

750HP VFD (ZJ30DBS) drilling rig specification

Item	Description	Specification	QTY.	MFR
1	MAST	JJ180/33-K	1SET	HH
1.1	Mast body		1SET	HH
	Technical specification			
	Accord with API Spec. 4F Third Edition ,with API monogram			
	Max. static load of hook (Note: Acceleration and poundshock, placing stand and wind load will decrease max. hook load)	1800KN(200Tons)		
	Mast effective height	33m(108ft)		
	Top width(front side X lateral face)	2.9m×1.9m		
	Bottom width	5.5m		
	Wind load capacity			
	<i>See attached table</i>			
	Stands capacity on racking board	3000m		
	(120 columns 5"drill pipe 28m stand, including 8" drill collar 8 column)			
	Assembling height of racking board	16.5m、17.5m		
	Weight	35T		
	Features			
	K type, cantilever mast, without guy line			
	Mast consists of main mast ,racking board , casing stabbing board and other accessories of mast.			
	Mast body is integrated rigid frame structure with front opening, being consist of each 3 sections.			
	TDS and traveling block can be transported with mast top section,Do not need slip the drilling line.			
	Mast is assembled on horizontal condition, being lifted and lowered by drawworks and raising system(A frame and raising line.)			
	Mast is rased and lowered 90 degree perpendicular to the row of the well.			
	All of the pulley blocks are provided with safety sling.			
	Equipped with complete attachments and safety devices.			
1.2	Mast accessory		1SET	HH
	0.5t Air winch assembling base support on racking platform		1	
	Climb assistantor		2	
	Standpipe operation board		1	
	Mast ladder(each one on left and right, with safety cage)		2	
	Dead line stabilizer		4	
	Manual tong sheave		2	
	Conterbalance of manual tong		2	
	Hydraulic power tong block		2	
	Mast raising devices		1set	
	Hydraulic buffering device		2	

Item	Description	Specification	QTY.	MFR
2	SUBSTRUCTURE	DZ225/6.7-XD	1SET	HH
2.1	Substructure body		1SET	HH
	Technical specification			
	Accord with API Spec. 4F Third edition ,with API monogram			
	Max. static hook load	2250kN(250Tons)		
	Max.static setback load	1080kN(120Tons)		
	The total load of stand and max.static hook load	3330kN(370Tons)		
	Drill floor height	6.7m(22ft)		
	Drill floor area	9m×10m		
	Clear heitght from the bottom of rotary beam to ground.	5.7m(19ft)		
	Setback capacity(5" drill pipe)	120 stands 4 1/2" DP+10 stands 8" DC		
	Weight	70		
	Features			
	The substructure is box on box type.			
	Bottom layer includes two boxes,the boxes parallel with the row of the well.and with the interface to connect the skid device.			
	The shaker tank can be hang up on the rear box and skid together.			
	Top layer includes three module,the mast support shoes are on the right and left top box,the middle module is setback and rotary table beam.			
	The substructure can be transported by 5 loads.			
	The floor of work is covered checkered plate.			
	This height from grand to RT beam is satisfied of using compact preventers according to the design.			
	Having automated hydraulic pipes driver(Automatic Catwalk), which must be located according to the design of the rig indicated by the manufacturer			
2.2	BOP trolley		1	
	Technical specification			
	Max.lifting capacity	2×150kN		
	Lifting speed	0~3.5m/min		
	horizontal moving speed	0~4.2m/min		
	Operation	hydraulic		
2.3	Substructure accessory		1SET	HH
	The substructure is provided following accessory			
	5T Air winch assembling accessory		2	
	Tail rope pole of manual tong		2	
	Tail rope pole of hydraulic tong		1	
	Escape slide		1	
	V-door ramp		1	
	Drill floor ladder(one is from front side to ground, one from backside to ground, one from right side drill floor to shale shaker tank)		3	
	BOP moving slide rail		2	
	Dog house support bracket			
3	Dead line anchor JZG20(on mast)		1 set	Jiangnan

Item	Description	Specification	QTY.	MFR
	Technical specification			
	Assembling position	Off the driller side, right down section of mast		
	Load cell	Pull type		
	Output pressure of sensor	6MPa		
	Max. deadline pull	200kN		
	Wireline dia.	29mm		
	Weight indicator type	MD/Tocto		
	Max.load showed on the weight indicator	2400kN		
	Features			
	Deadline anchor and sensors are made according to API 8A Spec.			
4	Drilling wireline		1 set	XIANYANG
	Technical specification			
	Accord with API 9A Spec.			
	Type	6x19S+IWRC EIPS (LH)		
	Dia	Φ29mm(1 1/8")		
	Length	1200m		
5	Wireline spooler DDS		1 set	HH
	Max.dia.of sheave	2000mm		
	Max.width of sheave	1600mm		
	Rated speed of sheave	9.5r/min		
	Rated ouput torque	8000N.m		
	Wireline capacity	2200m (Φ29mm)		
	Max.load bearing	8000kg		
	Weight	2.855t		
	Motor			
	Model	M2JA80-132M4A-8.63		
	Rated power	8.63kW		
	Rated speed	1730r/min		
	Rated voltage	460V		
	Reducer			
	Model	XWD-6-29		
	Ratio	1:29		
6	Hydraulic Cat Head	YM-10	2	
	Max. pull force	10mt		
	Rated hydraulic pressure	16mpa		
	Scope	1.5m		
7	MAIN DRAW WORKS OR MAIN POWER UNIT	JC30DB	1set	HH
7.1	Drawworks body		1set	
	Technical specification			
	Rated input power	550kW(750HP)		
	Max. fast line pull	210kN		
	Wireline dia.	Φ29mm(1 1/8")		
	Shift	one shift stepless speed regulation		
	Drum(Dia.X Length)	Φ580mmx1176mm		
	Drawworks speed and function control	AC VF control+ Regeneration brake		

