kent	EPCM BAB FAR NORTH FULL FIELD DEVELOPMENT PROJECT (BFN) DOCUMENTS/DRAWINGS COMMENTS RESOLUTION SHEET (CRS)	أدنوك ADNOC

Projects Engineering Division

COMPANY Transmittal Reference:	Date	CONTRACTOR Transmittal Reference:	Date
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OLCMS-M I/O List - CO2 HUB SS,WIC-45 & WIC-46	11-77-63-1616 Rev: A		CODE 2

S. No.	Page No. / Clause No.	COMPANY Comments	CONTRACTOR Response	Status / Remarks
1.	1	Follow the comments on Document Title OLCMS-M I/O List GDS SS Doc. No. 11-56-63-1623_Rev A	Noted and updated as per the comments received in Document Title OLCMS-M I/O List GDS SS Doc. No. 11-56-63-1623_Rev A.	

CONTRACTOR Checked By	Job Title	Date	Signature
Amit Mokal	Lead Electrical Engineer	25-01-2024	
CONTRACTOR Approved By	**Job Title**	**Date**	**Signature**
Thaer Abed Abu Diab	Engineering Manager	25-01-2024	

EPCM FOR BAB FAR NORTH FULL FIELD DEVELOPMENT PROJECT (BFN)

ADNOC Onshore Contract No. : 4700016030
ADNOC Onshore Project No. : P11643

OLCMS-M I/O LIST - CO2 HUB SS ,WIC-45 & WIC-46

REV.	DATE	ORIGINATOR	REVIEWED	APPROVED	DESCRIPTION
					
B	25/01/2024	AAK	BNM / ARM	THA	Issued for Approval
A	05/01/2024	AAK	BNM / ARM	THA	Issued for Review

THIS DOCUMENT IS INTENDED FOR USE BY ADNOC AND ITS NOMINATED CONSULTANTS, CONTRACTORS, MANUFACTURERS AND SUPPLIERS.

ORIGINATOR: **KENT INTERNATIONAL ARABIA LTD**

ADNOC Onshore Document No.	: 11-77-63-1616	Revision	: B
ORGINATOR No:	: 1828-0000-47EL-1022	Date	: 25/01/2024
ADNOC Onshore Project No	: P11643	Page	: **1** of **16**

The table below is a brief summary of the most recent revisions to this document. Details of all revisions are held on document by the issuing department.

Sr. No.	Rev. No.	Issue No.	Date of issue	Description of revision
1	A	1	05/01/2024	Issued for Review
2	B	2	25/01/2024	Issued for Approval

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Abbreviations

ADNOC Onshore	Abu Dhabi National Oil Company-Onshore
AC	Alternative Current
ACH	Anti-Condensation Heater
AGES	ADNOC Group Engineering Specifications
AGP	ADNOC Gas
API	American Petroleum Institute
BCU	Bay control unit
BFR	Breaker Failure Relay
BFD	Block Flow Diagram
CDS	Central Degassing Station
CED	Equipment Certification Dossier
COMPANY	ADNOC Onshore
CPU	Central Processing Unit
DC	Direct Current
DAU	Data Acquisition Unit
EIU	Equipment Interface Unit
EPCM	Engineering, Procurement and Construction Management
EMC	Electromagnetic compatibility
ESD	Emergency Shutdown System
EDG	Emergency Diesel Generator
FAT	Factory Acceptance Test
FEED	Front End Engineering & Design
FMS	Fault Monitoring System
GIS	Gas Insulated Switchgear
HAI	Hardwired Analog Input
HDI	Hardwired Digital Input
HDO	Hardwired Digital Output
HV	High Voltage(>1000V)
HAZID	Hazard Identification
HAZOP	Hazard and Operability Study
HMI	Human Machine Interface
HSEIA	Health Safety Environment Impact Assessment
ICSS	Integrated Control & Safety Systems

IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
I/O	Input /Output
ITP	Inspection and Test Plan
LV	Low Voltage (≤1000V)
OLCMS-M	Online Condition Monitoring System for Motors
OLCMS-T	Online Condition Monitoring System for Transformer
QA	Quality Assurance
QC	Quality Control
SAT	Site Acceptance Test
SCMS	Substation Control and Monitoring Systems
SAI	Serial Analog Input
SDI	Serial Digital Input
SDO	Serial Digital Output
UPS	Uninterruptible Power Supply
WIC	Water Injection Cluster
WAG	Water Alternating Gas

1. INTRODUCTION

1.1. BAB Field Description

Bab field is located in a desert area, approximately 160 km southwest of Abu Dhabi city. The field covers an area of approximately 45 km by 25 km. The main processing facilities are located around Bab HABSHAN. The processed Crude Oil from Green Degassing Station (GDS) is pumped to ADNOC Onshore export network and associated gas is delivered to ADNOC Gas (AG) for further processing.

