**CONTRACT NO: JBALB/HQ/K004/2024**

**SARAWAK WATER SUPPLY GRID PROGRAM – STRESSED AREAS IMPROVEMENT OF WATER SUPPLY SYSTEM IN BETONG DIVISION**

**PACKAGE 4–UPGRADING OF LUBAU WTP (RE-TENDER)**

**Appendix D:**

**Standard Site Form for Mechanical & Electrical Work**

FORM M-GE-1 SECTIONAL PIPE PRESSURE TEST FORM FORM M-GE-2 PIPE WELDED JOINT AIR TEST

FORM M-GE-3 PRE-COMMISSIONING OF PUMPS

* INSTALLATION CHECK
* CABLE INSULATION

FORM M-GE-4 FORM M-GE-5

TESTING AND COMMISSIONING OF OVERHEAD TRAVELING CRANE

TESTING AND COMMISSIONING OF DIESEL GENERATOR

FORM M-GE-6 TESTING AND COMMISSIONING OF PUMPS

-FLYGT SUBMERSIBLE PUMP (MAS) CONTROLLER PROTECTION SETTING

FORM M-GE-7-1 TESTING AND COMMISSIONING OF PUMPS

HORIZONTAL SPLIT CASING PUMP & MOTOR PROTECTION SETTING

FORM M-GE-7-2 TESTING AND COMMISSIONING OF AUXILLARY PUMPS

FORM M-GE-7-3 TESTING AND COMMISSIONING OF EC PUMPS FORM M-GE-8 SURGE COMPRESSION SYSTEM TEST FORM

FORM M-GE-9 TESTING AND COMMISSIONING OF AIR COMPRESSOR

FORM M-GE-10 DIESEL GENERATOR OPERATION RECORD FORM M-GE-11 RAW WATER PUMP OPERATION RECORD FORM M-GE-12 TREATED WATER PUMP OPERATION RECORD FORM M-GE-13 TOP ENTRY MIXER TEST FORM

FORM M-GE-14 METERING PUMP TEST FORM FORM M-GE-15 AIR BLOWER TEST FORM FORM M-GE-16 JAR TEST FORM

FORM M-GE-17 FILTER TEST FORM

FORM M-GE-18 FLOW METER TEST FORM

FORM M-GE-19 ELECTRIC ACTUATOR TEST FORM

FORM M-GE-20 FILTER VALVE/ PENSTOCK OPERATION TEST FORM

**CONTRACT NO: JBALB/HQ/K004/2024**

**SARAWAK WATER SUPPLY GRID PROGRAM – STRESSED AREAS IMPROVEMENT OF WATER SUPPLY SYSTEM IN BETONG DIVISION**

**PACKAGE 4–UPGRADING OF LUBAU WTP (RE-TENDER)**

**Appendix D:**

**Standard Site Form for Mechanical & Electrical Work**

FORM E-LV-1 TESTING AND COMMISSIONING OF SWITCH BOARD

FORM E-LV-2 TESTING AND COMMISSIONING OF GENERATOR SETS

FORM E-LV-3 MAIN POWER CABLE INSULATION TEST FORM E-LV-4 EARTH RESISTANCY TEST

FORM E-LV-5 DISTRIBUTION BOARD SUB-CIRCUIT TEST FORM E-LV-6 AIR CONDITIONING UNIT TEST

|  |  |  |
| --- | --- | --- |
| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**    **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

**SECTIONAL PIPE PRESSURE TEST FORM**

FORM M-GE-1

***Location:***

Instruments Used :

Drawing No. (if any) :

Working Pressure: Psi / Bar

Test Pressure : Psi / Bar

Specified Duration : Pipe Length / Chainage:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Item** | **Date / Time** | **Reading (**  **) Units** | **Date/ Time** | **Reading**  **( ) Units** | **Duration** | **Weather** | **Remarks** |
|  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |

TEST RESULT :

ACCEPTED

REJECTED

Comment:

|  |  |  |
| --- | --- | --- |
| **Tested By:** | **Witnessed By:** | |
| ***Contractor Representative*** | ***Consultant Representative*** | ***Client Representative*** |
|  |  |  |
| Name:……………………………………………  Date:……………………………………………. | Name:……………………………………………….  Date:……………………………………………….. | Name:……………………………………..  Date:……………………………………… |

|  |  |  |
| --- | --- | --- |
| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