Item	Description	Specification	QTY.	MFR
	Parking set position, emergency stop, manual bit feed	Hydraulic single disc brake		
	Hoisting speed	0~1.2m/s		
	Auxiliary driving unit power	37kW		
	Speed of auto bit feed	0~30m/h (Adopt auxiliary driving unit)		
	Overall dimension (Length X width X height)	5030mmx2894mmx2731mm		
	Weight	18200kg		
	Features			
	The drawworks is driven by VFD. The transmission is gear box			
	The speed regulation and control adopt AC VF control and regeneration brake.			
	All of the runing parameters, including trip speed, hook position, all safety equipments, auto bit feed with constant WOB, regeneration brake, can realize full digital control by electric control system.			
	The drawworks is provided with 37KW auxiliary driving system, being driven by AC VF. The driving unit is used for auto bit feed and emergency lifting.			
	The drum has $\Phi 29$ mm(1 1/8") LEBUS groove, The gear box is complete seal structure.			
	Automated lubrication system for the diaphragm that goes into the anchor of the dead line which gives signal(señal) to the controls of the rig's console			
	The signs of each instrument and the valves of the controls were in spanish language.			
7.2	Hydraulic disc brake		1SET	HH
	Technical specification			
	Brake disc	1 set		
	Close type claw	2 sets		
	Open type claw	2 sets		
	Dia. Of brake disc	$\Phi 1400$ mm		
	Rated positive pressure of brake claw	75kN		
	Rated hydraulic operation system pressure of brake	7.5MPa		
	Cooling type of brake disc	Air cooling		
	Features			
	The hydraulic disc brake has the functions of working brake and emergency brake			
7.3	Drawworks driving AC VF motor		1SET	Yongji
	Model	YJ23		
	Fundamental frequency power	600kW		
	Fundamental frequency voltage	600V		
	Fundamental frequency current	714 A		
	Elementary wave factor factor	0.86		
	Fundamental frequency rotary speed	661 r/min		
	Fundamental frequency torque	8673Nm		
	Insulation class	200 class		
	Stator winding wireline connection type	Y		

Item	Description	Specification	QTY.	MFR
	Cooling type	Forced air cooling(With self-equipped blower)		
	Connection box denfence class	IP54, Positive pressure explosion proof		
	Weight	2900 kg		
	Features			
	Motor adapt to the requirement of VF system driving and control, meeting the environmental requirements of drilling operation			
	Motor has air pressure inspecting switch, repairing switch and heater	0.6kW(heater)	1set	
	Motor adopt force draught cooling tpye with blower.	11kW	1set	
7.4	Drawworks auxiliary driving AC motor		1set	CHINA
	Model			
	Rated power	37kW		
	Rated voltage	480 V		
	Fundamental frequency torque	290 N.m		
	Fundamental frequency	60 Hz		
	Fundamental frequency rotary speed	1480 r/min		
	Max. frequency	100 Hz		
	Cooling type	Forced air cooling		
	Motor IP class	IP54, Exd type		
7.5	Auxiliary driving unit		1SET	HH
	Technical specification			
	Rated power	37kW		
	Scope of bit feed	0-30m/h		
	Weight	1.184t		
	Features			
	The 37KW auxiliary driving AC VF motor drive drawworks drum shaft after the power pass by the bevel gear reducer then get into main gear box.			
	VFD driving make high accuracy bit feed.			
	With great transmission ratio, the auxiliary driving motor can output big torque to lift max.drilling string weight and can be used in emergency lifting while main system fail to work.			
7.6	Crown Saver	Equiped with crown block saver valve.In the driller's cabin,position of travelling bolck can be displayed ,and install Crown Saver with emergency actuator switch.	1	HH
7.7	Fast line Guide	Guide of the cable of quick line, complete set for guiding the steel cable of the main draw works (quick line) and for controlling the vibration and flogging of the cable	1	HH

Item	Description	Specification	QTY.	MFR
8	Crown block	TC180	1set	HH
	Technical specification			
	Accord with API Spec. 8A/4F			
	Max.static load	1800kN(200Tons)		
	Qty. of sheave	5+1		
	OD of main sheave	Φ915mm(36")		
	Wireline dia.	Φ29mm(1 1/8")		
	Overall dimension (Length X width X height)	2857×3671×3510mm		
	Weight	4456kg		
	Features			
	Under the crown block beam is provided with buffer wood, proof net and safety chain, and on the beam there are handrails			
	5T Air winch hoisting sheave			
	The crown block is equipped with hanging pad eyes of top drive guide rail and the ones used in wire line backward in the traveling system.			
	The crown block is equipped with main sheave and fast line keeper, and the main sheave is equipped with guard.			
	All of the sheave bearings are lubricated by the lgrease cup at the end of the shaft.			
9	Traveling block w/hook	YG180	1set	China
	Technical specification			
	Accord with API Spec 8A, with API monogram			
	Max.static load	1800kN(200Tons)		
	Qty. of sheave	5		
	OD of sheave	Φ915mm(36")		
	Wireline dia.	Φ29mm(1 1/8")		
	Spring stroke	180mm		
	Main mouth of hook dia.	150mm		
	Sub mouth of hook dia.	90mm		
	Opening size of main mouth of hook	180mm		
	Overall dimension (Length X width X height)	3307×960×713mm		
	Weight	4585kg		
	Features			
	180mm spring stroke of hook meets the requirements of make-up and breakout			
	The are reliable locking unit at the hook mouth			
	Sheave adopts cone roller bearing.			
	With strong elevator bail, on the top of hook is equipped with lift lug used in wireline backward.			
10	Cable tray		1set	HH
	This will be used for the wiring of electrical interconnection of the units in accordance with the rig design proposed by the provider			
11	VERTICAL PIPE (STAND PIPE)		1set	HH
	Working pressure	35MPa (5000psi)		
	Nominal diameter	Φ102mm(4")		
	Type	single standpipe		
	Feature:			

