Production and Financial Performance**
Unit Code	**IND PPS4 11 0613**
Unit Descriptor	This unit describes the outcomes required to calculate and analyse production and financial performance in the pulp and paper industry.

Element	Performance Criteria
1. Calculate and compare actual and budget performance	1.1. Actual and budget performance is calculated and compared within Occupational Health and Safety (OHS) ***regulations***, environmental and safe working requirements/practices, Standard Operating Procedures (SOP), and housekeeping requirements. 1.2. Costs are calculated and compared with standards or budgets to identify variance from planned performance. 1.3. Financial results are analysed to identify costs which require particular attention in improving financial performance.
2. Prepare and analyse data	2.1. Data is prepared and analysed within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 2.2. Use ***measuring devices*** and record data to ***measure productivity and efficiency***. 2.2. Data is consolidated with standard reporting format to report performance and activity. 2.3. Time series data is interpreted from tables and graphs to identify performance trends and communicated in ***different forms of communication***.
3. Calculate calibration adjustments	3.1. ***Calibration*** adjustments are calculated within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements. 3.2. ***Mathematical concepts*** associated with equipment calibration are understood and used to determine adjustment to equipment settings. 3.3. Calibration ***manual or electronic calculation*** is verified by checking the accuracy of the adjustment in the actual work performance.

Variable	Range
regulation	may include OHS and environmental requirements (local, state and commonwealth)

Measuring devices	may include • scales • vernier callipers • meters • gauges
Productivity and efficiency measures	may include: • delay • waste • speed • tonnage • through put • asset utilisation • machine efficiency
Forms of communication	may include: • written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Calibrations	may include: • will typically relate to measuring associated with: • weight • volume • temperature • length
Mathematical concepts	may include: • addition • subtraction • multiplication • division • percentages • ratios and proportions • volumes
Manual or electronic calculations	may include: • percentages • proportions • ratio • results using decimals, simple factions and whole numbers percentages

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • the required knowledge and skills tailored to the needs of the specific workplace

	• applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in calculating and analyzing production and financial performance
Underpinning Knowledge and Attitudes	Demonstrates knowledge of - • Procedures, regulations and legislative requirements relevant to calculating and analysing production and financial performance including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping • Basic problem-solving techniques consistent with level of responsibility • Purpose of yield, wastage, productivity • Variation of planned with actual outcomes • Purpose of comparing cost with budget • Purpose of the data the company uses to record performance • Key features of time series data presented in tables and graphs • Trends illustrated in tables and graphs • Purpose of calibrating of equipment
Underpinning Skills	Demonstrates skills to: • Use required forms of communication in calculating and analysing production and financial performance • Read and interpret required documentation, procedures and reports • Access, navigate and enter computer-based information • Identify and actions problems within level of responsibility • Determine variation of planned with actual outcomes • Calculate yield, wastage and productivity • Calculate variance of cost from budget • Apply mathematical concepts to determine whether equipment settings require adjustments • Verify calibration calculation
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Perform Standard Calibration**
Unit Code	**IND PPS4 12 0613**
Unit Descriptor	This unit of competency covers the ability to calibrate test and measurement equipment in accordance with standard calibration procedures and documented test methods. These procedures/methods specify all associated reference standards, materials, equipment and methods to be used and the required parameters or quantities and ranges to be tested, including the criteria for rejection or approval.

Element	Performance Criteria
1. Prepare items for calibration	1.1. Select the authorised calibration procedure in accordance with ***enterprise procedures***. 1.2. Identify ***hazards*** and use appropriate personal protective equipment, safety equipment and procedures. 1.3. Confirm all measuring equipment meets the laboratory's specification requirements and complies fully with the ***calibration procedure***. 1.4. Assemble and set up specified reference standards and associated equipment prior to testing. 1.5. Verify performance of reference standards and measuring equipment prior to use and adjust or calibrate as necessary. 1.6. Identify and minimise potential sources of measurement error.
2. Perform calibration	2.1. Perform individual tests without variance according to the documented procedure to ensure repeatability of measurement. 2.2. Confirm readings are the result of a valid measurement and record data as required (as-found or before adjustment). 2.3. Adjust device under test to bring readings within specification and record data (as-left or after adjustment) if required. 2.4. Analyse resulting test data to detect trends or inconsistencies that would significantly affect the accuracy or validity of test results. 2.5. Seek appropriate advice when interpretation of results is outside authorised scope of approval. 2.6. Apply Safety and **(*OHS) procedures*** for calibration. 2.7. Use ***reference material*** and ***Working environment*** for calibration.

3. Document results	3.1. Document compliance/non-compliance with requirements of test and/or specifications. 3.2. Estimate and document uncertainty of measurement in accordance with enterprise procedures, if required. 3.3. Record the results of each test/calibration accurately, unambiguously and objectively. 3.4. Ensure confidentiality of enterprise information and use for ***communication***.
4. Finalise calibration	4.1. Prepare and issue a final report on the job/item detailing testing carried out, traceability, statement of compliance and relevant information as required. 4.2. Report any non-compliance and verify next course of action with supervisor. 4.3. Attach calibration labels, equipment stickers, quality control tags and tamper resistant seals as required in enterprise procedures. 4.4. Store test equipment/measurement standards and results in accordance with enterprise procedures.