FORM M-GE-6

**TESTING AND COMMISSIONING OF PUMPS**

**SUBMERSIBLE PUMP (MAS) CONTROLLER PROTECTION SETTING**

Pump No. / Location: Equipment Tag No. :

Serial No. : Date :

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **PUMP MAS PROTECTION** | | | **Pre-Set Value** | | | |
|  |  | | **Warning** | | **Trip** | **Unit** |
| a) | Temperature Stator ph 1 | |  | |  | °C |
| b) | Temperature Stator ph 2 | |  | |  | °C |
| c) | Temperature Stator ph 3 | |  | |  | °C |
| d) | Temperature Main Bearing | |  | |  | °C |
| e) | Leakage Stator Housing | |  | |  | mA |
| f) | Leakage Junction Box | |  | |  | mA |
| g) | Vibration | |  | |  | mm/s |
| h) | Pump Current | |  | |  | Amp |
| g) | Current Unbalance | |  | |  | % |
| h) | Voltage Unbalance | |  | |  | % |
| i) | Low Power | |  | |  | kW |
|  |  | |  | |  |  |
|  |  | |  | |  |  |
| **PUMP OPERATION PROTECTION** | | | **Pre-Set Value** | | | |
| a) | Low Water Level in Suction Chamber / Reservoir | |  | |  | m |
| b) | Discharge Main Pipe High Pressure Stop - Pressure Sensor | |  | |  | Bar |
| c) | Discharge Header High Pressure Stop - Pressure switch | |  | |  | Bar |
|  |  | |  | |  |  |
| Remarks : | | | | | | |
| **Tested By:** | | **Witnessed By:** | | | | |
| ***Contractor Representative*** | | ***Consultant Representative*** | | ***Client Representative*** | | |
|  | |  | |  | | |
| Name: …………………………………… Date : …………………………………… | | Name: …………………………………… Date : …......…………………………… | | Name: ....….………………………………… Date : .........………………………………… | | |

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| --- | --- | --- |
| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

FORM M-GE-7

- Sheet 1/2

**TESTING AND COMMISSIONING OF PUMPS HORIZONTAL SPLIT CASING PUMP & MOTOR PROTECTION SETTING**

Pump No. / Location : Equipment Tag No. : Serial No. : Date :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PUMP & MOTOR PROTECTION** | | **Pre-Set Value** | | |
| a) | Low Water Level in Suction Reservoir | m | | |
| b) | Valve Closed Interlock |  | | |
|  |  | **Warning** | **Trip** | **Unit** |
| c) | Motor Winding |  |  | °C |
| d) | Motor NDE Bearing |  |  | °C |
| e) | Motor DE Bearing |  |  | °C |
| f) | Pump NDE Bearing |  |  | °C |
| g) | Pump DE Bearing |  |  | mA |
| h) | Heater connection |  |  |  |
| i) | Pump Discharge Pressure Switch |  |  |  |
| j) | Discharge Main Pipeline Pressure Sensor |  |  |  |

Remarks :

|  |  |  |
| --- | --- | --- |
| **Tested By:** | **Witnessed By:** | |
| ***Contractor Representative*** | ***Consultant Representative*** | ***Client Representative*** |
|  |  |  |
| Name: ………………………………  Date : ……………………………… | Name: ……………………………  Date : …......…………………… | Name: ....….…………………………  Date : .........………………………… |

|  |  |  |
| --- | --- | --- |
| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

FORM M-GE-7

- Sheet 2/2

**TESTING AND COMMISSIONING OF PUMPS HORIZONTAL SPLIT CASING PUMP & MOTOR PROTECTION SETTING**

System: Location :

1. Instruments Signal Output Scaling:

|  |  |
| --- | --- |
| Minimum | Maximum |
| ( ) mA | ( ) mA |
| ( ) mA | ( ) mA |
|  |  |

System Level Sensor System Pressure Sensor

*\* Data obtain from sensor name plate*

1. Instruments / Sensors Signal Record

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sensor Signal Output (Min) | Sensors | Reading | Sensor Signal Output (Max) | Sensors | Reading |
| 4 mA | ( ) | m | 20 mA | ( ) | m |
| 4 mA | ( ) | Bar | 20 mA | ( ) | Bar |
|  |  | |  |  | |

