طرح نگهداشت و افزایش تولید ۲۷ مخزن

ELECTRICAL LOAD LIST

نگهداشت و افزایش تولید میدان نفتی بینک

Rev.	Date	Purpose of Issue / Status	Prepared by:	Checked by:	Approved by:	Client Approval
D06	Jan.2024	IFA	H.Shakiba	M.Fakharian	S.Faramarzpour	
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	

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 سطح‌الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک ELECTRICAL LOAD LIST	شرکت توسعه پتروایران HIRGAN ENERGY

شماره پیمان:	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	شماره صفحه: ۲ از ۷
۹۱۸۴ – ۰۷۳ - ۰۵۳	BK	GCS	PEDCO	120	EL	LI	0001	D06	

REVISION RECORD SHEET

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4	X	X	X		
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شماره پیمان:	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	شماره صفحه: ۳ از ۷
۰۵۳-۰۷۳-۹۱۸۴	BK	GCS	PEDCO	120	EL	LI	0001	D06	

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=<I<100A Feeders
F3: Simple 4-Pole MCCB Feeder with Thermal/Magnetic Trips, for 100A=<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=<I<100A Feeders
F6: Simple 3-Pole MCCB Feeder with Thermal/Magnetic Trips, for 100A=<I Feeders
F7: Simple 2-Pole MCCB Feeder for Feeding Single Phase Loads (Ph+N or 2-Ph)
F8: Simple 2-Pole MCCB Feeder for Feeding Single Phase Loads (Ph+N or 2-Ph) with Contactor
F9: Simple 3-Pole MCCB Feeder for Feeding Three Phase Loads (3PH+N) with Contactor
M1: Direct on Line Motor Starter Feeders for 0.4 ≤ P < 4kW (Switch Fuse + Contactor + Bimetal + R/L Signaling)
M2: Direct on Line Motor Starter Feeders for 4kW ≤ P < 18.5kW (Switch Fuse + Contactor + Bimetal + R/L Signaling + R/L Ammeter)
M3: Direct on Line Motor Starter Feeders for 18.5kW ≤ 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 ≤ P (Switch Fuse + Contactor + Overload CT + R/L Signaling + R/L Ammeter + Motor Protection Relay (49, 50G, Phase Control))
M5: Direct on Line Motor Starter Feeders for 0.55 kW ≤ P < 18.5kW (Switch Fuse + Contactor + Bimetal + R/L Signaling + R/L Ammeter) for Package

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

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 aboat 2742 KVA.

