**METHOD OF STATEMENT**

**FOR**

**Project Name**

**Client:**

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| **REvision details** | **REVISION** | **REV. DATE** | **PREP. BY** | **CHECKED** | **APPROVED** |

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| Approved By |  |  |  |  |

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| Performed By |  |  |  |  |
| Approved By |  |  |  |  |

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| Customer Name | | | | |
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# Summary

## Project Details

The GMS System is designed to monitor the supply lines, vessels, pumps, valves, and other equipment’s in the following mentioned areas/facilities in PROJECT-01 & 02 Plant.

The System will utilize a Siemens S7-400H Programmable Logic Controller (PLC) as a main controller to execute various controls in GMS System. Operating stations are based on Siemens software WinCC 7.5 SCADA which will be used to monitor and operate the system.

## Purpose

The purpose of this document is to provide direction for the tasks and activities involved during the panel installation & commissioning, providing the way for scheduling, roles and responsibilities, lines of communication, reporting, approvals and coordination.

This procedure describes the sequence of work to be followed during existing panel investigation and wiring data collection at Project Name

* Work permit shall be applied for each activity prior to work
* Meet up with Air Liquide control team for quick review work for the day.

The objective of this method of statement is to provide a proper and systematic working method to be carried out for all the tasks performed by the team in a safe manner.

This method statement provides guidelines for all personnel to work in an incident free workplace and using the correct equipment in a proper and safe way.

# Definitions

CUSTOMER NAME – Customer Name

DB – Distribution Board

E&I – Electrical & Instrumentation

EPD – Electrical Panel Drawing

FAT – Factory Acceptance Test

FO – Fibre Optic

GAD – General Arrangement Drawing

GE – General Electric

GMS – Gas Monitoring System

ICPro – ICPro Employees and their Sub Contractors

IFIX – Existing GE SCADA at Plant

IM – Interface Module

IO – Input Output

IOL – Input Output List

IP – Internet Protocol

LEW – Licensed Electrical Worker

LNG – Liquefied Natural Gas

LOTO – Lock Out Tag Out

MCB – Miniature Circuit Breaker

MEWP – Mobile Elevating Work Platforms

MOH – Ministry of Health

MOS – Method of Statement

NAD –Network Architecture Drawing

PLC – Programmable Logic Controller

PPE – Personal Protection Equipment

PTW – Permit to Work

RIO – Remote Input Output

RTU – Remote Terminal Unit

SAT – Site Acceptance Test

SCADA – Supervisory Control and Data Acquisition

TB – Terminal Block

TCP – Transmission Control Protocol

UPS – Uninterruptible Power Supply

VAC – Voltage Alternating Current

VDC – Voltage Direct Current

WAH – Work at Height

# Personal Protective Equipment

Personnel involved in site works are required to wear the relevant PPE’s and are advised to do visual inspection of their personal PPE’s prior to use.

* Hard hat with chin straps
* Green reflective vest (Optional based on site conditions)
* Safety Glasses
* Safety shoes.

# Site survey

It is essential that a survey be conducted to establish the sequence of installation work and access route, etc. before commencement of work.

# Responsibilities

It is the overall responsibilities of the team involved in this site visit and ensure proper implementation of safe work procedure. Necessary safety gears, tools and equipment shall be provided in good condition for safe execution of work.

## Project Lead

* Responsible for the safe execution of the work
* To support the execution team with the necessary resources.
* Ensure that all foreign workers engaged in the worksite are legal workers who possess valid work permit and other necessary documents.
* Ensure workers assigned to projects are qualified and competent for their own trade.
* Ensure that all necessary preparation and documents are approved prior to the commencement of the work.

## Engineer / Supervisor

* Ensure work is carried out in accordance to work method statements.
* Assign employees only to tasks for which they are trained and qualified.
* Monitor worker and work group performance for quality and safe work practices.
* Correct any deficiencies noted and educate the worker to improve work methods.
* Review engineering drawing.
* Application of PTW
* Cable schedule document preparation during IO cable transfer
* Document the IO’s connected TB group, number, Transmitter Tag, Cable Core, Cable Marker details in both existing panel and new GMS RIO panel during cable transfer.
* Attend to the issues/deviations noted by process engineer/E&I engineer related to new PLC/SCADA Systems.

## Electrical Technician

* Panel Movement
* Lay Cables as per the reference electrical drawing/supervisor instruction
* Transfer of cables from existing panel to new GMS RIO panel
* Cable routing/diverting in the existing cable tray while transferring the cables from existing panel
* Cable Termination inside the new panel.

## Plant Operator

* To look after the plant condition and respond immediately to the scenario if any abnormalities found during the cable switchover to new GMS RIO panel.
* To inform the facility/plant in-charge daily as per the schedule about the area where the IO’s are located physically at site, during cable transfer from existing panel to new panel.

## Process Engineer

* To check the IO’s whether it is physically disconnected and not reading any values in existing IFIX SCADA and confirm the right cables are pulled out from the existing panel.
* To check the IO’s are reading proper value in the new SCADA system, similar to the old system. Check whether correct instrument range in entered in the SCADA System, Alarms are enabled similar to the set points in the old SCADA system.
* Execute the Site Acceptance Test (SAT) cases as per the protocol/document.

## E&I/Instrumentation Engineer

* To look after the plant condition and respond immediately to the scenario if any abnormalities found during the cable switchover to new GMS RIO panel.
* To fix any abnormalities/fault condition found in the existing IFIX SCADA/GE PLC/ADAM Modules during the cable transfer to new GMS RIO panel.
* To co-ordinate with process engineer/plant operator and execute the Site Acceptance Test (SAT) cases as per the protocol/document.

## Responsible Personals for Project Co-ordination

|  |  |  |
| --- | --- | --- |
|  | **CUSTOMER NAME** | **ICPro** |
| **Project Lead** |  |  |
| **Engineer/Supervisor** | XXXX |  |
| **Electrical Technician** | XXXX |  |
| **Plant Operator** | XXXX | NA |
| **Process Engineer** |  | NA |
| **E&I/Instrumentation Engineer** | XXXX | NA |

XXXX – To be provided by CUSTOMER NAME

# Work Preparation

## General

Ensure that all personnel to work at site attended the safety induction course conducted by Air Liquide and granted a valid entrance pass. This can be optional for site visit and inspection activities, based on CUSTOMER NAME direction.

Ensure that all personnel are qualified & suitably experience for tasks to be undertaken.

Ensure the Method of statement/Risk Analysis is prepared and approved.

Safety helmet, safety glass, hand glove, reflective vest and safety shoe is a minimum requirement. All other PPE on site is to be used according to site safety regulation.

* Site survey shall be carried out with client representatives to identify exact work location, interface with other contractors and any other obstructions.
* Toolbox Meeting is compulsory for supervisor to brief workers and obtains feedback from them prior to work commencement. Highlight any potential hazards and concern when performing the work.
* Ensure all required PPE for related work is inspected and available to use.
* Fire watchman to be present at all welding (Hot work zone) areas with fire extinguisher.
* Fire blanket to cover all area underneath or nearby the welding for manual hand weld.
* Face shield and hand glove must be worn when performing cutting and grinding work.

## Meeting and Co-ordination

*Meeting*

A Meeting shall be conducted to review the activities and method statement related to the site work. This meeting shall be attended by all parties from CUSTOMER NAME / ICPro & ICPro Sub Contractors involved in this work prior to the start of work.

*Co-ordination*

CUSTOMER NAME will co-ordinate with the other discipline of the terminal to assist in the site work upon the request of ICPro engineers as and when the need arises.

## Emergency Procedure

In the event of any emergency, normal site evacuation procedure shall apply. Refer to CUSTOMER NAME Emergency Response Procedure (ERP).

