

MICRO HYDRO POWER PLANT TECHNOLOGY

Assessment Package

National Vocational
Certificate Level 4

Version 1 - July 2015

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Document Version

July, 2015
Islamabad, Pakistan

MICRO HYDRO POWER PLANT TECHNOLOGY

Assessment Package

National Vocational
Certificate Level 4

Version 1 - July 2015



ASSESSMENT
MATERIAL

EVIDENCE
GUIDE

Qualification code:

LEN0294.v1

Level: 4

Credit: 45

Version: 1

APPLY MICRO HYDEL POWER OPERATIONS (TECHNICIAN) SKILLS

CONTENTS

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

ASSESSMENT AND ASSESSOR DETAILS

Competent	<input type="checkbox"/>	Not Yet Competent	<input type="checkbox"/>																
Assessment	<input type="checkbox"/>	Re-Assessment	<input type="checkbox"/>																
Assessor's Name: _____		Assessor's Code _____																	
Assessor's Signature _____		Date <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>DD</td><td>MM</td><td colspan="6">YYYY</td> </tr> </table>										DD	MM	YYYY					
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CANDIDATE DETAILS

Candidate's Name: _____
First Name Last Name

Father's Name _____

Institute Name and District _____

CNIC/BFORM #

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Registration Number issued by Assessment Body : _____

Gender Male ☐ Female ☐ Transgender ☐

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ASSESSMENT RESULTS SUMMARY FORM

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NAVTTTC OFFICE ONLY

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1

ASSESSMENT SUMMARY AND RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
NATURE OF ACTIVITY	WRITTEN	ORAL	PORTFOLIO	OBSERVATION	DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF: APPLY MICRO HYDEL POWER OPERATIONS (TECHNICIAN) SKILLS FOR MHP PLANT	COMPETENT	NOT YET COMPETENT
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> Complete supplied project brief related to the application of Micro Hydel Power Operations (Technician) skills for MHP plant: <ul style="list-style-type: none"> ✓ Apply entrepreneurial skills ✓ Manage work and personnel in a MHP plant ✓ Control MHP plant shutdown for emergency standby electrical systems ✓ Analyze faults in MHP plant operation ✓ Plan and design MHP plant 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer all questions Assessment Panel will have following oral presentation of completed project brief 		
Other Requirements			✓		<ul style="list-style-type: none"> All completed course assignments Completed work forms Completed job records Completed plan for career options related to Micro Hydel Power operations All learner log books and formative assessments completed by Instructor including: <ul style="list-style-type: none"> ✓ Observations ✓ Demonstrations ✓ Questions and recorded answers 		

2

CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name

ALL WORK ASSESSED FOR THESE COMPETENCY STANDARDS MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to perform the following task within 4(four) hours timeframe:

- Prepare emergency shutdown electrical system of MHP
- Prepare emergency shutdown electrical system of MHP
- Connect generator with control panel
- Remove the jam bearing of main shaft of turbine
- Fix the speed governor haunting
- Fix the leakage of fore bay tank
- Conduct site assessment
- Planning of civil construction works
- Determine physical requirements of MHP plant

ACTIVITIES	CANDIDATE RESPONSE
1. Complete project brief of applying Micro Hydel Power Operations (Technician) skills for MHP plant under observation by Instructor	<p>During a practical assessment, under observation by an assessor, I will correctly perform the following task:</p> <ul style="list-style-type: none"> • Prepare emergency shutdown electrical system of MHP <ul style="list-style-type: none"> ✓ Turn off circuit breaker of generator ✓ Turn off power switch of control panel • Isolate MHP electrical system from distribution network <ul style="list-style-type: none"> ✓ Turn off circuit breaker of control panel • Connect generator with control panel <ul style="list-style-type: none"> ✓ Join wire connections of generator with control panel ✓ Turn on power switch of generator • Remove the jam bearing of main shaft of turbine <ul style="list-style-type: none"> ✓ Remove cover from bearing bracket ✓ Use puller to remove bearing from main shaft • Fix the Speed Governor Haunting <ul style="list-style-type: none"> ✓ Adjust the frequency of generator (55Hz) from the tuner of speed Governor. ✓ Check the frequency from control panel (55Hz) • Fix the leakage of fore bay tank <ul style="list-style-type: none"> ✓ Divert the water direction from flushing gates of spillway ✓ Add concrete to the leakage point • Conduct site assessment <ul style="list-style-type: none"> ✓ Measure head with the use of water level method ✓ Measure flow with the use of Salt Dilution method • Planning of civil construction works <ul style="list-style-type: none"> ✓ Dimension main civil construction structure of MHP plant ✓ Measure the total length of power channel • Determine physical requirements of MHP plant <ul style="list-style-type: none"> ✓ Identify procurement requirements for mechanical and electrical equipment of MHP plant ✓ Prepare powerhouse floor plan to arrange for electro-mechanical equipment ✓ Carry out initial planning of distribution network layout

<p>2. Present completed project brief supplied by Instructor</p>	<ul style="list-style-type: none"> • Oral presentation of project brief and completed project work to Assessment Panel. • Presentation to include: <ul style="list-style-type: none"> ✓ Requirements of brief ✓ Planning and preparation of project ✓ Problems encountered and how they were dealt with ✓ Project outcome/s ✓ Lessons learnt from undertaking project (reflective thinking) • Presentation to take no longer than 10 minutes
<p>3. Answer all questions Assessor Panel will have following project presentation</p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

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ASSESSOR JUDGEMENT GUIDE

Candidate's Name Father's Name

INSTRUCTIONS FOR ASSESSOR

THIS SECTION CONTAINS MINIMUM EVIDENCE REQUIREMENTS.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO	ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
2: Complete project brief of applying Micro Hydel Power Operations (Technician) skills for MHP plant under observation by Instructor			
Prepare emergency shutdown electrical system of MHP	Turn off circuit breaker of generator Turn off power switch of control panel		
Isolate MHP electrical system from distribution network	Turn off circuit breaker of control panel		
Connect generator with control panel	Joint wire connections of generator with control panel Turned on power switch of generator		
Remove the jam bearing of main shaft of turbine	Removed cover from bearing bracket Used puller to remove bearing from main shaft		
Fix the speed governor haunting	Adjusted the frequency of generator (55Hz) from the tuner of speed Governor. Checked the frequency from control panel (55Hz)		
Fix the leakage of fore bay tank	Diverted the water direction from flushing gates of spillway Added concrete to the leakage point		
Conduct site assessment	Measured head with the use of water level method Measured flow with the use of Salt Dilution method		
Planning of civil construction works	Dimensioned main civil construction structure of MHP plant Measured the total length of power channel		
Determine physical requirements of MHP plant	Identified procurement requirements for mechanical and electrical equipment of MHP plant Prepared powerhouse floor plan to arrange for electro-mechanical equipment Carried out initial planning of distribution network layout		
3. Present completed project brief supplied by Instructor	<ul style="list-style-type: none"> Oral presentation of project brief and completed project work to Assessment Panel. Presentation to include: <ul style="list-style-type: none"> Requirements of brief 		

