طرح نگهداشت و افزایش تولید ۲۷ مخزن

DATA SHEETS FOR 33 KV OVER HEAD LINE EQUIPMENT

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

شماره پیمان:	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه
۰۵۳ - ۰۷۳ - ۹۱۸۴	BK	SSGRL	PEDCO	110	EL	DT	0013	D04

REVISION RECORD SHEET

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5	X	X	X	X	
6	X	X	X	X	
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DATA SHEET FOR PHASE CONDUCTOR (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	Manufacture	By vendor	
2	Year of Manufacture	By vendor	
3	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
4	Conductor Name	HYENA	
5	Applicable standard	ASTM B232, IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375 & General Technical Specification and Execution Procedures for Transmission Lines NO: 427	
6	Max allowable temperature of conductor (°c)	85	
7	Reted short circuit current for 0.5 Sec. (KA)	18.8	
8	Max. temperature range (operation)	75	
9	Temperature range for installation(°c)	-5 ~ +55	
10	Stranding and wire diameter (nos./mm):		
11	Aluminium	7/4.39	
12	Steel	7/1.93	
13	Overall diameter(mm)	14.57	
14	Aluminium Area (mm^2)	106	
15	Steel area (mm^2)	20.48	
16	Total area (mm^2)	126.2	
17	Weight (kg/km):		
18	Aluminium	290	
19	Steel	160	
20	Total	450	
21	Nominal current in 30° (A)	441	
22	Ultimate tensile Strength (kg)	4090	
23	Coefficient of linear expansion (1 /C° x 10-6)	18.8	
24	Initial modulus of elasticity (kg/mm^2)	6000	
25	Final modulus of elasticity (kg/mm^2)	7450	
26	DC resistance at 20°C(Ω/km)	0.2713	
27	AC resistance at 25°C(Ω/km)	0.277	
28	AC resistance at 75°C(Ω/km)	0.3142	
29	Temperature range (transport / storage)	By vendor	
30	Pollution condition	Heavy	
31	Routine tests & Type test	Acc To IEC 61089	

DATA SHEET FOR SHIELD WIRE (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	Manufacture	By vendor	
2	Year of Manufacture	By vendor	
3	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
4	Code Name	7No.8 AWG	
5	Applicable standard	ASTM B416, IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375 & General Technical Specification and Execution Procedures for Transmission Lines NO: 427	
6	Max allowable temperature of conductor (°c)	55	
7	Temperature range for installation(°c)	-5 ~ +55	
8	Stranding and wire diameter (nos./mm):	7/3.26	
9	Overall diameter(mm)	9.78	
10	Total area (mm^2)	58.43	
11	Weight (kg/km):	390	
12	Ultimate tensile Strength (kg)	7226	
13	Coefficient of linear expansion (1 /C° x 10-6)	13	
14	Initial modulus of elasticity (kg/mm^2)	16000	
15	Final modulus of elasticity (kg/mm^2)	16000	
16	DC resistance at 20°C(Ω/km)	1.467	
17	Pollution condition	Heavy	
18	Routine tests & Type test	Acc To IEC 61089	

DATA SHEET FOR INSULATOR (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	Type	BALL & SOCKET	
2	Applicable Standard	IEC60120, IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375 & General Technical Specification and Execution Procedures for Transmission Lines NO: 426	
3	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
4	Material	Porcelain	
5	Nominal line to line voltage rating (kV)	33	
6	Maximum continuous line to line operating voltage (kV)	36	
7	Rated frequency (Hz)	50	
8	Creepage distance (mm/kV)	31	
9	Minimum creepage distance of insulator (mm)	1116	
10	Minimum mechanical Failing Load (kN)	70	
11	Socket coupling size (IEC60120)	16	
12	Ball coupling size (IEC60120)	16	
13	Rated lightning impulse withstand voltage to earth and between poles (kV peak)	145	
14	Rated lightning impulse withstand voltage across the isolating dist. of Fuse base (kVpeak)	170	
15	Rated one minute power frequency withstand voltage to earth and between poles (kVrms)	70	
16	Rated one minute PF withstand voltage across the isolating dist. of Fuse base (kVrms)	70	
17	Power Frequency Puncture Voltage (kV)	110	
18	Metallic Part material	Malleable Cast Iron	
19	Insulator material	Brown Glazed Porcelain	
20	Metallic parts	Malleable cast iron	
17	Washable in service	Yes	
18	Unit Spacing (mm)	By vendor	
19	Disc Diameter (mm)	By vendor	
20	Total Weight	By vendor	
21	Type and Material of Terminal	By vendor	
22	Pollution condition	Heavy	
23	Routine tests & Type test	Acc To IEC 383	