The field is sour with high H_2S content. The wells to the northeast of Bab field exhibit generally higher H_2S content than wells to the southwest.

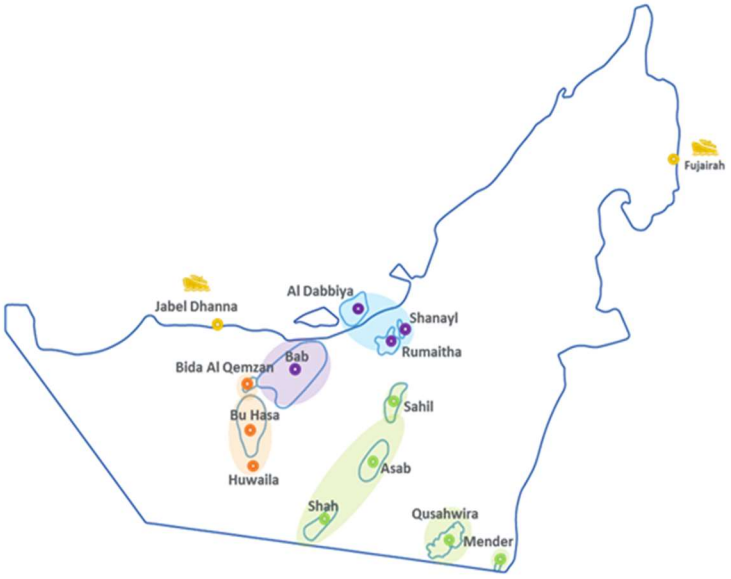

Figure 1 - ADNOC Onshore Field Map

1.2. Project Description

As part of ADNOC CCUS Program, Bab Far North FFD Project aims to capitalize on CO2 Capture for EOR and Green Degassing Station that enable AON to produce green oil by implementing environmentally sustainable design such as reduce CO2 emissions and improve energy efficiency for oil and gas operations.

Additional 35 MBD Oil production will be routed to Minipads for oil gathering. Then Oil will be transferred through pipeline to the GDS plant where CO2 rich hydrocarbon gas from production separator will be treated for CO2 and H2S separation. The recovered CO2 will be re-injected into the reservoir. Hydrocarbon gas post CO2 recovery and flash gas from separators will be sent to AG through BCDS. Separated Oil will be stabilized and exported, while produced water will be disposed to disposal wells.

CO2 supply is from ADNOC Gas (AG) Habshan-5 and will be routed to the CO2 Hub for the distribution into CO2 network. CO2 Hub will serve as junction point to receive the CO2 from different suppliers and divert CO2 to other consumers within BAB or nearby fields.

1.3. Purpose of this Document

The purpose of this document is to describe the I/O List of Online Condition Monitoring System - Motor (OLCMS-M) required for the BAB FAR North Full Field Development Project. This document shall be read in conjunction with other reference project documents and COMPANY standards.

2. PROJECT SCOPE

The following are the main scope of BAB Far North Project:

- 13 new Oil Producer wells
- 14 new CO_2 WAG injector wells
- 7 existing Off-pad wells
  - Re-routing of existing two (2) pilot oil producer wells to the nearby new Minipad
  - 2 Oil Producer EPS (early production scheme)
  - 2 WAG injector EPS (early production scheme)
  - 1 Pilot WAG injector
- 3 Minipads
- 2 Wellbays
- CO_2 Recovery and re-injection / Green Degassing Station (GDS)
- Oil Production, Water Injection, CO_2 Injection networks, Nitrogen and Blow Down lines
- Export Oil pipeline
- CO_2 Hub
- CO_2 pipeline from Habshan-5 to CO_2 Hub
- Recovered Gas and Produced water pipelines from GDS to BCDS and Disposal wells respectively.
- Associated Utilities and Flares.
- 2 WICs (Water Injection Clusters).