Document No:

## Protection of Others

Measures for the protection of community or public such as barriers, signage, emergency lights etc. shall be covered in the permit to work.

# Material / tools delivery and store

* All materials delivery shall be coordinated with Air Liquide team.
* CUSTOMER NAME shall guide the delivery lorry/truck to designated unloading location.
* Ensure correct tool/machinery is used to load/unload material or equipment which is not able to carry by man. E.g.: trolley, pallet jack, etc.
* Material length over 2 meters or weight exceed 25kg must be carried by minimum two workers.
* On the receipt of materials at site necessary precautions shall be taken during unloading and storage to avoid any damage.
* Materials shall be stored in a covered or dry space at all time to avoid corrosion.
* Ensure all the electrical tools and equipment are inspected by Licensed Electrical Worker (LEW) and color coded.

# Working at Height

* All work above 1.8m height from ground is considering high risk, complete safety harness must be worn and hook on rigid support/anchorage point.
* Working at height area shall be inspected by WAH Supervisor prior to work.
* All work at height shall be properly planned and personnel involved in working at height must be competent.
* Proper anchorage point shall be provided. Harness to hook on anchorage point all the time when working at height.
* Site supervisor to ensure proper and stable access/platform to high location.
* Site supervisor to check worker physical condition before assign worker to work at height.
* Working at height involves the use of ladder (A-frame/fireman/platform), MEWP and scaffold.

## “A” Frame Ladder

* Supervisor to check work area and height of work location and select the correct height of ladder to be use.
* Once the ladder is set up on the work area, one worker to hold the ladder, one worker with full body harness to go up ladder to reach work location.
* Tools, materials shall be pass up by another worker to the one on ladder.
* Ladder shall be used to access to high location but limited up to 3 meter high.
* Buddy system shall be practice at all time, the ladder must be hold by other when a worker stands on the ladder. Small size or light weight material, for example short pipe/tube, fittings or valve to be pass up by another worker.
* Last two rungs of ladder shall be covered. These two rungs are strictly prohibited to stand.
* Ladder shall be placed on a firmer ground before going up.
* Workers need to be aware when moving the ladder around to avoid hitting or damage existing system/equipment on site.

# Safe Distancing Measures

Ministry of Health (MOH) announced various safe distancing measures to be taken to reduce the risk of local spread of COVID-19, including at workplaces. Such measures are to limit close contact and large gatherings of people in close proximity over a prolonged duration. Employers and employees must adopt safe distancing measures at the workplace.

Ensure that physical distancing of at least 1m can be achieved in most settings where interactions are non-transient. When combined with good personal hygiene and social responsibility together with efforts to tighten our borders and to quarantine and ring-fence from any infection clusters.

* Reduce need for and duration of physical interactions
* Ensure clear physical spacing of at least 1m apart
* Stagger working hours, lunch timings and other breaks
* Implement or enhance shift or split team arrangements

The duration’s meetings/transactions should be kept as short as possible.

# Safe working Procedure

## Procedure at Site Work

* During site work, completed items will be recorded.
* After completion of site works, Site Work Report will be submitted.
* CUSTOMER NAME representatives to accompany ICPro engineers during site work at all times.

## Safety Rules

* To follow all CUSTOMER NAME terminal safety rules without exception
* To wear proper working clothes and PPE at all times.
* To keep work schedule and follow to work procedure. Any required deviations to approved method of statement must be reapproved by CUSTOMER NAME.
* To report to CUSTOMER NAME, if any incident happens during site work.
* To confirm CUSTOMER NAME instruction/permission before touching any existing running instrument.
* To report CUSTOMER NAME, if any damage or defect is found during site work.

# PTW Application

* Work permit shall be applied for each activity prior to work.
* Work can only start after approval of all the above permits
* At end of the day PTW should be closed after completion of work.

# Safety Documents

* Comply with Air Liquide work Permit system and safety regulations.
* Prepare and submit the Risk Assessment.
* Daily work permits for the all activity shall be applied and approved before actual site works commenced.

# Project Implementation & Schedule

Schedule given below is tentative which shall be updated based on the progress of work and possible speed of execution at site taking into consideration of CUSTOMER NAME resource availability, complication of site work for cable removal & transfer, testing by CUSTOMER NAME and other ongoing site activates at site.

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No** | **Work Involved** | **Start Date** | **End Date** |
| 1 | New PROJECT-01 GMS RIO Panel Movement & Installation \*\* | 09 Oct 2020 | 10 Oct 2020 |
| 2 | New PROJECT-02 GMS RIO Panel Movement & Installation \*\*\* | 19 Oct 2020 | 19 Oct 2020 |
| 3 | Signal cable Identification, Submission to CUSTOMER NAME and Approval | 08 Oct 2020 | To continue progressively |
| 4 | Ethernet Cable Laying | 08 Oct 2020 | 08 Oct 2020 |
| 5 | PROJECT-01 GMS RIO Panel Power Cable Laying & Termination \*\* | 12 Oct 2020 | 16 Oct 2020 |
| 6 | PROJECT-02 GMS RIO Panel Power Cable Laying & Termination \*\* | 12 Oct 2020 | 16 Oct 2020 |
| 7 | Profibus Cable Laying | 08 Oct 2020 | 08 Oct 2020 |
| 8 | Fiber Optic Cable Laying | 09 Oct 2020 | 16 Oct 2020 |
| 9 | Installation Of Modbus RTU to TCP Convertor  in ANZ-STM-FUTURE(PROJECT-01 GMS PLC Panel2) | 08 Oct 2020 | 12 Oct 2020 |
| 10 | Profibus to Fibre Optic Convertor Installation | 15 Oct 2020 | 23 Oct 2020 |
| 11 | Modbus Device Integration | 10 Oct 2020 | 10 Nov 2020 |
| 12 | Cold Embrittlement PLC Communication Integration | 10 Oct 2020 | 10 Nov 2020 |
| 13 | PROJECT-01 GMS RIO Panel Power Up | 16 Oct 2020 | 16 Oct 2020 |
| 14 | PROJECT-02 GMS RIO Panel Power Up | 20 Oct 2020 | 20 Oct 2020 |
| 15 | PROJECT-01 GMS RIO Panel Integration  with LNG & Utility PLC System | 16 Oct 2020 | 16 Oct 2020 |
| 16 | PROJECT-01 GMS RIO Panel Cable Transfer  from Existing Panel To New Panel | 08 Oct 2020 | 30 Oct 2020 |
| 17 | Fiber Optic Cable Terminal, OTDR | 16 Oct 2020 | 19 Oct 2020 |
| 18 | PROJECT-02 GMS RIO Panel Integration  with LNG & Utility PLC System | 14 Oct 2020 | 14 Oct 2020 |
| 19 | PROJECT-02 GMS RIO Panel Cable Transfer  from Existing Panel To New Panel | 21 Oct 2020 | 23 Oct 2020 |
| 20 | Ethernet Switch Installation  at PROJECT-03 GMS SCADA Control Room | 02 Nov 2020 | 02 Nov 2020 |
| 21 | Ethernet Switch Installation at PROJECT-02 Fibre Optic Panel | 03 Nov 2020 | 03 Nov 2020 |
| 22 | Site Acceptance Test Protocol Execution & Sign OFF | 09 Nov 2020 | 09 Nov 2020 |
| 23 | Project Handover | 10 Nov 2020 | 10 Nov 2020 |

\*\* Some of the works are part of CUSTOMER NAME scope of work or new work scope for ICPro. CUSTOMER NAME shall issue PO for the same. Example Power DB modification, cable laying, Panel Installation area clearance etc. which may affect the overall schedule

