NOTICE INVITING TENDER DOCUMENT

FOR

Site works for removal of old Alternator, Engine, Radiator & Accessories from old existing Power Pack housing and Re-installation, Alignment & Commissioning of Alternator, Engine, Radiator & Accessories in new power pack housing with acoustic enclosure with 7.7 (min) stack height at M/s ONGC Karaikal-20 Nos

NIT No.: CXX/2019-20/06/PP/KKL **DTD. 04-12-2019**

DUE DATE AND TIME: 27-12-2019, 1100 HRS

BHARAT HEAVY ELECTRICALS LTD.

Control Equipment Services Department (CXX)

Block-3 Annexe, WWGF

Piplani, BHOPAL - 462 022

Encl: 32 sheets

BHARAT HEAVY ELECTRICALS LTD., BHOPAL - 462022
CONTROL EQUIPMENT SERVICES DEPT. (CXX)
0755- 2503352/5268
email *: rakeshvishnoi@bhel.in*
praveenshah@bhel.in

To,

From : R. VISHNOI, Sr. DGM (OFE & CXX)
BHEL BHOPAL – 462 022

Ref : CXX/2019-20/06/PP/KKL Date : **04-12-2019**

By Registered Post / By E-mail / By Hand/Press Tender

CXX/2019-20/06/PP/KKL **Dtd: 04-12-2019**

SUB: Site works for removal of old Alternator, Engine, Radiator & Accessories from old existing Power Pack housing and Re-installation, Alignment & Commissioning of Alternator, Engine, Radiator & Accessories in new power pack housing with acoustic enclosure with 7.7 (min) stack height at M/s ONGC Karaikal-20 Nos

Dear Sirs,

1. Sealed Bids are invited as per Terms & Conditions enclosed from qualifying bidders
2. The Bids shall be in 2-part system i.e. Part-1 "Techno-Commercial Bid" and Part-2 "Price Bid", both to be sent in separate sealed envelopes and dispatched in a single packet. The outer packet cover shall be inscribed with:

NIT No. : **CXX/2019-20/06/PP/KKL** **DUE DATE: 27-12-2019**

PROJECT: Site works for removal of old Alternator, Engine, Radiator & Accessories from old existing Power Pack housing and Re-installation, Alignment & Commissioning of Alternator, Engine, Radiator & Accessories in new power pack housing with acoustic enclosure with 7.7 (min) stack height at M/s ONGC Karaikal-20 Nos

Inner envelopes shall be inscribed with:

PART-1: TECHNO-COMMERCIAL BID
NIT No. : **CXX/2019-20/06/PP/KKL** **DUE DATE: 27-12-2019**

PROJECT: Site works for removal of old Alternator, Engine, Radiator & Accessories from old existing Power Pack housing and Re-installation, Alignment & Commissioning of Alternator, Engine, Radiator & Accessories in new power pack housing with acoustic enclosure with 7.7 (min) stack height at M/s ONGC Karaikal-20 Nos

PART-2: PRICE BID
NIT No. : **CXX/2019-20/06/PP/KKL** **DUE DATE: 27-12-2019**

PROJECT: Site works for removal of old Alternator, Engine, Radiator & Accessories from old existing Power Pack housing and Re-installation, Alignment & Commissioning of Alternator, Engine, Radiator &

Accessories in new power pack housing with acoustic enclosure with 7.7 (min) stack height at M/s ONGC Karaikal-20 Nos

The Bid should be addressed to:

In charge, Tender Room, Administrative Building,
BHEL, Piplani
BHOPAL – 462022

3. The Bid should be free from over writing; corrections etc. if any should be initialed.

4. Format for Part-1 Techno-Commercial Bid provided with the tender in Annex. – C is to be filled-up mandatorily and required enclosures attached.

5. The Bid must reach us sufficiently before **1100 hrs on 27-12-2019** and the Part-1 Techno-Commercial Bid will be opened on **27-12-2019** at **1400 hrs.** in the presence of those representatives of the bidders having authority letters from their companies.

6. **The Bid envelope should be inside the tender box (Green colour)** available in Tender room at Ground Floor, Administrative Building **before 1100 hrs. on 27-12-2019**. Bid received after 1100 hours shall be considered as late tender and is liable to be rejected.

7. Earnest Money (EMD) of Rs. **81,673/-** as mentioned in Annex. – A: **The EMD is to be paid either (i) by online mode as per clause 20 of NIT above (e-Payment)** and/or **(ii) in the form of FDR issued by Scheduled Banks/Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL). No other mode of payment is acceptable.** Bid received without EMD is liable to be rejected. Amount deposited other than online mode is not acceptable, Refer point no.20 for process of online deposition.

8. Tender Fee of **Rs 1,000/-+GST** (Rs. One Thousand only) to be **deposited online only and deposition slip (generated online)** to be sent along with the Bid inside the envelope containing Part-1 Techno-Commercial Bid. Bid received without Tender Fee is liable to be rejected. The Tender Fee shall be non-refundable. Amount deposited other than online mode is not acceptable, Refer point no.19 for process of online deposition.

9. **The enclosed scope of work, as detailed in the tender, covers only the major work / activities. In addition, if any other related activities for the completion of job are needed, as per general maintenance requirement and site conditions, they have to be carried out at site.**

10. Penalty for delay shall be as per LD Clause (Cl. 1.5 in Annex. – A & Cl. K.2 in Annex. – B).

11. It will be in the interest of the contractor to visit the site before submitting the Bid to have clear idea about the site conditions, location and existing state of the equipment etc. Contractor shall provide prior information to BHEL.

12. BHEL is not responsible for the tenders/ bids lost / delayed in transit / by post etc. Any Bid reaching this office after due date & time or without EMD & Tender Fee will not be considered.

13. The selected Contractor will have to mobilize their team (Reporting at site) with all pre-requisites within 7 days of the issue of the Letter of Intent / Work Order or advise for starting work from our end, whichever is later.

14. **Bid not received in line with the tender enquiry is liable to be rejected**.

15. It is requested that only authorized representative of the bidder attends the tender opening.

16. All tools & instruments and their mobilization is Contractor's responsibility. Contractor shall ensure use of only calibrated Inspection / Measuring / Testing Equipment conforming to national standards. Valid calibration certificate shall accompany these IMTEs.

17. "Code for Safety Management at Services Sites" in Annex. – E and "Statutory Liabilities of the Contractor" in Annex.– F are to be accepted by the party for qualifying in Techno-Commercial bid.

18. **Part-2 Price bids of only those parties will be opened who qualify in the Techno-Commercial bid**.

19. In order to minimize cash handling, faster collection of money receipt and also to provide ease and comfort of payment from their own place for depositors; an online facility through SB-Collect has been implemented. It is for depositing amount for getting various types of services from BHEL Bhopal viz. Tender cost, Earnest Money Deposit, Security Deposit etc., Complete

details are available under tag "online e-payment" on internet. Same page may also be viewed by clicking over the following link:
https://www.bhelbpl.co.in/qcins/iccs.htm
Details of developed templates are available on bank site. For first time user "Help Documents" is also available on page under which general information relating to procedure for depositing amount is available on page number 2 and 3. In addition to above for specific query related to type of deposit, demo with the template is also available on respective page mentioned on page no 2 of the help documents.
It is expected from the depositor(s) to understand the process first from the help document bank site before proceeding to deposit.

Path:

1. http://www.bhelbpl.co.in/qcins/iccs.htm
2. Proceed Direct to Bank Site for payment
3. Accept the T&C and proceed.
4. Select State- Madhya Pradesh
5. Select Industry
6. Select Industries name as Bharat Heavy Electrical limited Bhopal
7. Select Payment Category – Tender Fee/ EMD/ SD etc.
8. Fill the details and Deposit the amount.

20. After receipt of work order contractor has to sign a Contract Agreement on Rs.500/ Stamp Paper, covering all terms and conditions of the work order, Stamp duty charges to be Bourne by contractor.

Thanking You,

Yours faithfully,

For and on behalf of BHEL

(R. Vishnoi)

Sr. DGM (D) (OFE/ CXX)

Encl:

1	BHEL Commercial Terms & Conditions	Annex. – A
2	Scope of Work, Technical Details	Annex. – B
3	Techno-Commercial Bid Format	Annex. – C
4	Price Bid Format	Annex. – D
5	Code for Safety Management at Services Sites	Annex. – E
6	Statutory Liabilities of the Contractor	Annex. – F
7	Brief Description of Activities Involved	Annex. – G
8	Qualifying Criteria & Special Conditions	Annex. – H
9	Guidelines for compensation in case of Death/ Permanent Total Disablement	Annex. – I
10	Guideline for GST	Annex. - J
11	Arbitration & Law	Annex- K