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO		ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
	<ul style="list-style-type: none"> ○ Planning and preparation of project ○ Problems encountered and how they were dealt with ○ Project outcome/s ○ Lessons learnt from undertaking project (reflective thinking) • Presentation to take no longer than 10 minutes 			
4. Answer any questions their Assessor may have during the practical assessment	<p>Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application.</p> <p>Assessor to document all questions asked, if any, and the answers here:</p>			

4

LIST OF TOOLS , EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	This section contains information regarding; <ul style="list-style-type: none"> Context of the assessment List of required tools and equipment's. List of consumable items required during the service
1. Context of Assessment	This task will be performed in MHP plant lab/workshop environment Required tools, equipment and consumables will vary according to project brief

SR#	Mechanical	
1	7 pieces screwdriver set	
2	Adjustable wrench set	
3	Allen Keys Set	
4	Aluminum Spirit Level (leveling instrument)	
5	Bastard File with wood handle (Flat)	
6	Bastard File with wood handle (Round)	
7	Bench Vice	
8	Bench Workstation	
9	Chisel	
10	Clamp Meter	
11	Claw hammer with wood handle	
12	Combination Pliers	
13	Crimping Tool	
14	Hack Saw with Blades	
15	Hand Drill [1/8" – 1/8"]	
16	Hand Grease Gun	
17	Hand Grinding Machine	
18	Hot Air Blower	
19	Measuring tape	
20	Micro Meter [Screw Gauge]	
21	Nose Plier	
22	Oil Can	
23	Pedestal Drill	
24	Pen Grinder	
25	Pipe Wrench [18" & 24"]	
26	Portable Welding Plant [100 – 300 Amperes]	
27	Puller	
28	Punch Set	
29	Retched Block with Grip	
30	Screw Driver Set (-) [6"-18"]	
31	Screw Driver Set (+) [6"-18"]	
32	Side Cutting Plier	
33	Spanner Set (Open)	
34	Spanner Set (Ring)	
35	Stainless Steel Slogging Ring Spanner	
36	Thread Gauge	
37	Tong/Monkey Plier	
38	Vernier Calliper	
39	Wheel Grinder	
40	Wire Gauge	
41	Welding Plant	
	Electrical	
1	Clamp Meter	

2	Combination Plier	
3	Earth Tester	
4	Line Tester	
5	Megger	
6	Multi Meter	
7	Nose Plier	
8	Pin Plier	
9	Screw Driver Set	
10	Side Cutter	
	Safety Tools	
1	Fire Extinguisher	
2	First Aid Box	
3	Hand Gloves	
4	Hard top Hat	
5	Mask	
6	Overall combination [Dress]	
7	Safety Belt	
8	Safety Goggles	
9	Steel Toe Shoes	
	EQUIPMENT	
	Civil	
1	Air Vent Pipe	
2	Bell Mouth	
3	Control Gates	
4	Control Valves	
5	Expansion Joint	
6	Flanges	
7	Flushing Gates	
8	Flushing Pipe	
9	Penstock	
10	Reducer	
11	Rubber Seal	
12	Trash Rack	
	Electrical	
1	Ballast Tank with Heaters	
2	Binding wire	
3	Cable Shoe	
4	Channel Iron	
5	Conductors	
6	D-Iron Set	
7	Disc Insulator [With Tension Set]	
8	Earth Wire	
9	Earthing Plate	
10	Electrical Panels	
11	Electronic Load Controller	
12	Energy Meter	
13	Generator[Brushed and Brush-less]	
14	Metal Clad Main Switch	
15	Pin Insulator	
16	Pole	
17	Power Cable	
18	Pressure Transducer	
19	Shackle Insulator	
20	Stay Insulator	
21	Stay Plate	
22	Stay Rod	
23	Stay Wire	
24	Thimble	
25	Transformer	
26	Turn Buckle	
27	Ultra Sonic Flow Meter	
	Mechanical	

1	Angle Iron [Cross Arm]	
2	Butterfly Valve	
3	Coupling [Flexible/Rigid]	
4	Crossflow Turbine	
5	Flat Belt	
6	Flat Pulleys	
7	Fly Wheel	
8	Francis Turbine	
9	Gate Valve	
10	Gear Box	
11	Governor	
12	Hydraulic Jack	
13	Operating Rod	
14	Pelton Turbine	
15	Propeller/Kaplan Turbine	
16	Single Phase Variac [Auto Transformer]	
17	Tachometer	
18	V Belt	
19	V-Pulleys	



ASSESSMENT MATERIAL

EVIDENCE GUIDE

Qualification

LEN0294.v1

Level: 4

Credit: 10

Version: 1

APPLY ENTREPRENEURIAL SKILLS

CONTENTS

1. Assessment Summary and Record
2. Candidate Assessment
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ASSESSMENT AND ASSESSOR DETAILS

Competent ☐

Not Yet Competent ☐

Assessment ☐

Re-Assessment ☐

Assessor's Name: _____

Assessor's Code

Assessor's Signature _____

Date

DD	MM	YYYY							

CANDIDATE DETAILS

Candidate's Name: _____

First Name

Last Name

Father's Name _____

Institute Name and
District _____

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Registration Number
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Gender

Male ☐

Female ☐

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Candidate's Consent

I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

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DATABASE:

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MM

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1

ASSESSMENT SUMMARY & RECORD

Candidate's Name:.....Father's Name:.....

