



## OIL & GAS DEVELOPMENT COMPANY LIMITED

### **ADDENDUM NO. 001**

Attention All Prospective Bidders: Tender Inquiry # PROC-FC/CB/PROJ/NASHPA-3268/2018

This refers to the Section-III (Scope of Work):

Please amend to read the following clauses as:

#### **"2.3.1 Instrument Air System**

*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 compressors) is to be installed in addition to the existing air compressors (K-3401 A/B).*

*Furthermore, EPCC scope of work shall also include detailed design in all aspects (Process, Mechanical, Piping, Instrumentation & Control, Electrical and Civil works), procurement, installation, construction, commissioning, startup etc. of new air dryer package (having same capacity and same model as existing air dryer package installed at Nashpa Plant) parallel to existing air dryer package. Furthermore, EPCC Contractor shall also finalize the line size and tie in points accordingly. For technical specifications of new dryer package, refer to the detail technical specifications and data sheet of existing dryer package as attached herein the Addendum.*

*New Instrument Air Dryer shall be designed as per specification of Unfired Pressure Vessel (0193-VA-001). A steel structure shed shall be designed and fabricated for new Instrument Air Compressor & new Air dryer Package for preventing them from ambient condition."*

**"5.21-** *EPCC Contractor scope also includes the supply and installation of all instrumentation & controls for Compressor and Dryer Package. Instruments, Valves, control system and Graphical User Interface HMI/MMI shall be same as installed in*

*existing air compressors and air dryer. Supply, laying and termination of all interconnecting cables for instrument and control shall be included in EPCC contractor Scope. Instrumentation and control philosophy for monitoring and controlling for new instrument air compressor and dryer package shall be same as followed in existing instrument air system.”*

*“5.22- With addition of the third Air Compressor the existing Instrument Air System has total three Air compressors, the Instrument Air System shall now utilize lead-lag starting sequence with one operating and two standby compressor. EPCC contractor shall interface new Compressor controller with existing Compressors controller to operate in above mentioned operating and stand-by configuration.”*

*“5.23- Manual Selector and START/STOP switches shall also be provided with new air compressor package to select and START/STOP the compressor as lead or lag manually from the field.*

*Supply of all necessary hardware/Software equipment required for modifications in existing Instrument Air System such as logic, configurations, cabling, power supply etc shall be in EPCC Contractor scope.*

*Accordingly New Dryer package shall also be integrated with existing Dryer control system. Manual Selector and START/STOP switches shall be provided with new dryer package to select and START/STOP the new dryer from the field.*

*Provision for soft communication (Modbus RS-485) for interfacing Instrument Air Compressor and Dryer package controllers with DCS shall also be in EPCC Contractor scope.”*

***The clause “12.3.14.1- General” shall also include the following electrical work***

*“The EPCC Contractor scope shall also include Supply, laying and termination of electrical cables from existing UPS system to Air Compressor and Dryer Unit Control Panels.”*

*In lieu of above, find attached the latest revision of following documents/drawings.*

1. P&IDs of Instrument and Utility Air System (Dwg. No. NGP-001-PCS-15.09-0026-17-1).
2. General Plot Plan. (Dwg. No. NGP-000-GEN-15.01-0001-00-03)
3. Single Line Diagram for UPS (Dwg. No. NGP-010-ELE-1501-0004-13)



NASHPA Gas Processing and LPG Recovery Plant  
PROC-FC-CB/NASHPA/PROJ-1247 /2015

DOC. NO.	NGP-001-PCS-15.17-0040-17
DESCRIPTION	Data Sheet for Instrument Air System
REVISION	00
PAGE	3 OF 4

1	<b>Tag No. :</b>	PU-3401	<b>Client:</b>	OIL & GAS DEVELOPMENT COMPANY LTD.
2	<b>Service:</b>	Instrument Air System	<b>Plant Location:</b>	PAKISTAN
3	<b>PID No :</b>	NGP-001-PCS-15.09-0026-17	<b>Doc No.:</b>	NGP-001-PCS-15.17-0040-17
4	<b>Calculation Ref. :</b>		<b>Manufacturer:</b>	
5	Equipment Type: Instrument Air Package			
6	Service Description: Supply instrument / plant air to plant			
7				
8	<b>GENERAL</b>			
10	The Instrument Air Compressor Package consisting of two (2) Instrument Air Compressors with 1			
11	set Instrument Air Dryer & other associated equipment necessary to produce dry instrument air for			
12	Plant users as per details mentioned in P&ID.			
13				
14	<b>OUTLET SPECIFICATION</b>			
15	Outlet Instrument Air Pressure Required	75-140 psig		
16	Outlet Air Pressure Required	80-145 psig		
17	Temperature	110 °F		
18	Oil Content	< 0.01 ppm (wt.)		
19	Dew Point	- 4 °F		
20	Maximum Particle Size	1 micron		
21	Capacity of Instrument Air	340 scfm		
22				
23	<b>DESIGN CONDITIONS</b>			
24	Pressure	260 psig		
25	Temperature	200 °F		
26				
27	<b>PACKAGE REQUIREMENTS</b>			
28	1. Supplier shall provide and install all on-skid instruments within the Supplier's battery limit.			
29	2. 10% design margin shall be considered.			
30	3. All pressure vessel shall be designed according to ASME VIII Div. 1 "U-stamp".			
31	4. On/Off pressure switch control is not permitted.			
32	5. The electrical hazard classification for the area is Non Hazardous area.			
33	6. Supplier shall also be responsible to provide and install all instrument cables alongwith tray/conduit from			
34	on-skid instruments to skid mounted junction box.			
35	7. Supplier shall be responsible for instrument air distribution to consumers on the skid.			
36	8. Oil coalescer and oil removal system to be provided if oil lubricated compressor is selected.			
37	9. Dryer switching valve			
38	10. Exhaust silencer on regeneration vent			