Item	Description	Specification	QTY.	MFR
	Interfaces for drilling parameters instrument, logging instrument, cementing manifold, interface for pump pressure gauge and valves are left in advance.			
	The connection for high pressure manifold adopts hammer union type and the hose should be fixed with safety clamp.			
	All the connection of sensors adopts 2" 1502 union.			
	Supporting parts on manifold passed nondestructive examination.			
	With lateral outlet of 2" designed to operate at 5000 psi (350 kg/cm ²), equipped with integrated assembly of at least 6 valves.			
	Rotary hose		1pcs	
	max working pressure	35MPa		
	diameter	3"		
	length	19m		
12	FLUID COLLECTING SYSTEM		1	HH
	The drilling rig was equipped with a system for collecting drilling fluids and telescopic hood according to the dimensions of the work floor and of the rotary table			
13	WORK FLOOR AND Rotary table			
13.1	WORK FLOOR			
	The work floor should be on one level, built with sheets/plates minimum ½" thick and anti-skid tapeta minimum 1" thick			
	The perimeter of the work floor have railings with a minimum height of 1.10 meters			
	The work floor have stairs with railings of minimum 1.10 meters high, which should be firmly held			
	There were entrances to the booth area of the driller, pipe ramp and mud tanks with rest area			
13.2	Rotary Table and drive unit		1set	HH
13.2.1	Rotary table	ZP275	1set	HH
	Built to API Spec 7K specification			
	Max. static load	4500kN		
	Opening diameter	Φ698.5mm (27½")		
	Max. rotary speed	220r/min		
	Gear ratio	3.56		
	Overall dimension	2468x1810x718mm		
	Weight (not including that of master bushing)	7548kg		
13.2.2	Rotary table independent drive unit		1set	HH
	Technical specification:			
	Continuous working torque	40000N•m		
	Short-time Max. working torque	52000N•m		
	Speed-regulating range of rotary table	0~220r/min		
	Model of inertia brake	LT500/250T		
	Brake torque (0.8MPa)	26900 N•m		
	Weight (Including weight of rotary table)	12500kg		
	Feature:			
	Rotary is driven through chain box case and cardan shaft by AC VF motor.			

Item	Description	Specification	QTY.	MFR
	Its drive device is installed on the spreading support of substructure's top layer which is lower than drill floor.			
	It is equipped with inertia brake and adopts ventilating air tube clutch.			
	Gear case is whole sealing construction,grease lubricated.			
	The rotary table drive system can realize such protection functions as over torque, reverse and breakdown.			
13.2.3	Frequency variable motor of rotary table		1pc	China
	Technical specification:			
	Model	YJ23		
	Rated power	600kW		
	Fundamental frequency voltage	600V		
	Fundamental frequency current	714 A		
	Fundamental frequency power factor	0.86		
	Fundamental frequency rotary speed	661 r/min		
	Fundamental frequency torque	8670Nm		
	Insulation class	200 class		
	Number of poles	6 poles		
	Connection mode for stator winding	Y		
	Cooling type	Forced air cooling (equipped with blower)		
	Working type	Continuous		
	Protection grade of junction box	IP54, pressured junction box		
	Weight	2900kg		
	Feature:			
	The same as drive motor of drawworks			
13.2.4	Bushings for rotary table		1set	HH
	The rotary table is equipped with the following bushings:			
	Master bushing			
	5 1/4" four pins driving roller bushing			
	3 1/2" four pins driving roller bushing			
	2 3/8"-8 5/8"bushing (for drilling)			
	9 5/8"-10 3/4"bushing, (for running 9 5/8" casing)			
	11 3/8"-13 3/8" bushing, (for 13 3/8" casing)			
	Lift link for bushing			
14	Air hoist winch		2	CHINA
	A) two auxiliary draw works of minimum capacity of 2500 lbs (1100 kg) type planetary gear, hydraulic or pneumatic system with reel for cable of minimum diameter 5/8". The draw works must have the drive and local control.			
	B) ancillary pulleys for steel cable with minimum diameter of 5/8".			
	C) the draw works should have protection guard and cable guide.			
	D) the core of the cable must be flexible fiber.			
15	AUXILIARY DRAW WORKS FOR MANEUVERS			
	Type	HW3-3000A	2	CHINA
	Rate pull	30KN		

Item	Description	Specification	QTY.	MFR
	Diameter of wirline	5/8"		
16	INTEGRAL CABIN OF THE AUTOMATED DRILLER			
16.1	Driller Cabin		1set	HH
	Overall dimension			
	Approximate weight	3500kg		
	Features:			
	Driller's cabin: outside surface is carbon steel , Bulletproof glass to be applied on window and safety door lock to be used.			
	Operation Console: for installing driller control system; control touch screen and DW speed joystick to be on the left; drilling parameter touch screen and disk brake joystick to be on the right.			
	Driller control system: to control RT, DW, MP; to control traveling block's position by close loop to have protection for traveling block to prevent collision with crown or with RT; power fail protection for electric system; to limit RT torque; system eme			
	Set drive emergency stop button , system emergency stop button and parking brake in drilling cabin.One emergency system stop button out of generator house.			
	Control cabinet: for placing PLC slave unit, switches, push buttons, 24V control power source, etc.			
	Plug board: provided with quick disconnect receptacles for connection from driller cabin to external equipments.		1set	USA
	Indoor air control system: solenoid valve banks to be used, inclusive of indoor connectors, hoses, connectors on connection board.		1set	FESTO PRODUCT
	Gas detection system: 4 channel flammable gas and H2S alarm system to be used to complete detection and alarm for flammable gas and H2S on floor, wellhead, chokers(2)		1set	DETCO
	Emergency lighting system: to meet lighting requirement in driller cabin and to have emergency lighting function.	EXPLOSION PROOF CLASS 1 DIVISION 1	1set	USA
	Air conditioning: to meet air conditioning requirement in driller cabin.	At least 4.5kW (explosion air conditioner with signal cooling function)	1set	TRANE
	Ex requirement: to meet explosion proof requirement for the designated area. Ex areas are classified in accordance with section API RP500			
16.2	Drilling instrumentation system (one touch screen, the other one is in toolpusher house)		1set	
	functions			
	Real-time data collection, storage, processing and real-time printable.			
	Forming the data chart, graph and can be printed.			
	features			
	Analog dial and digit display. Graphic and convenient			
	Analog gauge		1set	
	weight indicator		1set	M D
	dial size	12"		
	dial applicable line number	8、 10 line		
	max hanging weight	1800kN		

