

Information

PO Date	MAR/14/2024	Contact	MOC Proj	Requisitioner	Janelle De Boer
Validity	MAR/05/2024 to SEP/30/2024	Phone	403-766-6248	Payment	within 60 days Due net
Currency	CAD Canadian Dollar	Fax	403-206-1172	Terms	
Your Ref.	CW2391644	Email	Saad.Salman@cenovus.com		
Delivery Date	JUN/20/2024	Delivery Terms	FCA - Free Carrier		

Vendor Address

SFC ENERGY LTD
 5730 80 AVE UNIT 160 SE
 CALGARY AB T2C 5T9
 CANADA
Phone 8005657431
Fax 4032796553

Shipping Address

Foster Creek Central Warehouse
 Cenovus Energy Inc
 c/o B&R Eckel's Transport Consolidation
 13008-163 Street NW
 EDMONTON AB T5V 1L6
 CANADA
Recipient Janelle D.B.

Billing Address

This purchase order has been sent via Cortex.
 Please submit all invoices associated with this purchase order via Cortex.

This Purchase Order is governed by the terms and conditions set out in the Agreement referenced in the Line Item

PO Acknowledgement: Seller must acknowledge receipt and acceptance of the material quantities, specifications, pricing and delivery as stated in this PO within one business day of receipt to poack.lloyd@cenovus.com.

Pricing: Please ensure the currency is clearly stated, and that all costs are accurately reflected. Additional costs include, but are not limited to, drum deposits, reel deposits, pallet charges, environmental handling costs, expediting fees, etc. Failure to do so will result in a possible delay when processing the invoice.

Delivery: The delivery date indicated is the expected date on-site, and not the ship date. Please notify Cenovus immediately if this date cannot be met. All shipments are to be coordinated as per the agreed Incoterms stated and must identify the 3-letter term and the named port/place/location including the city/site and province/state.

Vendor Information: Verify the Vendor Name and Address stated on the PO are complete and accurate. Notify Cenovus immediately of any changes, as this will affect payment processing.

All Shipments within Canada or International

All Less Than Truckload (LTL) or Courier shipments, excluding hotshots are to be routed for next day delivery to the distribution point:

B&R Eckel's Transport

13008 163rd Street

Edmonton, AB, T5V 1L6

1 (780) 447-5847

LESS THAN TRUCKLOAD AND TRUCKLOAD

Within Alberta (over 200 lbs.)

B&R Eckel's Transport (Primary & Consolidation Point)

Phone: +1 (780) 447-5847

Email: cenovusdispatch@breckels.com

Within Canada & U.S. (over 200 lbs.)

Manitoulin Transport (Account #: 93521)

Barry Hnatchuk

Phone: +1 (403) 299-7000 ext. 83435

Email: logistics@manitoulintransport.com

COURIER

Within Alberta & Canada (under 200 lbs)

Purolator (Account #: 1-7716952)

Phone: + 1 (800) 387-3027

U.S. & International (under 200 lbs)

FedEx (Account #: 2797-3233-2)

Phone: +1 (800) 463-3339

SPECIALIZED CARGO, INTERNATIONAL OUTSIDE OF NORTH AMERICA AND HOTSHOTS

For any non-standard request please send email Logistics@cenovus.com and copy denis.plechkov@cenovus.com. Phone #: +1 (403) 298-6082

Customs Broker Information:

Charter Customs Broker:

Canada:

CATrucks CATrucks@charterbrokerage.net

Phone Number: 403.984.9144

USA:

US Truck Imports TruckImports@charterbrokerage.net

IMPORTANT

1. Reference Documentation

The Purchase Order number must be referenced on all invoices, packages, packing slips, express receipts, bill of lading documentation (waybills) and correspondence.

2. Quality Assurance Requirements

Material Test Reports (MTRs) or Letters of Compliance are required for all applicable items.

Motors - threaded hubs shall be provided for conduit or cable entry. Motors shall comply with PS-EL-01 (Low Voltage Induction Motors) or PS-EL-03 (Medium Voltage Induction Motors) as applicable. Specification sheet along with associated data sheet completed by a competent electrical engineer or technologist must also be included.

Pressure Fittings - shall be provided with a CRN that meets regulatory requirements in the jurisdiction where it will be installed, proof of registration will be provided upon request. As a minimum, all fittings must be registered in Canada.

Controlled Products - must arrive with a Safety Data Sheet (SDS).

Valve Tags - to be per MSS-SP-25 and have the following requirements: The ten character value commodity code and Cenovus material code identifies the valve from the time of order to installation. Supplier is to attach to each valve a corrosion-resistant metal tag showing the valve code.

Tags to be security attached with 18-gauge stainless steel wire, and to be attached to the gland bolting, hand wheel or other suitable location. Do not attach through bolt holes of valve body.

Electrical Equipment Requirements - Manufacturer shall supply documentation that certifies that the products supplied are certified by a Canadian accredited approval agency. Equipment and materials shall conform to the requirements of the Canadian Standards Association and bear a CSA approval label or suitable equivalent. Any approvals that are not CSA shall be approved by Cenovus and shall be suitable to the authority having jurisdiction for electrical inspections and permitting. If for any reason CSA (or approved equivalent) has not been obtained for the equipment, assembly or materials, special acceptance by CSA (or equivalent) shall be obtained by the vendor at the Vendor's expense.