ACTIVITY		METHOD			DESIRED OUTCOMES	RESULT	
NATURE OF ACTIVITY	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS	DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: APPLY ENTREPRENEURIAL SKILLS	COMPETENT	NOT YET COMPETENT
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer all questions in the knowledge assessment on the following topics: <ul style="list-style-type: none"> Introduction to entrepreneurship Conduct business start-up activities Develop a financial strategy Develop a marketing strategy 		
Other Requirements				✓	<ul style="list-style-type: none"> All candidate formative assessments completed by Instructor including; <ul style="list-style-type: none"> Observations Demonstrations Questions and recorded answers All work produced as module projects and assignments Completed learner logbooks Completed work records Evidence of: <ul style="list-style-type: none"> Researching potential business premises Researching requirements for business operating clearance development of business plan which includes: <ul style="list-style-type: none"> Financial plan Service and product delivery Marketing strategy 		

2

CANDIDATE ASSESSMENT

Candidate's Name:.....Father's Name:.....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete knowledge assessments of the following topics within 1 (one) hour of timeframe:

- Introduction to entrepreneurship
- Conduct business start-up activities
- Develop a financial strategy
- Develop a marketing strategy

ACTIVITIES	CANDIDATE RESPONSE
1. Complete knowledge assessment	<p>Answer all questions in the knowledge assessment on the following topics:</p> <ul style="list-style-type: none"> • Introduction to entrepreneurship <ul style="list-style-type: none"> ✓ Identify the importance of entrepreneurs for Pakistan ✓ Identify challenges of being an entrepreneur ✓ Confirm and implement strategies for improving personal entrepreneurship qualities • Conducting business start-up activities <ul style="list-style-type: none"> ✓ Select and secure business premises ✓ Secure business operating clearance ✓ Secure business support service • Developing a financial strategy <ul style="list-style-type: none"> ✓ Project profit and loss and cash flow, including total cost of set-up ✓ Identify sources of funding ✓ Establish and follow bank requirements • Developing a marketing strategy <ul style="list-style-type: none"> ✓ Identify potential profitable opportunities and target markets ✓ Plan service and product delivery ✓ Identify competitors operating in the industry ✓ Identify methods of promotion
2. Other requirements	<ul style="list-style-type: none"> • All candidate formative assessments completed by Instructor including; <ul style="list-style-type: none"> ✓ Observations ✓ Demonstrations ✓ Questions and recorded answers • All work produced as module projects and assignments • Completed learner logbooks • Completed work records • Evidence of: <ul style="list-style-type: none"> ✓ Researching potential business premises ✓ Researching requirements for business operating clearance ✓ development of business plan which includes: <ul style="list-style-type: none"> ▪ Financial plan ▪ Service and product delivery ▪ Marketing strategy

Candidate's Name:..... Father's Name:.....

**INSTRUCTIONS
FOR
ASSESSOR**

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
1. Knowledge assessment	Answer all questions in the knowledge assessment on the following topics:			
Introduction to entrepreneurship	Identify the importance of entrepreneurs for Pakistan			
	Identify challenges of being an entrepreneur			
	Confirm and implement strategies for improving personal entrepreneurship qualities			
Conducting business start-up activities	Select and secure business premises			
	Secure business operating clearance			
	Secure business support service			
Developing a financial strategy	Project profit and loss and cash flow including total cost of set-up			
	Identify sources of funding			
	Establish and follow bank requirements			
Developing a marketing strategy	Identify potential profitable opportunities and target markets			
	Plan service and product delivery			
	Identify competitors operating in the industry			
	Identify methods of promotion			
2. Other requirements	<ul style="list-style-type: none"> All candidate formative assessments completed by Instructor including; <ul style="list-style-type: none"> Observations Demonstrations Questions and recorded answers All work produced as module projects and assignments Completed learner logbooks Completed work records Evidence of: <ul style="list-style-type: none"> Researching potential business premises Researching requirements for business operating clearance development of business plan which includes: <ul style="list-style-type: none"> Financial plan Service and product delivery Marketing strategy 			

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

instructions	This section contains information regarding; <ul style="list-style-type: none"> • Context of the assessment • List of required tools and equipment. • List of consumable items required during the service
1. Context of Assessment	This practical skill demonstration will be conducted in a Micro Hydel Power plant lab/workshop environment

2. List of consumable Items required		
S. No	Consumable Items	Quantity
1	Pen	1 per candidate
2	Knowledge assessment with sufficient space for answers	1 per candidate



ASSESSMENT MATERIAL EVIDENCE GUIDE	<h2 style="text-align: center;">MANAGE WORK AND PERSONNEL IN A MHP PLANT</h2>																																													
Qualification LEN0294.v1 Level: 4 Credit: 9 Version: 1																																														
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NAVTTC OFFICE ONLY	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> 1. DATE FORM RECEIVED: <table border="1" style="display: inline-table; width: 100px; height: 20px; vertical-align: middle;"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> DD MM YYYY </td> <td style="width: 50%;"> 2. DATE ENTERED INTO DATABASE: <table border="1" style="display: inline-table; width: 100px; height: 20px; vertical-align: middle;"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> DD MM YYYY </td> </tr> </table>		1. DATE FORM RECEIVED: <table border="1" style="display: inline-table; width: 100px; height: 20px; vertical-align: middle;"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> DD MM YYYY											2. DATE ENTERED INTO DATABASE: <table border="1" style="display: inline-table; width: 100px; height: 20px; vertical-align: middle;"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> DD MM YYYY																																
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1

ASSESSMENT SUMMARY & RECORD

CANDIDATE NAME:

FATHER NAME:

ACTIVITY		METHOD			DESIRED OUTCOMES	RESULT	
NATURE OF ACTIVITY	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS	DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: MANAGE WORK AND PERSONNEL IN A MHP PLANT	COMPETENT	NOT YET COMPETENT
Practical skill demonstration			✓		<ul style="list-style-type: none"> ▪ Induct new employees ▪ Receive and disseminate information ▪ Motivate employees and monitor performance ▪ Provide technical support to individuals 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> • Answer all questions your assessor may have during the practical assessment 		
Other Requirements				✓	<ul style="list-style-type: none"> • All candidate formative assessments completed by Instructor including; <ul style="list-style-type: none"> ○ Observations ○ Demonstrations ○ Questions and recorded answers • All work produced as module projects and assignments • Completed learner logbooks • Completed work records 		