Variable	**Range**
Codes of practice	Where reference is made to industry codes of practice, and/or Ethiopian /international standards, it is expected the latest version will be used
Enterprise procedures	May include: • Standards, codes, procedures and/or enterprise procedures may include Ethiopian and international standards, • Material Safety Data Sheets (MSDSs) • enterprise recording and reporting procedures and Standard Operating Procedures (SOPs) • quality manuals, equipment and operating/technical manuals • test methods and calibration procedures (validated and authorised) • test methods and calibration procedures published by international, national or regional standards, reputable technical organisations, scientific texts or journals and equipment manufacturers • incident and accident/injury reports • schematics, work flows, laboratory layouts and production and laboratory schedules
Hazards may include:	• electric shock • disturbance or interruption of services • manual handling of heavy equipment boxes • sources of electromagnetic radiation (lasers and RF generators/transmitters)

	• fluids under pressure • heat sources, such as ovens
calibration procedure	May include: • Standard calibrations may include testing and/or calibrating the following equipment and reference materials using standard methods and procedures: • test equipment, such as anemometers, balances, barometers, calipers, environmental chambers, hygrometers, manometers, masses, micrometers, pressure equipment, spectrophotometers, tape measures, rules, temperature (digital) indicating systems, thermometers, thermocouples, timing devices, vibration analysis equipment and weighing instruments • electrical reference standards, such as air-lines, analogue meters, attenuators, bridges-manual balance, capacitors, DC voltage references, digital instruments (calibrators, DMMs, electronic transfer standards), inductors, instrument and ratio transformers, instrument transformer test sets, potentiometers, resistors, radio frequency (RF) power meters, RF thermistor mounts and thermal converters, shunts, time interval and frequency standards, transfer standards AC-DC, voltage dividers, volt ratio boxes and watt-hour references • working standards, instruments and testing equipment, such as electromagnetic compatibility (EMC) test equipment, field strength meters, flammability test equipment, gauges/test fingers/test pins, hipot testers, impact hammers, impulse testers, instrument calibrators, network analysers, signal generators and spectrum and harmonic analysers
OHS procedures	may include: • use of personal protective equipment, such as hearing protection, gloves, safety glasses and coveralls • ensuring access to service shut-off points • handling and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer's instructions, and enterprise procedures and regulations • regular cleaning of equipment and work areas • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health
Reference materials	may include: • colour standards • graded granular materials and hardness blocks

Working environment	may include: • purpose-built designed facility • mobile facility in the field
Communication	may include: • supervisors and managers (laboratory, quality and customer service) • peers and other laboratory or relevant technical personnel • clients and end users of equipment • external auditors, or accreditation agency for example, NATA • manufacturers of equipment and suppliers of spare parts and materials

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • maintain very close attention to procedures, accuracy and precision of measurement to ensure integrity of test/calibration results (especially during lengthy tests) • critically examine each calibration step to ensure repeatability and validity of data • apply all relevant procedures and regulatory requirements to ensure the quality and integrity of the services or data provided • prepare test/calibration documentation that is accurate and complies with requirements • operate equipment correctly and safely • recognise problems or departures in systems and documentation and initiate actions to prevent or minimise them • Recognize and report opportunities for improvements to procedures.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • purpose of metrology and calibration, including common terminology, concepts, principles, procedures, and applications • National Association of Testing Authority's (NATA) and National Measurements Institute's (NMI) role in the measurement and testing system in Australia • traceability, including legal requirements for traceability • requirements for the competence of testing and calibration laboratories (e.g. AS ISO/IEC 17025) as they affect job role and responsibilities • hierarchy and appropriate selection of reference materials and instruments • non-conformance/non-compliance procedures and protocols associated with equipment, reference material and calibration procedures • troubleshooting procedures for equipment and test methods • methods for statistical analysis (means, ranges and standard deviations) and estimation of uncertainty of measurement (may include the use of software)

	• reporting procedures and legislative requirements • handling, transport, storage and operation of reference and working standards • laboratory environmental control requirements • relevant health, safety and environmental requirements • layout of the enterprise, divisions and laboratory • organisational structure of the enterprise • lines of communication • role of laboratory services for the enterprise and customers • Additional knowledge requirements may apply for different calibration fields. For example, testing and calibrations conducted in the following: ➢ acoustic and vibration measurement ➢ chemical testing ➢ construction materials testing ➢ electrical testing ➢ heat and temperature measurement ➢ mechanical testing ➢ metrology ➢ non-destructive testing ➢ optics and radiometry ➢ pressure measurements
Underpinning Skills	Demonstrates skills in: • selecting and applying appropriate test methods and calibration procedures • maintaining close attention to procedures, accuracy and precision of measurement to ensure the integrity of test/calibration results • using calibration and correction charts • calculating to give results in appropriate accuracy, precision and units • preparing test/calibration documentation that is accurate and complies with requirements • operating equipment correctly and safely • recognising problems or departures in systems and documentation and initiating actions to prevent or minimise them • recognizing and report opportunities for improvements to procedures
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Implement a Competitive Manufacturing System**
Unit Code	**IND PPS4 13 0613**
Unit Descriptor	This unit covers the knowledge and skills needed to implement competitive manufacturing practices. Generally, five areas drive competitive manufacturing: cost, quality, delivery, safety/environment, and morale. In a competitive manufacturing company systems will need to be implemented which drive continuous improvement in all these areas, without one area competing unduly with another.

Element	Performance Criteria
1. Optimise the manufacturing system	1.1. ***Competitive manufacturing*** practices are applied to maximise health, safety and environment performance. 1.2. Competitive manufacturing practices are applied to maximise quality consistency. 1.3. Competitive manufacturing practices are applied to maximise performance by team members. 1.4. Competitive manufacturing practices are applied to maximise ***customer*** benefit/cost ratio. 1.5. Competitive manufacturing practices are applied to reduce lead time to delivery within the scope of the team's authority and responsibility. 1.6. Negotiate with relevant stakeholders to resolve conflicts which arise. 1.7. Selected ***tools*** improvements which will deliver the greatest overall benefit for the resources required/available without reducing current performance on individual factors.
2. Implement improvements	2.1. The chosen improvement/s is/are implemented. 2.2. Check the selected improvements improve the ***system*** as a whole and do not result in unintended consequences. 2.3. Implementation is monitored and adjustments made as required. 2.4. 5s and 6 sigma are used for improvement and commutative manufacturing.

