RASHTRIYA ISPAT NIGAM LIMITED
VISAKHAPATNAM STEEL PLANT
VISAKHAPATNAM-530 031

MATERIALS MANAGEMENT DEPARTMENT
(PURCHASE WING)
BLOCK-A, MAIN ADMINISTRATION BUILDING
VISAKHAPATNAM STEEL PLANT
VISAKHAPATNAM-530 031
ANDHRA PRADESH, INDIA

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GLOBAL TENDER NOTIFICATION

Invitation to Tender No.Pur.1.90.0830/0077 dt. 14.05.2011.

Sealed tenders are invited for supply of **Hydraulics Mudguns & Drilling Machines** for BF-I as per specifications

Last date & time for issue of Tender Documents : **02.07.2011 till 1700 HRS (IST)**
Last date & time for receipt of Tenders : **04.07.2011 by 1030 HRS (IST)**

Tender document is available on our Website: **www.vizagsteel.com** for free down-load.

- GENERAL MANAGER (MM) I/C

RASHTRIYA ISPAT NIGAM LIMITED
VISAKHAPATNAM STEEL PLANT
(A Government of India Enterprise)

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Invitation for Tender No. **Pur. 1.90.0830/0077 dt.14.05. 2011** for supply of Hydraulic Mudgun & Drilling Machine

RASHTRIYA ISPAT NIGAM LIMITED
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GLOBAL TENDER NOTICE FOR SUPPLY OF HYDRAULIC MUDGUN & DRILLING MACHINE FOR BF- I AS PER SPECIFICATIONS.

NOTICE OF INVITATION TO TENDER NO. Pur. 1.90.0830/0077 dt. 14.05.2011

1.0 Rashtriya Ispat Nigam Limited (RINL), Visakhapatnam Steel Plant (VSP), hereinafter referred to as PURCHASER, hereby invites SEALED BIDS IN THREE PARTS: **Part I (PRE-QUALIFICATION BID)** , **Part II (TECHNO - COMMERCIAL BID) and Part III (PRICE BID)** in separate envelopes) for supply of Hydraulic Mudgun & Drilling Machine conforming to Technical specifications as per **Annexure -I** of tender documents. **Offer should be submitted in THREE sets.**

Tenderer(s) should note that supervision of Erection, Testing & commissioning, demonstration of performance of Hydraulic Mudgun & Drilling Machine fall in the scope of supplier. (For detailed scope, refer ANNEXURE-I)

2.0 **ITEM & QUANTITY**: The PURCHASER intends to purchase 1 Set of Hydraulic Mudgun & Drilling Machine for Blast Furnace -1 conforming to Technical specifications as per **Annexure -I** of tender documents.

3.0 **DELIVERY**: Our requirement for delivery of machine 31.01.2012. Tenderer (s) should offer their best delivery schedule (time).

4.0 Tenderers should submit their tenders in Three parts:

Part I (PRE-QUALIFICATION BID) ,
Part II (TECHNO - COMMERCIAL BID),
Part III (PRICE BID)

in separate sealed envelopes clearly indicating Part I (Pre-Qualification Bid , Part II: Techno- Commercial Bid and Part III : Price Bid on the respective envelopes. ITT No. & date, Due date of tender opening as well as Name & Address of Tenderer must be mentioned on each cover / envelopes without fail, for identification of Parts.

5.0 A Proforma as given in **Annexure -III** of the Tender Documents is prescribed for Part-III (**PRICE BID)**. All the tenderers are advised to submit their **PRICE BID** in the prescribed proforma only. **PRICE BID** should contain no caveat conditions. Offers to the contrary will stand the risk of getting rejected.

5.1 The tendered quantity shall be procured from the overall lowest technically and commercially acceptable tenderer. RINL shall have the option of resorting to reverse e-auction (e- bidding or online bidding). All technically and commercially acceptable bidders would be required to participate in the reverse e-auction. Details with regard to reverse e-auction are mentioned at para 5.2 below. In the e-auction the bidders outside India would be required to quote prices only on the basis of CFR, Chennai or Visakhapatnam Seaport to arrive Landed Net of Cenvat Price (LNCP) and bidders within India are required to quote their prices (LNCP) on FOR VSP Stores basis .

However, the prices shall be computed on FOR VSP Stores basis for ascertaining ranking.

5.2 ***The bidders shall register themselves for participating in reverse e-auction and furnish USER ID details in the Techno- Commercial bid.***

All the tenderers would have to generate user ID & Password by following the following steps

• Go to www.vizagsteel.com
• Click on "auctions" link.
• Click on "Purchase". "Purchase reverse auction log in" window will appear.
• Click on "new user!!! Click to register" for generating user ID and fixing corresponding password.

5.3 Definition of key terms for reverse auction and RINL's reverse e-auction user manual is uploaded on our web site www.vizagsteel.com under auctions menu and MM reverse auctions sub menu. TA & CA tenderers would be authorized to quote their LNCP prices on only e-reverse auction engine on a fixed time and date. After the completion of the reverse e-auction at the end of price delivery process, the purchase order would be placed in the normal mode.

***In case of reverse e-auction, the overseas bidders would be required to quote prices only on the basis of Landed Net of Cenvat Price (LNCP) which is arrived as follows*:**

A	CFR Price (GBP/EURO/USD/YEN)	1
B	Ass. Value (1% on CFR)	1.01
C	Customs Duty @ 7.5% (B * 7.5%)	0.0757500
D	CVD @ 10.3% [(B + C) * 10.3%]	0.1118323
E	Ed. Cess @ 3% [(C + D)* 3%]	0.0056275
F	Addl. CVD @ 4% [(B + C + D + E)* 4%	0.0481284
G	Landed Cost (A + C + D + E + F)	1.2413381
H	LNCP (G - D - F)	1.0813775
I	LNCP in INR	H*FE Rate

NOTE: LNCP in INR = 1.0813775 * FE Rate

NOTES:

1) The Foreign Exchange Conversion Rate (SBI card rates) to be used for calculation of LNCP shall be informed to you later.

2) Prices in e-auction to be quoted on CFR, Chennai/ Visakhapatnam basis only to arrive LNCP. However, the LNCP shall be computed by loading the insurance at actuals, and road transport charge from disport (as given in the techno-commercial bid) to VSP Stores as well as loading on account of deviations to NIT terms & conditions. In other words, the lowest bid in e-reverse auction is not necessarily ranked L1.

3) Indigenous tenderer(s) may see the modality for arriving LNCP in our official website **www.vizagsteel.com . (Steps to be followed : MM >> Materials Management tenders >> detailed terms & conditions of ITT).**

Subsequent to carrying out the reverse e-auction, the sealed price bids of all the TA & CA tenderers, irrespective of either they have participated in the reverse e-auction or not, shall be opened within a short duration. Based on the prices so received through revesre e-auction and the sealed price bids received in the physical mode of tender, a composite comparative statement shall be made considering the lower of prices (i.e sealed price bid prices and reverse e-auction prices) of all the tenderers. Placement of orders shall be considered on the L1 price(LNCP) so arrived.

5.4 RINL will inform the technically and commercially acceptable (TA & CA) tenderers of the date and time of reverse e-auction for participation in the process by them.

