

MICRO HYDRO POWER PLANT TECHNOLOGY

Assessment Package

National Vocational
Certificate Level 3

Version 1 - July 2015

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Document Version

July, 2015

Islamabad, Pakistan

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Assessment Package

National Vocational
Certificate Level 3

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ASSESSMENT MATERIAL

EVIDENCE GUIDE

Qualification code: LEN0283.v1
Level:3
Credit: 50
Version:1

APPLY MICRO HYDEL POWER (OPERATOR) SKILLS FOR 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: _____

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 AND RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF: APPLY MICRO HYDEL POWER (OPERATOR) SKILLS FOR MHP PLANT		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> Complete supplied project brief related to the application of Micro Hydel Power (Operator) skills for MHP plant: <ul style="list-style-type: none"> ✓ Operate and monitor Micro Hydel Power Plant (MHP) plant ✓ Carry out corrective maintenance procedures on electrical components in a MHP plant ✓ Carry out corrective maintenance procedures on mechanical components in a MHP plant ✓ Carry out corrective maintenance procedures on civil structure components in a MHP plant ✓ Maintain records in MHP operations ✓ Carry out preventive maintenance procedures as part of MHP operations 		
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 		

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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 complete the following tasks within timeframe of ten hours in two days :

- Conduct pre-start checks and monitor the operation of generator & turbine
- Planning and preparing for corrective maintenance of generator & Control Panel
- Performing troubleshooting, electrical maintenance and final inspection
- Planning and preparing for mechanical corrective maintenance of turbine & speed governor
- Performing troubleshooting, mechanical corrective maintenance and final inspection of turbine & speed governor
- Planning and preparing for civil corrective maintenance of power channel & fore bay tank
- Performing troubleshooting, corrective maintenance & final inspection of power channel & fore bay tank.
- Maintain & communicate records i.e log book and forms of MHP Operation
- Planning, preparing & performing for preventive maintenance of MHPP civil structure
- Perform final check of civil structure

ACTIVITIES	CANDIDATE RESPONSE
<p>1. Complete project brief of Apply Micro Hydel Power (Operator) skills for MHP plant under observation by Instructor</p>	<ul style="list-style-type: none"> • Conduct pre-start checks and monitor the operation of generator & turbine <ul style="list-style-type: none"> ✓ Check safety equipment of Genset & Turbine for correct operation ✓ Perform the pre-operational tests of generator & turbine. ✓ monitor turbine, generator and control system ✓ Detect deviations from normal operating conditions and system requirements • Planning and preparing for corrective maintenance of generator & Control Panel <ul style="list-style-type: none"> ✓ interpreting electrical component specifications and/or circuit diagrams of Control Panel • Performing troubleshooting, electrical maintenance and final inspection <ul style="list-style-type: none"> ✓ Identify faulty components of Generator & Control Panel ✓ Dismantling/removing faulty electrical components of Generator or Control Panel ✓ Replacing/repairing faulty parts or components Generator & Control Panel ✓ Perform post-repair testing of electrical component/system i.e Generator & Control Panel ✓ Performing final quality inspection of Generator & Control Panel ✓ Cleaning up and storing tools, equipment and materials • Planning and preparing for mechanical corrective maintenance of turbine & speed governor <ul style="list-style-type: none"> ✓ Obtain and interpret turbine & speed governor of specifications and/or drawings • Performing troubleshooting, mechanical corrective maintenance and final inspection of turbine & speed governor <ul style="list-style-type: none"> ✓ Identify faulty components of turbine & speed governor ✓ Dismantle/remove faulty mechanical components of turbine & speed governor ✓ Replace/repair faulty mechanical component of turbine & speed governor ✓ Perform post-repair testing of mechanical component/system ✓ Perform final quality inspection of turbine & speed governor ✓ Clean up and store tools, equipment and materials turbine & speed governor • Planning and preparing for civil corrective maintenance of power channel & fore bay tank <ul style="list-style-type: none"> ✓ Obtain and interpret specifications and/or drawings of power channel & fore bay tank • Performing troubleshooting, corrective maintenance & final inspection of power channel & fore bay tank. <ul style="list-style-type: none"> ✓ Identify faulty area of power channel & fore bay tank ✓ Demolished/remove faulty civil structure of power channel & fore bay tank ✓ Re-construct/repair faulty civil structure of power channel & fore bay tank

	<ul style="list-style-type: none"> ✓ Perform final quality/leak inspection of power channel & fore bay tank ✓ Clean up and store tools, equipment and materials • Maintain & communicate records i.e log book and forms of MHP Operation <ul style="list-style-type: none"> ✓ Confirm on-site recording documents requirements for MHP operation ✓ Store and care for log book and other records in line with MHP operation ✓ Pass-on information to supervisor according to workplace procedures for MHP operation • Planning, preparing & performing for preventive maintenance of MHPP civil structure <ul style="list-style-type: none"> ✓ Interpret specifications and drawings of MHPP civil structure ✓ Check for suspended trash or material at screens ✓ Check for water leakage or overflow ✓ Check for sand sedimentation & flush out ✓ Check for deformation or crack ✓ Check for mechanical malfunction, sound, vibration, temperature, oil leakage ✓ Remove debris ✓ Reduce water intake ✓ Remove/Replace worn or faulty components ✓ Record maintenance procedures, and report subsequent actions • Perform final check of civil structure <ul style="list-style-type: none"> ✓ Complete work related documents and procedures ✓ Perform final quality inspection ✓ Cleaning up and storing tools, equipment and material
<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

INSTRUCATIONS FOR ASSESSMENT

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 ON CANDIDATE PERFORMANCE
1. Complete project brief of Apply Micro Hydel Power(Operator) skills for MHP plant under observation by Instructor			
Conduct pre-start checks and monitor the operation of generator & turbine	Checked safety equipment of Genset & Turbine for correct operation		
	Performed the pre-operational tests of generator & turbine.		
	monitored turbine, generator and control system		
	Detected deviations from normal operating conditions and system requirements		
Planning and preparing for corrective maintenance of generator & Control Panel	Obtained and interpret specifications and/or drawings of power channel & fore bay tank		
Performing troubleshooting, electrical maintenance and final inspection	Identified faulty components of Generator & Control Panel		
	Dismantled/removed faulty electrical components of Generator or Control Panel		
	Replaced/repared faulty parts or components Generator & Control Panel		
	Performed post-repair testing of electrical component/system i.e Generator & Control Panel		
	Performed final quality inspection of Generator & Control Panel		
	Cleaned up and storing tools, equipment and materials		
Planning and preparing for mechanical corrective maintenance of turbine & speed governor	Obtained and interpret turbine & speed governor of specifications and/or drawings		
Performing troubleshooting, mechanical corrective maintenance and final inspection of	Identified faulty components of turbine & speed governor		
	Dismantled/removed faulty mechanical components of turbine & speed governor		
	Replaced/repared faulty mechanical component of		