Variable	Range
Competitive manufacturing	• Competitive manufacturing is used to describe the range of systemic manufacturing practice concepts and approaches. It covers but is not limited to: ➢ lean manufacturing

	➢ agile manufacturing ➢ preventative and predictive maintenance approaches ➢ monitoring and data gathering systems such as Systems Control and Data Acquisition (SCADA)software, Enterprise Resource Planning (ERP)systems, Manufacturing Resource Planning (MRP), and proprietary systems such as SAP etc. ➢ statistical process control systems including six sigma and three sigma ➢ Just in Time (JIT), kanban and other pull related manufacturing control systems ➢ supply, value, and demand chain monitoring and analysis ➢ Other continuous improvement systems. • Competitive manufacturing should be interpreted so as to take into account the stage of implementation of competitive manufacturing approaches, the enterprise's size and work organisation, culture, regulatory environment and manufacturing sector.
Customer	• Competitive manufacturing organisations encompass the entire production system, beginning with the customer**,** and include the product sales outlet, the final assembler, product design, raw material mining and processing and all tiers of the value chain (sometimes called the supply chain). Any truly 'competitive' system is highly dependent on the demands of its customers and the reliability of its suppliers. No implementation of competitive manufacturing can reach its full potential without including the entire 'enterprise' in its planning. • Customer may be interpreted to be an internal customer, but typically the benefits to the final customer should be used as the basis for the identification of waste. The operator does not need to interface directly with the external customer, but should be provided with sufficient information to enable them to identify customer benefits and features. • Supplier may be interpreted to be an internal supplier, but typically the external supplier and their abilities should be known. The operator does not need to interface directly with the external supplier, but should be provided with sufficient information to enable them to identify supplier abilities.
Tools	• Tools is used in this unit to mean the tools of competitive manufacturing such as 5S, 6 sigma, continuous improvement, cause effect diagrams, etc.
System	• A competitive manufacturing system is that holistic combination of the process, plant and equipment, procedures and practices including the skills and work organisation of the workforce which make up the productive organisation.

Evidence Guide

Critical Aspects of Competence	Assessment requires evidence that the candidate: • cost components and their relationship to customer benefits/features • Apply competitive manufacturing practices to maximise quality consistency • Apply competitive manufacturing practices to maximise performance by team members • Apply competitive manufacturing practices to maximise customer benefit/cost ratio • interpersonal relationships
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • the customers and the benefits they derive from the products • cost components and their relationship to customer benefits/features • the suppliers and their capabilities • product waste • factors causing variability in a product and how to control them • relevant tools for their job and how to apply them • factors impacting on the product, process and waste, particularly those wholly or partially under their control (and how to control them) • good Health Safety and Environment (HSE) practice and factors impacting on HSE performance • morale and how to improve it • optimisation techniques appropriate to the organisation and the job • Application of quality standards and processes.
Underpinning Skills	Demonstrates skills in: • communication • communication • interpersonal relationships • prioritising • mathematics • statistics • analysing • conducting root cause analysis • Problem solving. • Solving.
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Troubleshoot and Optimize Production Processes**
Unit Code	**IND PPS4 14 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to troubleshoot and optimize the production process. This unit focuses on the systems analysis and design.

Element	Performance Criteria
1. Evaluate production for efficiency purposes	1.1. Machine operations, staff and ***production process*** organisation are evaluated on an ongoing basis to make production efficiency gains. 1.2. ***Production schedule*** is analysed according to production output, inventory, procurements, time constraints, supply capacities and requirements. 1.3. Quality standards and safe work practices are examined to ensure compliance. 1.4. Changeover/make ready ***processes*** are reviewed for production efficiency gains. 1.5. Recommendations covering the above areas are developed and documented.
2. Optimise production efficiency	2.1. Compliance to specified requirements is checked to ensure efficiency is maintained. 2.2. Non-compliance is identified and investigated to determine causes. 2.3. Production standards or machines are set and/or changed according to enterprise procedures. 2.4. Changeover/ make ready times and processes are monitored to ensure times are maintained or improved. 2.5. Production schedule is monitored and adjusted according to production output, inventory, procurements, time constraints and supply capacities and requirements to ensure efficiency is maintained.
3. Troubleshoot production efficiency problems	3.1. Corrective or preventive action is implemented where appropriate. 3.2. Changes are communicated to relevant personnel in a logical and easily understood manner. 3.3. Changes are monitored and adjusted to confirm improvement to production efficiency.
4. Troubleshoot material and machining	4.1. Evaluation of material or product structure is conducted to identify options for production and required tuning and adjustments are completed.

problems	4.2. Idiosyncrasies of machines are reviewed and adjustments or tuning undertaken to compensate or to exploit the idiosyncrasy within the manufacturer's specifications. 4.3. Options are assessed to determine most effective/efficient method of production, ensuring highest quality and yield from materials and ease of production. 4.4. Options and recommendations are documented for future reference according to enterprise procedures.
5. Document changes and remedies	5.1. Changes to the production process are documented according to enterprise procedures. 5.2. Adjustments to machines are recorded according to enterprise procedures. 5.3. Documentation is circulated according to enterprise procedures, if required.

Variable	**Range**
Production process	and associated machines/equipment include those generally operating in the various sectors of the printing and graphic arts industry.
Production schedule	may apply to daily or production runs, including repetitive production runs, short runs and quick changes.
Range of processes	Applies to the development of complex new processes or the modification of existing complex processes based on significant judgement. Applies to the overall production process.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • recommend and implement new, more efficient production processes and troubleshoot problems within the production process that effect efficiency gains • Produce a portfolio that demonstrates that each element has been carried out. This should include records of standards and monitoring procedures and evidence that they are being effectively carried out • production efficiencies are confirmed through discussions with senior management and review of workplace documentation • evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • setting quality standards • setting the criteria for inspection of print quality set • the quality of artwork/film bearing on the quality of the printed product • quality standards that have been set by the customer

