

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
	ELECTRICAL LOAD LIST								
شماره پیمان:	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	شماره صفحه: ۱ از ۷
۰۵۳ - ۰۷۳ - ۹۱۸۴	BK	GCS	PEDCO	120	EL	LI	0001	D05	

طرح نگهداشت و افزایش تولید ۲۷ مخزن

ELECTRICAL LOAD LIST

نگهداشت و افزایش تولید میدان نفتی بینک

D05	Feb.2023	IFA	H.Shakiba	M.Fakharian	M.Mehrshad	
D04	Jul.2022	IFA	H.Shakiba	M.Fakharian	M.Mehrshad	
D03	May.2022	IFA	H.Shakiba	M.Fakharian	M.Mehrshad	
D02	Mar.2022	IFA	H.Shakiba	M.Fakharian	M.Mehrshad	
D01	Jan.2022	IFA	H.Shakiba	M.Fakharian	M.Mehrshad	
D00	Nov.2021	IFC	H.Shakiba	M.Fakharian	M.Mehrshad	
Rev.	Date	Purpose of Issue / Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Class: 1 CLIENT Doc. Number: F0Z-709066

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

ELECTRICAL LOAD LIST



شماره پیمان:

۰۵۳ - ۰۷۳ - ۹۱۸۴

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه
D05	0001	LI	EL	120	PEDCO	GCS	BK

شماره صفحه: ۲ از ۷

REVISION RECORD SHEET

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4	X	X	X		
5	X	X	X	X	
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 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض								
	احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
	ELECTRICAL LOAD LIST								
شماره پیمان: ۰۵۳-۰۷۳-۹۱۸۴	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	شماره صفحه: ۳ از ۷
	BK	GCS	PEDCO	120	EL	LI	0001	D05	

Service Type:

N : Normal Load
E : Emergency Load

Load Duty:

C : Continuous Load
I : Intermitant Load
S : Stand By Load
LR/FL: Loacked Rotor / Full Load Current

Load Type:

M: Motor
F: Non-Motor

Definition of API Factor

1.25 for Motor Power < 22kW,
1.15 for Motor Power between, 22kW and 55kW
1.1 for Motor Power > 55kW

Height derating factor can be determined as follows if no manufacturer data is available:

Height Above Sea Level	Height Factor
< 1000 m	1
1000 < Height < 1500 m	0.97
1500 m >	0.94

Coolant (Cooling) Factor is 0.88 according to basic document for motor feeder type.

LV Feeder Type:

F1: Simple 4-Pole MCCB Feeder with Thermal/Magnetic Trips, for $I < 63A$ Feeders
F2: Simple 4-Pole MCCB Feeder with Thermal/Magnetic Trips, for $63A \leq I < 100A$ Feeders
F3: Simple 4-Pole MCCB Feeder with Thermal/Magnetic Trips, for $100A \leq I$ Feeders
F4: Simple 3-Pole MCCB Feeder with Thermal/Magnetic Trips, for $I < 63A$ Feeders
F5: Simple 3-Pole MCCB Feeder with Thermal/Magnetic Trips, for $63A \leq I < 100A$ Feeders
F6: Simple 3-Pole MCCB Feeder with Thermal/Magnetic Trips, for $100A \leq I$ Feeders
F7: Simple 2-Pole MCCB Feeder for Feeding Single Phase Loads (Ph+N or 2-Ph)
M1: Direct on Line Motor Starter Feeders for $0.4 \leq P < 4kW$ (Switch Fuse + Contactor + Bimetal + R/L Signaling)
M2: Direct on Line Motor Starter Feeders for $4kW \leq P < 18.5kW$ (Switch Fuse + Contactor + Bimetal + R/L Signaling + R/L Ammeter)
M3: Direct on Line Motor Starter Feeders for $18.5kW \leq P < 30$ (Switch Fuse + Contactor + Bimetal + R/L Signaling + R/L Ammeter (49, 50G, Phase Control))
M4: Direct on Line Motor Starter Feeders for $30kW \leq P$ (Switch Fuse + Contactor + Overload CT + R/L Signaling + R/L Ammeter + Motor Protection Relay (49, 50G, Phase Control))