Annexure – A

1.0 BHEL COMMERCIAL TERMS & CONDITIONS CXX/2019-20/06/PP/KKL		
1.1	Terms of Payment	• No mobilization advance is payable. • Payment shall be made Power pack and acoustic enclosure-wise against completed activities in the following manner: • **100% payment for each Power pack and acoustic enclosure after full work completion (supported with MOM / certification by BHEL / ONGC) together with invoice for completed activities within 45 days.** • **SD deducted shall be returned 90 days after completion of work and acceptance by M/s BHEL.**
1.2	Deduction of Income Tax / Payment of Service tax	All payments are subject to Income Tax deduction as per prevalent rate of the bill amount at source as per Central Government Laws. BHEL shall issue appropriate certificate in this regard. **GST as applicable**, **shall be payable extra at the prevailing rate upon proof of payment.**
1.3	Earnest Money Deposit (EMD)	EMD is essentially to be deposited by each bidder: **EMD amount for this NIT is Rs. 81,673/-** **The EMD is to be paid either (i) by online mode as per clause 20 of NIT above (e-Payment)** and/or **(ii) in the form of FDR issued by Scheduled Banks/Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL). No other mode of payment is acceptable. The EMD paid shall not carry any interest. EMD of un-successful bidder shall be returned after award of work to successful bidder (techno-commercial cleared L1 bidder).**
1.4	Security deposit (SD)	SD is essentially to be deposited by the successful bidder @5% of the Contract Value. EMD of the successful tenderer shall be converted and adjusted towards the required amount of Security Deposit. At least 50% of the required Security Deposit, including the EMD, shall be collected before start of the work. Balance of the Security Deposit can be collected by deducting 10% of the gross amount progressively from each of the running bills of the Contractor till the total amount of the required Security Deposit is collected balance SD may be accepted in the following forms (after adjusting the EMD amount) : i) Electronic Fund Transfer in favor of BHEL as per clause 20 above. ii) Bank Guarantee from Scheduled Banks/ Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL iii) Fixed Deposit Receipt issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL) iv) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL) (Note: BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith (v) online as per clause 20 of NIT above (e-Payment).
1.5	Penalty Clause	Refer Annexure B Clause K

All other terms and conditions shall be governed as per NIT details and its Annexures signed and submitted by the bidder with the Bid and subsequent clarifications / confirmations, if any.

Annexure – B

NIT No. CXX/2019-20/06/PP/KKL	Dtd: 04-12-2019

SCOPE OF WORK & TECHNICAL DETAILS OF	Site works for removal of old Alternator, Engine, Radiator & Accessories from old existing Power Pack housing and Re-installation, Alignment & Commissioning of Alternator, Engine, Radiator & Accessories in new power pack housing with acoustic enclosure with 7.7 (min) stack height at M/s ONGC Karaikal-20 Nos
EXECUTING AGENCY	BHEL, BHOPAL: CEE – CXX DEPT.

A. SCOPE OF WORK:

Site works for removal of 20 Sets of old Alternators, CAT 3512B Engines, Radiators & Accessories from existing Power Pack housing and Installation, Alignment, Commissioning support for of Alternator, Engine, Radiator & Accessories in new power pack housing with acoustic enclosure and 7.7 m (apprx) stack height, supplied by BHEL Bhopal at ONGC Karaikal. Activities to be carried out at M/s ONGC Karaikal Rig/ yard . Activity involves decoupling of existing alternators, radiator, engine & it's accessories, removal from existing Power Pack housing, removal of required panels & roof from new acoustic enclosure for installation, making the skid ready in all respects including modification (if required) for installation of the alternators, engine, radiator & accessories, installation in new housing, alignment, reassembly of acoustic enclosure and installation of 7.7 m stack height. Contractor's scope of work/ supply also includes supply of minor items such as purchase of harwares, touch up paint, block machining and commissioning support, back pressure test, temperature rise test, vibration test and acoustic level tests, finishing QC points etc. as briefly covered in scope of work. Providing requisite manpower, specialized & general tools, tackles and any other equipment's/facilities that may be required for successful installation, alignment and commissioning of the Power Pack & acoustic enclosure and integration with the existing system shall be contractor's responsibility.

B. BRIEF DESCRIPTION OF ACTIVITIES INVOLVED: Please Refer **Annexure – G.**

C. OBJECTIVE OF THE PROJECT:

Replacement/ up gradation of existing Power pack Housing with BHEL Bhopal make Acoustic enclosures meeting CPCB norms and 7.7 m (approx.) stack height.

D. RIG/ SITE DETAILS:

Contractor has to complete the work at Rig site/ yard at Karaikal. Being mobile equipment location of Rig keep on changing based on deployment. BHEL shall not make any payment on account of change in Rig site location.

E. EQUIPMENT, DRAWING & INSTRUCTIONS:

1. BHEL is in the process of supplying new Power pack with acoustic enclosure along with accessories for part of replacement/ up-gradation project of oil rigs.

2. Installation, alignment & commissioning of above equipment shall be carried out in existing Rig/ ONGC yard, accordingly, modification, testing, trouble-shooting, rectification, of existing interfacing equipment/ mounting structures and component, fabrication/ welding/ drilling work etc. as and when required, for incorporation of new equipment shall be integral part of scope of work for contractor.

3. Steps envisaged for installation, alignment & support for commissioning are as under:

A) **PREPARATION PRIOR TO START OF WORK:**

Development of a safe replacement protocol to minimize shut down in consultation with concerned HDS of Asset / basin, rig in charge. Scope of work includes taking photographs of existing important components such as Alternator mounting frame, rating plates, Engine, Radiator, MDP, Multipin Connector of engine, Termination of Actuator & MPU cables, Battery connections at battery & Engine side, Engine ECM Connector, coupling, Muffler & Exhaust piping at roof, Lighting fitting of Power Pack House, Shims below mounting pads etc., Making sketch for existing alternator mounting frame/ arrangement and measuring end play, bore and face misalignment reading etc. and demonstration to ONGC.

B) PREACUTIONARY MEASURES:

This activity will cover removal of various components such as battery cables, ECM (Electronic control Module), Covering reducer outlet for safety against foreign material, Disengaging exhaust extension pipe from exhaust reducer and Physical protection of components such as Engine, MDP (Marine display panel), ECM, Multipin connector, reducer, Engine MPU Control cable, Engine Actuator control cable, 20 core control Field connection & power cables, checking coolant level and securing critical components.

C) INFORMING BHEL & APPROVAL PRIOR TO GOING AHEAD:

Contractor will take prior approval after completion of A & B before going ahead further.

D) STEPS FOR DISENGAGING ENGINE, ALTERNATOR, RADIATOR & ACCESSORIES:

This step involves various steps for disengaging equipment. Step by step disengaging of alternator earthing, guard, couplings, mounting screws and pushing back alternator. Safely draining coolant in containers. Disengaging coolant & diesel lines, radiator base, fuel separator, filters, diesel & airlines etc.

E) PREPARATION FOR DG SET REMOVAL FROM EXISTING POWER PACK & INSTALLATION IN NEW ACOUSTIC ENCLOSURE SUPPLIED BY BHEL:

Disengaging Lighting, Muffler & exhaust hardware unfastening, removal of exhaust components, Roof removal of existing Power pack housing, Removal of light fitting in New Power pack Housing (BHEL Supplied). In the new Housing (supplied by BHEL) removal of roof panels, all doors, side walls and associated components and diverter plates are to be removed for placement of engine, alternator, radiator & accessories.

F) PLACEMENT & INSTALLATION OF ENGINE IN NEW POWER PACK HOUSE:

Radiator removal, alternator pushback, shim requirement calculation (consult BHEL if required), unfasten engine mounting bolts, placement of engine in new housing, corrective action as required and welding of engine mounting blocks.

G) VERIFICATION OF LOCATION OF RADIATOR MOUNTING BLOCK, ALTERNATOR MOUNTING FRAME & ALTERNATOR MOUNTING BLOCK:

Calculation of shim for radiator placement (consult BHEL), Careful placement of radiator, verification of radiator pad location by placement, placement of alternator, shim estimation (consult BHEL) and carry out rough alignment, corrective action as required is to be taken up.

H) PERMANENT WELDING OF ALTERNATOR MOUNTING FRAME, ALTERNATOR MOUNTING BLOCKS & RADIATOR MOUNTING BLOCKS ON NEW POWER PACK HOUSING:

Having reached satisfactory positioning of alternator & radiator the same is to be removed and alternator mounting frame and radiator mounting blocks is to be permanently welded at it's place. Radiator 7 alternator is to be placed back after permanent welding.

I) INSTALLATION OF ROOF SHEETS, SIDEWALLS DOORS & ACCESSORIES OF ACOUSTIC ENCLOSURE BACK IN PLACE:

Doors, Roof, diverter plate mounting channel, diverter plate, Louvers, roof panels, rain protection over roof panels, light fitting etc to be installed back, Silicon sealant paste to be applied at Roof/ panel joints. Excellent workmanship must be ensured.

J) ALIGNMENT OF ALTERNATOR:

Alignment, Exciter air gap & Endplay shall be within specified tolerance. Refer procedure in Annexure- G

K) ASSEMBLY OF ACCESSORIES ON POWER PACK:

This covers installation of the various components such as under trench diesel & airline, valves, gauges, etc, Piping, nipple, socket, gauges, elbow etc. as covered in Annx.- L. Installation of water separator, termination of diesel and fuel hoses with threading as required., Breather line assembly, Deciding terminal box location, it's installation, Fastening 85 pin connector and termination of cables to terminal box, exhaust component and 7.7 m (approx.) exhaust stack installation, reinstalling coupling guard of engine as originally was. Installing back earthing strip and it's termination with alternator. Installation back of battery and it's termination. Contractor scope includes wiring cable termination & repair of cable terminations as required.

L) COMMISSIONING ACTIVITIES & COMMISSIONG SUPPORT:

Demonstration of alignment, endplay & air gap readings, Restoration of control & power cables, Filling back coolant lube level check, air pressure, diesel supply & return line check and support during commissioning. Final commissioning shall be done in supervision of commissioning experts of Ultimate customer / BHEL/ BHEL subcontractor for control system commissioning and/ or customer/ Engine OEM for Engine. However contractor's engineer shall be fully associated and provide manpower and incidental support as required during commissioning.