	• inspection specifications determined by standards • identifying production requirements and capacities • job requirements that determine the production processes • identifying special production requirements and possible problems • criteria that are used to determine the availability of machines, materials and labour • OHS concerns that need to be considered when planning production • causes of failure • common causes of failure in each production area that need to be monitored • procedures that have you implemented to minimise the effect of these • revising schedules • monitoring and amending production schedules if required • consideration that is given to revising production schedules to take into account customer requirements and job complexity • evaluating re-work methods • responsibility for evaluating the re-work of unacceptable items • method of re-work that has been determined • criteria that have been set to monitor the re-work • requirements that have been established for the inspection of re-working material to customer's specifications • determining unacceptable items and evaluating production procedures • determining the cause of unacceptable items • records that are kept of acceptable and rejected items • records that are kept for the reason for the rejection • determining the cause for the rejection and how have you rectified the problem • quality improvements • information that needs to be monitored so as to maintain standards • monitoring quality standards • enterprise improvements affect on quality standards
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by documenting recommendations to optimise the production process • collecting, analysing and organising information by reviewing the production schedule and evaluating its effectiveness • planning and organising activities by determining the most effective production processes • teamwork when communicating with colleagues over changes

	to production • mathematical ideas and techniques by determining optimised yield for machinery • problem-solving skills by compensating or optimising machine idiosyncrasies • use of technology by evaluating machine operations and making changes to improve the production process
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Plan and Organize Work**
Unit Code	**IND PPS4 15 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitude required in planning and organizing work activities in a production application. It may be applied to a small independent operation or to a section of a large organization.

Elements	Performance Criteria
1. Set objectives	1.1 ***Objectives*** are planned consistent with and linked to work activities in accordance with organizational aims. 1.2 Objectives are stated as measurable targets with clear time frames. 1.3 Support and commitment of team members are reflected in the objectives. 1.4 Realistic and attainable objectives are identified.
2. Plan and schedule work activities	2.1 Tasks/work activities to be completed are identified and prioritized as directed. 2.2 Tasks/work activities are broken down into steps in accordance with set time frames and achievable components. 2.3 Task/work activities are assigned to appropriate team or individuals in accordance with agreed functions. 2.4 ***Resources*** are allocated as per requirements of the activity. 2.5 ***Schedule of work activities*** is coordinated with personnel concerned.
3. Implement work plans	3.1 ***Work methods and practices*** are identified in consultation with personnel concerned. 3.2 ***Work plans*** are implemented in accordance with set time frames, resources and ***standards.***
4. Monitor work activities	4.1 Work activities are monitored and compared with set objectives. 4.2 Work performance is monitored. 4.3 Deviations from work activities are reported and recommendations are coordinated with appropriate personnel and in accordance with set standards. 4.4 Reporting requirements are complied with in accordance with recommended format. 4.5 Timeliness of report is observed.

	4.6 Files are established and maintained in accordance with standard operating procedures.
5. Review and evaluate work plans and activities	5.1 Work plans, strategies and implementation are reviewed based on accurate, relevant and current information. 5.2 Review is done based on comprehensive consultation with appropriate personnel on outcomes of work plans and reliable feedback. 5.3 Results of review are provided to concerned parties and formed as the basis for adjustments/simplifications to be made to policies, processes and activities. 5.4 Performance appraisal is conducted in accordance with organization rules and regulations. 5.5 Performance appraisal report is prepared and documented regularly as per organization requirements. 5.6 Recommendations are prepared and presented to ***appropriate personnel/authorities***. 5.7 ***Feedback mechanisms*** are implemented in line with organization policies.

Variable	**Range**
Objectives	• Specific • General
Resources	• Personnel • Equipment and technology • Services • Supplies and materials • Sources for accessing specialist advice • Budget
Schedule of work activities	• Daily • Work-based • Contractual • Regular
Work methods and practices	• Legislated regulations and codes of practice • Industry regulations and codes of practice • Occupational health and safety practices
Work plans	• Daily work plans • Project plans • Program plans • Resource plans • Skills development plans • Management strategies and objectives
Standards	• Performance targets • Performance management and evaluation systems • Occupational standards

	• Employment contracts • Client contracts • Discipline procedures • Workplace assessment guidelines • Internal quality assurance • Internal and external accountability and auditing requirements • Training Regulation Standards and Safety Standards
Appropriate personnel/ authorities	include: • Management • Line Staff
Feedback mechanisms	include: • Verbal feedback • Informal feedback • Formal feedback • Questionnaire • Survey and Group discussion

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • set objectives • plan and schedule work activities • implement work plans • monitor work activities • review and evaluate work plans and activities
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities • organizations policies, strategic plans, guidelines related to the role of the work unit • team work and consultation strategies
Underpinning Skills	Demonstrates skill of: • planning • leading • organizing • coordinating • communication skills • inter-and intra-person/motivation skills • presentation skills
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Migrate to New Technology**
Unit Code	**IND PPS4 16 0613**
Unit Descriptor	This unit defines the competence required to apply skills and knowledge in using new or upgraded technology. The rationale behind this unit emphasizes the importance of constantly reviewing work processes, skills and techniques in order to ensure that the quality of the entire business process is maintained at the highest level possible through the appropriate application of new technology. To this end, the person is typically engaged in on-going review and research in order to discover and apply new technology or techniques to improve aspects of the organization's activities.

Elements	Performance Criteria
1. Apply existing knowledge and techniques to technology and transfer	1.1 Situations are identified where existing knowledge can be used as the basis for developing new skills. 1.2 New or upgraded technology skills are acquired and used to enhance learning. 1.3 New or upgraded equipment are identified, classified and used where appropriate, for the benefit of the organization.
2. Apply functions of technology to assist in solving organizational problems	2.1 Testing of new or upgraded equipment is conducted according to the specification manual. 2.2 Features of new or upgraded equipment are applied within the organization 2.3 Features and functions of new or upgraded equipment are used for solving organizational problems 2.4 Sources of information relating to new or upgraded equipment are accessed and used
3. Evaluate new or upgraded technology performance	3.1 New or upgraded equipment is evaluated for performance, usability and against OHS standards**.** 3.2 ***Environmental considerations*** are determined from new or upgraded equipment. 3.3 ***Feedback*** is sought from users where appropriate.

