Corrigendum-1
TENDER NO_AGL/0304/TO/CNG COMPRESOOR/05-19

Techno-commercial Query

Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
1	Bid Document, VOLUME – II OF II Clause No. 1.6	Page 6 of 167	**TYPE OF COMPRESSOR BLOCK** Lubricated or non lubricated two throw Balanced opposed reciprocating Compressor with lube oil system and cooling system (console type) as required.	Burckhardt Compression (India) Pvt. Ltd.(BCIN) Trunk Piston Design compressor are best suited for CNG applications as they offer Zero Gas Loss and are suitable for frequent start stop ,do not require nitrogen purging etc . BCIN trunk piston design compressor have clocked 4 Million operating hours at sites of IGL and other CGD companies such as AGL,BGL ,TNGL etc. All Burckhardt Compression make CNG packages are currently in operation at Aavantika Gas Limited of Trunk Piston design model. Request you to please approve Burckhardt Compression Trunk Piston Design.	**Bidder may supply the package with their proprietary design.**
2	Bid Document, VOLUME – II OF II Clause No. 4.10.1	Page 14 of 167	GAS ENGINE Gas fired 4-stroke; spark ignited type.	We request to please confirm the acceptable make of Gas Engine	**Tender Condition Prevails**
3	Bid Document, VOLUME – II OF II Clause No. 4.10.10	Page 15 of 167	CPCB COMPLIANCE Yes, Engine shall meet the latest MP state/central pollution control board rules & regulations.	Currently there are no norms applicable on emissions from gas engine powering compressors. Also central/state pollution control board do not undertake testing & certification of emissions at site. They are governing bodies and their scope is limited to publishing of standards. Testing of engines at site is carried out by agencies authorised by state/central pollution control boards. We request AGL to advice on applicable CPCB norms.	**Bidder shall submit a certificate approved/accepted by MP State Pollution Control Board for the installed gas engine during Site Acceptance Test / Performance Test.** **OR** **Bidder shall meet the CPCB norms on Genset run on dedicated Natural Gas mentioned in the environment (protection) rules - 1986, in Schedule-I,Serial No - 95A after issued a notification on 07/03/16 by Ministry of Environment ,Forest & Climate Change.**
4	Bid Document, VOLUME – II OF II Clause No. 7.1	Page 29 of 167	Compressor Capacity DESIGN SUCTION PRESSURELOCATION: COMPRESSOR BLOCK OR PACKAGE INLET Package Inlet (Bidder to note that the suction pressure and temperature shall be measured at vendor's boundary limit and not at compressor cylinder)	We understand that pressure drop across suction filter and PRV and flow meter are to be accounted for while designing the package. Please confirm if our understanding is correct. Also please confirm the placement location of suction filters (within the package or outside the package) In case the suction filters are placed outside the package then the design is to be done considering 16 bar in at the inlet of suction flow meter or the package. In case placement of Suction Filters is permitted outside the package then please confirm if the package design is to be done considering 16 Kg/CM2 at the inlet of the suction filter or after the suction filter.	**Yes, your understanding is correct. The location of the suction filters are either inside or outside of the package. In both the cases, the compressor package shall be designed considering 16kg/cm2 at the inlet of the suction filter.**
5	Bid Document, VOLUME – II OF II Clause No. 1.6.3	Page 6 of 167	MASS FLOW METER FOR VENT The mass flow meter shall be W&M approved only	We understand that weights & measures approval is applicable only for suction, discharge, engine flow meter. Vent flow meter is thermal mass flow meter type & weight and measures approval is not required. Please confirm if our understanding is correct.	**For Vent Mass Flow Meter , Certifications on the par to national / international standards to be submitted.**

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6	Bid Document, VOLUME – II OF II Clause No. 4.11.3	Page 15 of 167	IP RATING OF ENCLOSURE Enclosure shall be provide with a degree of protection…….IP 54	The compressor enclosure is equipped with large suction and discharge hoods open to atmosphere. Under the circumstances it is not possible to certify the enclosures as IP 54 compliant. We request for waiver of this clause.	**Enclosure shall be flameproof , weatherproof with adequate ventillation system.**
7	Bid Document, VOLUME – II OF II Clause No. 14.0	Page 43 of 167	NOISE LEVEL OF ENCLOSURE 72+/- 3 dBA at 1.0m distance	Gas engine driven packages have noise level in the range of 78dBA +/ - 3 dBA. We request AGL to accept the same.	**Tender Condition Prevails**
8	Bid Document, VOLUME – II OF II Clause No. 1.6.15 & 4.11.1	Page 6 & 15 of 167	TEMPERATURE DIFF. BETWEEN AMBIENT AND INSIDE OF ENCLOSURE Exhaust fan in the enclosure in addition……..heat exchanger. Maximum allowed temperature within the enclosure shall be 8 deg. C above ambient temperature.	Requirement of exhaust fan is mentioned on page no 6 point 15, but of this page it is mentioned (In case the ventilation fan is mounted inside the canopy then no separate ventilation fan required provided this meet the required temperature.) Our Radiator Fan and the ventilation fan are engine driven. Under the circumstances we shall not be providing a separate electric motor driven fan.	**Please refer reply to Sr. No. 26**
9	Bid Document, VOLUME – II OF II Clause No. 5.3	Page 20 of 167	HMI HMI shall be ……Touch Screen with 10” graphic display. Preferred make – Siemens & Schneider and Display shall be weather proof to IP 65.	7” Touch Screen is an Industry standard. We offer Siemens PLC with 7 “ touch screen. Siemens does not supply 10” screen. We request AGL to accept 7 inch touch screen as it is a standard in City gas	**Tender Condition Prevails**
10	Bid Document, VOLUME – II OF II Clause No. 2.1.2	Page 9 of 167	AIR COMPRESSOR 3.7 kW 16kg/cm2 discharge with PRV. Preferred make IR/KPCL/ELgi/CP. 1000 water litre capacity air receiver also required.	Kindly approve the Iwata Motherson make as we are supplying the same to all CGD companies.	**Tender Condition Prevails**
11	Bid Document, VOLUME – II OF IIClause No. 5.6.11(n)	Page 23 of 167	SS TUBE FITTINGS All high pressure fittings need to be of double ferrule type and SS material only. Makes: M/s Swagelok (USA) / M/s Parker (USA)/HYLOK/DK- LOK/SSP/HOKE/HAMLET/ M/S BMT Korea	We request approval towards Voss make fittings as Burckhardt packages are factory supplied with Voss din rated fittings. The same are in use at all city gas companies and have successfully completed over 4 million hours of operations in India. We can provide a certification towards successful use of Voss fittings in Burckhardt package from prestigious City Gas end user.	**Tender Condition Prevails**
12	Bid Document, VOLUME – II OF II Clause No. 5.6.11(s)	Page 23 of 167	PREFERRED MAKES of cooler GEI Hamon Ind. Ltd, GEA India, Patel Air temp, Process equipment Karad / M/s KPCL, M/s CP.	We request approval towards Chintamni make gas coolers as Burckhardt packages are factory supplied with Chintamani cooler. The same are in use at all city gas companies and have successfully completed over 4 million hours of operations in India. We can provide a certification towards successful use of Chintamani gas cooler in Burckhardt package from prestigious City Gas end user.	**Tender Condition Prevails**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
13	Bid Document, VOLUME – II OF II Clause No. 4.2.3	Page 11 of 167	Compressor maximum vibrations at cylinders and at frame shall not exceed 10 mm /sec. And 5 mm/s respectively unfiltered peak velocity	These may be applicable to API618 / ISO13631 compliant compressor block. These may not have any interlink with performance in field as these are related with design. We supply our field proven trunk piston design compressor in CNG industries. These parameters are not applicable to Trunk Piston Design. We suggest that these being design parameters, proprietary to each manufacturer, may kindly be dealt accordingly.	**Vendor may supply the package with their proprietary design, subject to fulfillment of Tender requirement. However, the same design must have been supplied in the past and approved by PESO.**
14	Bid Document, VOLUME – II OF II Clause No. 5.2.2	Page 17 of 167	Control Philosophy PLC architecture	We understand that 100% redundancy in CPU and power supply is required for bump less changeover.	**Yes, your understanding is correct.**
15	Bid Document, VOLUME – II OF II Clause No. 6.3	Page 113 of 167	**MECHANICAL STRING TEST** **Mechanical String Test of complete package for 4 hrs shall be performed at packager's shop before dispatch in presence of Purchaser/Consultant. This test can be clubbed up with the Mechanical Run Test of compressor as specified above, provided the job driver, lube Oil system is used f or the test. All parameters including discharge pressure shall be demonstrated. String test at unload condition is not acceptable.**	Since we test the machines on natural gas in our plant. We request to combine and allow MST and PAT at packager's work.	**Tender Condition Prevails**
16	Bid Document, VOLUME – II OF II Clause No. 6.4	Page 114 of 167	**PACKAGE PERFORMANCE TEST (PT)** **Bidder shall assemble the complete package including auxiliary systems, instrumentation, safety dev ices within the enclosure at his shop and dispatch. Duration of PG test shall be min 4 hours continuously. Complete package including gas engine shall be performance tested as a module along with electric motor driven air compressor. Bidder shall demonstrate all controls, shutdown, trips & alarm s etc. Pressure and temperature of gas shall be considered at purchaser's boundary limit and supplier shall install necessary pressure and temp measuring devices. Necessary spool piece shall be provided in discharge tubing of the com pressor. All instrument duly calibrated, tools & tackles, any modification required for conducting PT shall be in the scope of supplier.**	We request that Performance Acceptance Test be conducted for full 04 hours, on load, prior to dispatch at the premises of packager itself. This methodology is better as due to variation in loads and frequent auto shutoff, it is not possible to carry out PAT seamlessly at site	**Tender Condition Prevails**
17	Bid Document, VOLUME – I OF II SOR	Page 141 of 142	As mentioned in SOR 1) Supply of CNG Compressor – 3 QTY 2) String Test of package @ packager's Factory– 3 QTY 3) Supply of Special tools and tackles – 3 QTY 4) Supply of Air Compressor with Air Receiver Vessel – 3 QTY 5) E&C and PAT at Site – 3 Qty 6) O&M for 1 st to 5th year – 3 QTY for each year	Our packaging plant is fully equipped to test the package on design parameter continuously for 4 hours on Natural Gas. We request AGL to accept Performance Acceptance test at factory.	**Tender Condition Prevails**

