



NASHPA COMPRESSION FACILITY PROJECT



Tender Enquiry No.: PROC/FC/CB/PROJ/NASHPA-3268/2018

PRE-BID CLARIFICATION # 18

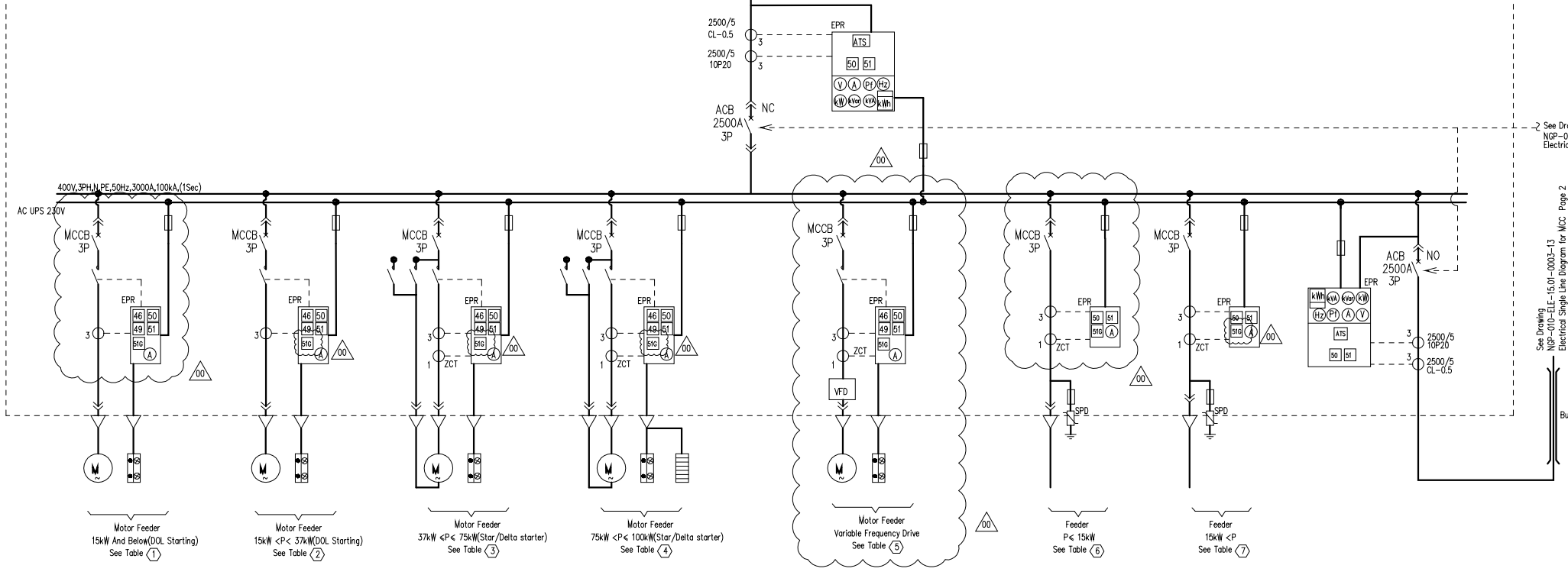
One of the bidder has asked following queries, OGDCL/ENAR responses are as follows:

Sr. No.	Clarification By Bidder	OGDCL / ENAR Response
1	<p>Section – III, Scope Of Work and SOW 1.3.1.1</p> <p>"The Vetting and Endorsement of Basic Design of Compressor Packages, their suction & discharge headers, piping and associated tie in points for all required services & facilities, shall include studies, calculations, etc. to confirm and verify the process design and equipment sizing basis. The Design vetting/Endorsement and Optimization Report shall be submitted to OGDCL/Consultant for approval."</p> <p>INSTRUCTION TO BIDDER page 15 of 29</p> <p>"Review of Design Basis & Basic Design Document including in the tender document with suggested modifications (if any) and a statement of Ownership and following: <input type="checkbox"/> Process Flow Diagrams (PFD) <input type="checkbox"/> Heat and Material Balance (HMB) <input type="checkbox"/> Piping and Instrument Diagrams (P&ID)....."</p> <p>From the above two statements Bidder understands that Vetting and Endorsement of Basic Design is part of Detailed Design SOW. Technical Bid shall mainly cover the ownership of Basic Design for new Compression package. Pl. confirm</p>	<p>Bidder to adhere the provision of technical details and technical information as per clause 3.2.1.2 of Section-II (Instructions to Bidders). Bidder to refer clauses 2.1.3 and 3.2.1.1 (xvii) of Section-II (Instructions to Bidders). No price adder shall be entertained after award of contract.</p>
2	<p>Section III, Scope of Work Section 2.2 (Modification in the Existing Process System)</p> <p>During the Detail Engineering if EPCC Contractor carried out necessary modification(s) in existing Process System which is not stated in SOW will be treated as additional Scope.</p> <p>Pl. Confirm</p>	<p>Minimum requirements for the project is mentioned in the Tender Document. Bidder to refer clauses 2.1.3 and 3.2.1.1 (xvii) of Section-II (Instructions to Bidders). No price adder shall be entertained after award of contract.</p>
3	<p>Section III, Scope of Work Section 2.3.1 – Instrument Air System</p> <p>"EPCC Contractor shall finalize the quantity of instrument air required for the compression facility and finalize the line size and tie in points accordingly. Moreover, a new air compressor (K-3401 C) (same model as existing air compressor) is to be installed in addition to the existing air compressors (K-3401 A/B)".</p> <p>As per "Equipment Rating Report (0193-A-1002-0)" Existing Air Receivers found Adequate.</p> <p>Bidder understands that only a new compressor identical with existing ones shall be installed as stand-by, and shall be connected with Existing Air Dyer Package. Pl. confirm</p>	<p>The clause 2.3.1 is self explanatory. Bidder to refer Addendum # 01.</p>
4	<p>Section III, Scope of Work Section 2.3.2 – Fuel Gas System</p> <p>"In order to provide the fuel gas to the new compressor Packages for engine, the EPCC Contractor shall vet and endorse the existing fuel gas system of Nashpa Gas Plant and finalize the tie in points in case the existing system found adequate to cater the additional load for the new compression facility and resolve the bottlenecks (if any)".</p> <p>As per "Equipment Rating Report (0193-A-1002-0)" Existing Fuel Gas Knockou Pot found Adequate.</p> <p>Bidder understands that if existing system found inadequate during detail Design then any modification in terms of new PCVs or new Gas Knockout Pot will be treated as change order. Pl. Confirm.</p>	<p>The clause 2.3.2 is self explanatory. Adequacy check of existing fuel gas system (including fuel gas knock out Pot, instrumentations etc) has been carried out considering assumed load of fuel gas for the engine of new compression facilities. Prior to bid submission, EPCC contractor shall check the fuel gas requirement of its offered engine and evaluate the existing fuel gas system accordingly. No change order shall be entertained after award of project.</p>
5	<p>Section III, Scope of Work Section 2.3.3 – Fire Water System</p> <p>'Bidder understands that Adequacy check of existing Fire water system (Tank, Pumps and FW network/Header) part of EPCC Contractor SOW, whereas adequacy of existing Fire Hydrants and Monitors in other areas of Plant will not be checked by EPCC Contactor, and if existing FW tank and Pumps found inadequate for new compression Project then new FW Tank and Pump will be treated as change order.</p> <p>As per "Equipment Rating Report (0193-A-1002-0)" Existing FW Tank & Pumps found Adequate. Pl. Confirm.</p>	<p>Bidder understanding is correct regarding adequacy check existing Fire Hydrants and Monitors in other areas of Plant. Existing fire water tanks, pumps and associated piping headers are adequate for the compression facility fire fighting. However, bidder shall take respective tie-ins from existing fire water header(s) for compression facility and shall further design, procure, construct and install proper fire fighting system for compression facility based on international codes and standards.</p> <p>It is to note that response of Query # 6 of Pre-Bid Clarifications #12 shall be read as above.</p>
6	<p>Section III, Scope of Work Section 2.3.4 – Flare System</p> <p>"EPCC Contractor shall vet and endorse the existing Flare system of Nashpa Gas Plant including existing flare headers, network, knockout drums, KOD Pumps etc. and finalize the tie in points in case the existing system/network found adequate to cater the new load for the new compression facility and resolve the bottlenecks (if any)".</p> <p>Bidder understands that if existing system found inadequate during detail Design then any modification in terms of new KOD or KOD Pumps will be treated as change order. Pl confirm.</p>	<p>Existing flare system are adequate for the compression facility. However, bidder shall take respective tie-ins from existing flare system for compression facility and shall further design (considering the governing load of blowdown/PSV), procure, construct and install proper flare system for compression facility based on international codes and standards.</p> <p>It is to note that response of Query # 11 of Pre-Bid Clarifications #12 shall be read as above.</p>

7	<p>Section III, Scope of Work</p> <p>'As per 1.3.1.1 & 13.1 following HSE Studies will be carried out by EPCC Contractor in-house OR through Sub-Contractor;</p> <ul style="list-style-type: none"> - HAZOP - HAZID - Safety Assessment - Environmental Impact Assessment (EIA) <p>Pl. Confirm</p>	<p>HAZOP, HAZID and Safety Assessment shall be carried out by EPCC Contractor through third party chairman approved by OGDCL/Consultant.</p> <p>OGDCL has already carried out Environmental Impact Assessment (EIA) of complete Nashpa Plant through its pre-qualified third party.</p>
8	<p>Section III, Scope of Work Para 12.3.12.8</p> <p>'As per referred para, Oily water drainage network consisting of underground pipes, manholes & catch basins, is required. Client to provide the location of connection of new oily network to the existing oily network by marking on underground drawings.</p>	<p>The EPCC Contractor would be responsible for the design of oily water drainage system for Nashpa Compression Facility and selection of appropriate location for the tie-in with existing network. The drawing for "underground services layout" is already provided in "Mechanical Works Package (Volume-II B)" of Tender Document.</p>
9	<p>Section III, Scope of Work Para 12.3.12.5</p> <p>'As per referred para, fireproofing of steel structure is to be done as per Client's approved specification. Client to provide fire proofing zone layouts of plant and specification of fireproofing</p>	<p>Fire Proofing of Steel Structure located in fire potential areas is required to be carried out by the EPCC Contractor. The fire proofing shall be carried out in accordance with OGDCL approved specification, as already mentioned in the scope of work.</p>
10	<p>0193-DS-1702-0 (Data sheet Air Compressor K-3401C) Clause 1.0, Applicable Standard API 619</p> <p>'API-619 Scope does not cover instrument air compressors which fall under general-purpose category. API Scope defines: "It is not applicable to general-purpose air compressors, liquid-ring compressors, or vane-type compressors." Hence, API-619 is not applicable to Instrument Air Compressor. Furthermore, Make & Model of IA Compressor mentioned as "Atlas Copco GA-75" in Datasheet, which is not API-619 compliant. Client to clarify requirement of API 619 compliance for IA Compressor.</p>	<p>Bidder to provide make and model of new air compressor (K-3401 C) same as the existing air compressors (K-3401 A/B) in all aspects and compliance.</p>
11	<p>0193-A-1000-0 (Design Basis) Clause 3.8, Noise</p> <p>'It is not possible to achieve noise level of 85dBA @ 1 meter without canopy. Contractor feels that canopy for this size engine and compressor will not be suitable especially for maintenance purposes, hence it is requested to revise noise criteria to 85dBA @ 10m.</p>	<p>Bidder to adhere the noise limit of 85dBA @ 1 meter as mentioned in Tender document. If the bidder needs to install canopy in order to meet the noise limit then canopy shall be installed accordingly.</p>
12	<p>14-0193-MA-001- 0 (Specification for Reciprocating Compressor), Note: 9: Raw Gas use as fuel gas for compressor startup, however for continuous operation fuel gas shall be used.</p> <p>'We understand that raw gas will be used as fuel for compressor start-up only, not for performance test. Compressor flowrate performance will not be guaranteed for operation of compressor on raw gas. Client to confirm.</p>	<p>Performance test shall be carried out on fuel gas. However, considering the raw gas, EPCC Contractor shall ensure that the compressor packages are designed in such a manner that safe and trouble free operation shall be carried out taking into account high ambient temperature and rated power.</p>
13	<p>'14-0193-MA-001- 0 (Specification for Reciprocating Compressor) 2.0 SCOPE OF SUPPLY & SERVICES Supply of Compressor package complete with gas engine including lube oil, fuel gas, etc. as outlined in this document.</p> <p>'We understand that "fuel gas" mentioned in reference clause implies "fuel gas system". Client to please confirm.</p>	<p>Bidder to refer P&ID # 0193-PB-2102-0 SHEET 2 OF 2 (Typical P&ID For Front End Compressors).</p>
14	<p>14-0193-MA-001- 0 (Specification for Reciprocating Compressor) 3.0 PACKAGE OVERVIEW The package shall be complete with lubrication, sealing, cooling, ignition, exhaust, instrument air, fuel gas and start gas system for compressor & driver as required.</p> <p>'Contractor understand that Instrument Air will be supplied from Utility Instrument Air already available at plant and is not part of package. Instrument Air System here refers to supply of instrument air to package instruments from skid Tie-In. Please confirm our understanding.</p>	<p>Refer point # 3 above.</p>
15	<p>0193-DS-1702-0 (DATA SHEET AIR COMPRESSOR K-3401C)</p> <p>'Existing Air Dryer Package is to be used and contractor to provide air compressor without integrated dryer. Please confirm our understanding.</p>	<p>Refer point # 3 above.</p>