NASHPA Gas Processing and LPG Recovery Plant  
PROC-FC-CB/NASHPA/PROJ-1247 /2015

DOC. NO. NGP-001-PCS-15.17-0040-17

DESCRIPTION Data Sheet for Instrument Air System

REVISION 00

PAGE 4 OF 4

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3	<b>PID No. :</b>	NGP-001-PCS-15.09-0026-17	<b>Doc No.:</b>	NGP-001-PCS-15.17-0040-17
4	<b>Calculation Ref. :</b>		<b>Manufacturer:</b>	
39	11. Two years spares operation			
40	<b>NOTES</b>			
41	1. All equipment to be supplied and guaranteed by VENDOR.			
42	2. Design flow rate includes 10% margin above the normal capacity.			
43	3. Piping within the package to conform to project Piping Material Specifications (NGP-000-PIP-15.03-0001)			
44	4. All equipment will be provided on one structure steel skid assembly			
45	5. VENDOR to provide the user list.			
46	6. All critical parameter shall be capable of remote adjustment of set point through interface of DCS. Package			
47	shall be monitored and controlled through stand-alone unit PLC. All alarm / annunciator shall be available in			
48	DCS.			
49	7. Minimum recommended spares for two(2) year of operation. Price shall be supplied as an optional extra.			
50	Spares shall be recommended for the compressor and where necessary.			
51	8. Operating and maintenance manual. Manual must include component part numbers and drawings where			
52	applicable.			
53	9. All equipment will be provided on one structure steel skid assembly.			
54				
55				



### 三、仪表风和氮气系统构成 System constitution

本撬装有以下两部分: This skid is equipped with the following two parts:

#### A、仪表空气部分 Instrument air

压缩机、后部冷却器、过滤器、干燥机

Air compressor, Air cooler, Filter and Dryer

#### B、PSA 制取氮气 N2 generator

空气缓冲罐、制氮机、氮气缓冲罐、氮气过滤器

Air buffer tank, N2 generator, N2 buffer tank and N2 filter

### 四、仪表风和氮气系统的设备清单 Skid equipment list

1、压缩机 Air compressor	GA75*-10	2台 2sets
2、空间暖风机 Space heater	BSHN-3L	2台 2sets
3、后部冷却器 Air cooler	KLF-12N	2台 2sets
4、油水过滤器 Oil and water Filter	AO-040HBFX	2台 2units
5、高效除油过滤器 Oil filter	AA-040HBFX	2台 2units
6、吸附干燥机 Dryer	KXD-120	1台 1set
7、除尘过滤器 Dust filter	AAR-040HBFX	2台 2units
8、空气缓冲罐 Air buffer tank	C-0.3/1.0	1台 1set
9、制氮机 N2 generator	PD2N-68	1台 1set
10、氮气缓冲罐 N2 buffer tank	C-0.6/1.0	1台 1set
11、氮气过滤器 N2 filter	AAR-025EBMX	2台 2units
12、动力柜 Pwoer box		1个 1set
13、吸干机控制箱 JB of dryer		1个 1set
14、制氮机控制箱 JB of N2 generator		1个 1set

## 二、 仪表风和氮气系统的性能参数 **Technical specification**

### 1、 设计参数 **Design parameters**

设计环境压力 Ambient pressure	14.5psig
进口压缩空气设计温度 Temperature of inlet compressed air	77°F
环境温度最小值 Min. ambient temperature	0°F
环境温度最大值 Max. ambient temperature	113°C
设计相对湿度 Humidity	80%
安装位置 Installation	室外有顶棚 Outdoor with roof

### 2、 性能参数 **Data sheet**

#### 1) 氮气指标要求 **Nitrogen specification**

制氮机型号规格 Nitrogen skid Model: PD2N-68

氮气流量 N2 capacity: 68Nm<sup>3</sup>/min (40SCFM)

氮气纯度 N2 purity: 99%

氮气压力 N2 pressure : 0.8MPa(120psig)

露点 Dew point: 20°C (68°F)

#### 2) 仪表空气指标要求 **IA specification**

流量 Capacity: 578Nm<sup>3</sup>/min(340SCFM)

压力 Pressure: 0.5M~0.97MPa(75~140psig)

露点 Dew point: -20°C (-4°F)

#### 3) 系统的用电负荷 **Power of skid**

空压机 Air compressor	380V/50Hz	75KW*2(一用一备 One ues one standby)
暖风机 Space heater	220V/50Hz	3KW*2 (一用一备 One ues one standby)
后部冷却器 Air cooler	380V/50Hz	0.3KW * 1 台(一用一备 One ues one standby)
制氮机 N2 generator	220V/50Hz	0.4KW

No.161 Zhongfeng street SND Suzhou PRC Zip: 215129

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## 五、仪表风和制氮机设备构成及原理 Skid composition and principle

空压机、空间暖风机、后部冷却器、过滤器等详见使用说明书

The manual of air compressor,space heater,air cooler and filter please see their Manual books.

