

R13 SCR POWER HOUSE with Drillers Control Interface			
Item	Qty	UOI	Description
1	1	Set	SCR POWER HOUSE CENTER COMPLETE c/w GENSET CONTROL, SCR DRIVE, MCC & POWER HOUSE AND DRILLERS CONSOLE INTERFACE (HMI, TORQUE, LIMIT, PHEOSTAT) SCR MUST BE COMPATIBLE WITH RIG 13 4 EACH CATERPILLAR 3512B generators.
			AC SWITCHBOARD(600VAC ALTERNATOR GENSET CONTROL AND DISTRIBUTION) - ROSSHILL
A	4	Pcs	
			- Four(4) generator control switchboards to control engine/generator sets 1421KVA/995KW,600V,3phase, 60HZ, 0.7 PF, 1200RPM, excitation voltage SSV, excitation current 6.7 Amps
			Each Generator control will contain the following components:
			Main Circuit Breaker;
			Metering: Ammeter, Kilovar meter, Kilowatt meter, Voltmeter meter;
			Protective Circuits: UnderVoltage, Over Voltage, Over Frequency, Under Frequency, Reverse Power, Circuit Breaker Open, Circuit Breaker Closed, Power Limiting, Generator Run light;
			Generator Voltage Regulator control:
			Engine Governor Control: Solid State Governor Control, Automatic KW load sharing.
	1	Set	Synchronized detection and merging system
			Synchronizing System
	1	Set	Grounding detection system
			Ground Detection Lights, Percent AC ground meter, Grounding Resistors, one(1) per phase, Ground Circuit Test Button - "Push to Test"
	1	Set	24V DC power supply unit for engine
	1	Set	Power limit system

			EMI Filtering Notes:
			All Wiring associated with electronic equipment shall be kept separate from power wiring.
			All control wiring will utilize ferrules for terminations to insure a positive connections
			All control power circuits and P.T. circuit wiring shall be protected by fuses.
			Termnal blocks shall be rated to withstand the maximum continous current rating and voltage rating of the connected circuits.
			Fuse holders for control P.T. circuits will be of a design defined as "finger safe" minimizing The exposure to the personnel to arcing caused by making or breaking a circuit under load. and all materials, equipment, workmanship will be in compliance to the latest editions of ANSI C-37 for metal enclosed distribution switchgear, IEEE-45, NFPA, UL and API as appropriate.
			The 600VAC Generator Control shall be freestanding metal enclosed switchgear built in conformance with ANSI C-37 requirements.
			The Equipment shall be be front access only
			The construction of the system shall be of a type suitable for use in an oilfield environment.
			The equipment shall be self-ventilating.
			The equipment Is designed to fully control and protect a diesel electric genratorset rated 600VAC, 3 phase, three wire, 60Hz.
			SCR DRIVES (ROSSHILL) with EMI signal filtering, Sprocket SIlp/HED and Drawworks Dynamic Brake system (RESISTANCE CAPACITANCE ABSORPTION CIRCUIT)
B	5	Pcs	
			Six (6) SCR Drives cubicle Contains the following DC series Traction motor to be controlled. Motor Loads(Reversing)
	1 ea		-Drawworks A, High torque series type motor, YZ08,800KW, 1150Amps, 970RPM, 750VDC-1ea
	1 ea		-Drawworks B, High torque series type motor, YZ08,800KW, 1150Amps, 970RPM, 750VDC-1ea

	1	ea	Rotary Table, High torque series type motor, YZ08,800KW, 1150Amps, 970RPM, 750VDC-1ea Motor Loads(Non-reversing)
	2	ea	MP1, High torque series type motor, YZ08,800KW, 1150Amps, 970RPM, 750VDC-2ea
	2	ea	MP2, High torque series type motor, YZ08,800KW, 1150Amps, 970RPM, 750VDC-2ea
	2	ea	-MP3, High torque series type motor, YZ08,800KW, 1150Amps, 970RPM, 750VDC-2ea
	3	ea	Sprocket slip
	1	ea	Draw works Dynamic brake systeym
	1	ea	Foot Throttle
C	1	Set	All PLC System
			S71500 WITH EMI SIGNAL FILTERING AND DOOR MOUNTED HIGH RESOLUTION HMI TOUCHSCREEN FOR TROUBLESHOOTING PURPOSES.
			High Resolution HMI Touchscreen to include:
			- Detail Status Overview
			- Trobubleshooting Diagnostics
			- Touch Select Features
			- DW Lockout Switch
			- RT Lockout Switch
			- MP1 Lockout Switch 1#
			- MP2 Lockout Switch 2#
			- MP3 Lockout Switch 3#
			- System Alarm Indicator
			- Communication Loss Indicator
D	1	Set	480V MCC (GCS)