\*\*\* Tentative to change based on the Shutdown plan of CUSTOMER NAME

# Methodology

## New PROJECT-01 Panel Movement and Installation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Clear all the intruding items such as Air-Conditioner, Toolboxes, etc  *Refer below image for all the items that need to be cleared from the location before the installation of the Panel* | CUSTOMER NAME | CUSTOMER NAME |
|  | A2 | Clear all the intruding items such as O2 Detector Panel, O2 Alarm Tower Light Panel, Cable Ducts, Utility Power Sockets  *Refer below image for all the items that need to be cleared from the location before the installation of the Panel* | ICPro | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Panel to be transported and installed at the new location with proper grouting and secure the panel firmly. | ICPro | CUSTOMER NAME |
|  | B2 | Verify whether the panel is secured firmly | CUSTOMER NAME/ICPro | CUSTOMER NAME |

Picture of Installation Space that needs to be cleared at AMK-01

MOS Implementation & Verification for Item [14.1]

|  |  |  |  |
| --- | --- | --- | --- |
| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## New PROJECT-02 Panel Movement and Installation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Clear all the intruding items such as Chairs, Boxes, and all other equipment that interfere with the Installation of the Panel  *Refer below image for all the items that need to be cleared from the location before the installation of the Panel* | CUSTOMER NAME | CUSTOMER NAME |
|  | A2 | Check whether no incoming power present for existing PROJECT-02 GMS Panel(Panel Power Shutdown Condition) | CUSTOMER NAME | CUSTOMER NAME |
|  | A3 | Remove existing GMS Panel from the wall and place it on a table/floor at a nearest location within the reach of the existing cable. | ICPro | CUSTOMER NAME |
|  | A4 | Verify the existing panel is removed from the wall and placed on the table provided | ICPro | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | New GMS Panel to be transported and installed at the location of old GMS panel, secure firmly to the wall using the wall mounting clamps provided. | ICPro | CUSTOMER NAME |
|  | B2 | Verify whether the panel is secured firmly | ICPro | CUSTOMER NAME |

Picture of Installation Space that needs to be cleared at AMK-02

MOS Implementation & Verification for Item [14.2]

|  |  |  |  |
| --- | --- | --- | --- |
| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## Ethernet Cable Laying

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Identify the existing cable tray/route  *If no segregation/ different cable trays exist for power cables, communication cable/ field signal cables in the present plant condition; same cable trays will be used to lay the new Ethernet cable where the power cables are also laid* | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A2 | Availability of Ethernet Cable – length as required | ICPro | CUSTOMER NAME |
|  | A3 | Identify the location for installation of new 24 Port Ethernet Switch (PROJECT1-SW1) | CUSTOMER NAME | CUSTOMER NAME |
|  | A4 | Identify the location of ETH-03 Ethernet Switch in PROJECT-03 LNG & Utility PLC Panel A | CUSTOMER NAME | CUSTOMER NAME |
|  |  | Identify the space location for installation of Modbus RTU to TCP Convertor inside the ANZ-STM-FUTURE (PROJECT-01 GMS PLC Panel2) cabinet | ICPro | CUSTOMER NAME |
|  | A5 | Cable Route Marker Naming Details | CUSTOMER NAME | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | 2 No’s of Ethernet Cable to be laid between  PROJECT-03 LNG & Utility PLC Panel A Switch (ETH-03) & PROJECT1-SW1 for establishing the communication with LNG & Utility PLC and Modbus TCP 3rd party devices/Cold Embrittlement PLC | ICPro | CUSTOMER NAME |
|  | B2 | Crimp the Ethernet cables at both the ends and add cable route markers | ICPro | CUSTOMER NAME |
|  | B3 | Test the new laid Ethernet cable ends using the LAN Cable Tester | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B4 | 1 No’s of Ethernet Cable to be laid between Modbus RTU to TCP Convertor inside the ANZ-STM-FUTURE (PROJECT-01 GMS PLC Panel2) cabinet to Ethernet Switch (PROJECT1-SW1) | ICPro | CUSTOMER NAME |
|  | B5 | Crimp the Ethernet cables at both the ends and add cable route markers | ICPro | CUSTOMER NAME |
|  | B6 | Test the new laid Ethernet cable ends using the LAN Cable Tester | CUSTOMER NAME/ICPro | CUSTOMER NAME |
| **C** | **Communication Testing** | | | |
|  | C1 | Refer Section 14.11 PROJECT-01 & PROJECT-02 GMS RIO Panel Integration with LNG & Utility PLC System |  |  |

MOS Implementation & Verification for Item [14.3]

|  |  |  |  |
| --- | --- | --- | --- |
| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## Installation of Modbus RTU to TCP Convertor in ANZ-STM-FUTURE (PROJECT-01 GMS PLC Panel2)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Identify the space location for installation of Modbus RTU to TCP Convertor inside the cabinet (Visual Check) | ICPro | CUSTOMER NAME |
|  | A2 | Modbus RTU to TCP Convertor (MGate MB3170) x 1No’s module availability | ICPro | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Install the Modbus RTU to TCP Convertor x 1No’s at the space available in the panel  *(Refer below image for the space to install the module)* | ICPro | CUSTOMER NAME |
|  | B2 | Connect the Ethernet Cable to be laid between Modbus RTU to TCP Convertor to Ethernet Switch (PROJECT1-SW1) | ICPro | CUSTOMER NAME |
|  | B3 | Identify the spare TB at 24VDC distribution group and note the TB number below, which can be used to power the newly installed Modbus RTU to TCP Convertor in ANZ-STM-FUTURE (PROJECT-01 GMS PLC Panel2) cabinet  24VDC Distribution Group : \_\_\_\_\_\_\_\_\_\_\_\_\_\_  24VDC TB Number : \_\_\_\_\_\_\_  0VDC TB Number : \_\_\_\_\_\_\_ | ICPro | CUSTOMER NAME |
|  | B4 | Wire the 24VDC from the above mentioned TB Group/number upto the module power input terminal blocks (Modbus RTU to TCP Convertor (MGate MB3170)  24VDC TB Number : \_\_\_\_ to Power Input TB (V1+)  0VDC TB Number : \_\_\_\_ to Power Input TB (V1-) | ICPro | CUSTOMER NAME |
|  | B5 | Verify the newly wired ferruling, connection and power. Ensure the module is powered up | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B6 | Connect the Newly laid Ethernet cable inside the cabinet to the Modbus RTU to TCP Convertor | ICPro | CUSTOMER NAME |
| **C** | **Module Power Up and Communication Testing** | | | |
|  | C1 | Refer Section 14.15 Modbus Device Integration |  |  |

|  |  |
| --- | --- |
| PROJECT-01 GMS PLC Panel2  (ANZ-STM-FUTURE) Cabinet Module Installation Location | Modbus RTU to TCP Convertor |
| IMG_20200615_141512671.jpg | Type : Mgate MB3170  download.jpg |

MOS Implementation & Verification for Item [14.4]

|  |  |  |  |
| --- | --- | --- | --- |
| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## Profibus Cable Laying