### 1.1 无热再生干燥器的构成 Composition of dryer

无热再生干燥器包括填充吸附剂的吸附塔、三级空气过滤器、气动阀、单向阀、消声器及电器控制系统。

The dryer is build up with two adsorbent towers filled with adsorbent,three grade filters,valves,muffler and JB box.

电器控制系统包括可编程控制器（CPU224）、电控柜、仪表气管路、电磁阀等组成。

The JB box is build up with PLC(CPU224 by SIEMENS), box,IA pipeline and solenoid valves.

### 1.2 无热再生干燥器的原理 Principle of dryer

无热再生干燥器是一种利用多孔性固体物质表面的分子力来吸取气体中的水分，从而获得较低露点温度、洁净、干燥气体的净化设备。它采用孔径与水分子直径相近的活性氧化铝为吸附剂，采纳国际上先进的变压吸附原理，在常温变压吸附时，空气中水分子的分压力大于吸附剂中水分子的分压力，水分子进入吸附剂内部，在吸附剂表面冷凝成水滴，并放出冷凝热，将此热量蓄于吸附塔的上部。再生时，大约 15% 的干燥空气进入常压下的再生吸附塔，使吸附剂的水分逸出，同时蓄于吸附塔内的热量有助于解析。吸附剂经过吸附、再生、吸附循环使用，对压缩空气进行连续不断的干燥处理，从而获得深度干燥的气体。

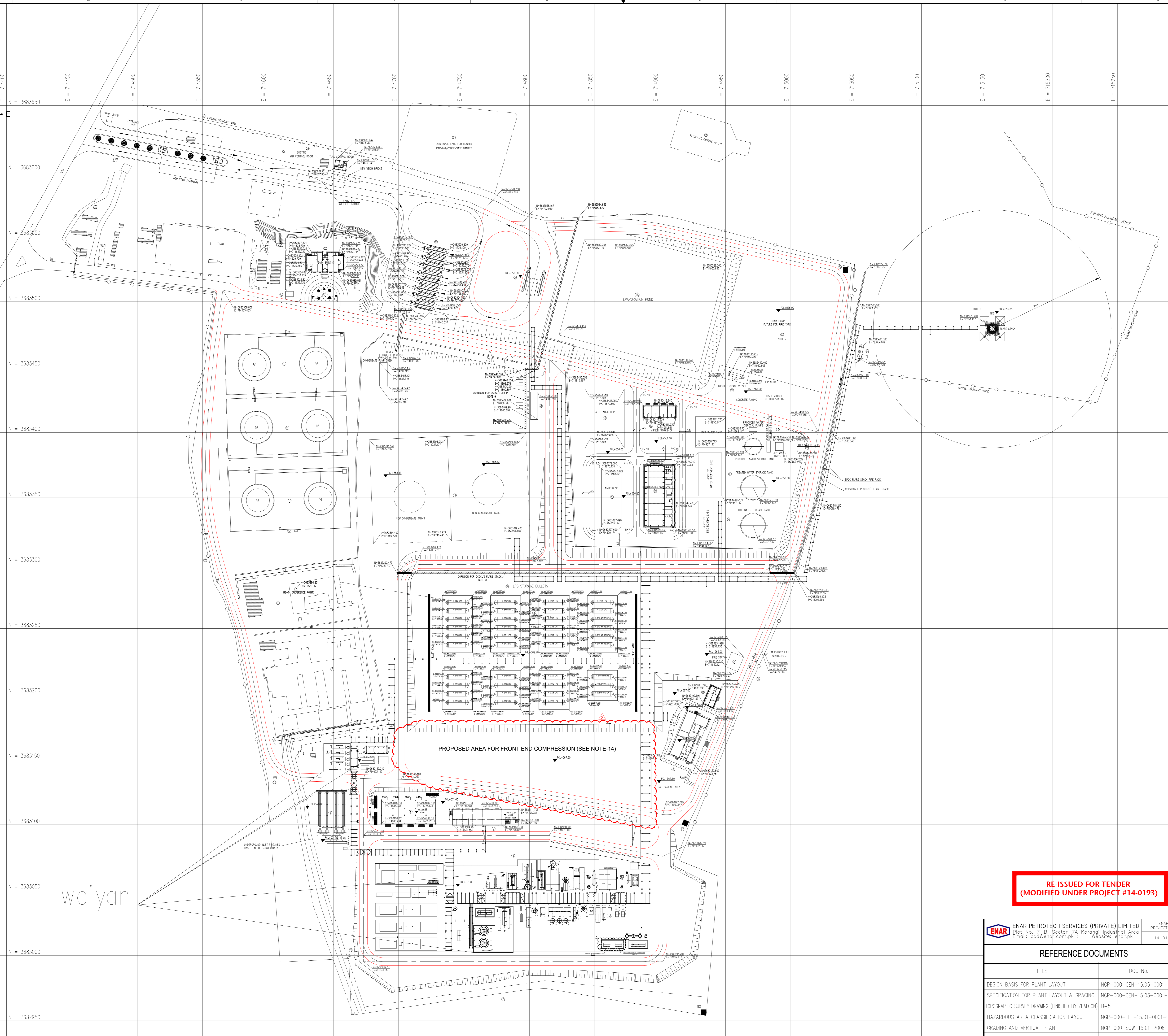
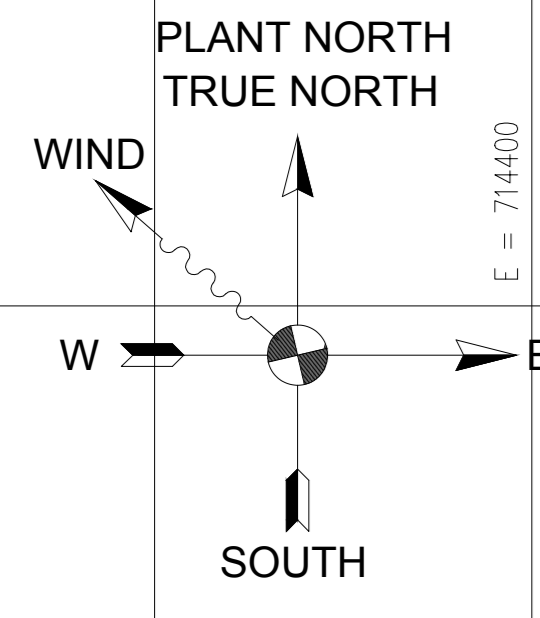
Heat-less regeneration dryer is a kind of gas to absorb moisture in the use of molecular force porous solid material surface, so as to obtain low dew point temperature, clean, dry gas purification equipment. It adopts activated alumina aperture and water molecules of different sizes as adsorbent, adopt international advanced principle of PSA, at room temperature when the pressure swing adsorption, partial pressure of water molecules in air is greater than the adsorption of water molecules, water molecules into the internal adsorbent, the adsorbent surface condensed into water droplets, and produce condensation heat. The heat storage in the upper part of the adsorption tower. The regeneration, about 15% of the dry air into the regeneration adsorption tower under atmospheric pressure, The water loss of the adsorbent in the adsorption tower in the heat storage also helps to analyze. The adsorbent after adsorption, adsorption regeneration, recycling of compressed air drying processing continuously, so as to obtain the gas deep dry.