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18	Bid Document, VOLUME – I OF II Clause No. 26.1.1	Page 67 of 142	PRICE REDUCTION SCHEDULE 0.5% per week or part thereof of the delayed deliver value maximum up to 5% of total delivery order value. The total value of PO considered for applying PRS shall be excluding of all Taxes and Duties.	We request that 0.5% value of PRS be applicable upon completion of the complete week.	**Please refer clause no. 33 "PRICE REDUCTION SCHEDULE (PRS)" of GCC-Goods Section V of Tender Vol I of II.**
19	Bid Document, VOLUME – I OF II Clause No. 1.A	Page 32 of 142	FOR SUPPLY 1) 85% of supply valve including string test – within 15 days	All Prominent City Gas Companies allow payment to domestic bidders against Inland Letter of Credit. Similarly, we request to release 85% payment through Inland letter of credit. This shall help us to offer better price.	**Tender Conditions Prevail**
20	Bid Document, VOLUME – II OF II Clause No. 7.2.1 (i)	Page 30 of 167	PRICE LOADING FOR FUEL CONSUMPTION F = (G-Q) * hours * Nop *N Where, F = Loading amount in Rs. G = Guaranteed fuel consumption in Kg/Hr for every 873 kg (1200 SCMH) of CNG Compressed for bidder under evaluation. H =Cost of NG= Rs. 44/ Kg Nop = 13000 Hrs * N =No. of Compressors	We understand that 1200 SCMH machines are expected to operate for approximately 2.5 hours daily. (13000 hours/15 years as per tender clause) We humbly submit that the Machine Size Vs Loading and Penalty do not match and submit as below : 1. Economic Lifecycle of CNG package is considered as 73000 Hours. (Reference tender of Progressive City Gas Entities) In case AGL has assumed total operational life of the machine as 13000 hours then a 1200 SCMH Machine will compress Approx 11.7 Million Kg of CNG in lifecycle which is 1/6th Capacity of a 1200 SCMH Machine (as 1200 SCMH machine is procured to compress approx 70 Million KG of CNG in Lifecycle) To compress 11.7 Million over lifecycle a 250 SCMH machine is sufficient. With a margin of 100 % also a 400 SCMH capacity is more than sufficient (13000hours x 1200 SCMH / 73000 hours of life cycle = 213 SCMH) A 1200 SCMH machine for the purpose is significantly over sized proposition. It may also be noted that an over sized machine has many other associated factors also contribute towards inefficiency and thus increase loses. Some of the factors are summarised as below.	**Tender Condition Prevails**
				2. All API 618 standard Machines, by virtue of Design require Nitrogen Purging Or have to forcibly Vent Gas into the atmosphere to prevent air from entering the crankcase. 3. Under the circumstances an API 618 Machine cannot be Zero Gas Loss Machine. Machines lose Gas while in operation as well as in idling. 4. Loss is excessive in case of idling in comparison to operation because flooding of Air in Crankcase is not permitted & venting of Gas in open environment is the	

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			* This has been considered on present running hours, expected running hours for next 15 years and NPV of Investment.	necessity to prevent formation of explosive mixture. In our opinion, Natural Gas being potent Greenhouse Gas should not be vented in the atmosphere as it exists in environment for more than 100 years & depletes the Ozone layer. Purchase of 1200 SCMH machine and almost 80 % idling will lead to massive financial loss to Ex-Chequer and will also pollute the environment . Hence AGL is requested to reconsider decision to purchase 1200 SCMH machine and instead opt for 250 SCMH as it will save millions of rupees in Capex and OPEX and also safeguard the environment . All Progressive CGD companies evaluate the bid after considering the following: ▪ It is requested that lifecycle ownership and operating cost should be considered while evaluating bids ▪ The following may kindly be considered in evaluation: • Cost of equipment and auxiliaries including insurance, freight and taxes • Energy cost for 73000 hours of operation • Gas Loss for 73000 hours of operation • Operation & maintenance cost • E&C, PAT, FAT charges We request to confirm the same.	**Tender Condition Prevails**
21	Bid Document, VOLUME – II OF II Clause No. 7.2.2(ii) - Vol II -	Page 31 of 167	Penalty during performance test towards gas loss Bidders are to ensure that the package loss (excluding Engine consumption) should not exceed 1.0%of the capacity of the machine. If package loss is quoted more than 1 %of the capacity of the machine, then bid shall be rejected. In case the above loss exceeds 0.5% of the capacity of the machine (established in PT), the purchaser shall be compensated @ Rs 65/- per kg for 5 years for the gas leakage. The amount will be deducted from O&M monthly running bill. It is bidder's responsibility to demonstrate during PT that the gas leakage is within the limit of 0.5% of the capacity of the machine. All the provisions such as Flow Meter (for low flow application) at common vent line suitable for the application required for this shall be provided by bidder at his own cost.	From the tender terms we understand that a machine with gas loss of upto 1% is acceptable. We understand that even as 13000 hours of operation and 873kg/hr production the machine make cause a gas loss of 1.13 lac kgs or in financial terms a loss of approx. 50 lacs. It is requested that AGL consider taking declaration of gas loss from bidder and load the bid price during evaluation.	**Tender Condition Prevails**
22	Bid Document, VOLUME – II OF II Clause No. 13.14.1 & 13.14.2 & 1.3 -	Page 41 & 42 & 166 of 167	All spares, consumables, lubricants, lubricating oil, coolant, sealant etc. required for carrying out the Operation and maintenance of the complete compressor package during the warranty period, including periodic, breakdown maintenance for continuous and uninterrupted operation of the compressor packages shall be in scope of the Bidder and shall be kept in stock. If any equipment got fire or broken due to accident the same shall be replaced or rectified by the bidder.	Insurance towards fire, theft & accident of the compressor package shall be in PURCHASER's Scope.	**Tender Condition Prevails**
23	Bid Document, VOLUME – II OF II Clause No. 4.0	Page 4 of 167	Delivery shall be……..	Please note that we shall be transporting the package either to storage/store or site (place to be confirmed by client during despatch instructions).Further loading, retransportation and unloading of the package store to site will not be in our scope.	**Re-transportation of the package from the store to the actual site/station including transit insurance is in bidder's scope.**