			MCC is front access, self-ventilating design and rated 480V three phase, 3wire, 60Hz.
			The motor control center is rated and braced for 42KAIC at 480VAC. Each motor starter and circuit breaker is fully rated. All motor starter circuit breakers are magnetic only type, and sized for horsepower indicated. All feeder breakers are thermal magnetic. Each motor control center is plug removable, and is supplied with single primary fused control power transformer for remote 120VAC control. Each motor starter is supplied with a Hand-Off-Auto controller, or provisions for a three-wire remote push-button stop/start station as required. Each motor circuit is supplied with wired to a matching power(4pins) and control receptacle(4pins) on the Power control house. Each distribution feeder breaker is wired to matching terminal block.
			Note: The control center is unable to list UL and label it. A Certificate of Conformity can be issued.
			Motor Control Circuits Designations: Feeders transformers 600VAC to 480VAC
			*Aground fault monitoring system will be provided for the 480VAC Distribution System
			All Wiring associated with electronic equipment shall be kept separate from power wiring.
			All control wiring will utilize ferrules for terminations to Insure a positive connections
			All control power circuits and P.T. circuit wiring shall be protected by fuses.
			Terminal blocks shall be rated to withstand the maximum continous current rating and voltage rating of the connected circuits.
			Fuse holders for control P.T. circuits will be of a design defined as "finger safe" minimizing the exposure to the personnel to arcing caused by making or breaking a circuit under load. Motorloads,460VAC
			Motor Loads, 460VAC
			Softstart with bypass design in case the softstart fails - with HOA & indicating lights :
	3 ea		75HP Supercharger

	2	ea	75HP Mud Mixer
	1	ea	75HP Desander
	1	ea	75HP Desilter 1EA -
			75HP Demuding
	1	ea	75HP Cutting Pump
			FAN & COOLING CHEST - DOL with HOA & indicating lights : (MCC BUCKETS) All the MCC Buckets should be Draw Out Type with lock out tagout*
	2	ea	15HP Fan Blower AC Motor Drawworks A&B
	2	ea	5HP Disk Brake Cooling Pump
	2	ea	15HP Fan Blower AC Motor Mud Pump
	1	ea	3HP Liner Wash, MP1
	1	ea	3HP Oil Cooling Pump, MP1
	2	ea	15HP Fan Blower AC Motor Mud Pump
	2	ea	3HP Liner Wash, MP2
	1	ea	3HP Oil Cooling Pump, MP2
	2	ea	15HP Fan Blower AC Motor Mud Pump 3
	1	ea	3HP Liner Wash, MP3
	1	ea	3HP Oil Cooling Pump, MP3
			CIRCUIT BREAKER (MCC BUCKETS) with ON/OFF & indicating lights :All the MCC Buckets should be Draw Out Type with lock out tagout*
	2	ea	160Amps CB - 75HP Centrifuge Pump 2EA x 160Amps CB - 75HP Mud Cleaner 1EA x 100Amps CB - 60HP Degasser
	2	ea	100Amps CB - 50HP Water Pump
	1	ea	160Amps CB - 50HP Water Well Pump
	2	ea	100Amps CB - 50HP Diesel Oil Pump