6.0 **BID MONEY/ BID BOND**:

6.1 Each tender shall be considered only if Bid money in US Dollars / Euros or in Indian Rupees by means of either a Demand Draft/ Cheque (both subject to realization) /Electronic Mode drawn on any Scheduled Bank and payable to Rashtriya Ispat Nigam Ltd. **at Visakhapatnam** or a Bid Bond in the form of Bank Guarantee (as per the prescribed proforma at **Annexure -V** of the Tender Documents) established in favour of Rashtriya Ispat Nigam Limited, Visakhapatnam Steel Plant, Visakhapatnam for an amount INR **37,50,000/-** (Indian Rupees - Thirty Seven Lakhs and Fifty Thousand only) or **US$ 83,350** (US Dollars Eighty Three Thousand Three Hundres and Fifty only) or **EURO 58,600** (EURO Fifty Eight Thousand and Six Hundreds only) is submitted along with Part I (Pre-qualification Bid) of tender or prior to submission of tender to VSP. No change in the prescribed proforma of Bank Guarantee for Bid Bond is acceptable. Further, the tenderer is required to submit the duly filled in CHECK LIST for Bank Guarantee as at **Annexure- V(A)** along with tender.

6.2 The Bid Bond as mentioned above should be established either in the form of Bank Guarantee issued by any of the Nationalized Bank (whether situated at Visakhapatnam or outstation but within India) **with a clause to enforce the same on their local branch at Visakhapatnam** or by way of Account payee Demand Draft payable at Visakhapatnam in favour of Rashtriya Ispat Nigam Limited. The Bank Guarantees from other Scheduled Banks (other than Nationalised Banks) should however be from the branch located in Visakhapatnam. The Bond established through Co-operative Banks is not acceptable. The Bid Bond should be valid for minimum 180 (One hundred and Eighty) days from the date of tender opening. ***Tenders received without the Bid Bond / Bid Money of requisite value will summarily be rejected.*** **(*FATAL*)** Bid money, if paid in cash, shall not accrue interest.

Bid Bond / Bid Money submitted shall be returned to the unsuccessful tenderers on finalization of the tender and clearance from Nodal Officer of Integrity Pact. However, Bid Bond / Bid Money submitted by the successful tenderer shall be returned to them on finalization of the tender and upon submission of Performance Guarantee Bond and clearance from Nodal Officer of Integrity Pact.

7.0 Tenders will be accepted upto **1030 Hrs. (IST) on 04.07.2011.** Pre-qualification Criteria Bid (Part I) will be opened immediately thereafter in the presence of the Tenderers or authorised Representatives of the tenderers, who may choose to be present.

The date and time of Techno - Commercial Bid (Part II) opening shall be intimated separately to those Tenderers who have been qualified in Pre-qualification Criteria. Techno- Commercial Bid (Part II) of those Tenderers who have been qualified in Pre-qualification Criteria shall be opened in the presence of the Tenderers or Authorised Representatives of the Tenderers who may choose to be present.

The date and time of PRICE Bid (Part III) opening shall be intimated separately to Technically and Commercially acceptable tenderers. Price Bids (Part-III) of those Tenderers who have been Techno-Commercially accepted shall be opened in the presence of the Tenderers or Authorised Representatives of the Tenderers who may choose to be present.

8.0 **TENDER DOCUMENTS**: Tender document is available on VSP website and the same can be downloaded from website: **www.vizagsteel.com.** Tender documents can also be obtained "Free of Charge" from Asst. General Manager (MM), Purchase Department, Block - A, 3rd Floor, Administrative Building, Visakhapatnam Steel Plant, Visakhapatnam - 530 031, India. The last date for issue of Tender documents is till **1700 Hrs on 02.07.2011.**

9.0 Tenders submitted against this tender shall not be returned in case the tender opening date is extended /postponed. Tenderers desirous to modify their offer / terms may submit their revised /supplementary offer(s) within the extended TOD, by clearly stating the extent of updation done to their original offer and the order of prevalence of revised offer vis-à-vis original offer. The employer reserves the right to open the original offer along with revised offer(s).

10.0 Not withstanding anything specified in this Tender Documents, Rashtriya Ispat Nigam Limited, in its sole discretion and without having to assign any reason reserves to itself the rights:

a) To accept or reject the lowest tender or any other tender or all the tenders;
b) To accept any tender in full or in part;
c) To reject the offers not conforming to the tender terms and
d) To give Purchase preference to Central Public Sector Enterprises (CPSE) as per Government of India guidelines.

ASST. GENERAL MANAGER (MM)

ANNEXURE - I

RASHTRIYA ISPAT NIGAM LIMITED
VISAKHAPATNAM STEEL PLANT
VISAKHAPATNAM

SPECIFICATION NO. VSP-BF.1-CR-PRI-002

for

HYDRAULIC MUDGUN AND DRILLING MACHINE OF BLAST FURNACE -1

PART – A

ELIGIBILITY CRITERIA

FEBRUARY 2011

M.N. DASTUR & COMPANY (P) LIMITED
Consulting Engineers
P-17, Mission Row Extension
Kolkata 700 013

PART – A

ELIGIBILITY CRITERIA FOR HYDRAULIC MUDGUN AND DRILLING MACHINE OF BLAST FURNACE-1

The Tenderer shall meet the following eligibility criteria and fill "YES" or "NO" in the box provided against each point:

1. The Tenderer shall possess the proven technology, know-how, design & engineering capability, experience in supply and installation of minimum two (2) sets of hydraulic operated mudgun and drilling machines with hydraulic reversible hammer for the Blast Furnace(s) of 3000 cum (minimum) size operating with a top pressure of 2.5 bar(g).

   In case of Consortium, the leader of the consortium shall possess proven technology, know-how, design & engineering capability, experience in supply. The Consortium leader shall have the overall responsibility for successful completion of the project.

   The Tenderer shall submit a list of reference Blast Furnaces for which the mudgun and drilling machine have been supplied by him. Mudgun and drilling machine of the reference Blast Furnace(s) shall be in operation for a minimum of five (5) years ending on 31.08.2010. Tenderer shall also submit the performance details of equipment for the above plants, certified by the owners/clients.

2. The Tenderer shall have average annual turnover of Rs.13.5 crores or equivalent US Dollars/Euro during the last three (3) consecutive financial years i.e. 2007-08 to 2009-10.

   The Tenderer shall submit certified audited annual financial reports for last three (3) consecutive financial years in English.

   In case of Consortium offer, one of its members or combination of members must meet requirements of points 1 & 2 above and furnish a binding copy of their Consortium Agreement.

Notes:

1. In case the answer is "YES" for the above points, the same shall be supported with valid documents. In the absence of valid documents in support of above points, the offer shall be rejected.

2. In case the answer is "NO" against any of the above points, the offer shall be rejected.

3. In addition the Tenderer shall furnish the information for similar work executed as per the following Table (including Consrtium members/collaboration):

Sl. No	Description	Customer-1	Customer-2	Customer-3	Customer-4
1.	Name of the Customer				
2.	Address & contact person				
3.	Telephone No., Fax No. and E-mail ID				
4.	a) Brief description of the work				
	b) Details of Equipment supplied				
	c) Date of installation				
	d) Details of Furnace design/operating parameters				
5.	Value of work order				
6.	Contractual time of completion				
7.	Actual time of completion				
8.	Reasons for delay, if any				

RASHTRIYA ISPAT NIGAM LIMITED
VISAKHAPATNAM STEEL PLANT
VISAKHAPATNAM

SPECIFICATION NO. VSP-BF.1-CR-PRI-002

for

HYDRAULIC MUDGUN AND DRILLING MACHINE OF BLAST FURNACE-1

TECHNICAL SPECIFICATION

PART – C, VOLUME - II

FEBRUARY 2011

M.N. DASTUR & COMPANY (P) LIMITED
Consulting Engineers
P-17, Mission Row Extension
Kolkata 700 013

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SPECIFICATION

for

HYDRAULIC MUDGUN AND DRILLING MACHINE OF BLAST FURNACE-1

for

VISAKHAPATNAM STEEL PLANT

1.0 INTRODUCTION

1.1 Visakhapatnam Steel Plant (VSP) owned by Rashtriya Ispat Nigam Limited (RINL) is producing about 4.0 million tons of hot metal per annum (Mtpa) from their existing two blast furnaces. VSP is operating the blast furnace-1 'Godavari' installed at Visakhapatnam since March 1990. VSP intends to carry out Category-I capital repair of blast furnace-1 which includes upgradation of blast furnace and improvements in energy efficiency & working environment. The furnace useful volume is being increased to 3800 cum from 3200 cum. As a part of this Category-I capital repair, VSP intends to replace four nos. electrically operated mud gun and drilling machine with new higher capacity hydraulically operated cast house equipment.