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24	Bid Document, VOLUME – II OF II Clause 1.6	Page 6 of 167	Separate Junction Boxes..... For interfacing to local panel	Please note that we will not be providing separate junction boxes for different signals. As per our standard practice all cables run directly up to PLC panel. Kindly confirm	**Accepted**
25	Bid Document, VOLUME – II OF II Clause 1.6	Page 6 of 167	Blow Down vessel shall be located preferably on top of the package to facilitate periodic testing of pressure vessel.	Blow down vessel shall be mounted on the common structural skid for compressor, gas engine and other auxiliary components. This is our proprietary design approved by PESO.	**Bidder may supply the package with their proprietary design. BDV on the top of the package shall be preferable.**
26	Bid Document, VOLUME – II OF II Clause 1.6	Page 6 of 167	Exhaust fan in the enclosure in addition to the cooling fan of the heat exchanger.	The ACHE is forced draft and the hot air inside the package is blown out by the fan. Thus, ventilation fans are not envisaged.	**Our aim is there should be sufficient ventillation for heat dissipation of coolers. Bidder is required to assess the requirement of additional ventilation fan for the same.Compressor shall not be tripped on account of rise of temperature inside compressor package.**
27	Bid Document, VOLUME – II OF II Clause 1.6	Page 7 of 167	Separate accoustic enclosure..... UV detectors in each enclosure	We would like to inform you that our compressor package design having single accoustic enclosure without partition is approved by PESO. Hence we will not provide a separate enclosure with a set of GD and FD in each enclosure.	**Tender Condition Prevails**
28	Bid Document, VOLUME – II OF II Clause 1.6	Page 7 of 167	O&M charges (post warrantee period) with spares, consumables, man power and lubricants including complete overhauling of compressor & engine, if required.	Top and Major Overhauling of Engine is not inlcuded in our scope.	**Tender Condition Prevails**
29	Bid Document, VOLUME – II OF II Clause 2.1.2	Page 10 of 167	Manual drains and automatic moisture traps shall be provided in the system.	Moisture trap not provided by KPCL on reservoir .We are providing moisture separator cum regulator in the system.	**Please refer clause no 1.6, Page no 91 of 167, Vol II of II of tender document.**
30	Bid Document, VOLUME – II OF II Clause 2.1.7	Page 10 of 167	For running the Air compressor…..... requirement in the offer.	Please specify the distance of PDB from the location where the compressor package is going to be installed so that cost of necessary power cable can be considered.	**Distance between the PDB and compressor package will be depending on the site condition. However, distance between them is not more than 40 meters.**
31	Bid Document, VOLUME – II OF II Note 4.8.2	Page 13 of 167	For Calculating the surface area of the air cooler the ambient temperature of 42 deg C and 80% R.H.	Please confirm the ambient air temperature required for calculating the area of air cooler. In Datasheet of Heat exchanger it is stated that exchanger should be designed with air side temperature of 44 deg C.	**The ambient temperature of 44 deg C is considered for designing of ACHE.**
32	Bid Document, VOLUME – II OF II Note 4.9.3	Page 13 of 167	Scrubber service class- B shall be used for interstage/ discharge scrubbers.	The proposed CNG package has suction volume bottle at each stage and discharge volume bottle at final stage discharge only. The volume bottles at suction are connected to condensate drain system through auto-drain valves. These volume bottles shall act as scrubbers/ condensate removal system. No separate KODs shall be supplied. Isolation valve is mounted in upstream of auto drain valve. Please let us know your acceptance.	**Bidder may supply the package with their proprietary design.**
33	Bid Document, VOLUME – II OF II Note 4.10.10	Page 15 of 167	Engine shall meet all the latest MP State / Central Pollution Control Board rules & regulations. Bidder shall submit a certificate approved/accepted by MP State Pollution Control Board for the installed gas engine during Site Acceptance Test / Performance Test.	CPCB norms are not applicable as CPCB scope is limited to Natural Gas Engines for genset applications. However, we will submit OEM certificate indicating emission values of offered engine	**Please refer reply to Sr. No. 3**
34	Bid Document, VOLUME – II OF II Note 4.11.1	Page 15 of 167	Adequate ventilation fans shall be provided to account for heat dissipation of coolers.	Please note that Gas engine, compressor and ACHE are in line and all the hot air inside the package is blown out by the fan itself due to forced draft. Thus, ventilation fans are not envisaged.	**Please refer reply to Sr.no. 26**

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35	Bid Document, VOLUME – II OF II Note 4.11.3	Page 15 of 167	Enclosures shall be provide with a degree of protection equivalent to IP 54 as defined in AS 1939, shall be flame proof and provided with ventilation system. The enclosures shall have doors for normal access and removable wall panels for ease of maintenance.	Please note that we will be offering weather proof canopy and manufacturer's compliance will be given for the degree of protection. Please confirm the acceptance. Also removable wall panels will not be provided as all components are easily accessible without removing wall panels.	**Please refer reply to Sr. No. 6.**
36	Bid Document, VOLUME – II OF II Note 4.13	Page 15 of 167	V -Belt drive upto 150 KW gas engine rating is acceptable. Direct driv e shall be offered by the Bidder if power requirement is > 150 KW.Gear drive is not acceptable. V -Belt driv e >= 150 KW gas engine rating is also acceptable but the same design must be approved by PESO.	According to International standards API 618 V-Belt drive is not suitable for power requirement greater than 150 kW. V-belt drives are also not accepted by consultants such as MECON, etc. We would like to point out that PESO only approves electrical components of the package. From mechanical point of view belt drive is not suitable.	**In case of Belt drive, Bidder shall meet the requirements as per API 618. For more details please refer clause no 7.4 (Belt Drive) of API 618.**
37	Bid Document, VOLUME – II OF II Note 5.6.11	Page 22 of 167	Preferred Makes	We wish to add some other makes as per our market availabilty: Switches/Fuses/Contactors: Technik SS tube, Tube fittings: SSP / Ratnamani Ball/Needle Valve: SSP	**For SS tube & Fittings/On-Off Valve/ NRV : Refer clause no 5.6.11 (n) , Vol II of II of the tender document.**
38	Bid Document, VOLUME – II OF II Note 5.7.10	Page 25 of 167	Pressure transmitters shall be fixed range type with 2 wire 4 to 20 mA transmitter of piezoresisitive suitable for CNG applications except at suction and discharge	Please note that all PTs will be piezoresistive.	**Noted**
39	Bid Document, VOLUME – II OF II Note 5.7.13	Page 25 of 167	Two nos. Of RS 485/RS232 Serial Communication Ports shall be provided for Hooking Up the PLC to SCADA .....for accessing the PLC, HMI and mass flow meter through owner supplied Laptop PC or laptop supplied by the bidder.	Please note that we shall include one set of license software for accessing PLC, HMI and Mass flowmeter common for 3 nos of compressor packges. Laptop will not be in our scope.	**Accepted**
40	Bid Document, VOLUME – II OF II Note 5.7.14	Page 25 of 167	Vendor shall submit test certicates and test reports.	Certificates will be submitted as per our standard QAP.	**Tender Condition Prevails**
41	Bid Document, VOLUME – II OF II Clause 1.6	Page 90 of 167	Separate accoustic enclosure..... UV detectors in each enclosure	We would like to inform you that our compressor package design having single accoustic enclosure without partition is approved by PESO. Hence we will not provide a separate enclosure with a set of GD and FD in each enclosure.	**Tender Condition Prevails**
42	Bid Document, Sec V- Special conditions of Contract Item No. 7.3	Page 82 of 142	Defects liability period) twelve months period of liability from the date of issue of completion certificate:	Defect liability should be 12 months from commissioning or 18/24 months from supply which ever is earlier.	**Refer Clause no. 7 of GCC-Works Section VI. Tender Conditions Prevail**
43	Bid Document, Sec V- Special conditions of Contract Item No. 6	Page 82 of 142	Contractor will also be responsible for taking delivery of free issue material from Owner's store and Transportation to place of work including its coverage for transit insurance.	Please note that we shall be transporting the packages either to storage/store or site (place to be confirmed by client during despatch instructions). Further loading. Re-transportation and unloading of the package from store to site will not be in our scope.	**Please refer reply to Sr.no. 23**
44	Bid Document, Sec VI- Special conditions of Contract Item No. 1.4	Page 37 of 142	All arrangements and temporary construction if any, within allocated area for adequate storage and safe custody of all goods received against the order and for all other allied activities of the Bidder, shall be done entirely by the bidder at their own cost.	Please note that contractor shall only be responsible for safe custody of all supplies. Storage (watch and guard) and preservation to be considered in Purchaser's scope.	**Tender Condition Prevails**

