طرح نگهداشت و افزایش تولید 27 مخزن

UTILITY CONSUMPTION LIST

نگهداشت و افزایش تولید میدان نفتی بینک

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Status:

IDC: Inter-Discipline Check
IFC: Issued For Comment
IFA: Issued For Approval
AFD: Approved For Design
AFC: Approved For Construction
AFP: Approved For Purchase
AFQ: Approved For Quotation
IFI: Issued For Information
AB-R: As-Built for CLIENT Review
AB-A: As-Built –Approved

NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک	شرکت توسعه پتروایران HIRGAN ENERGY

شماره پیمان:	UTILITY CONSUMPTION LIST								شماره صفحه : 2 از 9
053 - 073 - 9184	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	PEDCO	120	PR	LI	0006	D04	

REVISION RECORD SHEET

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CONTENTS

1.0 INTRODUCTION

Binak oilfield in Bushehr province is a part of the southern oilfields of Iran, is located 20 km northwest of Genaveh city.

With the aim of increasing production of oil from Binak oilfield, an EPC/EPD Project has been defined by NIOC/NISOC and awarded to Petro Iran Development Company (PEDCO). Also PEDCO (as General Contractor) has assigned the EPC-packages of the Project to "Hirgan Energy - Design and Inspection" JV.

As a part of the Project, a New Gas Compressor Station (adjacent to existing Binak GCS) shall be constructed to gather of 15 MMSCFD (approx.) associated gases and compress & transfer them to Siahmakan GIS.

GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields Company (NISOC)
PROJECT:	Binak Oilfield Development – Surface Facilities; New Gas Compressor Station
EPD/EPC CONTRACTOR (GC):	Petro Iran Development Company (PEDCO)
EPC CONTRACTOR:	Joint Venture of : Hirgan Energy – Design & Inspection (D&I) Companies
VENDOR:	The firm or person who will fabricate the equipment or material.
EXECUTOR:	Executor is the party which carries out all or part of construction and/or commissioning for the project.
THIRD PARTY INSPECTOR (TPI):	The firm appointed by EPD/EPC CONTRACTOR (GC) and approved by CLIENT (in writing) for the inspection of goods.
SHALL:	Is used where a provision is mandatory.
SHOULD:	Is used where a provision is advisory only.
WILL:	Is normally used in connection with the action by CLIENT rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR.
MAY:	Is used where a provision is completely discretionary.

2.0 SCOPE

This document gives the list and calculation for utility consumption for “BINAK Gas Compressor Station”. It shall be used in conjunction with data/requisition sheets for Present document’s Subject.

3.0 NORMATIVE REFERENCES

3.1 LOCAL CODES AND STANDARDS

- IPS-G-IN-200 General Standard For Instruments Air System
- IPS-E-PR-330 Process Design Of Compressed Air Systems

3.2 THE PROJECT DOCUMENTS

- BK-GNRAL-PEDCO-000-PR-DC-0001 Process Design Criteria
- BK-GCS-PEDCO-120-PR-UF-0001 Utility Flow Diagram (UFD)
- BK-GCS-PEDCO-120-PR-PI-0002~0025 P&IDs

3.3 ENVIRONMENTAL DATA

Refer to "Process Basis of Design; Doc. No. BK-GNRAL-PEDCO-000-PR-DB-0001".

3.4 ORDER OF PRECEDENCE

In case of any conflict between the contents of this document or any discrepancy between this document and other project documents or reference standards, this issue must be reported to the CLIENT. The final decision in this situation will be made by CLIENT.

4.0 UTILITY CONSUMPTION LIST

D04

Table 4-1: Overall GCS Utility Consumption

SERVICE	DESCRIPTION	FUEL GAS	WATER	FUEL OIL	INSTRUMENT AIR	PLANT AIR	NITROGEN
		kg/h	m^3/h	m^3/h	Nm^3/h	Nm^3/h	Nm^3/h
C-2101 A/B/C	1st Stage Gas Compressors				3 * 6 (Note 1,5)		3 * 6 (Note 1)
AE-2101/02 A/B/C	1st & 2nd Stage Air Coolers				21 (Note 1,5)		
PK-DR-2203	Air Dryer Regeneration				23.9		
PK-2207	Corrosion Inhibitor Package			0.0033 (Note 2)			
PK-2101	Dehydration Package	479.8 (Note 1)			14 (Note 1,5)		
IG-2201	Flare Ignition Package and Flare Header Purge Gas	26 (Note 1)					
PK-2206	Diesel Generator Package			0.135 (Note 2)			
TK-2102	Lean Glycol Tank Blanketing						9.34 (Note 5)
V-2107	Glycol Sump Drum Blanketing						0.59 (Note 5)
TK-2209	Potable Water Tank		0.042 (Note 4)				
P-2302 B/C	Fire Water Main Diesel Pump			0.126 (Note 2)			
Control Valves & On/Off Valves					39.04 (Note 2,5)		
Work Shop and Ware House						30	
Total		505.8	0.042	0.294	143.6	30	30.9

Note 1) Based on vendor data.