System Level Sensor System Pressure Sensor

*\* Reding obtain from sensor name plate or logged in to sensor's system parameter*

Remarks :

|  |  |  |
| --- | --- | --- |
| **Tested By:** | **Witnessed By:** | |
| ***Contractor Representative*** | ***Consultant Representative*** | ***Client Representative*** |
|  |  |  |
| Name: ……………………………… Date : ……………………………… | Name: …………………………… Date : …......…………………… | Name: ....….………………………… Date : .........………………………… |

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| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

FORM M-GE-7-2

- Sheet 1/1

**TESTING AND COMMISSIONING OF AUXILLARY PUMPS**

Location : Equipment Tag No. : Type: Service: Brand : Model : Power (kw) : Capacity: Serial No. : Date :

|  |  |  |  |
| --- | --- | --- | --- |
| **PUMP & MOTOR PROTECTION** | | **Result** | |
| **Pump 1** | **Pump 2** |
| a) | Low Water Level in Suction Chamber - Operation Prohibited (m) |  |  |
| b) | High Water Level in Suction Chamber - Operation allow (m) |  |  |
| c) | Emergency Stop Function |  |  |
| d) | Float Switch Function |  |  |
| **TEST DESCRIPTION** | |  |  |
| e) | Closed Valve Current (A) |  |  |
| f) | Fully Open Valve Current (A) |  |  |
| g) | Pressure (m) |  |  |
| h) | Voltage (V) |  |  |
| i) | Correct Rotation Check |  |  |
| j) | Observed any abnormal vibration/ sound during operation? |  |  |

Remarks :

|  |  |  |
| --- | --- | --- |
| **Tested By:** | **Witnessed By:** | |
| ***Contractor Representative*** | ***Consultant Representative*** | ***Client Representative*** |
|  |  |  |
| Name: …………………………… Date : …………………………… | Name: ……………………………………… Date : …......…………………… | Name: ....….…………………… Date : .........…………………… |

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| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

FORM M-GE-8

**SURGE SURPRESSION SYSTEM TEST FORM**

***Location:***

* 1. ***Air Compressor Functionality Test ( Unit of )***

*Equipment Information:*

*Manufacturer : Rating: Model : Compressor S/N: Motor S/N: Capacity :*

Air Compressor Operation Test

* + 1. Manual Start/Stop vi Overload Trip Test
    2. Auto Start/Stop by pres.sw. vii Overload Trip Set (A)
    3. Running Voltage (V) viii Tank Safety Air Valve functionality Test

1. Running Current (A) - Compressed air safety relief valve set at
   1. ***Surge Vessel Functionality Test***
2. Verification of Water Level Electrode cables connection correct. Electrode designation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COM** | **HHWL** | **HWL** | **NWL** | **LWL** | **LLWL** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Panel Terminal Correct Length (m)

1. Detected Water Levels Functioning Test

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Status | Change of water level | | | | | | | |
| **HHWL** |  |  |  |  |  |  |  |  |
| **HWL** |  |  |  |  |  |  |  |  |
| **NWL** |  |  |  |  |  |  |  |  |
| **LWL** |  |  |  |  |  |  |  |  |
| **LLWL** |  |  |  |  |  |  |  |  |
| ARV on (Open) |  |  |  |  |  |  |  |  |
| ARV off (Closed) |  |  |  |  |  |  |  |  |
| AC Start; Solenoid Valve Open |  |  |  |  |  |  |  |  |
| AC Stop; Solenoid Valve Close |  |  |  |  |  |  |  |  |
| LLWL Alarm Cut off Signal Outpost |  |  |  |  |  |  |  |  |
| HHWL Alarm Cut off signal Outpost |  |  |  |  |  |  |  |  |
| Eq. Response Action (a/r) |  |  |  |  |  |  |  |  |

1. Interlock Signal to stop RWP operation Yes/No Comment:

|  |  |  |
| --- | --- | --- |
| **Tested By:** | **Witnessed By:** | |
| ***Contractor Representative*** | ***Consultant Representative*** | ***Client Representative*** |
|  |  |  |
| Name: ……………………………………….  Date : ………………………………………. | Name: …….…………………………  Date : ….…………………………… | Name: ….…………………………  Date : ....………………………… |

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| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