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Identify the existing cable tray/route  *If no segregation/ different cable trays exist for power cables, communication cable/ field signal cables in the present plant condition; same cable trays will be used to lay the new Profibus cable where the power cables are also laid* | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A2 | Profibus Cable of 20Mts length – 2 Cables availability | ICPro | CUSTOMER NAME |
|  | A3 | Cable Route Marker Naming Details | CUSTOMER NAME | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | 2 No’s of Profibus Cable(Profibus-A , Profibus-B) to be laid between PROJECT-03 LNG & Utility PLC Panel C and PROJECT-01 GMS RIO Panel | ICPro | CUSTOMER NAME |
|  | B2 | Terminate Profibus Cable (Profibus-A) at both the ends in   1. PROJECT-03 LNG & Utility PLC Panel C   Rack - 06, Slot/Card – R6IM1, Port - X1 DP   1. PROJECT-01 GMS RIO Panel   Rack - 07, Slot/Card - R7IM1, Port - X1 DP | ICPro | CUSTOMER NAME |
|  | B3 | Terminate Profibus Cable (Profibus-B) at both the ends in   1. PROJECT-03 LNG & Utility PLC Panel C   Rack - 06, Slot/Card – R6IM2, Port - X1 DP   1. PROJECT-01 GMS RIO Panel   Rack - 07, Slot/Card - R7IM2, Port - X1 DP | ICPro | CUSTOMER NAME |
|  | B4 | Verify the Profibus cable termination and route marker added at both the ends of the cable.  Profibus-A   1. PROJECT-03 LNG & Utility PLC Panel C   Rack - 06, Slot/Card – R6IM1, Port - X1 DP   1. PROJECT-01 GMS RIO Panel   Rack - 07, Slot/Card - R7IM1, Port - X1 DP | ICPro | CUSTOMER NAME |
|  | B5 | Verify the Profibus cable termination and route marker added at both the ends of the cable.  Profibus-B   1. PROJECT-03 LNG & Utility PLC Panel C   Rack - 06, Slot/Card – R6IM2, Port - X1 DP   1. PROJECT-01 GMS RIO Panel   Rack - 07, Slot/Card - R7IM2, Port - X1 DP | ICPro | CUSTOMER NAME |
|  | B6 | Verify the Profibus node address dip switch setting as listed below and end termination switch setting at each rack in OFF State, both IM Modules in a rack should have the same settings   1. PROJECT-03 LNG & Utility PLC Panel A   Rack – 01, Node Addr:02,  Rack – 02, Node Addr:03   1. PROJECT-03 LNG & Utility PLC Panel B   Rack – 03, Node Addr:04  Rack – 04, Node Addr:05  Rack – 05, Node Addr:06   1. PROJECT-03 LNG & Utility PLC Panel C   Rack – 06, Node Addr:07   1. PROJECT-01 GMS RIO Panel   Rack – 07, Node Addr:08  Rack – 08, Node Addr:09  Rack – 09, Node Addr:10 | CUSTOMER NAME/ICPro | CUSTOMER NAME |
| **C** | **Module Power Up and Communication Testing** | | | |
|  | C1 | Refer Section 14.11 PROJECT-01 & PROJECT-02 GMS RIO Panel Integration with LNG & Utility PLC System |  |  |

MOS Implementation & Verification for Item [14.5]

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| --- | --- | --- | --- |
| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## Profibus to Fibre Optic Convertor Installation & Fiber Optic Cable Laying

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Identify New Cable Tray Installing Route | ICPro | CUSTOMER NAME |
|  | A2 | Fiber Optic Cable of 200Mts length – 2 Cables availability | ICPro | CUSTOMER NAME |
|  | A3 | Fiber Optic to Profibus Converter (4 No’s) availability | ICPro | CUSTOMER NAME |
|  | A4 | Identify the location for installation of Fiber optic to Profibus converter (ICF-1180I- S-ST) inside the cabinets PROJECT-01 GMS RIO Panel and PROJECT-02 GMS RIO Panel  *Ref Doc: ICP\_GAD\_PR1291\_Rev03* | ICPro | CUSTOMER NAME |
|  | A5 | Cable Route Marker Naming Details | CUSTOMER NAME | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Install the Fiber optic to Profibus converter (ICF-1180I- S-ST) x 2 No’s at the available space in the PROJECT-01 GMS RIO Panel as mentioned in General Arrangement Drawing  *Ref Doc: ICP\_GAD\_PR1291\_Rev03* | ICPro | CUSTOMER NAME |
|  |  | Wire the 24VDC power cable to the Fiber optic to Profibus converter power terminal + and –  *Ref Doc: ICP\_GAD\_PR1291\_Rev03* | ICPro | CUSTOMER NAME |
|  | B2 | Install the Fiber optic to Profibus converter (ICF-1180I- S-ST) x 2 No’s at the available space in the PROJECT-02 GMS RIO Panel as mentioned in General Arrangement Drawing  *Ref Doc: ICP\_GAD\_PR1291\_Rev03* | ICPro | CUSTOMER NAME |
|  | B3 | Wire the 24VDC power cable to the Fiber optic to Profibus converter power terminal + and –  *Ref Doc: ICP\_GAD\_PR1291\_Rev03* | ICPro | CUSTOMER NAME |
|  | B4 | New cable trays to be installed at the outdoor side, where the fibre optic cables are needed to be routed to PROJECT-02 GMS RIO Panel | ICPro | CUSTOMER NAME |
|  | B5 | Fiber Optic Cable – 2 No’s to be laid in the newly installed cable tray | ICPro | CUSTOMER NAME |
|  | B6 | Terminate the fiber optic cable at panel end in   1. PROJECT-01 GMS RIO Panel   Module - FO/CONV 1, Port - P1 (Rx, Tx)   1. PROJECT-02 GMS RIO Panel   Module - FO/CONV 1, Port - P1 (Rx, Tx) | ICPro | CUSTOMER NAME |
|  | B7 | Terminate the fiber optic cable at panel end in   1. PROJECT-01 GMS RIO Panel   Module - FO/CONV 2, Port - P1 (Rx, Tx)   1. PROJECT-02 GMS RIO Panel   Module - FO/CONV 2, Port - P1 (Rx, Tx) | ICPro | CUSTOMER NAME |
|  | B8 | Verify the fibre optic cable termination and cable route marker at both the ends of the cable. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B9 | Verify the Profibus node address dip switch setting as mentioned below and end termination switch setting at rack-10 in ON State, both IM Modules in a rack should have the same settings   1. PROJECT-02 GMS RIO Panel   Rack – 10, Node Addr:11 | CUSTOMER NAME/ICPro | CUSTOMER NAME |
| **C** | **Module Power Up and Communication Testing** | | | |
|  | C1 | Refer Section 14.11 PROJECT-01 & PROJECT-02 GMS RIO Panel Integration with LNG & Utility PLC System |  |  |

MOS Implementation & Verification for Item [14.6]

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| --- | --- | --- | --- |
| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## PROJECT-01 GMS RIO Panel Power Cable Laying & Termination

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Identify the Incoming power source DB and breaker Number for PROJECT-01 GMS RIO Panel  UPS1 - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *If any special permits are required for working the power Source DB/ Substation Room CUSTOMER NAME must apply for the permit and provide Supervisor during the work.* | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A2 | Identify the availability of Breaker(Type & Rating) in the power source DB for PROJECT-01 GMS RIO Panel  UPS1 - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A3 | Identify the existing power cable tray and space in cable tray for laying the power cable from power source DB to new panel location. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A4 | LOTO to be done during mounting the MCB inside the power source panel or UPS DB and until Cable Termination inside New Panels. | CUSTOMER NAME | CUSTOMER NAME |
|  | A5 | Cable Route Marker Naming Details | CUSTOMER NAME | CUSTOMER NAME |
|  | A6 | Electrical Panel drawing for power cable termination reference details  ICP\_EPD\_PR1291\_001\_Rev03 | ICPro | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Install the new Breaker at the below mentioned power source DB panel  UPS1  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ICPro | CUSTOMER NAME |
|  | B2 | Install the new Breaker at the below mentioned power source DB panel  UPS2  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ICPro | CUSTOMER NAME |
|  | B3 | Install the new Breaker at the below mentioned power source DB panel  Non UPS  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ICPro | CUSTOMER NAME |
|  | B4 | Verify whether the proper breaker(Type & Rating) is installed in the appropriate power source DB  UPS1  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B5 | 1 No’s of Power cable to be laid between  UPS1 Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS1 Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-01 GMS RIO Panel – PTB1(TB1, 2, 3) | ICPro | CUSTOMER NAME |
|  | B6 | 1 No’s of Power cable to be laid between  UPS2 Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2 Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-01 GMS RIO Panel – PTB2(TB1, 2, 3) | ICPro | CUSTOMER NAME |
|  | B7 | 1 No’s of Power cable to be laid between  Non UPS Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-01 GMS RIO Panel – PTB3(TB1, 2, 3) | ICPro | CUSTOMER NAME |
|  | B8 | Verify the Power cable termination at the power source DB and panel are crimped, terminated properly with cable ferruling and route marker at both the ends of the cable.  UPS1 Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS1 Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-01 GMS RIO Panel – PTB1(TB1, 2, 3)  UPS2 Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2 Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-01 GMS RIO Panel – PTB2(TB1, 2, 3)  Non UPS Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-01 GMS RIO Panel – PTB3(TB1, 2, 3) | CUSTOMER NAME/ICPro | CUSTOMER NAME |
| **C** | **Continuity & Power Up** | | | |
|  | C1 | Refer Section 14.9 PROJECT-01 GMS RIO Panel Power Up |  |  |