3. DEFINITIONS

For the purpose of this document, the following definitions shall apply:

COMPANY	Abu Dhabi Company for Onshore Petroleum Operations Limited - ADNOC Onshore
ENGINEERING CONTRACTOR	Shall mean “The party which carries out all or part of the design, engineering, or management of the PROJECT” during the FEED Stage.
SUB-CONSULTANT(s) / SUB-CONTRACTOR(s)	Shall mean “The organization(s) / party(s) providing specific services to EPCM CONTRACTOR”.
EPCM CONTRACTOR	Shall mean “The party which carries out the detailed design & engineering, procurement, management of construction & pre-commissioning, and commissioning assistance for the PROJECT, during the EPCM stage.
PROJECT MANAGEMENT TEAM (PMT)	The COMPANY-authorized party responsible for the overall day-to- day execution of the PROJECT, consisting of COMPANY and PMC personnel. PMT is to serve as liaison between COMPANY and ENGINEERING CONTRACTOR/ EPCM CONTRACTOR on the PROJECT.
WORKS	All activities include all works and services to be performed by EPCM CONTRACTOR, including the provision of all engineering, procurement services, supervision, personnel, construction management, Goods and transportation management, recommissioning and commissioning support services.
PROJECT	EPCM For Bab Far North Full Field Development Project (BFN)
SUPPLIER/VENDOR	The party which manufactures and/or supplies equipment, technical documents / drawings, and services to perform the duties specified by COMPANY / EPCM CONTRACTOR.
IMPLEMENTATION CONTRACTOR(s)	The party or parties which will carry out construction & pre-commissioning of surface facilities while being managed by EPCM CONTRACTOR.
SHALL	Indicates a mandatory requirement.

SHOULD	Indicates a strong recommendation to comply with the requirements of this document.
MAY	Indicates an action to be undertaken upon evaluation of a review of the circumstances of the issue in question.

4. ORDER OF PRECEDENCE

The precedence of different applicable standards, specifications and PROJECT specifications shall follow the order:

- The laws, standards and Regulations of United Arab Emirates
- ADNOC HSE Standards
- Tender Bulletins
- PROJECT Specific documents, specifications, Data Sheets, Drawings, etc.
- ADNOC Group Engineering Specifications (AGES)
- ADNOC Onshore applicable standard engineering Specifications, Amendments and Codes / Standards
- Shell DEPs, Version 46 (Where AGES not available/applicable)
- International Oil & Gas Industry Codes, Standards, and Recommended practices (all where specified in above or, where none of the above is applicable, as proposed by EPCM CONTRACTOR and approved by ADNOC Onshore)

In the event of any conflict of data or requirements in any of the PROJECT applicable specified documents and standards in which some of the requirement could be of more stringent, then EPCM CONTRACTOR / SUPPLIER shall carefully scrutiny on the most stringent requirements with regards, to the safety, environmental, economic, and legal aspects. In all cases, EPCM CONTRACTOR / SUPPLIER shall provide the results of the analysis; in writing; for COMPANY approval. In all such cases of conflict, COMPANY decision shall be final.

5. REFERENCE DOCUMENTS

The latest versions and amendments of all applicable UAE Statutory Legislation and Regulations inclusive of ADNOC Standards and Code of Practice, Project Specifications, COMPANY Technical Specifications, Standards and Procedures, Shareholders Technical Standards, Guidelines and Codes of Practice and all relevant International Codes and Standards, shall be used.