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

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	D06	GCS-400-NSWG-001A	AC-2121A	First Stage Air Cooler 21A	N	C	1	3	0.4	M	DOL	2.3	1.25	0.88	1	3.27	5.5	84	79	41.8	6.5	12.0	2.74	2.12	M2
2	D06	GCS-400-NSWG-001A	AC-2122A	Second Stage Air Cooler 22A	N	C	1	3	0.4	M	DOL	4	1.25	0.88	1	5.68	5.5	84	79	72.7	6.5	12.0	4.76	3.70	M2
3	D06	GCS-400-NSWG-001B	AC-2121B	First Stage Air Cooler 21B	N	C	1	3	0.4	M	DOL	2.3	1.25	0.88	1	3.27	5.5	84	79	41.8	6.5	12.0	2.74	2.12	M2
4	D06	GCS-400-NSWG-001B	AC-2122B	Second Stage Air Cooler 22B	N	C	1	3	0.4	M	DOL	4	1.25	0.88	1	5.68	5.5	84	79	72.7	6.5	12.0	4.76	3.70	M2
5	D06	GCS-400-NSWG-001A	AC-2121C	First Stage Air Cooler 21C	N	S	0.1	3	0.4	M	DOL	2.3	1.25	0.88	1	3.27	5.5	84	79	41.8	6.5	12.0	0.27	0.21	M2
6	D06	GCS-400-NSWG-001A	AC-2122C	Second Stage Air Cooler 22C	N	S	0.1	3	0.4	M	DOL	4	1.25	0.88	1	5.68	5.5	84	79	72.7	6.5	12.0	0.48	0.37	M2
7	D06	GCS-400-NSWG-001A	AC-2131A	First Stage Air Cooler 31A	N	C	1	3	0.4	M	DOL	2.3	1.25	0.88	1	3.27	5.5	84	79	41.8	6.5	12.0	2.74	2.12	M2
8	D06	GCS-400-NSWG-001A	AC-2132A	Second Stage Air Cooler 32A	N	C	1	3	0.4	M	DOL	4	1.25	0.88	1	5.68	5.5	84	79	72.7	6.5	12.0	4.76	3.70	M2
9	D06	GCS-400-NSWG-001B	AC-2131B	First Stage Air Cooler 31B	N	C	1	3	0.4	M	DOL	2.3	1.25	0.88	1	3.27	5.5	84	79	41.8	6.5	12.0	2.74	2.12	M2
10	D06	GCS-400-NSWG-001B	.	Second Stage Air Cooler 32B	N	C	1	3	0.4	M	DOL	4	1.25	0.88	1	5.68	5.5	84	79	72.7	6.5	12.0	4.76	3.70	M2
11	D06	GCS-400-NSWG-001A	AC-2131C	First Stage Air Cooler 31C	N	S	0.1	3	0.4	M	DOL	2.3	1.25	0.88	1	3.27	5.5	84	79	41.8	6.5	12.0	0.27	0.21	M2
12	D06	GCS-400-NSWG-001A	AC-2132C	Second Stage Air Cooler 32C	N	S	0.1	3	0.4	M	DOL	4	1.25	0.88	1	5.68	5.5	84	79	72.7	6.5	12.0	0.48	0.37	M2
13	D06	GCS-400-NSWG-001E	PK-C-2203A	Instrument & Plant Air Package A	E	C	1	3	0.4	F	-	-	-	-	-	-	75	92	82	100.0	1	143.5	81.52	56.90	F3
14	D06	GCS-400-NSWG-001E	PK-C-2203B	Instrument & Plant Air Package B	E	S	0.1	3	0.4	F	-	-	-	-	-	-	75	92	82	100.0	1	143.5	8.15	5.69	F3
15	D06	~~GCS-400-NSWG-001A~~	~~PK-Dr-2203A~~	~~Air Dryer Package A~~	~~N~~	~~C~~	~~1~~	~~3~~	~~0.4~~	~~F~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~0~~	~~78~~	~~75~~	~~100.0~~	~~1~~	~~0.0~~	~~0.00~~	~~0.00~~	~~F1~~
16	D06	~~GCS-400-NSWG-001B~~	~~PK-Dr-2203B~~	~~Air Dryer Package B~~	~~N~~	~~S~~	~~0.1~~	~~3~~	~~0.4~~	~~F~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~0~~	~~78~~	~~75~~	~~100.0~~	~~1~~	~~0.0~~	~~0.00~~	~~0.00~~	~~F1~~
17	D06	GCS-400-NSWG-001A	PK-C-2204	Air Compressor for N2 Package	N	C	1	3	0.4	F	-	-	-	-	-	-	75	91	82	100.0	1	145.1	82.42	57.53	F3
18	D06	~~GCS-400-NSWG-001A~~	~~PK-2204~~	~~Nitrogen Package~~	~~N~~	~~C~~	~~1~~	~~3~~	~~0.4~~	~~F~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~2.2~~	~~78~~	~~75~~	~~100.0~~	~~1~~	~~5.4~~	~~2.82~~	~~2.49~~	~~F1~~
19	D06	GCS-400-NSWG-001A	PK-2201	LP Flare Package	N	C	1	3	0.4	F	-	-	-	-	-	-	30	90	80	100.0	1	60.1	33.33	25.00	F1
20	D06	GCS-400-NSWG-001E	IG-2201	LP Flare Ignition Package	E	I	0.75	3	0.4	F	-	-	-	-	-	-	2	90	85	100.0	1	3.77	1.67	1.03	F1
21	D06	GCS-400-NSWG-001B	PK-2207	Corrosion Inhibitor Package	N	C	1	3	0.4	F	-	-	-	-	-	-	2	90	85	100.0	1	3.77	2.22	1.38	F1
22	D06	GCS-400-NSWG-001B	PK-2101	Dehydration Package	N	C	1	3	0.4	F	-	-	-	-	-	-	65.2	90	85	100.0	1	123.02	72.44	44.90	F1
23	D06	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	1.5	78	75	66.67	5	3.70	0.96	0.85	M1
24	D06	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	1.5	78	75	66.67	5	3.70	0.96	0.85	M1
25	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	84	79	52.7	6.5	11.96	2.59	2.01	M2