3. Material Returns

The Seller agrees to repurchase, at Cenovus' request, any materials that Cenovus identifies as surplus to requirements, provided the materials are in new and saleable condition. The Seller agrees that where an item is normally stocked by the Seller or Seller's Manufacturer, it shall be repurchased at the same price that Cenovus paid the Seller and carries no restocking charges. Materials that are not normally stocked by the Seller or Seller's Manufacturer may be subject to a restocking charge and this charge must be clearly identified to Cenovus prior to acceptance of this Purchase Order by the Seller. If the parties have an executed Cenovus' Goods and Services Agreement for the material returned, that Agreement shall govern.

Item	Description	Quantity	UM	Unit Price	Amount Excl. Tax	Tx Cd	Tax	Amount Incl. Tax
10	<p>SFC-ABB-CVE-ACS880-250HP-480V-ESP-MFC-N1</p> <p>SFC-ABB-CVE-ACS880-250HP-480V-ESP-MFC-N1G-TW</p> <p>Included Option ESP Application Firmware</p> <p>Project: MOC-16529662 - FC 2023 Redev W05 P02 Step Out</p> <p>SES Approver: Janelle De Boer</p> <p>SES Approver Code: 2Z-60008298</p> <p>SCM Contact: Dawneen Massinon</p> <p>Reference Agreement CW2391644</p> <p>AFE Number: US-006247-PF-FC-05</p>	1	EA	39,921.00	39,921.00	BA	GST 1,996.05	41,917.05

Total Excluding Tax CAD	39,921.00
Total GST	1,996.05
Total Including Tax CAD	41,917.05

<p>Tax Code Legend</p> <p>BA - GST/HST Applicable, PST NOT applicable</p>
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WORK AUTHORIZATION

Contract No. CW2391644

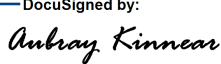
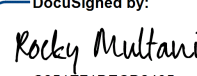
Date of Issuance:	March 6, 2024
Project Title:	FC 2023 Redev W05 P02 Step Out
Scope of Work:	N1G ESP VFD System
Cenovus Representative:	Janelle DeBoer
Cenovus Contract Admin:	Dawneen Massinon
Contractor:	SFC Energy Ltd.
Contractor Representative:	Rocky Multani
Work Order:	US-006247-PF-FC-05
GL Code:	6160040
<p><i>This Work Authorization, in combination with Master Agreement 500369, and CFA CW2351307 authorizes the Contractor to perform the Services (Work and Goods) set out below. Any defined terms used in this Work Authorization, including all attachments, shall have the meanings ascribed to those terms in the Master Agreement and CFA, as the case may be. If the defined terms herein do not have a meaning ascribed in the Master Agreement and CFA, they will have the meaning ascribed to them in this Work Authorization.</i></p>	
Delivery Date:	14 – 18 Weeks ARO (July 15, 2024)
Work Authorization Price:	\$39,921.00 CDN
<p>CENOVUS ENERGY INC.:</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>Name: Aubray Kinnear</p> <p>Title: Acting Sr. Manager, SCM Oilsands Operations</p> <p>Date: 2024-03-14 10:31 AM MDT</p> </div> <div> <p>DocuSigned by:</p>  <p>F5D00445C9FF492...</p> </div> </div>	
<p>SFC Energy Ltd.</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>Name: Rocky Multani</p> <p>Title: Account Manager</p> <p>Date: 2024-03-14 10:24 AM MDT</p> </div> <div> <p>DocuSigned by:</p>  <p>C851E71DECD2405...</p> </div> </div>	

EXHIBIT 1 - DETAILED SCOPE OF WORK

The Contractor will provide the following material and associated documentation:

1. SFC-ABB-CVE-ACS880-250HP-480V-ESP-MFC-N1G-TW

NEMA Type 1 Gasketed, Single Door Floor Mount Enclosure

Estimated 90"H x 28" W x 21" D

Through wall design c/w installation of the following:

ABB Model: ACS880-01-302A-5+N5600

250HP, 302A Continuous Output Current Rating

110% Overload Capacity for 1 Min / 5 Min

380VAC – 500 VAC, 3phase, 60Hz, +10% / -15%

Integrated Input Choke

Coated Control Boards

DTC – Direct Torque Control Technology

Safe Torque-off (STO) Safety Function

Integrated 2-Wire Modbus RS-485 (TIA/EIA-485)

Compliance: CSA, UL, Cul, ce, c-Tick, GOST-R, Machine 2006/42/EC

Included Option: ESP Application Firmware:

- Input Fused Disconnect c/w Handle and Door Interlock
- 480/120V Fused Control Power Transformer
- Thermostatically Controlled Heating & Cooling
- Pre-Heated air intake (outside the building) c/w air filters
- Air exhaust (outside the building) through-wall design c/w air filters
- Door Mounted:
 - o Drive Keypad c/w Mounting Kit
- FEIP-21: ABB Ethernet/IP 2 Port Adapter
- Customer I/O Terminal Rail
- Resistor-less Output Sine Wave Filter
- Top Entry/Exit of Cables
- Lot: Wire, Wire duct, Terminals, Lugs, Tagging, Testing & Drawings

cETLus Listed and certified to CSA STD. C22.2 NO.14 and UL STD.508A for use in non-hazardous, general purpose location.