Item	Description	Specification	QTY.	MFR
	installation method	Panel Moun)		
	standpipe pressure gauge		1set	MD
	dial size	6"		
	max measureable range	7,500 PSI, (52.5Mpa)		
	installation method	Panel Mount		
	standpipe manometer		1set	CHINA
	dial size	6"		
	max measureable range	25000 LBS,		
	installation method	Panel Mount		
	Drilling data display		1set	
	Hook hanging weight, drill pressure, standpipe pressure, outlet discharge, mud pump stroke(including amassed value), RT torque, RT rev, hook speed, bit-feed speed, break-out torque of the cathead, travelling block height, well depth, drilling working dur	SPANLISH language		
	Drilling data recording system		1set	HH
	Industry computer mounted in VFD, capable of recording drilling parameters within 1 month, with printer.			
	Sensors			
	Hook load sensor		1set	MD
	Pump stroke sensor		2set	CHINA
	Stand pipe pressure sensor		1set	MD
	travelling block position sensor		1set	MD
	Mud Return line sensor assembly		1set	CHINA
	Mud level sensor		6set	Siemens
	All the sensors can function as corresponding aims and can meet EX-proof requirements of due area.			
16.3	Well site communication system			
	Wellsite communication system: talkback system with amplifier is used to achieve intercommunication between driller cabin, monkey board, floor, shaker, mud pump area, VFD house and tool pusher office.		1set	CHINA
16.4	Monitoring system		1set	CHINA
	features			
	Monitoring system consists of display sysetm, control system and camera system.			
	8 hours camera video can be saved			
	Camera system: 5 cameras, 1 for drawworks drum, 1 for racking floor, 1 for mud pump,1 for shale shaker and 1 wellhead. One video at racking floor with PAN/TILT .	Protect shell level NEMA4		
	1 displayer in driller control cabin. Screen direction adjustable			
	15" LCD displayer in driller's cabin			
	4 pictures can be showed at the same time and can be switched at will.			
16.5	Cable telephone system		1set	China
	features			
	7 cable system equipment, located in driller's cabin, racking floor, rig floor,drill pump set and VFD house			
17	SYSTEM OF GENERATION AND DISTRIBUTION OF POWER		3set	Catpillar

Item	Description	Specification	QTY.	MFR
17.1	Main generator sets			
	Specifications			
	Rated output power	1070kW		
	Rated frequency	60Hz		
	Rated voltage	600V		
	Rated rev	1200r/min		
	Starting-up	Pneumatic motor		
17.2	Engine			
	Model	CAT3512		
	Rated power	1435bhp		
	Rated rev	1200r/min		
	Revolving direction (viewing by facing fly-wheel)	Anti-clockwise		
	Cooling	fixed-type water tank, fan, closed-type cooling		
17.3	Generator			
	Model	SR4		
	Capacity	1750kVA		
	Protection grade	IP22		
	Cooling manner	Air cooling		
	line-out method	3 phase star, with neutral point		
	Pressure regulation	automatically		
	Exciting method	Self-exciting		
17.4	AUXILLARY GENERATOR	CAT C15	1set	Catpillar
	Rated output power	365kW		
	Rated frequency	60Hz		
	Rated voltage	480V		
	Rated speed	1800r/min		
	Start mode	Electrical motor activates		
17.5	Generator House		4 set	HH
	Overall dimension	12700mm×2900mm×3050mm		
	Features:			
	4 generator houses form an integral block with internal passages. In-house fire extinguishers, emergency lights and safety warning signs are provided.			
	Generator house is designed to be suitable for overall lifting and oilfield trailer transportation.			
	Fuel, air and water pipeworks are placed in house skid. Hoses and ball valves are used for connection between houses.			
	Cable trays are arranged in upper position below ceiling. All the cables to be placed in cable trays.			
18	VFD Room and Control System		1set	
	Design Fundamentals:			
	AC VFD drive system, control system, interlocking protections, etc. to meet requirement of 4000m drilling rig on work parameters, capacity and drilling operation. The system features excellent speed regulation, high overload capacity, high reliability			