1.2 This specification covers the design and engineering, manufacture, supply, supervision of erection commissioning and demonstration of performance guarantee tests of four sets of hydraulically operated mud gun and drilling machine along with the hydraulic system and accessories at site as described subsequently.

1.3 All units mentioned in this specification are in metric system.

1.4 All the work shall be carried out as per the scope matrix enclosed in Annexure – 1.

1.5 This specification forms a part of tender documents and shall be read in conjunction with the Instructions to Tenderer and General Conditions of Contract.

2.0 STANDARDS

2.1 The components of all equipment shall be designed, assembled and tested in accordance with the standards of the Standard Institution, Institution of Electrical Engineers and Manufacturer's Association of the country where they are manufactured. The equipment and component parts shall conform to the relevant standards published by the Bureau of Indian Standards Institution and the relevant Interplant Standards for the Steel Industries (IPSS) wherever available so that specific aspects under Indian conditions are taken care of. Where suitable Indian Standards are not available, other International Standards such as BS, ASTM, ANSI, ASME, AISI, DIN, GOST may be adopted with prior approval of the Purchaser.

2.2 All items of equipment shall comply with the regulations and stipulations of the Inspectorate of Factories and other applicable statutory bodies of Government of India and Andhra Pradesh wherever applicable. When required by regulations the

successful tenderer shall have to obtain the necessary approval from statutory authorities and other concerned agencies. All costs on this account shall be borne by the successful tenderer.

2.3 The electrical equipment shall also conform to the latest Indian Electricity Rules as regards safety, earthing and other essential provisions specified therein for installation and operation of electrical equipment and plants.

2.4 In addition, all work shall confirm the General specifications which form a part of the tender documents as per the given list:

PAINTING		
1.	VSP- 6.3/GS/P-01	Painting
MECHANICAL		
2.	VSP- 6.3/GS-M-01	Pipework
3.	VSP- 6.3/GS-M-02	Lubrication systems
4.	VSP- 6.3/GS-M-03	Hydraulic power systems
ELECTRICAL/INSTRUMENTATION		
5.	VSP- 6.3/GS-E-05	AC motors and controls
6.	VSP- 6.3/GS-E-06	Power and lighting distribution boards and miscellaneous electrical equipment
7.	VSP- 6.3/GS-E-07	Selection of electrical equipment, installation, testing and commissioning
8.	VSP- 6.3/GS-I-01	Instrumentation and control system
9.	VSP- 6.3/GS-I-02	Basic (Level-1) Automation System
INSPECTION		
10.	VSP- 6.3/GS-IN-01	Inspection and testing requirement for plant & equipment at manufacturer's premises

For General specifications , refer our official website: www.vizagsteel.com
(steps to be followed : Tenders >> Project contracts >>General specifications)

2.5 The tenderer shall study the General Specifications for maintaining uniformity in entire plant and confirm the acceptance of the same in the offer. In case any deviation is considered by the tenderer, the same shall be clearly indicated in the tender. Wherever, for the specific technical requirement, technical parameters described in this specification are not in uniformity with those mentioned in General specifications, this technical specification will prevail.

3.0 OTHER REQUIREMENTS

3.1 Standardisation in design and construction of equipment and system intended for identical duties shall be preferred. All like parts of similar equipment are to be interchangeable.

3.2 All working parts, as far as possible, are to be arranged for convenience of operation, inspection, lubrication and ease of replacement with minimum downtime. All like parts on equipment furnished, or on duplicate equipment furnished, or on duplicate equipment are to be interchangeable.

3.3 Workmanship and materials shall be of good quality suitable for the purpose intended and in accordance with the highest standards and practices for equipment of the class covered by the specification.

3.4 Name Plate

3.4.1 Each equipment shall be provided with a name plate installed at a convenient location indicating equipment number, capacity, other operating parameters etc.

3.5 Equipment Numbering System

3.5.1 The equipment numbering system will be finalized during the tender discussion considering the existing numbering system.

3.6 Safety

3.6.1 All design must comply with latest national / international standards / practices pertaining to safety, health and environment. The equipment shall be complete with approved safety devices wherever a potential hazard to plant and personnel exists. Special care shall be taken to protect enclosed electrical equipment from entry of rats, lizards and other creeping reptiles which may cause electrical short circuit inside live equipment. All safety requirement, sealing and isolation system shall be provided by the tenderer.

3.6.2 All correspondence, data, drawings, documents etc shall be in English language and all technical data shall be in MKS units.

4.0 INFORMATION ON PLANT SITE

4.1 Location

The Steel Plant is situated in Visakhapatnam district in the state of Andhra Pradesh. The site is situated South of National Highway No. 5 and the East Coast Railway line between Visakhapatnam and Chennai at an altitude of 10.5M above mean sea level (MSL). The plant site is located at latitude of 17037' N and longitude of 83012' E.

4.2 Climate of Visakhapatnam

The climatological data in vicinity of the site are as follows:

Rainfall		
Highest monthly	..	606 mm
Highest daily	..	370 mm
Highest recorded temperature	..	40.5 ^{0}C
Lowest recorded temperature	..	16.5 ^{0}C
Relative humidity	..	4% (min.) to 100% (max.)

Wind velocity	..	35.2 Kmph (highest monthly mean wind speed for 24 hr.)

4.3 **Railways**

The nearest Railway station is Duvvada on the Visakhapatnam-Chennai line about 10 km from the plant and the Visakhapatnam railway station is about 30 km from the plant.

4.4 **Roads**

The National Highway No. 5 is about 5 Km away from the plant.

4.5 **Sea Port**

The nearest sea port is at Visakhapatnam which is about 16 km from the plant site. A new port at Gangavaram is under development and is adjacent to the north-east boundary of the plant.

4.6 **Air Port**

The nearest airport is at Visakhapatnam which is about 12 km from the plant.

4.7 **Communication**

Postal and other telecommunication facilities are well established in Visakhapatnam.

4.8 **UTILITIES, SERVICES BATTERY LIMIT**

4.8.1 Industrial water will be available tentatively at 3-4 kg/cm^2

4.8.2 Soft water will be available tentatively at 6-7 kg/cm^2

4.8.3 General purpose industrial grade compressed air will be available at 4 kg/cm2

4.8.4 Nitrogen will be available at 6-8 kg/cm2

4.8.5 Steam will be available at 250-300 deg centigrade at 10-12 ata.

4.8.6 Two (2) nos. circular cranes of 20/5T+5 capacities each are available in cast house for handling purpose

5.0 SCOPE OF WORK

5.1 **General**

5.1.1 The scope of work includes complete design and engineering, preparation & submission of drawings, manufacture, supply of equipment, assembly of equipment, shop testing, shop painting, packing, delivery, expert supervision during erection and commissioning, carrying out performance guarantee tests inclusive of materials and consumables of 1 set of cast house equipment consisting of 4 nos. of hydraulically operated mud guns, 4 nos. of hydraulically operated drilling machines with hydraulic reverse hammer and 2 nos. of hydraulic stations with all connected systems as per specification.

5.1.2 Tenderer scope shall also include supply of the followings:

- Hydraulic units alongwith associated electrics complete with piping, pipe fittings and pipe support.

- Electric equipment, control/automation equipment and its associated wiring, communication bus cable and automation hardware for Hydraulic mudgun and drilling machines.