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45	Bid Document, Sec III- Terms of Payment	Page 32 of 142	5% payment: On completion of installation, erection, allignment & commissioning..... Validity of BG	Please note that if Erection & Commissioning has started but not completed due to reasons attributable to the owner, this payment will be put on hold. Hence we request you to accept the following ammendment in the backstop of this payment milestone: However, if erection has started but not completed within 90 days after supply due to reasons not attributable to supplier, the payment against Erection & Commissioning shall be released against bank guarantee of the said amount. The bank guarantee shall be valid for a period of 1 year after completion of 90 days and validity of this BG shall not be extended further.	**B) 5% payment: On completion of erection, alignment & commissioning of each compressor units. However, if, erection is not started within 90 days after supply due to non-availability of site/gas, payment against erection and commissioning shall be released to the successful bidder against receipt of bank guarantee of the said amount to remain valid for a period of 1 year after completion of 90 days; i.e. 15 months from the date of FOT site (actual).** **REVISED PAYMENT TERMS** **• In case Erection and Commissioning is delayed beyond 3 Months for the Reason not attributable to Vendor:** **In case erection and commissioning is delayed beyond 3 months from receipt of package at site, then 5% payment will be released to the vendor after 90 Days (3 months) of receipt of package at site against submission of security deposit equivalent to 5% value in form of Bank Guarantee for the period of Twenty-Four (24) Months (warrantee period) and renewable till the commencement of AMC period (maximum validity 7 years).**
46	Bid Document, Sec III- Terms of Payment	Page 32 of 142	10% payment: In case the testing and PG test could not be executed within 90 days from date of completion of Erection & Commissioning.... Validity of BG	Please note that if Erection & Commissioning has started but not completed due to reasons attributable to the owner, this payment will be put on hold. Hence we request you to accept the following ammendment in the backstop of this payment milestone: Installation/ Erection has started but not completed within 105 days from the date of delivery of material at site due to reasons directly attributable to the owner; the balance 10% of supply value as per 1.1.1 (C) or 1.1.2 (C) shall be released after deduction against PRS clause if any and on submission of Bank Guarantee of equivalent amount which shall initially remain valid for a period of 1 year after completion of 90 days and vaildity of this BG shall not be extended further.	**1.2 In case the Testing and Field Performance Test could not be executed within 90 days from the date of completion of Erection and commissioning due to reason directly attributable to the owner.** **OR** **Erection could not be taken up within 105 days from the date of delivery of material at site due to reasons directly attributable to the owner; the balance 10% of supply value as per 1.1 (C) shall be released after deduction against PRS clause if any and on submission of Bank Guarantee of equivalent amount which shall remain valid for a period of 1 year after completion of 90 days; i.e. 15 months from the date of FOT site (actual).** **REVISED PAYMENT TERMS** **• In case the Testing and Field Performance Test could not be executed within 90 days from the date of completion of Erection and commissioning due to reason not attributable to Vendor OR Erection could not be taken up within 105 days from the date of delivery of material at site due to reasons not attributable to Vendor:** **Testing and Field Performance Test could not be executed within 90 days from the date of completion of Erection and commissioning at site or erection could not be taken up within 105 days from the date of delivery of material at site, then 10% payment for testing & field performance test can be released against submission of Security Deposit equivalent to 10% of remaining value in form of Bank Guarantee for the period of Twenty Four (24) Months (warrantee period) and renewable till the commencement of AMC period (maximum validity 7 years).**

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					• Regarding Payment Terms during AMC period after expiry of Warranty Period:
					
					Firm commissioning date cannot be given at that time as it depends upon the site conditions. However, the AMC rate will be valid upto the period of 7 years (2 years Warranty period + 5 years AMC period) from the date of Supply. For example – If Compressor is commissioned in 4th year from the date of supply then AMC period should be considered for the balance period from 4th year to 7th year at the same rate quoted by bidder.
					
					Definition of Balance period = (Two Year Warranty period + Five Year AMC Period) – (Time Elapsed due to delay in Commissioning from the date of supply)
					
					For example:
					i) If Compressor is commissioned within Warranty period of 24 months from the date of supply:
					if a Compressor delivered on 15.05.2020 and commissioned on 16.07.2021, then AMC period will commence for balance period as per following formula:
					
					Balance Period = {(warranty period (15.05.2020 to 16.07.2021) + Five year AMC period} - {Time Elapsed due to delay in Commissioning from the date of supply (15.05.2020 to 16.07.2021)}
					
					AMC period will commence for Balance period = From 17.07.2021 to 16.07.2026.
					
					i) If Compressor is commissioned beyond Warranty period of 24 months from the date of supply:
					if a Compressor delivered on 15.05.2020 and commissioned on 25.08.2023, then AMC period will commence for balance period as per following formula:
					
					Balance Period = {(warranty period (15.05.2020 to 14.05.2022) + Five year AMC period (15.05.2022 to 14.05.2027)} - {Time Elapsed due to delay in Commissioning from the date of supply (15.05.2020 to 25.08.2023)}
					