16	<p>Section 4.4 (b) of Scope of Work Page 25 of 106</p> <p>Section 1.10 Document No: 0193-ELA-6500 Page 16 of 20</p> <p>'CATHODIC PROTECTION SYSTEM: As per SOW document Cathodic protection is required for oily water sewerage & fire water network underground pipeline. Client is requested to provide the CP System details (documents) of the existing system. Client is also requested to confirm whether the existing CP System will be adequate for providing the CP for the new pipelines.</p> <p>As mentioned in the doc 0193-ELA-6500, Electric power to the transformer rectifier shall be supplied from emergency Switchgear/MCC. Client is requested to provide the SLD of Emergency Switchgear/MCC. We assume that the existing Emergency Switchgear will have spare feeder available for supplying the power to T/R of new CP System</p>	<p>New Transformer Rectifier (TR) shall be considered for oily water sewerage & fire water network underground pipeline cathodic protection system. Please refer Drawing No. "NGP-010-ELE-15.01-0002-13-00 Single Line Diagram for Main Distribution Board" comprising of normal bus-bar as well as the emergency bus bar, already provided in tender. Spare breaker selection shall be finalized during the detail engineering by EPC Contractor. Refer attached drawings.</p>
17	<p>Section 4.4 (e) of Scope of Work Page 25 of 106</p> <p>Section 1.11 Document No: 0193-ELA-6500 Page 17 of 20</p> <p>'ELECTRICAL HEAT TRACING: As per SOW document Electrical heat tracing is required for liquid level instruments and the power for heat tracing junction box / or distribution box shall be supplied from emergency source. Client is requested to provide the SLD of Emergency Switchgear/MCC. We assume that the existing Emergency Switchgear will have spare feeder available for supplying the power to new Heat tracing System</p>	<p>Please refer Drawing No. "NGP-010-ELE-15.01-0002-13-00 Single Line Diagram for Main Distribution Board" comprising of normal bus-bar as well as the emergency bus bar, already provided in tender. Spare breaker selection shall be finalized during the detail engineering by EPC Contractor. Refer attached drawings.</p>
18	<p>Section 4.5 (c) of Scope of Work Page 26 of 106</p> <p>'Client is requested to provide any existing Lightning Protection system study report or Lighting protection system layouts if carried out earlier in the existing facility</p>	<p>EPC Contractor to furnish / carry-out the lightning protection study report based on IEC 62305-2 & Pakistan Metrology's information and shall be submitted to OGDCL / Consultant for review and approval as per ITB SOW.</p>
19	<p>Section 4.5.2 of Scope of Work Page 27 of 106</p> <p>'Lighting: Client to confirm that existing lighting circuit nearby the new compressors and Instrument Air Pkg area would be adequate enough to be extended. Lighting for the new scope will be provided from the existing circuits. Client is also requested to provide the existing Lighting Panel Circuit board schedules or SLDs of Lighting DBs to analyse their adequacy. Existing Lighting Layouts are also required from the client.</p>	<p>New lighting distribution boards (normal & emergency) will be considered for area/skid lighting and shall be feed from existing switchgear/MCC.</p> <p>Lighting layout for new FEED gas compressor area shall be developed by EPC Contractor during detail engineering. Refer attached drawings.</p>
20	<p>Section 4.5.2.3 of Scope of Work Page 27 of 106</p> <p>Client to confirm whether Emergency lighting fixtures (15-20%), fitted with 1 hour Battery Pack can be powered up from Normal MCC or it should be supplied from the Emergency MCC.</p>	<p>Emergency lighting shall form a minimum of 15-20% of the total number of luminaries to be installed based on lighting study report. Whereas, these emergency lighting luminaries shall also include the essential luminaries mainly positioned to illuminate escape routes and emergency exits, and shall be fitted with a battery pack that shall provide 1 hour of power.</p> <p>Emergency lighting shall be powered up from Emergency MCC.</p>
21	<p>Section 4.8 (e) of Scope of Work Page 28 of 106</p> <p>Welding Industrial sockets: 'Client to provide the Power Layout of the existing plant in which the welding industrial socket outlets are shown. This is required for suitable placement of new outlets. Client is also requested to confirm the requirement of Maximum radius that need to be covered by one welding socket. we understand that this radius should be 60m max. Client is also requested to provide the Single Line drawing of Distribution board which is feeding the power to the existing welding sockets</p>	<p>EPC Contractor to finalize the location of industrial sockets during the detailed engineering and cable routing layout for general area will be updated accordingly. The outlets shall be located such that the maximum length of lead required to reach any outlet is not more than 30 meters (in case of utility socket if required) and 50 metres (in case of welding socket).</p> <p>Power supply shall be feed from MCC#2, refer attached drawings.</p>
22	<p>Clause 5.14</p> <p>Reference to stated clause, Compressor Package PLCs shall be hardwired with plant existing safety system. Therefore kindly inform make & model of existing safety system. Further inform regarding spare channels availability in existing safety system to accommodate new signals as per IO's requirement mentioned in document#0193-LT-6000.</p>	<p>Below are the details of existing Safety System; • ESD: Honeywell Safety Manager.</p> <p>Furthermore Spare channels are available in existing system.</p>

MCC-TA#
PROCESS EQUIPMENT LOADS



See Drawing
NGP-010-ELE-15.01-0003-13
Electrical Single Line Diagram for MCC Page 2

See Drawing
NGP-010-ELE-15.01-0003-13
Electrical Single Line Diagram for MCC Page 2

GENERAL NOTES

1. SHUNT TRIPPING DEVICE SHALL BE INSTALLED ON MCCBS WHICH WOULD BE SHED BY LOAD SHEDDING SYSTEM, LOAD SHEDDING SYSTEM WILL SEND ONLY ONE TRIP SIGNAL FOR ALL BUS SECTION, THE SUPPLIER IS RESPONSIBLE FOR SENDING THE TRIP SIGNAL TO THE MCCB WHICH NEED TO BE SHED.

HOLD

LEGEND

LEGEND	DESCRIPTION	LEGEND	DESCRIPTION
	Motor Space Heater	49	Machine or Transformer Thermal Relay
	Motor Remote Control Unit	50	Instantaneous Over Current Relay
	AC Motor	50G	Instantaneous Earth Fault Relay
	Electronic Protection Relay	51	Time Over Current Relay
	Reverse-phase or Phase-balance Current Relay	51G	Time Delay Earth Fault Relay
	Air Circuit Breaker	51N	Inverse Time Neutral Overcurrent Relay
	Moulded Case Circuit Breaker	EL08	Earth Leakage Circuit Breaker

REFERENCE DOCUMENTS

TITLE	DOC No.
ELECTRIC LOAD LIST	NGP-000-ELE-15.02-0001-00
TYPICAL SCHEMATIC FOR MOTOR CONTROL CIRCUITS	NGP-000-ELE-15.08-0004-00
ELECTRICAL DESIGN BASIS	NGP-000-ELE-15.05-0001-00
SINGLE LINE DIAGRAM FOR MCC	NGP-010-ELE-15.01-0002-13
SINGLE LINE DIAGRAM FOR POWER DISTRIBUTION SCHEME	NGP-010-ELE-15.01-0001-13
DATA SHEET FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.17-0005-13
SPECIFICATION FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.03-0005-13

REV.	DESCRIPTION	PRPD	CHKD	REVD	APPD	DATE
00	Approved for Design	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	29/11/2016
C	Issued for Approval	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	12/07/2016
B	Issued for review	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	22/04/2016
A	Internal Discipline Check	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	25/02/2016

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CONTRACTOR: **HONG KONG HUIHUA GLOBAL TECHNOLOGY LIMITED**
PROJECT NO. NASHPA 1247

PROJECT TITLE: NASHPA GAS PROCESSING AND LPG RECOVERY PLANT PROC-FC-CB/NASHPA/PROJ-1247/2015
DRAWING NO. NGP-010-ELE-15.01-0003-13

DRAWING TITLE: **ELECTRICAL SINGLE LINE DIAGRAM FOR MCC**
REV. SCALE SHEET
00 ~ 1 OF 4

① 0.4kV Motor Feeder (MCC1# A)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
P-2101/1	Spray Pump Motor-EA2101	4	16	16	20/5	C	
P-2101/3	Spray Pump Motor-EA2101	4	16	16	20/5	C	
EA-2402A	Condenser Evaporative Air Cooler	15	40	40	40/5	C	
P-2431/1	LPG Air Cooler Spray Pump A-EA2402	4	16	16	20/5	C	
P-2431/3	LPG Air Cooler Spray Pump C-EA2402	4	16	16	20/5	C	
TE2401	Turbo Expander Units Lube Oil Pump A	4	16	16	20/5	C	
TE2401	Turbo Expander Units Lube Oil Cooler A	4	16	16	20/5	C	
EA-2301A	Regen Gas Cooler	15	40	40	40/5	C	
P-2401A	Absorber Bottom Pump	11	25	25	30/5	C	
P-2402A	De-Ethnizer Pump	15	40	40	40/5	C	
P-2404A	De-Propanizer Reflux Pump	7.5	25	25	30/5	I	Yes
PU-2401A	Propane Refrigeration Unit Oil pump-A	5.5	16	16	20/5	C	Yes
PU-2401A	Propane Refrigeration Unit Oil pump-B	5.5	16	16	20/5	C	Yes
PU-2401A	Propane Refrigeration Unit Oil heater for Separator	3	16	16	20/5	C	Yes
EA-2405/1A	Condenser Cooling VF Fan Aux. Fan A	0.23	10	10	10/5	C	Yes
EA-2405/3	Propane Refrigeration Unit Condenser Cooling Fan A	11	25	25	30/5	C	Yes
P-EA-2405/1	Condenser Water Pump A	15	40	40	40/5	C	Yes
P-4101A	Methanol Injection Pump A	4	16	16	20/5	I	Yes
P-3301A	Stop Pump	11	25	25	30/5	I	Yes
EA-2502A	Sale Gas Compressor evaporative Air Cooler	15	40	40	40/5	C	
P-2510/1	Sale Gas Compressor Spray Pump A EA-2502	3	16	16	20/5	C	
P-2510/3	Sale Gas Compressor Spray Pump C EA-2502	3	16	16	20/5	C	
Spare			40	40	40/5		
Spare			40	40	40/5		
Spare			25	25	30/5		
Spare			25	25	30/5		
Spare			16	16	20/5		
Spare			16	16	20/5		
Spare			32	30	30/5		
Spare			32	30	30/5		

② 0.4kV Motor Feeder (MCC1# A)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
EA-2101A	Inlet Evaporative Air Cooler	30	63	63	75/5	C	
P-2201A	Condensate Stabilizer Around Pump	30	63	63	75/5	C	
EA-2201A	Condensate Air Cooler	30	63	63	75/5	C	
EA-2201C	Condensate Air Cooler	30	63	63	75/5	C	
EA-2401A	De-Butanizer OVHD Condenser Air Cooler	18.5	40	40	40/5	C	
EA-2401C	De-Butanizer OVHD Condenser Air Cooler	18.5	40	40	40/5	C	
Spare			63	63	75/5		
Spare			40	40	40/5		
Spare			80	80	75/5		