Document Number	Title
Project documents:	
11-99-67-0601	Electrical Design Basis (Annexure to AGES-GL-02-001)
11-99-53-0609	Induction Motor Specification (Annexure To AGES-SP-02-007)
11-99-53-0610	Electrical Adjustable Speed Drive System Specification (Annexure To AGES-SP-02-004)
11-99-53-0618	Substation Control and Monitoring System (SCMS) Specification (Annexure To AGES-SP-02-008)
11-99-53-0611	Electrical Power, Control and Earthing Cables Specification (ANNEXURE TO AGES-SP-02-011)
11-99-53-0624	Specification For Online Condition Monitoring System - Motor
11-99-67-0607	Typical metering & protection diagram
11-99-74-0601	Overall Telecommunication System Architecture
11-99-70-0605	Fiber Optic Cable Block Diagram
11-56-63-1605	SCMS / FMS / OLCMS-T I/O Schedule - 220kV GDS Substation
11-56-58-1604	OLCMS-M Architectural Diagram GDS SS
11-77-58-1603	OLCMS-M Architectural Diagram - CO2 HUB SS
11-20-63-1601	SCMS I/O Schedule - WIC
11-77-63-1613	SCMS I/O Schedule - CO2 HUB SS
11-56-56-0604	Single line Diagrams - 33kV GIS – GDS
11-56-56-0605	Single line Diagrams - 11kV Switchgear – GDS
11-56-56-0606	Single line Diagrams - 3.3kV Switchgear – GDS
11-77-56-0604	Single Line Diagram – 33kV Switchgear - CO2 HUB

Document Number	Title
11-77-56-0605	Single Line Diagram – 11kV Switchgear - CO2 HUB
11-99-58-0601	Overall SCMS Architecture Diagram
11-77-63-1613	SCMS I/O Schedule - CO2 HUB SS
11-99-56-1601	Overall Single Line Diagram - BFN Project
11-20-58-1602	SCMS Architectural Diagram - WIC 46
11-20-58-1601	SCMS Architectural Diagram - WIC 45
11-77-58-1601	SCMS Architectural Diagram – CO2 HUB SS
11-99-54-0624	Datasheet for 33kV GIS
11-99-54-0620	Datasheet for Power Transformers
11-99-54-0632	Datasheet for HV Variable Speed Drive System
11-99-54-0641	Datasheet for SCMS
11-99-53-0624	Specification For Online Condition Monitoring System – Motor
11-99-54-1603	Datasheet for OLCMS-M
11-99-54-1602	Datasheet for OLCMS-T
11-99-53-0622	Specification For Online Condition Monitoring System – Transformer
11-99-97-1601	EPCM Project Quality Plan
COMPANY Standards:	
AGES-GL-02-001	Electrical Engineering Design Guide
AGES-SP-02-007	Induction Motor Specification
AGES-SP-02-004	Electrical Adjustable Speed Drive System Specification
AGES-SP-02-008	ECMS (Electrical Control and Monitoring System) Specification
AGES-SP-02-015	Field Commissioning of Electrical Installation and Equipment
AGES-PH-02-001	Earthing, Bonding and Lightning Protection Philosophy
International Codes and Standards: Latest IEC standard on the date of contract award shall be applicable.	
IEC 60038	IEC Standard Voltages
IEC 60059	IEC Standard Current Ratings

Document Number	Title
IEC 61000	Electromagnetic Compatibility (EMC)
IEC 61850	Communication Networks and Systems in Substations / Power Utility Automation

6. CONSIDERATION

1. The I/O list is only typical signal list and minimum requirement. All signal as applicable, for the following equipment shall be considered.
   - HV Motors fed from 11kV Switchgears (Located at CO2 HUB).
   - HV Motors fed from 3.3kV Switchgears (Located at WIC-45 & WIC-46).
   - HV VSD driven motors which are fed from 11kV Switchgear (Located at CO2 HUB).
   - 415V Emergency Diesel Generator (Located at CO2 HUB).

2. The 25% spare capacity (Binary and analogue Signals) shall be considered for each type of feeder in OCLMS-M System.

3. In case of Hardwired I/O points, The system shall have the capacity for the I/O points specified, plus 20 %spare of each type I/O used in each cabinet location. Each I/O rack shall include prewired terminal strips for the spare capacity.

4. In addition to spares listed in this document, following spare capacity to be considered for OLCMS-M: -
   - 25% spare parts (DAU fully installed and wired).
   - 10% spare space slots
   - 25% spare function capacity (CPU, memory, disk space, and data highway/network capacity)

5. The Online Condition Monitoring System - Motor (OLCMS-M) shall be installed in CO2 HUB, WIC-45 & WIC-46 substations for online condition monitoring for Motors & EDG mentioned in Appendix-4.