2. DOCUMENTATION

- Per attached SDDR

ATTACHMENTS:

Document Description	Document Number	Revision
Foster Creek Offsites Well Pad W05 Electrical Building BU-9060 & Transformer Area Layout	FC1-46-LAY-W05-0003-001	8.A.0
Foster Creek Offsites Well Pad W05 480V MCC-9066A (REAR) Single Line Diagram (Option 2)	FC1-46-SLD-W05-0001-005	6
Foster Creek Commercial Plant Well Pad W05 – Electrical Bldg BU-9060 Submersible Pump P-9201B Wiring Schematic	FC1-46-SCH-W05-0010-001	0.A.0
Foster Creek Offsites Well Pad W05 – Production Submersible Pump (ESP) VFD Wiring Schematic	FC1-46-SCH-W05-003-02	3
VFD Set-up Sheet		
VFD Parameters: ABB ACS880		
Seller Drawing and Document Requirements (SDDR)		
Level of Inspection		

EXHIBIT 2 - PAYMENT

1. All prices in this Schedule are in Canadian dollars (CAD) unless specifically noted otherwise.
2. The Contract prices are not subject to escalation and shall be fixed and firm for the duration of the Contract.
3. Cenovus will pay the Contractor the Unit Rate price as detailed in this Section for performance of the Work as defined in Exhibit 1 and undertaking of all obligations under this Contract.
4. Total Price excluding PST & GST: **\$39,921.00 CDN**

5. Payment Terms: Net 60 Days

6. Cancellation / Changes:

- 5% of the selling price after order is processed
- After 2 weeks, if the order is cancelled after the supplier has purchased materials, but prior to production, cancellation charges shall be 25% of the selling price
- After 4 weeks of order if manufacturing begins and readiness to ship 60% Restocking.
- After receiving the VFDs at SFC Energy for assembly of systems – 100% Restocking

7. Changes

No modification, additions, deletions or other revisions to this Contract, shall be binding on either party unless set out in a Change Order or required by a Change Directive. Neither the keeping of daily records in respect of disputed work nor the signing of those records by Cenovus's Representative shall be considered as an admission of entitlement to payment by Cenovus. Changes to bill of material, cost and/or overall schedule shall be communicated to the Cenovus Representative within a reasonable period of time not to exceed five (5) business days.

Contractor shall provide a quote covering the impact for assessment. This quote shall be reviewed and either:

- i. Approved;
- ii. Rejected; or
- iii. Returned for further information or discussion with Contractor.

All approved quotes will result in a change order, generated by Cenovus, to the Contractor. Any additional costs incurred outside of the order or approved quotes will be at Contractor's sole risk and expense.

Should a deviation to a specification, standard or other technical document provided by Cenovus be required, notification shall be sent to Cenovus. Cenovus will review the request for deviation and approve or reject. Any unapproved deviations to Cenovus specifications,

standards, data sheets or other technical documents shall be at Contractor's sole risk and expense. Cenovus shall not pay or be responsible for unapproved deviations.

8. **Delivery:** FCA SFC Energy Ltd., Calgary Alberta
12-14 Weeks ARAD (allow 2-4 weeks ARO for delivery of Approval Drawings)
9. **Storage:** Not Applicable

EXHIBIT 3 – Key Contacts

Contractor Contact Information

Contractor:	SFC Energy Ltd.
Primary Contact:	Rocky Multani, P. Eng. MIEEE
Phone Number:	403-723-5744 (Cell: 403-990-7499)
Email Address:	Rocky.multani@sfc.com

Cenovus Contact Information

Engineering Primary Contact:	Janelle DeBoer
Phone Number:	403-766-6255
Email Address:	Janelle.deboer@cenovus.com
Documents Receiver Contact:	Janelle DeBoer
Phone Number:	403-766-6255
Email Address:	Janelle.deboer@cenovus.com
Primary Field Contact:	
Phone Number:	
Email Address:	
Procurement Contact:	Dawneen Massinon
Phone Number:	403-766-3316
Email Address:	Dawneen.massinon@cenovus.com