Item	Description	Specification	QTY.	MFR
	Adopting proper and reliable explosion proof, anti-vibration, dampproof, waterproof measures to satisfy safety requirement.			
	Suitable Condition:			
	Altitude≤1000m			
	For work under condition of an altitude from 1000m~3000m, it is to be as per Attachment B in GB3859 Standard upon Semiconductor Converter Application to correct on current capacity and to be used on a reduced capacity level.			
	Temperature: -20°~+50℃			
	Humidity: less than 90% at temperature of +20℃.			
	The system is suitable to be used under oilfield work condition with rigorousness of high humidity, desert, saline-alkali soil, sand blow, etc.			
	Features:			
	Electric AC VFD drive system comprises VFD room, MCC loop,power and control cables, AC VF motors, other auxiliary electric devices, etc.			
	Main objective equipments controlled by the system are 1 DW motors, 1 RT drive motor and 2 MP motors respectively driven by 1 VF inverter unit.			
	VF inverter unit is digital controlled by way of common DC bus bars.			
	Regenerative brake, digital-controlled VF auto bit feed, fully digital control console unit, maximum torque output at zero motor rpm are achieved by this drive system.			
	With fully digital-control and profibus technique, fully digital transmission of control signals, fault diagnosing information and relevant parameters can be realized between VFD room and driller control cabin.			
	Profibus has one-channel construction. PLC technique is used in system's control loop,			
	To implement real time monitor, and on-time instruction, warning and protection in case of failure. Quick disconnect and module construction are used for internal elements arrangement and installation so as to reduce maintenance work duration and system d			
	To achieve real-time monitor by use of electrical control system functions.			
	This system possesses perfect protective functions: close position control loop to prevent traveling block from collision at top or on floor, no-power protection, drive system emergency shutdown, etc.			
	To have function of computer surveillance and fault diagnosing.			
	The electric drive system to have one 3 phase 600V/50Hz AC power output interface(capacity to be compatible to top drive system)			
18.1	VFD house		1set	HH,CHINA
	Specification	12000x2900x3215		
	Features:			

Item	Description	Specification	QTY.	MFR
	To have adequate strength, thermal insulation by wall, functions featuring fireproof, sand isolation, anti-vibration, watertight, thermal preservation, etc. to be suitable for oilfield work conditions and entire lifting.			
	To achieve manual controlling and paralleling 3 main generators on line.			
	House body has two doors, opened outside, provided with safety lock.			
	Inside of house is equipped with air conditioning system, inside lighting, emergency lighting(An emergency lighting fixture will also include in the center interior of the house.), warning system, earthing unit, fault examing plug, input and outut line c			
	The incoming power connections will be located in a recessed box located at the top and on one side of the house. This location in on the same side of the house as the VFD line-up The receptacles and plugs for the outgoing power and rig AC loads are ins			
	Transformers and resistors for dynamic braking units will be mounted on an covered porch at one end of the house. Air conditioners will be mounted at one end of the house too.			
18.2	Generator control cabinet		3set	HH,CHINA
	Features:			
	Realize manual paralleling, control and protection of 3 main generator sets			
	Each unit will contain the following:			
	Power Circuit Breaker – 1600AF/1600AT, 600Volt, 3 pole, 65 kA IC, UL/CSA Rated (Merlin Gerin Masterpact MT)			
	Emergency stop push button.			
	GENERATOR SYNCHRONIZING SYSTEM			
18.3	SYNCHRONIZING cabinet		1set	HH
	The Generator Synchronization (Sync) Circuit is required to connect additional generators to the Main AC bus, after one (1) or more generators are already connected to the Main AC Bus.			
	The Sync Circuit compares the frequency and voltage of the Main AC Bus with that of the generator being brought on line, so that they can be matched before the new generator's circuit breaker is closed.			
	GROUND FAULT DETECTION SYSTEM FOR 600V BUS BAR		1set	CHINA
	POWER LIMIT CIRCUIT		1set	HH,CHINA
	Top Drive Feeder Circuit Breaker in Synchronizing cabinet.		1set	HH,CHINA
	A. Power Circuit Breaker – 400AF/400AT, 600Volt, 3 pole,			
18.4	Rectifier Unit (ABB product)		1pc	ABB
	Features:			
	There are 1 rectifier units, which can be used both independently and separately, with 6 pulse bridge diode construction to respectively supply DC power for common DC busbars.			

Item	Description	Specification	QTY.	MFR
18.5	Mud Pump drive inverter unit t(ABB unit to be used)		2set	ABB
	Technical Specification:			
	Rated power	1050kW		
	Rated current output	0~600V		
	Voltage output	98%		
	Efficiency			
	Features:			
	The inverter unit possesses perfect fault diagnosing and protections inclusive of over-current protection, overvoltage protection overload protection, fuse melting protection, maximum current output limit, fan failure protection and other protections of d			
18.6	RT/DW drive inverter (to use ABB unit)		2set	ABB
	Technical specification:			
	Rated power	900 kW		
	Voltage output	0~600V		
	Efficiency	98%		
	Features:			
	The inverter unit possesses perfect fault diagnosing and protections inclusive of over-current protection, overvoltage protection overload protection, fuse melting protection, maximum current output limit, fan failure protection and other protections of d			
18.7	DW regenerative brake system		1set	
	Technical specification:			
	Suitable relative ambient humidity	≤95 %, dew is not allowed.		
	Cooling mode	Forced air blower cooling		
	Features:			
	Composed of brake unit and brake resister complete with quick fuse and cooling air blower to be connected on the common DC busbars.			
	Braking unit	3*NBRA699		ABB
	Continue Power	300kW		
	Braking resistance			XUANYU
18.8	MCC cabinet		1pc	HH
	Features:			
	To supply power for blowers of MUD PUMP VF AC motors and rig floor electric equipments			
	interchangeability between drawers of same current or power grade. Motor control unit mainly comprises breaker, contactor, thermal relay, etc. Direct startup mode and local control are used to have indication functio			
	There are three circuits of power line for the solid control system, respectively control the agitators on 3 mud tanks			
	The MCC will be wired 480 Volt, 60 Hz, with individual breakers. The horizontal bus will be tin plated copper and 2000 amps rated. The vertical bus will be tin plated copper and rated for 300 amps. A copper ground bus will run the full length of the MC			