- Foundation frames with nut, bolts, washers etc.

5.1.3 All equipment shall be complete in all respects and any item not covered specifically but essential for proper design, installation and operation shall be included by the tenderer.

5.1.4 The tenderer shall study the specification and satisfy himself thoroughly regarding the workability of the equipment and shall take full responsibility for guaranteed operation of the equipment as regards output, performance and smooth reliable working with the plant equipment. If the tenderer feels that any design data or technical requirement of the equipment described hereafter are in his opinion unsuitable, he shall clearly indicate the same.

5.1.5 Supervision of erection of all the equipment including MCC, control desks, Local Control stations, local control panels, hydraulics and associated electrics, alarming systems and related equipment are in the scope of tenderer, for which necessary details along with schedule of erection, category wise deployment of supervisory personnel during erection, etc, are to be submitted.

5.1.6 It is emphasised that tenderer should visit the site and convince himself of the site conditions, condition of equipment and surrounding infrastructural support available before submission of his offer**.**

5.2 **Design and engineering (imported and indigenous)**

5.2.1 Tenderer shall provide drawings and documents for the equipment and associated electrics covered under the scope of work of the tenderer including GA, assembly, P&I diagrams, SLDs, block diagrams, hydraulic & lubrication pipeline routing, flow diagrams, civil assignment drawings & load data, control philosophy, functional description, Instrument datasheets, automation system drawings, test certificates, engineering and installation drawings etc.

5.2.2 Preparation and submission of all manuals including operating and maintenance included in the engineering services.

5.2.3 Successful tenderer shall also provide the civil assign drawings/load data for the mud gun and drilling machine foundation and MCC/Control Desk / Local control panels etc as required.

5.2.4 All erection drawings/instructions/manuals

5.2.5 List of spares and manufacturing drawings of fast wearing parts/items.

5.2.6 Tenderer to provide a detailed schedule of submission of drawings and documents.

5.2.7 Tenderer shall provide summary specification for equipment supplied.

5.3 **Supply of plant and equipment** (**imported and indigenous**)

5.3.1 All items shall be complete with necessary instrument system auxiliary, accessories, safety items etc.

5.3.2 Commissioning spares, special tools, tackles, foundation bolts, nuts & bolts with washers, embedments, inserts, anchorage, initial fill of oils, grease and lubricants.

5.4 **Supervision, Testing and Commissioning**

5.4.1 Tenderer is required to quote for expert supervision, testing and commissioning of the item as per scope of work. Shipping with adequate and suitable packing, transportation, loading, unloading, storage at site are in scope of tenderer. The erection, testing, commissioning and PG test shall be carried out under expert supervision and overall responsibility shall be on the tenderer.

5.4.2 Tenderer is required to include foreign expert's supervision for detailed engineering and manufacturing to be carried out in India.

5.4.3 Painting of the equipment is in the scope of tenderer. All equipment shall be shop painted and touch up painting shall be done after erection.

5.4.4 Compliance of safety norms and practices

5.5 Performance guarantee test shall be as per Part D, Performance Guarantee.

6.0 INFORMATION TO BE FURNISHED WITH THE OFFER

6.1 Tenderer shall submit their offer, in line with this specification, complete in all respect including all technical details, drawings, sketches, design parameters, etc which are necessary for providing clarity of the offered system / items. The general details to be provided in the offer are listed below.

6.2 In case of consortium, tenderer shall submit the scope matrix indicating division of scope of work among the consortium members.

6.3 General description of the equipment along with detailed flow sheet, plan and section of each unit to enable the Purchaser to have a proper understanding of the process offered for the new units.

6.4 Complete motor list for new unit.

6.5 Process parameters for the circulating process and service fluids, consumption of utilities, electric power and other media for the unit.

6.6 P&I diagram for each section and list and type of instruments.

6.7 Automation system configuration diagram

6.8 Makes of all bought-out items shall be indicated.

6.9 Reference list of similar experience.

6.10 List of imported equipment/components.

6.11 Implementation/delivery schedule

6.12 The tenderer shall also submit the information as called for in the enclosed questionnaire duly filled in.

6.13 Proposed organization and execution plan

6.14 Furnish the measures taken for fulfilling safety requirements and statutory regulations of concerned authorities.

6.15 Tenderer shall indicate the total power requirement for the equipment under his scope of work.

7.0 DEVIATION AND EXCLUSION

Generally the tenderer shall submit his offer in line with the tender specification. However, in case of any necessary deviation/exclusion, the same shall be indicated in a separate list with adequate reasons. Any deviation/exclusion not specifically mentioned in this list will not be considered.

8.0 WORK BY OTHERS

8.1 The following work will be executed by the Purchaser and are excluded from tenderer's scope of work:

8.1.1 Reference grid pillars and bench marks.

8.1.2 Erection of equipment at site

8.1.3 Pipe work for utility services

8.1.4 Construction of civil foundation

8.1.5 Entire cable supply except PLC communication cable

9.0 SPARES

9.1 Commissioning Spares

Provision shall be made for all spares required for commissioning of the equipment and for its efficient operation until PAC during demonstration of satisfactory performance test and in accordance with the guarantees. These items shall be based on the tenderer's experience in commissioning similar plants in the past. The cost of commissioning spares are to be included in the offer along with the list and must be at site along with the main equipment. The successful tenderer shall be responsible for

having the required items at site in sufficient quantities which will be finalised with them. All the left over commissioning spares to be handed over to the Purchaser without any extra charges.

9.2 **Insurance Spares**

The following insurance spares shall be supplied by the tenderer :

- Clay barrel with cylinder .. One (1) no.
- Roller carriage complete with hydraulic hammer unit .. One (1) no.

9.3 **Spare Parts for two (2) years' Normal Working**

The tenderer shall submit a complete itemized list of spares showing the unit cost of each item within two weeks from the date of order placement. The prices indicated in the spare parts list shall be valid upto one (1) year from the date of submission and the same shall be ordered at the discretion of the Purchaser.

The tenderer shall also undertake that supplies of necessary spare parts will be made available at any time later during the life of the equipment at reasonable cost.

Spare parts not manufactured directly by the Tenderer shall be properly identified and description / catalogue etc. given in sufficient details to enable the Purchaser to procure these directly from the manufacturer, if so desires.

10.0 DRAWINGS FOR WEARING PARTS

The successful tenderer should submit the detailed manufacturing drawings and specifications for fast wearing parts and operational consumables/items.

11.0 DRAWINGS AND DOCUMENTS

11.1 All data, drawing, documents, calculations, manuals, instructions etc shall be in English language and in metric units.

11.2 Tenderer shall submit a list of categories of drawings and documents to be supplied by them under basic engineering scope and detailed engineering scope.

11.3 The successful tenderer shall submit the following drawings for the approval of Purchaser:

- General layout and general assembly drawing in Six sets
- Piping layout showing location dimension
- Automation system configuration drawing
- PLC drawings/documents

- GA, SLD of MCC / Local control panels / Local control stations / Control Desk / UPS and UPSDB etc and electrical cabling – power/control
- Layout drawing showing location of equipment
- Dimensions of civil foundation including foundation bolt location
- Load data

- Power requirements with total break up
- Utilities requirement
- List of bought out items and their source of supply

The successful tenderer should submit six (6) sets of the following drawings for reference:

- Assembly drawings with spare parts specification
- Detailed manufacturing drawings and specification of fast wearing parts
- Electrical control circuits diagrams with bill of materials, cable lists and terminal diagrams for the supplied MCC / control desks and panels / Local control stations / UPS & UPSDB
- Circuit diagrams for hydraulic systems
- Instrumentation flow sheet
- Instructions for assembly and erection
- Operation and maintenance manuals
- Hydraulic control schemes and material lists
- Specification for all bought out items including instruments and supply consumables with their source of supply

11.4 Drawings prepared by Contractor shall be suitable for transmitting electronically and digitisation for storage.

11.5 All erection drawings shall contain relevant safety instructions “DO’S” and “DONT’S” for erection, testing and commissioning.