③ 0.4kV Motor Feeder (MCC1# A)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
P-2403A	De-Butanizer Reflux Pump	37	80	80	75/5	C	
Spare			80	80	75/5		

④ 0.4kV Motor Feeder (MCC1# A)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
Spare			220	225	200/5		
Spare			220	225	200/5		

⑤ 0.4kV Motor Feeder (MCC1# A)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
EA-2405/1	Propane Refrigeration Unit Condenser Cooling VF Fan A	11	25	25	30/5	C	Yes
Spare			25	25	30/5		

⑥ 0.4kV Feeder (MCC1# A)

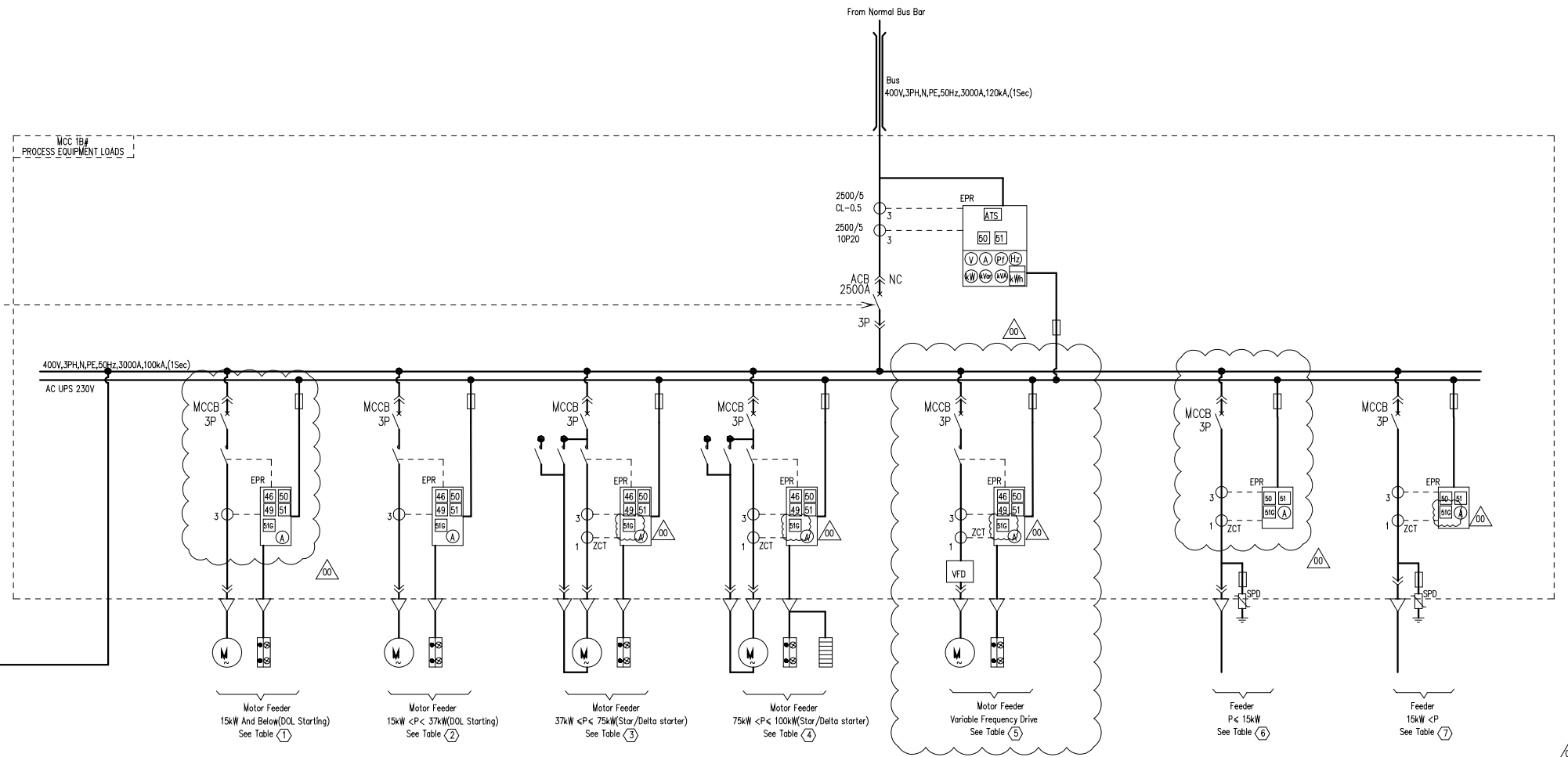
ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
MCC-2001A/B	De Emulsifier Injection Skid(D1-01)	0.75	20		20/5	C	Yes
TE2401	Oil Reservoir Heater	3	32		30/5	C	
DB-SKE-2301	Inlet Gas Chiller Distribution Box	6	50		50/5	C	
Spare			20		20/5		
Spare			32		30/5		
Spare			50		50/5		

⑦ 0.4kV Feeder (MCC1# A)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
U10-UPS-001-2	Load of UPS1#	96	200		200/5	C	
U10-UPS-002-3	Load of UPS2#	96	200		200/5	S	
UCP-3100-E/A	Hot Oil Electrical Control Panel UCP-3100-E/A	30	100		100/5	C	
UCP-3100-E/D	Hot Oil Electrical Control Panel UCP-3100-E/D	160	400		400/5	S	
Spare			100/5				
Spare			200/5				
Spare			400/5				

See Drawing
NGP-010-ELE-15.01-0003-13
Electrical Single Line Diagram for MCC Page 1

See Drawing
NGP-010-ELE-15.01-0003-13
Electrical Single Line Diagram for MCC Page 1



① 0.4kV Motor Feeder (MCC# B)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
P-2101B	Spray Pump Skid-EA2101	4	16	16	20/5	C	
P-2101D	Spray Pump Skid-EA2101	4	16	16	20/5	C	
EA-2402B	Condenser Evaporative Air Cooler	15	40	40	40/5	C	
P-2431/2	LPG Air Cooler Spray Pump A-EA2402	4	16	16	20/5	C	
TE2401	Turbo Expander Units Lube Oil Pump B	4	16	16	20/5	S	
TE2401	Turbo Expander Units Lube Oil Cooler B	4	16	16	20/5	S	
EA-2301B	Regen Gas Cooler	15	40	40	40/5	C	
P-2401B	Absorber Bottom Pump	11	25	25	30/5	S	
P-2402B	De-Ethanolizer Pump	15	40	40	40/5	S	
P-2404B	De-Propanizer Reflux Pump	7.5	25	25	30/5	S	Yes
PU-2401B	Propane Refrigeration Unit Oil pump-A	5.5	16	16	20/5	S	Yes
PU-2401B	Propane Refrigeration Unit Oil pump-B	5.5	16	16	20/5	S	Yes
PU-2401B	Propane Refrigeration Unit Oil heater for Separator	3	16	16	20/5	S	Yes
EA-2405/2A	Condenser Cooling VF Fan Aux, Fan B	0.23	10	10	10/5	C	Yes
EA-2405/4	Propane Refrigeration Unit Condenser Cooling Fan B	11	25	25	30/5	C	Yes
P-EA-2405/2	Condenser Water Pump B	15	40	40	40/5	C	Yes
EA-2405	Evaporator Oil Collector Heater Tracing(220V)	2	16	16	20/5	C	Yes
P-4101B	Methanol Injection Pump A	4	16	16	20/5	S	Yes
P-3301B	Slop Pump	11	25	25	30/5	S	Yes
EA-2502B	Sale Gas Compressor evaporative Air Cooler	15	40	40	40/5	C	
P-2510/2	Sale Gas Compressor Spray Pump B EA-2502	3	16	16	20/5	C	
Spare		16	16	16	20/5		
Spare		16	16	16	20/5		
Spare		25	25	25	30/5		
Spare		40	40	40	40/5		
Spare		40	40	40	40/5		
Spare		32	30	30/5			
Spare		32	30	30/5			

② 0.4kV Motor Feeder (MCC# B)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
EA-2101B	Inlet Evaporative Air Cooler	30	63	63	75/5	C	
P-2201B	Condensate Stabilizer Around Pump	30	63	63	75/5	S	
EA-2201B	Condensate Air Cooler	30	63	63	75/5	C	
EA-2201D	Condensate Air Cooler	30	63	63	75/5	S	
EA-2401B	De-Butanizer OVHD Condenser Air Cooler	18.5	40	40	40/5	C	
EA-2401D	De-Butanizer OVHD Condenser Air Cooler	18.5	40	40	40/5	C	
Spare		63	63	63	75/5		
Spare		40	40	40	40/5		
Spare		80	80	80	75/5		

③ 0.4kV Motor Feeder (MCC# B)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
P-2403B	De-Butanizer Reflux Pump	37	80	80	75/5	C	
Spare			80	80	75/5		

④ 0.4kV Motor Feeder (MCC# B)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
Spare			220	225	200/5		

⑤ 0.4kV Motor Feeder (MCC# B)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
EA-2405/2	Propane Refrigeration Unit Condenser Cooling Fan B	11	25	25	30/5		Yes
Spare			25	25	30/5		

⑥ 0.4kV Feeder (MCC# B)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
DB-SK-2301	Feed Gas Filter Distribution Box	13	40		40/5	C	
DB-SKSR-2011C	Slug Catcher & Gathering System Distribution Box	9	40		40/5	C	
DB-SK24	Distribution board for Skid24	5.4	25		30/5	I	
Spare			40		40/5		

⑦ 0.4kV Feeder (MCC# B)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
TE2401	Sealing Gas Heater	40	100		100/5	C	
006-DB-002	LPG Pump Shed 006-DB-002	82.5	225		250/5	I	Yes
UCP-3100-E/B	Hot Oil Electrical Control Panel UCP-3100-E/B	160	400		400/5	S	
UCP-3100-E/C	Hot Oil Electrical Control Panel UCP-3100-E/C	160	400		400/5	S	
Spare			100		100/5		
Spare			225		250/5		
Spare			400		400/5		

GENERAL NOTES

1. SHUNT TRIPPING DEVICE SHALL BE INSTALLED ON MCCBS WHICH WOULD BE SHED BY LOAD SHEDDING SYSTEM, LOAD SHEDDING SYSTEM WILL SEND ONLY ONE TRIP SIGNAL FOR ALL BUS SECTION, THE SUPPLIER IS RESPONSIBLE FOR SENDING THE TRIP SIGNAL TO THE MCCB WHICH NEED TO BE SHED.

HOLD

LEGEND

LEGEND	DESCRIPTION	LEGEND	DESCRIPTION
	Motor Space Heater	49	Machine or Transformer Thermal Relay
	Motor Remote Control Unit	50	Instantaneous Over Current Relay
	AC Motor	50G	Instantaneous Earth Fault Relay
	Electronic Protection Relay	51	Time Over Current Relay
	Reverse-phase or Phase-balance Current Relay	51G	Time Delay Earth Fault Relay
	Air Circuit Breaker	51N	Inverse Time Neutral Overcurrent Relay
	Moulded Case Circuit Breaker	ELGB	Earth Leakage Circuit Breaker

REFERENCE DOCUMENTS

TITLE	DOC No.
ELECTRIC LOAD LIST	NGP-000-ELE-15.02-0001-00
TYPICAL SCHEMATIC FOR MOTOR CONTROL CIRCUITS	NGP-000-ELE-15.08-0004-00
ELECTRICAL DESIGN BASIS	NGP-000-ELE-15.05-0001-00
SINGLE LINE DIAGRAM FOR MCC	NGP-010-ELE-15.01-0002-13
SINGLE LINE DIAGRAM FOR POWER DISTRIBUTION SCHEME	NGP-010-ELE-15.01-0001-13
DATA SHEET FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.17-0005-13
SPECIFICATION FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.03-0005-13

REV.	DESCRIPTION	PRPD	CHKD	REVD	APPD	DATE
00	Approved for Design	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	29/11/2016
C	Issued for Approval	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	12/07/2016
B	Issued for review	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	22/04/2016
A	Internal Discipline Check	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	25/02/2016

CLIENT: **OIL&GAS DEVELOPMENT COMPANY LTD.**
 OGDCL HOUSE TOWER-B, FIRST FLOOR, PHASE, BLUE AREA, JINNAH AVENUE ISLAMABAD PAKISTAN
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CONSULTANT: **Zishan Engineers (Pvt.) Ltd.**
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CONTRACTOR: **HONG KONG HUIHUA GLOBAL TECHNOLOGY LIMITED**