MV Feeder Type:

C1: 11 KV Incoming Feeder
C2: Outgoing Transformer 2000 KVA
C3: Outgoing Motor Starter <1000 KW
C4: Bus Coupler 11 KV

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	ELECTRICAL LOAD LIST								شماره صفحه: ۴ از ۷	
	شماره پیمان:									
۰۵۳-۰۷۳-۹۱۸۶	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سرپال	نسخه		
	BK	GCS	PEDCO	120	EL	LI	0001	D05		

Item NO	Rev	Bus	Equipment Number	Load Description	Service Type	Load Duty	Diversity Factor for Demand Load	NO Phases	Rated Voltage (V)	Load Type	Starting Method	BHP (Kw)	API Factor	Coolant Factor	Height Factor	Mechanical Power (Kw)	Rated Power (Kw)	Eff. (%)	Power Factor	Load Factor (%)	LR/FL	Current Normal Operation(A)	Starting Conditions Current (A)	Absorbed Peak Active Power (Kw)	Absorbed Peak Reactive Power (Kvar)	Absorbed Peak Apparent Power (Kva)	Feeder Type
1	D02	GCS-11-SWG-001A	C-2101A	First & Second Stage Gas Compressor A	N	C	1	3	11	M	DOL	932	1.1	0.88	1	1165	1250	95	77	74.6	6	89.7	538.1	981.05	812.928	1274.09	C3
2	D02	GCS-11-SWG-001B	C-2101B	First & Second Stage Gas Compressor B	N	C	1	3	11	M	DOL	932	1.1	0.88	1	1165	1250	95	77	74.6	6	89.7	538.1	981.05	812.928	1274.09	C3
3	D02	GCS-11-SWG-001A	C-2101C	First & Second Stage Gas Compressor C	N	S	0.1	3	11	M	DOL	932	1.1	0.88	1	1165	1250	95	77	74.6	6	89.7	538.1	98.11	81.293	127.41	C3
4	D00	GCS-11-SWG-001B	P-2301A	Fire Water Electric Pump	N	I	0.75	3	3.3	M	DOL	220	1.1	0.88	1	275.00	300	92	82	73.3	6	69.57	417.44	179.35	125.19	218.72	C3
5	D03	GCS-11-SWG-001A	GCS-TR-001	Transformer-001 11/.42 KV	N	C	1	3	11	F	-	-	-	-	-	-	1000	100	80	100.0	1	65.61	-	1000.00	750.00	1250.00	C2
6	D03	GCS-11-SWG-001B	GCS-TR-002	Transformer-002 11/.42 KV	N	C	1	3	11	F	-	-	-	-	-	-	1000	100	80	100.0	1	65.61	-	1000.00	750.00	1250.00	C2

GCS-11-SWG-001A					
Continuous		Intermittent		Standby	
Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)
1981.05	1562.93	0.00	0.00	98.11	81.29
Power Calculation		Avtive Power (Kw)	Reactive Power (Kvar)	Apparent power (KVA)	Power Factor
Maximum Normal Running Load		1981.05	1562.93	2523.35	0.79
Peak Load		2079.158	1644.221	2650.73	0.78
Peak Load				2650.728	

GCS-11-SWG-001B					
Continuous		Intermittent		Standby	
Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)
1981.05	1562.93	179.35	125.19	0.00	0.00
Power Calculation		Avtive Power (Kw)	Reactive Power (Kvar)	Apparent power (KVA)	Power Factor
Maximum Normal Running Load		2160.40	1688.11	2741.73	0.79
Peak Load		2160.40	1688.11	2741.73	0.79
Peak Load				2741.725	

The **Peak** load on 11 Kv switchgear "GCS-11-SWG-001A" is 2650 KVA while demand load on "GCS-11-SWG-001B" is about 2742 KVA.

Fire water Pump will fed from 800 kVA trnasformer 11/3.3 KV, which will be finalized after power flow calculation.