M) QUALITY CHECKS POINTS PRIOR TO COMPLETION:

Contractor shall maintain excellent aesthetics and finish, deburring of gusset plate, grinding of welding work, dent removal, paint touchup, proper routing and tying of cabling etc. and also Pre-start checks for engine.

N) RECORDING OF MOM WITH ULTIMATE CUSTOMER/ BHEL:

O) SPECIAL TEST:

Contractor to carry out vibration test, temperature rise test & back pressure test and shall be fully associated and provide manpower for acoustic level testing of the Power packs.

Note: (steps for activities A to P above are briefly covered in Annx-G)

4. BHEL shall provide following drawings/ documents to successful bidder only, along with PO/ works contract to take up the job:

A. Recording formats for various parameters such as bore & face misalignment, End Play, Batt. Voltage & gravity, Tightening Torque, Air Gap etc. with applicable Limits.

B. Checklist for activities covered in step A & B, above.
C. Drawings for :
   (i) Alternator alignment blocks.
   (ii) Alternator OGA.
   (iii) Gusset plate installation drawing.
   (iv) Reducer Cover.
   (v) Engine, radiator & alternator assembly
D. Wiring diagram & scheme for:
   (i) Engine MPU Control
   (ii) Engine Actuator Control
   (iii) Alternator 20 core control & Field connections.
   (iv) Alternator Power Connections.
E. Work Completion Report Format
F. Quality check point list
G. Alignment Procedure.

The IPR rights of above documents shall be property of BHEL. It is made clear that these documents shall not be issued for bidding purpose.

5. Photographs, measurements & sketch as mentioned in scope of work is to be taken/ prepared and forwarded to BHEL & kept for record. These photographs shall be helpful in deciding course of action at BHEL as well as reassembling after alternator replacement.

6. Sequence as mentioned in scope of work is to be followed for safety of personnel & equipment. In case problem arises due to contractor's negligence, the contractor shall be liable to pay the damage of equipment.

7. Electrical power supply and gas cutting facility will be provided on the rig. However provision of welding set & electrodes and all required tools, tackles and instruments for the site are the contractor's responsibility and to be considered in their offer. Crane at site shall be provided by ultimate customer. Tools including general tools and special tools as required shall be in the scope of supplier. Dial gauge, magnetic stand, Toque spanner, multimeter, feeler gauge, Spirit level, crimping tools etc. as required shall be arranged by supplier on returnable basis. BHEL shall not be responsible for arranging the same.

8. Hardware, mounting accessories, Brackets, Block, cabling taken out for replacement of Power pack equipment and required to be put back on installation of new alternator shall be safely handled by contractor. In case of misplacement of any hardware the contractor shall be fully responsible for arranging the same at their cost within no time. Incase BHEL has to provide any of the missing hardware the cost towards the same is recoverable from contractor.

9. Minor repair in terminals are in contractor scope. Contractor shall carry crimping tool as required.

10. It is direct responsibility of the contractor for ensuring proper quality of workmanship. Workman ship and quality shall be to the satisfaction of BHEL & ultimate customer. In case any rectification is desired by BHEL/ ONGC corrective measure shall be taken by contractor.

11. The above special instructions only broadly explain the nature of job and activities to be performed by contractor. It does not cover all activities to be performed by contractor in complete details. In case any activity (such as relocation/ rectification of some existing component, not mentioned in NIT but required for completeness of work (installation, testing & commissioning) shall be considered as part of scope of work for the contractor.

12. In case it is found that the job done is of substandard quality, or other terms and conditions of the contract are not being followed fully, then BHEL will send the notice to contractor to take remedial measures within 24 hours and in case of neglect of the notice, suitable action deemed fit may be taken against the contractor in addition to levying of liquidated damages.

13. The contractor shall comply with all the safety regulation of M/s ONGC.

14. The contractor shall provide all personal safety equipment to his work men.

15. The contractor shall maintain first aid box at the working area for his personnel.

16. The contractor will carry all the tools, tackles, safety gear and consumables like cleaning agent, lubricant, dendrite, solvent, hardware etc. to complete the work.

17. The contractor shall engage such persons for the job that are qualified and experienced for the same.

18. The Contractor shall ensure that any related/ associated works and incidentals which may not be explicitly covered in the scope but are found necessary for completion of the job are covered in his Bid.

19. Contractor will obtain Non-Employee Duty (NED) pass for his workmen, from ONGC for entry into ONGC site/base office before commencement of work.

20. The contractor shall ensure use of proper tools/equipment with trained personnel for carrying out jobs safely in M/s ONGC premises to safeguard against mishap and damage to men, material and machinery.

21. The contractor shall ensure to keep the work place tidy, dispose of rubbish in containers provided.

22. The contractor shall keep his men and materials insured and keep BHEL & ONGC indemnified against any claim arising for any reason whatsoever. BHEL and ONGC shall in no way, pay any compensation for any damages, injury or loss of life of contractor's personnel working at site/office complex arising due to any reason whatsoever.

23. Consumables viz. welding electrodes, insulation tapes, solder wire/flux, drill bits, torch batteries, marker pens etc. are in the scope of supplier and to be considered in their offer. Provision for Misc. Expenses and contingency purchases (including suit to Assy. items) shall be as covered in Price.

F. CONTRACT VALIDITY & REVIEW OF PERFORMANCE:

1. Contract shall be valid for a period of 24 months from the date of signing of contract with successful bidder.
2. BHEL may short close the contract without assigning any reason.
3. BHEL shall appraise the performance of the contractor during testing, commissioning and functioning of the system and any other work done by contractor and shall be entitled to reject any work which, is not in full accordance with their expectations BHEL reserves the right to even terminate the contract unilaterally.

ANNEXURE – C

NIT No. CXX/2019-20/06/PP/KKL **Dtd: 04-12-2019**

PART – 1 TECHNO-COMMERCIAL BID DUE DATE: 27-12-2019

Site works for removal of old Alternator, Engine, Radiator & Accessories from old existing Power Pack housing and Re-installation, Alignment & Commissioning of Alternator, Engine, Radiator & Accessories in new power pack housing with acoustic enclosure with 7.7 (min) stack height at M/s ONGC Karaikal-20 Nos

1.	NAME OF BIDDER & POSTAL ADDRESS WITH PIN CODE	
2.	CONTACT PERSON(S) PHONE / MOBILE NO(S).	
3.	FAX NO.	
4.	EMAIL ID	
5.	BID REF. NO. & DATE	Ref. Date
6.	COMPANY REGISTRATION NO. (document)	Reg. No. City Date
7.	IT PERMANENT A/C NO. (PAN) (document)	
8.	GST REGN. NO. (furnish document)	
9.	ESI / WC CODE NO. (furnish document)	
10.	PROVIDENT FUND NO. (furnish document)	
11.	TENDER FEE PARTICULARS	DD No. Date Amt. **1,000 /-** Bank
12.	EMD PARTICULARS	DD No. Date Amt. **81,673 /-** Bank
13.	VALIDITY OF BID	6 months
14.	COMPLETION PERIOD	5 weeks from BHEL call Refer Annx..B.F
15.	MOBILISATION (TO SITE) PERIOD	7 days from intimation
16.	BIODATAS OF PROPOSED EXPERIENCED SITE MANPOWER	Experienced Commissioning Engineer – 1; Skilled Fitter – 2; Skilled Welder – 1
17.	AVERAGE ANNUAL FINANCIAL TURNOVER FOR LAST 3 YEARS UPTO 31ST MARCH 2019 (furnish documentary proof)	(*Mention Amount, which must be at least Rs. 12.25 Lakhs*) **(mandatory)**
18.	EXPERIENCE OF HAVING SUCCESSFULLY COMPLETED SIMILAR OIL RIG R&U, E&C JOBS DURING THE LAST 7 YEARS UPTO 30TH Nov 2019 (furnish documentary proof)	(*Must be not less than Rs. 16.33 Lakhs each for 3 jobs* ***OR*** *Rs. 20.42 Lakhs each for 2 jobs* ***OR*** *Rs.32.67 Lakhs for 1 job*) **(mandatory)**
19.	TECHNICAL DEVIATIONS , if any	Yes / No
20.	DEVIATIONS ON COMMERCIAL CONDITIONS, give details, if any	Yes / No
21.	Meets techno-commercial qualifying criteria as per Annx.H	Yes / No
22.	Whether documentary proof submitted in support of cl. 21 above.	Yes / No
23.	CONFIRMATION TO SPECIAL CONDITIONS (Annx-H, I, J, K)	Yes / No
24.	SIGNED COPY OF NIT	Enclosed **(mandatory)**
25.	UNPRICED PRICE BID FORMAT	(Fill up "QUOTED" wherever prices are quoted) **(mandatory)**
26.	ADHERANCE TO SAFETY MGMT CODE & STATUTORY LIABILITIES AS PER ANNEXURE-E & ANNEXURE-F	Yes / No **(mandatory)**
27.	List of Enclosures: 1. 2. etc	

Signature with date & Seal of contractor

ANNEXURE – D

NIT No. CXX/2019-20/06/PP/KKL	**Dtd: 04-12-2019**

PART – 2 PRICE BID DUE DATE: 27-12-2019

Site works for removal of old Alternator, Engine, Radiator & Accessories from old existing Power Pack housing and Re-installation, Alignment & Commissioning of Alternator, Engine, Radiator & Accessories in new power pack housing with acoustic enclosure with 7.7 (min) stack height at M/s ONGC Karaikal-20 Nos.