Item	Description	Specification	QTY.	MFR
	Drawer-type, units that have same current and power grade can interchange Motor control unit mainly comprises breaker, contactor, thermal relay, etc. Direct startup mode and local control are used to have indication function. Feed circuit loop is maily co			
	All motors with or above 30kW are controlled by soft starter, All motors below 30kW are controlled by direct startup mode and local control.			
	Major electrical components are schneider products			
	Rig floor mcc supply power for blowers and oil pump of rotary table motor and drawwork motor . rig floor electric equipments are supplied power by rig floor mcc too.		1pc	HH
18.9	Plug board		1set	CHINA
	Feature:			
	Including plugs. Busbar connection terminals are used for circuits with current above 200A.			
18.10	Air Cooling Blower		1set	TRANE
	Feature:			
	TRANE air conditioner has 65 kW cooling capacity with split construction.			
18.11	Auxiliary drive inverter unit (to use ABB unit)		1set	ABB
	Technical specification:			
	Supply power voltage	3AC480V(AC)		
	Rated power	45 kW		
	Rated output current	92A(AC)		
	Efficiency	97%		
	Features:			
	Composed of inverter, brake unit and brake resistor.			
	The system can also be used for emergency hoist with maximum drill string weight as well as for mast raising up and lowering down.			
18.12	PLC cabinet		1pc	HH,CHINA
	Feature			
	Simmens S7-300 series PLC programmable control system and relevant electric elements are installed.	PLC dual redundancy system		
	In the case of failure, fault information and how to shoot the fault are displayed on touch screen by PLC to assist service personnel to find out the faulted point promptly.			
	The PLC is used for serial communication with remote consoles and other rig devices. Additionally, the PLC incorporates the VFD cabinet.			
	UPS power unit is provided as standby power supply for rig control system.			
18.13	PC unit		1set	ABB
	Features:			
	PC cabinet is used to display, record real time drilling parameters, and to monitor drilling operation.			
	Interfaces for remote control and technical management are provided.			
	Both Spanish and English displays can be achieved on screens and at the same time changeover between metric and British unit system can be done as required.			
18.14	Lighting dry transformer		1pc	SHUNTE

Item	Description	Specification	QTY.	MFR
	Technical specification:			
	Rated capacity	100 kVA		
	Rated high/low voltage	480V/220V/120V		
	Features:			
	One (1) 100 kVA, 480/220/120 volt, 3 phase, 60 Hz, 60 degrees C ambient copper wound, dry type, Delta/Y transformer – outdoor type.			
18.15	Ground fault detection system for 480V bus bar		1set	HH
	The Ground Fault System is designed to detect 480V AC bus bar ground faults via a set of wire connected grounding resistors.			
18.16	Dry transformer		1pc	HH
	Technical specification:			
	Rated capacity	400 kVA		
	Rated high/low voltage	600V/480V		
	Features:			
	Two (2) 400 kVA, 600/480 volt, 3 phase, 60 Hz, 60 degrees C ambient copper wound, dry type, Delta/Delta transformer – outdoor type.			
18.17	Switch cabinet		2pc	HH,CHINA
	Features:			
	Master breakers are schneider			
		Switch cabinet1		
	Switch cabinet 2 consisting of secondary breaker 800A of the transformerS and auxillary generator line-in breaker 600A constitute the switch cabinet2. Interlock protection functions between two AC power supply, displaying parameter and indication functi	Switch cabinet2		
18.18	Cables		1set	HH
	Features:			
	Flexible shielded cables with rubber shead are used to supply power for VF motors.			
	Tinplated copper cable lugs to be used.			
	Supply cable and cable slot for rig linear sliding and lateral sliding from wells to destination.			
19	BOOTH OF SERVICES			
19.1	Reciprocating air compressor		1	
	screw air condenser	quency QTD37	2pcs	
	cool dryer	1pcs		
	air filer device	3set		
	Compressor rated displacement	2x5.3 m ³ /min@1Mpa		
	Cold start rated displacement	1.4 m ³ /min		
	rated working pressure	1MPa		
	main air path pipe diameter	2"		
	cool starting air condenser	ZY-1.42/10-©	1	
19.2	air tanks total capacity	2x2m3+2x1.3m3		
	Air Filter	A-300、C-300、T-300	1each	
19.3	Air Drier	JYH-75F		
	features			

Item	Description	Specification	QTY.	MFR
	Installed in generator air source house, 2 screw air condenser, 1 cool dryer, 1 2 x 2 cubic m air tank, 2 1.3M3 buffering tank below drill floor and air path pipelines. flanges are applied to link the condenser and the air tanks			
	With cool starting air condenser, driven by diesel engine			
	2x1.3m3 below substructure			
	Equipped with pressure gauge, valve of safety and filter with automatic systems to purge the condensed.			
19.4	HPU	ZHYZ1000	1pcs	CHINA
	specs			
	Oil tank capacity	1000L		
	System total flow rate	182L/min		
	Variation plunger pump	120L/min		
	system rated pressure	19 MPa		
	Variation plunger pump			
	gear pump	0.5 MPa		
	variation plunger pump	8 MPa		
	system total power	49.75 kW		
	EP motor	37kW		
	EP motor	0.75kW		
	EP motor	3kWx2		
	EP heater	3kWx2		
	Accumlator capacity	6.3Lx4		
	Measurement (L x W x H)	2050mmx1600mmx 1900mm		
	Weight (without hydraulic oil)	2300kg		
	features			
	Offer hydraulic power for hydraulic machine tools (tongs, cathead, buffering oil cylinder) and rig skidding system, it can drive other hydraulic device. HPU mounted on drilling floor.			
	It has two parts: one for machine tools driving, one for hydraulic disc brake			
	Adopt load sensitively multi-circuit valve block,use electric control and manual control. Circuits of different pressure,different displacement can work synchronicly.			
	HPU has heater and cooler for hydraulic oil			
20	Lighting system for rig		1set	
	The areas of: mud tanks, chemical material storage, tank for pure diesel, tank for mixed diesel, pump to operate preventores, chocking assembly			
	The crown of the mast must have 2 stroboscopic lamps (status) red color			
	The areas for: mud pumps, tank for water of industrial use, tank for treated water, compressors, generator groups, electric, mechanical and welding maintenance personnel.			
	The perimeter and different levels of the drilling rig should contain enough light and should be in accordance with the works to develop there, according to corresponding norm.			