FORM M-GE-12

**TREATED WATER PUMP OPERATION RECORD**

**Total Pump On Duty : Pump/ motor SN:** /

|  |  |  |  |
| --- | --- | --- | --- |
| **Equipment Tag No:** |  | **Date:** |  |
| ***Location:*** |  |  |  |
| ***Pump Information*** |  | ***Motor Information*** |  |
| *Make :* |  | *Motor Speed :* | rpm |
| *Model :* |  | *Motor :* | kW |
| *Duty Point :* |  | *Electrical characteristics:* | A |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Time** | **Individual Pump Discharge Pressure (m)** | **Main Discharge Header Pressure (m)** | **Inlet Tank/Channel Water Level (m)** | **Flow (m3/Hr)** | **Running Current (Amp)** | **Voltage (Vac)** | **Running Speed (Rpm/Hz)** | **Bearing Temperature (oC)** | | | | **Motor Winding Temperature (oC)** | **Vibration (mm/s)** | |
| **Pump** | | **Motor** | | **Motor** | **Pump** |
| **Drive End**  **(DE)** | **Non Drive**  **End (NDE)** | **Drive End**  **(DE)** | **Non Drive**  **End (NDE)** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Comment : | | | | | | | | | | | | | | |
| **Tested By:** | | | | **Witnessed By:** | | | | | | | | | | |
| ***Contractor Representative*** | | | | ***Consultant Representative*** | | | | | | ***Client Representative*** | | | | |
|  | | | |  | | | | | |  | | | | |
| Name: ......……………………………………………………………………… Date: .....………………………………………………………………………. | | | | Name: ..…………………………………………………… Date: ..……………………………………………………… | | | | Name: ..………………........………………………………………………… Date : ..………........…………………………………………………………. | | | | | | |

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| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | PROJECT TITLE: | **CLIENT:**    **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

**TOP ENTRY MIXER TEST FORM**

**Equipment Tag No. :** FORM M-GE-13

**Location :**

**1. Equipment Details**

|  |  |  |  |
| --- | --- | --- | --- |
| **MIXER** | | **MOTOR** | |
| Manufacturer | MIXTEC | Manufacturer |  |
| Model |  | Serial No. |  |
| SerialL No. |  | Voltage/ Ph/ V |  |
| Tank turnover |  | Power / Current | kW Amp |
| Superficial velocity |  | Speed |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **2. Visual Inspection:** | YES | NO | Remark |
| a) Mixer Frame mounting check |  |  |  |
| b) Mixer shaft alignment check |  |  |  |
| c) Rotation check |  |  |  |
| d) Cable entry & termination |  |  |  |
| e) Emergency stop |  |  |  |
| f) Local Start/Stop |  |  |  |
| g) Operation protection |  |  |  |
| h) Motor installed with shed? ( if applicable) |  |  |  |

**3 Cable Insulation Test**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Power Cable | R-Y | R-B | Y-B | R-E | Y-E | B-E |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **4. Operational Test** | | YES | | NO | Remark | | | | |
| Mixer Stator Method: | Variable Speed Drive | |  | DOL | |  | AT |  |  |
| a) Manual operation test | |  | |  |  | | | | |
| b) Auto operation test | |  | |  |  | | | | |
| c) Remote operation test | |  | |  |  | | | | |
| d) Emergency stop functionality test | |  | |  |  | | | | |
| e) Low Water Level Start Prohibited Test | |  | |  |  | | | | |
| f) Local Start/Stop | |  | |  |  | | | | |
| g) Motor installed with Shed? ( if applicable) | |  | |  |  | | | | |

**5. Operation Data**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Voltage (Vac) | | | Current (Amp) | | |
| R-Y | R-B | Y-B | R | Y | B |
| Regulated Speed (rpm/Hz) : | | | | | |

Remarks:

|  |  |  |
| --- | --- | --- |
| **Prepared By:** | **Witnessed By:** | |
| ***Contractor Representative*** | ***Consultant Representative*** | ***Client Representative*** |
|  |  |  |
| Name:………………………………… Date:………………………………….. | Name:………………………………… Date:…………………………………. | Name:………………........………… Date:……………………………… |

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| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