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO	ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
turbine & speed governor	turbine & speed governor		
	Performed post-repair testing of mechanical component/system		
	Performed final quality inspection of turbine & speed governor		
	Cleaned up and store tools, equipment and materials turbine & speed governor		
Planning and preparing for civil corrective maintenance of power channel & fore bay tank	Obtained and interpret specifications and/or drawings of power channel & fore bay tank		
Performing troubleshooting, corrective maintenance & final inspection of power channel & fore bay tank	Identified faulty area of power channel & fore bay tank		
	Demolished/removed faulty civil structure of power channel & fore bay tank		
	Re-constructed/repared faulty civil structure of power channel & fore bay tank		
	Performed final quality/leak inspection of power channel & fore bay tank		
	Cleaned up and store tools, equipment and materials		
Maintain & communicate records i.e log book and forms of MHP Operation	Confirmed on-site recording documents requirements for MHP operation		
	Stored and care for log book and other records in line with MHP operation		
	Passed-on information to supervisor according to workplace procedures for MHP operation		
Planning, preparing & performing for preventive maintenance of MHPP civil structure	Interpreted specifications and drawings of MHPP civil structure		
	Checked for suspended trash or material at screens		
	Checked for water leakage or overflow		
	Checked for sand sedimentation & flush out		
	Checked for deformation or crack		
	Checked for mechanical malfunction, sound, vibration, temperature, oil leakage		
	Removes debris		
	Reduced water intake		
	Removed/Replaced worn or faulty components		
	Recorded maintenance procedures, and report subsequent actions		
Perform final check of civil structure	Completed work related documents and procedures		
	Performed final quality inspection		
	Cleaned up and storing tools, equipment and material		
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 		

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO		ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
	<ul style="list-style-type: none"> ○ Project outcome/s ○ Lessons learnt from undertaking project (reflective thinking) • Presentation to take no longer than 10 minutes 			
<p>4. Answer any questions their Assessor may have during the practical assessment</p>	<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>			

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LIST OF TOOLS , EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRCUTIONS

- This section contains information regarding;
- 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.

2. List of tools and equipments required

S. No	Tools and equipments and consumables	Quantity
	Mechanical	
1	7 pieces screwdriver set	05
2	Adjustable wrench set	05
3	Allen Keys Set	05
4	Aluminium Spirit Level (levelling instrument)	05
5	Bastard File with wood handle (Flat)	05
6	Bastard File with wood handle (Round)	05
7	Bench Vice	05
8	Bench Workstation	05
9	Chisel	05
10	Clamp Meter	05
11	Claw hammer with wood handle	05
12	Combination Pliers	05
13	Crimping Tool	05
14	Hack Saw with Blades	05
15	Hand Drill [1/8" - 1/8"]	05
16	Hand Grease Gun	05
17	Hand Grinding Machine	05
18	Hot Air Blower	05
19	Measuring tape	05
20	Micro Meter [Screw Gauge]	05
21	Nose Plier	05
22	Oil Can	05
23	Pedestal Drill	05
24	Pen Grinder	05
25	Pipe Wrench [18" & 24"]	05

26	Portable Welding Plant [100 – 300 Amperes]	05
27	Puller	05
28	Punch Set	05
29	Retched Block with Grip	05
30	Screw Driver Set (-)[6"-18"]	05
31	Screw Driver Set (+) [6"-18"]	05
32	Side Cutting Plier	05
33	Spanner Set (Open)	05
34	Spanner Set (Ring)	05
35	Stainless Steel Slogging Ring Spanner	05
36	Thread Gauge	05
37	Tong/Monkey Plier	05
38	Vernier Calliper	05
39	Wheel Grinder	05
40	Wire Gauge	05
41	Welding Plant	05
	Electrical	
1	Clamp Meter	05
2	Combination Plier	05
3	Earth Tester	05
4	Line Tester	05
5	Megger	05
6	Multi Meter	05
7	Nose Plier	05
8	Pin Plier	05
9	Screw Driver Set	05
10	Side Cutter	05
	Safety Tools	
1	Fire Extinguisher	05
2	First Aid Box	05
3	Hand Gloves	05
4	Hard top Hat	05
5	Mask	05
6	Overall combination [Dress]	05
7	Safety Belt	05
8	Safety Goggles	05
9	Steel Toe Shoes	05
	Civil	

1	Air Vent Pipe	05
2	Bell Mouth	05
3	Control Gates	05
4	Control Valves	05
5	Expansion Joint	05
6	Flanges	05
7	Flushing Gates	05
8	Flushing Pipe	05
9	Penstock	05
10	Reducer	05
11	Rubber Seal	05
12	Trash Rack	05
	Electrical	
1	Ballast Tank with Heaters	05
2	Binding wire	05
3	Cable Shoe	05
4	Channel Iron	05
5	Conductors	05
6	D-Iron Set	05
7	Disc Insulator [With Tension Set]	05
8	Earth Wire	05
9	Earthing Plate	05
10	Electrical Panels	05
11	Electronic Load Controller	05
12	Energy Meter	05
13	Generator[Brushed and Brush-less]	05
14	Metal Clad Main Switch	05
15	Pin Insulator	05
16	Pole	05
17	Power Cable	05
18	Pressure Transducer	05
19	Shackle Insulator	05
20	Stay Insulator	05
21	Stay Plate	05
22	Stay Rod	05
23	Stay Wire	05
24	Thimble	05
25	Transformer	05
26	Turn Buckle	05

27	Ultra Sonic Flow Meter	05
	Mechanical	
1	Angle Iron [Cross Arm]	05
2	Butterfly Valve	05
3	Coupling [Flexible/Rigid]	05
4	Cross flow Turbine	05
5	Flat Belt	05
6	Flat Pulleys	05
7	Fly Wheel	05
8	Francis Turbine	05
9	Gate Valve	05
10	Gear Box	05
11	Governor	05
12	Hydraulic Jack	05
13	Operating Rod	05
14	Pelton Turbine	05
15	Propeller/Kaplan Turbine	05
16	Single Phase Variac [Auto Transformer]	05
17	Tachometer	05
18	V Belt	05
19	V-Pulleys	05



ASSESSMENT MATERIAL EVIDENCE GUIDE	<h1>OPERATE AND MONITOR MICRO HYDEL POWER PLANT (MHP) PLANT</h1>																											
Qualification LEN0283.v1 Level: 3 Credit:9 Version: 1																												
CONTENTS	<ol style="list-style-type: none">1. Assessment Summary and Record2. Candidate Assessment3. Assessor Judgment Guide4. List of required tools/equipment, material and context of assessment																											
ASSESSMENT AND ASSESSOR DETAILS	<table style="width: 100%;"><tr><td>Competent <input type="checkbox"/></td><td>Not Yet Competent <input type="checkbox"/></td></tr><tr><td>Assessment <input type="checkbox"/></td><td>Re-Assessment <input type="checkbox"/></td></tr><tr><td>Assessor's Name: _____</td><td>Assessor's Code _____</td></tr><tr><td>Assessor's Signature _____</td><td>Date <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="text-align: center;">DD</td><td style="text-align: center;">MM</td><td colspan="6"></td><td style="text-align: center;">YYYY</td></tr></table></td></tr></table>	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; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="text-align: center;">DD</td><td style="text-align: center;">MM</td><td colspan="6"></td><td style="text-align: center;">YYYY</td></tr></table>											DD	MM							YYYY
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CANDIDATE DETAILS	<p>Candidate's Name: _____ <small style="display: flex; justify-content: space-between; width: 100%;">First Name Last Name</small></p> <p>Father's Name _____</p> <p>Institute Name and District _____</p> <p>CNIC/BFORM # <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table></p> <p>Registration Number issued by Assessment Body: _____</p> <p>Gender Male <input type="checkbox"/> Female <input type="checkbox"/> Transgender <input type="checkbox"/></p> <p>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.</p> <p>Candidate's Signature: _____</p>																											
ASSESSMENT RESULTS SUMMARY FORM	You can use this coversheet as an <i>Assessment Results Summary Form</i> . Simply post a photocopy of this completed coversheet to NAVTTC																											