NAME & ADDRESS / PIN CODE / TEL / FAX / E-MAIL OF BIDDER		
BID DETAILS	Ref No. :	Date:

A. PRICE BID FORMAT FOR KARAIKAL ASSET (Qty.:- 20 Nos) :

Rates must be quoted as below:

Sl.	Description	Amount (Rs.)
1.0	**Unit Price for Lumpsum work in Power Pack and acoustic enclosure** as per brief scope of work mentioned in Cl. "A to P" of Annexure-G of & other terms & conditions as per NIT no. CXX/2019-20/06/PP/KKL)	**A =**
2.0	**Number of Power pack & acoustic enclosure in which work to be done by Contractor as per scope of work**	**E = 20**
3.0	**Total Price for 20 (Twenty) unit**	**F= D x E =**

(*) Amount quoted against these heads shall be fixed (and shall not be changed by contractor in their Bid) as mentioned in NIT, above in the column (Amount), i.e. Right most column.

Sign of contractor: _____

Date:

Seal

ANNEXURE – E

NIT No. CXX/2019-20/06/PP/KKL Dtd: 04-12-2019

SUB: CODE FOR SAFETY MANAGEMENT AT SERVICES SITES

It may please be noted that the following practices are to be observed during execution the work:

GUIDELINES FOR SAFE WORK PRACTICES

- Personal Protective Equipment: Provision & use of personal protective equipment conforming to Indian or equivalent standards to all employees of BHEL & its sub-contractors working at sites shall be ensured as specified below:
- Safety Helmets Conforming to IS:2925 shall be worn by all at sites where there is any possibility of any object falling from overhead.
- Safety Belts (Type 2) Conforming to IS: 3521 shall be used with the life line properly tied, by any person who is required to work at an elevated location from where there is possibility of fall of the person by more than two meters.
- Person who might be exposed to any hazards to his eyes & face during the course of his work shall use 2.1.3 Eye & Face Protection Device Conforming to IS: 8940 or 8520.
- Ear protection Device Conforming to IS: 6229 shall be used by any person exposed to excessive noise in his work.
- Hand & Body Protection Devices IS: 2573 or 6994 or 8519 or 8807 as applicable shall be used by a person who might be exposed to the possibility of Injury to his hand or body while executing a particular task.
- Foot Protection Devices: Safety shoes or good quality covered shoes, depending on the degree of hazard one is likely to be exposed to, shall be worn by persons engaged at servicing sites.

HOUSE KEEPING

- Materials, equipment etc. shall not be placed or left work area so as to obstruct safe movement of people or cause any other mishap.
- Work places & passageways that are slippery due to oil, water etc. shall be cleaned up or strewn with sand/similar substance.
- Action shall be taken to discourage the practice of throwing materials/ equipment from elevated locations to lower levels.

ILLUMINATION

- Adequate & suitable artificial lighting shall be provided at all work places and their approaches.
- Lamps shall be protected by suitable guards where necessary to prevent danger, if the lamp breaks.
- Hand-held lamps shall be powered by either 24V supply or dry cells.
- Emergency lighting provisions for night work shall be made to minimize danger in case of power failure.
- Insertion of electrical wires directly into socket holes without proper plug top for drawing power shall not be allowed.
- Proper earthing & insulation of all temporary electrical lines laid for servicing jobs shall be ensured.

FIRE HAZARDS/ ACCIDENTS AND THEIR CONTROL

- Contractor should ensure that fire- fighting equipment, arranged by customer, is available in the vicinity of work place.
- Arrangements shall be made be contain sparks generated during welding, cutting or other operations and sparks shall not be allowed to fall down on combustible materials, if any, kept below.
- Every scaffold shall be of safe design for the purpose for which it is to be used and shall be of safe and sound constructions and maintained in good conditions.
- Switching off of power supply to welding machines etc. shall be ensured during non-working period.
- Rolling & dragging gas cylinder shall be allowed but suitably designed cage system shall be sued for lifting of gas cylinders to elevated work locations and also for lowering them.

FIRST AID

- Contractor shall be required to maintain a first aid box with essential items. The box shall be available for use at all hours of work.

STATUTORY REQUIREMENTS

- Adherence to all local, state and central legislation on safety measures as applicable to the work at site shall be ensured.

- This document may be treated as a part of the NITs and your acceptance of these requirements will be essential for qualifying to work as our sub-contractor.

ANNEXURE – F

NIT No. CXX/2019-20/06/PP/KKL **Dtd: 04-12-2019**

SUB: STATUTORY LIABILITIES OF THE CONTRACTOR

- All statutory requirement under Minimum Wages Act 1948, Payment of Wages Act 1936, Workmen Compensation Act 1923, EPF & MP Act 1952, Payment of Gratuity Act 1972, ESI Act 1948, Contract Labour (R&A) Act 1970, Payment of Bonus Act 1965, Income Tax Act, Service Tax Act and all other applicable Act etc shall be complied by the Contractor
- Contractor shall comply with all statutory requirement, rules, regulations & notification etc in relation to employees issued from time to time by the concerned authorities
- Contractor shall ensure payment of statutory prescribed minimum wages as applicable from time to time in the presence of authorized representative of BHEL and maintain proper records of their timely disbursement. These records need to be preserved for a minimum period of at least 3 years and should be made available even after the contract is over for any verification by statutory / BHEL authority
- Contractor to provide PF Pass Book to his employees ensure payment of PF, EDLI, pension dues under EPF and MP Act 1952 to the RPFC
- Contractor shall ensure payment of ESI contributions under ESI Act 1948, and provide ESI membership no. of each employee
- Contractor shall produce proof of deductions as well as remittance of PF, EDLI, Pension, ESI contribution, administrative charges etc where ever applicable and shall maintain proper records
- Contractor shall furnish proper returns to the concerned statutory authorities
- Contractor shall be solely responsible for non- payment, delayed payment of wages, contribution under EPF & MP Act, ESI Act etc
- In case the Contractor fails to make payment of wages to his employees or remittance of contribution to the concerned authorities, the security deposit / other dues under the contract can be utilized by BHEL to discharge the liability of the contractor
- Payment of bonus under Bonus Act, payment of gratuity under Gratuity Act and retrenchment compensation under Act will be sole responsibility of the Contractor
- Over & above the daily wage rate, payment shall be made for leave with wages
- Contractor shall observe provisions of the Factories Act in respect of working hours, holidays, rest intervals, leave & overtime to his employees. No work shall be done on second / third shift, overtime, Sundays or on other declared holidays without written permission
- In case a contractor employs women as employee, he will discharge his obligation under law in respect of such women workers such as prohibition of engaging them during night hours, prohibition of employing them for more than 9 hours per day, provision of crèche facility, grant of maternity leave as per rules etc
- Contractor shall be responsible for making payment of wages before expiry of 7 days from the last day of wage period and to ensure disbursement of wages in the presence of the authorized representative of the contract operating division & HR representative who shall record under his signature to the end of entries in the register of wages and give certificate to this effect which shall be enclosed with the bill for claiming payment
- In case the Contractor fails to make payment to his employees within the stipulated date / time, security deposit can be utilized for payment of wages etc. In case of such an eventuality the Contractor shall replenish such an amount immediately
- Contractor shall indemnify BHEL against all claims and losses under various statues or any civil or criminal law in connection with the employees deployed by him
- The contractor shall issue all the necessary Personal Protective Equipments (PPEs) to all his workmen involved in the job. The liability for any compensation on account of any injury sustained by an employee of the contractor shall be exclusively of the Contractor
- Contractor to obtain insurance cover for his employees / equipment, tools & tackles etc and take third party risk insurance coverage at his own cost. BHEL shall not be responsible for any loss, damage, pilferage of his property under employees

- Contractor should have independent code numbers under EPF & MP Act 1952 and ESI Act 1948 Service Tax and shall cover his employees under the said codes
- Contractor to obtain license under CL(R&A) Act 1970.

ANNEXURE-G of NIT No. CXX/2019-20/06/PP/KKL

	Description of Work
A.	**PREPARATION PRIOR TO START OF WORK:**
A1	**Take Photographs of:** **a. Existing Power Pack & it's equipment displaying:** **b. Engine SL. No. & rating plate, Alternator Sl. No. & Rating plate, Radiator details** **c. Mounting Pads of Engine, alternator & radiator with engine, alternator & radiator mounted** **d. Engine MDP** **e. Multipin Connector of engine** **f. Termination of Actuator & MPU cables** **g. Battery connections at battery & Engine side** **h. Engine ECM & Connector** **i. Muffler & Exhaust piping at roof** **j. Lighting fitting of Power Pack House** **k. Shims below mounting pads &** **l. General photographs of Skid & Power Pack.** **m. General photograph & video of engine accessories covering every visible surface, fittings, gauges, pipes, component & equipment.** **n. Photographs of air inlet pipe, diesel inlet & return line, breather outlet line** **o. Termination of Power & control cables st alternator** **p. Radiator belts & belt guard, fins, fuel cooler, radiator cap & radiator mounting.** **q. Engine & Alternator mounting , alignment & coupling hardware's.** **r. Engine exhaust reducer & outlet pipe, turbocharger.** **s. All other components, mountings, hardware's etc. of engine, engine accessories, radiator & alternator** **Above photographs/ videos must be forwarded to BHEL**
A2	Making **sketch** for existing alternator mounting frame/ arrangement and mounting structure above floor level , showing length, width and height from skid base, for different components used in existing skid, shims and their heights for alternator mounting.