2

CANDIDATE ASSESSMENT

Candidate Name:..... Father Name:.....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one (1) hour** of timeframe:

- Induct new employees
- Receive and disseminate information
- Motivate employees and monitor performance
- Provide technical support to individuals

ACTIVITIES	CANDIDATE RESPONSE
1. Complete practical task of managing work and personnel in a MHP plant under observation by an assessor	<p>During a practical assessment, under observation by an assessor, I will correctly:</p> <ul style="list-style-type: none"> • Induct new employees <ul style="list-style-type: none"> ✓ Communicate workplace operational and safety procedures, and policies to employees ✓ Induct staff on MHP design and structure, and technical operations • Receive and disseminate information <ul style="list-style-type: none"> ✓ Receive and disseminate information and instructions ✓ Communicate instructions to employees ✓ Assign roles and responsibilities ✓ Ensure instructions, roles and responsibilities are understood • Motivate employees and monitor performance <ul style="list-style-type: none"> ✓ Maintain a positive and challenging working climate ✓ Monitor performance of employees and teams, and take corrective actions ✓ Provide constructive feedback ✓ Assist staff in identifying their development needs • Provide technical support to individuals <ul style="list-style-type: none"> ✓ Analyse report or other feedback from individual or team ✓ Identify and analyse backlog or problem ✓ Identify problem-solving method ✓ Solve problem in collaboration with individual or team • Meet set timeframes required for tasks of managing work and personnel in a MHP plant
2. Answer any questions your Assessor may have during the practical assessment	My answers to questions are correct and demonstrate my understanding of the topics and their application:
3. Other Requirements	<ul style="list-style-type: none"> • All candidate formative assessments completed by Instructor including: <ul style="list-style-type: none"> ✓ Observations ✓ Demonstrations ✓ Questions and recorded answers • All work produced as module projects and assignments • Completed learner logbooks • Completed work records

Candidate Name:

Father Name:

**INSTRUCTIONS
FOR
ASSESSOR**

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
1. Complete practical task of managing work and personnel in a MHP plant under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out:			
Induct new employees	Communicate workplace operational and safety procedures, and policies to employees Induct staff on MHP design and structure, and technical operations			
Receive and disseminate information	Received and disseminate information and instructions Communicate instructions to employees Assigned roles and responsibilities Ensured instructions, roles and responsibilities are understood			
Motivate employees and monitor performance	Maintained a positive and challenging working climate Monitored performance of employees and teams, and take corrective actions Provide constructive feedback Assisted staff in identifying their development needs			
Provide technical support to individuals	Analysed report or other feedback from individual or team Identified and analyse backlog or problem Identified problem-solving method Solved problem in collaboration with individual or team Met set timeframes required for tasks of managing work and personnel in a MHP plant			
2. Answer any questions their assessor may have during the practical assessment	Candidate's answers to questions are correct and demonstrate understanding of the topics and their application. <i>Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attached.</i>			
3. Any other requirements	<ul style="list-style-type: none"> All candidate formative assessments completed by Instructor including; <ul style="list-style-type: none"> Observations Demonstrations Questions and recorded answers All work produced as module projects and assignments Completed learner logbooks Completed work records 			

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	This section contains information regarding; <ul style="list-style-type: none"> • Context of the assessment • List of required tools and equipment. • List of consumable items required during the service
1. Context of Assessment	This practical skill demonstration will be conducted in a Micro Hydel Power Plant lab/workshop environment

SR#	Consumable	Qty
1	pen	1
2	Interview format	1

**ASSESSMENT
MATERIAL****EVIDENCE
GUIDE**

Qualification

LEN0294.v1

Level: 4

Credit: 3

Version: 1

**CONTROL MHP PLANT SHUTDOWN
FOR EMERGENCY STANDBY
ELECTRICAL SYSTEMS****CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgement Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND
ASSESSOR
DETAILS**

Competent

☐

Not Yet Competent

☐

Assessment

☐

Re-Assessment

☐

Assessor's Name:

Assessor's Code

Assessor's Signature

Date

DD	MM	YYYY							

**CANDIDATE
DETAILS**

Candidate's Name:

First Name

Last Name

Father's Name

Institute Name and
District

CNIC/BFORM #

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Registration Number
issued by
Assessment Body :

Gender

Male

☐

Female

☐

Transgender

☐

Candidate Consent

I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate Signature:

**ASSESSMENT
RESULTS
SUMMARY FORM**You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to NAVTTC

NAVTTTC OFFICE ONLY	1. DATE FORM RECEIVED:	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	2. DATE ENTERED INTO DATABASE:	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>
	DD MM YYYY	DD MM YYYY		

1

ASSESSMENT SUMMARY & RECORD

Candidate Name:.....

Father Name:

ACTIVITY		METHOD			DESIRED OUTCOMES	RESULT	
NATURE OF ACTIVITY	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS	DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: CONTROL MHP PLANT SHUTDOWN FOR EMERGENCY STANDBY ELECTRICAL SYSTEMS	COMPETENT	NOT YET COMPETENT
Practical skill demonstration			✓		<ul style="list-style-type: none"> Prepare emergency shutdown electrical system of MHP Prepare MHP plant for work Isolate MHP electrical system from distribution network Connect generator with control panel 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer all questions your assessor may have during the practical assessment 		
Other Requirements				✓	<ul style="list-style-type: none"> Provide verified evidence of ELC connection with MHP Electricity 		

2

CANDIDATE ASSESSMENT

Candidate Name:

Father Name:

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within one hour of timeframe:

- Prepare emergency shut down electrical system of MHP
- Isolate MHP electrical system from distribution network
- Connect generator with control panel

ACTIVITIES	CANDIDATE RESPONSE
1. Complete practical task of controlling MHP plant shutdown for emergency standby electrical systems under observation by an assessor	<p>During a practical assessment, under observation by an assessor, I will correctly:</p> <ul style="list-style-type: none"> • Prepare emergency shutdown electrical system of MHP <ul style="list-style-type: none"> ✓ Turn off circuit breaker of generator ✓ Turn off power switch of control panel • Isolate MHP electrical system from distribution network <ul style="list-style-type: none"> ✓ Turn off circuit breaker of control panel • Connect generator with control panel <ul style="list-style-type: none"> ✓ Join wire connections of generator with control panel ✓ Turn on power switch of generator
2. Answer any questions your Assessor may have during the practical assessment	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application:</p>
3. Other Requirements	<ul style="list-style-type: none"> • All candidate formative assessments completed by Instructor including: <ul style="list-style-type: none"> ○ Observations ○ Demonstrations ○ Questions and recorded answers • All work produced as module projects and assignments • Completed learner logbooks • Completed work records • Documented plant shutdown, isolation and servicing procedures