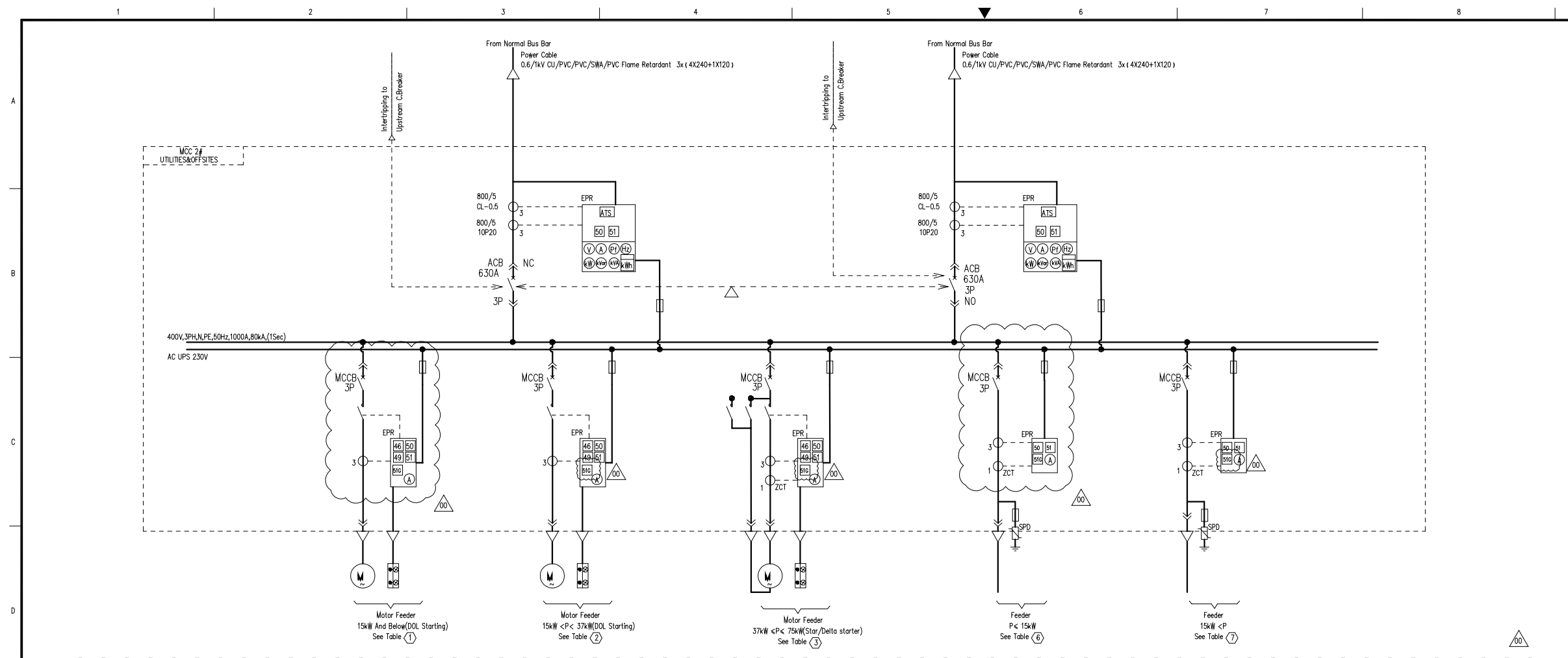
PROJECT NO. NASHPA 1247

PROJECT TITLE: NASHPA GAS PROCESSING AND LPG RECOVERY PLANT PROC-FC-CB/NASHPA/PROJ-1247/2015

DRAWING NO. NGP-010-ELE-15.01-0003-13

DRAWING TITLE: **ELECTRICAL SINGLE LINE DIAGRAM FOR MCC**

REV. SCALE SHEET
 00 ~ 2 OF 4



GENERAL NOTES

1. SHUNT TRIPPING DEVICE SHALL BE INSTALLED ON MCCBS WHICH WOULD BE SHED BY LOAD SHEDDING SYSTEM, LOAD SHEDDING SYSTEM WILL SEND ONLY ONE TRIP SIGNAL FOR ALL BUS SECTION, THE SUPPLIER IS RESPONSIBLE FOR SENDING THE TRIP SIGNAL TO THE MCCB WHICH NEED TO BE SHED.

HOLD

LEGEND

LEGEND	DESCRIPTION	LEGEND	DESCRIPTION
	Motor Space Heater	49	Machine or Transformer Thermal Relay
	Motor Remote Control Unit	50	Instantaneous Over Current Relay
	AC Motor	50G	Instantaneous Earth Fault Relay
	Electronic Protection Relay	51	Time Over Current Relay
	Reverse-phase or Phase-balance Current Relay	51G	Time Delay Earth Fault Relay
	Air Circuit Breaker	51N	Inverse Time Neutral Overcurrent Relay
	Moulded Case Circuit Breaker	EL08	Earth Leakage Circuit Breaker

① 0.4kV Motor Feeder (MCC 2#)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
	Spare		25	32	30/5		
	Spare		25	32	30/5		

② 0.4kV Motor Feeder (MCC 2#)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
	Spare		50	50	50/5		
	Spare		100	80	100/5		

③ 0.4kV Motor Feeder (MCC 2#)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
	Spare		150	150	150/5		
	Spare		100	95	100/5		

④ 0.4kV Feeder (MCC 2#)

ZEL Tag	FEEDER ITEM NO.	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
MCC-TR-3702	Raw Water Treatment Shed Distribution Board	15	50	50/5	C	Y(1st Step)	
001-DB-104	Sub Distribution Panel	13	32	30/5	I		
001-DB-101	Sub Distribution Panel	10	32	30/5	I		
001-DB-102	Sub Distribution Panel	10	40	40/5	I		
001-DB-103	Sub Distribution Panel	10	40	40/5	I		
000-DB-001	DB for Street Lighting	7.5	40	40/5	I		Yes
000-DB-002	DB for Street Lighting	3.75	32	30/5	I		Yes
000-DB-003	DB for Street Lighting	5	40	40/5	I		Yes
001-DB-001	DB for Process Area Lighting	2.37	25	30/5	I		Yes
001-DB-002	DB for Process Area Lighting	7.2	40	40/5	I		Yes
001-DB-003	DB for Process Area Lighting	4.8	40	40/5	I		Yes
001-DB-401	Dehydration (Mat.Sieve) Unit 001-DB-401	1.5	32	30/5	I		
001-WS-001	Welding Socket	10	32	30/5	I		
001-WS-002	Welding Socket	10	32	30/5	I		
002-WS-001	Welding Socket	10	32	30/5	I		
010-WS-001	Welding Socket	10	32	30/5	I		
	Spare		32	30/5			
	Spare		32	30/5			
	Spare		40	40/5			
	Spare		40	40/5			
	Spare		50	50/5			
	Spare		50	50/5			

⑤ 0.4kV Feeder (MCC 2#)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
008-DB-002	Produced Water Treatment Pump Shed Distribution Board	50	125	150/5	C		Yes
MCC-TR-3701	Raw Water Treatment Shed Distribution Board	110	250	250/5	C		Yes
001-DB-801	Sub Distribution Panel	25.6	63	75/5	I		Yes
010-DB-01	CCR 010-DB-01	30.87	80	80/5	I		Yes
004-DB-001	LPG and Propane Storage Area 004-DB-001	26.8	80	80/5	I		Yes
008-DB-001	Raw Water Treatment Shed Distribution Board	40	100	100/5	C		Yes
	Spare		80	80/5			
	Spare		100	100/5			
	Spare		250	250/5			

REFERENCE DOCUMENTS

TITLE	DOC No.
ELECTRIC LOAD LIST	NGP-000-ELE-15.02-0001-00
TYPICAL SCHEMATIC FOR MOTOR CONTROL CIRCUITS	NGP-000-ELE-15.08-0004-00
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DATA SHEET FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.17-0005-13
SPECIFICATION FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.03-0005-13

REV.	DESCRIPTION	PRPD	CHKD	REVD	APPD	DATE
00	Approved for Design	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	29/11/2016
C	Issued for Approval	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	12/07/2016
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A	Internal Discipline Check	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	25/02/2016

CLIENT:
OIL & GAS DEVELOPMENT COMPANY LTD.
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 E-Mail: contact@zishanengineers.com Website: www.zishanengineers.com

CONTRACTOR:
HONG KONG HUIHUA GLOBAL TECHNOLOGY LIMITED

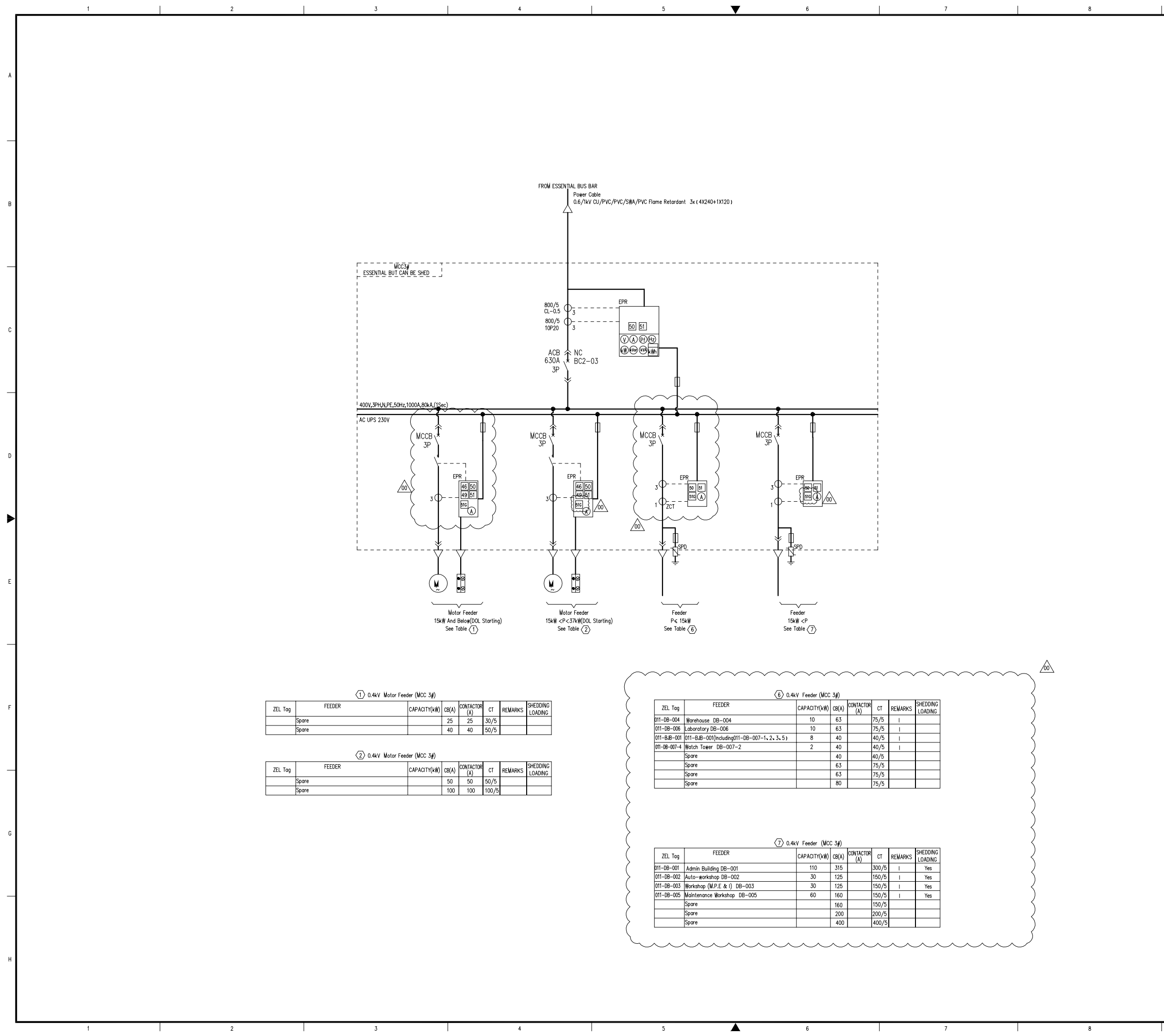
PROJECT TITLE: NASHPA GAS PROCESSING AND LPG RECOVERY PLANT PROC-FC-CB/NASHPA/PROJ-1247/2015