DATA SHEET FOR FITTING SUSPENSION & TENSION SET (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	Type	FORGED STEEL	
2	Applicable standard	IEC 61284, IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375 & General Technical Specification and Execution Procedures for Transmission Lines NO: 465	
3	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
4	Material:	-	
5	Outer Part	AL.ALLOY	
6	Iner Part	FORGED STEEL, Hot Deep Galvanized.	
7	Jumper Plate	AL.ALLOY	
8	Terminal Jumper	AL.ALLOY	
9	Bolts & Nuts & Washers	STEEL, Hot Deep Galvanized.	
10	Split Pin	STAINLESS STEEL	
11	Min breaking strength	95% OF CONDUCTOR U.T.S	
12	Coupling Standard IEC	16 mmA	
13	Short Circuit Current	25kA/0.4Sec.	
14	Arcing Horn	STEEL	
15	Min breaking strength (KN)	80	
16	Anti-Climbing Devices and Safety Signs for Lines up to 400kV	ENA TS 43-90	
17	Tower Identification	Steel Sheet with 2mm Thickness	
18	Danger Alarm	Steel Sheet with 1.2mm Thickness	
19	Pollution condition	Heavy	
20	Routine tests & Type test	Acc To IEC 61284	

DATA SHEET FOR EARTHING SYSTEM (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	GROUND WIRE :		
2	Type	Copper Conductor	
3	Applicable standard	DIN 48201, IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375 & General Technical Specification and Execution Procedures for Transmission Lines NO: 409	
4	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
5	Stranding (No./mm)	7/2.5	
6	Total cross section (mm2)	35	
7	Overall Diameter (mm)	7.5	
8	Unit Weight (kg/m)	0.31	
9	Calculated breaking load (kN)	13.77	
10	DC Resistance At 20°C (ohm/km)	0.5265	
11	TOWER BONDING CLAMP :		
12	Type of Body	Forged Steel	
13	Surface Coating	HOT DIP. GALV. Acc to ASTM A123 & A153 or BS729	
14	Type of Bolt & Nut	Steel	
15	Torgue on Bolt	20 NM	
16	Applicable standard	ST37 & DIN931,934,125,127	
17	Diameter of Wire catcher	Ø 8-13 mm	
18	Pollution condition	Heavy	
19	Routine tests & Type test	Acc To DIN 48201	