**METERING PUMP TEST FORM**

FORM M-GE-14

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1. EQUIPMENT:** | | **2. LOCATION** | | | |
| **3. EQUIPMENT DETAIL** | | | | | |
| **PUMP** | | **MOTOR** | | | |
| MANUFACTURER | PROMINENT | VOLTAGE / PH / Hz | | | 415V/3ph/50Hz |
| MODEL |  | POWER | | |  |
| SERIAL No. |  | SERIAL No. | | |  |
| DESIGN CAPACITY |  | TYPE ENCLOSURE | | | IP55 |
| **4. VISUAL INSPECTION:** | | YES | NO | Remark | |
| a) Dosing skids frame mounting check | |  |  |  | |
| b) Pipeline leakage check | |  |  |  | |
| c) Cable entry & termination check | |  |  |  | |
| d) Emergency stop | |  |  |  | |
| e) Local Start/Stop | |  |  |  | |
| f) Rotation check | |  |  |  | |
| g)Pump suction tank level switch installation | |  |  |  | |
| h) Motor c/w with force cooling fan (if applicable) | |  |  |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| **5. INSULATION RESISTANCE TEST** | | | |
| PHASE TO EARTH | R to E: | Y to E: | B to E: |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **6. CHEMICAL METERING PUMP RUNNING DATA** | | | | |
| **CHEMICAL PUMP STROKE (%(** | **FLOWRATE (L/MIN)** | | **RUNNING CURRENT**  **(Amp)** | **VOLTAGE (V)** |
| 50 |  |  |  |  |
| 40 |  |  |  |  |
| 30 |  |  |  |  |
| 20 |  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **7. MANUAL START / STOP FUNCTIONALITY TEST** | ACCEPTED : | FAILED : |

|  |  |  |  |
| --- | --- | --- | --- |
| **8. PUMP RUNNING CHECK** | | **9. PUMP ACCESSORIES SETTINGS** | |
| CALIBRATION CYLINDER (Y/N) : |  | BACK PRESSURE VALVE SETTING (Bar): |  |
| ABNORMAL NOISE (Y/N) : |  | PRESSURE RELIEF VALVE SETTING (Bar): |  |
| SUCTION WITH STRAINER (Y/N) : |  | SAFETY RELIE PIPE CONNECTED (Y/N) |  |

|  |  |  |
| --- | --- | --- |
| **Prepared By:** | **Witnessed By:** | |
| ***Contractor Representative*** | ***Consultant Representative*** | ***Client Representative*** |
|  |  |  |
| Name:………………………………… Date:………………………………….. | Name:………………………………… Date:…………………………………. | Name:………………........………… Date:…………………………………. |

|  |  |  |
| --- | --- | --- |
| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

**FILTER VALVE/ PENSTOCK OPERATION TEST FORM**

FORM M-GE-20

- Sheet 1/1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Location** | **Valve/ Penstock Tag No.** | **Serial No.** | **Fully Open Function** | **Fully Close Operation** | **Water Tightness Check** |
| FILTER TANK NO.1 | FIV NO.1 |  |  |  |  |
| FOV NO.1 |  |  |  |  |
| BWV NO.1 |  |  |  |  |
| ASV NO.1 |  |  |  |  |
| WOV NO.1 |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Location** | **Valve/ Penstock Tag No.** | **Serial No.** | **Fully Open Function** | **Fully Close Operation** | **Water Tightness Check** |
| FILTER TANK NO.2 | FIV NO.2 |  |  |  |  |
| FOV NO.2 |  |  |  |  |
| BWV NO.2 |  |  |  |  |
| ASV NO.2 |  |  |  |  |
| WOV NO.2 |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Location** | **Valve/ Penstock Tag No.** | **Serial No.** | **Fully Open Function** | **Fully Close Operation** | **Water Tightness Check** |
| FILTER TANK NO.3 | FIV NO.3 |  |  |  |  |
| FOV NO.3 |  |  |  |  |
| BWV NO.3 |  |  |  |  |
| ASV NO.3 |  |  |  |  |
| WOV NO.3 |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Location** | **Valve/ Penstock Tag No.** | **Serial No.** | | **Fully Open Function** | **Fully Close Operation** | | **Water Tightness Check** |
| FILTER TANK NO.4 | FIV NO.4 |  | |  |  | |  |
| FOV NO.4 |  | |  |  | |  |
| BWV NO.4 |  | |  |  | |  |
| ASV NO.4 |  | |  |  | |  |
| WOV NO.4 |  | |  |  | |  |
| Remarks : | | | | | | | |
| **Tested By:** | | | **Witnessed By:** | | | | |
| ***Contractor Representative*** | | | ***Consultant Representative*** | | | ***Client Representative*** | |
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| Name: ……………………………………… Date : ……………………………………… | | | Name: ……………………………….. Date : …......……………………….. | | | Name: ………………....….……… Date : .........…………………… | |