PROJECT NO.: NASHPA 1247

DRAWING NO.: NGP-010-ELE-15.01-0003-13

DRAWING TITLE: ELECTRICAL SINGLE LINE DIAGRAM FOR MCC

REV. SCALE SHEET: 00 ~ 3 OF 4



(1) 0.4kV Motor Feeder (MCC 3#)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
	Spare		25	25	30/5		
	Spare		40	40	50/5		

(2) 0.4kV Motor Feeder (MCC 3#)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
	Spare		50	50	50/5		
	Spare		100	100	100/5		

(6) 0.4kV Feeder (MCC 3#)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
011-DB-004	Warehouse DB-004	10	63	75/5	I		
011-DB-006	Laboratory DB-006	10	63	75/5	I		
011-BB-001	011-BB-001(Including 011-DB-007-1, 2, 3, 5)	8	40	40/5	I		
011-DB-007-4	Watch Tower DB-007-2	2	40	40/5	I		
	Spare		40	40/5			
	Spare		63	75/5			
	Spare		63	75/5			
	Spare		80	75/5			

(7) 0.4kV Feeder (MCC 3#)

ZEL Tag	FEEDER	CAPACITY(kW)	CB(A)	CONTACTOR (A)	CT	REMARKS	SHEDDING LOADING
011-DB-001	Admin Building DB-001	110	315	300/5	I	Yes	
011-DB-002	Auto-workshop DB-002	30	125	150/5	I	Yes	
011-DB-003	Workshop (M.P.E & I) DB-003	30	125	150/5	I	Yes	
011-DB-005	Maintenance Workshop DB-005	60	160	150/5	I	Yes	
	Spare		160	150/5			
	Spare		200	200/5			
	Spare		400	400/5			

GENERAL NOTES

1. SHUNT TRIPPING DEVICE SHALL BE INSTALLED ON MCCBS WHICH WOULD BE SHED BY LOAD SHEDDING SYSTEM, LOAD SHEDDING SYSTEM WILL SEND ONLY ONE TRIP SIGNAL FOR ALL BUS SECTION, THE SUPPLIER IS RESPONSIBLE FOR SENDING THE TRIP SIGNAL TO THE MCCB WHICH NEED TO BE SHED.

HOLD

LEGEND

LEGEND	DESCRIPTION	LEGEND	DESCRIPTION
	Motor Space Heater	49	Machine or Transformer Thermal Relay
	Motor Remote Control Unit	50	Instantaneous Over Current Relay
	AC Motor	50G	Instantaneous Earth Fault Relay
EPR	Electronic Protection Relay	51	Time Over Current Relay
46	Reverse-phase or Phase-balance Current Relay	51G	Time Delay Earth Fault Relay
ACB	Air Circuit Breaker	51N	Inverse Time Neutral Overcurrent Relay
MCCB	Moulded Case Circuit Breaker	ELCB	Earth Leakage Circuit Breaker

REFERENCE DOCUMENTS

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DATA SHEET FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.17-0005-13
SPECIFICATION FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.03-0005-13

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B	Issued for review	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	22/04/2016
A	Internal Discipline Check	Zhang Boopeng	Zhang Xiyi	Liu Na	Cheng Xin	25/02/2016

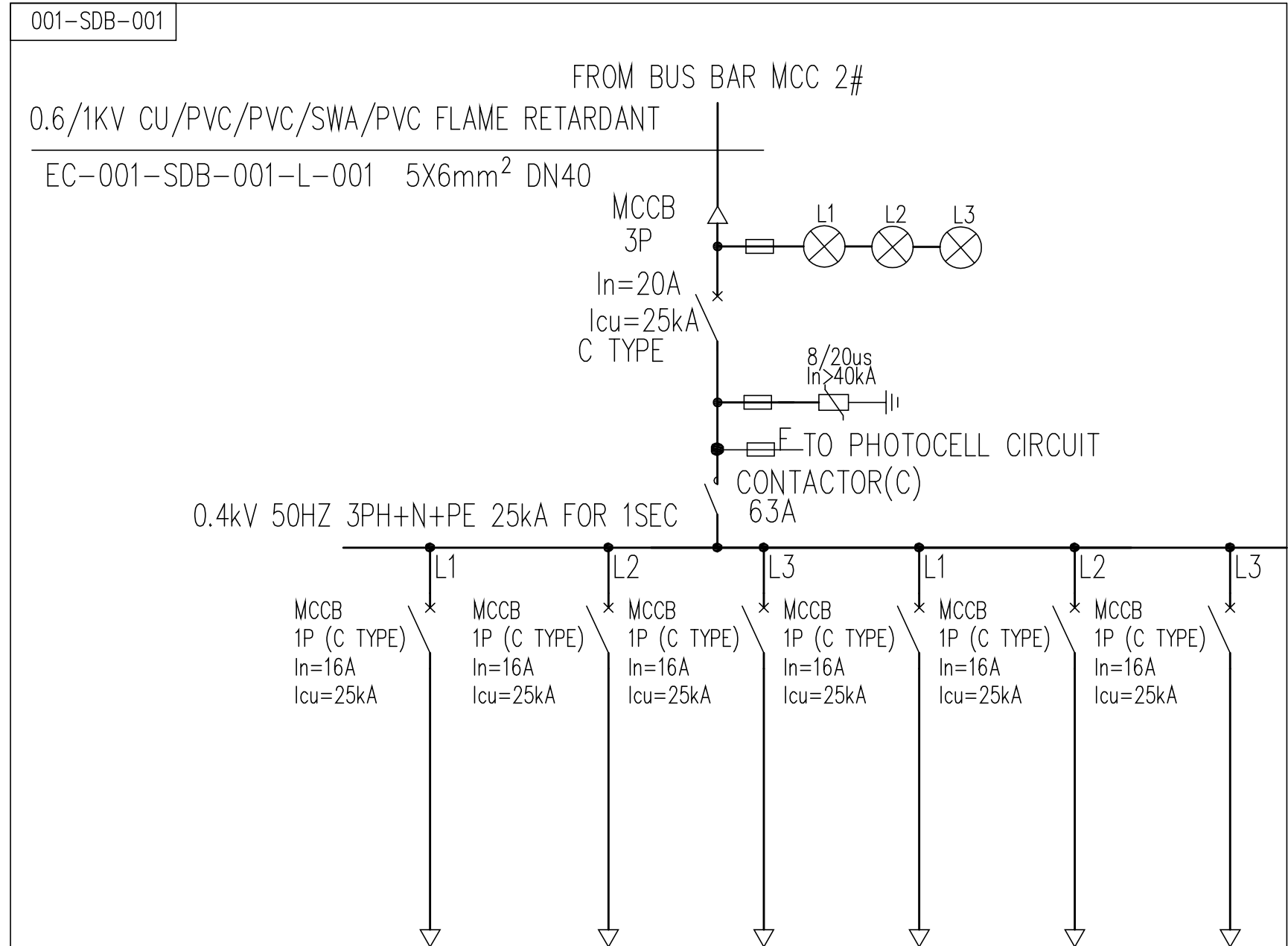
CLIENT: **OIL&GAS DEVELOPMENT COMPANY LTD.**
OGDCL HOUSE TOWER-B, FIRST FLOOR, PHASE, BLUE AREA, JINNAH AVENUE ISLAMABAD PAKISTAN
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CONTRACTOR: **HONG KONG HUIHUA GLOBAL TECHNOLOGY LIMITED**

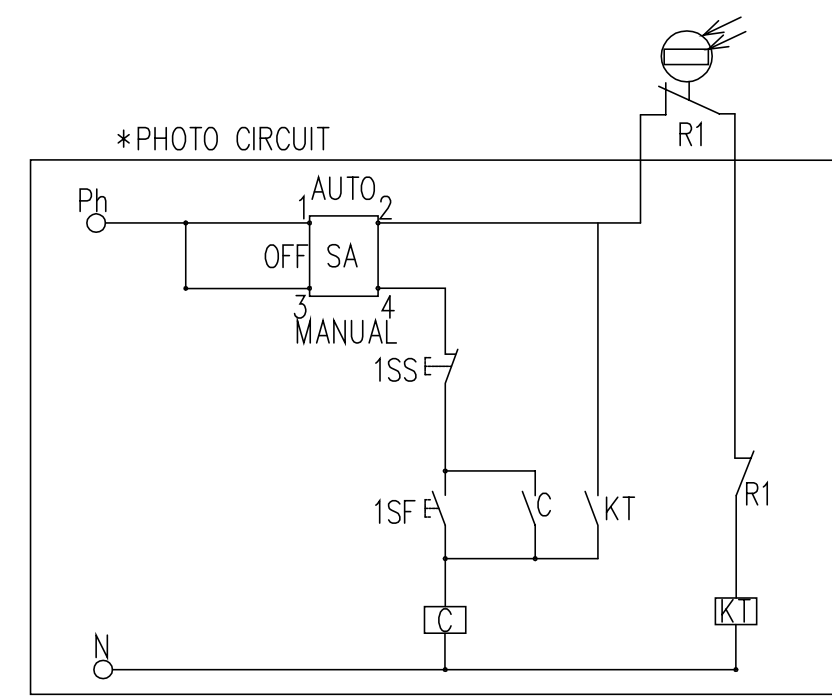
PROJECT TITLE: **NASHPA GAS PROCESSING AND LPG RECOVERY PLANT PROC-FC-CB/NASHPA/PROJ-1247/2015**

DRAWING TITLE: **ELECTRICAL SINGLE LINE DIAGRAM FOR MCC**



CIRCUIT NUMBER	01	02	03	04	05	06
LOAD NAME	LIGHTING FOR FRAME	LIGHTING FOR FRAME	LIGHTING FOR FRAME	LIGHTING FOR FRAME	SPARE	SPARE
POWER(kW)	0.43	0.43	0.43	0.36		
CABLE & WIRE	TYPE	CU/PVC/PVC/SWA/PVC FLAME RETARDANT				
	VOLTAGE	0.6/1kV	0.6/1kV	0.6/1kV	0.6/1kV	
	SECTION mm ²	3X4	3X4	3X4	3X4	
CONDUIT	DN25	DN25	DN25	DN25		

SUB-DISTRIBUTION BOARD FOR PROCESS UNITS AREA



DETAILS OF TYPICAL PHOTOCELL CIRCUIT DIAGRAM

SITE	TERMINAL CONNECTION			
	1	2	3	4
1 AUTO	×	×		
2 OFF				
3 MANUAL			×	×

CHANGE SWITCH TERMINAL CONNECTION DIAGRAM

GENERAL NOTES

- SDB IS FREE STANDING EXPLOSION PROOF TYPE(EEX-D IIB T4, ATEX CERTIFICATE)TYPE WITH ALUMINIUM ALLOY ENCLOSURE. PROTECTION DEGREE: IP65.
- SUNSHADE SHALL BE PROVIDED ON DB.
- THE INCOMING AND OUTGOING WLL BE EQUIPPED WITH CABLE GLAND.
- THE CABLE INLET/OUTLET DIRECTION WILL BE DOWNWARD. THE CABLE GLAND SIZE SHOULD MEET THE WIRING REQUIREMENT.
- CABLE GLANDS WILL BE DOUBLE COMPRESSION TYPE, BRASS, NICKEL PLATED AND COMPLETE WITH EARTH TAG, LOCKNUT AND WATER TIGHT SEALS, UV PROTECTED PCP PROTECTIVE SHROUD.
- THE INCOMING AND OUTGOING WILL EQUIPPED WITH POWER INDICATOR LIGHT.
- THE COLOR SHADE SHALL BE RAL7035.
- PHOTOCELL SHOULD BE SET WHERE CAN RECEIVE THE SUNLIGHT.