Candidate's Name:Father's Name:

**INSTRUCTIONS
FOR
ASSESSOR**

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO	ASSESSOR COMMENTS
1. Complete practical task of controlling MHP plant shutdown for emergency standby electrical systems under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out:		
Prepare emergency shutdown electrical system of MHP	Turned off circuit breaker of generator Turned off power switch of control panel		
Isolate MHP electrical system from distribution network	Turned off circuit breaker of control panel		
Connect generator with control panel	Joined wire connections of generator with control panel Turned on power switch of generator		
2. Answer any questions their assessor may have during the practical assessment	Candidate's answers to questions are correct and demonstrate understanding of the topics and their application. <i>Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attached.</i>		
3. Any other requirements	<ul style="list-style-type: none"> All candidate formative assessments completed by Instructor including; <ul style="list-style-type: none"> Observations Demonstrations Questions and recorded answers All work produced as module projects and assignments Completed learner logbooks Completed work records Documented plant shutdown, isolation and servicing procedures 		

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	This section contains information regarding; <ul style="list-style-type: none"> • Context of the assessment • List of required tools and equipment. • List of consumable items required during the service
1. Context of Assessment	This practical skill demonstration will be conducted in a Micro Hydel Power Plant lab/workshop environment

SR#	Mechanical	
1	Adjustable wrench set	
2	Allen Keys Set	
3	Combination Pliers	
4	Crimping Tool	
5	Nose Pliers	
6	Pipe Wrench [18" & 24"]	
7	Side Cutting Pliers	
8	Spanner Set (Open)	
9	Spanner Set (Ring)	
10	Stainless Steel Slogging Ring Spanner	
	Electrical	
1	Clamp Meter	
2	Line Tester	
3	Mugger	
4	Multi Meter	
5	Screw Driver Set	

**ASSESSMENT
MATERIAL****EVIDENCE
GUIDE****Qualification**

LEN0294.v1

Level: 4**Credit: 3****Version: 1**

ANALYZE FAULTS IN MHP PLANT OPERATION

CONTENTS

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgement Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND
ASSESSOR
DETAILS****Competent**☐**Not Yet Competent**☐**Assessment**☐**Re-Assessment**☐**Assessor's Name:****Assessor's Code****Assessor's Signature****Date**

DD		MM		YYYY											

**CANDIDATE
DETAILS****Candidate's Name:**

First Name

Last Name

Father's Name**Institute Name and District****CNIC/BFORM #**

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**Registration Number issued by
Assessment Body :****Gender**

Male

☐

Female

☐

Transgender

☐**Candidate's Consent**

I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature:**ASSESSMENT
RESULTS
SUMMARY FORM**You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to NAVTTC**NAVTTC OFFICE
ONLY**1. DATE
FORM
RECEIVED:

DD		MM		YYYY					

2. DATE ENTERED INTO
DATABASE:

DD		MM		YYYY					

1

ASSESSMENT SUMMARY & RECORD

Candidate's Name:.....Father's Name:.....

ACTIVITY		METHOD			DESIRED OUTCOMES	RESULT	
NATURE OF ACTIVITY	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS	DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: ANALYZE FAULTS IN MHP PLANT OPERATION	COMPETENT	NOT YET COMPETENT
Practical skill Demonstration			✓		<ul style="list-style-type: none"> Analyse the common faults of MHP plant 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer all questions your assessor may have during the practical assessment 		
Other Requirements				✓	<ul style="list-style-type: none"> Provide the verified evidence of changing runner 		

2

CANDIDATE ASSESSMENT

Candidate's Name:

Father's Name:

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **5(five) hours** timeframe:

- Change the jam bearing of main shaft of turbine
- Fix the Haunting of Speed Governor
- Fix the leakage of fore bay tank

ACTIVITIES	CANDIDATE RESPONSE
1. Complete practical task of analysing faults in MHP plant operation under observation by an assessor	<p>During a practical assessment, under observation by an assessor, I will correctly:</p> <ul style="list-style-type: none"> • Remove the jam bearing of main shaft of turbine <ul style="list-style-type: none"> ✓ Remove cover from bearing bracket ✓ Use puller to remove bearing from main shaft • Fix the Speed Governor Haunting <ul style="list-style-type: none"> ✓ Adjust the frequency of generator (55Hz) from the tuner of speed Governor. ✓ Check the frequency from control panel (55Hz) • Fix the leakage of fore bay tank <ul style="list-style-type: none"> ✓ Divert the water direction from flushing gates of spillway ✓ Add concrete to the leakage point
2. Answer any questions your Assessor may have during the practical assessment	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application:</p>
3. Other Requirements	<ul style="list-style-type: none"> • All candidate formative assessments completed by Instructor including: <ul style="list-style-type: none"> ○ Observations ○ Demonstrations ○ Questions and recorded answers • All work produced as module projects and assignments • Completed learner logbooks • Completed work records • Documented fault analysis records

Candidate's Name:

Father's Name:

**INSTRUCTIONS
FOR
ASSESSOR**

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO	ASSESSOR COMMENTS
1. Complete practical task of analysing faults in MHP plant operation under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out:		
Remove the jam bearing of main shaft of turbine	Removed cover from bearing bracket Used puller to remove bearing from main shaft		
Fix the Speed Governor Haunting	Adjusted the frequency of generator (55Hz) from the tuner of speed Governor. Checked the frequency from control panel (55Hz)		
Fix the leakage of fore bay tank	Diverted the water direction from flushing gates of spillway Added concrete to the leakage point		
2. Answer any questions their assessor may have during the practical assessment	Candidate's answers to questions are correct and demonstrate understanding of the topics and their application. <i>Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attached.</i>		
3. Any other requirements	<ul style="list-style-type: none"> All candidate formative assessments completed by Instructor including: <ul style="list-style-type: none"> Observations Demonstrations Questions and recorded answers All work produced as module projects and assignments Completed learner logbooks Completed work records Documented fault analysis records 		