Variables	Range
Environmental Considerations	May include but is not limited to recycling, safe disposal of packaging (e.g. cardboard, polystyrene, paper, plastic) and correct disposal of waste materials by an authorized body
Feedback	May include surveys, questionnaires, interviews and meetings.

Evidence Guide	
Critical Aspects of Competence	Competence must confirm the ability to transfer the application of existing skills and knowledge to new technology
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Broad awareness of current technology trends and directions in the industry (e.g. systems/procedures, services, new developments, new protocols) • Vendor product directions • Ability to locate appropriate sources of information regarding metal manufacturing and new technologies • Current industry products/services, procedures and techniques with knowledge of general features • Information gathering techniques
Underpinning Skills	Demonstrate skills of: • Research skills for identifying broad features of new technologies • Ability to assist in the decision making process • Literacy skills in regard to interpretation of technical manuals • Ability to solve known problems in a variety of situations and locations • Evaluate and apply new technology to assist in solving organizational problems • General analytical skills in relation to known problems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Establish Quality Standards**
Unit Code	**IND PPS4 17 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to establish quality specifications for work outcomes and work performance. It includes monitoring and participation in maintaining and improving quality, identifying critical control points in the production of quality output and assisting in planning and implementing of quality assurance procedures.

Elements	Performance Criteria
1. Establish quality specifications for product	1.1 Market specifications are ***sourced*** and ***legislated requirements*** identified. 1.2 Quality specifications are developed and agreed upon 1.3 Quality specifications are documented and introduced to organization staff / personnel in accordance with the organization policy 1.4 Quality specifications are updated when necessary
2. Identify hazards and critical control points	2.1. Critical control points impacting on quality are identified. 2.2. Degree of risk for each hazard is determined. 2.3. Necessary documentation is accomplished in accordance with organization quality procedures
3. Assist in planning of quality assurance procedures	3.1 Procedures for each identified control point are developed to ensure optimum quality. 3.2 Hazards and risks are minimized through application of appropriate controls. 3.3 Processes are developed to monitor the effectiveness of quality assurance procedures.
4. Implement quality assurance procedures	4.1 Responsibilities for carrying out procedures are allocated to staff and contractors. 4.2 Instructions are prepared in accordance with the enterprise's quality assurance program. 4.3 Staff and contractors are given induction training on the quality assurance policy. 4.4 Staff and contractors are given in-service training relevant to their allocated ***safety procedures***.
5. Monitor quality of work outcome	5.1 Quality requirements are identified 5.2 Inputs are inspected to confirm capability to meet quality requirements

	5.3 Work is conducted to produce required outcomes 5.4 Work processes are monitored to confirm quality of output and/or service 5.5 Processes are adjusted to maintain outputs within specification.
6. Participate in maintaining and improving quality at work	6.1 Work area, materials, processes and product are routinely monitored to ensure compliance with quality requirements 6.2 Non-conformance in inputs, process, product and/or service is identified and reported according to workplace reporting requirements 6.3 Corrective action is taken within level of responsibility, to maintain quality standards 6.4 Quality issues are raised with designated personnel
7. Report problems that affect quality	7.1 Potential or existing quality problems are recognized. 7.2 Instances of variation in quality are identified from specifications or work instructions. 7.3 Variation and potential problems are reported to supervisor/manager according to enterprise guidelines.

Variable	**Range**
Sourced	• End-users • Customers or stakeholders
Legislated requirements	• Verification of product quality as part of consumer legislation or specific legislation related to product content or composition.
Safety procedures.	• Use of tools and equipment for fabrication/production/ manufacturing works • Workplace environment and handling of material safety, • Following occupational health and safety procedures designated for the task • Respect the policies, regulations, legislations, rule and procedures for manufacturing/production/fabrication works

Evidence Guide	
Critical Aspect of Competence	Assessment requires evidence that the candidate to: • Monitor quality of work • Establish quality specifications for product • Participate in maintaining and improving quality at work • Identify hazards and critical control points in the production of quality product • Assist in planning of quality assurance procedures • Report problems that affect quality • Implement quality assurance procedures

Underpinning Knowledge	Demonstrates knowledge of: • work and product quality specifications • quality policies and procedures • improving quality at work • hazards and critical points of operation • obtaining and using information • applying federal and regional legislation within day-today work activities • accessing and using management systems to keep and maintain accurate records • requirements for correct preparation and operation • technical writing
Underpinning Skills	Demonstrates skills in: • monitoring quality of work • establishing quality specifications for product • participating in maintaining and improving quality at work • identifying hazards and critical control points in the production of quality product • assisting in planning of quality assurance procedures • reporting problems that affect quality • implementing quality assurance procedures
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Develop Individuals and Team**
Unit Code	**IND PPS4 18 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to determine individual and team development needs and facilitate the development of the workgroup.

Elements	Performance Criteria
1. Provide team leadership	1.1 ***Learning and development needs*** are systematically identified and implemented in line with ***organizational requirements***. 1.2 Learning plan to meet individual and group training and developmental needs is collaboratively developed and implemented. 1.3 Individuals are encouraged to self-evaluate performance and identify areas for improvement. 1.4 ***Feedback on performance*** of team members is collected from relevant sources and compared with established team learning process.
2. Foster individual and organizational growth	2.1 Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of competence standards. 2.2 ***Learning delivery methods*** are made appropriate to the learning goals, the learning style of participants and availability of equipment and resources. 2.3 Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate individual and team achievement of competencies. 2.4 Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements.
3. Monitor and evaluate workplace learning	3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements. 3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support. 3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning. 3.4 Records and reports of competence are maintained within organizational requirement.

4. Develop team commitment and cooperation	4.1 Open communication processes to obtain and share information is used by team. 4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities. 4.3 Mutual concern and camaraderie are developed in the team.
5. Facilitate accomplishment of organizational goals	5.1 Team members are actively participated in team activities and communication processes. 5.2 Individual and joint responsibility is developed by teams members for their actions. 5.3 Collaborative efforts are sustained to attain organizational goals.