A3	**Measure:** **A.** End play readings also to be demonstrate the same to the ultimate customer's site representative and to be recorded. **B.** Measure bore and face misalignment reading in four positions **C.** Open alternator exciter side cover & measure exciter air gap at 12 positions **D.** Battery Voltage & Specific gravity (in case of lower Voltage) **E.** (A & D) to be demonstrated to customer. reading from (A) to (D) to be forwarded to BHEL. Format for recording of these readings shall be provided by BHEL to successful bidder.
B	**PREACUTIONARY MEASURES** **Note:** **1. Steps mentioned in "Para B" must be completed and reported to BHEL prior to going next steps mentioned in "Para C" onwards) .** **2. No welding is allowed prior to completion of step B1 & B2.** **3. No disengaging work is allowed prior to completion of step B3.** **4. Outcome of steps B1-B5 must be demonstrated to site in charge from ultimate customer side and get it verified/ certified from them prior to proceeding to next steps. 5. Outcome of step A & B must be communicated to BHEL as given in step "C" and prior approval to be obtained prior to proceeding 6. Incase the contractor does not follow precautionary measures and/or does not take BHEL approval as per Para "C" , any consequential damage to engine electronics/ turbocharger or other component/s shall be to the supplier's account.** **7. Checklist for activities covered in step A & B shall be provided by BHEL to the successful bidder along with WO. Contractor shall forward filled up check list as mentioned in Para "C"**
B1	Removal of battery cables from both sides (engine side & battery side). Safely securing/ handing over battery leads to ONGC. Take photograph displaying activity completion for record and submitting to BHEL. Putting battery on charging through external charger available with ultimate customer, at safer location as per ultimate customer advice.
B2	Opening of Allen screw of ECM (Electronic control Module), Securing ECM unit in insulated cover and tying ECM unit cable with a solid support. Take photograph displaying activity completion for record and submitting to BHEL.
B3	Disengaging exhaust extension pipe from exhaust reducer and covering exhaust reducer with exhaust reducer by fasteners. Take photograph displaying activity completion for record and submitting to BHEL.
B4	Isolate following cables and polythene warp and tie their connections prior to going ahead: **1.** Engine MPU Control **2.** Engine Actuator Control **3.** Alternator 20 core control & Field connections. **4.** Alternator Power Connections. **5.** 85 Pin connector incoming wires to be isolated from engine Take photograph displaying activity completion for record and submitting to BHEL. Removed hardware shall be securely placed/ handed over to ONGC.

B5	Following critical component must be polythene wrapped and firmly using rope/ tie: **1.** MDP (Marine display panel) **2.** ECM **3.** Multipin connector **4.** Covered reducer must be separately polythene wrapped and tied with rope/ tie. Take photograph displaying activity completion for record and submitting to BHEL.
B6	Wrapping engine with polythene sheet for protection against unexpected rain. Take photograph displaying activity completion for record and submitting to BHEL.
B7	Checking Coolant level of radiator
B8	Demonstration to ultimate customer's site in charge that step B1 - B7 above has been completed and getting it verified/ certified. Draft Performa for recording with customer shall be provided to BHEL to successful bidder.
C	**INFORMING BHEL & APPROVAL PRIOR TO GOING AHEAD:**
C1	Supplier shall forward outcome of step A & B above to BHEL including information but not limited to: **1.** Photograph as per Step A1 **2.** Sketches as per Step A2 **3.** End play, bore & face misalignment readings, air gap etc. reading and Measurement as per step A3. **4.** Photographs for Step B1 - B6 **5.** Filled-up Checklist as per step B8 **6.** Certification from ultimate customer as per B8.
C2	Information as per Step C1 shall be forwarded by Supplier to BHEL thru What app on following numbers;1. 9425604975 Sr. DGM (D) OFE2. 9406903476 Dy. Mgr (D) CEEAlternatively information can be provided on CD.
C3	On receipt of Photographs & documents BHEL will Give suggestion / Approval for further go ahead within 24 Hrs. at contractor's email. During this period contractor may take up step D9 or any other step as per BHEL advice . Further installation shall be carried out as per BHEL advice.
D	**STEPS FOR DISENGAGING ENGINE, ALTERNATOR & RADIATOR & ACCESSORIES**
D1	Disengage fasteners used for earthing of alternator & removal of earthing strip.
D2	Disengage coupling guard
D3	Disengage hub from spider coupling by unfastening bolts (CAT P/N 7J 7868)
D4	Unfasten alternator mounting bolts
D5	Loosen Jacking screw
D6	Loosen alignment screw
D7	Push back alternator
D8	Polythene wrap alternator for safety against drip
D9	Drain coolant in container/s. Close drain path. Keep drained coolant safely.

D10	Disengaging Cooling lines of engine & radiator (1. Two Nos. at top, 2. Two nos. at bottom & 4" main line) at engine and radiator.
D11	Carefully keep these water lines at a secured place along with coupling & hardware's.
D12	Disengaging diesel cooler & capping of lines
D13	Disengaging radiator base from engine base. All hardware's to be handed over to customer/ Carefully kept by contractor.
D14	Disengaging Radiator mounting pad bolts
D15	Disengaging Fuel water separator unit from inlet diesel line. Capping it's hose. Disengaging it's mounting screws and carefully removing water separator from old Power Pack. Being glass items extreme care should be taken during removal & storage of the same.
D16	Remove Fuel Filters and safely keep it's hoses and hardware
D17	Disengaging diesel inlet & outlet hose at engine & capping of inlet/ outlet.
D18	Disengaging air starting inlet line
E	**PREPARATION FOR DG SET REMOVAL FROM EXISTING POWER PACK & INSTALLATION IN NEW ACOUSTIC ENCLOSURE SUPPLIED BY BHEL:**
E1	Disengaging of Lighting items such as well glass fittings and its cabling required for removal of room of existing Power Pack
E2	Unfasten hardware's from muffler inlet and extension pipe outlet, elbow & Exhaust extension pipe shall become free at both end. Take out elbow using crane. Take out exhaust extension pipe also. In case the same is welded with roof use gas cutting to make free exhaust extension pipe .
E3	Disengaging fasteners used for joining of exhaust piping & muffler (elbow, muffler, extension pipe, tail pipe etc. as require). Removal of exhaust piping, muffler and support as required and handing over these items back to M/s ONGC. Crane shall be provided by M/s ONGC.
E4	Disengaging fasteners used for tightening of roof and removal of Power pack roof of existing Power pack. Use gas cutting if required with permission of customer. If required remove radiator side flaps/ side wall.
E5	In new Power Pack housing (supplied by BHEL): Remove Light fitting & it's cables & keep it safely
E6	In the new Power Pack house, disengaging fasteners used for tightening of roof and removal of Power pack roof & transverse members of canopy . Removal of all doors, side walls & associated components. Also remove diverter plate support channel by unfastening and safe fitment of radiator. Members shall be placed at safe place with plane surface to avoid any deformation.
F	**PLACEMENT & INSTALLATION OF ENGINE IN NEW POWER PACK HOUSE:**

F1	Make room for Engine removal by:A. Pullback radiator carefully such that fan blade do not touch fan housing & make sufficient space for lifting of engine. In space is not available in old canopy radiator may be lifted and kept outside safely. B. Pull back alternator & make sufficient space for lifting of engine. In space is not available in old canopy alternator may be lifted and kept outside safely. Care should be taken to provide wooden planks/ support below alternator pads such that housing bottom part does not touch ground.
F2	Cleaning of dust, grease, paint mark etc. on mounting pads of engine by emery paper, air blowing, diesel and final cleaning with diesel (In new Power Pack House)
F3	Calculate shim requirement for Engine mounting block . Consult BHEL as required. Inserts shims below engine.
F4	Unfasten mounting screws of engine lift the engine carefully such that fan blade do not touch anywhere and gradually bring it to it's location in the nesw Power Pack housing and engine mounting holes should come on the engine mounting blocks. Incase engine mounting holes on engine mounting pads coincides (If not remove blocks and take corrective action) , Fasten engine mounting hardware's.
F5	Carry out permanent welding of engine mounting blocks with skid.
G	**VERIFICATION OF LOCATION OF RADIATOR MOUNTING BLOCK, ALTERNATOR MOUNTING FRAME & ALTERNATOR MOUNTING BLOCK**
G1	Cleaning of dust, grease, paint mark etc. on mounting pads of Radiator by emery paper, air blowing, diesel and final cleaning with diesel (In new Power Pack House)
G2	Cleaning of dust, grease, paint mark etc. on mounting pad of Alternator by emery paper, air blowing, diesel and final cleaning with diesel (In new Power Pack House)
G3	Anticipate shim requirement below radiator pad (based on mounting arrangement & block height of earlier power Pack). Consult BHEL if required& place these shims on radiator mounting pads.
G4	Lift radiator and install it in new Power Pack housing. Extreeme care to be taken to ensure radiator fan housing & fan blade do not touch while positioning radiator (Recommended that radiator should be moved sideways rather than lowering to ensure fan safety). Place radiator on radiator mounting blocks & fasten mounting screw.
G5	Engaging radiator skid with engine skid & fastening & fastening of screws
G6	Lifting alternator to man height by crane, cleaning of dust, dirt, paint mark etc. by emery paper, air blowing, diesel and final cleaning with diesel.
G7	Calculate shim requirement for Alternator alignment . Consult BHEL as required.
G8	Placement of alternator on the alternator mounting pads with shims in between as calculated in above step.
G9	Carry out placement of removed alternator on alternator mounting pads of new Power Pack House
G10	Carry out alignment process as mentioned in section "J" and verify acceptable limit is achievable with given positioning of alternator mounting block & frame below it.