11.6 Integrated equipment layout drawings (plan, elevation, sections) etc. shall contain all dimensions and BOM with weights and quantities.

12.0 TOOLS AND TACKLES

The tenderer shall include in his tender, the supply of four (4) sets of special tools including special instruments, required for calibration, programming etc., required for the operation and maintenance of the equipment.

13.0 TESTS AND INSPECTION

13.1 All necessary tests shall be carried out by the successful tenderer to demonstrate whether the materials and equipment offered conform to the relevant standards and specifications. The tenderer shall include and provide for in his offer all facilities, which shall enable inspection by the Purchaser or his authorised representatives.

13.2 Tenderer shall furnish in his offer a complete list of routine tests he proposes to conduct at the factory. This shall include but not be limited to assembly inspection, operation test, dielectric test, insulation resistance test etc. Manufacturer’s test certificates shall also be furnished for bought out items.

13.3 The equipment shall be shop assembled for checking the accuracy of parts and alignment, except where assembling is to be done at site. If disassembly is required for shipment/transport, parts shall be adequately marked, where necessary, with permanent match markings to facilitate reassembly at site.

13.4 The successful tenderer shall carry out the tests required as per the standard practices to demonstrate that the material and equipments offered shall confirm to

the relevant standards and specifications and shall submit the test reports and certificates.

13.5 The equipment under the scope of work shall be inspected by Purchaser as per GS VSP-6.3/GS-IN-01. The successful tenderer shall submit to the, purchaser, a detailed Quality Assurance Plan (QAP) that will interalia furnish the list of various components, subassemblies and assemblies which the successful tenderer proposes to put up for inspection and the details of the Tests to be conducted for each one of those components, subassemblies, assemblies etc. to purchaser for their approval. Any modification to the QAP shall be mutually agreed upon to ensure that minimum amount of assembly work is done at Site.

14.0 CONSUMABLES AND OPERATING SUPPLIES

The offer shall include information on the specifications including equivalent brand names and quantities of all consumable materials such as lubricants, flushing oil, resins etc; required during start-up, commissioning, initial filling and yearly requirements for normal operation. The successful tenderer shall supply such materials required for start-up, commissioning, initial filling and performance tests.

15.0 VENDORS LIST

Source of indigenous bought out items shall be as per the preferred make list of purchaser. Incase the items is not appearing in the make list (other than the approved list), the successful tenderer shall obtain clearance from the purchaser.

16.0 IMPLEMENTATION/DELIVERY SCHEDULE

As per the present plan the blowing out of the furnace will take place in 1st quarter of 2012-13. The delivery period is of 12 months from the placement of order. The schedule shut down period is of 120 days. Tenderer shall consider the delivery & shutdown time indicated above as maximum period. Tenderer shall indicate in a bar chart the delivery schedule starting from effective date of contract specifically indicating the time for the following activities.

- Collection of basic data
- Basic engineering
- Detail engineering
- Manufacture and supply
- Inspection by Client/Consultant
- Commissioning

Tenderer shall also submit the daily/weekly/monthly revised project schedule/programme as required.

17.0 EXISTING SYSTEM

17.1 Blast Furance-1 cast house is of circular construction with gradient in floor. Cast house is of 80 m in diameter and is termed as L.H cast house and R.H cast house. Each side of the cast house i.e. LH side or RH side is housed with two tap holes 90 deg apart. Cast house is equipped with 2 nos. right hand operated mudgun & drill machine and 2 nos. left hand operated mudgun & drill machine for hot metal tapping. At each taphole, main trough, iron & slag runners and tilting runners are provided for filling hot metal ladles.

17.2 Each tap hole is equipped with electrically operated drilling machine for opening the iron notch and electrically operated mudgun for closing the iron notch after tapping.

17.3 Presently mudgun and drilling machine are installed on separate foundations on either side of main runner.

17.4 Presently, four (4) mudguns, completely electrically operated along with control desk are available. Brief details of existing mud-gun are given below:

Pressure of piston on clay	:	12.75×10^6 Pascal
Force applied to the piston	:	2594×10^3 N
Time of clamping	:	12 sec.
Speed of the clay at nozzle	:	0.1 m/sec.
Force applied to clamp the nozzle	:	146.2×10^3 N
Max. swiveling angle	:	155^0

The filling of mud-gun is being carried out manually. Proper indications/measurements are not available to measure the quantity of clay pushed.

17.5 At present four (4) nos. of drilling machines of Electro-mechanical type are available. The forward and the backward movement stroke of the drill with impact & drilling, rotation and the inclination movements are performed electrically. The main features of the drilling machines are given below

Radius of rotation	:	4.37 m
Maximum angle of rotation	:	120 deg
Travel of drill head	:	3.1 m
Angle of inclination	:	6, 9, 12 and 16 deg
Torque on drill	:	80 kgf-m

17.6 Cast house is served by two circular cranes of 20T+5T/5T capacity each. These cranes also serve the purpose for the maintenance of these cast house equipment. Cast house is provided with ramp from ground level for easy approach of vehicles.

17.7 Four (4) nos. of control pulpits are located at +12.1 m level in the periphery of cast house for the operation of cast house equipment. Control panels for each mudgun and drilling machine are installed in the room adjacent to the control pulpits.

18.0 MODIFICATION ENVISAGED

Cast house floor will be made flat after the revamping to facilitate the movement of vehicles all around the cast house. All runner system will be changed with new one. 4 nos. splash cover with hydraulically operated manipulator will be provided. New hydraulically operated mud gun and drilling machine shall be installed in the same side of the main runner. Tentative arrangement of mud gun and drilling machine is shown in the drawing BF1-CH-001.

19.0 DESIGN BASIS

19.1 Furnace Details

A. Blast furnace profile:		
- Useful volume, cum	..	~ 3900
- Blast furnace hearth diameter, mm	..	12,140
- Blast furnace throat diameter, mm	..	10,400
- Sump depth, mm	..	2500
B. Operating parameters		
- Annual production, mtpa	..	2.5
- Average daily production, tpd	..	7150
- Peak daily production, tpd	..	7850
- Working days/year	..	350
- Furnace top pressure – working, bar(g)	..	2.4 (max.)
- Furnace top pressure – design, bar(g)	..	2.5
- Operating blast volume, Ncum/hr	..	~ 350,000

- Operating blast pressure, bar (g)	..	~ 4.5
- Nos. of tapping per day	..	~ 14
- Tapping duration, mins	..	~ 120
- Tapping speed, m/sec	..	~ 5 – 7
C. General information		
- Clearance between cast house floor and bottom of tuyere platform, mm	..	2200
- Elevation of taphole, mm	..	+ 9100

19.2 New hydraulically operated mudgun and drilling machine (2 Right hand execution and 2 Left hand execution) shall be installed in the same side of the main runner on different foundations. Cover manipulator will be installed on the other side of the main runner.

19.3 Mudgun and drilling machines shall be of radio remote controlled and can be operated in the following ways:

- Operation from casthouse control pulpit
- Wireless operation at local

  (Radio remote control system shall confirm to EN-954-1 and shall have provision of shutting off the system in case of signal fault to avoid mal-operation of the equipment.)