26	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	84	79	52.7	6.5	11.96	2.59	2.01	M2
27	D06	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	88	79	63.6	6.5	22.84	5.97	4.63	M2
28	D06	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	88	79	63.6	6.5	22.84	5.97	4.63	M2
29	D06	GCS-400-NSWG-001E	P-2302A	Fire Water Jockey Pump A	E	I	0.75	3	0.4	F	-		-	0.88	1	-	18.5	90	79	0.0	1	37.56	15.42	11.96	F1
30	D06	GCS-400-NSWG-001E	P-2302B	Fire Water Jockey Pump B	E	I	0.75	3	0.4	F	-		-	0.88	1	-	18.5	90	79	0.0	1	37.56	15.42	11.96	F1
31	D06	GCS-400-NSWG-001B	P-2209	Potable Water Pump	N	I	0.75	3	0.4	M	DOL	1.5	1.25	0.88	1	2.13	2.2	78	75	68.2	5.2	5.43	1.44	1.27	M1
32	D06	GCS-400-NSWG-001E	P-2206	Diesel Oil Pump	E	I	0.75	3	0.4	M	DOL	0.6	1.25	0.88	1	0.85	1.1	73	75	54.5	4.7	2.90	0.62	0.54	M1
33	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	73	75	54.5	4.7	2.90	0.62	0.54	M1
34	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	73	75	54.5	4.7	2.90	0.62	0.54	M1
35	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	78	75	66.7	5	3.70	0.96	0.85	M1
36	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	78	75	66.7	5	3.70	0.96	0.85	M1
37	D06	GCS-400-NSWG-001B	P-2102	Glycol Manual Pump	N	I	0.75	3	0.4	M	DOL	0.4	1.25	0.88	1	0.57	1.1	73	75	36.4	4.7	2.90	0.41	0.36	M1
38	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	73	75	72.7	4.7	2.90	0.82	0.72	M1
39	D06	GCS-400-NSWG-001B	GCS-400-CR-01	Main Compressor Crane	N	I	0.75	3	0.4	F	-	-	-	-	-	-	10	90	85	100.0	1	18.87	8.33	5.16	F1
40	D06	GCS-400-NSWG-001A	GCS-400-CR-02	Fire Water Pumps Crane	N	I	0.75	3	0.4	F	-	-	-	-	-	-	5	90	85	100.0	1	9.43	4.17	2.58	F1
41	D06	GCS-400-NSWG-001B	GCS-400-NDP-01	Process Area Normal Distribution Panel	N	C	1	3	0.4	F	-	-	-	-	-	-	13.6	90	85	100.0	1	25.66	15.11	9.37	F1
42	D06	GCS-400-NSWG-001E	GCS-400-EDP-01	Process Area Emergency Distribution Panel	E	C	1	3	0.4	F	-	-	-	-	-	-	4.7	90	85	100.0	1	8.87	5.22	3.24	F1
43	D06	GCS-400-NSWG-001A	GCS-400-NDP-02	Utility Area Normal Distribution Panel	N	C	1	3	0.4	F	-	-	-	-	-	-	6.6	90	85	100.0	1	12.45	7.33	4.54	F1
44	D06	GCS-400-NSWG-001E	GCS-400-EDP-02	Utility Area Emergency Distribution Panel	E	C	1	3	0.4	F	-	-	-	-	-	-	3.2	90	85	100.0	1	6.04	3.56	2.20	F1
45	D06	GCS-400-NSWG-001B	WS-PR-01	First Welding Receptacle (Process Area)	N	I	0.75	3	0.4	F	-	-	-	-	-	-	35	90	75	100.0	1	74.84	29.17	25.72	F2
46	D06	GCS-400-NSWG-001A	WS-PR-03	Third Welding Receptacle (Process Area)	N	S	0.1	3	0.4	F	-	-	-	-	-	-	35	90	75	100.0	1	74.84	3.89	3.43	F2
47	D06	GCS-400-NSWG-001B	WS-UT-01	First Welding Receptacle (Utility Area)	N	I	0.75	3	0.4	F	-	-	-	-	-	-	35	90	75	100.0	1	74.84	29.17	25.72	F2
48	D06	GCS-400-NSWG-001A	WS-UT-02	Second Welding Receptacle (Utility Area)	N	S	0.1	3	0.4	F	-	-	-	-	-	-	35	90	75	100.0	1	74.84	3.89	3.43	F2
49	D06	GCS-400-NSWG-001A	GCS-400-CP01	Cathodic Protection Transformer Rectifier1	N	C	1	3	0.4	F	-	-	-	-	-	-	5	90	90	100.0	1	8.91	5.56	2.69	F1
50	D06	GCS-400-NSWG-001A	GCS-110-CHG-001	110VDC Charger 1	N	S	0.1	3	0.4	F	-	-	-	-	-	-	20	90	85	100.0	1	37.74	2.22	1.38	F1
51	D06	GCS-400-NSWG-001E	GCS-110-CHG-002	110VDC Charger 2	E	C	1	3	0.4	F	-	-	-	-	-	-	20	90	85	100.0	1	37.74	22.22	13.77	F1
52	D06	GCS-400-NSWG-001A	GCS-24-CHG-001	24VDC Charger 1	N	S	0.1	3	0.4	F	-	-	-	-	-	-	23	90	85	100.0	1	43.40	2.56	1.58	F1
53	D06	GCS-400-NSWG-001E	GCS-24-CHG-002	24VDC Charger 2	E	C	1	3	0.4	F	-	-	-	-	-	-	23	90	85	100.0	1	43.40	25.56	15.84	F1
54	D06	GCS-400-NSWG-001B	GCS-110-UPS-001	110VAC UPS 1	N	S	0.1	3	0.4	F	-	-	-	-	-	-	50.8	90	85	100.0	1	95.85	5.64	3.50	F2
55	D06	GCS-400-NSWG-001E	GCS-110-UPS-002	110VAC UPS 2	E	C	1	3	0.4	F	-	-	-	-	-	-	50.8	90	85	100.0	1	95.85	56.44	34.98	F2