LEGEND

LEGEND	DESCRIPTION	LEGEND	DESCRIPTION
	MOULDED CASE CIRCUIT BREAKER		FUSE
	EARTH LEAKAGE CIRCUIT BREAKER		TRANSFER SWITCH
	SURGE PROTECTIVE DEVICE		STOP BUTTON
	INTERMEDIATE RELAY		START BUTTON
	NORMAL OPEN CONTACT		CONTACTOR COIL
	NORMAL CLOSE CONTACT		NORMAL OPEN CONTACT
	CONTACTOR		CABLE TERMINATION
	PHOTOCELL		

REFERENCE DOCUMENTS

TITLE	DOC No.
ELECTRIC LOAD LIST	NGP-000-ELE-15.02-0001-00
TYPICAL SCHEMATIC FOR MOTOR CONTROL CIRCUITS	NGP-000-ELE-15.08-0004-00
ELECTRICAL DESIGN BASIS	NGP-000-ELE-15.05-0001-00
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SPECIFICATION FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.03-0005-13

REV.	DESCRIPTION	PRPD	CHKD	REVD	APPD	DATE
C	Issued for Approval	ZhanFei	GeJinghua	BaiHaijun	ChengXin	17/10/2016
B	Issued for Review	ZhanFei	GeJinghua	BaiHaijun	ChengXin	05/09/2016
A	Internal Discipline Check	ZhanFei	GeJinghua	BaiHaijun	ChengXin	15/07/2016

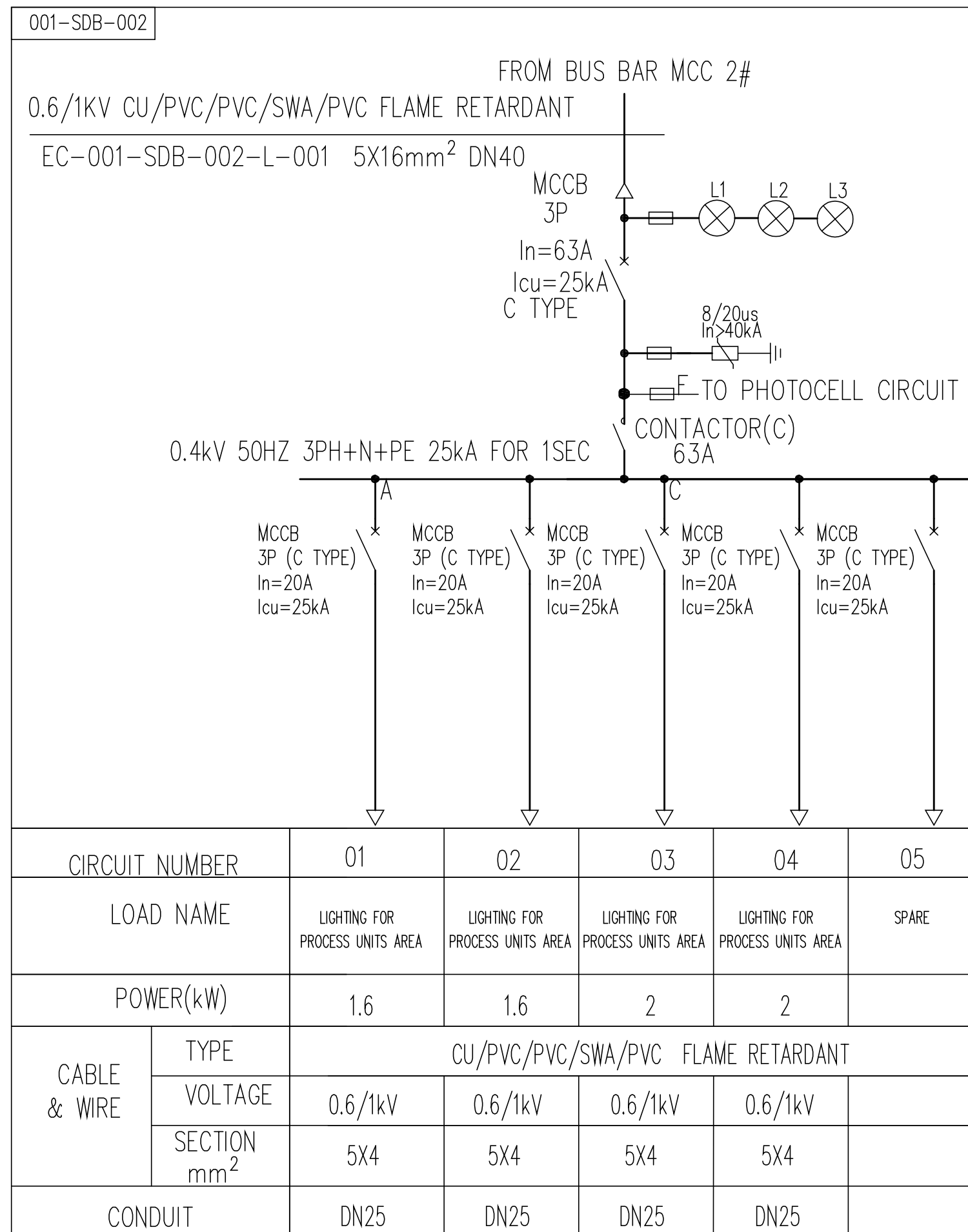
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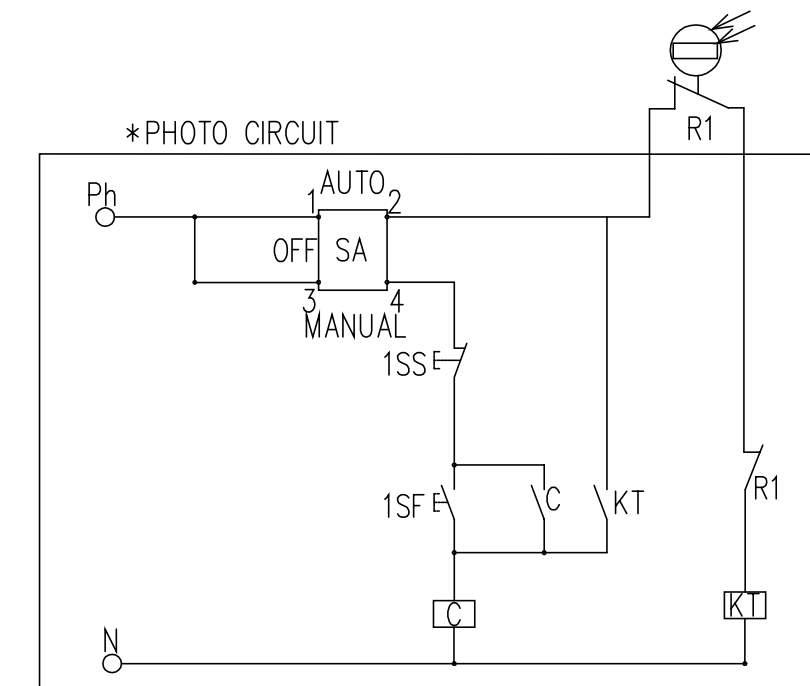
CONTRACTOR: **HONG KONG HUIHUA GLOBAL TECHNOLOGY LIMITED**
 PROJECT NO. NASHPA 1247

PROJECT TITLE: **GAS PROCESSING, LPG RECOVERY PLANT AND ALLIED FACILITIES AT NASHPA OIL FIELD**
 DRAWING NO. NGP-001-ELE-15.01-0008-24

DRAWING TITLE: **Electrical Single Line Diagram For Distribution Board (Process Units Area Lighting)**
 REV. SCALE SHEET
 C ~ 1 OF 4



SUB-DISTRIBUTION BOARD FOR PROCESS UNITS AREA



DETAILS OF TYPICAL PHOTOCELL CIRCUIT DIAGRAM

SITE	TERMINAL CONNECTION			
	1	2	3	4
1 AUTO	×	×		
2 OFF				
3 MANUAL			×	×

CHANGE SWITCH TERMINAL CONNECTION DIAGRAM

GENERAL NOTES

- SDB IS FREE STANDING EXPLOSION PROOF TYPE(EEX-D IIB T4, ATEX CERTIFICATE)TYPE WITH ALUMINIUM ALLOY ENCLOSURE. PROTECTION DEGREE: IP65.
- SUNSHADE SHALL BE PROVIDED ON DB.
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LEGEND

LEGEND	DESCRIPTION	LEGEND	DESCRIPTION
	MOULDED CASE CIRCUIT BREAKER		FUSE
	EARTH LEAKAGE CIRCUIT BREAKER		TRANSFER SWITCH
	SURGE PROTECTIVE DEVICE		STOP BUTTON
	INTERMEDIATE RELAY		START BUTTON
	NORMAL OPEN CONTACT		CONTACTOR COIL
	NORMAL CLOSE CONTACT		NORMAL OPEN CONTACT
	CONTACTOR		CABLE TERMINATION
	PHOTOCELL		

REFERENCE DOCUMENTS

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SPECIFICATION FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.03-0005-13

REV.	DESCRIPTION	PRPD	CHKD	REVD	APPD	DATE
C	Issued for Approval	ZhanFei	GeJinghua	BaiHaijun	ChengXin	17/10/2016
B	Issued for Review	ZhanFei	GeJinghua	BaiHaijun	ChengXin	05/09/2016
A	Internal Discipline Check	ZhanFei	GeJinghua	BaiHaijun	ChengXin	15/07/2016

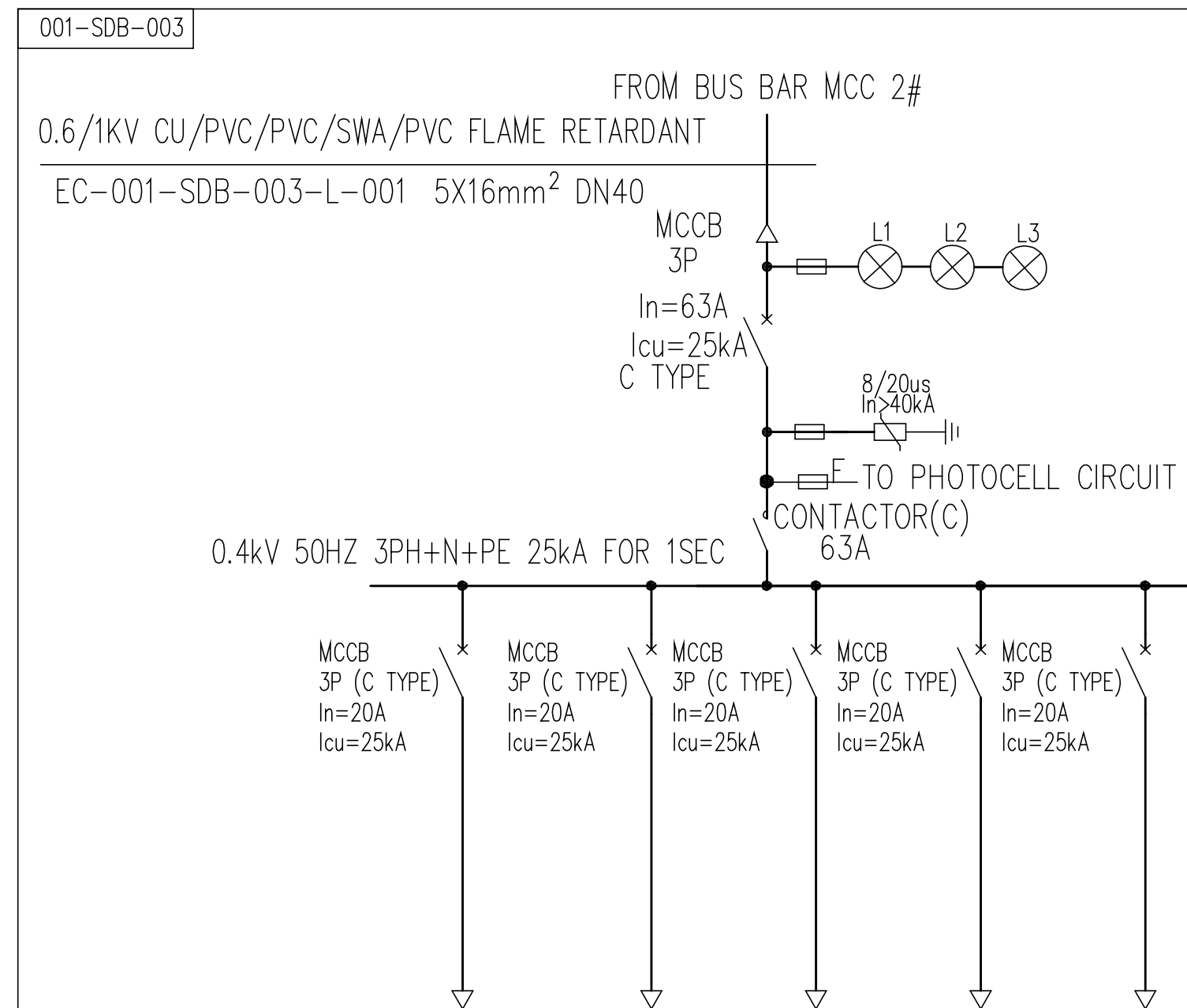
CLIENT: **OIL&GAS DEVELOPMENT COMPANY LTD.**
 OGDCL HOUSE TOWER-B, FIRST FLOOR F6/G6, BLUE AREA, JINNAH AVENUE ISLAMABAD PAKISTAN
 FAX: +92 051 2623033, PHONE: +92-051-9209859