- Local operation

19.4 Design basis for mudgun is indicated in Table - 1

TABLE – 1 – DESIGN BASIS FOR MUDGUN

Effective volume of clay barrel, cum	..	0.25
Pressure of piston on clay, Kg/cm^2	..	200 min.
Dia of nozzle, mm	..	150
Actuation	..	Hydraulic

19.5 The mudgun shall have the following characteristic:

- Hydraulic drives for swiveling, pressing and plugging

- Swiveling in inclined plane

- Electronic soft touching system

- Clay consumption indicator, compensation (measurement of taphole face erosion to avoid burning of nozzle and regulation of pressure against taphole according to clay pushing)

- Mudgun nozzle contact time with iron & slag stream shall be minimum for optimal nozzle protection

19.6 Water cooling arrangement for mud gun clay barrel and nozzle cone is to be provided to protect against heat and splashes.

19.7 Mudgun shall have the provision for adjusting its plugging position in all the direction i.e up-down and left-right direction.

19.8 Design basis for drilling machine is indicated in Table - 2

TABLE – 2 – DESIGN BASIS FOR DRILLING MACHINES

Drilling length, mm	..	4000
Drilling dia, mm	..	30 – 90
Normal drilling angle, deg	..	9 (should have the provision to drill at any angle betweer 6deg to 12deg.)
Actuation	..	Hydraulic

19.9 The existing drilling machine will be replaced with new hydraulic operated machines which shall be capable of drilling a tap hole length of 4 metres. It is desired to open the tap hole by rotation only. The new drilling machine should have the systems for mist cooling facilities, tap hole length measurement etc.

19.10 The drilling machine shall have the following characteristics:

- New hydraulic Drilling machines shall be with reversible hammer capable of drilling a tap hole length of 4.0 metres

- Mist cooling facilities

- Tap hole length measurement

19.11 Existing control panel room located at a level +12.1 m in the periphery of cast house for the operation of cast house equipment will be used for installation of valve stand for the new cast house equipment.

19.12 The hydraulic system shall comprise of two identical hydraulic stations. Each station will be dedicated for two taphole i.e. station ‘A’ will serve tap hole 1 and 2 whereas station ‘B’ will serve taphole 3 and 4. Each hydraulic station shall operate 2 sets of mudgun, drilling machines and cover manipulators. The cover manipulators are in the scope of Purchaser. However the hydraulic stations for mud

gun and drilling machines are also to be catered to the cover manipulators. The data for cover manipulators will be provided by the purchaser. Each hydraulic system shall be designed to operate any two equipment simultaneously.

19.13 Each hydraulic station have the following main characteristics:

- Oil tank
- 3 Main pumps (Two working & one stand-by)
- 1 pilot oil pump
- 2 circulation pumps (One working & one stand-by)
- 1 accumulator station with Nitrogen bottles
- 1 set of interconnecting piping
- 2 valve desks

19.14 Installation of hydraulic power pack for cast house equipment will be located in a room at a suitable location below cast house.

19.15 Tenderer shall check the existing handling facilities and design the equipment accordingly so that the existing handling facilities can be utilized for the maintenance of the equipment.

19.16 Tenderer shall specify about all the interlocking in his offer.

19.17 Tenderer shall provide the hydraulic piping routing diagram to ensure the availability of required pressure, flow etc.

19.18 Tenderer shall provide necessary cable engineering drawings /documents

19.19 Tenderer shall design the accumulator system to meet the requirement of emergency back-up hydraulic power in case of electrical power failure or pump failure to operate drill unlatch, drill carriage retract, drill slew out, operation of manipulator to remove covers, mud gun slew in, mud gun plugging operation and mud gun slew out operations.

19.20 Tenderer shall provide the civil assignment drawings and shall furnish the equipment load data for main equipment and hydraulic system.

20.0 ELECTRICS

20.1 Power supply

20.1.1 The LT Electrical power in Blast Furnace -1 area is available at the following voltage:

415V, 3 Phase and neutral, 4 wire, 50Hz.

If any equipment offered by the tenderer is required to operate at a voltage other than above , the conversion equipment as required shall also be included in the scope of supply of tenderer. If any conversion transformers are required, the same shall be dry type only.

20.1.2 The 415V system is solidly grounded at their respective transformer neutrals.

20.1.3 System voltage and frequency variation limits shall be as follows:

415 V system	:	Voltage +6% to –6% Frequency 3% to –3%

20.1.4 All switchgear shall be designed for withstanding short circuit level of 50kA for 1 sec at 415V level.

20.1.5 Control circuit voltage adopted for 415 V circuit breaker, ac contactor, auxiliary relays etc. shall be 240 V AC.

20.2 **Battery Limit**

20.2.1 Incoming power of 415V, 3 phase shall be made available at the incoming terminal of tenderer's MCC .MCC shall be located in the 14IICY room located at +12.1 m in the periphery of cast house. Tenderer shall visit the site and design MCC accordingly.

20.3 **Scope of work**

The scope of work shall include the electrics for hydraulic mudgun and drill machine equipment not limited to the following:

20.3.1 Supply of 415V Motor Control Centres (MCC) for four (4) nos. hydraulic mudgun and drill machines.

20.3.2 Supply of field equipment, junction boxes, local control stations, Control desks etc related to new hydraulic mudgun and drill machines and hydraulic stations..

20.3.3 Basic and detail engineering including BOQ for the following items:

(i) Cables - 1.1kV grade PVC / XLPE armoured aluminum cable for secondary distribution, HRPVC/FRLS power and control cables for hot areas, flexible copper cable for motor connection from power junction boxes to motor terminals, PVC armoured copper control cable for motor control and instrumentation & automation and Triad cables for RTDs/BTDs

(ii) Installation accessories - Prefabricated GS cable trays, racks, hooks, tray supports, GI pipes, conduits, angle, channel, flats, flexible GI conduit, coupler, sockets, and clamps.

(iii) Complete earthing system with earth electrodes, GI flats, GI wire, clamps, sockets, nuts, test links etc. for the new equipment.

20.3.4 One (1) set industrial type microprocessor based with IGBT parallel redundant UPS system for feeding power to complete automation and Instrumentation system. UPS shall be located at PLC room.

20.3.5 Four (4) nos. Control desk/pulpit suitable for mounting local display unit (small HMI) and various lamps, push buttons, selector switches, etc. to control the operation of Mudgun and Drilling machine along with cover manipulator. The control desk /pulpit shall be fabricated out of 2 mm thk CRCA sheet with stainless steel top.

20.3.6 Four (4) nos. radio controlled unit with necessary actuators for local operation of Mudgun and Drilling machine along with cover manipulator.

20.3.7 Supply, installation of all cables required for Mudgun & Drilling machines including power supply cable to new MCC/ Installation accessories/complete earthing system required for Mudgun & Drilling machines and hydraulic stations are in purchaser's scope.

Tenderer shall provide Basic technical data /specification for various types of cables & cabling materials & accessories & earthing materials for procuring the same by the others.

20.3.8 Basic and detail engineering for any other items which in opinion of tenderer are required for successful erection and commissioning of electrics for hydraulic mudgun and drill machines.

20.3.9 Detail electrical layout drawings for installation of items as well as assignment drawing.

20.3.10 Based on above information/drawing prepared by tenderer, purchaser shall be in a position to install the above items.

20.3.11 Special supervision will be provided by the tenderer during the installation of above items by the purchaser.

20.3.12 Tenderer shall visit the site and get himself acquainted with the environmental and operating conditions and equipment arrangement prevailing at site and shall understand the scope of the work involved in this specification and get satisfy thoroughly the suitability of the equipment offered before submitting the tender offer. The tenderer shall take full responsibility for guranteed operation of the system as regards performance, smooth, reliable and safe working.

20.4 **Equipment specification**

20.4.1 415 V Motor Control Centre (MCC)

20.4.1.1 The MCC shall conform to IS:8623 (Part-1), (Part-2) for factory built assemblies, IS:13947 (Part-1) for general requirement of switchgear. The MCC shall have TPN busbars of aluminum alloy conforming to IS–5082.MCC shall be single front design and shall have only front access.