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
56	D06	GCS-400-NSWG-001E	GCS-110-UPS-Bypass	110VAC UPS By Pass	E	S	0.1	3	0.4	F	-	-	-	-	-	-	23.46	90	85	100.0	1	44.26	2.61	1.62	F1
57	D04	GCS-400-NSWG-001A		MOV 1	N	C	1	3	0.4	F	-	-	-	-	-	-	2	90	85	100.0	1	3.77	2.22	1.38	F1
58	D04	GCS-400-NSWG-001B		MOV 2	N	S	0.1	3	0.4	F	-	-	-	-	-	-	2	90	85	100.0	1	3.77	0.22	0.14	F1
59	D04	GCS-400-NSWG-001E	GCS-230-FDP 01	Fire Diesel Panel 01 (Electrical Main Motor)	E	C	1	1	0.23	F	-	-	-	-	-	-	1	90	85	100.0	1	3.28	1.11	0.69	F7
60	D04	GCS-400-NSWG-001E	GCS-230-FDP 02	Fire Diesel Panel 02 (Diesel Engine)	E	C	1	1	0.23	F	-	-	-	-	-	-	1	90	85	100.0	1	3.28	1.11	0.69	F7
61	D06	GCS-400-NSWG-001A	MCC-2101A	Auxiliary Panel for Gas Compressor C-2101A	N	C	1	3	0.4	F	-	-	-	-	-	-	41.1	90	85	100.0	1	77.55	45.67	28.30	F2
62	D06	GCS-400-NSWG-001B	MCC-2101B	Auxiliary Panel for Gas Compressor C-2101B	N	C	1	3	0.4	F	-	-	-	-	-	-	41.1	90	85	100.0	1	77.55	45.67	28.30	F2
63	D06	GCS-400-NSWG-001B	MCC-2101C	Auxiliary Panel for Gas Compressor C-2101C	N	S	0.1	3	0.4	F	-	-	-	-	-	-	41.1	90	85	100.0	1	77.55	4.57	2.83	F2
64	D01	GCS-400-NSWG-001E	SPH-01	Space Heater & Lighting for New LV Switchgear	E	C	1	1	0.23	F	-	-	-	-	-	-	2	90	85	100.0	1	6.56	2.22	1.38	F7
65	D01	GCS-400-NSWG-001E	SPH-02	Space Heater & Lighting for MV Switchgear	E	C	1	1	0.23	F	-	-	-	-	-	-	2	90	85	100.0	1	6.56	2.22	1.38	F7
66	D06	GCS-400-NSWG-001E	GCS-400-EDP-CRM	Control Room Emergency Distribution Panel & HVAC	E	C	1	3	0.4	F	-	-	-	-	-	-	30.3	95	85	100.0	1	54.16	31.89	19.77	F1
67	D06	GCS-400-NSWG-001A	GCS-400-NDP-SWHVAC	Switchgear Distribution Panel & HVAC	N	C	1	3	0.4	F	-	-	-	-	-	-	30	90	85	100.0	1	56.60	33.33	20.66	F1
68	D06	GCS-400-NSWG-001E	GCS-400-EDP-CCTV	CCTV Distribution Panel & HVAC	E	C	1	3	0.4	F	-	-	-	-	-	-	15	90	85	100.0	1	28.30	16.67	10.33	F1
69	D06	GCS-400-NSWG-001B	GCS-400-EDP-WARE	Warehouse Distribution Panel & HVAC	N	C	1	3	0.4	F	-	-	-	-	-	-	10	90	85	100.0	1	18.87	11.11	6.89	F1
70	D06	~~GCS-400-NSWG-001E~~	~~EHTC~~	~~Electrical Heat Tracing Panel~~	~~E~~	~~C~~	~~1~~	~~3~~	~~0.4~~	~~F~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~10~~	~~100~~	~~90~~	~~100.0~~	~~1~~	~~16.04~~	~~10.00~~	~~4.84~~	~~F1~~
71	D03	GCS-400-NSWG-001A	CAP-01	Capacitor Bank 1	N	C	1	3	0.4	F	-	-	-	-	-	-	-	100	100	100	1	173.21	-	120	F3
72	D03	GCS-400-NSWG-001B	CAP-02	Capacitor Bank 2	N	C	1	3	0.4	F	-	-	-	-	-	-	-	100	100	100	1	173.21	-	120	F3