整个过由可编程控制器（PLC）指挥，正常时实现自动化生产。

The whole system has been programmed by a programmable logic controller (PLC) to achieve automatic production when normal condition.

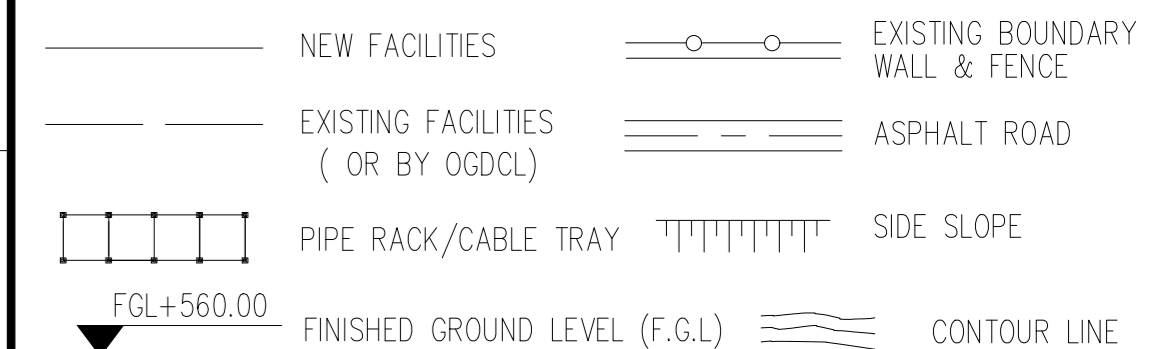




**GENERAL NOTES**

1. ALL DIMENSIONS ARE IN MILLIMETERS, ALL COORDINATES AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
2. ALL COORDINATES ARE BASED ON UTM PROJECTION, GRID ZONE 42N, WGS 1984 DATUM, LEVELS TAKEN W.R.T BS-01. COORDINATES TAKEN WITH SATELLITE. PROJECTION SCALE FACTOR 1.000.
3. REFERENCE POINT IS BS-01. N=3683280.201m; E=714621.147m; ELEVATION=565.447m.
4. EXISTING API PIT AND FLARE STACK WILL BE DISMANTLED AND RELOCATED BY OGDCL.
5. THE WATER PUMP FOR EXISTING RAW WATER POND MUST BE EXPLOSION-PROOF MOTOR PUMP AND ARRANGE ON THE SOUTH SIDE OF THE POND.
6. ADDITIONAL LAND FOR FLARE STACK TO BE ACQUIRED BY OGDCL.
7. THIS AREA WILL BE USED FOR CHINA CAMP, AFTER THAT AS A PIPE YARD.
8. CORRIDOR FOR OGDCL'S FLARE STACK, WIDTH=1.0m, COORDINATES ARE THE CENTER LINE OF THE CORRIDOR. ELEVATION SHOULD FOLLOW NGP-000-SCW-15.01-2006-23 GRADING AND VERTICAL PLAN.
9. CORRIDOR FOR OGDCL'S API PIT, WIDTH=1.0m, COORDINATES ARE THE CENTER LINE OF THE CORRIDOR. ELEVATION SHOULD FOLLOW NGP-000-SCW-15.01-2006-23 GRADING AND VERTICAL PLAN.
10. COORDINATES AND ELEVATIONS FOR OGDCL FACILITIES ARE ONLY FOR REFERENCE.
11. TAG NUMBERS AND COORDINATES OF ALL EQUIPMENTS IN PROCESS AREA REFER TO NGP-000-GEN-15.01-0004-00 UNIT PLOT PLAN FOR PROCESS EQUIPMENT LAYOUT.
12. TAG NUMBERS AND COORDINATES OF ALL EQUIPMENTS IN WATER STORAGE AND TREATMENT AREA REFER TO NGP-000-GEN-15.01-0003-00 UNIT PLOT PLAN FOR WATER EQUIPMENT LAYOUT.
13. TAG NUMBERS AND COORDINATES OF ALL EQUIPMENTS IN LPG STORAGE BULLETS AREA REFER TO NGP-000-GEN-15.01-0005-00 UNIT PLOT PLAN FOR LPG STORAGE BULLETS.