	1	ea	1160Amps CB - 75HP Spare
	1	ea	100Amps CB - 50HP Spare
	2	ea	160Amps CB - 30HP Air Compressors
	1	ea	60Amps CB - 25HP Trip tank
	1	ea	160Amps CB, (3ea)20HP Mud Agitators (Premix Tank1)
	1	ea	160Amps CB, (3ea)20HP Mud Agitators (Premix Tank2)
	1	ea	60Amps CB, (3ea)20HP Mud Agitators (Reserve Tank1)
	1	ea	160Amps CB, (3ea)20HP Mud Agitators (Reserve Tank 2)
	1	ea	160Amps CB, (3ea)20HP Mud Agitators (Suction Tank)
	1	ea	160Amps CB, (3ea)20HP Mud Agitators (Intermediate Tank)
	1	ea	160Amps CB, (3ea)20HP Mud Agitators (Mud Cleaner Tank)
	1	ea	60Amps CB, (3ea) 20HP Agitators & 3EA - 7.5HP Shale Shakers (Shale Shaker Tank)
	2	ea	2EA x 60Amps CB- 20HP Disk Brake Cooling Pumps
	2	ea	60Amps CB - 20HP Water Pumps
	1	ea	60Amps CB - 20HP Koomey Units (BOP)
	1	ea	60Amps CB - 20HP Spare
	2	ea	60Amps CB- 5HP Fuel Pump
	1	ea	160Amps CB - 5HP Cellar Pump
	2	ea	60Amps CB - 5HP Steam Cleaner
	1	ea	60Amps CB- 5HP Vacuum Degasser
	1	ea	60Amps CB- 5HP Spare
	1	ea	160Amps CB- Hydraulic Pressure Station
	1	ea	60Amps CB - Multi level

	1 ea	160Amps CB- Cooling POT
	1 ea	200Amps CB- Hive POT
	1 ea	160Amps CB - Boiler House
	1 ea	60Amps CB - Drill Power
	1 ea	60Amps CB - gas room
	1 ea	160Amps CB - well power
	1 ea	160Amps CB - Air condition unit
	1 ea	160Amps CB - Geolograph room
E		Air condition unit
F		Top drive supply power, 600 VAC,(IN=1250A)
G.		LIGHTING PANEL:(A wall-mounted lighting panel is provided for the following circuits)
		Transformer Feeder Circuit Breaker
		Branches: 27 branches
		Living Area,200A, 208Vac, 3phase, MCCB
		Generator #1 Lighting 63A,2P with GFCI , 30mA, 120Vac, miniature type
		Generator #2 Lighting 63A,2P with GFCI, 30mA, 120Vac, miniature type
		Generator #3 Lighting 63A,2P with GFCI , 30mA, 120Vac, miniature type
		Generator #4 Lighting 63A,2P with GFO , 30mA, 120Vac, miniature type
		Power Driller House, 63Amps, 3P, 120Vac, miniature type
		Power Drill Rlg floor, 63Amps, 3P, 120Vac, miniature type
		Fixed Control Lighting I,63A, 2P, 120Vac, miniature type
		Fixed Control Lighting II, 63A,2P, 120Vac, miniature type
		Fixed Control Lighting III, 63A, 2P, 120Vac, miniature type

		Fixed Control Lighting IV, 63A, 2P, 120Vac, miniature type
		Fixed Control Lighting V, 63A, 2P, 120Vac, miniature type
		Fixed Control Lighting VI, 63A, 2P, 120Vac, miniature type
		Fixed Control Lighting VII, 63A, 2P, 120Vac, miniature type
		Fixed Control Lighting VIII, 63A, 2P, 120Vac, miniature type
		Multi Level Tank Lighting, 63A, 2P, 120Vac, miniature type
		Diesel Oil Tank Lighting, 63A, 2P, 120Vac, miniature type
		Diesel Oil Tank Lighting, 63A, 2P, 120Vac, miniature type
		Cooling Water Tank Lighting, 63A, 2P, 120Vac, miniature type
		Staff House Lighting, 63A, 2P, 120Vac, miniature type
		Right Dog House Lighting, 63A, 2P, 120Vac, miniature type
		Water Tank Lighting, 63A, 2P, 120Vac, miniature type
		SCR Room Lighting, 63A, 2P, 120Vac with GCFI, miniature type
		Geograph Room Lighting, 63A, 2P, 120Vac with GCFI, miniature type
		DC motor Heater 1 , 208Vac, miniature type DC motor Heater 2 , 208Vac, miniature type
H		POWER AND CONTROL RECEPTACLES (Matching plugs for all power & control receptacles should be provided)
		- Power Receptacles Generators - Bus & Stabs
		All 3 phase AC Power - (4 plns)
		- Control Receptades
		Generators - (4pins)
		AC Control - (4pins)
I		ICABLES-CONTROL (FROM SCR TO DRILLERS CONSOLE) WITH PLUGS AND RECEPTACLE
J		CABLES-CONTROL (FROM SCR TO GENERATORS) WITH PLUGS AND RECEPTACLE K