GCS-400-NSWG-001A			
Max Intermittent		Max Standby (KW)	
(KW)	(KVAR)	(KW)	(KVAR)
4.17	2.58	3.89	3.43
5.56	3.44	38.89	34.30

GCS-400-NSWG-001B			
Max Intermittent		Max Standby (KW)	
(KW)	(KVAR)	(KW)	(KVAR)
29.17	25.72	5.64	3.50
38.89	34.30	56.44	34.98

GCS-400-NSWG-001E			
Max Intermittent		Max Standby (KW)	
(KW)	(KVAR)	(KW)	(KVAR)
15.42	11.96	8.15	5.69
20.56	15.95	81.52	56.90

1. For each LV switchgear A & B, a separate transformer is needed to supply normal & emergency power. So the sum of apparent power will be about 1189KVA, which 2 transformers 1250 KVA are required.
2. Size of transformers shall be finalized in load flow and motor starting study.
3. Power factor has been calculated while all capacitor banks are out of service.

GCS-400-NSWG-001A					
Continuous		Intermittent		Standby	
Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)
227.68	154.23	5.13	3.43	14.06	10.98
Power Calculation		Avtive Power (Kw)	Reactive Power (Kvar)	Apparent power (KVA)	Power Factor
Maximum Normal Running Load (Demand)		232.81	157.66	281.17	0.83
Peak Load		246.866	168.644	298.97	0.83
Peak Load With 20% Spare (KVA)				**358.765**	

GCS-400-NSWG-001B					
Continuous		Intermittent		Standby	
Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)
161.56	102.47	70.30	59.82	10.43	6.47
Power Calculation		Avtive Power (Kw)	Reactive Power (Kvar)	Apparent power (KVA)	Power Factor
Maximum Normal Running Load (Demand)		231.86	162.29	283.01	0.82
Peak Load		242.292	168.751	295.27	0.82
Peak Load With 20% Spare (KVA)				**354.320**	

GCS-400-NSWG-001E					
Continuous		Intermittent		Standby	
Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)	Avtive Power (Kw)	Reactive Power (Kvar)
259.75	166.00	53.38	41.57	10.76	7.31
Power Calculation		Avtive Power (Kw)	Reactive Power (Kvar)	Apparent power (KVA)	Power Factor
Maximum Normal Running Load		313.13	207.57	375.68	0.83
Peak Load		323.891	214.878	388.69	0.83
Peak Load With 20% Spare (KVA)				**466.425**	

Total Peak Load on LV Switchgear				
Peak Load	Avtive Power (Kw)	Reactive Power (Kvar)	Apparent power (KVA)	Power Factor
	813.05	552.27	982.88	0.8272
Peak Load With 20% Spare (KVA)			**1179.458**	

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):

Continous: 100% Diversity factor.

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

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

Note

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