EXHIBIT 4 – INVOICING INSTRUCTIONS**INVOICING INSTRUCTIONS – CORTEX SUPPLIERS**

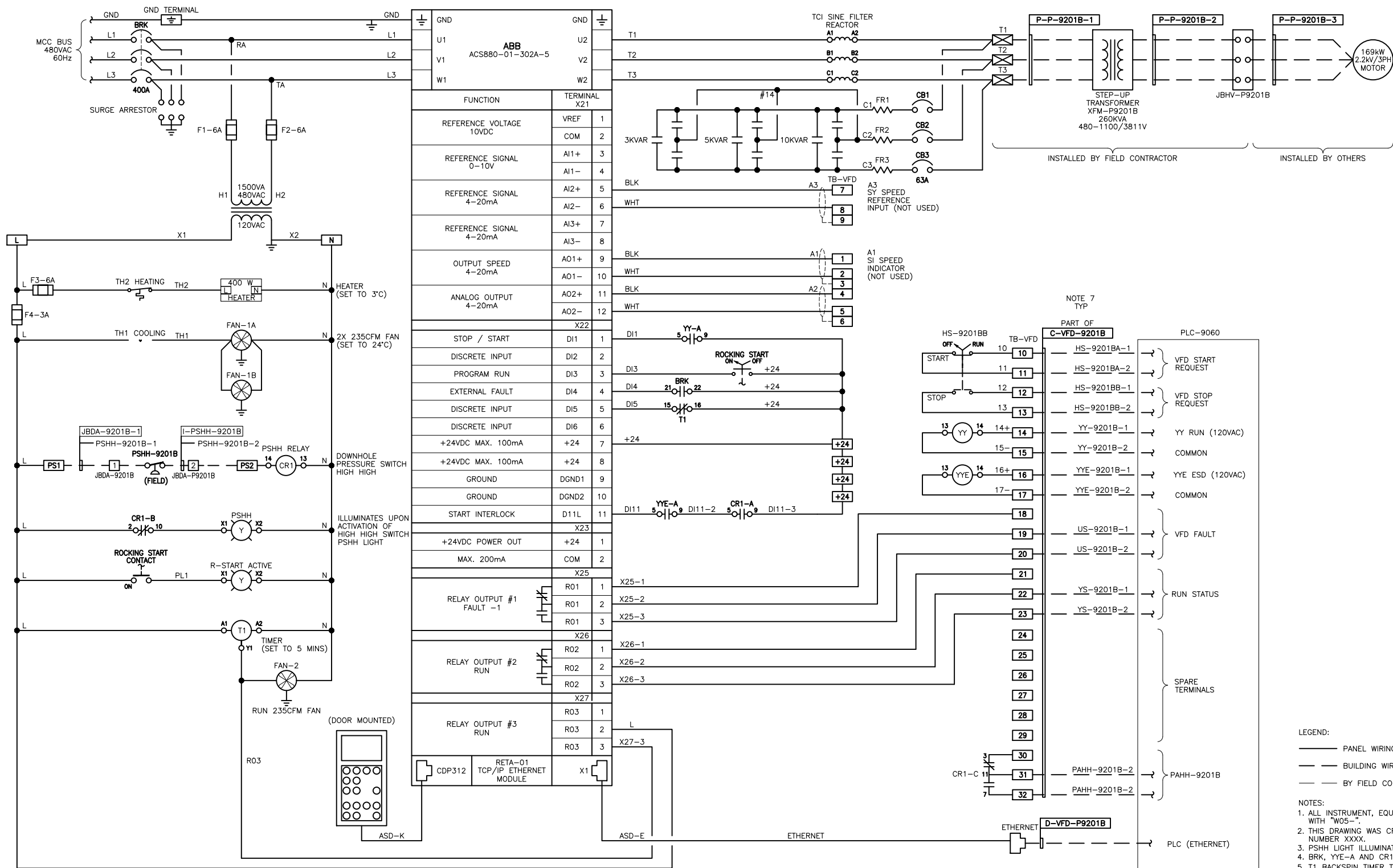
1. All invoices to be submitted through Cortex as per PO Instructions
2. The Supplier shall submit invoices per the milestone payment schedule in Exhibit 2.
3. Prior to submitting the invoice to Cortex, Contractor will be required to email the Invoice with proof of milestone completion to Cenovus Representative for review and approval.









If the Invoice is acceptable, the Cenovus Representative will have the invoice stamped/signed approved and return it to the Contractor. After the Contractor receives the stamped/signed approved invoice, the Contractor will then submit the stamped/signed approved invoice with all associated proof of Milestone completion to Cortex. If the Contractor uploads a non-stamped/signed approved invoice to Cortex, it will be immediately rejected. All invoices shall at a minimum contain the following information:

- **Full name of Contractor:**
- Contractor contact name and e-mail:
- Contractor address:
- Date of invoice:
- Contractor invoice reference number:
- Purchase order number:
- **Work Authorization number:**
- Description of goods/services:
- Name of invoice: Cenovus Energy
- Project name:
- **Approver name and "ZZ" approver code: Janelle DeBoer – 2Z-60008298**
- Reference to progress payment point being invoiced:
- Invoiced amounts:
- Taxes and duties (show as separate line items):
- Grand total:

INVOICING INSTRUCTIONS – NON-CORTEX SUPPLIERS

4. Submit tickets (field tickets, service tickets or packing slips) with your invoice in PDF to PO.Invoices@cenovus.com.



LEGEND		
SYMBOL	DESCRIPTION	
— — —	FIELD WIRING	
	CONTROL TRANSFORMER	
	REACTOR COIL	
	CONTROL TERMINAL	
	POWER DISTRIBUTION TERMINAL	
	PANEL TERMINAL	
	GROUND TERMINAL	
	TEMPERATURE SWITCH	
	JUNCTION BOX TERMINAL	
WIRE SPECIFICATION		
TAGS	COLOUR	AWG—TEW
U(X), V(X), W(X)	BLACK	4/0
CB(1-3)	BLACK	#6
FR(1-3)	BLACK	#6 HT
C(1-3)	BLACK	#6 HT
RA, TA	BLACK	#12
H1, H2, X1, F3	BLACK	#12
F4, L, HTR—L	BLACK	#14
X2	WHITE	#12
N, HTR—N	WHITE	#14
TH(X), FN(X), CR—1	PURPLE	#14
PL(X), T1, X27-3	PURPLE	#14
+24	RED	#16
14, 16	BLACK	#16
15, 17	WHITE	#16
10, 11, 12, 13, DI(X)	YELLOW	#16
X25-(X), X26-(X)	YELLOW	#16
A1, A2, A3	BEL	#18
DC-4	BEL	#18
30, 31, 32	YELLOW	#16
GND	GREEN	#4—#14

LEGEND:

———— PANEL WIRING

— — — BUILDING WIRING

— — — BY FIELD CONTRACTOR

NOTES:

- 1. ALL INSTRUMENT, EQUIPMENT AND BUILDING NUMBERS ARE PREFIXED WITH "W05-".
- 2. THIS DRAWING WAS CREATED FROM SIMARK CONTROLS LTD. DRAWING NUMBER XXXX.
- 3. PSHH LIGHT ILLUMINATES UPON ACTIVATION OF SWITCH HIGH HIGH.
- 4. BRK, YYE-A AND CR1-A SHOWN IN NON-ENERGIZED STATE.
- 5. T1 BACKSPIN TIMER TO RUN ENABLE
- 6. YY-A START/STOP COMMAND TO ESP VFD.
- 7. REFER TO DWG. FC1-46-SCH-W05-003-02.