G11	In case satisfactory positioning of radiator wrt engine or alignment of alternator with engine is not possible as required above with given arrangement, then the mounting block/ frame of radiator/ alternator as required to be gas cut and removed from present location and to be suitably positioned and welded.
H	**PERMANENT WELDING OF ALTERNATOR MOUNTING FRAME, ALTERNATOR MOUNTING BLOCKS & RADIATOR MOUNTING BLOCKS ON NEW POWER PACK HOUSING**
H1	Having achieved satisfactory positioning of alternator mounting frame, alternator mounting block & radiator mounting blocks, the radiator & alternator shall be removed and placed elsewhere (till final welding as per next step) safely as described above in relevant sections.
H2	Carry out permanent welding of alternator mounting frame, alternator mounting block & radiator mounting block. Allow time for cooling.
H3	Place back radiator safely (taking care of fan blade) and fasten screws of radiator mounting block & radiator skid & engine mounting rail joint.
H4	Place back alternator on it's mounting feet (shall be tightened after final alignment as per step J)
I	**INSTALLATION OF ROOF SHEETS, SIDEWALLS DOORS & ACCESSORIES OF ACOUSTIC ENCLOSURE BACK IN PLACE** (Excellent workmanship must be ensured. Care should be taken to cover exhaust & radiator water filling cut-out on the roof. Acoustic enclosure must be restored as prior to step E6)
I1	Remove alternator wrapping. Having done installation of radiator & engine and also placement of alternator all side walls removed in step E6.
I2	Install all doors removed during process E6, proper alignment must be ensured.
I3	Install all diverter plate mounting channel, removed during process E6.
I4	Put back diverter plate, removed during process E6.
I5	Restore all louvers and louver supports
I6	Roof members to be placed on side walls and fastened to the side walls in place by using hardware's.
I7	Rain protection sheet to be securely mounted over joints.
I8	Apply Silicon sealant wherever required
I9	Install back Light Fitting and securely do the routing of the cables.
J	**ALIGNMENT OF ALTERNATOR**
J1	Engaging screws in alignment blocks and arranging suitable plate from scrap in the Rig for placing between tip of alignment screw and alternator pad.
J2	Engaging jacking screws on alternator placed on the skid.
J3	Gradually push the alternator towards engine and determine exact shims requirement by taking measurement when hub is close to spider.
J4	Lift alternator by using jacking screw, place the shim, use alignment screw also such that spigot matches. Finally loosen jacking screw.

J5	Engage alternator hub & engine spider coupling by using bolts (CAT P/N 7J 7868) between alternator hub and spider.
J6	Install two Nos. precision dial gauges on magnetic stand for taking bore and face position reading at different angles of shaft. Dial gauge should be set to zero at 12 O' cloak position. Rotate shaft by 360 degree. Take dial gauge readings at various points (minimum four). Determine No. of shims required from these reading and place the shim and carry out alignment. continue alignment process till desired level (Max 8 mills) have been achieved. Tighten coupling bolts (CAT P/N 7J 7868) to full torque
J7	Tighten the mounting bolts to full torque. Loosen jacking bolt and take final alignment reading. In case dial gauge readings are beyond acceptable limits after tightenening the bolts repeat the alignment process till such time that bore & face alignment is within acceptable limits. Record dial gauge readings for bore & face misalignment in four quadrants for submitting to BHEL and onwards submission to ultimate customer.
J8	Take end play of the engine. It should be same as step A3.
J9	Open alternator exciter side cover and measure air gap at 12 positions and record in format provided by BHEL.
J10	Reporting to BHEL: Contractor shall immediately communicate final values of: 1. Bore Misalignment 2. Face Misalignment 3. Endplay 4. Alternator Exciter Air gap 5. Tightening Torque for Coupling bolt & Mounting Bolts. 6. Record of Shims used in four pads
J11	Demonstration to customer: Engine End Play, Bore and face misalignment at four quadrant/ as per their satisfaction to be demonstrated to the customer and got verified in the format provided by BHEL.
J12	Loosen (free) Jacking Bolts and leave in it's thread for future use.
J13	Fasten alignment screws till it just touches alternator mounting feet.
J14	On customer satisfaction as per point F13 above, subsequent steps as per G onwards is to be taken
J15	Recording with customer to be forwarded to BHEL.
K	**DELETED**
L	**ASSEMBLY OF ACCESSORIES ON POWER PACK**
L1	Coolant Line Connections: (1. Two Nos. at top, 2. Two nos. at bottom & 4" main line) . Connections should be leak-proof and restored as original. Flex master coupling shall be used in all joints.
L2	Diesel inlet & return line connections as under: 1. Under trench laid 3/4” MS pipe or equivalent mm size as per IS 1239 (Table 2 Medium duty) for inlet as well as return line. 2. At inlet & return line termination with customer pipes BSPT/ NPT (as per existing customer installation), thread will be made by contractor. 3. At power pack boundary accessories as under shall be provided: A. Inlet Line: Brass heavy duty ball valve (zolloto or equivalent) with socket, nipple, Hex Nipple as required. B. Return Line: NRV Heavy duty Bras (zolloto or equivalent) with socket, nipple, Hex Nipple as required.

	Accessories as mentioned in A&B shall be accessible for operation. 4. One no. Union 3/4" MS Heavy duty at each line at suitable place. 5. Both diesel line shall be taken at floor level near inlet of water separator by using elbows, nipples, socket and hex nipple as required. MS heavy duty components only shall be used for elbows, nipples, socket and hex nipple. 6. Suitable reducer, heavy duty clamp & heavy duty hoses shall be used for connection to water separator inlet & diesel cooler outlet. 7. Pipeline/ Nipple etc. shall rest on heavy duty pipe mounting bracket. 8.Material for diesel line is in the scope of contractor and to be provided suit to assembly. Diesel pipeline, elbow, union, Nipple, Hex Nipple, Socket, ball valve, hoses Pipe mounting bracket as required is in contractor's scope and shall be considered in their offer. Broad list of items envisaged for airline is provided in Annexure L. 9. All connection shall be leak proof with high degree of workmanship.
L3	Air starting line connections as under: 1. Under trench laid 11/2" MS pipe or equivalent mm size as per IS 1239 (Table 2 Medium duty) 2. At inlet BSPT/ NPT (as per existing customer installation) thread will be made by contractor. 3. Airline shall be taken at floor level near engine & alternator coupling by using 2 Nos. 11/2" MS heavy duty Elbow & suitable length of hex nipple/ nipple (Nipple, Hex Nipple, elbow as required shall be 11/2" heavy duty MS material. 4. Followed by 11/2" MS heavy duty Union. 5. Followed by 11/2" MS heavy duty Nipple/ Hex Nipple. 6. Followed by 11/2" Brass heavy duty ball valve (zolloto or equivalent). 7. Followed by 11/2" MS pipe or equivalent mm size as per IS 1239 (Table 2 Medium duty) of suitable length, laid on floor reaching close to starting motor. 8. Followed by 11/2" MS heavy duty Elbow . 9. Followed by approx. 200 mm length nipple 11/2" MS heavy duty. 10. Followed by PRV (Pressure reducer Valve). 11. Followed by approx. 200 mm length nipple 11/2" MS heavy duty.

	12. Followed by 11/2” MS heavy duty Elbow 13. Followed by 11/2” MS heavy duty Hex Nipple 13. Followed by 11/2” MS heavy duty Union. 14. Followed by starting motor inlet hose (CAT part) 15. 1/2" Hex Nipple MS Heavy duty shall be welded at two Nos. 200 mm nipple (used in step 9 & 11 above) and also with elbow used in step 12 above. 16. The 1/2' Hex Nipple connected to elbow shall be followed by 1/2" heavy duty brass ball valve (zolloto or equivalent) followed by 1/2" MS Nozzle for pipe connection. 17. Both the 1/2' Hex Nipple connected to elbow shall be followed by 1/2" heavy duty SS Needle valve. 18. At outlet of SS valve (PRV Inlet side) 0-500 psi Pressure gauge (Heavy duty size 4", glycerin filled,) shall be provided. Any special tool & consumable like Teflon tape, Whole tight as required is in the scope of contractor and to be considered in their offer. 19. At outlet of SS valve (PRV outlet side) 0-150 psi Pressure gauge (Heavy duty size 4", glycerin filled,) shall be provided. 20. Pipeline/ Nipple etc. shall rest on heavy duty pipe mounting bracket. 21.Material for air line except M/s Caterpillar parts is in the scope of contractor and to be provided suit to assembly. Air pipeline, elbow, union, Nipple, Hex Nipple, Socket, ball valve, Needle valve, Air Pressure gauges, Pipe mounting bracket as required is in contractor's scope and shall be considered in their offer. Broad list of items envisaged for airline is provided in Annexure L. 22. All connection shall be leak proof with high degree of workmanship.
L4	Install water separator with suitable mounting bracket. Fabrication of bracket for water separator is in the scope of supplier. Broad list of items envisaged for airline is provided in Annexure L.
L5	Termination of fuel hoses: 1. Inlet line to water separator inlet. 2. Water separator outlet to fuel filter/ engine out let . 3. Engine outlet to diesel cooler inlet & 4, Diesel cooler outlet to return line. Replacement of hoses & termination is in the scope of contractor. Broad list of items envisaged for airline is provided in Annexure L . All connection shall be leak proof with high degree of workmanship.
L6	Two Nos. breather pipes to be installed on engine breather outlet through suitable clamps and neatly taken to trench where it will be terminated to 2" class A MS pipe with clamps. for taking fumes out at Power pack boundary. MS pipes for breather outlet and clamps to be provided suit to assembly, are in the scope of contractor. Broad list of items envisaged for airline is provided in Annexure L.