MOS Implementation & Verification for Item [14.7]

|  |  |  |  |
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| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## PROJECT-02 GMS RIO Panel Power Cable Laying & Termination

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Identify the Incoming power source DB and breaker Number for PROJECT-02 GMS RIO Panel  UPS1 - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *If any special permits are required for working the power Source DB/ Substation Room CUSTOMER NAME must apply for the permit and provide Supervisor during the work.* | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A2 | Identify the availability of Breaker(Type & Rating) in the power source DB for PROJECT-02 GMS RIO Panel  UPS1 - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A3 | Identify the existing power cable tray and space in cable tray for laying the power cable from power source DB to new panel location. | ICPro/CUSTOMER NAME | CUSTOMER NAME |
|  | A4 | LOTO to be done during mounting the MCB inside the power source panel or UPS DB and until Cable Termination inside New Panels. | CUSTOMER NAME | CUSTOMER NAME |
|  | A5 | Cable Route Marker Naming Details | CUSTOMER NAME | CUSTOMER NAME |
|  | A6 | Electrical Panel drawing for power cable termination reference  ICP\_EPD\_PR1291\_002\_Rev03 | ICPro | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Install the new Breaker at the below mentioned power source DB panel  UPS1  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ICPro | CUSTOMER NAME |
|  | B2 | Install the new Breaker at the below mentioned power source DB panel  UPS2  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ICPro | CUSTOMER NAME |
|  | B3 | Install the new Breaker at the below mentioned power source DB panel  Non UPS  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ICPro | CUSTOMER NAME |
|  | B4 | Verify whether the proper breaker(Type & Rating) is installed in the appropriate power source DB  UPS1  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B5 | 1 No’s of Power cable to be laid between  UPS1 Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS1 Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-02 GMS RIO Panel – PTB1(TB1, 2, 3) | ICPro | CUSTOMER NAME |
|  | B6 | 1 No’s of Power cable to be laid between  UPS2 Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2 Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-02 GMS RIO Panel – PTB2(TB1, 2, 3) | ICPro | CUSTOMER NAME |
|  | B7 | 1 No’s of Power cable to be laid between  Non UPS Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-02 GMS RIO Panel – PTB3(TB1, 2, 3) | ICPro | CUSTOMER NAME |
|  | B8 | Verify the Power cable termination at the power source DB and panel are crimped, terminated properly with cable ferruling and route marker at both the ends of the cable.  UPS1 Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS1 Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-01 GMS RIO Panel – PTB1(TB1, 2, 3)  UPS2 Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2 Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-01 GMS RIO Panel – PTB2(TB1, 2, 3)  Non UPS Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS Breaker Rating & Type - \_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROJECT-01 GMS RIO Panel – PTB3(TB1, 2, 3) | CUSTOMER NAME/ICPro | CUSTOMER NAME |
| **C** | **Continuity & Power Up Procedure** | | | |
|  | C1 | Refer Section 14.10 PROJECT-02 GMS RIO Panel Power Up |  |  |

MOS Implementation & Verification for Item [14.8]

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| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## PROJECT-01 GMS RIO Panel Power Up

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Power cables termination at the incoming power source TB’s inside the new panel. | ICPro | CUSTOMER NAME |
|  | A2 | Verify no continuity exist between the incoming power supply TB’s inside new panel in TB Group PTB1, PTB2, PTB3   * Line & Neutral * Line & Protective Earth | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A3 | Verify proper continuity exist between the incoming power supply TB’s inside new panel in TB Group PTB1, PTB2, PTB3   * Earth TB and panel body. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A4 | Verify Proper Cable Insulation Reports are available based on the newly laid cables from DB power source to panel incoming power TB’s. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A5 | Remove LOTO at the UPS/power source DB end. | CUSTOMER NAME | CUSTOMER NAME |
|  | A6 | Cable Route Marker Naming Details | CUSTOMER NAME | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Turn OFF all the MCB’s inside the Panel. | ICPro | CUSTOMER NAME |
|  | B2 | Verify LOTO removed | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B3 | Turn ON the Breakers in power source DB, verify the voltage and record the details below  UPS1  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Number - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Number - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Number - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B4 | Verify the voltage inside PROJECT-01 GMS RIO Panel and record the details below  UPS1  TB Group (TB Num.) - PTB1(TB1, 2)  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2  TB Group (TB Num.) - PTB2(TB1, 2)  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS  TB Group (TB Num.) - PTB3(TB1, 2)  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B5 | Turn ON the MCB’s (MCB1, MCB2, MCB3), if the above recorded voltage are within the acceptable range 220VAC to 230VAC | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B6 | Turn ON all the MCB’s sequentially and verify all the modules are in powered up condition | CUSTOMER NAME/ICPro | CUSTOMER NAME |

MOS Implementation & Verification for Item [14.9]

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| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## PROJECT-02 GMS RIO Panel Power Up

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Power cables termination at the incoming power source TB’s inside the new panel. | ICPro | CUSTOMER NAME |
|  | A2 | Verify no continuity exist between the incoming power supply TB’s inside new panel in TB Group PTB1, PTB2, PTB3   * Line & Neutral * Line & Protective Earth | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A3 | Verify proper continuity exist between the incoming power supply TB’s inside new panel in TB Group PTB1, PTB2, PTB3   * Earth TB and panel body. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A4 | Verify Proper Cable Insulation Reports are available based on the newly laid cables from DB power source to panel incoming power TB’s. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | A5 | Remove LOTO at the UPS/power source DB end. | CUSTOMER NAME | CUSTOMER NAME |
|  | A6 | Cable Route Marker Naming Details | CUSTOMER NAME | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Turn OFF all the MCB’s inside the Panel. | ICPro | CUSTOMER NAME |
|  | B2 | Verify LOTO removed | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B3 | Turn ON the Breakers in power source DB, verify the voltage and record the details below  UPS1  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Number - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Number - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS  Power Source DB Panel - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Breaker Number - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B4 | Verify the voltage inside PROJECT-01 GMS RIO Panel and record the details below  UPS1  TB Group (TB Num.) - PTB1(TB1, 2)  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  UPS2  TB Group (TB Num.) - PTB2(TB1, 2)  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non UPS  TB Group (TB Num.) - PTB3(TB1, 2)  Voltage - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B5 | Turn ON the MCB’s (MCB1, MCB2, MCB3), if the above recorded voltage are within the acceptable range 220VAC to 230VAC | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B6 | Turn ON all the MCB’s sequentially and verify all the modules are in powered up condition | CUSTOMER NAME/ICPro | CUSTOMER NAME |