14. FOR FRONT END COMPRESSION AREA PLEASE REFER TO UNIT PLOT PLAN (DWG# 0193-PC-001)

**LEGEND**



**REFERENCE POINT**

BS-01	N (m)	E (m)	ELEVATION(m)	REFERENCE
SURVEY COORDINATE	3683280.201	714621.147	565.447	UTM WGS1984

**EQUIPMENT AND BUILDING LIST**

NO.	DESCRIPTION AND CAPACITY	UNIT QTY.	REMARK
1	PIG RECEIVER & GATHERING MANIFOLD	SET 1	BY HBP
2	SLUG CATCHER	SET 1	BY HBP
3	SEPARATOR AREA		EXISTING
4	PROCESS EQUIPMENT AREA		EXISTING
5	NEW PROCESS EQUIPMENT AREA		BY HBP
6	CCR (CENTRAL CONTROL ROOM)	SET 1	BY HBP
7	ELECTRICAL BUILDING	SET 1	BY HBP
8	POWER GENERATOR BUILDING	SET 1	BY HBP
9	LABORATORY	SET 1	BY OGDCL
10	LPG STORAGE BULLETS	SET 39	BY HBP
11	EXISTING CONDENSATE TANKS	SET 6	EXISTING
12	NEW CONDENSATE TANKS (FUTURE)	SET 2	BY OGDCL
13	PRODUCED WATER TREATMENT SYSTEM		BY HBP
14	FIRE WATER SYSTEM		BY HBP
15	RAW WATER TREATMENT SYSTEM		BY HBP
16	EVAPORATION POND	SET 1	BY HBP
17	M.P.E. & I WORK SHOP	SET 1	BY OGDCL
18	AUTO WORK SHOP	SET 1	BY OGDCL
19	MAINTENANCE WORK SHOP	SET 1	BY OGDCL
20	WAREHOUSE	SET 1	BY OGDCL
21	FIRE STATION	SET 1	BY OGDCL
22	SECURITY WATCH TOWER	Nos. 5	BY OGDCL
23	PIPE YARD (100m x 50m)	SET 1	BY OGDCL
24	NEW FLARE K.O. DRUM	SET 1	BY HBP
25	RELOCATED EXISTING API PIT	SET 1	BY OGDCL
26	EXISTING FLARE HEADER	SET 1	BY OGDCL
27	NEW FLARE STACK	SET 1	BY HBP
28	LOADING SYSTEM AREA	SET 1	BY OGDCL
29	LPG LOADING AREA	SET 1	BY HBP
30	NEW CONDENSATE GANTRY	SET 1	BY OGDCL
31	ADDITIONAL LAND FOR BOWSER PARKING	SET 1	BY OGDCL
32	ADMIN BUILDING	SET 1	BY OGDCL
33	CLINIC	SET 1	BY OGDCL
34	LPG PUMP SHED	SET 1	BY HBP
35	BOUNDARY WALL	SET 1	EXISTING
36	DIESEL STORAGE VESSEL	SET 1	BY HBP
37	RECIPROCATING COMPRESSOR PACKAGES	SET 4	BY EPC
38	INSTRUMENT AIR COMPRESSOR	SET 1	BY EPC
39	NEW AIR DRYER PACKAGE	SET 1	BY EPC