L7	Location of terminal box is to be decided in consultation with customer based on existing layout and cable length available. Discussed with customer and finalize location of terminal box
L8	Relocation of terminal box through weld cut and welding at decided location
L9	Fastening back 85 pin connector at engine end . Passing cable though suitable path, securing the same and termination at terminal box.
L10	Welding of base & top mounting plates at two end of RS angles- For 4 Nos. angles., as per stack assembly conditions.
L11	Take measurement of exhaust extension pipe, exhaust cover available space between reducer and roof. Exhaust cover to be gas cut and exhaust extension pipe shall be welded to it such that exhaust extension pipe matches with reducer outlet and it's height is adjusted such that it's weight is supported on roof and not comes over engine component (reducer/ turbocharger). The welded assembly of exhaust extension pipe & exhaust cover to be fastened at roof using hardware's.
L12	Careful removal of exhaust reducer cover . Pulling up bellow and fixing exhaust reducer with exhaust extension pipe. Take photograph displaying activity completion for record and submitting to BHEL.
L13	Installation of support structure for exhaust piping, Installation of exhaust piping & muffler (elbow, muffler, extension pipe, tail pipe etc. earlier removed for taking out alternator), Engaging fasteners and ensuring proper installation of muffler & Exhaust piping . this must be restored back to as in case of earlier Power Pack (expect for installation of tail pipe which will be replaced by piping & installation components to increase stack height to 7.7m as mentioned in next step) to the satisfaction of site in charge.
L14	Lifting stack height to 7.7m height (min) from ground level by installing following components after muffler 1. Elbow Assembly 2. Extension pipe- 2 No's, 3. End Elbow assembly. Gasket - 4 Nos. to be fabricated by contractor suit to assembly and to be considered in their offer. For supporting base mounting plate 4 Nos. shall be welded on acoustic enclosure, 4 Nos. RS angles shall be fastened on mounting plate, RS angles shall be used to support mounting of pipe mounting bracket. After assembly of stack (min 7.7 m) the assembly should be demonstrated to site in charge and got verified.
L15	Reinstalling coupling guard. Condition to be restored as in case of earlier Power Pack.
L16	Install back earthing strips and fasten them back to the alternator. Condition to be restored as in case of earlier Power Pack
L17	Removal of polythene sheet wrapping of engine & MDP panel.
L18	Placing the battery back to Power Pack at it's original location. Connection shall be done as per step H6.
M	**COMMISSIONING ACTIVITIES & COMMISSIONING SUPPORT(In supervision of Commissioning experts of Ultimate customer / BHEL/ BHEL subcontractor for control system commissioning and/ or customer/ Engine OEM for Engine):**
M1	Once again demonstration of alignment reading, endplay, air gap & Battery voltages to the satisfaction of respective experts)
M2	Connecting back twenty core control cable, actuator & MPU cables. Condition to be restored as original.
M3	Reconnecting Alternator Power cables. Condition to be restored as original.

M4	Reconnecting multipin cable to the engine. Condition to be restored as original.
M5	Reconnecting ECM. Condition to be restored as original.
M6	Reconnecting 24 VDC control battery cable for engine. Condition to be restored as original.
M7	Prerequisite for engine starting shall be checked by Contractor. This includes lube Oil level, coolant level, air pressure, battery Voltage etc.
M8	During commissioning of alternator controls the contractor's team shall be fully associated and provide manpower and incidental support as required during commissioning.
N	**QC CHECKS & COMPLETION:**
	Contractor is fully responsible for maintaining excellent aesthetics and finish. Scope of work includes, deburring of gusset plate, grinding of welding work, dent removal if any on alternator or acoustic enclosure , mounting, black coal tar paint over mounting structure, proper routing and tying of cabling etc. Contractor must take care of these issues since the beginning, any leftover job must be completed after completion of commissioning. paint etc. as required shall be procured locally as per contract terms.
O	**RECORDING OF MOM WITH ULTIMATE CUSTOMER : On completion of work MOM/ standard commissioning format shall be obtained from ultimate customer to this effect.**
P	**Special Test**
P1	Acoustic enclosure performance test
P2	Vibration test
P3	Back pressure test
P4	Temp rise test

ANNEXURE-H of NIT No. CXX/2019-20/06/PP/KKL

NIT No. CXX/2019-20/06/PP/KKL	**Dtd: 04-12-2019**

SUB: QUALIFYING CRITERIA & SPECIAL CONDITIONS

QUALIFYING CRITERIA (TECHNO-COMMERCIAL):

FINANCIAL:

AVERAGE ANNUAL FINANCIAL TURNOVER FOR LAST 3 YEARS UPTO 31ST MARCH 2019 (furnish documentary proof)	(*Mention Amount, which must be at least Rs. 12.25 Lakhs*) **(mandatory)**
EXPERIENCE OF HAVING SUCCESSFULLY COMPLETED SIMILAR (SIMILAR means job as defined in TECHNICAL Qualifying Criteria in next paragraph) OIL RIG R&U, E&C JOBS DURING THE LAST 7 YEARS UPTO 30TH NOV 2019 (furnish documentary proof)	(*Must be not less than Rs. 16.33 Lakhs each for 3 jobs* ***OR*** *Rs. 20.42 Lakhs each for 2 jobs* ***OR*** *Rs.32.67 Lakhs for 1 job*) **(mandatory)**

TECHNICAL:

MUST HAVE SUCCESSFULLY COMPLETED ALIGNMENT OF CAT 3512B ENGINE & OIL RIG ALTERNATORS/ REPLACEMENT OF D399/ CAT 3512B engine/ Erection of new 3512B Engine- (MINIMUM Qty: 2 Nos.) AT RIG SITE/ POWER PACK OEM WORKS IN LAST 7 YEARS as on 30TH NOV2019 (furnish documentary proof)	PO/ WO from OEM of Engine (or authorized dealer of OEM of engine) or PO/WO of alternator manufacturer/ BHEL/ DRILLING COMPANY & Proof of receipt of Payment/ MOM/ documentary proof duly signed by Purchaser (Party who has placed order) / Drilling Company (ultimate customer)/ BHEL as Proof of having successfully executed such PO/WO.

<u>SPECIAL CONDITIONS</u>:

1. It is not the intent to specify completely herein, all details for installation, alignment, commissioning & testing of Oil Rig Power pack & acoustic enclosure. any activity not explicitly mentioned in our specification but required for installation, alignment commissioning & testing of equipment as per prevailing sound engineering practices in drilling industry, ensuring safety of equipment & personnel, ergonomics, aesthetics and troubleshooting of new & existing equipment are deemed to be considered as part of contractor's scope. Procedure given in specification are Indicative. Prior to bidding, the bidder must carefully assess the system requirement and work involved for installation and alignment of Oil Rig Power pack and acoustic enclosure and its smooth integration with existing Power pack & working rig and intended usage.

2. Minor modifications like changing block location before permanent welding, relocation of terminal box, cable routing etc. are in the scope of work. Major modification, if any to the existing skid/base frame (if required) will be intimated to BHEL for suitable action. In such case no waiting charge is payable to contractor.

3. Approval or inspection by BHEL shall not absolve the contractor in manner from its responsibility of fulfilling requirements of this specification, meeting statutory norms, complying law of the land, ensuring safety of equipment and personnel, providing necessary clearances between electrical and fuel lines and adhering to sound engineering practices.