7. APPENDICES

APPENDIX-1 – OLCMS-M I/O List - CO2 HUB SS

ADNOC	APPENDIX-1 OLCMS-M I/O List - CO2 HUB SS																kent		
PROJECT NO: P11643																	ADNOC ONSHORE DOCUMENT NO: 11-77-63-1616		REV: B
Tag Name	From Equipment Description	Associated Equipment	To Equipment Description	Action	Signal Description	Signals Communication	Signal Type	SDI	SDO	SAI	HDI	HDO	HAI	Ouput to OLCMS-T via. SCMS	Ouput to OLCMS-M via. DAU(FIELD)	Remarks	Rev		
1.1	**TYPICAL SIGNAL LIST FOR 11kV - HV MOTOR (DOL)**																		
11-77-KM-6101	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0						
11-77-KM-6101	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	3	0	0	0						
11-77-KM-6101	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0						
11-77-KM-6101	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	1	0	0	0						
11-77-KM-6101	11kV - HV Motor (DOL)	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	1	0	0	0		X				
11-77-KM-6101	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0						
11-77-KM-6101	11kV Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0						
11-77-KM-6102	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0						
11-77-KM-6102	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	3	0	0	0						
11-77-KM-6102	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0						
11-77-KM-6102	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	1	0	0	0						
11-77-KM-6102	11kV - HV Motor (DOL)	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	1	0	0	0		X				
11-77-KM-6102	11kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0						
11-77-KM-6102	11kV Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0						
TOTAL IOs COUNTS								**0**	**0**	**22**	**0**	**0**	**0**						
25% SPARE IOs COUNTS								**0**	**0**	**4.4**	**0**	**0**	**0**						
TOTAL IOs COUNTS INCLUDING 25% SPARE								**0**	**0**	**27**	**0**	**0**	**0**						
1.2	**TYPICAL SIGNAL LIST FOR 11kV - HV MOTOR (VSDS)**																		
11-77-PM-3101-01	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0						
11-77-PM-3101-01	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	6	0	0	0						
11-77-PM-3101-01	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	4	0	0	0						
11-77-PM-3101-01	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	4	0	0	0					B	

APPENDIX-1
OLCMS-M I/O List - CO2 HUB SS

PROJECT NO: P11643

ADNOC ONSHORE DOCUMENT NO: 11-77-63-1616

REV: B

Tag Name	From Equipment	Associated Equipment	To Equipment	Action	Signal Description	Signals								Ouput to OLCMS-T via. SCMS	Ouput to OLCMS-M via. DAU(FIELD)	Remarks	Rev
	Description		Description			Communication	Signal Type	SDI	SDO	SAI	HDI	HDO	HAI				
11-77-PM-3101-01	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Outlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-01	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Inlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				B
11-77-PM-3101-01	11kV - HV Motor (VSDS)	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	3	0	0	0		X		
11-77-PM-3101-01	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-01	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	VSD Enclosure Temperature	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-01	11kV GIS Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0				
11-77-PM-3101-02	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-02	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	6	0	0	0				
11-77-PM-3101-02	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	4	0	0	0				
11-77-PM-3101-02	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	4	0	0	0				B
11-77-PM-3101-02	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Outlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-02	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Inlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				B
11-77-PM-3101-02	11kV - HV Motor (VSDS)	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	3	0	0	0		X		
11-77-PM-3101-02	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-02	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	VSD Enclosure Temperature	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-02	11kV GIS Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0				
11-77-PM-3101-03	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-03	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	6	0	0	0				
11-77-PM-3101-03	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	4	0	0	0				
11-77-PM-3101-03	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	4	0	0	0				B
11-77-PM-3101-03	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Outlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-03	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Inlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				B
11-77-PM-3101-03	11kV - HV Motor (VSDS)	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	3	0	0	0		X		
11-77-PM-3101-03	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-03	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	VSD Enclosure Temperature	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-77-PM-3101-03	11kV GIS Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				