**RE-ISSUED FOR TENDER  
(MODIFIED UNDER PROJECT #14-0193)**

**ENAR PETROTECH SERVICES (PRIVATE) LIMITED**  
Plot No. 7-B, Sector-7A, Korangal Industrial Area  
Email: [cbn@enar.com.pk](mailto:cbn@enar.com.pk) Website: [enar.pk](http://enar.pk)

ENAR PROJECT NO. 14-0193

TITLE	DOC No.
DESIGN BASIS FOR PLANT LAYOUT	NGP-000-GEN-15.05-0001-00
SPECIFICATION FOR PLANT LAYOUT & SPACING	NGP-000-GEN-15.03-0001-00
TOPOGRAPHIC SURVEY DRAWING (FINISHED BY ZEALCON)	B-5
HAZARDOUS AREA CLASSIFICATION LAYOUT	NGP-000-ELE-15.01-0001-00
GRADING AND VERTICAL PLAN	NGP-000-SCW-15.01-2006-00
UNIT PLOT PLAN FOR WATER EQUIPMENT LAYOUT	NGP-000-GEN-15.01-0003-00
UNIT PLOT PLAN FOR PROCESS EQUIPMENT LAYOUT	NGP-000-GEN-15.01-0004-00
UNIT PLOT PLAN FOR LPG STORAGE BULLETS	NGP-000-GEN-15.01-0005-00

**OIL & GAS DEVELOPMENT COMPANY LTD.**  
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**HONG KONG HUIHUA GLOBAL TECHNOLOGY LIMITED**

PROJECT TITLE: NASHPA GAS PROCESSING AND LPG RECOVERY PLANT PROC-FC-CBNASHPA/PROJ-12472015

DRAWING TITLE: GENERAL PLOT PLAN

PROJECT NO. NASHPA 1247

DRAWING NO. NGP-000-GEN-15.01-0001-00

REV. SCALE SHEET 03 1:1000 | OF 1

weiyang



TAG No.	PU-3401
DESCRIPTION	AIR DRYER AND COMPRESSION PACKAGE

TAG No.	PU-3410
DESCRIPTION	NEW AIR DRYER PACKAGE

K-3401A/B/C AIR COMPRESSOR	
SERVICE	INSTRUMENT AIR
QTY.	ONE OPERATING TWO STANDBY
OPERATING PRESSURE, PSIG	80~145
OPERATING TEMPERATURE, °F	110
TYPE	ROTARY SCREW TYPE

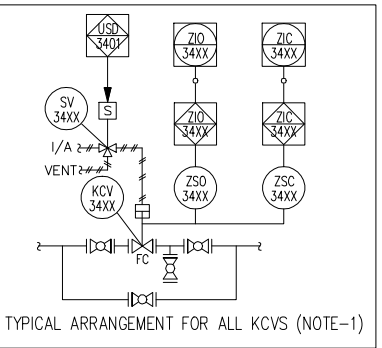
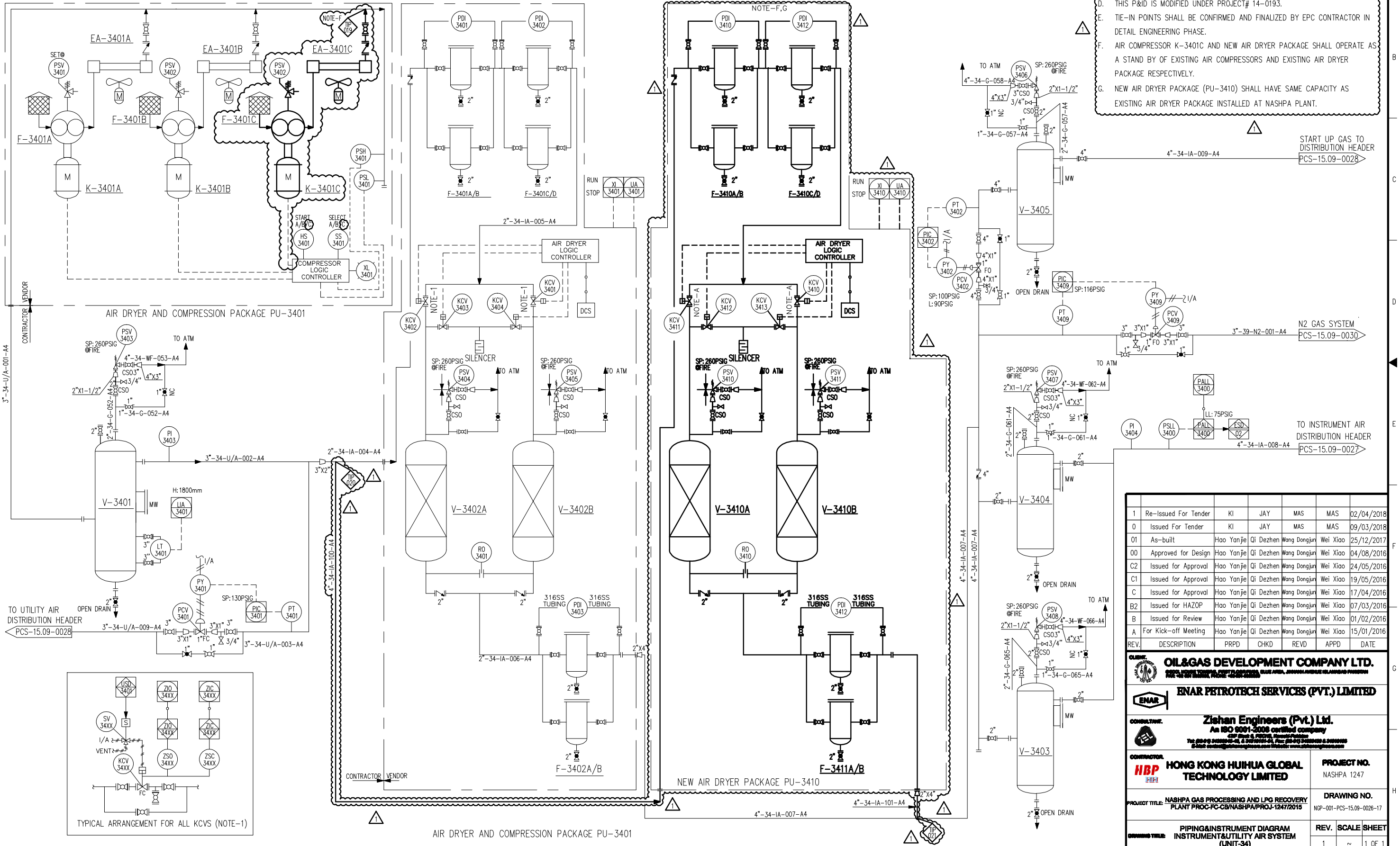
V-3401 PLANT AIR VESSEL	
PRESSURE PSIG	DESIGN 260
OPERATING	80~145
TEMPERATURE °F	DESIGN 200
OPERATING	110
INTERNAL DIAMETER, FT	7.5
LENGTH(S/S), FT	22.0
MATERIAL	A-516Gr.70