20.4.1.2 MCC shall be fed by double feeders from 415V switchboard. Maximum demand of any MCC shall be restricted to 500KW,.

20.4.1.3 MCC shall have two incomers and one bus coupler. The incomers and bus coupler of the MCC shall be ACBs if the rating is 630Amps and above. Below 630Amps rating fixed type MCCBs shall be provided. ACBs and MCCBs shall be provided with over current, short circuit and earth fault protective releases.

20.4.1.4 Minimum two(2) nos. spare outgoing feeders shall be provided in each bus section of MCC.

20.4.1.5 Each cubicle shall have segregated motor circuit components arranged in tier formation upto 5 tiers maximum.

20.4.1.6 Adequately rated continuous Al earth busbar shall be provided provided for the complete length of the MCC. Two separate terminals shall be provided for external earth connection in conformity with IE rules.

20.4.1.7 Minimum degree of enclosure protection shall be IP:52 when located inside control rooms and IP:54 for all other degree areas including shop floor.

20.4.1.8 General design and constructional features for 415V MCC shall be as per clause 5.0 of General Specification VSP–6.3/GS–E–05

20.4.1.9 Motor feeders

20.4.1.9.1 Each outgoing motor feeder module shall have its own MCCB with direct acting short circuit protection, magnetic contactor, bimetallic or electronic over current protection relay (EOCR) and other accessories such as auxiliary relays indicating lamps, test push-buttons, control switches, digital ammeters etc as required.

20.4.1.9.2 For motor feeders following shall be considered:

a) Bimetallic thermal overload relay for motors rated below 7.5 kW

b) EOCRs for O/C protection for motors rated from 7.5 kW up to 15 kW.

c) EOCRs for O/C & E/F, unbalance protection with digital display for motors rated >15 kW and below 110 kW.

d) Composite motor protection relay for overload, overcurrent, earth fault, phase unbalance and locked rotor protection with digital display for motors rated 110 kW and above. However, for motors driving high inertia loads, relay shall be selected to provide comprehensive protection considering high starting time with non contact type speed switch interlock, if required.

20.4.1.9.3 One make of devices shall be adopted for motor feeders considering Type-2 co-ordination as per IS:13947 (PART 4).

20.4.1.9.4 The contactors shall conform to requirements of IS:13944 (Part-4). All reversing contactors shall be provided with both mechanical and electrical interlock. The contactor shall be of utilisation category AC-4 with minimum rating of 32A.The minimum current rating of contactor shall be 125% of that of full load current of motor. 400Amps and above contactors shall of of vacuum type and shall be provided with RC and ZnO circuits for protection against surges.

20.4.1.9.5 “Test” push button shall be provided in motor control circuit to check healthiness of control circuit with main power circuit in off position.

20.4.1.9.6 Emergency stop push button shall be considered for all motor feeders.

20.4.1.9.7 Since all the motors shall be controlled through PLC system, signal exchange shall be necessary between each motor feeder and PLC system.

20.4.1.9.8 Typical power and control scheme for DOL feeder Drg. no. 26969-01-03-ELE-0001 is attached for reference.

20.4.1.9.9 MCCBs to be used in motor feeders shall have built-in earth fault/earth leakage protection and shall have service breaking capacity (ICS) of at least 75% of ICU as per IEC 60947-2.

20.4.1.10 415 V Main Busbars

20.4.1.10.1 The 415 V MCC shall have continuous three-phase and neutral air-insulated busbars extending full length of the switchboard and run horizontally in separate busbar compartment with vertical tappings to breakers in each cubicle. The current carrying capacity of the vertical tappings shall not be less than the current rating of the main busbars in case of incoming feeders and derated current rating of the breakers in case of outgoing feeders. The busbars shall be of adequate mechanical strength and so arranged and supported that the permissible clearance is maintained under all service conditions including short-circuits. The busbars shall be arranged in such a way that they can be extended at the free ends without difficulty. Busbars shall be provided with heat shrunk PVC sleeve with coloured tapes at interval.

20.4.1.10.2 The busbars shall be able to withstand the continuous and short-time current ratings.

20.4.1.10.3 All phase & neutral busbars shall be made of flat section aluminium alloy having uniform cross section. The cross-section of busbars and connections shall be so selected that with the passage of normal rated current at rated frequency, the temperature rise of the busbars does not exceed 45^0C over an ambient 45^0C.

20.4.1.10.4 The busbars shall be colour marked as follows:

Phase	**(R)**	**..**	**Red**
Phase	**(Y)**	**..**	**Yellow**
Phase	**(B)**	**..**	**Blue**
Neutral	**(N)**	**..**	**Black**
Earth	**(E)**	**..**	**Green**

R, Y and B are the three-phase of AC circuit with anticlock wise vector rotation.

20.4.1.11 Control power supply

20.4.1.11.1 240 V AC control power for circuit–breaker closing, tripping,indication lamps shall be obtained by the use of 415/240 V dry type control transformers of adequate capacity generally conforming to IS-11171, with selector switch for working/stand-by selection.

20.4.1.11.2 The control busbar shall be made of copper. All protective devices, tripping circuits, indication lamp circuits as well as the closing circuit of bus–section circuit–breakers shall be connected to this bus.

20.4.1.11.3 The control transformers shall be connected on the live side of each incoming circuit–breaker. Miniature circuit–breakers (MCB) shall be provided on the primary side and secondary side of the control transformer.

20.4.1.11.4 The secondaries of control transformers shall be provided with automatic changeover arrangement over suitable contactors.

20.4.1.12 Instruments and meters

20.4.1.12.1 All instruments and meters shall be of robust design, vibration-proof, housed in dust-proof casing and suitable for flush/semi-flush mounting on vertical panels.

They shall be mounted in the front of the panel at a suitable height to facilitate easy access and visibility. The instruments shall be of parallax-free design and shall have glare-free front glass covers. Marking of the scale of all instruments shall be such that it is suitable for direct reading. Suitable zero adjustment facility shall be provided with each indicating instrument and it shall be suitable for operation from the front of the instrument casing. All indicating instrument shall be magnetically screened. The instruments and relays shall be capable of carrying the CT secondary current under fault condition for the specified period without any damage.

20.4.1.12.2 Each incoming feeder shall be provided with a 96 mm x 96 mm voltmeter and a ammeter with 3-position selector switch. The voltmeters shall be connected on the live side of the concerned breaker for indicating the three-phase voltages, complete with voltmeter fuses.

20.4.1.12.3 Each outgoing feeder shall be provided with a 96 mm x 96 mm ammeter and a 4-position selector switch complete with CTs for measuring the currents in all the three phases. For outgoing motor feeders the ammeter shall be provided with a normal scale up to full-load value and suppressed scale beyond full-load for indication of motor starting current.

20.4.1.12.4 Digital multifunction meters shall be considered in all incoming feeders which shall include current, voltage, PF, kVA, kVAR, kW, kWhr with maximum demand indicator. Moreover, current transducer shall also be considered in each incoming breakers & outgoing motor feeders.

20.4.1.13 Current transformers

20.4.1.13.1 The current transformers (CTs) shall be of either bar primary or wound primary type as required having cast resin insulation. Metering CTs shall have accuracy class of 1.0 with ISF ≤ 5. Protective CTs shall have accuracy class of 5P and accuracy limit factor of 10. The CTs shall have insulation level and thermal and dynamic ratings corresponding to that of the circuit-breaker with which it is associated. CTs shall be considered for operation of EOCR and the composite motor protection relay for higher rated motors. Saturable type heavy duty current transformer shall be provided for high inertia loads.