					AMC period will commence for Balance period = From 25.08.2023 to 14.05.2027

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
47	Bid Document, Sec VI- Special conditions of Contract Item No. 33	Page 48 of 142	PRICE REDUCTION SCHEDULE (PRS)	We request you to accept below price reduction schedule: 0.5% per week or part thereof of the delayed delivery value maximum up to 5% of Undelivered portion Order value (Excluding Taxes and Duties).	**Please refer clause no. 33 "PRICE REDUCTION SCHEDULE (PRS)" of GCC-Goods Section V of Tender Vol I of II.**
48	Bid Document, Sec VI- Special conditions of Contract Item No. 18.1	Page 44 of 142	Insurance: Insurance cover shall be applicable during entire tenure contractor's custody till the material is handed over to the Owner at site in a manner defined in tender documents.	Please note that complete Insurance cover will be excluded from our scope. We shall only bear the transit Insurance till site.	**Tender Conditions Prevail**
49			Installation, testing & Commissioning of CNG compressor package.	Please note that our E&C charges shall be valid till warranty period	**E&C charges shall be valid for 24 months from the supply of Compressor at Site/store**
			3 x 1200 SCMH AT 16 KG/CM2G , 3 STAGE- 16-19-MOTOR		
50	Bid Document, VOLUME – II OF II Clause No. 1.2		**Codes & Standards** The following National & International Codes & Standards of Latest editions shall be applicable. OISD 179, NFPA-52: 1995 or equivalent NFPA – 37 NFPA – 12- CO2 Flooding system IS: 325/ IEC or International standards. – Standards for electric Motor IS: 6382 Applicable ANSI, ASTM, NEC, NEMA code. API – 618 API – 11P 2nd edition API – 661 Specifications for Air cooled exchangers ASME Section – VIII Div – 1/2 Design codes for pressure vessels. Gas Cylinder Rules 2016. Standard Specifications of Bureau of Indian Standards (BIS). Specifications/Recommendations of IEC. Indian Electricity Rules. Indian Explosives Act. TEMA – C - Water cooled heat exchangers ASME / ANSI – B-31.3 Code for Process Piping	The compressor design is derived from API618/11P/equivalent industry standards. However, the design is enhanced to meet specific CNG application such as pressurized crankcase to avoid gas vent loss etc.	**Tender Condition Prevails**
51	Bid Document, VOLUME – II OF II Clause No. 1.3		**Precedence** 3. International standards/codes as applicable 4. Indian Standards / codes applicable		
52	Bid Document, VOLUME – II OF II Clause No. 4.4.1		All oil wiper intermediate gas cylinder pressure packing shall be a segmental ring with stainless steel garter springs. The pressure packing case shall be provided with a common vent and drain below the piston rod tube to the outside of the Package enclosure.	Pressurized crankcase and hence not applicable	**Please refer clause no 4.4.4, Vol II of II of the tender document.**
53	Bid Document, VOLUME – II OF II Clause No. 4.4.2		ERW / seamless steel tubing conforming to ASTM A-192 or series 300 SS tubing conforming to ASTM A-269 with minim um thickness as specified in Cl. 7.11 of API-11P shall be used for vent piping.	Pressurized crankcase and hence not applicable	**Please refer clause no 4.4.4, Vol II of II of the tender document.**
54	Bid Document, VOLUME – II OF II Clause No. 4.4.3		Packing vent piping inside of the distance piece shall be designed for the maximum operating pressure of the cylinder.	Pressurized crankcase and hence not applicable	**Please refer clause no 4.4.4, Vol II of II of the tender document.**
55	Bid Document, VOLUME – II OF II Clause No. 4.5.3, 4.12.8 & 4.12.11		All lube oil piping after oil filter shall be 300 series stainless steel conforming to ASTM A269. All lube oil piping down stream of filter shall be series 300 Stainless Steel All piping after coalescent filter at compressor discharge shall be of SS 316.	After oil filter inbuilt oil galleries are provided. Standard Brass NRV provided at forced lubrication point.	**Tender Condition Prevails**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
56	Bid Document, VOLUME – II OF II Clause No. 4.6.1 & 4.6.2		**Distance Pieces** Distance piece as per API-11P with cylinder side compartment vented to safe location is specified. Distance pieces shall be provided with gasket, solid covers and shall be suitable for a minimum differential compartment pressure of 1.75 kg/cm²g.	Distance piece will be as per manufacturer's design standard.	**Tender Condition Prevails**
57	Bid Document, VOLUME – II OF II Clause No. 4.7.1		Single plunger per point force feed mechanical lubricator / divider Block type shall provide lubrication to compressor cylinders.	Divider block type with Common indicator will be provided & Brass NRV provided.	**Please refer clause no 4.7.3, Vol II of II of the tender document.**
58	Bid Document, VOLUME – II OF II Clause No. 4.7.3		Lubricators shall have a sight flow indicator for each lubricator point and a stainless steel double ball check valve shall be provided at each lubrication point. Common sight glass is also acceptable . Divider block lubrication system to compressor cylinders shall also be accepted.	Common indicator is provided & Brass NRV provided.	**Please refer clause no 4.7.3, Vol II of II of the tender document.**
59	Bid Document, VOLUME – II OF II Clause No. 4.7.4		Digital no flow timer shall be provided to stop the compressor in case of loss of cylinder lubrication.	Common Digital No Flow Switch (time based) will be provided. - When there is no – pulse (from cylinder lubrication - divider block) for certain time interval, the switch toggles & the compressor is tripped on lubrication fault.	**Accepted**
60	Bid Document, VOLUME – II OF II Clause No. 4.8.2		**Inter / After Gas Coolers** Air-cooled inter-stage and final stage discharge coolers shall be provided which shall limit the gas temperature after the cooler to 50 degree C (Or the discharge temperature after aftercooler = Ambient + 10 deg C). For calculating the surface area of the air cooler the ambient air temperature of 42°C and 80% RH shall be considered. Cooler design shall be on the basis of 20% excess capacity than required corresponding to suction PR of 16 kg/cm^2 Gas sections of coolers shall be designed as per API-661 requirements; however gas section shall be inspected by approved third party inspection agency and may not be "U" code stamped. Vibration switch shall be provided on the heat exchanger to trip the compressor on high vibration limit. Bidder shall indicate vibration level in the offer. For cooling of the Heat Exchangers a cooling fan to be provided inside the enclosure(s). Cooling system shall be preferably installed on the same skid as the compressor due to space constraints. Bidder shall submit cooler sizing calculation for review.	- The approach above ambient would be **10°C**. (max. discharge temp. **42°C + 10°C = 52°C**). - The required inputs would be given in the Heat Exchanger datasheet. -Cooler design shall be on the basis of 10% excess -Design shall be manufacturer standard. -TPI not considered. -We shall be suplying package with concrete filled frame, vibration s/w on cooler frame is not envisaged	**1. The dicharge temp after the cooler = 42°C + 10°C = maximum 52°C.** **2. For the rest points : Tender Condition Prevails.**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
61	Bid Document, VOLUME – II OF II Clause No. 6.2.1		**Mechanical running test (MRT)** The MRT for the each compressors shall be carried out by tenderer with job or shop driver including complete job driving system i.e., job driven V-belt, job pulleys etc., for 4 hours continuously at shop of compressor manufacturer. The compressor need not be pressure loaded for MRT test. During this test following shall be recorded at agreed intervals. • Vibration levels measured on cylinders and frame • Bearing temperature • Oil cooler inlet and outlet tem p • Sound level Subsequent to satisfactory run the compressor shall be examined as per standard procedure & following shall be examined as minimum: Strip test is limited to open Crank Case cover, X-Hd guide & Dist.pc. Cover and opening of bore & other parts, piston, one valve per cylinder. Visual examination of position rod If any of part found damaged, all similar components shall be stripped for inspection. The MRT test shall be repeated after replacement of such parts. All the interlocking and performance of the	MRT will be carried out as per manufacturer's standards.	**Tender Condition Prevails**
62	Bid Document, VOLUME – II OF II Clause No. 8.4		The headers of air-cooled exchanger shall be zinc sprayed.	The headers of air-cooled exchanger shall be with heat resistant paint.	**Tender Condition Prevails**
63	Bid Document, VOLUME – II OF II Clause No. 1.6		3 nos. mass flow meters to measure the Natural Gas consumption at packages inlet, package discharge (both Coriolis type) and package loss / venting (thermal type) with online test arrangement. Mass flow meter (Model CNG 50 & F Series with integral local display) based on Coriolis principle of Micro motion, USA CNG 50 with 2700 transmitter at Compressor discharge, F-series with 1700 transmitter at compressor suction. Installation and manufacturing of mass flow meter shall be as per as per AGA-11. While installing special care shall be taken to isolate the m ass flow meter from piping vibration. Mass flow meter shall be provided in package vent for measuring vent losses. The mass flow meter at the suction & discharge of compressor shall be W&M approved only. The flowmeters should be enabled with MODBUS/RS 485 communications	-As we are offering block with pressurised crankcase, there is no vent loss. Thermal MFM is not evisaged and hence not considered. -Custody transfer for suction MFM not considered.	**Tender Condition Prevails**
64	Bid Document, VOLUME – II OF II Clause No. 1.6		Common structural steel skid for the compressor- Motor combination and for all auxiliary systems	All auxiliary systems (Air compressor , CO2 flooding etc) shall be supplied loose and to be mounted apart from pacakge.	**Only CO2 flooding , Air Compressor with Dryer , Air Receiver to be mounted apart from the package. Suction Filter shall be inside or outside of the package.**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
65	Bid Document, VOLUME – II OF II Clause No. 1.6		Separate junction boxes for different type of signals like intrinsically safe signals, alarm, shutdowns, thermocouples, RTDs etc. for interfacing to local panel	LCP (With PLC) is mounted on package itself hence separate JB's are not required (With PLC) is mounted on package itself & also separate gauge box will be used for intrinsically safe signals.	**Please refer reply to Sr. No. 24.**