V-3403/4 INSTRUMENT AIR VESSEL	
PRESSURE PSIG	DESIGN 260
OPERATING	75~140
TEMPERATURE °F	DESIGN 200
OPERATING	110
INTERNAL DIAMETER, FT	7.5
LENGTH(S/S), FT	22.0
MATERIAL	A-516Gr.70

V-3405 START UP GAS VESSEL	
PRESSURE PSIG	DESIGN 260
OPERATING	75~140
TEMPERATURE °F	DESIGN 200
OPERATING	110
INTERNAL DIAMETER, FT	7.5
LENGTH(S/S), FT	22.0
MATERIAL	A-516Gr.70

GENERAL NOTES

- A. DUE TO SPACE CONSTRAINT, COMPLETE ASSEMBLY OF KCVS ALONG WITH POSITION SWITCHES AND SOLENOID VALVES IS NOT SHOWN ON P&ID. HOWEVER, ALL KCVS SHALL BE PROVIDED AS PER TYPICAL ARRANGEMENT SHOWN BELOW.
- B. VENDOR TO PROVIDE DEW POINT ANALYZER.
- C. ALL FLANGES PRESSURE GRADE OF V-3401, V-3404, V-3405 AND V-3406 IS 300#.
- D. THIS P&ID IS MODIFIED UNDER PROJECT# 14-0193.
- E. TIE-IN POINTS SHALL BE CONFIRMED AND FINALIZED BY EPC CONTRACTOR IN DETAIL ENGINEERING PHASE.
- F. AIR COMPRESSOR K-3401C AND NEW AIR DRYER PACKAGE SHALL OPERATE AS A STAND BY OF EXISTING AIR COMPRESSORS AND EXISTING AIR DRYER PACKAGE RESPECTIVELY.
- G. NEW AIR DRYER PACKAGE (PU-3410) SHALL HAVE SAME CAPACITY AS EXISTING AIR DRYER PACKAGE INSTALLED AT NASHPA PLANT.



REV.	DESCRIPTION	PRPD	CHKD	REVD	APPD	DATE
1	Re-Issued For Tender	KI	JAY	MAS	MAS	02/04/2018
0	Issued For Tender	KI	JAY	MAS	MAS	09/03/2018
01	As-built	Hao Yanjie	Qi Dezhen	Wang Dongjun	Wei Xiao	25/12/2017
00	Approved for Design	Hao Yanjie	Qi Dezhen	Wang Dongjun	Wei Xiao	04/08/2016
C2	Issued for Approval	Hao Yanjie	Qi Dezhen	Wang Dongjun	Wei Xiao	24/05/2016
C1	Issued for Approval	Hao Yanjie	Qi Dezhen	Wang Dongjun	Wei Xiao	19/05/2016
C	Issued for Approval	Hao Yanjie	Qi Dezhen	Wang Dongjun	Wei Xiao	17/04/2016
B2	Issued for HAZOP	Hao Yanjie	Qi Dezhen	Wang Dongjun	Wei Xiao	07/03/2016
B	Issued for Review	Hao Yanjie	Qi Dezhen	Wang Dongjun	Wei Xiao	01/02/2016
A	For Kick-off Meeting	Hao Yanjie	Qi Dezhen	Wang Dongjun	Wei Xiao	15/01/2016