4. BHEL shall appraise the performance of the contractor during testing, commissioning and functioning of the system and any other work done by contractor and shall be entitled to reject any work which, is not in full accordance with their expectations BHEL reserves the right to even terminate the contract unilaterally if, in their judgment, there are enough rejections of work, delay or omissions.
5. Contractor's scope includes removal of existing items & reinstallation, including suit to assembly items to be supplied by contractors as required for replacement & re-commissioning of Power Pack & acoustic enclosure and demonstration to BHEL / ultimate customer (M/s ONGC) or their appointed expert/s to their satisfaction. Signing of MOM with BHEL / ultimate customer (M/s ONGC) in a manner acceptable to BHEL shall be considered as completion of work for particular Acoustic Enclosure & power pack.
6. Contractor shall update BHEL on daily basis regarding the work progress made and consult further course of action. Contractor shall nominate a person for liaison with BHEL who will visit CEE/ CXX BHEL Bhopal on daily basis for submission of relevant information from site & coordination.
7. The activities are expected to be completed tentatively in FY 19-20 & 20-21. it is made clear that schedule of providing Power Pack/ alternator for activities covered in this NIT depends on availability of shut-down from customer side, over which BHEL does not have any control. Payment shall be made unit-wise on completion of activity for individual Acoustic Enclosure & Power pack unit. BHEL shall not have any liability towards contractor in case any Power pack is not made available to the contractor, due to lack of readiness by ultimate customer (M/s ONGC) or any other reason not foreseeable at present.
8. Bidder shall provide unit price for removal of old alternator, engine, radiator & accessories installation, alignment & commissioning of alternator, engine, radiator & accessories in new power pack housing with acoustic enclosure with 7.7 (approx.) stack height at M/s ONGC Rig/ yard site. Power Pack & Acoustic enclosure may be provided in batches and it is not necessary that all Power Pack & Acoustic enclosure shall be provided in one go.
9. BHEL shall provide sundry installation item as required to contractor at the time of deputation. Transportation of the same to rig site is contractor's responsibility. Porter charges for the same may be claimed as per provision of Annex. G.
10. BHEL may short close the contract without assigning any reason.
11. The contractor shall defend of hold the BHEL, M/s ONGC or person & agencies working on their behalf harmless from all actions, claims, suits and demands made, against either or both or any or all of them in respect of injuries to or death of any person including employees of the contractor or non-compliance of any statutory requirement.
12. Train/ air/ road travel fare, travelling expenses lodging & boarding and transportation facilities of the person engaged in installation & commissioning job and liaison with BHEL or any other purpose is the sole responsibilities of the contractor. BHEL shall not be responsible for providing these facilities.
13. All commissioning /pre-commissioning data and photographs as mentioned in NIT including alignment readings, air gap readings, end play readings etc. has to be documented & forwarded to BHEL for record.

"BHEL shall recover the amount of compensation paid to victim(s) by BHEL towards loss of life / permanent disability due to an accident which is attributable to the negligence of contractor, agency or firm or any of its employees as detailed below*.*

a) Victim: Any person who suffers permanent disablement or dies in an accident as defined below.

*b) Accident : Any death or permanent disability resulting solely and directly from any unintended and unforeseen injurious occurrence caused during the manufacturing/ operation and works incidental thereto at BHEL factories! offices and precincts thereof, project execution, erection and commissioning , services, repairs and maintenance, trouble shooting, serving, overhaul, renovation and retrofitting, trial operation, performance guarantee testing undertaken by the company or during any works **/** during working at BHEL Units! Offices! townships and premises! Project Sites.*

c) Compensation in respect of each of the victims:

*(i) In the event of death or **permanent disability** resulting from **Loss of both limbs:** Rs. 10,00,0001- (Rs. Ten Lakh)*

*(ii) In the event of **other permanent disability:** Rs. 7,00,000/- (Rs. Seven Lakh)*

d) Permanent Disablement: A disablement that is classified as a permanent total disablement under the proviso to Section 2 (I) of the Employee's Compensation Act, 1923."

1. Wherever bidders are required to supply services at project site Party has to submit GST registration no. of the State in which project site is located along with copy of registration certificate at the time of submission of Bid. In case the same is not available at the time of submission of bid, the contractor has to give an undertaking that the same will be arranged before award of work order.

2. HSN Code/SAC, rate of tax under GST and applicable GST (IGST, CGST/SGST/UTGST) and GSTIN shall be clearly mentioned by the Bidder.

3. GST portion of the **invoice shall be released only upon:-**

   2.2.1 All invoices raised by contractors/vendors must be GST compliant Tax invoices as per GST invoice rules.
   2.2.2 Contractor declaring such invoice in his GSTR-1 or any modified return as notified by government
   2.2.3 Receipt of goods/services and Tax Invoice by BHEL and
   2.2.4 Confirmation of payment of GST thereon by contractor on GSTN portal
   2.2.5 Alternatively, Contractor has to submit BG of appropriate value which shall be valid at least one month after the confirmation of date of payment of GST by contractor on GSTN portal and receipt of Tax invoice and receipt of services, whichever is later. Contractor has to give an undertaking in this regard.
   2.2.6 Contractor has to give an undertaking to BHEL that they have declared invoice in his return and paying GST within timeline prescribed for availing ITC by BHEL. Payment to Contractor for GST portion will be released only after completion of above activity and on availment of ITC by BHEL.

4. In case GST credit is delayed/denied to BHEL due to **non/delayed receipt of services/goods and /or tax invoice** or expiry of the timeline prescribed in GST Law for availing such ITC, or any other reasons not attributable to BHEL, GST amount shall be recoverable from the contractor along with interest levied/ leviable on BHEL

Reverse Charge under GST

5A. In respect of services, reverse charge liability shall arise at the earliest of date of payment to service provider or 60 days from the date of issue of invoice by service provider. Contractor has to submit bill for payment within 30days from the date of invoice. Any interest or penalty implications attributable to the contractor shall be recovered from them.

5B. Any GST liability arising on BHEL under reverse charge before actual receipt of goods and/or invoice thereof would be subject to recovery of interest leviable for the period between the date of such liability and actual date of eligibility of ITC based on receipt of goods, receipt of invoices and other condition specified in GST Law.

Penalty

6. Penalty if chargeable from suppliers/contractors as per NIT, applicable GST will be charged in addition to the same.

Tax Deduction at sources

7. TDS as per extent provisions of the GST Law shall be deducted from supplier/contractor bill.

ARBITRATION & LAW

1. All disputes between the parties to the Contract arising out of or in relation to the Contract, other than those for which the decision of the Engineer in the Contract or any other person is expressed to be final and conclusive, shall after written notice by either party to the contract to the other party, be referred to sole arbitration of the General Manager or his nominee. The Arbitration shall be conducted in accordance with the provisions of the Indian Arbitration and Reconciliation Act, 1996.

2 The parties to the Contract understand and agree that there will be no objection that the General Manager or the person nominated as arbitrator had earlier in his official capacity directly or indirectly dealt with the matters to which the Contract relates or that in the course of his official duties had expressed views on all or any of the matters in dispute or difference. The award of the arbitrator shall be final and binding on the parties to this contract.

3 The arbitration proceedings shall be held at Bhopal.

4 MODEL CONCILIATION CLAUSE FOR CONDUCTING CONCILIATION PROCEEDINGS UNDER THE BHEL CONCILIATION SCHEME, 2018

The Parties agree that if at any time (whether before, during or after the arbitral or judicial proceedings), any Disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the agreement, contract or the Memorandum of Understanding (delete whichever is inapplicable), which the Parties are unable to settle mutually), arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators. Notes: 1. No serving or a retired employee of BHEL/Administrative Ministry of BHEL shall be included in the BHEL Panel of Conciliators. 2. Any other person(s) can be appointed as Conciliator(s) who is/are mutually agreeable to both the parties from outside the BHEL Panel of Conciliators. The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof.

Annexure-L

NIT No. CXX/2019-20/06/PP/KKL

AIR LINE		
SL.NO.	**DESCRIPTION**	**QTY.**
1	MS C CLASS 1.5''x3000mm pipe line	2 NOS
2	MS C CLASS 1.5''x4000mm pipe line	1 NOS
3	MS C CLASS 1.5''x1250mm pipe line	1 NOS
4	BALL VALVE 1.5'' (BRASS)	1 NOS
5	BALL VALVE 0.5'' (BRASS)	1 NOS
6	MS C CLASS 1.5''x200mm NIPPLE	2 NOS
7	MS HEX NIPPLE 0.5''	3 NOS
8	MS HEAVY DUTY 1.5'' ELBOW	5 NOS
9	MS C CLASS 1.5''x100mm NIPPLE	2 NOS
10	MS HEAVY DUTY 1.5'' UNION	1 NOS
11	PRESSURE GUAGE 4'' GLYCERIN FILLED 0 TO 150PSI	1 NOS
12	PRESSURE GUAGE 4'' GLYCERIN FILLED 0 TO 500PSI	1 NOS
13	NEEDLE VALVE SS 304 0.5''	2 NOS
14	MS BLOCK FOR 1.5'' pipe line	4 NOS
15	C CHANNEL 150x200 FOR 1.5'' PIPE LINE	2 NOS
16	U CLAMP FOR 1.5'' pipe line	4 NOS
17	MS C CLASS/ Heavy Duty T (JOINT)2''X 1.5" (2" at main line 2 sides, 1.5 " at branch line for delivery)	1 NOS
18	MS HEX NOZZLE 0.5''	1 NOS
19	MS HEAVY DUTY 2'' ELBOW2	2 NOS
20	MS C CLASS 2''X3000mm pipe line	2 NOS
21	MS C CLASS 3/4''X3000mm pipe line	2 NOS
22	MS HEX NIPPLE 3/4''	4 NOS
23	BALL VALVE 3/4'' (BRASS)	1 NOS
24	NRV VALVE 3/4'' (BRASS)	1 NOS
25	MS UNION 3/4''	2 NOS
26	MS ELBOW 3/4''	2 NOS
27	MS SOCKET 3/4''	2 NOS
28	HOSE PIPE 3/4''x600 (PARKER) 1250PSI	2 NOS
29	MS C CHANNEL 150x200mm FOR 2'' PIPE LINE	4 NOS
30	MS BLOCK FOR 3/4 PIPE LINE	4 NOS
31	HOSE PIPE 3/4''x1500 (PARKER) 1250PSI	2 NOS