DATA SHEET FOR DISCONNECTOR SWITCH (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	Installation (indoor / outdoor)	Outdoor	
2	Standard	IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375	
3	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
4	Nominal system voltage, 3phase	33 kV	
5	System voltage variation	± 10%	
6	Nominal frequency and frequency variation	50 ± 5%	
7	Numbers of poles and current rating	3pole / 630 A	
8	Short circuit amper and time duration	25 kA / 1 s	
9	Rated peak withstand current	62.5 kA	
10	Creepage distance (mm/kV)	31	
11	Minimum creepage distance of insulator (mm)	1116	
12	Rated lightning impulse withstand voltage to earth and between poles (kV peak)	145	
13	Rated lightning impulse withstand voltage across the isolating distance of Fuse - base(kV peak)	170	
14	Rated one minute power frequency withstand voltage to earth and between poles (kV rms)	70	
15	Rated one minute power frequency withstand voltage across the isolating distance of Fuse - base (kV rms)	70	
16	Mode of operation OPEN/CLOSE	open-close (manual) and with earth blad and earth switch manual	
17	Disconnectors & Earthing switches Operating	Hand operating	
18	Accessories	with earth blad and earth switch manual	
19	Disconnector Mechanism	Center break	
20	Construction	Three pole operation Containing Earthing switch	
21	Ingress protection of electrical enclosures	Min. IP55 (If Needed)	
22	Disconnector status Auxiliary Contacts: No. Of Make Contacts No. Of Break Contacts Rated Voltage Rated Current Breaking Current At 110V DC	 12NC (Normally close) 12NO (Normally open) 110V DC 25 ADC 5 ADC	
23	Earthing switch status Auxiliary Contacts: No. Of Make Contacts No. Of Break Contacts Rated Voltage Rated Current Breaking Current At 110V DC	 12NC (Normally close) 12NO (Normally open) 110V DC 25 ADC 5 ADC	
24	Interlocks(Electrical & Mechanical)	To prevent closure of earth switch when Disconnector is not in open position To prevent closure of Disconnector when earth switch is not in open position	
25	Dimensions & weights	By Vendor	
26	Pollution condition	Heavy	
27	Minimum Rating plate data	Manufacturer Type designation and serial number Rated voltage Rated lightning impulse withstand voltage across open pole Rated lightning impulse withstand voltage between poles Rated power frequency withstand voltage across open pole Rated power frequency withstand voltage between poles Rated normal current Rated duration of short circuit Rated no load transformer breaking current Year of manufacture Relevant standard with date of issue	
28	Routine Tests: a) dielectric test on the main circuit (clause 7.1 of IEC60694) b) tests on auxiliary and control circuits (Clause 7.2 of IEC60694) c) measurement of the resistance of the main circuit (Clause 7.3 of IEC60694); d) tightness test (Clause 7.4 of IEC60694) e) Design and visual checks (Clause 7.5 of IEC60694) f) Mechanical tests as per clause 7.101 of IEC62271-102	Witness & Report	
29	Type Tests	Certified Reports of test on the identical type according to IEC62271-102 or IEC129	

DATA SHEET FOR CUT OUT FUSE (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	Class	Outdoor	
2	Type	Channel Type	
3	Manufacturer of Fuse base & link	By Vendor	
4	Applicable Standard	IEC60282 , IEC60787, IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375	
5	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
6	Nominal line to line voltage rating (kV)	33	
7	Maximum continuous line to line operating voltage (kV)	36	
8	Rated frequency (Hz)	50	
9	Color of Porcelain insulator	By Vendor	
10	Rated current of Fuse base (A)	100	
11	Rated current of Fuse link (A)	10	
12	Creepage distance (mm/kV)	31	
13	Minimum creepage distance of insulator (mm)	1116	
14	Rated maximum braking current (kA)	16	
15	Rated lightning impulse withstand voltage to earth and between poles (kV peak)	145	
16	Rated lightning impulse withstand voltage across the isolating distance of Fuse - base(kV peak)	170	
17	Rated one minute power frequency withstand voltage to earth and between poles (kV rms)	70	
18	Rated one minute power frequency withstand voltage across the isolating distance of Fuse - base (kV rms)	70	
19	Fuse class	Full-range	
20	Operating pole	Required	
21	Mounting brackets and accessories	Required	
22	Provision for mounting of surge arrester	Required	
23	Weight of Fuse-base & Fuse link	By Vendor	
24	Dimension of Fuse-base	By Vendor	
25	Dimension of Fuse-link	By Vendor	
26	Pollution condition	Heavy	
27	Minimum data required on rating plate	On the fuse base: Manufacturer's name Manufacturer's type designation Rated insulation level Rated voltage Rated current On the fuse carrier: Manufacturer's name Rated voltage Rated current Rated breaking capacity and TRV class Rated frequency On the fuse links: Manufacturer's name Manufacturer's type designation Rated current and speed designation Rated voltage	
28	Routine Tests	Witness and Report according to IEC 60282-2	
29	Type Tests	Certified Report on the identical type according to IEC 60282-2	