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	This section contains information regarding; <ul style="list-style-type: none"> • Context of the assessment • List of required tools and equipment. • List of consumable items required during the service
1. Context of Assessment	This practical skill demonstration will be conducted in a Micro Hydel Power Plant lab/workshop environment

SR#	Mechanical/Electrical	
1	Adjustable wrench set	
2	Allen Keys Set	
3	Bench Workstation	
4	Clamp Meter	
5	Claw hammer with wood handle	
6	Combination Pliers	
7	Crimping Tool	
8	Hand Grease Gun	
9	Measuring tape	
10	Micro Meter [Screw Gauge]	
11	Nose Pliers	
12	Oil Can	
13	Pipe Wrench [18" & 24"]	
14	Bearing Puller	
15	Screw Driver Set (-) [6"-18"]	
16	Screw Driver Set (+) [6"-18"]	
17	Side Cutting Pliers	
18	Spanner Set (Ring)	
19	Stainless Steel Slogging Ring Spanner	
20	Vernier Calliper	

**ASSESSMENT
MATERIAL****EVIDENCE
GUIDE****Qualification**

LEN0294.v1

Level: 4**Credit: 20****Version: 1****PLAN AND DESIGN MHP PLANT****CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgement Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND
ASSESSOR
DETAILS****Competent**☐**Not Yet Competent**☐**Assessment**☐**Re-Assessment**☐**Assessor's Name:****Assessor's Code****Assessor's Signature****Date**

DD	MM	YYYY							

**CANDIDATE
DETAILS****Candidate's Name:**

First Name

Last Name

Father's Name**Institute Name and
District****CNIC/BFORM #**

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**Registration Number
issued by Assessment
Body :****Gender**

Male

☐

Female

☐

Transgender

☐**Candidate's Consent**

I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature:**ASSESSMENT
RESULTS
SUMMARY FORM**You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to NAVTTC

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	DD MM YYYY	DD MM YYYY		

1

ASSESSMENT SUMMARY & RECORD

Candidate's Name:..... Father's Name:.....							
ACTIVITY		METHOD			DESIRED OUTCOMES	RESULT	
NATURE OF ACTIVITY	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS	DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: PLAN AND DESIGN MHP PLANT	COMPETENT	NOT YET COMPETENT
Practical Skill Demonstration			✓		<ul style="list-style-type: none"> Conduct site assessment 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer all questions your assessor may have during the practical assessment 		
Other Requirements				✓	<ul style="list-style-type: none"> Provide verified evidence of designing power channel of MHP 		

2

CANDIDATE ASSESSMENT

Candidate's Name:Father's Name:.....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within set timeframe:

- Conduct site assessment
- Conduct initial planning of civil construction works
- Determine physical requirements of MHP plant

ACTIVITIES	CANDIDATE RESPONSE
1. Complete practical task of planning and designing MHP plant under observation by an assessor	<p>During a practical assessment, under observation by an assessor, I will correctly:</p> <ul style="list-style-type: none"> • Conduct site assessment <ul style="list-style-type: none"> ✓ Measure head with the use of water level method ✓ Measure flow with the use of Salt Dilution method • Planning of civil construction works <ul style="list-style-type: none"> ✓ Dimension main civil construction structure of MHP plant ✓ Measure the total length of power channel • Determine physical requirements of MHP plant <ul style="list-style-type: none"> ✓ Identify procurement requirements for mechanical and electrical equipment of MHP plant ✓ Prepare powerhouse floor plan to arrange for electro-mechanical equipment ✓ Carry out initial planning of distribution network layout • Meet set timeframes required for tasks of planning and designing MHP plant
2. Answer any questions your Assessor may have during the practical assessment	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application:</p>
3. Other Requirements	<ul style="list-style-type: none"> • All candidate formative assessments completed by Instructor including: <ul style="list-style-type: none"> ✓ Observations ✓ Demonstrations ✓ Questions and recorded answers • All work produced as module projects and assignments • Completed learner logbooks • Completed work records • Recorded planning data • Head and flow measurements and power calculations • Cost estimates • Powerhouse floor plans identifying dimensions, and locations of electro-mechanical equipment

3

ASSESSOR JUDGEMENT GUIDE

Candidate's Name: Father's Name:.....

INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO	ASSESSOR COMMENTS
1. Complete practical task of planning and designing MHP plant under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:		
Conduct site assessment	Measured head with the use of water level method Measured flow with the use of Salt Dilution method		
Planning of civil construction works	Dimension main civil construction structure of MHP plant Measured the total length of power channel		
Determine physical requirements of MHP plant	Identified procurement requirements for mechanical and electrical equipment of MHP plant Prepared powerhouse floor plan to arrange for electro-mechanical equipment Carried out initial planning of distribution network layout Met set timeframes required for tasks of planning and designing MHP plant		
2. Answer any questions their assessor may have during the practical assessment	Candidate's answers to questions are correct and demonstrate understanding of the topics and their application. <i>Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attached.</i>		
3. Any other requirements	<ul style="list-style-type: none"> All candidate formative assessments completed by Instructor including; <ul style="list-style-type: none"> Observations Demonstrations Questions and recorded answers All work produced as module projects and assignments Completed learner logbooks Completed work records Recorded planning data Head and flow measurements and power calculations Cost estimates Completed powerhouse floor plans identifying dimensions, and locations of electro-mechanical equipment 		

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	This section contains information regarding; <ul style="list-style-type: none"> • Context of the assessment • List of required tools and equipment. • List of consumable items required during the service
1. Context of Assessment	This practical skill demonstration will be conducted in a Micro Hydel Power Plant lab/workshop environment

SR#	Mechanical/Civil	
1	Aluminium Spirit Level (levelling instrument)	
2	Measuring tape	
3	Plastic Pipe	
4	Conductivity meter	
5	Pressure guage	
6		



ASSESSMENT MATERIAL

EVIDENCE GUIDE

Qualification code:

LEN0294.v1

Level: 4

Credit: 45

Version: 1

Apply Micro Hydel Power Operations(Technician)skills

CONTENTS

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgement Guide
4. List of required tools/ equipment, material and context of assessment