REFERENCE NUMBER	REFERENCE TITLE
FC1-46-LAY-W05-0003-001	ELECTRICAL BUILDING BU-9060 & TRANSFORMER AREA LAYOUT
FC1-46-LAY-W05-0006-001	ELECTRICAL BUILDING BU-9060 EQUIPMENT LAYOUT
FC1-46-LAY-W05-0006-003	ELECTRICAL BUILDING BU-9060 CABLE TRAY AND GROUNDING LAYOUT
FC1-46-SLD-W05-0001-006	480V MCC-9066B (ESP) SINGLE LINE DIAGRAM
FC1-46-WD-W05-0001-001	MODBUS WIRING DIAGRAM
FC1-46-SCD-W05-0004-001	ELECT BLDG BU-665 CONDUIT & CABLE SCHEDULE

STAMPS

STAMP AND PERMIT APPLY TO REVISION 0.A.0 ONLY

[illegible]

CONSULTANT NAME AND LOGO



REVISION DESCRIPTION
ISSUED FOR CONSTRUCTION
PROJECT NO.
MOC-16529662
LSD

ISSUE DATE
2023/09/21

SCALE
NTS

TITLE	FOSTER CREEK COMMERCIAL PLANT WELL PAD W05 - ELECTRICAL BLDG BU-9060 SUBMERSIBLE PUMP P-9201B WIRING SCHEMATIC
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DRAWING NO.
FC1-46-SCH-W05-0010-001


REVISION NO.
0.A.C

FC1-46-SCH-W05-003-02_3

DRIVE	DISCRPTION	POWER CABLE TAGS			CONTROL CONDUIT/CABLE TAGS				PSHH JBDA TAG	PSHH WIRE TAGS & DEVICE TAG	PLC CONTROL WIRE TAGS						
		VFD TO XFMR	XFMR TO JBHV	JBHV TO ESP	PLC TO VFD (CONTROL)	PLC TO VFD (ETHERNET)	VFD TO JBDA (PSHH)	JBDA TO PSHH (CONTROL)			DISCRETE INPUT					DISCRETE OUTPUT	
											LOCAL START	LOCAL STOP	FAULT	RUN STATUS	PSHH	START/STOP	ESD
VFD-9201A	PRODUCTION WELL ESP	P-P-9201A-1	P-P-9201A-2	P-P-9201A-3	C-VFD-9201A	D-VFD-9201A	JBDA-9201A-1	I-PSHH-9201A	JBDA-9201A	PSHH-9201A	HS-9201AA	HS-9201AB	US-9201A	YS-9201A	PAHH-9201A	YY-9201A	YYE-9201A
VFD-9201B	PRODUCTION WELL ESP	P-P-9201B-1	P-P-9201B-2	P-P-9201B-3	C-VFD-9201B	D-VFD-9201B	JBDA-9201B-1	I-PSHH-9201B	JBDA-9201B	PSHH-9201B	HS-9201BA	HS-9201BB	US-9201B	YS-9201B	PAHH-9201B	YY-9201B	YYE-9201B
VFD-9201C	PRODUCTION WELL ESP	P-P-9201C-1	P-P-9201C-2	P-P-9201C-3	C-VFD-9201C	D-VFD-9201C	JBDA-9201C-1	I-PSHH-9201C	JBDA-9201C	PSHH-9201C	HS-9201CA	HS-9201CB	US-9201C	YS-9201C	PAHH-9201C	YY-9201C	YYE-9201C
VFD-9201D	PRODUCTION WELL ESP	P-P-9201D-1	P-P-9201D-2	P-P-9201D-3	C-VFD-9201D	D-VFD-9201D	JBDA-9201D-1	I-PSHH-9201D	JBDA-9201D	PSHH-9201D	HS-9201DA	HS-9201DB	US-9201D	YS-9201D	PAHH-9201D	YY-9201D	YYE-9201D
VFD-9201E	PRODUCTION WELL ESP	P-P-9201E-1	P-P-9201E-2	P-P-9201E-3	C-VFD-9201E	D-VFD-9201E	JBDA-9201E-1	I-PSHH-9201E	JBDA-9201E	PSHH-9201E	HS-9201EA	HS-9201EB	US-9201E	YS-9201E	PAHH-9201E	YY-9201E	YYE-9201E
	FUTURE																
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	FUTURE																

NOTES: -
1. ALL INSTRUMENT, EQUIPMENT AND BUILDING NUMBERS ARE PREFIXED WITH "W05-".

PACKAGE NO.