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	ELECTRICAL LOAD LIST								شماره پیمان:			
	شماره پیمان:	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	نسخه	۰۵۳-۰۷۳-۹۱۸۴		
		BK	GCS	PEDCO	120	EL	LI	0001	D05			

Item NO	Rev	Bus	Equipment Number	Load Description	Service Type	Load Duty	Diversity Factor for Demand Load	NO Phases	Rated Voltage (V)	Load Type	Starting Method	BHP (Kw)	API Factor	Coolant Factor	Height Factor	Mechanical Power (Kw)	Rated Power (Kw)	Eff. (%)	Power Factor	Load Factor (%)	LR/FL	Current Normal Operation(A)	Absorbed Peak Active Power (Kw)	Absorbed Peak Reactive Power (Kvar)	Feeder Type
1	D05	GCS-400-NSWG-001A	AC-2121A	First Stage Air Cooler 21A	N	C	1	3	0.4	M	DOL	8.5	1.25	0.88	1	12.07	15	91.8	82	56.7	7	28.8	9.26	6.46	M3
2	D05	GCS-400-NSWG-001A	AC-2122A	First Stage Air Cooler 22A	N	C	1	3	0.4	M	DOL	8.5	1.25	0.88	1	12.07	15	91.8	82	56.7	7	28.8	9.26	6.46	M3
3	D05	GCS-400-NSWG-001B	AC-2121B	First Stage Air Cooler 21B	N	C	1	3	0.4	M	DOL	8.5	1.25	0.88	1	12.07	15	91.8	82	56.7	7	28.8	9.26	6.46	M3
4	D05	GCS-400-NSWG-001B	AC-2122B	First Stage Air Cooler 22B	N	C	1	3	0.4	M	DOL	8.5	1.25	0.88	1	12.07	15	91.8	82	56.7	7	28.8	9.26	6.46	M3
5	D05	GCS-400-NSWG-001A	AC-2121C	First Stage Air Cooler 21C	N	S	0.1	3	0.4	M	DOL	8.5	1.25	0.88	1	12.07	15	91.8	82	56.7	7	28.8	0.93	0.65	M3
6	D05	GCS-400-NSWG-001A	AC-2122C	First Stage Air Cooler 22C	N	S	0.1	3	0.4	M	DOL	8.5	1.25	0.88	1	12.07	15	91.8	82	56.7	7	28.8	0.93	0.65	M3
7	D05	GCS-400-NSWG-001A	AC-2131A	Second Stage Air Cooler 31A	N	C	1	3	0.4	M	DOL	19	1.15	0.88	1	24.83	30	92	80	63.3	7	58.8	20.65	15.49	M3
8	D05	GCS-400-NSWG-001A	AC-2132A	Second Stage Air Cooler 32A	N	C	1	3	0.4	M	DOL	19	1.15	0.88	1	24.83	30	92	80	63.3	7	58.8	20.65	15.49	M3
9	D05	GCS-400-NSWG-001B	AC-2131B	Second Stage Air Cooler 31B	N	C	1	3	0.4	M	DOL	19	1.15	0.88	1	24.83	30	92	80	63.3	7	58.8	20.65	15.49	M3
10	D05	GCS-400-NSWG-001B	AC-2132B	Second Stage Air Cooler 32B	N	C	1	3	0.4	M	DOL	19	1.15	0.88	1	24.83	30	92	80	63.3	7	58.8	20.65	15.49	M3
11	D05	GCS-400-NSWG-001A	AC-2131C	Second Stage Air Cooler 31C	N	S	0.1	3	0.4	M	DOL	19	1.15	0.88	1	24.83	30	92	80	63.3	7	58.8	2.07	1.55	M3
12	D05	GCS-400-NSWG-001A	AC-2132C	Second Stage Air Cooler 32C	N	S	0.1	3	0.4	M	DOL	19	1.15	0.88	1	24.83	30	92	80	63.3	7	58.8	2.07	1.55	M3
13	D04	GCS-400-NSWG-001E	PK-C-2203A	Instrument & Plant Air Package A	E	C	1	3	0.4	F	-	-	-	-	-	-	50	100	85	100.0	1	84.90	50.00	30.99	F3
14	D04	GCS-400-NSWG-001E	PK-C-2203B	Instrument & Plant Air Package B	E	S	0.1	3	0.4	F	-	-	-	-	-	-	50	100	85	100.0	1	84.90	5.00	3.10	F3
15	D05	GCS-400-NSWG-001A	PK-Dr-2203A	Air Dryer Package A	N	C	1	3	0.4	F	-	-	-	-	-	-	2	100	85	100.0	1	3.40	2.00	1.24	F1
16	D05	GCS-400-NSWG-001B	PK-Dr-2203B	Air Dryer Package B	N	S	0.1	3	0.4	F	-	-	-	-	-	-	2	100	85	100.0	1	3.40	0.20	0.12	F1
17	D03	GCS-400-NSWG-001A	PK-C-2204	Air Compressor for N2 Package	N	C	1	3	0.4	F	-	-	-	-	-	-	30	100	85	100.0	1	50.94	30.00	18.59	F2