Variable	**Range**
Learning and development needs	• Coaching, monitoring and/or supervision • Formal/informal learning program • Internal/external training provision • Work experience/exchange/opportunities • Personal study • Career planning/development • Performance evaluation • Workplace skills assessment • Recognition of prior learning
Organizational requirements	• Quality assurance and/or procedures manuals • Goals, objectives, plans, systems and processes • Legal and organizational policy/guidelines and requirements • Safety policies, procedures and programs • Confidentiality and security requirements • Business and performance plans • Ethical standards • Quality and continuous improvement processes and standards
Feedback on performance	• Formal/informal performance evaluation • Obtaining feedback from supervisors and colleagues • Obtaining feedback from clients • Personal and reflective behavior strategies • Routine and organizational methods for monitoring service delivery
Learning delivery methods	• On the job coaching or monitoring • Problem solving • Presentation/demonstration • Formal course participation • Work experience and involvement in professional networks • Conference and seminar attendance

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • identify and implement learning opportunities for others • give and receive feedback constructively • facilitate participation of individuals in the work of the team • negotiate plans to improve the effectiveness of learning • prepare learning plans to match skill needs • access and designate learning opportunities
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • coaching and monitoring principles • how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective • how to facilitate team development and improvement • methods and techniques to obtain and interpreting feedback • methods for identifying and prioritizing personal development opportunities and options • career paths and competence standards in the industry
Underpinning Skills	Demonstrates skills in: • reading and understanding a variety of texts, preparing general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management • communication including receiving feedback and reporting, maintaining effective relationships and conflict management • planning skills to organize required resources and equipment to meet learning needs • coaching and mentoring skills to provide support to colleagues • reporting to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes • facilitation to conduct small group training sessions • relating to people from a range of social, cultural, physical and mental backgrounds
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Utilize Specialized Communication Skills**
Unit Code	**IND PPS4 19 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate group discussions, and contribute to the development of communication strategies.

Elements	Performance Criteria
1. Meet common and specific communication needs of clients and colleagues	1.1 Specific communication needs of clients and colleagues are identified and met. 1.2 Different approaches are used to meet communication needs of clients and colleagues. 1.3 Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization.
2. Contribute to the development of communication strategies	2.1 ***Strategies*** for internal and external dissemination of information are developed, promoted, implemented and reviewed as required. 2.2 Channels of communication are established and reviewed regularly. 2.3 Coaching in effective communication is provided 2.4 Work related network and relationship are maintained as necessary. 2.5 Negotiation and conflict resolution strategies are used where required. 2.6 Communication with clients and colleagues is appropriate to individual needs and organizational objectives.
3. Represent the organization	3.1 When participating in internal or external fora, presentation is relevant, appropriately researched and presented in a manner to promote the organization. 3.2 Presentation is made clear and sequential and delivered within a predetermined time. 3.3 Appropriate media is utilized to enhance presentation. 3.4 Differences in views are respected. 3.5 Written communication is made consistent with organizational standards. 3.6 Inquiries are responded in a manner consistent with organizational standard.

4. Facilitate group discussion	4.1 Mechanisms which enhance ***effective group interaction*** are defined and implemented. 4.2 Strategies which encourage all group members to participate are used routinely. 4.3 Objectives and agenda are routinely set and followed for meetings and discussions. 4.4 Relevant information are provided to group to facilitate outcomes. 4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties. 4.6 Specific communication needs of individuals are identified and addressed.
5. Conduct interview	5.1 A range of appropriate communication strategies are employed in ***interview situations***. 5.2 Different ***types of interview*** are conducted in accordance with the organizational procedures. 5.3 Records of interviews are made and maintained in accordance with organizational procedures. 5.4 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated.

Variable	**Range**
Strategies	• Recognizing own limitations • Utilizing techniques and aids • Providing written drafts • Verbal and non verbal communication
Effective group interaction	• Identifying and evaluating what is occurring within an interaction in a non-judgmental way • Using active listening • Making decision about appropriate words, behavior • Putting together response which is culturally appropriate • Expressing an individual perspective • Expressing own philosophy, ideology and background and exploring impact with relevance to communication
Interview situations	• Establish rapport • obtain facts and information • Facilitate resolution of issues • Develop action plans • Diffuse potentially difficult situation
Types of Interview	• Related to staff issues • Routine • Confidential • Evidential

	• Non-disclosure • Disclosure

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • Demonstrate effective communication skills with clients and work colleagues accessing service • Adopt relevant communication techniques and strategies to meet client particular needs and difficulties
Underpinning Knowledge and Values	Demonstrates knowledge of: • communication process • dynamics of groups and different styles of group leadership • communication skills relevant to client groups
Underpinning Skills	Demonstrates skills of: • full range of communication techniques including: ➢ active listening ➢ feedback ➢ interpretation ➢ role boundaries setting ➢ negotiation ➢ establishing empathy ➢ communication strategies • communication required to fulfill job roles as specified by the organization
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Manage and Maintain Small/Medium Business Operations**
Unit Code	**IND PPS4 20 0613**
Unit Descriptor	This unit covers the operation of day-to-day business activities in a micro or small business. The strategies involve developing, monitoring and managing work activities and financial information, developing effective work habits, and adjusting work schedules as needed.