REFERENCE NUMBER	REFERENCE TITLE	STAMPS	REV NO	REVISION	DATE	DRN	CKD	DES	LDE	PE	CONSULTANT NAME AND LOGO		
FC1-46-SLD-W05-001-06	480V-MCC-9066B (ESP) SINGLE LINE DIAGRAM		2Z	AS BUILT - PROJECT CVE11043; SUPERSEDES REVS 0Z & 1Z	2015/10/16	WA	FN				MP	<div> Cenovus FCCL Ltd</div>	
			3	AS BUILT - BASE CASE; SUPERSEDES REV 2Z	2015/10/16	AG	FN				MP		
												REVISION DESCRIPTION	
												AS BUILT - BASE CASE	
												PROJECT NO.	
												LSD	
											ISSUE DATE	SCALE	
											2015/10/16	NTS	
											DRAWING NO.	REVISION NO.	
											FC1-46-SCH-W05-003-02	3	

VFD Set-Up Sheet



Job

Field:	FC
Pad/Well:	Brackish Water Pad JP9
Pump Vendor:	Baker Hughes

Pump (Provided by ESP Vendor)

Pump Model:	P100	
Number of Stages:	52	
GS or AGH type		
Pump HP Required @ 60 Hz	217.7	[HP]

Motor Rating @ 60 Hz (Use re-rated values if applicable)

Nameplate or Re-rated Horsepower	216	[HP]
Nameplate or Re-rated Voltage	2338	[V]
Nameplate or Re-rated Amperage	56.32	[A]

Cable

Cable Length	505	[m]
Cable AWG	4	[AWG]
Voltage Drop due to Cable 60Hz	72	[V]
Required Secondary Voltage 60Hz	2410	[V]

VFD (Define Max desired frequency, default is 60 Hz for new installs)

VFD Type	A88	
Transformer Amp Limit:	313	[A]
Transformer kVA:	260	[kVA]
Required kVA @ 60 Hz	237	[kVA]
Max Frequency Based on VFD	61	[Hz]
Max Frequency Based on Motor	59	[Hz]
Max Frequency Based on MAWP	62	
Max Frequency (lower of the three)	59	[Hz]
Minimum Frequency	30	[Hz]
Maximum Frequency	59	[Hz]
Pump HP Required @ 59 Hz	207	[HP]
Motor HP Available @ 59 Hz	212.4	[HP]
Required Secondary Voltage @ 59 Hz	2370	[V]

WARNINGS

Authenticated By:



Prepared by:	William Sheppard
Phone Number:	+15877793362
Email Address:	William.Sheppard@cenovus.com
Setup Type:	New Setup
Date:	2023/06/07
Maximo WO# or DEF#:	61150351

Well Operating Conditions

MAWP:	7800	[kPA]
Reservoir Pressure:	1600	[kPA]
TVD:	353	[m]
PSHH?	Yes	
Last PSHH Inspection		
Months Since Last Inspection:		
Last PIT Inspection:	2021/10/11	Date
Months Since Last Inspection:	20	
Deadhead Pressure at 59 Hz:	6825	[kPA]

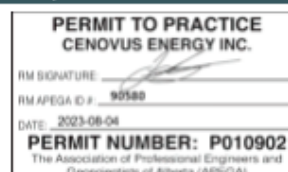
Transformer Setup

Measured Primary Voltage @ 59 Hz:	460	[V]
Required Secondary Voltage @ 59 Hz:	2370	[V]
Actual Secondary Voltage:	2434	[V]
Recommended Tap Setting:	2D Wye	SP
Xfmr NP Primary Voltage:	480	[V]
Xfmr NP Sec. Volt. at Recommended Tap:	2540	[V]
Transformer Ratio:	0.189	ratio
Increase Overload Set Point by:	0	[%]
VFD Overload Set Point:	298	[A]

Voltage Assumptions

Nominal Voltage (pre-filter VFD output)	460	[V]
Expected Volt. Drop Across Load Filter (10-15V)	0	[V]
Calculated Post-Filter Voltage @ 59 Hz	460	[V]

Validated By:



VFD Parameters: ABB ACS800

Critical	INDEX	PARAMETER NAME	HAND/AUTO DEFAULT	Value	NOTES
Yes	11.04	EXT REF 1 MINIMUM	0 Hz	FC/Llyod - 30, CL - 0	Minimum Speed Reference
Yes	11.05	EXT REF 1 MAXIMUM	52 Hz	59	Maximum Speed Reference
Yes	20.01	MINIMUM FREQ	0 Hz	-59	Miniumum speed in Frequency (needs to be negative to allow the rocking start to work)
Yes	20.02	MAXIMUM FREQ	(calculated)	59	Maximum speed that the VFD will output in Frequency
Yes	20.03	MAXIMUM CURRENT A	type specific	298	Maximum current limited to motor. Drive will enter a stall when the limit is reached.
Yes	22.02	ACCEL TIME 1	3.00 s	17	Acceleration Time in seconds (Time to go from 0 to Max Frequency)
Yes	30.05	MOT THERM P MODE	DTC	USER MODE	
Yes	30.10	STALL FUNCTION	FAULT	FAULT	Allows for stall detection. If 30.10 is fault and the running frequency is below 20Hz(30.11) for longer than the time in 30.12 The drive will fault on a Motor Stall.
Yes	30.11	STALL FREQ HI	20.0 Hz	20 Hz	
Yes	30.12	STALL TIME	20.00 s	20 s	
Yes	83.01	ADAPT PROG CMD	EDIT	STOP	Needs to be "Edit" until all parameters in 83, 84, 85 are entered then changed to start.
Yes	85.01	CONSTANT1	0.00	300	Defines the motor current at which an undercurrent condition is started. Scale 1 = 10; IE 300.00 = 30 Amps
Yes	99.05	MOTOR NOM VOLTAGE	0 V	460	Motor nameplate data for Motor voltage rating
Yes	99.06	MOTOR NOM CURRENT	0.0 A	298	(Motor Current)*(Voltage Tap Ratio) = Value for VFD
Yes	99.07	MOTOR NOM FREQ	50.0 Hz	59	Motor nameplate data Motor Frequency rating
Yes	99.08	MOTOR NOM SPEED	1 rpm	3441.66666667	Using 3500 RPM for all vendors at 60hz
Yes	99.09	MOTOR NOM POWER	0.0 kW	161	Motor Nameplate power rating