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: OPERATE AND MONITOR MICRO HYDEL POWER PLANT (MHP) PLANT	COMPETENT	NOT YET COMPETENT
Practical Skill Demonstration			✓		<ul style="list-style-type: none"> Conduct pre-start checks of Generator & Turbines Control and monitor operations of generator & turbine. Finalize documentation 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer any questions your assessor may have for you during the practical skill demonstration 		
Other Requirements				✓	<ul style="list-style-type: none"> Provide verified evidence of generator & turbine assignment and their monitoring controls. 		

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 practical tasks within set timeframe of **one(1) hour** on the following topics:

- Conduct pre-start checks of generator & turbine
- Control and monitor power plant operation of generator & turbine
- Finalize documentation of pre-test of generator & turbine

ACTIVITIES	CANDIDATE RESPONSE
<p>1. Complete practical skill demonstration of Operate and monitor Micro Hydel Power Plant (MHP) plant under observation by an assessor</p>	<p>During a practical assessment, under observation by an assessor within one hour, I will correctly perform the following tasks:</p> <ul style="list-style-type: none"> • Conduct pre-start checks of generator & turbine <ul style="list-style-type: none"> ✓ Check safety equipment of Genset & Turbine for correct operation ✓ Perform the pre-operational tests of generator & turbine. ✓ Observe safe working procedures during the pre-operational test • Control and monitor the Operation of Genset & Turbine <ul style="list-style-type: none"> ✓ Operate and monitor turbine, generator and control system ✓ Operate and monitor auxiliary equipment ✓ Detect deviations from normal operating conditions and system requirements • Finalize documentation <ul style="list-style-type: none"> ✓ Document irregularities in plant operation ✓ Report status of plant
<p>2. Other requirements</p>	<ul style="list-style-type: none"> • All candidate formative assessments completed by Instructor including: <ul style="list-style-type: none"> ○ Provide verified evidence of generator & turbine projects assignment and their monitoring controls.

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 skill demonstration of operating and monitoring Micro Hydel Power Plant (MHP) plant under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out:			
Conduct pre-start checks	Checked safety equipment for correct operation of generator & turbine			
	Carried out generator & turbine inspections and pre-operational tests.			
	Performed safe working procedures during pre-operation test.			
Control and monitor generator & turbine operation	Operated and monitor turbine, generator and control system			
	Operated and monitor auxiliary equipment			
Detect deviations from normal operating conditions and system requirements	Finalized documentation for pre tests			
	Documented irregularities in plant operation			
	Reported status of plant			
	Procedure for adjust and monitor water intake of turbine			
	Procedure for operate and monitor water conveyance system			
2. Other requirements	Provide verified evidence of generator & turbine projects assignment and their monitoring controls.			
3. Knowledge Assessment	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 practical skill demonstration will be conducted in a Micro Hydel Power Plant lab/workshop environment

SR#	Mechanical	
1	7 pieces screwdriver set	05
2	Adjustable wrench set	05
3	Allen Keys Set	05
4	Aluminum Spirit Level (leveling instrument)	05
11	Claw hammer with wood handle	05
22	Oil Can	05
25	Pipe Wrench [18" & 24"]	05
31	Screw Driver Set (+) [6"-18"]	05
32	Side Cutting Plier	05
33	Spanner Set (Open)	05
34	Spanner Set (Ring)	05
36	Thread Gauge	05
38	Vernier Calliper	05
	Electrical	
1	Clamp Meter	05
2	Combination Plier	05
3	Earth Tester	05
4	Line Tester	05
5	Megger	05
6	Multi Meter	05
7	Nose Plier	05
8	Pin Plier	05
10	Side Cutter	05
	Safety Tools	05
1	Fire Extinguisher	05
2	First Aid Box	05
3	Hand Gloves	05
4	Hard top Hat	05
5	Mask	05
6	Overall combination [Dress]	05
7	Safety Belt	05
8	Safety Goggles	05
9	Steel Toe Shoes	05
	EQUIPMENT	
3	Control Gates	05
4	Control Valves	05
5	Expansion Joint	05
6	Flanges	05
7	Flushing Gates	05
8	Flushing Pipe	05
9	Penstock	05
10	Reducer	05
11	Rubber Seal	05
12	Trash Rack	05

	Electrical	
10	Electrical Panels	05
11	Electronic Load Controller	05
12	Energy Meter	05
13	Generator[Brushed and Brush-less]	05
14	Metal Clad Main Switch	05
18	Pressure Transducer	05
27	Ultra Sonic Flow Meter	05
	Mechanical	05
2	Butterfly Valve	05
3	Coupling [Flexible/Rigid]	05
4	Crossflow Turbine	05
5	Flat Belt	05
6	Flat Pulleys	05
7	Fly Wheel	05
8	Francis Turbine	05
9	Gate Valve	05
10	Gear Box	05
11	Governor	05
12	Hydraulic Jack	05
13	Operating Rod	05
14	Pelton Turbine	05
15	Propeller/Kaplan Turbine	05
16	Single Phase Variance [Auto Transformer]	05
17	Tachometer	05
18	V Belt	05
19	V-Pulleys	05

1

ASSESSMENT SUMMARY & RECORD

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

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: CARRY OUT CORRECTIVE MAINTENANCE PROCEDURES ON ELECTRICAL COMPONENTS IN A MHP PLANT		
Practical skill demonstration			✓		<ul style="list-style-type: none"> Plan and prepare for corrective maintenance of Generator & Control Panel Perform troubleshooting of Generator & Control Panel Carry out corrective maintenance of Generator & Control Panel Perform final check of Generator & control Panel 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer any questions your assessor may have for you during the practical skill demonstration 		
Other Requirements				✓	<ul style="list-style-type: none"> Provide verified evidence of corrective Maintenance of Generator & Control Panel 		

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 practical tasks within Two Hour on the following topics:

- Plan and prepare for corrective maintenance of Generator & Control Panel
- Perform troubleshooting of Generator & Control Panel
- Carry out corrective maintenance of Generator& Control Panel
- Perform final check of Generator & Control Panel