18	D02	GCS-400-NSWG-001A	PK-2204	Nitrogen Package	N	C	1	3	0.4	F	-	-	-	-	-	-	2	100	85	100.0	1	3.40	2.00	1.24	F1
19	D05	GCS-400-NSWG-001A	PK-2201	LP Flare Package	N	C	1	3	0.4	F	-	-	-	-	-	-	22.5	100	95	100.0	1	34.19	22.50	7.40	F1
20	D00	GCS-400-NSWG-001E	IG-2201	LP Flare Ignition Package	E	I	0.75	3	0.4	F	-	-	-	-	-	-	2	100	95	100.0	1	3.04	1.50	0.49	F1
21	D04	GCS-400-NSWG-001B	PK-2207	Corrosion Inhibitor Package	N	C	1	3	0.4	F	-	-	-	-	-	-	2	100	95	100.0	1	3.04	2.00	0.66	F1
22	D04	GCS-400-NSWG-001B	PK-2208	Methanol Injection Package	N	I	0.75	3	0.4	F	-	-	-	-	-	-	0	100	95	100	1	0	0	0	F1
23	D00	GCS-400-NSWG-001B	PK-2101	Dehydration Package	N	C	1	3	0.4	F	-	-	-	-	-	-	20	100	95	100.0	1	30.39	20.00	6.57	F1
24	D04	GCS-400-NSWG-001E	P-2203A	Sump Pump A	E	I	0.75	3	0.4	M	DOL	1	1.25	0.88	1	1.42	2.2	86.8	77	45.45	5.2	4.75	0.86	0.72	M1
25	D04	GCS-400-NSWG-001E	P-2203B	Sump Pump B	E	I	0.75	3	0.4	M	DOL	1	1.25	0.88	1	1.42	2.2	86.8	77	45.45	5.2	4.75	0.86	0.72	M1
26	D04	GCS-400-NSWG-001E	P-2202A	Closed Drain Pump A	E	I	0.75	3	0.4	M	DOL	2.9	1.25	0.88	1	4.12	5.5	89.3	84	52.7	6.5	10.58	2.44	1.57	M1
27	D04	GCS-400-NSWG-001E	P-2202B	Closed Drain Pump B	E	I	0.75	3	0.4	M	DOL	2.9	1.25	0.88	1	4.12	5.5	89.3	84	52.7	6.5	10.58	2.44	1.57	M1
28	D05	GCS-400-NSWG-001E	P-2101A	Slug Pump A	E	I	0.75	3	0.4	M	DOL	7	1.25	0.88	1	9.94	11	92	81	63.6	6.5	21.31	5.71	4.13	M4
29	D05	GCS-400-NSWG-001E	P-2101B	Slug Pump B	E	I	0.75	3	0.4	M	DOL	7	1.25	0.88	1	9.94	11	92	81	63.6	6.5	21.31	5.71	4.13	M4
30	D05	GCS-400-NSWG-001E	P-2302A	Fire Water Jockey Pump A	E	I	0.75	3	0.4	F	-	12	1.25	0.88	1	-	20	100	95	60.0	1	30.39	15.00	4.93	F2
31	D05	GCS-400-NSWG-001E	P-2302B	Fire Water Jockey Pump B	E	I	0.75	3	0.4	F	-	12	1.25	0.88	1	-	20	100	95	60.0	1	30.39	15.00	4.93	F2
32	D04	GCS-400-NSWG-001B	P-2209	Potable Water Pump	N	I	0.75	3	0.4	M	DOL	1	1.25	0.88	1	1.42	2.2	86.8	77	45.5	5.2	4.75	0.86	0.72	M1
33	D05	GCS-400-NSWG-001B	P-2206	Diesel Oil Pump	N	I	0.75	3	0.4	M	DOL	0.3	1.25	0.88	1	0.43	1.1	83.9	80	27.3	4.7	2.37	0.27	0.20	M1
34	D04	GCS-400-NSWG-001E	P-2201A	LP Flare K.O. Drum Pump A	E	I	0.75	3	0.4	M	DOL	0.6	1.25	0.88	1	0.85	1.1	83.9	80	54.5	4.7	2.37	0.54	0.40	M1
35	D04	GCS-400-NSWG-001E	P-2201B	LP Flare K.O. Drum Pump B	E	I	0.75	3	0.4	M	DOL	0.6	1.25	0.88	1	0.85	1.1	83.9	80	54.5	4.7	2.37	0.54	0.40	M1
36	D04	GCS-400-NSWG-001A	P-2103A	Glycol Transfer Pump A	N	I	0.75	3	0.4	M	DOL	1	1.25	0.88	1	1.42	1.5	85.6	82	66.7	5	3.08	0.88	0.61	M1
37	D04	GCS-400-NSWG-001B	P-2103B	Glycol Transfer Pump B	N	I	0.75	3	0.4	M	DOL	1	1.25	0.88	1	1.42	1.5	85.6	82	66.7	5	3.08	0.88	0.61	M1
38	D00	GCS-400-NSWG-001B	P-2102	Glycol Manual Pump	N	I	0.75	3	0.4	M	DOL	0.5	1.25	0.88	1	0.71	1.1	83.9	80	45.5	4.7	2.37	0.45	0.34	M1
39	D04	GCS-400-NSWG-001B	P-2104	Glycol Drain Pump	N	I	0.75	3	0.4	M	DOL	0.8	1.25	0.88	1	1.14	1.1	83.9	80	72.7	4.7	2.37	0.72	0.54	M1
40	D01	GCS-400-NSWG-001A	P-2105A																						