ASSESSMENT AND ASSESSOR DETAILS

Competent ☐

Not Yet Competent ☐

Assessment ☐

Re-Assessment ☐

Assessor Name: _____

Assessor Code

Assessor Signature _____

Date

DD	MM	YYYY							

CANDIDATE DETAILS

Candidate Name: _____

First Name

Last Name

Father Name _____

Institute Name and District _____

CNIC #

OR

Registration Number: _____

Gender

Male ☐ Female ☐

Candidate Consent

I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate Signature: _____

ASSESSMENT RESULTS SUMMARY FORM

You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to **NAVTTTC**

NAVTTTC OFFICE ONLY

1. DATE FORM RECEIVED:

DD	MM	YYYY							

2. DATE ENTERED INTO DATABASE:

DD	MM	YYYY							

1

ASSESSMENT SUMMARY AND RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
NATURE OF ACTIVITY	WRITTEN	ORAL	PORTFOLIO	OBSERVATION	DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF: APPLY MICRO HYDEL POWER OPERATIONS (TECHNICIAN) SKILLS FOR MHP PLANT	COMPETENT	NOT YET COMPETENT
Practical skill demonstration			✓	✓	Complete supplied project brief related to the application of Micro Hydel Power Operations (Technician) skills for MHP plant: <ul style="list-style-type: none"> • Apply entrepreneurial skills • Manage work and personnel in a MHP plant • Control MHP plant shutdown for emergency standby electrical systems • Analyze faults in MHP plant operation • Plan and design MHP plant 		
Knowledge assessment		✓			<ul style="list-style-type: none"> • Answer all questions Assessment Panel will have following oral presentation of completed project brief 		
Other requirements	✓	✓	✓	✓	<ul style="list-style-type: none"> • All completed course assignments • Completed work forms • Completed job records • Completed plan for career options related to Micro Hydel Power operations • All learner log books and formative assessments completed by Instructor including; <ul style="list-style-type: none"> ○ Observations ○ Demonstrations ○ Questions and recorded answers 		

2

CANDIDATE ASSESSMENT

Candidate Name..... Father Name

ALL WORK ASSESSED FOR THESE COMPETENCY STANDARDS MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to:

- Prepare emergency shut down electrical system of MHP
- Prepare emergency shut down electrical system of MHP
- Connect generator with control panel
- Remove the jam bearing of main shaft of turbine
- Fix the Speed Governor Haunting
- Fix the leakage of fore bay tank
- Conduct site assessment
- Planning of civil construction works
- Determine physical requirements of MHP plant

ACTIVITIES	CANDIDATE RESPONSE
1. Complete portfolio of evidence	<ul style="list-style-type: none"> • All completed course assignments • Completed work forms • Completed job records • Completed plan for career options related to Micro Hydel Power operations • All learner log books and formative assessments completed by Instructor including; <ul style="list-style-type: none"> ○ Observations ○ Demonstrations ○ Questions and recorded answers •
2. Complete project brief of applying Micro Hydel Power Operations (Technician) skills for MHP plant under observation by Instructor	<ul style="list-style-type: none"> • Prepare emergency shut down electrical system of MHP <ul style="list-style-type: none"> ✓ Turn off circuit breaker of generator ✓ Turn off power switch of control panel • Isolate MHP electrical system from distribution network <ul style="list-style-type: none"> ✓ Turn off circuit breaker of control panel • Connect generator with control panel <ul style="list-style-type: none"> ✓ Join wire connections of generator with control panel ✓ Turn on power switch of generator • Remove the jam bearing of main shaft of turbine <ul style="list-style-type: none"> ✓ Remove cover from bearing bracket ✓ Use puller to remove bearing from main shaft • Fix the Speed Governor Haunting <ul style="list-style-type: none"> ✓ Adjust the frequency of generator (55Hz) from the tuner of speed Governor. ✓ Check the frequency from control panel (55Hz) • Fix the leakage of fore bay tank <ul style="list-style-type: none"> ✓ Divert the water direction from flushing gates of spillway ✓ Add concrete to the leakage point • Conduct site assessment <ul style="list-style-type: none"> ✓ Measure head with the use of water level method ✓ Measure flow with the use of Salt Dilution method • Planning of civil construction works <ul style="list-style-type: none"> ✓ Dimension main civil construction structure of MHP plant ✓ Measure the total length of power channel • Determine physical requirements of MHP plant <ul style="list-style-type: none"> ✓ Identify procurement requirements for mechanical and electrical equipment of MHP plant

	<ul style="list-style-type: none"> ✓ Prepare powerhouse floor plan to arrange for electro-mechanical equipment ✓ Carry out initial planning of distribution network layout
3. Present completed project brief supplied by Instructor	<ul style="list-style-type: none"> • Oral presentation of project brief and completed project work to Assessment Panel. • Presentation to include: <ul style="list-style-type: none"> ○ Requirements of brief ○ Planning and preparation of project ○ Problems encountered and how they were dealt with ○ Project outcome/s ○ Lessons learnt from undertaking project (reflective thinking) • Presentation to take no longer than 10 minutes
4. Answer all questions Assessor Panel will have following project presentation	My answers to questions are correct and demonstrate my understanding of the topics and their application.

Candidate Name Father Name

**INSTRUCTIONS
FOR
ASSESSMENT
PANEL**

THIS SECTION CONTAINS MINIMUM EVIDENCE REQUIREMENTS.