DATA SHEET FOR LIGHTNING ARRESTER (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	Type	ZnO	
2	Applicable Standard	IEC60099-4, IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375	
3	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
4	Nominal line to line voltage rating (kV)	33	
5	Maximum continuous line to line operating voltage (kV)	36	
6	Continuous Operating Voltage (Ucov)	28.8	
7	Rated frequency (Hz)	50	
8	Material of insulator	By vendor	
9	Earth fault factor	1.4	
10	Line discharge class per IEC 60099-4	2	
11	Minimum energy discharge capability (kJ/kV) U rated	Acc. To IEC	
12	Nominal discharge current with 8/20 microsecond wave (kA peak)	10	
13	Pressure relief class (kA)	20	
14	Creepage distance (mm/kV)	31	
15	Minimum creepage distance of insulator (mm)	1116	
16	Rated lightning impulse withstand voltage to earth and between poles (kV peak)	145	
17	Rated lightning impulse withstand voltage across the isolating distance of Fuse - base(kV peak)	170	
18	Rated one minute power frequency withstand voltage to earth and between poles (kV rms)	70	
19	Rated one minute power frequency withstand voltage across the isolating distance of Fuse - base (kV rms)	70	
20	Whether surge counter required?	No	
21	Washable in service	Yes	
22	Temporary overvoltage factor (Ktov) at 1 Sec. at 10 Sec. at 100 Sec.	By vendor	
23	5kA, 8/20μs lightning impulse protective level	By vendor	
24	10kA, 8/20μs lightning impulse protective level (Ur 10kA, 8/20)	Residual voltage < 43.2kV	
25	20kA, 8/20μs lightning impulse protective level	By vendor	
26	125A, 30/60μs switching impulse protective level	By vendor	
27	Height of Surge Arrester	By vendor	
28	Diameter of Sheds	By vendor	
29	Total Weight of Surge Arrester	By vendor	
30	Type and Material of Terminal	By vendor	
31	Pollution condition	Heavy	
32	Minimum data required on rating plate	Manufacturer Manufacturer type designation Serial number Continuous operating voltage Rated voltage Rated frequency Nominal discharge current Pressure relief short time current Line discharge current Pollution degree Year of manufacture Relevant standard with date of issue	
33	Routine Tests a) Measurement of reference voltage Uref (Clause 8.1.a of IEC 60099-4) b) Residual voltage test (Clause 8.1.b of IEC 60099-4) c) Internal Partial Discharge test (Clause 8.1.c of IEC 60099-4); d) Leakage test for sealed housing arresters (Clause 8.1.d of IEC 60099-4) e) Design and visual checks acc. to purchase specifications	Witness and Report	
34	Type Tests	Certified Report on the identical type according to IEC 60099-4	