ACTIVITIES	CANDIDATE RESPONSE
<p>1. Complete practical skill demonstration of carrying out corrective maintenance procedures on electrical components in a MHP plant under observation by an assessor</p>	<p>During a practical assessment, under observation by an assessor, I will correctly perform the following:</p> <p>Planning and preparing for corrective maintenance & Control Panel</p> <ul style="list-style-type: none"> ✓ Identifying and obtaining safety and other regulatory requirements related to Generator & Control Panel ✓ Obtain and interpreting electrical component specifications and/or circuit diagrams of Control Panel ✓ Identifying and selecting tools and equipment for maintenance of Generator & Control Panel <p>Performing troubleshooting</p> <ul style="list-style-type: none"> ✓ Carry out safe diagnostic procedures for electrical components of Generator & Control Panel ✓ Identify faulty components of Generator & Control Panel ✓ Follow safe working procedures for maintenance of Generator & Control Panel ✓ Report findings against the corrective maintenance of Generator & Control Panel <p>Carrying out corrective maintenance</p> <ul style="list-style-type: none"> ✓ Dismantling/removing faulty electrical components of Generator or Control Panel ✓ Replacing/repairing faulty parts or components Generator & Control Panel ✓ Perform post-repair testing of electrical component/system Generator & Control Panel ✓ Follow safe working procedures of Maintenance of Generator & Control Panel <p>Perform final check:</p> <ul style="list-style-type: none"> ✓ Completing work related documents of corrective maintenance of Generator & Control Panel ✓ Performing final quality inspection of Generator & Control Panel ✓ Cleaning up and storing tools, equipment and materials
<p>2. Complete knowledge assessment</p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application:</p>
<p>3. Other requirements</p>	<ul style="list-style-type: none"> • Provide verified evidence of corrective Maintenance of Generator & Control Panel

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. Completed practical skill demonstration of carry out corrective maintenance procedures on electrical components in a mph plant	During a practical assessment, under observation by an assessor, the candidate correctly carried out:		
Plan and preparing for corrective maintenance of generator & control panels	Identified and obtained safety and other regulatory requirements for generator & control panels Obtained and interpreted specifications and/or circuit diagrams of generator & control panels Identified and selected tools and equipment for corrective maintenance of generator & control panels		
Performing troubleshooting	Carried out safe diagnostic procedures for generator & control panels Identified faulty components of generator & control panels Followed safe working procedures for corrective maintenance of generator & control panels Reported findings of corrective maintenance		
Carrying out corrective maintenance	Dismantled/removed faulty of generator & control panels Replaced /repaired faulty parts or components of generator & control panels Performed post-repair testing of generator & control panels Followed safe working procedures of corrective maintenance of generator & control panels		
Perform final check:	Completed work related documents and procedures Performed final quality inspection of generator & control panels Cleaned up and storing tools, equipment and materials		
2. Other requirements	Provide verified evidence of corrective Maintenance of Generator & Control Panel.		
3. Knowledge 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>		

--	--	--	--	--

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 practical skill demonstration will be conducted in a Micro Hydel Power Plant lab/workshop environment

SR#	Electrical	
1	Clamp Meter	05
2	Combination Plier	05
3	Earth Tester	05
4	Line Tester	05
5	Megger	05
6	Multi Meter	05
7	Nose Plier	05
8	Pin Plier	05
9	Screw Driver Set	05
10	Side Cutter	05
	Safety Tools	05
1	Fire Extinguisher	05
2	First Aid Box	05
3	Hand Gloves	05
4	Hard top Hat	05
5	Mask	05
6	Overall combination [Dress]	05
7	Safety Belt	05
8	Safety Goggles	05
9	Steel Toe Shoes	05
	Electrical	
1	Ballast Tank with Heaters	05
2	Binding wire	05
3	Cable Shoe	05
4	Channel Iron	05
5	Conductors	05
6	D-Iron Set	05
7	Disc Insulator [With Tension Set]	05
8	Earth Wire	05
9	Earthing Plate	05
10	Electrical Panels	05
11	Electronic Load Controller	05
12	Energy Meter	05
13	Generator[Brushed and Brush-less]	05
14	Metal Clad Main Switch	05
15	Pin Insulator	05
16	Pole	05
17	Power Cable	05
18	Pressure Transducer	05
19	Shackle Insulator	05
20	Stay Insulator	05
21	Stay Plate	05
22	Stay Rod	05
23	Stay Wire	05
24	Thimble	05

25	Transformer	05
26	Turn Buckle	05
27	Ultra Sonic Flow Meter	05



ASSESSMENT MATERIAL EVIDENCE GUIDE	<h2 style="margin: 0;">CARRY OUT CORRECTIVE MAINTENANCE PROCEDURES ON MECHANICAL COMPONENTS IN A MHP PLANT</h2>																																						
Qualification LEN0283.v1 Level: 3 Credit: 9 Version: 1																																							
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	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Competent <input type="checkbox"/></td> <td style="width: 50%;">Not Yet Competent <input type="checkbox"/></td> </tr> <tr> <td>Assessment <input type="checkbox"/></td> <td>Re-Assessment <input type="checkbox"/></td> </tr> <tr> <td>Assessor's Name: _____</td> <td>Assessor's Code _____</td> </tr> <tr> <td>Assessor's Signature _____</td> <td>Date <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2">DD</td> <td colspan="2">MM</td> <td colspan="6">YYYY</td> </tr> </table> </td> </tr> </table>	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; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2">DD</td> <td colspan="2">MM</td> <td colspan="6">YYYY</td> </tr> </table>											DD		MM		YYYY															
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ASSESSMENT RESULTS SUMMARY FORM	You can use this coversheet as an <i>Assessment Results Summary Form</i> . Simply post a photocopy of this completed coversheet to NAVTTC																																						
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1

ASSESSMENT SUMMARY & RECORD

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

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: CARRY OUT CORRECTIVE MAINTENANCE PROCEDURES ON MECHANICAL COMPONENTS IN A MHP PLANT		
Practical Skill Demonstration			✓		<ul style="list-style-type: none"> Plan and prepare for corrective maintenance of turbine & speed governor Perform troubleshooting of turbine & speed governor Carry out corrective maintenance of turbine & speed governor Perform final check of turbine & speed governor 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer any questions your assessor may have for you during the practical skill demonstration 		
Other Requirements				✓	<ul style="list-style-type: none"> Provide verified evidence of corrective Maintenance of turbine & speed governor 		

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 practical tasks within Two Hours on the following topics:

- Plan and prepare for corrective maintenance of turbine & speed governor
- Perform troubleshooting turbine & speed governor
- Carry out corrective maintenance of turbine & speed governor
- Perform final check of turbine & speed governor