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| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

**MAIN POWER CABLE INSULATION TEST**

FORM E-LV-3

**Location: Insulation Tester Detail**

|  |  |  |  |
| --- | --- | --- | --- |
| **Model:** |  | Cal. Certificate No: |  |
| **Serial No:** |  | Voltage Inject : |  |

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| Item | From Point (Eq.Tag) | To Point (Eq.Tag) | Cable Detail | | | Service | Results (Mega Ohm) | DATE TESTED |
| Core | Size (mm2) | Type |
| R1-R2 |  |  |  |  |  |  |  |  |
| R1-R3 |  |  |  |  |  |
| R1-Y1 |  |  |  |  |  |
| R1-Y2 |  |  |  |  |  |
| R1-Y3 |  |  |  |  |  |
| R1-B1 |  |  |  |  |  |
| R1-B2 |  |  |  |  |  |
| R1-B3 |  |  |  |  |  |
| R1-N1 |  |  |  |  |  |
| R1-N2 |  |  |  |  |  |
| R2-R3 |  |  |  |  |  |
| R2-Y1 |  |  |  |  |  |
| R2-Y2 |  |  |  |  |  |
| R2-Y3 |  |  |  |  |  |
| R2-B1 |  |  |  |  |  |
| R2-B2 |  |  |  |  |  |
| R2-B3 |  |  |  |  |  |
| R2-N1 |  |  |  |  |  |
| R2-N2 |  |  |  |  |  |
| R3-Y1 |  |  |  |  |  |
| R3-Y2 |  |  |  |  |  |
| R3-Y3 |  |  |  |  |  |
| R3-B1 |  |  |  |  |  |
| R3-B2 |  |  |  |  |  |
| R3-B3 |  |  |  |  |  |
| R3-N1 |  |  |  |  |  |
| R3-N2 |  |  |  |  |  |
| Y1-Y2 |  |  |  |  |  |
| Y1-Y3 |  |  |  |  |  |
| Y1-B1 |  |  |  |  |  |
| Y1-B2 |  |  |  |  |  |
| Y1-B3 |  |  |  |  |  |
| Tested Result : ACCEPTED REJECTED Remarks : | | | | | | | | |

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| **Tested By:** | **Witnessed By:** | |
| ***Contractor Representative*** | ***Consultant Representative*** | ***Client Representative*** |
|  |  |  |
| Name:…………………………………………………….  Date:……………………………………………………… | Name:………………………………………………………  Date:………………………………………………………… | Name:………………........……………………………..  Date :………........……………………………………… |

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| **MAIN CONTRACTOR:**    **GROUP ENGINEERS MALAYSIA SDN BHD** | **PROJECT TITLE:**  **C** | **CLIENT:**  **JABATAN BEKALAN AIR LUAR BANDAR SARAWAK** |

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|  |  | FORM E-LV-5 |
| **DISTRIBUTION BOARD SUB-CIRCUIT TEST** |  |
| Location : Building : | Panel Rating : |  |
| Panel Tag: | Name of RCCB : |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Circuit No. | No. of Outlet/points | **Overcurrent Devices** | | | **Test Result** | | | | | | | | | | |
| **Continuity Test** | | | **Insulation Resistance Test for Circuit (M.Ohms)** | | | | | | **Main RCCB** | |
| Time (ms) | |
| Type | Rating (A) | Breaking Capacity (KA | R1 + R2 (Ohms) | R2 (Ohms) | Ring Circuit | R-Y | Y-B | B-R | RYB-E/L-E | RYB-N/L-N | N-E | At 0 | At 180 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Inspection Result : ACCEPTED REJECTED Remarks : | | | | | | | | | | | | | | | |

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| **Tested By:** | **Witnessed By:** | |
| ***Contractor Representative*** | ***Consultant Representative*** | ***Client Representative*** |
|  |  |  |
| Name:………………………………… Date:………………………………….. | Name : ..………………………………… Date : ...…………………………………. | Name: ...…………........…………….  Date : ...…........…………………….. |