APPENDIX-1
OLCMS-M I/O List - CO2 HUB SS

PROJECT NO: P11643

ADNOC ONSHORE DOCUMENT NO: 11-77-63-1616

REV: B

Tag Name	From Equipment	Associated Equipment	To Equipment	Action	Signal Description	Signals								Ouput to OLCMS-T via. SCMS	Ouput to OLCMS-M via. DAU(FIELD)	Remarks	Rev
	Description		Description			Communication	Signal Type	SDI	SDO	SAI	HDI	HDO	HAI				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	6	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	4	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	4	0	0	0				B
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Outlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Inlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				B
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	3	0	0	0		X		
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	VSD Enclosure Temperature	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301A	11kV GIS Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	6	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	4	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	4	0	0	0				B
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Outlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Inlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				B
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	3	0	0	0		X		
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301A	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	VSD Enclosure Temperature	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301A	11kV GIS Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0				
MM5139-PM-301B	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301B	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	6	0	0	0				
MM5139-PM-301B	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	4	0	0	0				
MM5139-PM-301B	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	4	0	0	0				B
MM5139-PM-301B	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Outlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301B	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	AIR Inlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				B
MM5139-PM-301B	11kV - HV Motor (VSDS)	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	3	0	0	0		X		
MM5139-PM-301B	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0				

Tag Name	From Equipment Description	Associated Equipment	To Equipment Description	Action	Signal Description	Signals: Communication	Signal Type	SDI	SDO	SAI	HDI	HDO	HAI	Ouput to OLCMS-T via. SCMS	Ouput to OLCMS-M via. DAU(FIELD)	Remarks	Rev
MM5139-PM-301B	11kV - HV Motor (VSDS)	DAU(SS)	OLCMS-M Panel	Measurement	VSD Enclosure Temperature	Modbus TCP/IP	SAI	0	0	1	0	0	0				
MM5139-PM-301B	11kV GIS Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0				
TOTAL IOs COUNTS								**0**	**0**	**150**	**0**	**0**	**0**				
25% SPARE IOs COUNTS								**0**	**0**	**30**	**0**	**0**	**0**				
TOTAL IOs COUNTS INCLUDING 25% SPARE								**0**	**0**	**180**	**0**	**0**	**0**				
1.3	**SIGNALS FROM 415V EDG CONTROL PANEL TO OLCMS-M via. SCMS:**																
11-77-GD-4202-01	EDG Control Panel	SCMS	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0	X			
11-77-GD-4202-01	EDG Control Panel	SCMS	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0	X			
11-77-GD-4202-01	EDG Control Panel	SCMS	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	3	0	0	0	X			
11-77-GD-4202-01	EDG Control Panel	SCMS	OLCMS-M Panel	Measurement	AIR Outlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0	X			
11-77-GD-4202-01	EDG Control Panel	SCMS	OLCMS-M Panel	Measurement	AIR Inlet Cooling air temperatures (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0	X			
11-77-GD-4202-01	EDG Control Panel	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	3	0	0	0		X		
TOTAL IOs COUNTS								**0**	**0**	**10**	**0**	**0**	**0**				
25% SPARE IOs COUNTS								**0**	**0**	**2**	**0**	**0**	**0**				
TOTAL IOs COUNTS INCLUDING 25% SPARE								**0**	**0**	**12**	**0**	**0**	**0**				
TOTAL IOs COUNTS								**0**	**0**	**219**	**0**	**0**	**0**				

APPENDIX-2 – OLCMS-M I/O List – WIC 45

APPENDIX-2
OLCMS-M I/O List - WIC 45

PROJECT NO: P11643

ADNOC ONSHORE DOCUMENT NO: 11-77-63-1616

REV: B

Type	From Equipment	Associated Equipment	To Equipment	Action	Signal Description	Signals								Ouput to OLCMS-T via. SCMS	Ouput to OLCMS-M via. DAU(FIELD)	Remarks	Rev
	Description		Description			Communication	Signal Type	SDI	SDO	SAI	HDI	HDO	HAI				
1.1	**TYPICAL SIGNAL LIST FOR 3.3kV - HV MOTOR (DOL)**																
11-20-PM-2145-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2145-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	3	0	0	0				
11-20-PM-2145-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2145-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2145-02	3.3kV - HV Motor (DOL)	DAU/PDA(FIELD)	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	3	0	0	0		X		
11-20-PM-2145-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2145-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Pressurization monitoring (for Ex-p motors)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2145-02	3.3kV Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0				
TOTAL IOs COUNTS								**0**	**0**	**14**	**0**	**0**	**0**				
25% SPARE IOs COUNTS								**0**	**0**	**2.8**	**0**	**0**	**0**				
TOTAL IOs COUNTS INCLUDING 25% SPARE								**0**	**0**	**17**	**0**	**0**	**0**				