ACTIVITIES	CANDIDATE RESPONSE
<p>1. Complete practical skill demonstration of carrying out corrective maintenance procedures on mechanical components in a MHP plant under observation by an assessor</p>	<p>During a practical assessment, under observation by an assessor, I will correctly perform the following tasks:</p> <ul style="list-style-type: none"> • Planning and preparing for corrective maintenance of turbine & speed governor <ul style="list-style-type: none"> ✓ Identify and obtain safety and other regulatory requirements related to turbine & speed governor ✓ Obtain and interpret turbine & speed governor of specifications and/or drawings ✓ Identifying and selecting tools and equipment for corrective maintenance of turbine & speed governor • Performing troubleshooting of turbine & speed governor <ul style="list-style-type: none"> ✓ Carry out safe diagnostic procedures for turbine & speed governor ✓ Identify faulty components of turbine & speed governor ✓ Follow safe working procedures for turbine & speed governor ✓ Report findings for corrective maintenance of turbine & speed governor • Carrying out corrective maintenance of turbine & speed governor <ul style="list-style-type: none"> ✓ Dismantle/remove faulty mechanical components of turbine & speed governor ✓ Replace/repair faulty mechanical component of turbine & speed governor ✓ Perform post-repair testing of mechanical component/system ✓ Follow safe working procedures of corrective maintenance of turbine & speed governor • Perform final check of turbine & speed governor <ul style="list-style-type: none"> ✓ Complete work related documents and procedures of corrective maintenance of turbine & speed governor ✓ Perform final quality inspection of turbine & speed governor ✓ Clean up and store tools, equipment and materials turbine & speed governor
<p>2. Other requirements</p>	<p>Provide verified evidence of corrective Maintenance of turbine & speed governor</p>
<p>3. Complete knowledge assessment</p>	<p>Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.</p> <p><i>Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attached.</i></p>

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 skill demonstration of carrying out corrective maintenance procedures on mechanical components in a MHP plant under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out:		
Planning and preparing for corrective maintenance	Identified and obtain safety and other regulatory requirements for turbine & speed governor		
	Obtained and interpret mechanical specifications and/or drawings of turbine & speed governor		
	Identified and selecting tools and equipment		
Performing troubleshooting	Carried out safe diagnostic procedures for turbine & speed governor		
	Identified faulty components of turbine & speed governor		
	Followed safe working procedures		
	Reported findings for corrective maintenance of turbine & speed governor		
Carrying out corrective maintenance of turbine & speed governor	Dismantled/removed faulty mechanical component of turbine & speed governor		
	Replaced/repared faulty mechanical components of turbine & speed governor		
	Performed post-repair testing of mechanical component/system of turbine & speed governor		
	Followed safe working procedures of corrective maintenance of mechanical components		
Performing final check:	Completed work related documents of corrective maintenance of turbine & speed governor		
	Perfomd final quality inspection of turbine & speed governor		
	Cleaned up and store tools, equipment and materials		
1. Other requirements	Provide verified evidence of corrective Maintenance of turbine & speed governor		
2. Knowledge 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>		

4

LIST OF TOOLS , EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRCUTIONS	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	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	



ASSESSMENT MATERIAL EVIDENCE GUIDE	<h2 style="margin: 0;">CARRY OUT CORRECTIVE MAINTENANCE PROCEDURES ON CIVIL STRUCTURE COMPONENTS IN A MHP PLANT</h2>																																						
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1

ASSESSMENT SUMMARY & RECORD

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

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: CARRY OUT CORRECTIVE MAINTENANCE PROCEDURES ON CIVIL STRUCTURE COMPONENTS IN A MHP PLANT		
Practical Skill Demonstration			✓		<ul style="list-style-type: none"> Plan and prepare for corrective maintenance of power channel & fore bay tank Perform troubleshooting power channel & fore bay tank Carry out corrective maintenance procedures of power channel & fore bay tank Perform final check of power channel & fore bay tank 		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> Answer any questions your assessor may have for you during the practical skill demonstration 		
Other Requirtements				✓	<ul style="list-style-type: none"> Provide verified evidence of corrective Maintenance of power channel & fore bay tank 		

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 practical tasks within *(2)Two Hours* on the following topics:

- Plan and prepare for corrective maintenance of power channel & fore bay tank
- Perform troubleshooting of power channel & fore bay tank
- Carry out corrective maintenance of of power channel & fore bay tank
- Perform final check of of power channel & fore bay tank

ACTIVITIES	CANDIDATE RESPONSE
<p>1. Complete practical skill demonstration of carrying out corrective maintenance procedures on civil structure components in a MHP plant under observation by an assessor</p>	<p>During a practical assessment, under observation by an assessor, I will correctly:</p> <ul style="list-style-type: none"> • Planning and preparing for corrective maintenance of power channel & fore bay tank <ul style="list-style-type: none"> ✓ Identify and obtain safety and other regulatory requirements for corrective maintenance of power channel & fore bay tank ✓ Obtain and interpret specifications and/or drawings of power channel & fore bay tank ✓ Identifying and selecting tools and equipment for corrective maintenance of power channel & fore bay tank • Performing troubleshooting of power channel & fore bay tank <ul style="list-style-type: none"> ✓ Carry out safe diagnostic procedures for trouble shooting of power channel & fore bay tank ✓ Identify faulty area of power channel & fore bay tank ✓ Follow safe working procedures for maintenance of power channel & fore bay tank ✓ Report findings for maintenance of power channel & fore bay tank • Carrying out corrective maintenance of power channel & fore bay tank <ul style="list-style-type: none"> ✓ Demolatie/remove faulty civil structure of power channel & fore bay tank ✓ Re-construct/repair faulty civil structure of power channel & fore bay tank ✓ Perform leak testing of civil structure area of power channel & fore bay tank ✓ Follow safe working procedures • Perform final check: <ul style="list-style-type: none"> ✓ Complete work related documents and procedures for maintenance of power channel & fore bay tank ✓ Perform final quality/leak inspection of power channel & fore bay tank ✓ Clean up and store tools, equipment and materials
<p>2. Complete knowledge assessment</p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application:</p>
<p>3. Other requirements</p>	<ul style="list-style-type: none"> • Provide verified evidence of corrective Maintenance of power channel & fore bay tank

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 skill demonstration of carrying out corrective maintenance procedures on civil structure components in a MHP plant under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out:			
Planning and preparing for corrective maintenance of power channel & fore bay tank	Identify and obtain safety and other regulatory requirements for corrective maintenance of power channel & fore bay tank			
	Obtain and interpret civil structure area specifications and/or civil drawings of power channel & fore bay tank			
	Identifying and selecting tools and equipment for corrective maintenance of power channel & fore bay tank			
Performing troubleshooting of power channel & fore bay tank	Carry out safe diagnostic procedures for corrective maintenance of power channel & fore bay tank			
	Identify faulty area of power channel & fore bay tank			
	Follow safe maintenance working procedures for power channel & fore bay tank			
	Report findings of corrective maintenance of power channel & fore bay tank			
Carrying out corrective maintenance	Demolshed/remove faulty civil structure area of power channel & fore bay			
	Re-construct/repair faulty civil structure area of power channel & fore bay tank			
	Perform leak testing of civil structure area of power channel & fore bay tank			
	Follow safe working procedures for corrective maintenance of civil area of power channel & fore bay tank			
Performing final leak check of power channel & fore bay tank	Complete work related documents of corrective maintenance of power channel & fore bay tank			
	Perform final quality/leak inspection of power channel & fore bay tank			
	Clean up and store tools, equipment and materials			
2. Other requirements	Provide verified evidence of corrective Maintenance of power channel & fore bay tank			
3. Knowledge assessment	Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.			