K			PORTABLE DEHUMIDIFIER WITH DIGITAL METER
L			POWER CONTROL HOUSE
			The building shall be <u>2.75 meters wide by 12,9 meters long by 2.9 meters high</u> . The building shall be of a modular, typical oilfield, with two runner skid mounted enclosed structure. The house will be an interlocking panel design. The house shall be insulated and provided with one 2-ton NC unit for ventilation or as per your designed.
			The base of the building shall be adequately sized structural steel members rigidly braced with structural steel cross members.
			Thers shall be one(2) access door provided and It shall be supplied with automatic door closure
			- There's should be removable stairs to climb in the roof
			-Floor finish to be high voltage Rubber matting In gray color and diamond shape with certificate mark.
			- House shall be provided with fluorescent fixtures, convenience outlets, and one (1) emergency lights
			Plug Panel will be through-the-wall design.Plug Panel to be angled for Plug-Ins.
			The standard lifting eyes should be provided to facilitate transportation and lifting for all the Panels and Building House.
			Power House Paint recommended Specifications:
			Structural:
			- Structural steel shall be deaned
			- 0.5 to 1mil of inorganic zinc primer shall be applied
			- A final coat of 2-3mils of urethane shall be applied
			Interior Galvanized Surface
			- All surfaces shall be cleaned with lacquer thinner to remove any existing grease,oll and
			dust and all seams are sealed with urethane caulking

			- Self etching primer shall be applied to the surface. Final mil thickness will be 0.5 mil
			- Polyurethane shall then be applied as the finish coat with a 2-3 mil dry finish
			Exterior Galvanized Surfaces: (Trim Facia, Etc.)
			- All surfaces shall be cleaned with lacquer thinner to remove any existing grease
			oil, and dust and all seams are sealed with a urethane caulking
			- Self-etching primer shall be applied to the surface. Final mil thickness will be 0.5
			- An intermediate coat of 2-3mils of high build epoxy shall be applied
			- Polyurethane shall then be applied as the finish coat with a 2-3 mils dry finish
	1 Lot		DRILLERS CONTROL INTERFACE (HIGH RESOLUTION HMI, Rheostat, Torque Limit, Foot throttle)
			I PRIOR VISIT AT RIG LOCATION
	1 Lot		-Prior Visit at Location - the rate of the technician and how long it takes to finish the initial inspection.
			Note: If your technicians are not allowed to travel Libya your proposals/quotation considered invalid.
	1 LOT		TRAINING FOR ELECTRICIAN (4EA)
			-Training for four(4) Electrician - the location of the training and detailed cost should be reflected in the
			offer
	1 lot		FULL DOCUMENTATIONS (3SETS) Hard copies and 1 soft copy
			- Detailed and complete One Line & Schematic Diagram
			- Certificate of conformity
			- Initial Test Results
			• Brochures and catalogue for all parts and devices used

			• User and Part Manual
			INSTALLATION AND COMMISSIONING AT RIG LOCATION
	1	IOT	-Installation and Commissioning at Rig Location - the rate of the technician and how long it takes to finish the project should be reflected in the offer. Note: If your technicians are not allowed to travel Libya your proposals/quotation considered Invalid.
			NOTES: REQUIRED TO SUBMIT DETAILED OFFER INCLUDING THE FOLLOWING (LAYOUT AND SCHEMATIC)
			SCR HOUSE EXTERNAL LAYOUT
			SCR HOUSE INTERNAL LAYOUT-GEN& SCR GENERATOR WINDOWS LAYOUT ((see floor actual layout with dimensions for your design reference)
			PLUG BOARD LAYOUT
			SYSTEM SINGLE LINE DIAGRAM
			CONTROL CABLE INTERCONNECTION DC POWER INTERCONNECTION GEN CONTROL CABLE INTERCONNECTION
			DRILLER CONSOLE LAYOUT MODEL
			*One/Single Line Diagram
			*DC Power Interconnect showing the assignment Switch(Tripping and Drilling Operations)
			*Drillers Control Interface(HMI, Rheostat, Torque Limit, Foot throttlre)(see attached with dimensions for you design reference)
			***** NOTHING FOLLOWS *****