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CCNEL – Caterpillar Oil & Gas
Building 329, Doncastle Road
Bracknell
RG12 8PE
United Kingdom
Tel: +44 1344 782920
Fax: +44 1344 782930

26th June 2018,

To: Dydenko O.V.
Chairman of Central Conflict Committee of National JSC "Naftogaz of Ukraine"
B. Khmelnitskogo St., 6, Kyiv, 01601, Ukraine

Subject : Procurement procedure number 17T-484
Tender ref 43130000-3 Drilling equipment (Power equipment for modernization of 15 (fifteen) rigs "Uralmash 4E")

Dear Sir,

Referring to the above-mentioned procurement prcedure, we draw your attention to page 47/155 of the requirement document ref 1504200999. It clearly stipulates the requirement of an engine type 3512B or equivalent.
Because of this, we only offered the 3512B engine and not the 3512A, which is of an older design. The 3512A would have been cheaper but more fuel consuming.

We have now learnt that the engines to be delivered on this tender will actually be the Cummins KTA50. This model is actually inferior to the 3512A, because of its similar technology but lower displacement, and definitely vastly inferior to the 3512B that is specified in your tender documentation.

For comparison between the specified 3512B and the now-considered KTA50, here is a list of the main differences :

1. The biggest and most significant difference is the engine displacement. The KTA50 has 50.3 litres of engine displacement against 58.5 litres for the 3512B : the KTA50 is a much smaller engine that is pushed hard for power. This leads to :
   a. a much higher wear rate, more engine stress, higher maintenance costs and more downtime.
   b. Much better load step transients with the 3512B than the KTA50.
2. The 3512B has a proper Engine Control Module (ADEM3), whereas the KTA50 is only controlled by an electronic governor. As a result, the injectors on the KTA50 are mechanical while on the 3512B, they are all electronically controlled, which ensures a better injection control and fuel consumption.
3. Fuel tolerance on the KTA50 is limited to grade 2D, whereas the 3512B can accept grade 1D or 2D. The 3512B is much more fuel tolerant in case a bad batch of fuel would be delivered.
4. Cummins use a generator winding pitch of 2/3, which is good for standard power generation but completely inadequate for Drilling, where the dominant harmonics are in the 5th and 7th order. The 3512B drilling genset has a winding pitch of 0.866, which is optimal for 5th and 7th order harmonics. This has an impact on all the equipment that is connected to the gensets and can lead to serious electrical faults on the whole rig.

To [illegible]
Chairman of [illegible] Committee [illegible]

Subject: Permanent protection [illegible]

Dear Sir,

[illegible]

We have [illegible]

[illegible]

In terms of cost to UGV, we definitely want to underline that these engines will result in millions of US Dollars (or Euros) of additional cost to UGV in fuel consumption.

The average power applied per engine in Drilling applications over th course of one year is 50% of nominal rating, i.e. about 650 kW per engine here. The fuel consumption of the 3512B at 50% is 203.8 g/kW.hr. The fuel consumptiom of this KTA50 at 50% is 218 g/kW.hr. Based on annual usage of 2000 hours per year and a price of 1 USD per litre, this translates into an additional fuel cost to UGV of 22,100 USD per engine per year, i.e. 66,300 USD more per rig per year.
Over a lifetime of 20 years per rig, this means a loss of 1,326,000 USD per rig. Considering all 15 rigs in the tender, this corresponds to a **20 Million USD loss in fuel difference**.
We are extremely surprised that this difference could be deemed acceptable.

We remain at your disposal for any further information you may require.

Best regards.

Eric HENIN
Territory Manager, Gas Specialist and Major Accounts Manager – Caterpillar Oil & Gas
Phone: (+44) 1344 782 925
Mobile: (+44) 7823 884 440
E-mail: henin_eric_h@cat.com