VFD Parameters: ABB ACS880

Critical	INDEX	PARAMETER NAME	HAND/AUTO DEFAULT	Value	NOTES
Yes	30.17	MAXIMUM CURRENT A	type specific	298	Maximum current limited to motor. Drive will enter a stall when the limit is reached.
Yes	31.24	STALL FUNCTION	FAULT	FAULT	Allows for stall detection. If 31.24 is fault and the running frequency is below 20Hz(31.27) for longer than the time in 31.28 The drive will fault on a Motor Stall.
Yes	31.27	STALL FREQ HI	15 Hz	20 Hz	
Yes	31.28	STALL TIME	20.00 s	30 s	
Yes	75.18	MINIMUM FREQ	0 Hz	FC/Lloyd - 30, CL - 0	Minimum Speed Reference
Yes	75.19	MAXIMUM FREQ	52 Hz	59	Maximum Speed Reference
Yes	75.21	ACCEL TIME 1	3.00 s	17	Acceleration Time in seconds (Time to go from 0 to Max Frequency)
Yes	99.06	MOTOR NOM CURRENT	0.0 A	298	(Motor Current)*(Voltage Tap Ratio) = Value for VFD
Yes	99.07	MOTOR NOM VOLTAGE	0 V	460	Motor nameplate data for Motor voltage rating
Yes	99.08	MOTOR NOM FREQ	50.0 Hz	59	Motor nameplate data Motor Frequency rating
Yes	99.09	MOTOR NOM SPEED	1 rpm	3441.66666667	Using 3500 RPM for all vendors at 60hz
Yes	99.10	MOTOR NOM POWER	0.0 kW	161	Motor Nameplate power rating

TITLE		Seller Drawing and Document Requirements (SDDR)	
Project Name:	FC 2023 Redev W05 P02 Step Out	Project Number:	MOC-16529662
Supplier:	TBD	PO line item#	TBD
Cenovus PO Number:	TBD	Cenovus Document Revision:	0
Supplier Document Number:	TBD	Customer Document Revision:	N/A
Cenovus Project Engineer:	Janelle De Boer	Documents receiver:	-
Equipment Tag:	See RFQ for Details		
Equipment Description:	VFD and Step-up Transformer	Equipment Type:	Electrical

Legend:

Timing for Submission or Availability in Weeks:			
With Bid	=	Document shall be submitted for review with Supplier's Quotation.	
P.O. +	=	Number of weeks from P.O. award date when document shall be submitted or made available for review.	
DEL + or -	=	Number of weeks after (+) or before (-) delivery date when document shall be submitted or made available for review.	
Type of Review:			
A	=	Cenovus approval is required for the document prior fabrication/assembly	
O	=	For Information Only	
R	=	Review/ Approval by Cenovus at the Project Office prior shipment.	
S	=	Review by Inspector at Supplier's Works.	
As-Built Requirements:	=	Document shall be resubmitted as-built	
Native Files Req'd:	=	Specifies which documents require the native file to be submitted as well as the PDF. Will indicate either the native file required, or may indicate a specific file format to be provided.	
Hard Copy Req'd:	=	Specifies which documents the supplier must submit as a physical hard copy as well as in electronic format. Will indicate either a hard copy is required, or may indicate a specific number of copies.	
Final Destination of Document:			
K	=	Document shall form part of the Quality Control Data Book.	
J	=	Document shall form part of the Catalogues & Manuals Data book	
H	=	Document shall part of the Engineering Turnover	
F	=	A copy of the reviewed document shall be sent to site with the equipment/material.	

Rev Description	ORG	CHK	QA	Discipline Lead	Rev. No:	Date

Title:	Seller Drawing and Document Requirements (SDDR)		
Project Name:	FC 2023 Redev W05 P02 Step Out	Project Number:	MOC-16529662
Supplier:	TBD	PO line item#	TBD
Cenovus PO Number:	TBD	Cenovus Document Revision:	0
Supplier Document Number:	TBD	Customer Document Revision:	N/A
Cenovus Project Engineer	Janelle De Boer	Documents receiver:	-
Equipment Tag:	See RFQ for Details		
Equipment Description:	VFD and Step-up Transformer	Equipment Type:	Electrical

SDDR Code	Document Type	Required	Timing for Submission or Availability in Weeks			Type of Review (A, O, R, or S) X				As-Built Req'd	Native files Req'd (file format)	Authentication Required	Preferred format (searchable)	Final Destination of Document (K, J, H, or F) X			
			With Bid	P.O. +	DEL. + OR -	A	O	R	S					K	J	H	F
DS	Datasheets																
VD	Vendor Drawings & Calculations																
VD025	Electrical Interconnection Diagrams	X				X				X		X	PDF				
VD033	Outline Drawings/Schematics	X				X				X		X	PDF				
VD034	Bill of Materials	X				X				X	XLSX		PDF				
CM	Catalogues & Manuals																
CM000	Packaged Catalogues & Manuals	X					X						PDF		X		
CM004	Weight Data	X					X						PDF				X
CM013	Installation, Operation and Maintenance Manual	X					X						PDF		X		
QC	Quality Control																
QC058	Canadian Standards Association (CSA) Approval	X						X					PDF	X			
PD	Procurement Document																