66	Bid Document, VOLUME – II OF II Clause No. 1.6		Separate acoustic enclosure, seprated with a partition wall of minimum 3 mm thickness and fabricated in such fashion that it is completely sealed so that gas or fire should not travel from one enclosure to another, for both Compressor and motor as specified, with two number L.E.L detector and two UV detectors in each enclosure.	Practically 100% sealing is not possible as mentioned in the tender document clause. PESO has approved non compartmentalized enclosures. Adequate safeties are provided in the enclosures to avoid any uneventful incident. Kindly consider non - compartment type enclosure.	**Tender Condition Prevails**
67	Bid Document, VOLUME – II OF II Clause No. 1.6		Separator/ Knockout drums/volume drums with solenoid valve operated auto & manual drains as required. Moisture separator cum regulator in the system shall also be accepted. Bypass valves for automatic drain system shall be as per manufacturer's recommendation.	Considering safety hazards manual drains for KOD not considered also as drain shall be normally open hence requirement on manual drain is not evisaged. For final oil drain from blowdown vessel manual and automatic drain shall be provided.	**Compressor package shall be capable to drain out from Seperators/KOD in case of automatic system fails.**
68	Bid Document, VOLUME – II OF II Clause No. 2.1.2		Bidder shall make his own provision for Instrument air if required with an electric motor driven air compressor with a suitably sized receiver & Refrigerant type air drier system. Air Compressor motor should be 415 V squirrel cage motor DOL / star delta starter having overload protection, single phase preventer. A Rain guard of MOC carbon steel minimum thickness of 2 mm should be provided over the air compressor.	Pl confirm if air compressor supply is in bidder's scope ?	**Please refer clause no 2.1.1, Vol II of II of the tender document.**
69	Bid Document, VOLUME – II OF II Clause No. 2..2.4		UPS and Non UPS power shall be made available from power distribution board (PDB) in the electrical room. Supply, Erection and termination of all cables and accessories from feeder in electrical room shall be in the bidder's scope	Pl confirm if UPS is in bidder's scope ? Cable lengths to be defined properly.	**Please refer clause no 2.1.6, Vol II of II of the tender document.However the distance between PDB and compressor package is not more than 40 meters.**
70	Bid Document, VOLUME – II OF II Clause No. 4.9.1		Carbon Steel separators/KOD at auto and manual drain system shall be prov ided for the capacity as required.	Considering safety hazards manual drains for KOD not considered also as drain shall be normally open hence requirement on manual drain is not evisaged. For final oil drain from blowdown vessel manual and automatic drain shall be provided.	**Please refer reply to Sr. No. 67.**
71	Bid Document, VOLUME – II OF II Clause No. 4.9.3		Scrubber service class - B shall be used f or Inter-stage / discharge scrubbers. Service Class - C shall be used f or su ction scrubber. (Refer API -11P)	Manufacturer standard , spinner type seperator shall be provided instead of scrubber type seperator.	**Please refer reply to Sr.No. 32**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
72	Bid Document, VOLUME – II OF II Clause No. 4.9.3		All v essels including pulsation dam pers shall be fully (100 %) radio graphed as per ASME VIII UW (a) or equiv alent.	All vessels will be fully (100%) radio-graphed as per ASME VIII, however U stamping not considered.	**Tender Condition Prevails**
73	Bid Document, VOLUME – II OF II Clause No. 4.9.4		Gas recovery system	Suction damper and gas recovery vessel shall be combined as per manufacturer std practice hence as per tender specs PRV between blowdown vessel and compressor suction is not considered.	**Please refer clause no 4.9.4, Vol II of II of tender document.**
74	Bid Document, VOLUME – II OF II Clause No. 4.9.7		Coalescent super fine filters (preferably two stages) with CE m ark/ third party inspected for rem oval of liquid (e.g. water & oil) and solid particles down to 0.1 microns out of com pressed natural gas shall be provided. Residual Oil Contents shall be less than 1 PPM. Manual drains with isolation valves with oil collecting pot shall be provided. The filter should be sized to flow for 200% of flow corresponding to flow at suction pressure of 19 kg/cm2g . However mechanical design shall be based on safety set pressure.	Filters with 100% of flow capacity are sufficient. CE / TPI markings are not necessary since filetrs shall be from approved makes.	**Tender Condition Prevails**
75	Bid Document, VOLUME – II OF II Clause No. 4.9.8		Pulsation, Vibration Control and Analog Study	Not feasible to be provided since design data is proprietary.	**Accepted**
76	Bid Document, VOLUME – II OF II Clause No. 4.11.5		All the pressure, tem perature, lube oil pressure, coolant temperature, coolant lev el indicators shall be visible from outside of enclosures.	Cooler level indicator of engine radiator shall not visible from outide however can be easily check	**Accepted**
77	Bid Document, VOLUME – II OF II Clause No. 4.12		Piping	Gas piping/ tubing at 3rd stage discharge will only be in SS-316, with SS fittings, Rest all piping /tubing will be Combination of Flanged & screwed connections with CS material (pipes, Fittings & Flanges) as per application requirement & standard design. This is as per manufacturing standard design. Instrument Air Tubing will be in SS-304.	**A) For CS Piping ,Please refer clause no 4.12.2, Vol II of II of tender document.** **B) For Instrument Air Piping ,Please refer clause no 4.12.5, Vol II of II of tender document.**
78	Bid Document, VOLUME – II OF II Clause No. 4.12.5		The instrument air tubing material shall be SS316 as per ASTM A269.	Impulse air tubing for actuator operation shall be SS-304.	**Please refer reply to Sr.No. 77 (B).**
79	Bid Document, VOLUME – II OF II Clause No. 4.12.9		External drain & v ent piping shall be Carbon Steel and not less than 1" nominal size	External drain connection shall be-1/2"	**Tender Condition Prevails**
80	Bid Document, VOLUME – II OF II Clause No. 4.12.9		Following certificates have to be submitted for piping fabricated at Site / shop	Electrode qualification test results not considered	**Please refer clause no 4.12.14, Point no .11 (C) Vol II of II of tender document.**
81	Makes		Pressure Transmitter	Please approve GIC	**Tender Condition Prevails**
82	Bid Document, VOLUME – II OF II Clause No.5.7.4 & 5.7.15		Electrical instrumentation shall be certified by a recognized authority such as BASEEFA, PTB, LCIE, CESI, INIEX, CMRS or any agency approved by Indian Gov ernm ent.	CCOE or its equivalent certificate (FM, CSA , ATEX, UL, CMRI) whichever applicable & available will be provided.	**Accepted**
83	Bid Document, VOLUME – II OF II Clause No. 5.7.4 & 5.7.15		For online Calibration of MFM; Vendor to provide suitable arrangement to connect Master Mass flow meter (Prover) with Compressor Suction & Compressor Discharge flow meter for calibration purpose.	For online calibration of suction MFM loose pipe arrangement shall be provided and for discharge MFM provision for calibration shall be available on P&ID	**Tender Condition Prevails**
84	Bid Document, VOLUME – II OF II Clause No. 5.7.14		Offered m ass flow m eter shall be necessary f or Custody Transfer application but not exceeding 0.5% of span. Type of approval certificate from W&M India is required.	0.5% accuracy considered but custody tranfer application for suction MFM not considered	**Tender Condition Prevails**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
85	Bid Document, VOLUME – II OF II Clause No. 6.4		Pressure and temperature of gas shall be considered at purchaser's boundary limit and supplier shall install necessary pressure and temp measuring devices. Necessary spool piece shall be provided in discharge tubing of the com pressor. All instrum ent duly calibrated, tools & tackles, any modification required f or conducting PT shall be in the scope of supplier.	Pressure and temperature shall be considered at compressor block suction during performance test.	**Tender Condition Prevails**
86	Bid Document, VOLUME – II OF II Clause No.20-QAP		HYDROTEST OF-CYLINDER HEADS	Not feasible hence not considered	**Tender Condition Prevails**
			LEAK PROOF T EST OF PRESSURIZED CRANK CASE (4 Hours wit h k erosene)	Hydrotest for crankacase considered. Customer inspection not considered as it will lead to major delivery time adder	**Tender Condition Prevails**
			ULTRASONIC TEST OF-CRANK SHAFT , CONNECTING ROD., PIST ON R O D	Ultrasonic test for crank shaft not considered	**Tender Condition Prevails**
			RADIOGRAPH Y AS APPLICABLE-PRESSURE VESSELS, HEAT EXCHANGER, G AS PIPING	As welding not involved in heat exchanger	**Tender Condition Prevails**
			BARRING OVER TO CHECK CYLINDER END CLEARANCE AND PISTON ROD RUNOUT	Piston rod runnot not considered as not feasible to check.	**Tender Condition Prevails**
			NO LOAD MECHANICAL RUN T EST OF THE COMPR. W IT H RAT ED (OR MORE) SPEED AND SHOP DRIVER (4 HRS. Minim um .)	Customer witness not considered	**Tender Condition Prevails**
			STRIP CHECK AND INTERNAL INSPECTION AFTER " NLMRT" OF ALL C O MPRESSO RS ; - Routine test c ertif icat e by v endors	Customer witness not considered	**Tender Condition Prevails**
3x 1200 SCMH AT 16 KG/CM2G , 3 STAGE- 16-19-ENGINE					
87	Bid Document, VOLUME – II OF II Clause No. 1.2		**Codes & Standards** The design, construction, manufacture, supply, testing and other general requirements of the compressor package equipment shall be strictly in accordance with the data sheets, applicable API codes, and shall comply fully with relevant National/ International standards, Indian Electricity Act, Indian Electricity Rules, regulations of Insurance Association of India and Factories Act while carrying out work as per this specification. Any modification suggested by the statutory bodies either during drawing approval or during inspection, if any, shall be carried out by the Bidder without any additional cost and delivery implications. The following codes and standards (versions/ revisions valid on the date of order) are referenced to & made part of specification: API-11P, Second edition, API 618, ISO 13631-2002, NFPA-37, OISD 179, NFPA-52: 2006, NFPA-496, NFPA-68, NFPA-70 ANSI, ASTM, NEC, NEMA Indian Electricity Rules, Indian Explosives Act, Gas cylinder rules, codes for SS tube & forged fittings.	The compressor design is derived from API618/11P/equivalent industry standards. However, the design is enhanced to meet specific CNG application such as pressurized crankcase to avoid gas vent loss etc.	**Please refer reply to Sr.No.50**
88	Bid Document, VOLUME – II OF II Clause No. 1.3		**Precedence** 3. International standards/codes as applicable 4. Indian Standards / codes applicable		