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک ELECTRICAL LOAD LIST								
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴	پروژه BK	بسته کاری GCS	صادر کننده PEDCO	تسهیلات 120	رشته EL	نوع مدرک LI	سریال 0001	نسخه D05	شماره صفحه: ۷ از ۷

1. Mechanical Power (KW): Mechanical Power for Motors = BHP(KW) x API Factor / (Cooling Factor x Height Factor)

2. Rated Power(KW): Rated Power = The Nearest Size of The Equipment to Mechanical Power of Motors

3. Load Factor(%): Load Factor = (BHP/Rated Power) x 100

4. Normal Operation(A): Normal Operation (A) = Rated Power / (Sqrt(3) x Nominal Voltage x cosØ)

5. Starting Current(A): Starting Current(A) = (LR/LF) x Normal Current

6. Electrical Power Demand (KW):

Electrical Absorbed Power Demand (KW) = BHP(KW) x Diversity Factor / Efficiency

Electrical Absorbed Power Demand (KW) = Rated Power(KW) x Diversity Factor / Efficiency

7. Electrical Reactive Power Demand (KVAR):

Electrical Reactive Power Demand (KVAR) = Electrical Absorbed Power Demand (KW) x Tangent(Ø)

For "Electrical Demand" calculation, following "Diversity Factors" has been considered (based on peak loads):

Continuous: 100% Diversity factor.

Intermittent: Normally less than 12 hours/day, As generally 75%

Standby: Spare/Backup drives or systems, As generally 10% or biggest standby load (which is bigger)

Notes

1- Electrical heat tracing for compressor will be supplied from Auxiliary MCC of each one