Elements	Performance Criteria
1. Identify daily work requirements	1.1 Work requirements are identified for a given time period by taking into consideration ***resources*** and constraints. 1.2 Work activities are prioritized based on business needs, requirements and deadlines. 1.3 If appropriate, work is allocated to relevant staff or contractors to optimize efficiency.
2. Monitor and manage work	2.1 People, resources and/or equipment are coordinated to provide optimum results. 2.2 Staff, clients and/or contractors are communicated within a clear and regular manner, to monitor work in relation to ***business goals*** or timelines. 2.3 ***Problem solving techniques*** are applied to work situations to overcome difficulties and achieve positive outcomes.
3. Develop effective work habits	3.1 Work and personal priorities are identified and a balance is achieved between competing priorities using appropriate ***time management strategies***. 3.2 Input from ***internal and external sources*** is sought and used to develop and refine new ideas and approaches. 3.3 Business or inquiries is/are responded to promptly and effectively. 3.4 Information is presented in a format appropriate to the industry and audience.
4. Interpret financial information	4.1 Relevant documents and reports are identified. 4.2 Documents and reports are read and understood and any implications discussed with appropriate persons. 4.3 Data and numerical calculations are analyzed, checked, evaluated, organized and reconciled. 4.4 Daily financial records and cash flow are maintained correctly and in accordance with legal and accounting requirements. 4.5 Invoices and payments are prepared and distributed in a timely

	manner and in accordance with legal requirements. 4.6 Outstanding accounts are collected or followed-up on.
5. Evaluate work performance	5.1 Opportunities for improvements are monitored according to business demands. 5.2 Work schedules are adjusted to incorporate necessary modifications to existing work and routines or changing needs and requirements. 5.3 Proposed changes are clearly communicated and recorded to aid in future planning and evaluation. 5.4 Relevant codes of practice are used to guide an ethical approach to workplace practices and decisions.

Variable	Range
Resources	may include: • Staff, money, time, equipment and space
Business goals	may include: • sales targets • budgetary targets • team and individual goals • production targets and reporting deadlines
Problem solving techniques	may include: • gaining additional research and information to make better informed decisions • looking for patterns • considering related problems or those from the past and how they were handled • eliminating possibilities • identifying and attempting sub-tasks • collaborating and asking for advice or help from additional sources
Time management strategies	may include: • prioritizing and anticipating • short term and long term planning and scheduling • creating a positive and organized work environment • clear timelines and goal setting that is regularly reviewed and adjusted as necessary • breaking large tasks into smaller tasks • getting additional support if identified and necessary
Internal and external sources	may include: • staff and colleagues • management, supervisors, advisors or head office • relevant professionals such as lawyers, accountants, management consultants and professional associations

Evidence Guide

Critical Aspects of Competence	A person must be able to demonstrate: • ability to identify daily work requirements and allocate work appropriately • ability to interpret financial documents in accordance with legal requirements
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Federal and Local Government legislative requirements affecting business operations, especially in regard to Occupational Health and Safety (OHS), equal employment opportunity, industrial relations and anti-discrimination • technical or specialist skills relevant to the business operation • relevant industry code of practice • planning techniques to establish realistic timelines and priorities • identification of relevant performance measures • quality assurance principles and methods • relevant marketing, management, sales and financial concepts • methods for monitoring performance and implementing improvements • structured approaches to problem solving, idea management and time management
Underpinning Skills	Demonstrate skills to: • interpret legal requirements, company policies and procedures and immediate, day-to-day demands • communication skills including questioning, clarifying, reporting, and giving and receiving constructive feedback • numeracy skills for performance information, setting targets and interpreting financial documents and reports • technical and analytical skills to interpret business document, reports and financial statements and projections • ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • problem solving skills to develop contingency plans • using computers and software packages to record and manage data and to produce reports • evaluation skills for assessing work and outcomes • observation skills for identifying appropriate people, resources and to monitor work
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Pulp and Papermaking Operations Supervision Level IV	
Unit Title	**Apply Problem Solving Techniques and Tools**
Unit Code	**IND PPS4 21 0613**
Unit Descriptor	This unit of competency covers the knowledge, skills and attitude required to apply scientific problem solving techniques and tools to enhance quality, productivity and other kaizen elements on continual basis.

Elements	Performance criteria
1. Identify and select theme/problem.	1.1 ***Safety requirements*** are followed in accordance with safety plans and procedures. 1.2 All possible problems related to the process /Kaizen elements are listed using ***statistical tools and techniques***. 1.3 All possible problems related to kaizen elements are identified and listed on Visual Management Board/Kaizen Board. 1.4 Problems are classified based on obviousness of cause and action. 1.5 Critical factors like the number of customers affected, Potentials for bottlenecks, and number of complaints etc… is selected. 1.6 Problems related to priorities of ***Kaizen Elements*** are given due emphasis and selected.
2. Grasp current status and set goal.	2.1 The extent of the problem is defined. 2.2 Appropriate and achievable goal is set.
3. Establish activity plan.	3.1 The problem is confirmed. 3.2 High priority problem is selected. 3.3 The extent of the problem is defined. 3.4 Activity plan is established as per ***5W1H***.
4. Analyze causes of a problem.	4.1 All possible causes of a problem are listed. 4.2 Cause relationships are analyzed using***4M1E***. 4.3 Causes of the problems are identified. 4.4 Root causes are selected. 4.5 The root cause which is most directly related to the problem is selected. 4.6 All possible ways are listed using ***creative idea generation*** to eliminate the most critical root cause. 4.7 The suggested solutions are carefully tested and evaluated for potential complications. 4.8 Detailed summaries of the action plan are prepared to implement the suggested solution.

5. Examine countermeasures and their implementation	5.1 Action plan is implemented by ***medium KPT*** members. 5.2 Implementation is monitored according to the agreed procedure and activities are checked with preset plan.
6. Assess effectiveness of the solution.	6.1 ***Tangible and intangible results*** are identified. 6.2 The results are verified over time. 6.3 Tangible results are compared with targets using ***various types of diagram***.
7. Standardize and sustain operation.	7.1 If the goal is achieved, the new procedures are standardized and made part of daily activities. 7.2 All employees are trained on the new ***Standard Operating Procedures (SOPs)***. 7.3 SOP is verified and followed by all employees. 7.4 The next problem is selected to be tackled by the team.