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
89	Bid Document, VOLUME – II OF II Clause No. 4.10.10		Engine shall meet all the latest MP State / Central Pollution Control Board rules & regulations. Also, Bidder shall submit a certificate approved/accepted by MP State Pollution Control Board for the installed gas engine during Site Acceptance Test / Performance Test. All the requisite fees for this test shall be borne by Bidder. Performance Test will be considered to be final thereafter only.	Provision of emmissionized gas engine with catalytic convertor shall only be in the scope of bidder. Certification of any sort from MP Pollution control board will not be provided by bidder. This is primarily the responsibility of the CGD Gas Company.	**Please refer reply to Sr.No.3**
90	Bid Document, VOLUME – II OF II Clause No. 4.4.1		All oil wiper intermediate gas cylinder pressure packing shall be a segmental ring with stainless steel garter springs. The pressure packing case shall be provided with a common vent and drain below the piston rod tube to the outside of the Package enclosure.	Pressurized crankcase and hence not applicable	**Please refer reply to Sr.No.52**
91	Bid Document, VOLUME – II OF II Clause No. 4.4.2		ERW / seamless steel tubing conforming to ASTM A-192 or series 300 SS tubing conforming to ASTM A-269 with minimum thickness as specified in Cl. 7.11 of API-11P shall be used for vent piping.	Pressurized crankcase and hence not applicable	**Please refer reply to Sr.No.53**
92	Bid Document, VOLUME – II OF II Clause No. 4.4.3		Packing vent piping inside of the distance piece shall be designed for the maximum operating pressure of the cylinder.	Pressurized crankcase and hence not applicable	**Please refer reply to Sr.No.54**
93	Bid Document, VOLUME – II OF II Clause No. 4.5.3, 4.12.8 & 4.12.11		All lube oil piping after oil filter shall be 300 series stainless steel conforming to ASTM A269. All lube oil piping down stream of filter shall be series 300 Stainless Steel All piping after coalescent filter at compressor discharge shall be of SS 316.	After oil filter inbuilt oil galleries are provided. Standard Brass NRV provided at forced lubrication point.	**Please refer reply to Sr.No.55**
94	Bid Document, VOLUME – II OF II Clause No. 4.6.1 & 4.6.2		**Distance Pieces** Distance piece as per API-11P with cylinder side compartment vented to safe location is specified. Distance pieces shall be provided with gasket, solid covers and shall be suitable for a minimum differential compartment pressure of 1.75 kg/cm ²g.	Distance piece will be as per manufacturer's design standard.	**Please refer reply to Sr.No.56**
95	Bid Document, VOLUME – II OF II Clause No. 4.7.1		Single plunger per point force feed mechanical lubricator / divider Block type shall provide lubrication to compressor cylinders.	Divider block type with Common indicator will be provided & Brass NRV provided.	**Please refer reply to Sr.No.57**
96	Bid Document, VOLUME – II OF II Clause No. 4.7.3		Lubricators shall have a sight flow indicator for each lubricator point and a stainless steel double ball check valve shall be provided at each lubrication point. Common sight glass is also acceptable. Divider block lubrication system to compressor cylinders shall also be accepted.	Common indicator is provided & Brass NRV provided.	**Please refer reply to Sr.No.58**
97	Bid Document, VOLUME – II OF II Clause No. 4.7.4		Digital no flow timer shall be provided to stop the compressor in case of loss of cylinder lubrication.	Common Digital No Flow Switch (time based) will be provided. - When there is no – pulse (from cylinder lubrication - divider block) for certain time interval, the switch toggles & the compressor is tripped on lubrication fault.	**Please refer reply to Sr.No.59**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
98	Bid Document, VOLUME – II OF II Clause No. 4.8.2		**Inter / After Gas Coolers** Air-cooled inter-stage and final stage discharge coolers shall be provided which shall limit the gas temperature after the cooler to 50 degree C (Or the discharge temperature after aftercooler = Ambient + 10 deg C). For calculating the surface area of the air cooler the ambient air temperature of 42°C and 80% RH shall be considered. Cooler design shall be on the basis of 20% excess capacity than required corresponding to suction PR of 16 kg/cm^2 Gas sections of coolers shall be designed as per API-661 requirements; however gas section shall be inspected by approved third party inspection agency and may not be "U" code stamped. Vibration switch shall be provided on the heat exchanger to trip the compressor on high vibration limit. Bidder shall indicate vibration lev el in the offer.	- The approach above ambient would be **10°C**. (max. discharge temp. **42°C + 10°C = 52°C**). - The required inputs would be given in the Heat Exchanger datasheet. -Cooler design shall be on the basis of 10% excess -Design shall be manufacturer standard. -TPI not considered. -We shall be suplying package with concrete filled frame, vibration s/w on cooler frame is not envisaged	**Please refer reply to Sr.No.60**
99	Bid Document, VOLUME – II OF II Clause No. 6.2.1		**Mechanical running test (MRT)** The MRT for the each compressors shall be carried out by tenderer with job or shop driver including complete job driving system i.e., job driven V-belt, job pulleys etc., for 4 hours continuously at shop of compressor manufacturer. The compressor need not be pressure loaded for MRT test. During this test following shall be recorded at agreed intervals. • Vibration levels measured on cylinders and frame • Bearing temperature • Oil cooler inlet and outlet temp • Sound level Subsequent to satisfactory run the compressor shall be examined as per standard procedure & following shall be examined as minimum: Strip test is limited to open Crank Case cover, X-Hd guide & Dist.pc. Cover and opening of bore & other parts, piston, one valve per cylinder. Visual examination of position rod If any of part found damaged, all similar components shall be stripped for inspection. The MRT test shall be repeated after replacement of such parts. All the interlocking and performance of the instrumentation system will be verified during the MRT.	MRT will be carried out as per manufacturer's standard procedures.	**Please refer reply to Sr.No.61**
100	Bid Document, VOLUME – II OF II Clause No. 8.4		The headers of air-cooled exchanger shall be zinc sprayed.	Shall be with heat resistant paint	**Please refer reply to Sr.No.62**
101	Bid Document, VOLUME – II OF II Clause No. 1.6.3		Electrical instrumentation shall be certified by a recognized authority such as BASEEFA, PTB, LCIE, CESI, INIEX, CMRS or any agency approved by Indian Gov ernm ent.	PESO approved	**Please refer reply to Sr.No.63**
102	Bid Document, VOLUME – II OF II Clause No. 1.6.6		Separate junction boxes f or different type of signals like analog, digital signals, alarm, shutdowns, and thermocouples, RTDs etc. f or interfacing to FLP local panel.	LCP (With PLC) is mounted on package itself hence separate JB's are not required (With PLC) is mounted on package itself & also separate gauge box will be used for intrinsically safe signals.	**Please refer reply to Sr.No.24**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
103	Bid Document, VOLUME – II OF II Clause No. 1.6.7		Main incoming cable from owner PDB to main control panel of the com pressor through Conduit/trenches. Cable from owners electronic earth pit (EE) f or electronic circuit in control Panel, cables f rom owners m ain earthing ring to control panel body earth and all interconnecting Cables including com plete erection accessories like double compression cable, FLP gland, cable tags, Lugs etc. as required. Conduit from PDB to Flam e control panel shall be m ade av ailable by supplier & from Control panel to diff erent accessories / ESD /units shall be in supplier scope	Define proper cable lengths.	**Please refer reply to Sr.No.30**
104	Bid Document, VOLUME – II OF II Clause No. 1.6.9		Blow down vessel shall be located preferably on top of the package to facilitate periodic testing of pressure vessel.	Blowdown vessel shall be monted on base of the pacakge. This is as per proven manufacturer design.	**Please refer reply to Sr.No.25**
105	Bid Document, VOLUME – II OF II Clause No. 1.6.13		Shed Structure (Galvanized corrugated sheet) of 10' x 8' ov er the Control panel to the Operator for operating the com pressor. Total structure setup, fabrication & finishing shall be in bidder's scope. The shed over the control penal is also for operator to operating the compressor	Control panel shall be mounted inside the pacakge canopy hence additional shed is not required.	**Tender Condition Prevails**
106	Bid Document, VOLUME – II OF II Clause No. 1.6.17 & 4.9.1		Separator/ Knockout drums/volume drums with solenoid valve operated auto & manual drains as required. Moisture separator cum regulator in the system shall also be accepted. Bypass valves for automatic drain system shall be as per manufacturer's recommendation	Considering safety hazards manual drains for KOD not considered also as drain shall be normally open hence requirement on manual drain is not evisaged. For final oil drain from blowdown vessel manual and automatic drain shall be provided.	**Please refer reply to Sr.No.67**
107	Bid Document, VOLUME – II OF II Clause No. 1.6.24		**Separate acoustic enclosure, seprated with a partition wall of minimum 3 mm thickness and fabricated in such fashion that it is completely sealed so that gas or fire should not travel from one enclosure to another, for both Compressor and Engine as specified, with two number L.E.L detector and two UV detectors in each enclosure.**	Practically 100% sealing is not possible as mentioned in the tender document clause. PESO has approved non compartmentalized enclosures. Adequate safeties are provided in the enclosures to avoid any uneventful incident. Kindly consider non - compartment type enclosure.	**Please refer reply to Sr.No.66**
108	Bid Document, VOLUME – II OF II Clause No. 4.9.1		Carbon Steel separators/KOD at auto and manual drain system shall be prov ided for the capacity as required.	Considering safety hazards manual drains for KOD not considered also as drain shall be normally open hence requirement on manual drain is not evisaged. For final oil drain from blowdown vessel manual and automatic drain shall be provided.	**Please refer reply to Sr.No.67**
109	Bid Document, VOLUME – II OF II Clause No. 4.9.3		Scrubber service class - B shall be used f or Inter-stage / discharge scrubbers. Service Class - C shall be used f or su ction scrubber. (Refer API -11P)	Manufacturer standard , spinner type seperator shall be provided instead of scrubber type seperator.	**Please refer reply to Sr.No. 32**
110	Bid Document, VOLUME – II OF II Clause No. 4.9.3		All v essels including pulsation dam pers shall be fully (100 %) radio graphed as per ASME VIII UW (a) or equiv alent.	All vessels will be fully (100%) radio-graphed as per ASME VIII, however U stamping not considered.	**Please refer reply to Sr.No. 72**
111	Bid Document, VOLUME – II OF II Clause No. 4.9.4		Gas recovery system	Suction damper and gas recovery vessel shall be combined as per manufacturer std practice hence as per tender specs PRV between blowdown vessel and compressor suction on considerd	**Please refer reply to Sr.No. 73**
112	Bid Document, VOLUME – II OF II Clause No. 4.9.7		Coalescent super fine filters (preferably two stages) with CE m ark/ third party inspected for rem oval of liquid (e.g. water & oil) and solid particles down to 0.1 microns out of com pressed natural gas shall be provided. Residual Oil Contents shall be less than 1 PPM. Manual drains with isolation valves with oil collecting pot shall be provided. The filter should be sized to flow for 200% of flow corresponding to flow at suction pressure of 19 kg/cm2g . However mechanical design shall be based on safety set pressure.	Filters with 100% of flow capacity are sufficient. CE / TPI markings are not necessary since filetrs shall be from approved makes.	**Please refer reply to Sr.No. 74**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
113	Bid Document, VOLUME – II OF II Clause No. 4.9.8		Pulsation, Vibration Control and Analog Study	Not feasible due to proprietary design details.	**Please refer reply to Sr.No. 75**
114	Bid Document, VOLUME – II OF II Clause No. 4.1		Gas Engine	We shall consider Cummins GTA855 gas engine.	**Please refer reply to Sr.No. 2**
115	Bid Document, VOLUME – II OF II Clause No. 4.11.5		All the pressure, tem perature, lube oil pressure, coolant temperature, coolant lev el indicators shall be visible from outside of enclosures.	Cooler level indicator of engine radiator shall not visible from outide however can be easily check	**Please refer reply to Sr.No. 76**
116	Bid Document, VOLUME – II OF II Clause No. 4.11.8		Suitable gradients shall be provided on the enclosure roof f or rain drainage and to av oid water pockets.	As exhaust silencer will be mounted on top gradients not considered.	**Please refer clause no 4.10.7, Page no 14 of 167, Vol II of II of tender document.**
117	Bid Document, VOLUME – II OF II Clause No. 4.12		Piping	Gas piping/ tubing at 3rd stage discharge will only be in SS-316, with SS fittings, Rest all piping /tubing will be Combination of Flanged & screwed connections with CS material (pipes, Fittings & Flanges) as per application requirement & standard design. This is as per manufacturing standard design. Instrument Air Tubing will be in SS-304.	**Please refer reply to Sr.No. 77**
118	Bid Document, VOLUME – II OF II Clause No. 4.12.5		The instrument air tubing material shall be SS316 as per ASTM A269.	Impulse air tubing for actuator operation shall be SS-304.	**Please refer reply to Sr.No. 78**
119	Bid Document, VOLUME – II OF II Clause No. 4.12.9		External drain & v ent piping shall be Carbon Steel and not less than 1" nominal size	External drain connection shall be-1/2"	**Please refer reply to Sr.No. 79**
120	Bid Document, VOLUME – II OF II Clause No. 4.12.9		Following certificates have to be submitted for piping fabricated at Site / shop	Electrode qualification test results not considered	**Please refer reply to Sr.No. 80**
121	Mkes		Pressure Transmitter	Please approve GIC	**Please refer reply to Sr.No. 81**
122	Bid Document, VOLUME – II OF II Clause No. 5.7.4 & 5.7.15		Electrical instrumentation shall be certified by a recognized authority such as BASEEFA, PTB, LCIE, CESI, INIEX, CMRS or any agency approved by Indian Gov ernm ent.	CCOE or its equivalent certificate (FM, CSA , ATEX, UL, CMRI) whichever applicable & available will be provided.	**Please refer reply to Sr.No. 82**
123	Bid Document, VOLUME – II OF II Clause No. 5.7.14		For online Calibration of MFM; Vendor to provide suitable arrangement to connect Master Mass flow meter (Prover) with Compressor Suction & Compressor Discharge flow meter for calibration purpose.	For online calibration of suction MFM loose pipe arrangement shall be provided and for discharge MFM provision for calibration shall be available on P&ID	**Please refer reply to Sr.No. 83**
124	Bid Document, VOLUME – II OF II Clause 5.7.14		Offered m ass flow m eter shall be necessary f or Custody Transfer application but not exceeding 0.5% of span. Type of approval certificate from W&M India is required.	0.5% accuracy considered but custody tranfer application for suction MFM not considered	**Please refer reply to Sr.No. 84**
125	Bid Document, VOLUME – II OF II Clause 6.4		Pressure and temperature of gas shall be considered at purchaser's boundary limit and supplier shall install necessary pressure and temp measuring devices. Necessary spool piece shall be provided in discharge tubing of the com pressor. All instrum ent duly calibrated, tools & tackles, any modification required f or conducting PT shall be in the scope of supplier.	Pressure and temperature shall be considered at compressor block suction during performance test.	**Please refer reply to Sr.No. 85**