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attached.

4

LIST OF TOOLS , EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

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

SR#	CIVIL	
1	Air Vent Pipe	05
2	Bell Mouth	05
3	Control Gates	05
4	Control Valves	05
5	Expansion Joint	05
6	Flanges	05
7	Flushing Gates	05
8	Flushing Pipe	05
9	Penstock	05
10	Reducer	05
11	Rubber Seal	05
12	Trash Rack	05



ASSESSMENT MATERIAL EVIDENCE GUIDE	<h1>MAINTAIN RECORDS IN MHP OPERATIONS</h1>																																
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Assessor's Signature _____	Date <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td style="text-align: center;">DD</td> <td style="text-align: center;">MM</td> <td colspan="6"></td> <td style="text-align: center;">YYYY</td> </tr> </table>											DD	MM							YYYY													
DD	MM							YYYY																									
CANDIDATE DETAILS	Candidate's Name: _____ <small style="display: flex; justify-content: space-between; width: 100%;"> First Name Last Name </small> Father's Name _____ Institute Name and District _____ CNIC/BFORM # <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> Registration Number issued by Assessment Body : _____ Gender Male <input type="checkbox"/> Female <input type="checkbox"/> Transgender <input type="checkbox"/> 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 <i>Assessment Results Summary Form</i> . Simply post a photocopy of this completed coversheet to NAVTTC																																
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1

ASSESSMENT SUMMARY & RECORD

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

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: MAINTAIN RECORDS IN MHP OPERATIONS		
Practical Skill Demonstration			✓		<ul style="list-style-type: none"> Maintain log book and forms / reports of MHP Operations Store and communicate forms/reports 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer any questions your assessor may have for you during the practical skill demonstration 		
Other Requirements				✓	<ul style="list-style-type: none"> Provide verified evidence of operation related forms/reports 		

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 practical tasks within **30 minutes** timeframe

- Maintain log book and forms of MHP Operation
- Store and communicate forms/report of MHP Operation

ACTIVITIES	CANDIDATE RESPONSE
<p>1. Complete practical skill demonstration of maintaining records in MHP operations under observation by an assessor</p>	<p>During a practical assessment, under observation by an assessor, I will correctly:</p> <ul style="list-style-type: none"> • Maintain log book and forms of MHP Operation <ul style="list-style-type: none"> ✓ Confirm on-site recording documents requirements for MHP operation ✓ Record forms/report related to operations, including personal observations ✓ Record material requirements, deviations and interpretation based on personal observations and professional judgement for MHP Operation • Store and communicate forms/reports of MHP Operation <ul style="list-style-type: none"> ✓ Store and care for log book and other records in line with MHP operation ✓ Pass-on information to supervisor according to workplace procedures for MHP operation
<p>3. Other requirements</p>	<p>Provide verified evidence of operation related forms/reports</p>
<p>2. Complete knowledge assessment</p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application:</p>

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 skill demonstration of maintaining records in MHP operations under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out:		
Maintain log book and forms of mhp operations	Confirmed on-site recording requirements for MHP operaiton		
	Recorded required information for MHP operations including personal observations		
	Recorded material requirements, deviations and interpretation based on personal observations and professional judgement for MHP operation		
	Stored and communicate information related to MHP operation		
	Stored and care for log book and other records in line with MHP operation		
1. Other requirements	Passed-on information to supervisor according to workplace procedures of MHP operation		
2. Knowledge assessment	<p>Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.</p> <p><i>Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attached.</i></p>		

4

LIST OF TOOLS , EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRCUTIONS	This section contains information regarding; <ul style="list-style-type: none"> • Context of the assessment • List of required tools and equipment. • List of consumeable items required during the service
1. Context of Assessment	This practical skill demonstration will be conducted in a Micro Hydel Power Plant lab/workshop enviornment The Assessor should select the required tools, equipment and consumables from the list below for the assessment

SR#	Mechanical	
-----	------------	--

1

ASSESSMENT SUMMARY & RECORD

Candidate's Name: Father's Name:

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	OBSERVATION	PORTFOLIOS		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: CARRY OUT PREVENTIVE MAINTENANCE AS PART OF MHP PLANT		
Practical skill Demonstration			✓		<ul style="list-style-type: none"> Plan and prepare for preventive maintenance of MHPP components Perform routine inspection of MHPP components Carry out preventive maintenance of MHPP components Complete work of preventive maintenance of MHPP components 		
Knowledge Assessment		✓			<ul style="list-style-type: none"> Answer any questions your assessor may have for you during the practical skill demonstration 		
Other Requirements				✓	<ul style="list-style-type: none"> Provide verified evidence of preventive Maintenance of turbine & Generator 		

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 practical tasks within Two Hours on the following topics:

- Plan and prepare for preventive maintenance of MHPP civil structure
- Performing daily routine checks of MHPP civil structure
- Perform preventive maintenance of MHPP civil structure
- Perform final check of MHPP civil structure

ACTIVITIES	CANDIDATE RESPONSE
<p>1. Complete practical assessment to carry out preventive maintenance as part of MHP plant under observation by an assessor</p>	<p>During a practical assessment, under observation by an assessor, I will correctly:</p> <ul style="list-style-type: none"> • Planning and preparing for preventive maintenance of MHPP civil structure <ul style="list-style-type: none"> ✓ Obtain safety and other regulatory requirements for preventive maintenance ✓ Interpret specifications and drawings of MHPP civil structure ✓ Identify and select tools and equipment for preventive civil structure • Performing daily routine checks of MHPP civil structure <ul style="list-style-type: none"> ✓ Check for suspended trash or material at screens ✓ Check for water leakage or overflow ✓ Check for sand sedimentation ✓ Check for deformation or crack ✓ Check for mechanical malfunction, sound, vibration, temperature, oil leakage • Perform preventive maintenance of civil structure <ul style="list-style-type: none"> ✓ Remove debris ✓ Flush out sand sedimentation and remove sand and rocks ✓ Reduce water intake ✓ Remove/Replace worn or faulty components ✓ Record maintenance procedures, and report subsequent actions • Perform final check of civil structure <ul style="list-style-type: none"> ✓ Complete work related documents and procedures ✓ Perform final quality inspection ✓ Cleaning up and storing tools, equipment and material
<p>2. Complete knowledge assessment</p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application:</p>
<p>3. Other requirements</p>	<ul style="list-style-type: none"> • Provide verified evidence of preventive Maintenance of turbine & Generator

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 skill demonstration of carry out preventive maintenance procedures as part of mph operations	During a practical assessment, under observation by an assessor, the candidate correctly carried out:		
Planning and preparing for preventive maintenance of MHPP civil structure	Obtained safety and other regulatory requirements for maintenance		
	Interpreted specifications and drawings		
	Identified and select tools and equipment		
Performing daily routine checks of civil structure	Checked for suspended trash or material at screens		
	Checked for water leakage or overflow		
	Checked for sand sedimentation		
	Checked for deformation or crack		
	Checked for mechanical malfunction, sound, vibration, temperature, oil leakage		
Performing preventive maintenance civil structure	Removed debris		
	Flushed out sand sedimentation and remove sand and rocks		
	Reduced water intake		
	Removed/Replaced worn or faulty components		
	Recorded maintenance procedures, and report subsequent actions		
Perform final checks of civil structure	Completed work related documents and procedures		
	Performed final quality inspection		
	Cleaned up and storing tools, equipment and material		
2. Other requirements	Provided verified evidence of preventive Maintenance of turbine & Generator		
3. Knowledge 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 here.</i>		