MOS Implementation & Verification for Item [14.10]

|  |  |  |  |
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| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## PROJECT-01 & PROJECT-02 GMS RIO Panel Integration with LNG & Utility PLC System

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Profibus cable to be interconnected between the PROJECT-03 LNG & Utility PLC Panel C & PROJECT-01 GMS RIO Panel | ICPro | CUSTOMER NAME |
|  |  | Fibre Optic cable to be interconnected between the PROJECT-01 GMS RIO Panel & PROJECT-02 GMS RIO Panel | ICPro | CUSTOMER NAME |
|  | A2 | Panel power up to be done for both the panels | ICPro | CUSTOMER NAME |
|  | A3 | SCADA need to setup properly establishing communication with LNG & Utility PLC | ICPro | CUSTOMER NAME |
|  | A4 | Verify Profibus node address in PLC and all rack IM modules  *Ref Doc: ICP\_NAD\_ PR1290\_PR1291\_Rev02* | ICPro | CUSTOMER NAME |
|  | A5 | Verify active termination switch in all rack IM modules  *Ref Doc: ICP\_NAD\_ PR1290\_PR1291\_Rev02* | ICPro | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Download the New PROJECT-01 & PROJECT-02 GMS Logic incorporated program in LNG& Utility PLC | ICPro | CUSTOMER NAME |
|  | B2 | Configure SCADA Setup to view the PROJECT-01 & PROJECT-02 GMS System alarms and the IO status for visualization. | ICPro | CUSTOMER NAME |
|  | B3 | Verify No Bus Fault exist in the IM Modules and PLC after downloading the New PROJECT-01 & PROJECT-02 GMS Logic incorporated program in PLC | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B4 | Verify the IP Address of the PLC, SCADA are as per the document  *Ref Doc: ICP\_NAD\_ PR1290\_PR1291\_Rev02* | CUSTOMER NAME/ICPro | CUSTOMER NAME |

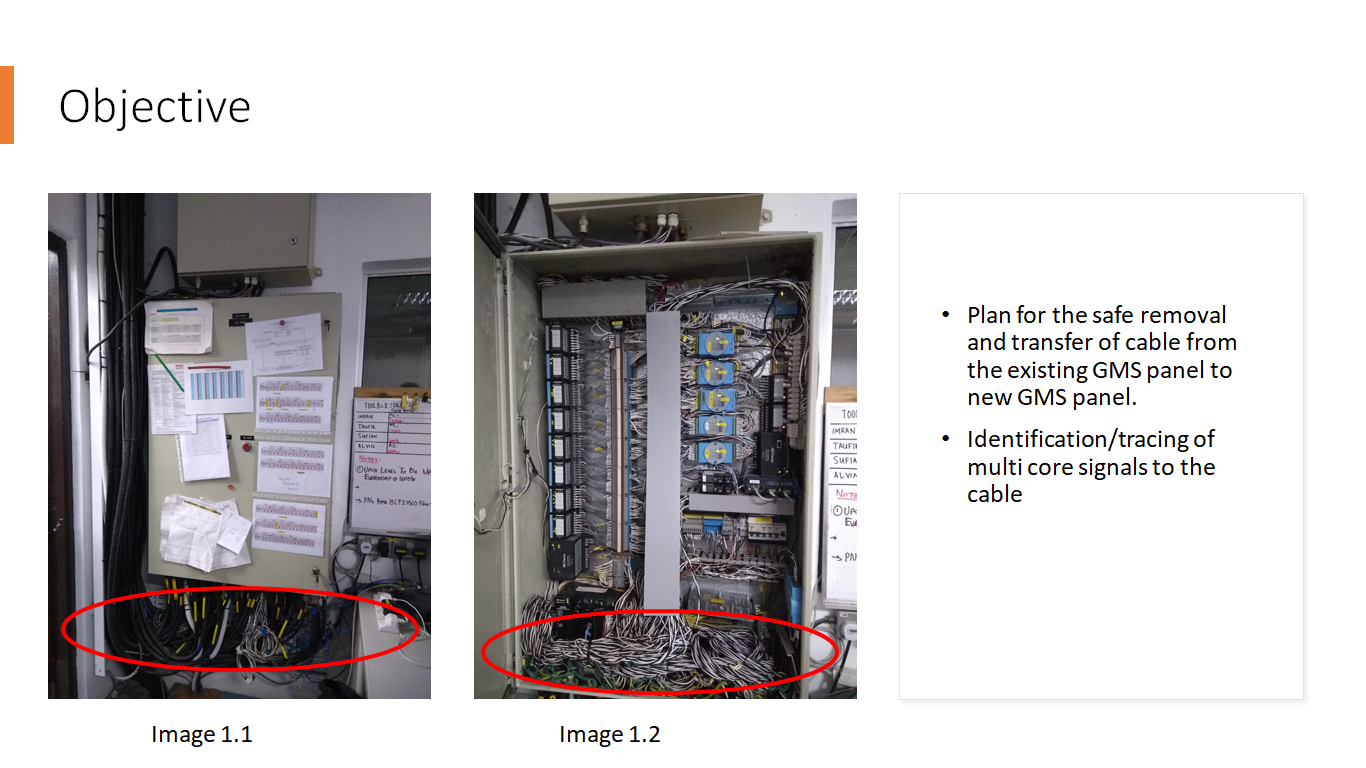
MOS Implementation & Verification for Item [14.11]

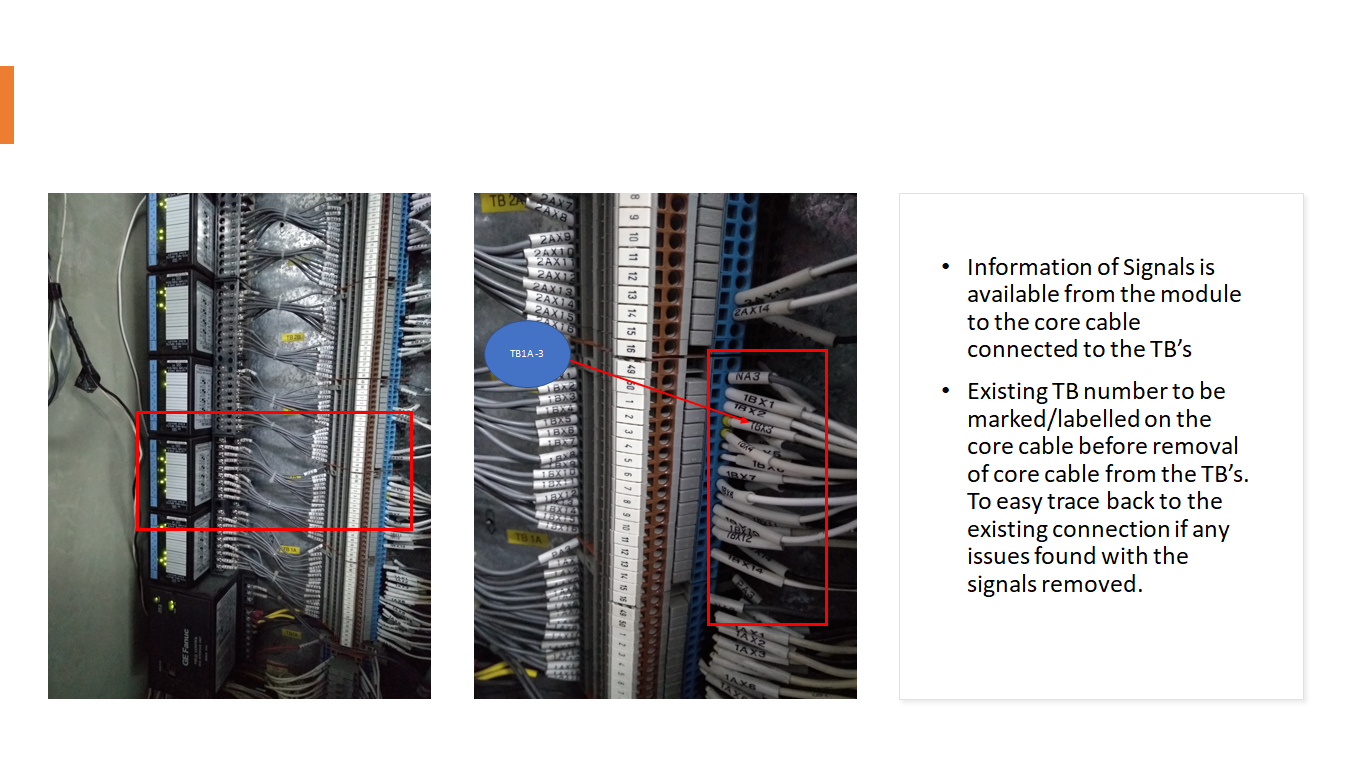
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| --- | --- | --- | --- |
| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