CONSULTANT: **Zishan Engineers (Pvt.) Ltd.**
 An ISO 9001-2008 certified company
 47/F Block 6, PECHS, Karachi-Pakistan
 Tel: (92-91) 34393045-48, 34310151-54, Fax: (92-91) 34533430 & 34510156
 E-Mail: contact@zishanengineers.com Website: www.zishanengineers.com

CONTRACTOR: **HONG KONG HUIHUA GLOBAL TECHNOLOGY LIMITED**
 PROJECT NO. NASHPA 1247

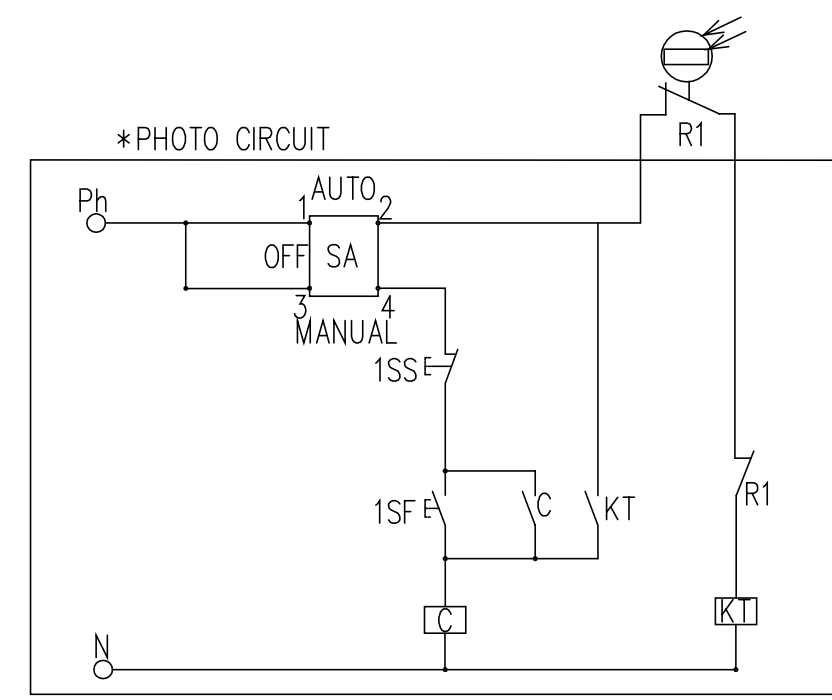
PROJECT TITLE: **GAS PROCESSING, LPG RECOVERY PLANT AND ALLIED FACILITIES AT NASHPA OIL FIELD**
 DRAWING NO. NGP-001-ELE-15.01-0008-24

DRAWING TITLE: **Electrical Single Line Diagram For Distribution Board (Process Units Area Lighting)**
 REV. C SCALE ~ SHEET 2 OF 4



CIRCUIT NUMBER	01	02	03	04	05	
LOAD NAME	LIGHTING FOR PROCESS UNITS AREA	LIGHTING FOR PROCESS UNITS AREA	SPARE	SPARE	SPARE	
POWER(kW)	2.4	2.4				
CABLE & WIRE	TYPE	CU/PVC/PVC/SWA/PVC FLAME RETARDANT				
	VOLTAGE	0.6/1kV	0.6/1kV			
	SECTION mm ²	5X4	5X4			
CONDUIT	DN25	DN25				

SUB-DISTRIBUTION BOARD FOR PROCESS UNITS AREA



DETAILS OF TYPICAL PHOTOCELL CIRCUIT DIAGRAM

SITE	TERMINAL CONNECTION			
	1	2	3	4
1 AUTO	×	×		
2 OFF				
3 MANUAL			×	×

CHANGE SWITCH TERMINAL CONNECTION DIAGRAM

GENERAL NOTES

- SDB IS FREE STANDING EXPLOSION PROOF TYPE(EEX-D IIB T4, ATEX CERTIFICATE)TYPE WITH ALUMINIUM ALLOY ENCLOSURE. PROTECTION DEGREE: IP65.
- SUNSHADE SHALL BE PROVIDED ON DB.
- THE INCOMING AND OUTGOING WLL BE EQUIPPED WITH CABLE GLAND.
- THE CABLE INLET/OUTLET DIRECTION WILL BE DOWNWARD. THE CABLE GLAND SIZE SHOULD MEET THE WIRING REQUIREMENT.
- CABLE GLANDS WILL BE DOUBLE COMPRESSION TYPE, BRASS, NICKEL PLATED AND COMPLETE WITH EARTH TAG, LOCKNUT AND WATER TIGHT SEALS, UV PROTECTED PCP PROTECTIVE SHROUD.
- THE INCOMING AND OUTGOING WILL EQUIPPED WITH POWER INDICATOR LIGHT.
- THE COLOR SHADE SHALL BE RAL7035.
- PHOTOCELL SHOULD BE SET WHERE CAN RECEIVE THE SUNLIGHT.

LEGEND

LEGEND	DESCRIPTION	LEGEND	DESCRIPTION
	MOULDED CASE CIRCUIT BREAKER		FUSE
	EARTH LEAKAGE CIRCUIT BREAKER		TRANSFER SWITCH
	SURGE PROTECTIVE DEVICE		STOP BUTTON
	INTERMEDIATE RELAY		START BUTTON
	NORMAL OPEN CONTACT		CONTACTOR COIL
	NORMAL CLOSE CONTACT		NORMAL OPEN CONTACT
	CONTACTOR		CABLE TERMINATION
	PHOTOCELL		

REFERENCE DOCUMENTS

TITLE	DOC No.
ELECTRIC LOAD LIST	NGP-000-ELE-15.02-0001-00
TYPICAL SCHEMATIC FOR MOTOR CONTROL CIRCUIT	NGP-000-ELE-15.08-0004-00
ELECTRICAL DESIGN BASIS	NGP-000-ELE-15.05-0001-00
SINGLE LINE DIAGRAM FOR MCC	NGP-010-ELE-15.01-0002-13
DATA SHEET FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.17-0005-13
SPECIFICATION FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.03-0005-13

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C	Issued for Approval	ZhanFei	GeJinghua	BaiHaijun	ChengXin	17/10/2016
B	Issued for Review	ZhanFei	GeJinghua	BaiHaijun	ChengXin	05/09/2016
A	Internal Discipline Check	ZhanFei	GeJinghua	BaiHaijun	ChengXin	15/07/2016

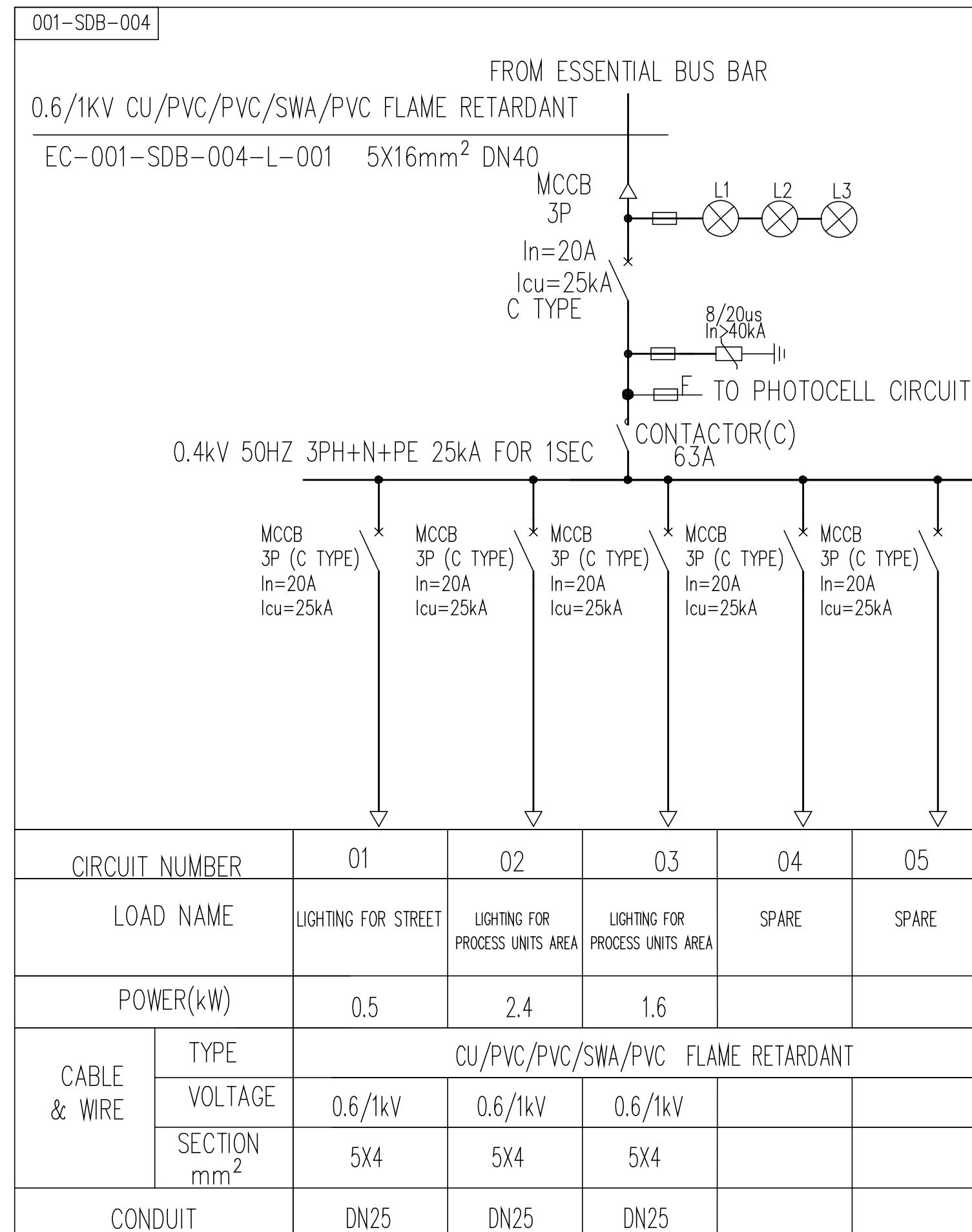
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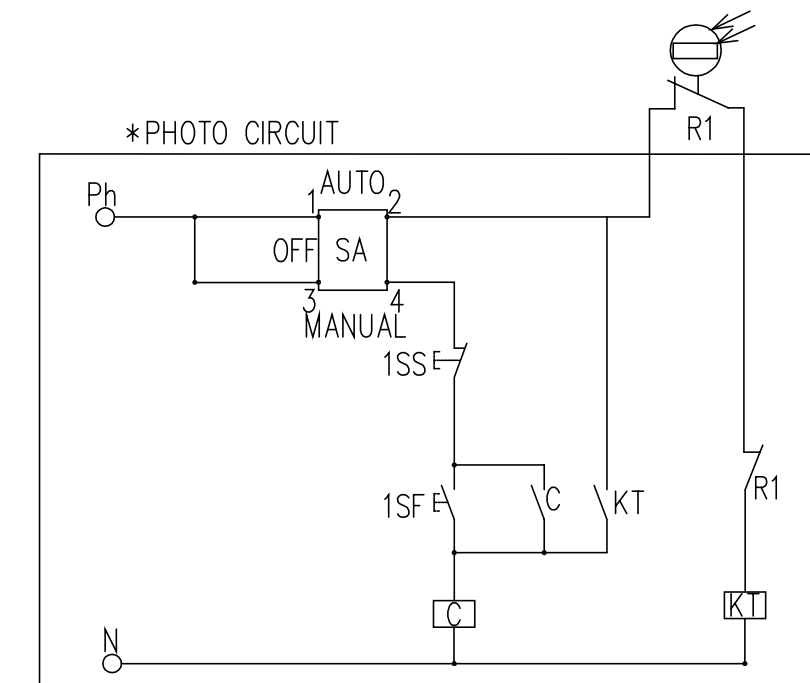
CONTRACTOR: **HONG KONG HUIHUA GLOBAL TECHNOLOGY LIMITED**
 PROJECT NO. NASHPA 1247