- The Assessment Panel will consist of a registered Assessor, the candidate's Instructor, and a private sector expert
- The project brief will consist of integrated task requirements to enable the candidate to supply sufficient evidence of their competence in the skills required to work as Micro Hydel Power Operations (Technician)
- The project brief must be suitable for the level of knowledge and skills required (i.e. Level 4)
- The timeframe for completion of assigned project brief is 5 working days
- The candidate may work in a team or as an individual to complete the project brief. If in a team, the contribution of each candidate must be clearly defined and observable.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO	ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
1. Present portfolio of evidence	All completed course assignments		
	<ul style="list-style-type: none"> • Completed work forms 		
	<ul style="list-style-type: none"> • Completed job records 		
	<ul style="list-style-type: none"> • Completed plan for career options related to Micro Hydel Power operations 		
	<ul style="list-style-type: none"> • All learner log books and formative assessments completed by Instructor including; <ul style="list-style-type: none"> ○ Observations ○ Demonstrations ○ Questions and recorded answers 		
2: Complete project brief of applying Micro Hydel Power Operations (Technician)s skills for MHP plant under observation by Instructor	<ul style="list-style-type: none"> • Prepare emergency shut down electrical system of MHP <ul style="list-style-type: none"> ✓ Turn off circuit breaker of generator ✓ Turn off power switch of control panel 		
	<ul style="list-style-type: none"> • Isolate MHP electrical system from distribution network <ul style="list-style-type: none"> ✓ Turn off circuit breaker of control panel 		
	<ul style="list-style-type: none"> • Connect generator with control panel <ul style="list-style-type: none"> ✓ Join wire connections of generator with control panel ✓ Turn on power switch of generator 		
	<ul style="list-style-type: none"> • Remove the jam bearing of main shaft of turbine <ul style="list-style-type: none"> ✓ Remove cover from bearing bracket ✓ Use puller to remove bearing from main shaft 		
	<ul style="list-style-type: none"> • Fix the Speed Governor Haunting <ul style="list-style-type: none"> ✓ Adjust the frequency of generator (55Hz) from the tuner of speed Governor. ✓ Check the frequency from control panel (55Hz) 		
	<ul style="list-style-type: none"> • Fix the leakage of fore bay tank <ul style="list-style-type: none"> ✓ Divert the water direction from flushing gates of spillway 		

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO		ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
	✓ Add concrete to the leakage point			
	• Conduct site assessment			
	✓ Measure head with the use of water level method			
	✓ Measure flow with the use of Salt Dilution method			
	• Planning of civil construction works			
	✓ Dimension main civil construction structure of MHP plant			
	✓ Measure the total length of power channel			
	• Determine physical requirements of MHP plant			
	✓ Identify procurement requirements for mechanical and electrical equipment of MHP plant			
	✓ Prepare powerhouse floor plan to arrange for electro-mechanical equipment			
	Carry out initial planning of distribution network layout			
3. Present completed project brief supplied by Instructor	• Oral presentation of project brief and completed project work to Assessment Panel.			
	• Presentation to include:			
	○ Requirements of brief			
	○ Planning and preparation of project			
	○ Problems encountered and how they were dealt with			
	○ Project outcome/s			
	○ Lessons learnt from undertaking project (reflective thinking)			
4. Answer any questions their Assessor may have during the practical assessment	• Presentation to take no longer than 10 minutes			
	Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application. Assessor to document all questions asked, if any, and the answers here:			

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

Instructions	This section contains information regarding; <ul style="list-style-type: none"> • Context of the assessment • List of required tools and equipment. • List of consumable items required during the service
1. Context of Assessment	This task will be performed in MHP plant lab/workshop environment Required tools, equipment and consumables will vary according to project brief

SR#	Mechanical	
1	7 pieces screwdriver set	
2	Adjustable wrench set	
3	Allen Keys Set	
4	Aluminum Spirit Level (leveling instrument)	
5	Bastard File with wood handle (Flat)	
6	Bastard File with wood handle (Round)	
7	Bench Vice	
8	Bench Workstation	
9	Chisel	
10	Clamp Meter	
11	Claw hammer with wood handle	
12	Combination Pliers	
13	Crimping Tool	
14	Hack Saw with Blades	
15	Hand Drill [1/8" – 1/8"]	
16	Hand Grease Gun	
17	Hand Grinding Machine	
18	Hot Air Blower	
19	Measuring tape	
20	Micro Meter [Screw Gauge]	
21	Nose Plier	
22	Oil Can	
23	Pedestal Drill	
24	Pen Grinder	
25	Pipe Wrench [18" & 24"]	
26	Portable Welding Plant [100 – 300 Amperes]	
27	Puller	
28	Punch Set	
29	Retched Block with Grip	
30	Screw Driver Set (-) [6"-18"]	
31	Screw Driver Set (+) [6"-18"]	
32	Side Cutting Plier	
33	Spanner Set (Open)	
34	Spanner Set (Ring)	
35	Stainless Steel Slogging Ring Spanner	
36	Thread Gauge	
37	Tong/Monkey Plier	
38	Vernier Caliper	
39	Wheel Grinder	
40	Wire Gauge	
41	Welding Plant	
	Electrical	
1	Clamp Meter	


2	Combination Plier	
3	Earth Tester	
4	Line Tester	
5	Megger	
6	Multi Meter	
7	Nose Plier	
8	Pin Plier	
9	Screw Driver Set	
10	Side Cutter	
	Safety Tools	
1	Fire Extinguisher	
2	First Aid Box	
3	Hand Gloves	
4	Hard top Hat	
5	Mask	
6	Overall combination [Dress]	
7	Safety Belt	
8	Safety Goggles	
9	Steel Toe Shoes	
	EQUIPMENT	
	Civil	
1	Air Vent Pipe	
2	Bell Mouth	
3	Control Gates	
4	Control Valves	
5	Expansion Joint	
6	Flanges	
7	Flushing Gates	
8	Flushing Pipe	
9	Penstock	
10	Reducer	
11	Rubber Seal	
12	Trash Rack	
	Electrical	
1	Ballast Tank with Heaters	
2	Binding wire	
3	Cable Shoe	
4	Channel Iron	
5	Conductors	
6	D-Iron Set	
7	Disc Insulator [With Tension Set]	
8	Earth Wire	
9	Earthing Plate	
10	Electrical Panels	
11	Electronic Load Controller	
12	Energy Meter	
13	Generator[Brushed and Brush-less]	
14	Metal Clad Main Switch	
15	Pin Insulator	
16	Pole	
17	Power Cable	
18	Pressure Transducer	
19	Shackle Insulator	
20	Stay Insulator	
21	Stay Plate	
22	Stay Rod	
23	Stay Wire	
24	Thimble	
25	Transformer	
26	Turn Buckle	
27	Ultra Sonic Flow Meter	
	Mechanical	

1	Angle Iron [Cross Arm]	
2	Butterfly Valve	
3	Coupling [Flexible/Rigid]	
4	Crossflow Turbine	
5	Flat Belt	
6	Flat Pulleys	
7	Fly Wheel	
8	Francis Turbine	
9	Gate Valve	
10	Gear Box	
11	Governor	
12	Hydraulic Jack	
13	Operating Rod	
14	Pilton Turbine	
15	Propeller/Kaplan Turbine	
16	Single Phase Variac [Auto Transformer]	
17	Tachometer	
18	V Belt	
19	V-Pulleys	

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