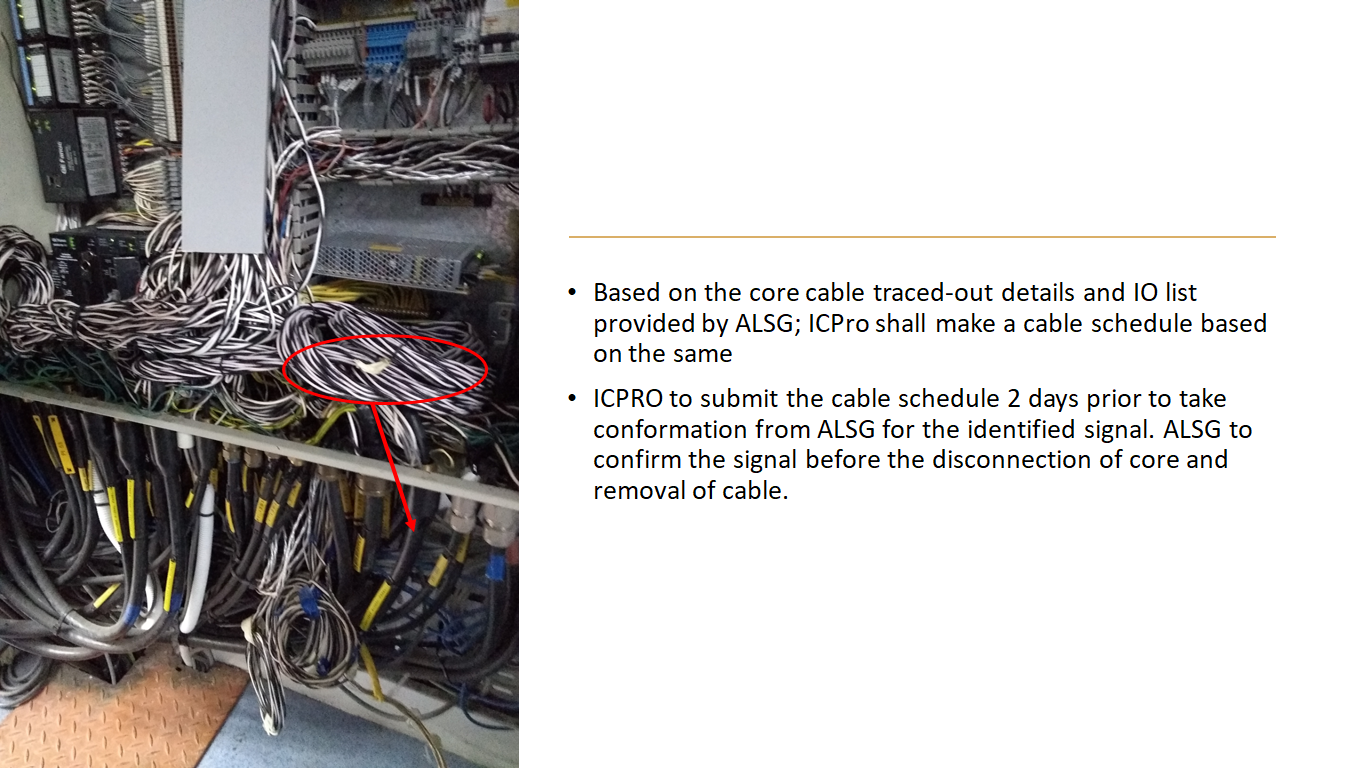
## PROJECT-01 & 02 GMS RIO Panel Cable Transfer from Existing Panel to New Panel

Procedure shown below is typical for signal transfer. These steps shall be repeated for each cable /group of cable based on the site progress of work for every day.

Details of identification, submission, approval, signal cable transfer and final acceptance by CUSTOMER NAME shall be tracked progressively using “IO Transfer Tag/Equipment List Template” attached.







|  |  |  |  |  |
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| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | IO Transfer Tag/Equipment List Template | ICPro | CUSTOMER NAME |
|  | A2 | CUSTOMER NAME Operation team for monitoring the affected signals locally or by other means | CUSTOMER NAME | CUSTOMER NAME |
|  | A3 | Cable Route Marker Naming Details | CUSTOMER NAME | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Site study of the core cable termination/route inside the existing panel and document the same in “IO Transfer Tag/Equipment List Template” – “Existing Panel Details” | ICPro | CUSTOMER NAME |
|  | B2 | IO Transfer Tag/Equipment List Document submission and approval | ICPro/CUSTOMER NAME | CUSTOMER NAME |
|  | B3 | If there are no marker in the existing cable/core temporary marker are to be installed before disconnecting the cable from existing panel | ICPro | CUSTOMER NAME |
|  | B4 | Plant Operator has to look after the plant condition and respond immediately to the scenario if any abnormalities found during the cable switchover to new GMS RIO panel and to inform the facility/plant in-charge daily as per the schedule about the area where the IO’s are located physically at site, during cable transfer. | CUSTOMER NAME | CUSTOMER NAME |
|  | B5.1 | Disconnect the cable core/pair - signal by signal | ICPro | CUSTOMER NAME |
|  | B5.2 | Confirm corresponding signal status in existing IFIX SCADA for each signal being disconnected | CUSTOMER NAME | CUSTOMER NAME |
|  | B5.3 | Verify the Signal Type for each Signal - After removing the cable from old panel TB’s – See below for each type of I/O | ICPro | CUSTOMER NAME |
|  | B5.3.1 | Analog Input   1. 4-20mA/0-20mA 2 wire – Signal+, Signal- at the TB end measures 24VDC and NO Voltage measured at the cable end. 2. 4-20mA/0-20mA 4 wire – Signal+, Signal- at the TB end measures NO Voltage and 24VDC at the cable end. 3. 0-10V – Signal+, Signal- at the cable end measures the voltage and confirms it is proportionate to the measured value at the SCADA before disconnection. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B5.3.2 | Digital Input   1. It is expected that all the DI are volt free contact from field Instrument/Devices. 2. Confirm NO voltage exists in the cable between the two cores and it’s a potential free contact at the field end. 3. For each type of signal CUSTOMER NAME to simulate from the field and confirm the type of signal(Volt Free from Field or any power supplied from the field device) | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B5.3.3 | Digital Output   1. As per design for all the DO power will be provided from panel (24VDC or 230VAC) 2. Confirm NO voltage exists in the cable between the two cores. 3. For each type of signal CUSTOMER NAME to simulate from the DO from SCADA and verify the Voltage rating (24VDC or 230VAC) of the field device. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B5.3.4 | Analog Output   1. 4-20mA – Signal+, Signal- at the TB end measures 4-20mA current and NO Voltage measured at the cable end. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B5.4 | Confirm the Signal Type identified from above steps against the signal type in I/O list or New Panel wiring Diagram and discuss with CUSTOMER NAME if there are any discrepancy | ICPro | CUSTOMER NAME |
|  | B5.5 | Each core cable end shall be insulated to avoid short circuit with each other cable during IO Transfer/re-routing the cable to the new panel. | ICPro | CUSTOMER NAME |
|  | B5.6 | Repeat Steps B5.1 to B5.5 for each signal in the multi pair cable | ICPro | CUSTOMER NAME |
|  | B6 | Remove Group of the multi-pair cables from the panel, re-route to new panel. | ICPro | CUSTOMER NAME |
|  | B7 | Cable termination to the new panel as per the Terminal assignments in “IO Transfer Tag/Equipment List Template” – “New GMS RIO Panel”  Full time supervision by ICPro and CUSTOMER NAME Project team during connection of signals cable. | ICPro | CUSTOMER NAME |
|  | B8 | Confirm Cable termination and start Loop verification Signal by Signal | ICPro | CUSTOMER NAME |
|  | B8.1 | Close the loop for each Verify the IO Status and values are getting updated correctly in the new SCADA | ICPro | CUSTOMER NAME |
|  | B8.2 | CUSTOMER NAME to verify the field device safe operation, SCADA reading and loop healthiness | CUSTOMER NAME | CUSTOMER NAME |
|  | B8.3 | Remove the Temporary marker if any | ICPro | CUSTOMER NAME |
|  | B8.4 | Sign-Off each loop transfer completion and acceptance in “IO Transfer Tag/Equipment List Template” – Verification after IO Transfer”” | ICPro | CUSTOMER NAME |
|  | B8.4 | Repeat B8.1 to B8.4 for each Signal | ICPro | CUSTOMER NAME |
|  | B9 | Planned to work / Signal Transfer for each day should be completed and ensure that there are no signal left open for the day of work | ICPro | CUSTOMER NAME |