☒ **Level 0 Receiving Inspection ONLY**

☐ **Level 1 Final Quality Surveillance**

- SCOPE:**
1. Final inspection upon completion of manufacture.
 2. Documentation review.
 3. Final Inspection Release
 4. Project Expediting

☐ **Level 2 Limited Scope Quality Surveillance**

- SCOPE:**
1. Approval of manufacturer's QC system prior to award
 2. Pre-inspection meeting
 3. Visits as necessary for inspection during manufacture
 4. Witness of hold points and final testing
 5. Documentation review
 6. Final inspection release.
 7. Project Schedule

☐ **Level 3 Full Scope Quality Surveillance**

- SCOPE:**
1. Approval of manufacturer's QC system prior to award
 2. Agreed Quality Plan prior to manufacture
 3. Pre-inspection meeting
 4. Frequent monitoring and inspection at discretion of Buyer and/or Representative during manufacture
 5. Witness of all testing
 6. Full documentation review
 7. Final inspection release.
 8. Project Schedule

☐ **Level 4 Resident Quality Surveillance**

- SCOPE:**
1. Approval of manufacturer's QC system prior to award
 2. Agreed Quality Plan prior to manufacture
 3. Pre-inspection meeting
 4. Continual monitoring and inspection during manufacture
 5. Witness of all testing
 6. Full documentation review
 7. Final inspection release.
 8. Project Schedule

Inspection Level	Definition	Notes	Criticality Rating ⁽⁶⁾	Description	Equipment Examples
0	Cenovus Receiving Inspection ONLY		I	The item is of little or no importance and no quality checks are required in supplier's shop	Pipe fittings, studs, nuts, gaskets and structural steel (raw).
1	Release for shipment surveillance is required.	<p>This level requires final surveillance inspection only to ensure the complete equipment and/or material is:</p> <ul style="list-style-type: none"> In compliance with the purchase order. Is properly identified. Is adequately prepared for shipment. The documentation requirements have been fulfilled. 	II	The item is of minor importance; "off the shelf" commercial quality is acceptable with only final quality check in supplier's shop	Off Shelf Pumps, relief valves, custom electrical equipment, pneumatic or electronic control panels.
2	Limited scope surveillance is required	<p>This level requires in addition to the activities outlined under Level 1:</p> <ul style="list-style-type: none"> A pre-fabrication meeting to review the quality requirements established by the Purchase Order and Cenovus's Specifications. Sign off of hold/witness/verify points as outlined in the Inspection Test Plan. Random visits as required. Inspection Company to prepare ITP for inspection milestones, capturing requirements of PO and Suppliers ITP's. 	III	The item is of moderate importance; "standard" quality is acceptable by having some quality checks in the supplier's shop	Non-code vessels (internally bare), fabricated piping spools (internally bare), structural fabrication, line pipe (internally bare), all modular pre-engineered, pre-packaged equipment.
3	Full scope surveillance is required	<p>This level requires in addition to the activities outlined under Level 2:</p> <ul style="list-style-type: none"> Random visits during fabrication with the purpose of monitoring and verifying the Supplier's compliance with the Quality Control Program and Purchase Order. Frequency of visits is based on the complexity of the equipment, equipment reliability requirements and the Supplier's Quality Control performance 	IV	The item is of significant importance and its quality must be protected by having regular quality checks in the supplier's shop	Pressure vessels, custom pumps, storage tanks, heat exchangers, aerial coolers, custom fabricated process package, equipment and piping that is internally and/or externally coated.
4	Residency surveillance is required.	<p>This level requires in addition to the activities outlined under Level 3:</p> <ul style="list-style-type: none"> Daily visits or full residency as directed by the project. Monitoring Supplier's Quality Control Program on an ongoing basis. Witnessing of all specified tests. 	V	The item is critical and its quality cannot be compromised. Rigorous quality checks are required in the supplier's shop	Similar to Level 3, required if complicated scope, new fabricated materials, or Vendor under probation.
<p>1. The surveillance level is based upon complexity, sensitivity, safety, codes and the project specifications.</p> <p>2. The Surveillance/Inspection Levels may be adjusted, i.e. raised or lowered in consideration of specific factors pertaining to the equipment or the supplier, for example: the uniqueness of the equipment for the selected supplier, the supplier's performance history, the proposed manufacturing location, the impact on schedule, etc. Adjustments to Inspection Levels can be made before placement of the PO or any time thereafter should the circumstances warrant a change. Adjustments to Surveillance/Inspection Levels must be documented and approved in writing by Cenovus Supplier, QA Specialist and Cenovus Project Engineer</p> <p>3. Hold - Approval required. Manufacturing cannot proceed until approved.</p> <p>4. Witness - Supplier to advise witness point, minimum 3 business days, manufacturing may proceed upon notification to the project EP QSR/QSC.</p> <p>5. Verify - Manufacturing to proceed in accordance to schedule, to be reviewed and approved by inspector.</p> <p>6. Refer to Cenovus Equipment Criticality Procedure TR-80-PRC-00-107-01 for more details</p>					