PROJECT TITLE: **GAS PROCESSING, LPG RECOVERY PLANT AND ALLIED FACILITIES AT NASHPA OIL FIELD**
 DRAWING NO. NGP-001-ELE-15.01-0008-24

DRAWING TITLE: **Electrical Single Line Diagram For Distribution Board (Process Units Area Lighting)**
 REV. C SCALE ~ SHEET 3 OF 4



SUB-DISTRIBUTION BOARD FOR PROCESS UNITS AREA



DETAILS OF TYPICAL PHOTOCELL CIRCUIT DIAGRAM

SITE	TERMINAL CONNECTION			
	1	2	3	4
1 AUTO	×	×		
2 OFF				
3 MANUAL			×	×

CHANGE SWITCH TERMINAL CONNECTION DIAGRAM

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	PHOTOCELL		

REFERENCE DOCUMENTS

TITLE	DOC No.
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TYPICAL SCHEMATIC FOR MOTOR CONTROL CIRCUITS	NGP-000-ELE-15.08-0004-00
ELECTRICAL DESIGN BASIS	NGP-000-ELE-15.05-0001-00
SINGLE LINE DIAGRAM FOR MCC	NGP-010-ELE-15.01-0002-13
DATA SHEET FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.17-0005-13
SPECIFICATION FOR LV SWITCHGEARS / MCC	NGP-000-ELE-15.03-0005-13

REV.	DESCRIPTION	PRPD	CHKD	REVD	APPD	DATE
C	Issued for Approval	ZhanFei	GeJinghua	BaiHaijun	ChengXin	17/10/2016
B	Issued for Review	ZhanFei	GeJinghua	BaiHaijun	ChengXin	05/09/2016
A	Internal Discipline Check	ZhanFei	GeJinghua	BaiHaijun	ChengXin	15/07/2016

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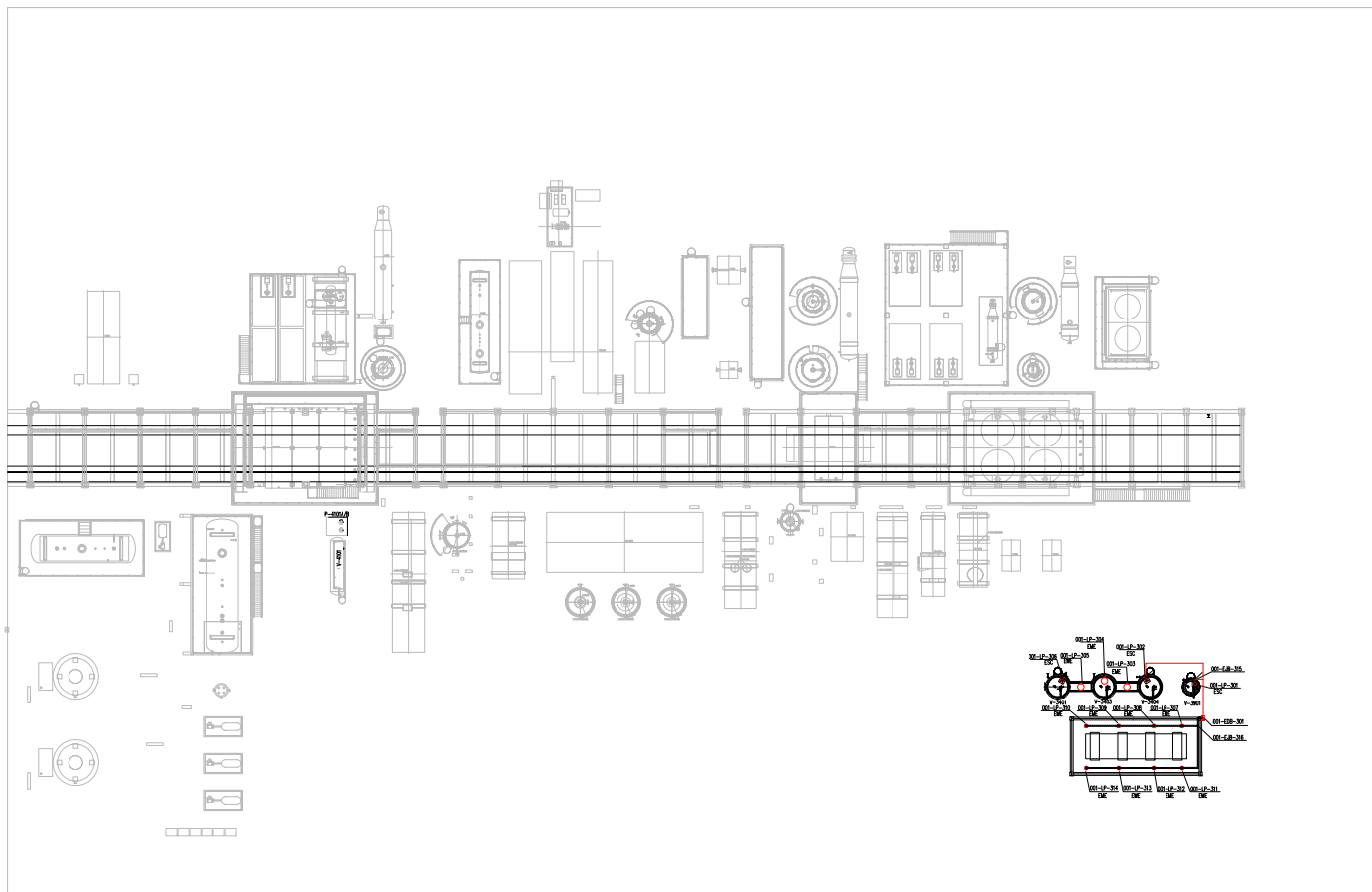
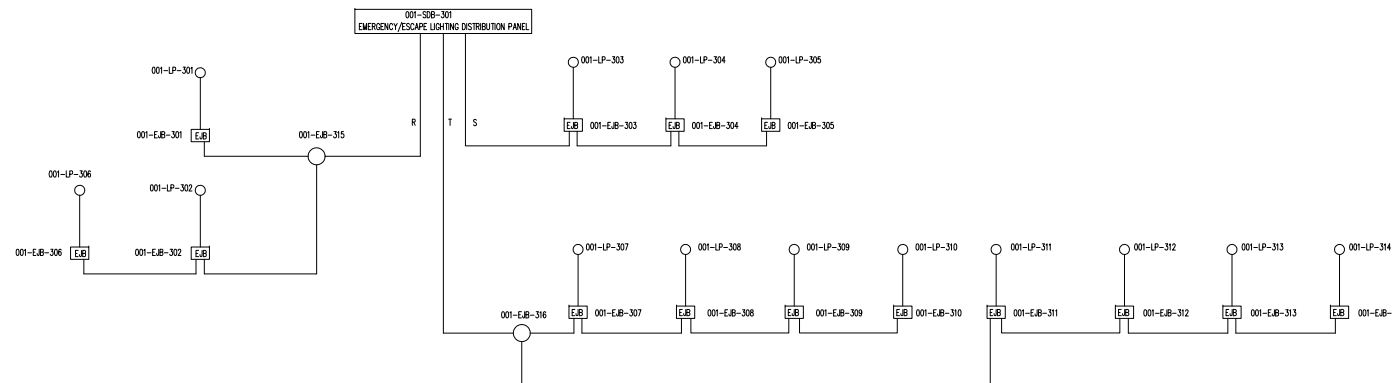
PROJECT NO. NASHPA 1247

PROJECT TITLE: GAS PROCESSING, LPG RECOVERY PLANT AND ALLIED FACILITIES AT NASHPA OIL FIELD

DRAWING NO. NGP-001-ELE-15.01-0008-24

DRAWING TITLE: Electrical Single Line Diagram For Distribution Board (Process Units Area Lighting)

REV. SCALE SHEET
 C ~ 4 OF 4



GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL COORDINATES ARE IN METERS.
2. ALL COORDINATES ARE BASED ON UTM PROJECTION, GRID ZONE 38N, WGS 1984 DATUM; GPS HEIGHT TRANSFORM BASED ON EQM2008 MODEL.
3. THE ELEVATION 100.00m CORRESPOND TO EQM2008 ELEVATION OF 69.20m.
4. EXISTING API PIT AND FLARE STACK WILL BE RELOCATED BY OGDCL.
5. LIGHTING FIXTURE ARE INDICATIVE ONLY. EXACT LOCATION OF LIGHTING FIXTURE SHALL BE ADJUSTED ON SITE.
6. ALL LIGHTING CABLE SHALL BE IN CABLE TRAY OR CONDUIT. THE LIGHTING CABLE SHALL BE ROUTED ALONG WITH THE STEEL STRUCTURE, AND THE CABLE IS INDICATIVE ONLY. IT SHALL BE ADJUSTED ON SITE.
7. ALL UNDERGROUND LIGHTING CABLE SHALL BE PROTECTED BY CONDUIT.
8. NOR--DENOTE NORMAL LIGHTING
EME--DENOTE EMERGENCY LIGHTING
ESC--DENOTE ESCAPE LIGHTING

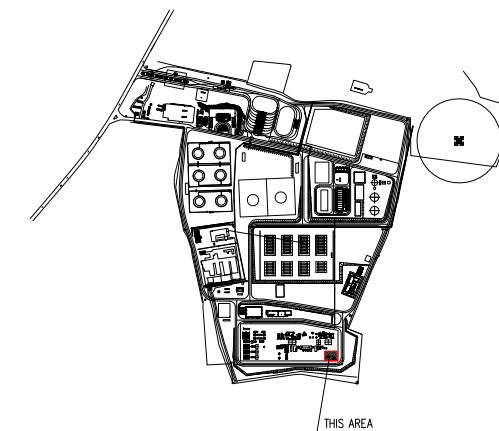
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1. TO BE UPDATED WHEN THE DETAIL DRAWING IS AVAILABLE.

LEGEND

- JUNCTION BOX , ELECTRICAL CONTROL PANEL OR DISTRIBUTION PANEL
- METAL HALIDE LAMP 70W 230V 50HZ, LIGHTING POLE H=2.5M STANCHION MOUNTED. EEX-d IIB T4 IP66
- METAL HALIDE LAMP 2x18W 230V 50HZ, LIGHTING POLE H=2.5M STANCHION MOUNTED. EEX-d IIB T4 IP66 EMERGENCY TYPE 1>1h
- METAL HALIDE LAMP 150W 230V 50HZ, BRACKET MOUNTED. EEX-d IIB T4 IP66
- JUNCTION BOX FOR WIRING EEX-d IIB T4 IP66
- JUNCTION BOX FOR LIGHTING FIXTURE EEX-d IIB T4 IP66

KEY PLAN



REFERENCE DOCUMENTS

TITLE	DOC No.
Overall Plot Plan	NGP-000-GEN-15.01-0001-00
Cable Routing Layout for General area	NGP-000-ELE-15.01-0002-00
Electrical Typical Installation for Cabling	NGP-000-ELE-15.08-0005-00
Electrical Typical Installation for Lighting	NGP-000-ELE-15.08-0006-00
Electrical Symbols and Legends	NGP-000-ELE-15.08-0003-00

REV.	DESCRIPTION	PRPD	CHKD	REVO	APPD	DATE
00	Approved for Construction	GE JINGHUA	XU TAO	BAI HAIJUN	CHENG XIN	15/11/2016
B	Issued for Review	GE JINGHUA	XU TAO	BAI HAIJUN	CHENG XIN	29/09/2016
A	Internal Discipline Check	GE JINGHUA	XU TAO	BAI HAIJUN	CHENG XIN	01/08/2016

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CONTRACTOR: **HONG KONG HUIHUA GLOBAL TECHNOLOGY LIMITED**

PROJECT NO. NASHPA 1247

PROJECT TITLE: NASHPA GAS PROCESSING AND LPG RECOVERY PLANT PROC-FC-CB/NASHPA/PROJ-1247/2015

DRAWING NO. NPP-001-ELE-15.01-2003-17

DRAWING TITLE: LIGHTING LAYOUT FOR INSTRUMENT & UTILITY AIR SYSTEM

REV. SCALE SHEET
 00 1:400 1 OF 1