Note:

* During the re-connection of the cable in new panel, if the cable length is insufficient/cable broke,

1. Plan for additional terminal block installation in ANZ-STM-FUTURE Panel and lay new cables

2. Plan junction Box or alternate methods if the cables broke

3. Standby Spare Terminal Blocks Existing cables, connections, IO Type

* Equipment/Transmitter healthy state must be confirmed by CUSTOMER NAME before connecting it to the new panel.
* Two Analog Splitter used in the existing panel are to removed and the same splitter to be installed in the new PROJECT-01 GMS RIO Panel in the designed area.

Refer Doc: ICP\_GAD\_PR1291\_Rev03, ICP\_EPD\_PR1291\_Rev03

MOS Implementation & Verification for Item [14.12]

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| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## Ethernet Switch Installation at PROJECT-01 GMS SCADA Control Room

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Verify the availability of  24 Port Ethernet Switch x 1 No’s | ICPro | CUSTOMER NAME |
|  | A2 | Verify the 230VAC Power Source Utility Socket availability new 24Port Ethernet switch power up | ICPro | CUSTOMER NAME |
|  | A3 | Identify the new Ethernet Switch Installation Location | CUSTOMER NAME | CUSTOMER NAME |
|  | A4 | Cable Route Marker Naming Details | CUSTOMER NAME | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Install new Ethernet Switch at the new location identified and where CUSTOMER NAME confirms | ICPro | CUSTOMER NAME |
|  | B2 | Connect the 230VAC Power cord to the Ethernet Switch and terminate the other end at the Power Source Utility Socket, Verify and Power up the Ethernet Switch | ICPro | CUSTOMER NAME |
|  |  | Disconnect all the Ethernet Cable from the existing switch and connect it to the new Ethernet Switch in sequential manner. | ICPro | CUSTOMER NAME |
|  | B3 | Verify whether proper route markers are added at the switch end terminated at the new Ethernet switch port. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B4 | Verify proper communication between systems established after installing the new switch | CUSTOMER NAME/ICPro | CUSTOMER NAME |

Notes: During the re-connection of the cable, if the cable length is insufficient, CUSTOMER NAME must replace the whole cable. While installing the New Switch CUSTOMER NAME has to bare the data loss/communication loss if anything exist the same network until the device comes back to online.

MOS Implementation & Verification for Item [14.13]

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| --- | --- | --- | --- |
| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## Ethernet Switch Installation at PROJECT-02 Fibre Optic Panel

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | Verify the availability of  8 Port Ethernet Switch – 1 No’s  8 Port Ethernet Switch with FO Port – 1 No’s | ICPro | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Identify the space inside the PROJECT-02 Fibre Optic Panel to install both the Ethernet switches | ICPro | CUSTOMER NAME |
|  | B2 | Power OFF the 24VDC Supply inside the Panel | ICPro | CUSTOMER NAME |
|  | B3 | Remove all the existing Ethernet switches installed inside the panel and replace it with new Ethernet switches | ICPro | CUSTOMER NAME |
|  | B4 | Connect the 24VDC power supply wires removed from existing Ethernet switches to the Power TB’s in new Ethernet switches | ICPro | CUSTOMER NAME |
|  | B5 | Disconnect all the Ethernet Cable from the existing switch and connect it to the new Ethernet Switch in sequential manner. | ICPro | CUSTOMER NAME |
|  | B6 | Power ON the 24VDC Supply inside the Panel | ICPro | CUSTOMER NAME |
|  | B7 | Verify the Power Voltage for each newly installed switch and record below  SW1 - \_\_\_\_\_\_\_\_\_\_\_\_  SW2 - \_\_\_\_\_\_\_\_\_\_\_\_ | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B8 | Verify proper communication between systems established after installing the new switches | CUSTOMER NAME/ICPro | CUSTOMER NAME |

Notes: While installing the New Switches, PROJECT-02 Fibre Optic Panel will be power off, where CUSTOMER NAME has to bare the data loss/communication loss if anything exist the same network.

MOS Implementation & Verification for Item [14.14]

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| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

## Modbus Device & Cold Embrittlement PLC Integration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Method Statement** | | **Action**  **by** | **Verified**  **by** |
| **A** | **Pre-requisite** | | | |
|  | A1 | PLC/SCADA Configuration | ICPro | CUSTOMER NAME |
|  | A2 | Ping the IP address of Modbus TCP Slave devices to check the physical connection is made to the PC | ICPro | CUSTOMER NAME |
| **B** | **Procedure** | | | |
|  | B1 | Configuration of the Modbus slave device to be downloaded to the Master PLC. | CUSTOMER NAME/ICPro | CUSTOMER NAME |
|  | B2 | Verify the Modbus slave devices tags are read as per the Modbus slave tag list in SCADA. | CUSTOMER NAME/ICPro | CUSTOMER NAME |

Notes: While configuring the Modbus communication, data loss/communication loss through Modbus until the device configuration read/write communication is tested and found working properly. CUSTOMER NAME need to plan to monitor the values manually during this period.

MOS Implementation & Verification for Item [14.15]

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| --- | --- | --- | --- |
| **Responsible Party** | **Representative** | **Signature** | **Date** |
| Customer Name |  |  |  |
| IC Pro OG Technologies Pte. Ltd. |  |  |  |

# Attachments

IO Transfer Tag/Equipment List Template

RA – specific for work, General RA

# Technical Support/Services

For any technical questions, please get in touch with us at below mentioned address or contact no’s.

|  |  |
| --- | --- |
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