Item	Description	Specification	QTY.	MFR
	The lights system must have enough capacity to illuminate each one of the areas mentioned above. The system can be composed of fluorescent lamps and reflectors.			
	Lighting fixtures		1set	CHINA
	Following lighting fixtures to be provided:			
	Fluorescent lights		50set	
	Crown warning light		1pc	
	400W floodlights		10set	
	Note: Quantity of lighting fixtures is subject to change as required by practical condition.			
21	EARTHING SYSTEM		1set	
	PUMPING SYSTEM AND THE OPERATION OF DRILLING FLUIDS			
22	PUMPS FOR OPERATING CONTROL FLUIDS SYSTEM (MUD PUMPS).			
22.1	Drilling pump	HHF1300	2pc	HH/China
	Model	Triplex single acting piston type		
	Max. diameter of linerxstroke	Φ180x305mm		
	Rated strokes	120spm		
	Rated power	969.8kW(1300HP)		
	Gear ratio	4.206		
	Stroke of piston	305mm		
	Pump valve	API 7#		
	Max. ID of liner	Φ180mm		
	Max. working pressure	34.3MPa		
	Max. displacement (130s/min)	50.42L/s		
	Diameter of discharge pipe	127mm (5")		
	Diameter of suction pipe	304mm (12")		
	Overall dimension (lengthxwidthxheight)	4426mmx2413mmx2688mm		
	Weight	25570kg		
22.2	Drilling pump transmission device		2set	HH
	Technical parameters			
	Rated power	1000kW		
	Transmission type	Combined V- belt		
	Model of V-belt	25J (4) -8000		
	Transmission ratio	1.58		
	Overall dimension (lengthxwidthxheight)	8600x3016x2853mm		
	Weight (including drilling pump)	41200kg		
	Feature			
	The pump transmission device consists of one AC variable frequency motor, narrow V-belt transmission device, transmission foundation, skid and guard and so on.			
	Equiped with electronic spray pump,charging pump,suction and discharge pipeline.			
	Equiped with spring reset safety relief valve and drilling pump blowdown line. (as customers' request)			
22.3	AC Motor for drilling pump		2set	Yongji.China

Item	Description	Specification	QTY.	MFR
	Technical specification:			
	Model	YJ31F2		
	Fundamental frequency power	1000kW		
	Fundamental frequency voltage	600V		
	Fundamental frequency current	1140 A		
	Fundamental frequency power factor	0.86		
	Fundamental frequency rotary speed	803 r/min		
	Fundamental frequency torque	11876Nm		
	Insulation class	200 class		
	Number of poles	6 poles		
	Connection mode for stator winding	Y		
	Cooling type	Forced air cooling (equipped with blower)		
	Working type	Continuous		
	Protection grade of junction box	IP54, pressured junction box		
	Weight	3200 kg		
	Feature:			
	The motors can meet the requirements of variable frequency system for the purpose of drive and control, it also can meet the requirement of working environment of drilling operation.			
	The motors are equipped with detector switch, service switch and heater.			
	The motors adopt forced air cooling and are equipped with blower by themselves.			
	The motors are equipped with sand filter.(optional)			
22.4	Supercharging pump set(centrifugal pump)		2pc	HH
	Technical specification:			
	Model of centrifugal pump	SB6"x8"J-12 1/2"		
	Inlet diameter of centrifugal pump	8"		
	Outlet diameter of centrifugal pump	6"		
	Displacement of centrifugal pump	200m ³ /h		
	Power of centrifugal pump motor	55 kW		
	Motor voltage/frequence	380V/50Hz		
22.5	Pulsation Damper	KB-75	2	HH
22.6	Drilling fluid manifold		1set	HH
	Working Pressure	35MPa (5000psi)		
	Metric diameter	Φ102mm(4")		
	Type	floor double manifold/double standpipe		
	features			
	Reserve outlet for drilling parameter instrumentation, logging device, cementing manifold, pump pressure meter			
	High pressure manifold connection: hammer union. All flexible hose wiht safety sling.			
	There be 2 hoses with diameter of 4" and length of 55 feet, for a pressure of 5000 psi, with bolts unions to connect to the line of the stand pipe and pump manifold			

Item	Description	Specification	QTY.	MFR
23	TRIP TANK		1set	HH
23.1	Trip tank(1 tank divides into 2 trip compartments)			
	Total volume	7m ³ x2		
	The installation position of liquid gas separator and choke line manifold are reserved for make-up pump skid			
23.2	Trip pump		2set	
	Model	SB3" x4" J-9 1/2"		
	Motor power	11kW		
	Rated voltage/frequence	480V /60Hz		
	inlet diameter	4"		
	outlet diameter	3"		
	Displacement	81m ³ /h		
	Head distance	25m		
	Rotary speed	1750rpm		
	<i>Display of liquid level</i>	<i>Supersonic liquid level gauge (included in drilling parameter instruments)</i>	2set	
24	SET OF METAL TANKS FOR A VOLUME OF AVAILABLE MUD OF 200 M³ MINIMUM.			
24.1	Mud tank		3set	HH
	The design of mud tanks conforms to API Spec 13C specification			
	Total effective volume of system	200m ³		
	Setting tank	40m³	1	
	Sand trap	15 m3		
	Degasser compartment	25 m3		
	Desilter compartment	25 m3		
	Mixing tank	80m³	1	
	Four Comparment	20 m3 each		
	Suction tank	80m³	1	
	pill tank	8 m3		
	Other two compartment	36 m3		
	Dimension	12m×2.9m×3.3m		
	Feature			
	Each compartment have an external outlet ;Each division have a man entrance at level of grill			
	lighting system (class 1, division 1).		1set	
	net for water supply.			
	stairs to get access to tanks with railings of 1.10m.			
	label in a visible place with its name and capacity in m ³ (of each compartment).			
	the signs of each one of the components installed in this tank used spanish language.			
	the bottom of the mud tank is "v"			
	Equipped with floats or other level indicators and on-line thermometer		1set	
	Eyewash		1 each	
24.2	Shale shaker(linear type)		2pc	
	Model	Derrick FLC-2000-3p		
	Treatment capacity	60L/s		