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Sr.no.	Clause No./Document No.	Page no.	Query Description	Bidder's Query	AGL Reply/Remarks
126	Bid Document, VOLUME – II OF II Clause 20-QAP		HYDROTEST OF-CYLINDER HEADS	Not feasible hence not considered	**Please refer reply to Sr.No. 86**
			LEAK PROOF T EST OF PRESSURIZED CRANK CASE (4 Hours wit h k erosene)	Hydrotest for crankacase considered. Customer inspection not considered as it will lead to major delivery time adder	
			ULTRASONIC TEST OF-CRANK SHAFT , CONNECTING ROD., PIST ON R O D	Ultrasonic test for crank shaft not considered	
			RADIOGRAPH Y AS APPLICABLE-PRESSURE VESSELS, HEAT EXCHANGER, G AS PIPING	As welding not involved in heat exchanger	
			BARRING OVER TO CHECK CYLINDER END CLEARANCE AND PISTON ROD RUNOUT	Piston rod runnot not considered as not feasible to check.	
			NO LOAD MECHANICAL RUN T EST OF THE COMPR. W IT H RAT ED (OR MORE) SPEED AND SHOP DRIVER (4 HRS. Minim um .)	Customer witness not considered	
			STRIP CHECK AND INTERNAL INSPECTION AFTER " NLMRT" OF ALL C O MPRESSO RS ; - Routine test c ertif icat e by v endors	Customer witness not considered	

This Corrigendum-1 forms an integral part of the Tender Document No.: AGL/0304/TO/CNG COMPRESOOR/05-19 and a copy (duly signed and stamped) of the same is to be submitted along with the Bid.