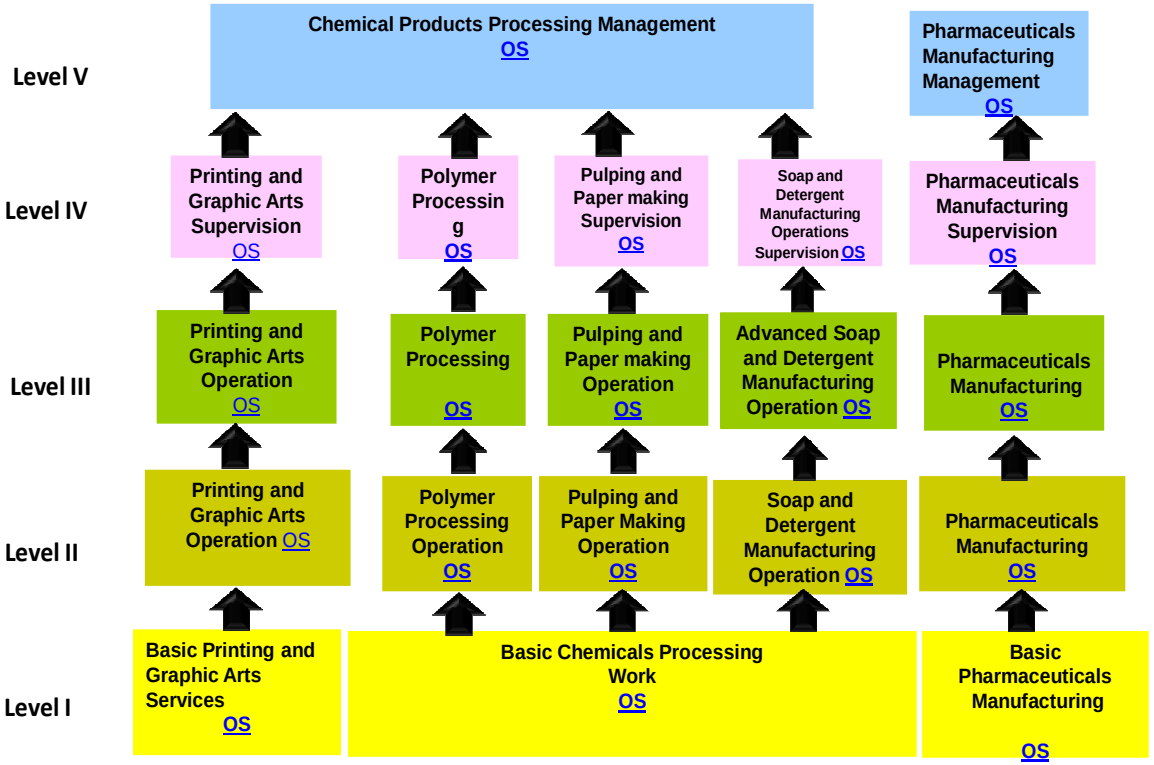
Variables	**Range**
Safety requirements	may include but not limited to: • OHS requirements include legislation, material safety, managements system, hazardous substances and dangerous goods code and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislations, relevant health regulation, manual handling procedure and organization insurance requirements
Statistical tools and techniques	may include but not limited to: • 7 QC tools may include: ➢ Stratification ➢ Pareto Diagram ➢ Cause and Effect Diagram ➢ Check Sheet ➢ Control Chart/Graph ➢ Histogram ➢ Scatter Diagram • QC techniques may include: ➢ Brain storming ➢ Why analysis ➢ What if analysis ➢ 5W1H
Kaizen Elements	may include but not limited to: • Quality • Cost • Productivity • Delivery • Safety • Moral • Environment and Gender equality

5W1H	may include but not limited to: • Who: person in charge • Why: objective • What: item to be implemented • Where: location • When: time frame • How: method
4M1E	may include but not limited to: • Man • Machine • Method • Material and • Environment
Creative idea generation	may include but not limited to: • Brainstorming • Exploring and examining ideas in varied ways • Elaborating and extrapolating • Conceptualizing
Medium KPT	may include but not limited to: • 5S • 4M (machine, method, material and man) • 4P (Policy, procedures, People and Plant) • PDCA cycle • Basics of IE tools and techniques
Tangible and intangible results	may include but not limited to: • Tangible result may include: ➢ Quantifiable data • Intangible result may include: ➢ Qualitative data
Various types of diagram	may include but not limited to: • Line graph • Bar graph • Pie-chart • Scatter diagram • Affinity diagram
Standard Operating Procedures (SOPs)	may include but not limited to: • The customer demand • The most efficient work routine (steps) • The cycle times required to complete work elements • All process quality checks required to minimize defects/errors • The exact amount of work in process required

Evidence Guide	
Critical Aspects of Assessment	Demonstrates skills and knowledge competencies to: • Apply all relevant procedures and regulatory requirements to ensure quality and productivity of an organization.

	• Detect non-conforming products/services in the work area • Apply effective problem solving approaches/strategies. • Implement and monitor improved practices and procedures • Apply statistical quality control tools and techniques.
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • QC story/PDCA cycle/ • QC story/ Problem solving steps • QCC techniques • 7 QC tools • Basic IE tools and techniques. • SOP • Quality requirements associated with the individual's job function and/or work area • Workplace procedures associated with the candidate's regular technical duties • Relevant health, safety and environment requirements • organizational structure of the enterprise • Lines of communication • Methods of making/recommending improvements. • Reporting procedures
Underpinning Skills	Demonstrates skills to: • Apply problem solving techniques and tools • Apply statistical analysis tools • Apply Visual Management Board/Kaizen Board. • Detect non-conforming products or services in the work area • Document and report information about quality, productivity and other kaizen elements. • Contribute effectively within a team to recognize and recommend improvements in quality, productivity and other kaizen elements. • Implement and monitor improved practices and procedures. • Organize and prioritize activities and items. • Read and interpret documents describing procedures • Record activities and results against templates and other prescribed formats.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Sector: Industry
Chemical Products Manufacturing



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This occupational standard was developed on May 2013 at Ethiopian Management Institute (EMI), Debre Zeyit.

COMMENT TEMPLATE

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