**CLIENT:**  
OIL&GAS DEVELOPMENT COMPANY LTD.

**ENR PETROTECH SERVICES (PVT.) LIMITED**

**CONSULTANT:**  
Zishan Engineers (Pvt.) Ltd.  
An ISO 9001-2008 certified company

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

**PROJECT NO.:** NASHPA 1247

**DRAWING NO.:** WGP-001-PCS-15.09-0026-17

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

**DRAWING TITLE:** PIPING&INSTRUMENT DIAGRAM INSTRUMENT&UTILITY AIR SYSTEM (UNIT-34)

**REV. SCALE SHEET:**  
1 ~ 1 OF 1

Drawing Size: ISO A1 (V)

GENERAL NOTES

- THIS IS NORMAL SINGLE LINE DIAGRAM FOR AC UPS SYSTEM. SCHEMATIC DRAWINGS INDICATING METRIC & POWER ASPECT DETAILS SHALL BE COVERED IN UPS VENDOR DRAWING.
- ALL METINGS SHALL BE PART OF INTERNAL ELECTRONICS AND MISDISCREPANT SHALL BE DISPLAYED ON FRONT LCD SCREEN OF PANEL BE MADE BEFORE BREAK TYPE.
- SEPARATE BYPASS CIRCUIT SHALL BE PROVIDED WITH SEPARATE DOOR FOR EASY MAINTENANCE ON UPS TRENDS.
- EAST WINDING AND WEST WINDING OF TRANSFORMER CHARGING CURRENT AND -VE DISCHARGING CURRENT OF THE BATTERY THIS CURRENT SHALL BE DISPLAYED ON FRONT LCD SCREEN OF THE PANEL.
- SMOCHARGER AND COMPONENTS RATING SHALL BE SELECTED AND CONFIRMED.
- THE SENSITIVITY OF ENU SHALL BE 30-300MA.
- COMMON ALARM IN AC UPS DISTRIBUTION BOARD SHALL BE PROVIDED BY WIRING.
- ALL THE CONTACTS OF OUTGOING WIRING OF IN SERIES.
- BATTERY CABLE SIZING SHALL BE BASED ON 1% VOLTAGE DROP (FROM UPS TO 10 ALL INCOMING AND OUTGOING BREAKERS SHALL COMPLY CLASS "C" TYPE CHARACTERISTICS.
- ANTI-CORROSION HEATERS SHALL BE PROVIDED IN EACH PANEL WITH LOCAL VENDOR TO INDICATE THE RAINING DATE WHERE THERE IS "X".
- EACH EQUIPMENT OF THE DOUBLE CIRCUIT SUPPLIES WHICH FROM THE SAME PHASE.
- EPC CONTRACTOR SHALL UTILIZE THE AVAILABLE SPACE BREAKER FOR UNWIRED FEEDER CIRCUITS.
14. ANY MODIFICATION (IF REQUIRED) DURING INSTALLATION SHALL NEED TO BE COVERED IN EPC CONTRACTOR SOW.
15. ALL CABLING FROM UPS DISTRIBUTION BOARD TO SEPARATED EQUIPMENT EITHER IN CONTROL ROOM OR AT FIELD SHALL BE COVERED IN EPC CONTRACTOR SOW.

HOLD

1. AFTER GETTING THE DATA FROM THE EQUIPMENT VENDOR, THE SINGLE LINE DIAGRAM WILL BE FINALLY GENERAL.

REFERENCE DOCUMENTS

NO	DESCRIPTION	DATE
001	000-000-000-00	
002	000-000-000-00	
003	000-000-000-00	
004	000-000-000-00	
005	000-000-000-00	
006	000-000-000-00	
007	000-000-000-00	
008	000-000-000-00	
009	000-000-000-00	
010	000-000-000-00	
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013	000-000-000-00	
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015	000-000-000-00	
016	000-000-000-00	
017	000-000-000-00	
018	000-000-000-00	
019	000-000-000-00	
020	000-000-000-00	

REISSUED FOR TENDER

NO	REVISION	DATE	BY	CHK	APP
1	ISSUED FOR TENDER	02/04/2018	MAA	AB	MAA
2	ISSUED FOR TENDER	09/02/2018	MAA	AB	MAA
3	ISSUED FOR TENDER	29/12/2017	MAA	AB	MAA
4	ISSUED FOR TENDER	07/11/2016	MAA	AB	MAA
5	ISSUED FOR TENDER	12/05/2016	MAA	AB	MAA
6	ISSUED FOR TENDER	03/04/2016	MAA	AB	MAA
7	ISSUED FOR TENDER	15/01/2016	MAA	AB	MAA
8	ISSUED FOR TENDER	15/01/2016	MAA	AB	MAA
9	ISSUED FOR TENDER	15/01/2016	MAA	AB	MAA
10	ISSUED FOR TENDER	15/01/2016	MAA	AB	MAA

**OilGas Development Company Ltd.**  
SINGAPORE  
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TEL: 65-6533-5555  
WWW.OILGASDEVELOPMENT.COM

**Zishan Engineers (Pvt.) Ltd.**  
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 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501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 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1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940