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 appliances required during the assessment
1. Context of Assessment	This practical skill demonstration will be conducted in a Micro Hydrel Power Plant lab/workshop environment

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	
	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 code:

LEN0283.v1

Level: 3

Credit: 50

Version: 1

Apply Micro Hydel Power (Operator) skills for 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 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 NAVTTC

NAVTTC 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	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF: APPLY MICRO HYDEL POWER (OPERATOR) SKILLS FOR MHP PLANT		
Practical skill demonstration			✓	✓	Complete supplied project brief related to the application of Micro Hydrel Power (Operator) skills for MHP plant: <ul style="list-style-type: none"> • Operate and monitor Micro Hydrel Power Plant (MHP) plant • Carry out corrective maintenance procedures on electrical components in a MHP plant • Carry out corrective maintenance procedures on mechanical components in a MHP plant • Carry out corrective maintenance procedures on civil structure components in a MHP plant • Maintain records in MHP operations • Carry out preventive maintenance procedures as part of MHP operations 		
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 Hydrel 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 complete the following tasks within timeframe of ten hours in two days :

- Conduct pre-start checks and monitor the operation of generator & turbine
- Planning and preparing for corrective maintenance of generator & Control Panel
- Performing troubleshooting, electrical maintenance and final inspection
- Planning and preparing for mechanical corrective maintenance of turbine & speed governor
- Performing troubleshooting, mechanical corrective maintenance and final inspection of turbine & speed governor
- Planning and preparing for civil corrective maintenance of power channel & fore bay tank
- Performing troubleshooting, corrective maintenance & final inspection of power channel & fore bay tank.
- Maintain & communicate records i.e. log book and forms of MHP Operation
- Planning, preparing & performing for preventive maintenance of MHPP civil structure
- Perform final check of civil structure

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 Apply Micro Hydel Power (Operator) skills for MHP plant under observation by Instructor	<p>Conduct pre-start checks and monitor the operation of generator & turbine</p> <ul style="list-style-type: none"> ✓ Check safety equipment of Genset & Turbine for correct operation ✓ Perform the pre-operational tests of generator & turbine. ✓ monitor turbine, generator and control system ✓ Detect deviations from normal operating conditions and system requirements <p>Planning and preparing for corrective maintenance of generator & Control Panel</p> <ul style="list-style-type: none"> ✓ interpreting electrical component specifications and/or circuit diagrams of Control Panel <p>Performing troubleshooting, electrical maintenance and final inspection</p> <ul style="list-style-type: none"> ✓ Identify faulty components of Generator & Control Panel ✓ Dismantling/removing faulty electrical components of Generator or Control Panel ✓ Replacing/repairing faulty parts or components Generator & Control Panel ✓ Perform post-repair testing of electrical component/system i.e. Generator & Control Panel ✓ Performing final quality inspection of Generator & Control Panel ✓ Cleaning up and storing tools, equipment and materials <p>Planning and preparing for mechanical corrective maintenance of turbine & speed governor</p> <ul style="list-style-type: none"> ✓ Obtain and interpret turbine & speed governor of specifications and/or drawings <p>Performing troubleshooting, mechanical corrective maintenance and final inspection of turbine & speed governor</p> <ul style="list-style-type: none"> ✓ Identify faulty components of turbine & speed governor ✓ Dismantle/remove faulty mechanical components of turbine & speed governor ✓ Replace/repair faulty mechanical component of turbine & speed governor

	<ul style="list-style-type: none"> ✓ Perform post-repair testing of mechanical component/system ✓ Perform final quality inspection of turbine & speed governor ✓ Clean up and store tools, equipment and materials turbine & speed governor <p>Planning and preparing for civil corrective maintenance of power channel & fore bay tank</p> <ul style="list-style-type: none"> ✓ Obtain and interpret specifications and/or drawings of power channel & fore bay tank <p>Performing troubleshooting, corrective maintenance & final inspection of power channel & fore bay tank.</p> <ul style="list-style-type: none"> ✓ Identify faulty area of power channel & fore bay tank ✓ Demolished/remove faulty civil structure of power channel & fore bay tank ✓ Re-construct/repair faulty civil structure of power channel & fore bay tank ✓ Perform final quality/leak inspection of power channel & fore bay tank ✓ Clean up and store tools, equipment and materials <p>Maintain & communicate records i.e. log book and forms of MHP Operation</p> <ul style="list-style-type: none"> ✓ Confirm on-site recording documents requirements for MHP operation ✓ Store and care for log book and other records in line with MHP operation ✓ Pass-on information to supervisor according to workplace procedures for MHP operation <p>Planning, preparing & performing for preventive maintenance of MHPP civil structure</p> <ul style="list-style-type: none"> ✓ Interpret specifications and drawings of MHPP civil structure ✓ Check for suspended trash or material at screens ✓ Check for water leakage or overflow ✓ Check for sand sedimentation & flush out ✓ Check for deformation or crack ✓ Check for mechanical malfunction, sound, vibration, temperature, oil leakage ✓ Remove debris ✓ Reduce water intake ✓ Remove/Replace worn or faulty components ✓ Record maintenance procedures, and report subsequent actions <p>Perform final check of civil structure</p> <ul style="list-style-type: none"> ✓ Complete work related documents and procedures ✓ Perform final quality inspection ✓ Cleaning up and storing tools, equipment and material
<p>3. 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>4. 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>

3

ASSESSOR JUDGEMENT GUIDE

Candidate Name Father Name

INSTRUCTIONS FOR ASSESSMENT PANEL	<p>THIS SECTION CONTAINS MINIMUM EVIDENCE REQUIREMENTS.</p> <ul style="list-style-type: none"> 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 a MHP (Operator) The project brief must be suitable for the level of knowledge and skills required (i.e. Level 3) 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.
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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 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 Apply Micro Hydel Power (Operator) skills for MHP plant under observation by Instructor	Conduct pre-start checks and monitor the operation of generator & turbine		
	<ul style="list-style-type: none"> ✓ Check safety equipment of Genset & Turbine for correct operation 		
	<ul style="list-style-type: none"> ✓ Perform the pre-operational tests of generator & turbine. 		
	<ul style="list-style-type: none"> ✓ monitor turbine, generator and control system 		
	<ul style="list-style-type: none"> ✓ Detect deviations from normal operating conditions and system requirements 		
	Planning and preparing for corrective maintenance of generator & Control Panel		
	<ul style="list-style-type: none"> ✓ Obtain and interpret specifications and/or drawings of power channel & fore bay tank 		
	Performing troubleshooting, electrical maintenance and final inspection		
	<ul style="list-style-type: none"> ✓ Identify faulty components of Generator & Control Panel 		
	<ul style="list-style-type: none"> ✓ Dismantling/removing faulty electrical components of Generator or Control Panel ✓ Replacing/repairing faulty parts or components Generator & Control Panel ✓ Perform post-repair testing of electrical component/system i.e. Generator & Control 		

