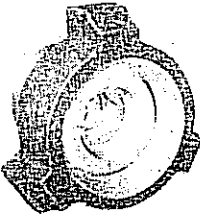


**CLARIFICATION OF TENDER ENQUIRY #PROC-FE/CB/STIM-5167/2021 for NITROGEN PUMPING UNIT, Qty = 1 Nos**

**TECHNICAL SPECIFICATIONS OF THE UNIT.**

T.O.R. Sr. No.	Clause	Tender Specification	Bidder's Clarification	OGDCL Reply
2	Truck Chassis	Right Hand Drive cab-over 6 x 6 heavy duty truck chassis suitable for Oil & Gas fields	We request that a equivalent Mercedes Benz AROCS 4145 8x8 RH Truck Chassis with Classic Space L-cab Sleeper Cab be accepted in place of the specified Kenworth 6 x 6 Truck Chassis.	Please refer to T.O.R. and quote as per requisite information available.
3.	Control Cabin	3.8 ..... with a separate generator power supply as well.	Does this mean that a separate Diesel Powered Genset should be installed on the Unit i.e.; a " <i>Cummins Onan (or equivalent) 8KW, 220 VDC., 50 Hz Diesel Engine powered Genset.</i> "  If such a Genset is required what should it provide 220 VAC electrical power for? Please clarify.	Please refer to T.O.R. and quote as per requisite information available.
3.1	Control Panel	3.1.5 Data Logging (pressure, Temperature, flow rates, LN Tank level).	Does this requirement mean that a separate "Data Acquisition System (DAS) with Computer is required, please clarify	Please refer to T.O.R. and quote as per requisite information available. Data Logging (pressure, temperature, flow rate, LN tank level) parameters should be recorded.

4.1	Road Engine		<p>We request that you delete the requirement for "This Engine is used to drive high pressure Triplex pump via power shift transmissions and flexible drive lines". For maximum flexibility it is standard for the Triplex Pump to be hydraulically driven from the Chassis Road Engine, in addition it is standard for the Chassis Road Engine to provide power to the complete hydraulic system, therefore we request that you confirm that the following is acceptable:</p> <p>The hydraulic system to drive the High Pressure Triplex Pump and Ancillary Items shall be powered from the above detailed Truck Chassis Diesel Engine/Transmission mounted engine driven approximate 1.2:1 Power Take-Off (PTO) via a driveline and a multi-output drive gearbox and will consist of hydraulic pumps to provide hydraulic power to the following:</p> <ul style="list-style-type: none"> <li>• Closed loop variable speed hydrostatic drive for the Triplex Pump. The control circuit for this drive shall shift to neutral (zero hydraulic flow) in case of Triplex Pump over pressure.</li> <li>• Open loop system to provide hydraulic power to the Triplex Pump Power end lubrication system:</li> <li>• Open loop system to provide hydraulic power to the following: <ul style="list-style-type: none"> <li>- Triplex Pump Power end lubrication system</li> <li>- LN2 boost centrifugal pump</li> <li>- Auxiliary Glycol Vaporization Circuit Centrifugal type Circulation Pump</li> <li>- Discharge plug valve actuator</li> <li>- Hydraulic Cooler drive motor</li> <li>- AC Compressor drive</li> </ul> </li> <li>• Triplex Pump Power end lubrication</li> </ul> <p>The Vaporization System Heat Builder hydraulic pump shall be powered from the Auxiliary Deck Diesel Engine mounted PTO.</p>	Please refer to T.O.R. and quote as per requisite information available.
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4.2	Deck Engine	..... along with Allison or equivalent transmission	We request that you delete the requirement for "a Allison or equivalent transmission", the purpose of this Deck Engine is to be used to for the Unit vaporization system. So we request that the following be accepted "Installed on the flywheel housing of this Auxiliary Diesel Engine shall be a hydraulic drive PTO and a Heat Builder (hydraulic) Pump"	Please refer to T.O.R. and quote as per requisite information available.
7.1	Nitrogen Tank	..... having gross capacity of 3,200 US Gallon and Net Liquid Nitrogen \ (pump able) 3,040 US Gallon	We request that you modify the required capacity of the Liquid Nitrogen Tank to match the standard available capacity of such tanks which is "Nominal (water) capacity 3,000 us gallons (11.355 M3)" as a 3,200 US Gallon tank is a non-standard size.	Please refer to T.O.R. and quote as per requisite information available.
13.1	Treating Iron	Acid, H2S	As this is a LN2 Pumping Unit that will not be Pumping Acid or H2S contaminated fluids please confirm that H2S/Sour Gas service GREEN ( [REDACTED] ) rated Treating Iron is required or if standard service RED ( [REDACTED] ) rated Treating Iron is actually required.	Please refer to T.O.R. and quote as per requisite information available.
13.1	Treating Iron	Item 14; Pipe Chokers for 2" 1502 Pipe	Please clarify this requirement, are they the following: 	Please refer to T.O.R. and quote as per requisite information available.  Pipe chokers; use to tie up two pipe between the connections.
9		Vaporizer and heat exchanger	No hydraulic heat builder on our unit. The technology used is to utilize water brake to create heat for LN <sub>2</sub> vaporizing. Mechanically driven Dynamic-Heat-Generator converts rotating shaft input directly into heat to vaporize liquefied gases. The DHG requires	Please refer to T.O.R. and quote as per requisite info available.

			only rotary input to heat large fluid volumes rapidly and efficiently without a heat exchanger. (details attached) Please confirm.	
7.1.2	Nitrogen tank	Codes & Standards	The Nitrogen Tank shall meet the ASME Codes as standard.	Please refer to T.O.R. and quote as per requisite information available.
2, 4.2 & 7.1 66-1-22	Truck chassis, Deck Engine & Nitrogen tank	Right Hand Drive cab-over 6 x 6 heavy duty truck chassis, Deck engine should have minimum Caterpillar 3406C (Industrial) or equivalent rated 375BHP to 465BHP @ 2100RPM along with Allison or equivalent transmission and A cryogenic Tank having gross capacity of 3,200 US Gallon	Request to revise the specification as follows, > Engine- The chassis engine will be used to drive the hydraulic and lubrication systems via transfer case and hydraulic accessories. NO DECK ENGINE will be needed. > Liquid Nitrogen Tank- Net volume of the tank will be 7.5 m3 with 0.8 MPa/ 116 psi working pressure.	Please refer to T.O.R. and quote as per requisite information available. Specifications cannot be revised at this stage.