DATA SHEET FOR LOAD BREAK SWITCH (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	Manufacturer / Country	By vendor	
2	Standard	IEC 62271-103, IEC 60694, IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375	
3	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
4	Type	SF6	
5	Rated Voltage	33kV	
6	Rated Frequency	50Hz	
7	No. of Phases and Poles	3 Phase, 3 Pole	
8	1 minute power freq. withstand voltage To earth and between phases: Across isolating distance:	 70kV 70kV	
9	Lightning impulse withstand voltage To earth and between phases: Across isolating distance:	 145kV 170kV	
10	Rated Normal Current	630 A	
11	Mainly active load breaking current	By vendor (> 200A)	
12	Closed loop breaking current	By vendor	
13	Line charging breaking current	By vendor	
14	Cable charging breaking current	By vendor	
15	No load transformer breaking current	By vendor (> 0.74A)	
16	Rated Short Time Withstand Current	25kA, 3 Sec.	
17	Rated Peak Withstand Current	62.5kA	
18	Rated Short Circuit Making Current	62.5kA	
19	Number of breaking operation CO	By vendor	
20	Supporting Structure Material	Hot dipped galvanized steel	
21	Creepage distance (mm/kV)	31	
21	Min. Creepage Distance of insulators	1116mm	
22	Ingress protection of el. Enclosures	Min. IP55	
23	Operating mechanism	Hand operated mechanism, common for three poles	
24	Permissible tensile force on terminals	By vendor	
25	Gas pressure indicator	Required	
26	Auxiliary Contacts: No. of Make Contacts No. of Break Contacts Rated Voltage Rated Current Breaking Current at 110V DC	By vendor: Min. 4 Min. 4 110V DC Min. 10A Min. 2A	
27	Anti-Condensation Heater	230V AC, 1Ph, 50Hz	
28	Interlocks with Earth Switch	Load Break Switch + Earth Switch integrated as one unit	
29	Dimensions and Weight	By vendor	
30	Pollution condition	Heavy	
31	Minimum data required on rating plate	Manufacturer Type designation and serial number Rated voltage One minute power frequency withstand voltage Lightning impulse withstand voltage Rated normal current Rated short time withstand current Mainly active load breaking current Closed loop breaking current Line charging breaking current Cable charging breaking current No load transformer breaking current Year of manufacture Relevant standard with date of issue	
32	Routine Tests a) Dielectric test on the main circuit (Clause 7.1 of IEC 60694) b) Tests on auxiliary and control circuits (Clause 7.2 of IEC 60694) c) Measurement of the resistance of the main circuit (Clause 7.3 of IEC60694) d) Tightness test (Clause 7.4 of IEC60694) e) Design and visual checks (Clause 7.5 of IEC60694) f) Mechanical tests as per clause 7.101 of IEC62271-100	Witness and Report	
33	Type Tests	Certified Report on the identical type according to IEC 62271-103	

DATA SHEET FOR TOWER (BK14)

Item	DESCRIPTION	CHARACTERISTIC	Vendor data
1	Manufacturer / Country	By vendor	
2	Standard	IPS-E-EL-160, Islamic Republic of Iran Vice Presidency for Strategic Planning and Supervision, General Technical Specification and Execution Procedures for overhead and cable power distribution lines NO: 374,375 & General Technical Specification and Execution Procedures for Transmission Lines NO: 440	
3	Environmental conditions	Acc. to document number: BK-00-HD-000-PR-DB-0001 (Process Basis of Design)	
4	Type of Steel: Analysis of steel Carbon Manganese Sulphur Phosphorus Silicon	MILD ST 37(235JR) 0.17 1.4 0.045 0.045 0.3 High Strength ST 52(355JR) 0.2 1.6 0.05 0.05 0.55	
5	Thickness of steel (1.6-3.2mm): Galvanizingdegree Coating thickness (µm) Coating thickness* gr/m^2 * Thickness amounts in µm are the galvanizing degree. this are calculated from gr/m2=µm*7.067	65 65 460	
6	Thickness of steel (3.2-4.8mm): Galvanizingdegree Coating thickness (µm) Coating thickness* gr/m^2 * Thickness amounts in µm are the galvanizing degree. this are calculated from gr/m2=µm*7.067	75 75 530	
7	Thickness of steel (4.8-6.4mm): Galvanizingdegree Coating thickness (µm) Coating thickness* gr/m^2 * Thickness amounts in µm are the galvanizing degree. this are calculated from gr/m2=µm*7.067	85 85 600	
8	Strength in Tension Standard Designation	BS 8100 – Lattice Towers and Masts	
9	Strength in Tension (Ultimate tensile stress)	340-470 490-630	
10	Strength in Tension (Yield stress)	235 355	
11	Strength in Compression (Elongation)	24% 22%	
12	Strength in Compression (Min zinc coating)	85µ 85µ	
13	Bolts & Nuts Characteristics: Standard designation Steel material Property class Ultimate shearing stress (On bolt shank) Ultimate Bearing stress Min zinc coating	ANSI C 135-1 (Galvanized Steel Bolts and Nuts for Overhead Lines) Steel Steel 5.6 5.8 2100kg/cm2 2800kg/cm2 5400kg/cm2 6000kg/cm2 46µ 46µ	
14	Pollution condition	Heavy	
15	Routine tests & Type test	According to ASCE1090 Manual 52	