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO	ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
	Panel		
	✓ Performing final quality inspection of Generator & Control Panel		
	✓ Cleaning up and storing tools, equipment and materials		
	Planning and preparing for mechanical corrective maintenance of turbine & speed governor		
	✓ Obtain and interpret turbine & speed governor of specifications and/or drawings		
	Performing troubleshooting, mechanical corrective maintenance and final inspection of turbine & speed governor		
	✓ Identify faulty components of turbine & speed governor		
	✓ Dismantle/remove faulty mechanical components of turbine & speed governor		
	✓ Replace/repair faulty mechanical component of turbine & speed governor		
	✓ Perform post-repair testing of mechanical component/system		
	✓ Perform final quality inspection of turbine & speed governor		
	✓ Clean up and store tools, equipment and materials turbine & speed governor		
	Planning and preparing for civil corrective maintenance of power channel & fore bay tank		
	✓ Obtain and interpret specifications and/or drawings of power channel & fore bay tank		
	Performing troubleshooting, corrective maintenance & final inspection of power channel & fore bay tank		
	✓ Identify faulty area of power channel & fore bay tank		
	✓ Demolished/remove faulty civil structure of power channel & fore bay tank		
	✓ Re-construct/repair faulty civil structure of power channel & fore bay tank		
	✓ Perform final quality/leak inspection of power channel & fore bay tank		
	✓ Clean up and store tools, equipment and materials		
	Maintain & communicate records i.e. log book and forms of MHP Operation		
	✓ Confirm on-site recording documents requirements for MHP operation		
	✓ Store and care for log book and other records in line with MHP operation		
	✓ Pass-on information to supervisor according to workplace procedures for MHP operation		
	Planning, preparing & performing for preventive maintenance of MHPP civil structure		

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO		ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
	<ul style="list-style-type: none"> ✓ Interpret specifications and drawings of MHPP civil structure ✓ Check for suspended trash or material at screens ✓ Check for water leakage or overflow ✓ Check for sand sedimentation & flush out ✓ Check for deformation or crack ✓ Check for mechanical malfunction, sound, vibration, temperature, oil leakage ✓ Remove debris ✓ Reduce water intake ✓ Remove/Replace worn or faulty components ✓ Record maintenance procedures, and report subsequent actions <p>Perform final check of civil structure</p> <ul style="list-style-type: none"> ✓ Complete work related documents and procedures ✓ Perform final quality inspection ✓ Cleaning up and storing tools, equipment and material 			
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 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>			

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LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

Instructions

- This section contains information regarding;
- 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.

2. List of tools and equipment required

S. No	Tools and equipment and consumables	Quantity
Mechanical		
1	7 pieces screwdriver set	05
2	Adjustable wrench set	05
3	Allen Keys Set	05
4	Aluminum Spirit Level (levelling instrument)	05
5	Bastard File with wood handle (Flat)	05
6	Bastard File with wood handle (Round)	05
7	Bench Vice	05
8	Bench Workstation	05
9	Chisel	05
10	Clamp Meter	05
11	Claw hammer with wood handle	05
12	Combination Pliers	05
13	Crimping Tool	05
14	Hack Saw with Blades	05
15	Hand Drill [1/8" – 1/8"]	05
16	Hand Grease Gun	05
17	Hand Grinding Machine	05
18	Hot Air Blower	05
19	Measuring tape	05
20	Micro Meter [Screw Gauge]	05
21	Nose Plier	05
22	Oil Can	05
23	Pedestal Drill	05
24	Pen Grinder	05
25	Pipe Wrench [18" & 24"]	05

26	Portable Welding Plant [100 – 300 Amperes]	05
27	Puller	05
28	Punch Set	05
29	Retched Block with Grip	05
30	Screw Driver Set (-)[6"-18"]	05
31	Screw Driver Set (+) [6"-18"]	05
32	Side Cutting Plier	05
33	Spanner Set (Open)	05
34	Spanner Set (Ring)	05
35	Stainless Steel Slogging Ring Spanner	05
36	Thread Gauge	05
37	Tong/Monkey Plier	05
38	Vernier Caliper	05
39	Wheel Grinder	05
40	Wire Gauge	05
41	Welding Plant	05
	Electrical	
1	Clamp Meter	05
2	Combination Plier	05
3	Earth Tester	05
4	Line Tester	05
5	Megger	05
6	Multi Meter	05
7	Nose Plier	05
8	Pin Plier	05
9	Screw Driver Set	05
10	Side Cutter	05
	Safety Tools	
1	Fire Extinguisher	05
2	First Aid Box	05
3	Hand Gloves	05
4	Hard top Hat	05
5	Mask	05
6	Overall combination [Dress]	05
7	Safety Belt	05
8	Safety Goggles	05
9	Steel Toe Shoes	05
	Civil	

1	Air Vent Pipe	05
2	Bell Mouth	05
3	Control Gates	05
4	Control Valves	05
5	Expansion Joint	05
6	Flanges	05
7	Flushing Gates	05
8	Flushing Pipe	05
9	Penstock	05
10	Reducer	05
11	Rubber Seal	05
12	Trash Rack	05
	Electrical	
1	Ballast Tank with Heaters	05
2	Binding wire	05
3	Cable Shoe	05
4	Channel Iron	05
5	Conductors	05
6	D-Iron Set	05
7	Disc Insulator [With Tension Set]	05
8	Earth Wire	05
9	Earthing Plate	05
10	Electrical Panels	05
11	Electronic Load Controller	05
12	Energy Meter	05
13	Generator[Brushed and Brush-less]	05
14	Metal Clad Main Switch	05
15	Pin Insulator	05
16	Pole	05
17	Power Cable	05
18	Pressure Transducer	05
19	Shackle Insulator	05
20	Stay Insulator	05
21	Stay Plate	05
22	Stay Rod	05
23	Stay Wire	05
24	Thimble	05
25	Transformer	05
26	Turn Buckle	05

27	Ultra Sonic Flow Meter	05
	Mechanical	
1	Angle Iron [Cross Arm]	05
2	Butterfly Valve	05
3	Coupling [Flexible/Rigid]	05
4	Cross flow Turbine	05
5	Flat Belt	05
6	Flat Pulleys	05
7	Fly Wheel	05
8	Francis Turbine	05
9	Gate Valve	05
10	Gear Box	05
11	Governor	05
12	Hydraulic Jack	05
13	Operating Rod	05
14	Pilton Turbine	05
15	Propeller/Kaplan Turbine	05
16	Single Phase Variac [Auto Transformer]	05
17	Tachometer	05
18	V Belt	05
19	V-Pulleys	05

National Vocational and Technical Training Commission (NAVTC)

 5th Floor Evacuee Trust Complex Sector F-5/1, Islamabad.

 +92 51 9044 04

 +92 51 9044 04

 info@navttc.org

 www.navttc.org