APPENDIX-3 – OLCMS-M I/O List – WIC 46

APPENDIX-3
OLCMS-M I/O List - WIC 46

PROJECT NO: P11643

ADNOC ONSHORE DOCUMENT NO: 11-77-63-1616

REV: B

Type	From Equipment	Associated Equipment	To Equipment	Action	Signal Description	Signals								Ouput to OLCMS-T via. SCMS	Ouput to OLCMS-M via. DAU(FIELD)	Remarks	Rev
	Description		Description			Communication	Signal Type	SDI	SDO	SAI	HDI	HDO	HAI				
1.1	**TYPICAL SIGNAL LIST FOR 3.3kV - HV MOTOR (DOL)**																
11-20-PM-2146-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Ambient temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2146-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Winding temperature (PT100)	Modbus TCP/IP	SAI	0	0	3	0	0	0				
11-20-PM-2146-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Bearing temperature (PT100)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2146-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Vibration monitoring	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2146-02	3.3kV - HV Motor (DOL)	DAU/PDA(FIELD	OLCMS-M Panel	Measurement	Partial discharge of winding insulation	Modbus TCP/IP	SAI	0	0	3	0	0	0		X		
11-20-PM-2146-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Speed with non-contact key phasor	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2146-02	3.3kV - HV Motor (DOL)	DAU(SS)	OLCMS-M Panel	Measurement	Pressurization monitoring (for Ex-p motors)	Modbus TCP/IP	SAI	0	0	1	0	0	0				
11-20-PM-2146-02	3.3kV Switchgear	DAU(SS)	OLCMS-M Panel	Measurement	Motor current signature analysis	Modbus TCP/IP	SAI	0	0	3	0	0	0				
TOTAL IOs COUNTS								**0**	**0**	**14**	**0**	**0**	**0**				
25% SPARE IOs COUNTS								**0**	**0**	**2.8**	**0**	**0**	**0**				
TOTAL IOs COUNTS INCLUDING 25% SPARE								**0**	**0**	**17**	**0**	**0**	**0**				

APPENDIX-4 – OLCMS-M INTERFACE EQUIPMENT LIST

APPENDIX-4 (OLCMS-M INTERFACE EQUIPMENT LIST)

S.No	Tag No	Description	Location	Type	Voltage(kV)	Ratings	Remarks
1	11-77-PM-3101-01	CO2 TRANSFER PUMP MOTOR-1	CO2 HUB Area	HV Motor	11	4520 kW	VSD + Outdoor Transformer
2	11-77-PM-3101-02	CO2 TRANSFER PUMP MOTOR-2	CO2 HUB Area	HV Motor	11	4520 kW	VSD + Outdoor Transformer
3	11-77-PM-3101-03	CO2 TRANSFER PUMP MOTOR-3	CO2 HUB Area	HV Motor	11	4520 kW	VSD + Outdoor Transformer
4	MM5139-PM-301A	HAIL & GHASHA CO2 TRANSFER PUMP MOTOR-1	CO2 HUB Area	HV Motor	11	2200 kW	VSD + Outdoor Transformer
5	MM5139-PM-301B	HAIL & GHASHA CO2 TRANSFER PUMP MOTOR-2	CO2 HUB Area	HV Motor	11	2200 kW	VSD + Outdoor Transformer
6	11-77-KM-6101	INSTRUMENT AIR COMPRESSOR MOTOR-01	CO2 HUB Area	HV Motor	11	250 kW	SS
7	11-77-KM-6102	INSTRUMENT AIR COMPRESSOR MOTOR-02	CO2 HUB Area	HV Motor	11	250 kW	SS
8	11-20-PM-2145-02	WATER INJECTION SURFACE PUMPS	WIC-45 AREA	HV Motor	3.3	1600 kW	DOL Starting
9	11-20-PM-2146-02	WATER INJECTION SURFACE PUMPS	WIC-46 AREA	HV Motor	3.3	1600 kW	DOL Starting
10	11-77-DG-4202-01	EMERGENCY DIESEL GENERATOR	CO2 HUB Area	EDG	0.415	1250 kVA	