Note 2) Will be finalized later.

Note 3) Deleted.

Note 4) Water consumption is not in material balance, because it is intermittent consumption.

Note 5) 30% over design should be considered.

4.1 FUEL GAS CONSUMPTION CALCULATIN

Fuel gas consumption for flare header;

Header size: 10 inch = 0.256 m

Area: 0.052 m^2

Purge velocity: 0.39 ft./s = 0.12 m/s

Fuel gas consumption: 21.6 Am^3/hr = 21 kg/hr

Ignition panel consumption: 5 kg/hr

Dehydration package: 479.8 kg/hr (Based on vendor data)

4.2 AIR CONSUMPTION CALCULATION

Instrument Air Consumption;

Control valve: 0.64 Nm^3/hr

On/Off valve: 0.64 Nm^3/hr

Air coolers: 21 Nm^3/hr

Each gas compressor train: 6 Nm^3/hr

Dehydration package: 14 Nm^3/hr (Based on vendor data)

Dryer regeneration: 20%

Over Design: 30%

29 control valves X 0.64 Nm^3/hr = 18.56 Nm^3/hr

32* On/Off valves X 0.64 Nm^3/hr = 20.48 Nm^3/hr

Note*: BDVs do not use instrument air during operation.

Gas compressor train = 3 * 6 Nm^3/hr = 18 Nm^3/hr

Total instrument air for plant = 18.56 + 20.48 + 21 + 14 + 18 = 92.04 Nm^3/hr

Total continuous air required (Peak Load) = 92.04 Nm^3/hr X 30% (Over Design) = 119.7 Nm^3/hr

Total instrument air = 119.7 Nm^3/hr X 20% (Regeneration Factor) = 143.6 Nm^3/hr

Plant air Consumption: 30 Nm^3/hr

Total air requirement = 143.6 Nm^3/hr + 30 Nm^3/hr = 173.6 Nm^3/hr

Based on Design Basis/BEDD 10% over design should be considered = 191 Nm^3/hr

4.3 FUEL OIL CONSUMPTION

D04

Total fuel oil consumption for gas corrosion inhibitor: 0.0033 m3/hr

Fuel oil consumption for diesel fire water pump has been considered 0.126 m^3/hr (based on NFPA-20, 0.634 lit/ per kW per hour)

Fuel oil consumption for diesel generator (500 kW 100% load) has been considered 0.135 m^3/hr (based on vendor data)

Total fuel oil consumption for diesel generator and corrosion inhibitor: 0.0033 +0.135 = 0.138 m^3/hr ~ 3.32 m^3/day

Total fuel oil consumption for fire water diesel pump: 0.126 m^3/hr ~ 3.02 m^3/day

4.4 POTABLE WATER

The potable water consumption is based on 100 lit./day per person, with considering 10 persons.

Potable water consumption: 10 X 0.100 = 1 m^3/day

4.5 NITROGEN BLANKETING

Based on API 2000 for tanks smaller than 3180 m^3 (20000 bbl) the venting requirement due to thermal contraction is limited by the maximum temperature change of 56 K/h (100 °R/h) in the tank's vapour space. Using an initial temperature of 48.9 °C (120 °F), venting requirement is approximately equal to 0.169 Nm^3 of air per cubic meter.(1 SCFH of air per barrel) of empty tank volume.

Lean Glycol Storage Tank		
Height	5	m
LL	0.6	m
V	55.29	m^3
0.169 Nm^3 per Empty Cubic	9.34	Nm^3/h

Glycol Sump Drum		
Height	1.1	m
LL	0.15	m
V	3.47	m^3
0.169 Nm^3 per Empty Cubic	0.59	Nm^3/h

Each gas compressor train: 6 Nm3/hr

TK-2102 Blanketing: 9.34 Nm^3/hr

V-2107 Blanketing: 0.59 Nm^3/hr

3 x 6 Nm^3/hr = 18 Nm^3/hr

(9.34 Nm^3/hr + 0.59 Nm^3/hr) x 30% Over Design = 12.9 Nm^3/hr

Total Nitrogen Consumption: 12.9 Nm^3/hr + 18 Nm^3/hr = 30.9 Nm^3/hr

Maximum nitrogen demand with considering 10% over design = 34 Nm^3/hr

Plant air demand for nitrogen production: 34 Nm^3/hr x 4 = 124 Nm^3/hr