Item	Description	Specification	QTY.	MFR
	Area of screen	2.52m2		
	Excitation index	7~ 7.3G		
	Power of excitation motor	2x2.5hp		
	Excitation motor frequency/voltage	60Hz/480V		
	Excitation speed	1720rpm		
24.3	Desander		1set	
	model	Derrick DSV-10-2		
	desander cyclone diameter	250mm		
	desander cyclone diameter	2		
	displacement	1000gpm		
	fluid supply centrifuge pump number	1		
	fluid supply centrifuge pump model	SB6" x8" J-12 1/2"	1set	
	fluid supply centrifuge pump motor power	55kW		
	fluid supply centrifuge pump discharge	209m3/h		
24.4	Desilter		1set	
	model	Derrick S-410-S		
	cyclone diameter	75mm		
	cyclone number	10		
	displacement	600gpm		
	fluid supply centrifuge pump number	1		
	fluid supply centrifuge pump model	SB6" x8" J-12 1/2"	1set	
	fluid supply centrifuge pump motor power	55kW		
	fluid supply centrifuge pump discharge	209m3/h		
24.5	vacuum degasser		1set	
	model	Vacu-Flo 500		
	processing capability	500 gpm (1893 lpm)		
	vaccum pump power/rev	3kW		
	fluid supply centrifuge	Derrick 250CP8x6x14H		
24.6	Mud cleaner feed pump		2pc	
	Model	SB6"x8"J-13"		
	Motor power	75kW		
	Motor rated voltage/frequency	460V /60Hz		
	Inlet diameter	8"		
	Outlet diameter	6"		
	Displacement	200m3/h		
	Rotary speed	1750rpm		
24.7	centrifugal pump	SB5" x6" J-11 1/2"	2set	
	Outlet diameter	5"		
	Inlet diameter	6"		
	Displacement	200m3/h		
	Motor power	45 kW(60HP)		
	Rated voltage/frequency	460V /60Hz		
	Rotary speed	1750rpm		
24.8	Mixing pump System			
	Mixing pump		2pc	China
	Model	SB6"x8"J-13"		
	Motor power	75kW		
	Rated voltage/frequency	460V /60Hz		
	inlet diameter	8"		
	outlet diameter	6"		

Item	Description	Specification	QTY.	MFR
	Displacement	200m3/h		
	Head distance	32m		
	Rotary speed	1750rpm		
	Mixing funnel		2set	China
	Model	ZHP150		
	Treatment capacity	180m3/h		
24.9	Mud shearing system		1set	
	shearing pump model	WJQ5" x6" -10"		
	shearing pump inlet diameter	6"		
	shearing pump outlet diameter	5"		
	shearing pump displacement	155m3/h		
	shearing pump travel range	32m		
	motor power	55 kW		
	rev	2250r/min		
	Mixing funnel		1set	
	Model	ZHP150		
	Treatment capacity	180m3/h		
24.10	Agitator, 15kW		8set	
	Model	NJ11		
	Power of its driving motor	11kW		
24.11	Agitator 5.5kw		1SETS	
	Model	NJ5.5		
	Driving motor power	5.5kW		
24.12	Mud gun		10SETS	
	Bore size	2"		
	Working pressure	6.4Mpa		
24.13	Pill tank		1SET	HH
	Effective capacity	8m3		
	Motor (explosion proof)	5.5kW		
24.14	Poor boy		1SET	
	Working media	Mud with gas		
	Working pressure	0.7MPa		
	Separator inside dia.	φ1200mm		
	Max.mud processing capacity	200M3/h		
	Max.gas processing capacity	20000M3/h		
	Fluid input pipe	φ102mm		
	Air discharge pipe	φ32mm		
	Fluid output pipe	φ325mm		
	Overall dimension (Length X width X height)	9020x2194x2184 (For transportation)		
24.15	Mud lab		1set	
	Chair and table 1set			
	test console			
	Each 1 stainless steel ditch and eye washing platform			
24.16	FLOAT LINE	12"	1	
	Mud devide box	6"	1	
25	STORAGE TANK FOR DIESEL for INTERNAL COMBUSTION ENGINE			
	effective capacity	50m3	1pcs	

Item	Description	Specification	QTY.	MFR
	measurement	12000x2900x2800		
	oil pump		2pcs	
	oil pump motor power	2.2KW		
	filter	2		
26	STORAGE TANK FOR WATER FOR GENERAL USE.			
	effective capacity	40m3	1 pcs	HH
	with water pump			China
	centrifuge pump model	SB3" x4" J-9 1/2"	2 pcs	
	centrifuge motor power	11kW		
27	Technical documents		1	HH
28	Software		1	HH
29	Training for 5 persons of 14 days	In HH Yard		HH
30	Onsite rig-up instruction service (5 persons 30 days)		1	HH
31	Assembly and Rig Up		1	HH
32	Painting		1	HH
33	Rig assemble fittings		1	HH
34	Packing charge		1	HH

HONGHUA AMERICA, LLC