20.4.1.14 Cable terminations

20.4.1.14.1 The cable terminations arrangement for all outgoing feeder units shall be housed in separate cable compartments and shall be suitable for single-core and multi-core aluminium conductor PVC/XLPE insulated armoured cables of number, types and sizes as required. The termination arrangement of multiple cables shall permit connection and disconnection of each individual cables without disturbing the other cables. For termination of cables crimping type lugs of proper size shall be provided. Where armoured cables are to be terminated suitable armour clamps shall also be provided. The cable termination compartment shall be provided with suitable removable gland plates at the bottom with holes drilled for cable entry as per cable requirements.

20.4.1.15 Other constructional features

20.4.1.15.1 All operating handles, control switches, push buttons, indicating lamps, instruments, meters etc shall be mounted on the front of the cubicles.

20.4.1.15.2 All control wiring within the cubicles shall be with single-core PVC insulated copper cables having minimum size of 1.5 sq mm. The wiring shall be effectively protected from possible damage by a electrical flashover. There shall be no joints or tappings between two terminations. Not more than two terminations shall be made at any one terminal. All terminals as well as terminations at various devices shall be provided with interlocked type plastic ferrules having engraved numbers. As far as possible each essential control circuits shall be contained in the respective cubicles.

20.4.1.15.3 The control circuit terminal blocks provided for external cable connections shall be provided with screwed type terminals and shall be complete with terminal screws, links, label carrier etc. All wiring shall be such that it is easily identifiable and accessible for maintenance.

20.4.1.15.4 Identification labels shall be provided for the MCC, each cubicle and each panel. These labels shall be located in readily visible positions and the inscription on each label shall be legible and clear.

20.4.1.15.5 Cable trough inside panel shall be fire retardant low smoke type.

20.4.1.15.6 Door interlock shall be provided with MCCB so that the compartment door can be opened only when the power device is in off state. Defeat interlock facility shall be provided.

20.4.1.16 All other design and construction features which are not mentioned against the items mentioned under clause 4.1 above shall be as per General specification VSP 6.3/GS-E-05.

20.4.2 AC Motors

20.4.2.1 All 415 V motors shall be TEFC type.

20.4.2.2 All AC motors shall fully confirm to IS:325 for all essential design construction and test feature. The motors shall have standardised dimension and rating strictly conforming to IS:1231 for foot-mounted, IS:2223 for flange mounted application.

20.4.2.3 All motors unless required otherwise shall have IM:1001 form of construction.

20.4.2.4 The motor body shall have two separate earthing terminals for earthing in compliance with Indian Electricity rules.

20.4.2.5 Preferably motors shall be provided with Top terminal box.

20.4.2.6 Greasing outlet facility with provision of collection of grease for motors above 250 frame size shall be considered.

20.4.2.7 For continuous duty, constant speed application, AC motors selected shall be energy efficient squirrel cage induction motor.

20.4.2.8 Construction and other features of motors shall be as per General specification VSP-6.3/GS-E-05.

20.4.3 Field mounted equipments

20.4.3.1 Field mounted equipment e.g., push button, control switches, limit switches, power junction boxes, control junction boxes, proximity switches, local control station, control desks and control posts shall be provided as per requirement.

20.4.3.2 The design and constructional features of items indicated in clause no. 20.4.3.1 shall be as specified in General Specification VSP-6.3/GS – E – 05.

20.4.4 LT Power, control, screened, special & flexible cable and data highway/fibre optic cable.

20.4.4.1 For relevant information refer General Specification VSP – 6.3/GS–E–07.

20.4.5 Design of earthing materials for tenderer's equipment

20.4.5.1 The equipment supplied, installed and terminated (by others) need to be earthed with nearest network as applicable in conformity with IE Rules and as per IS: 3043. G.I. strips shall be galvanised as per IS: 2629 and G.I. wires shall be galvanised as per IS: 4826.Earthing of equipment shall have to be done as per VSP General Specification No.VSP-6.3/GS-E-07.

20.4.6 Uninterrupted power supply (UPS)

20.4.6.1 The UPS shall have sealed maintenance free (SMF) battery, back–up SCVS with static by–pass switch and input isolation transformer. The parallel redundant UPS shall have 30 minutes battery back–up and maintenance by–pass. 30% spare capacity shall be considered for UPS. The UPS shall be complete with ACDB with control transformers etc. as required.

20.4.7 Existing control pulpits shall be replaced with new pulpits and shall be located at the existing locations at a level +12.1 m.

20.5 Typical minimum input/output requirement for various drives and systems to be provided for hydraulic mudgun and drill machines have been indicated in Table –1 below:

TABLE –1

TYPICAL LIST OF INPUTS AND OUTPUTS FROM ELECTRICAL BOARDS AND MCCS

DESCRIPTION				**INPUTS**			**OUTPUTS**	
				ANALOGUE	DIGITAL	BUS	ANALOGUE	DIGITAL
A. MOTOR CONTROL CENTRES								
1.DOL FEEDERS								
i)COMMON FOR ALL FEEDERS								

DESCRIPTION	INPUTS			OUTPUTS	
	ANALOGUE	DIGITAL	BUS	ANALOGUE	DIGITAL
-- MAIN MCCB "ON"		**Y**			
-- MAIN MCCB "TRIPPED"		**Y**			
-- COTROL POWER AVAILABLE		**Y**			
-- LOCAL SELECTED					**Y**
-- REMOTE SELECTED		Y			
-- OVERLOAD/EOCR OPERATED		Y			
--MOTOR CONTACTOR "ON"		Y			
--EMERGENCY STOP		Y			
--MOTOR CURRENT FOR ALL MOTORS	Y				
--BTD FOR ALL MOTORS (IF EXISTING)	Y				
--RTD FOR ALL MOTORS (110KW AND ABOVE)	Y				
--START MOTOR					Y
NOTES :					
1	SOME FIELD SWITCH CONTACTS HARDWIRED TO MCC MAY ALSO BE REQUIRED				
2	PLC I/O LIST IS INDICATIVE ONLY				

21.0 INSTRUMENTATION & LEVEL-1 AUTOMATION

21.1 General

21.1.1 This section covers design and engineering, manufacture, software development, inspection, supply, testing, supervision of erection and commissioning of Instrumentation and Automation system, as required, for efficient and safe operation of four (4) nos. hydraulically operated mud gun and drilling machine along with the hydraulic system for BF-1.

21.1.2 Any item/devices or accessories not included in this section but essential for proper functioning of the offered systems shall be included by the tenderer in his offer.

21.1.3 Each deviation/exception to the specification mentioned in clause no. 21.0 shall be listed separately. If the deviation/exception is not clearly listed, the purchaser shall not consider the same later.

21.1.4 Software development for Automation system shall be done in association with purchaser's personnel.

21.1.5 The successful tenderer shall be responsible for co-ordination with equipment erection contractor.

21.2 **Scope**

21.2.1 The scope of work of the tenderer shall include design and engineering, manufacture, software development, inspection, supply, testing, supervision of erection and commissioning of complete Instrumentation and Automation system.

21.2.2 The tenderer's scope of supply for Instrumentation and Automation system shall include but not be limited to the following**:**

21.2.2.1 All field mounted instruments comprising local indicators, primary measuring elements, transmitters, switches, control/on-off/safety shut-off valves with pneumatic actuators etc. for mud gun and drilling machines and associated hydraulic system.

21.2.2.2 Automation system consisting of Programming Logic Controller (PLC) with Hot standby CPU, Hot redundant power supply module, communication module, I/O bus, data bus and other related hardware mounted in cabinets for execution of various monitoring, alarm annunciation, sequential operation and logic control for mud gun and drilling machines along with associated hydraulic system and splash cover manipulators. PLC along with local I/O station shall be located at PLC room in cast house pulpit platform. However, remote I/O stations shall be located at respective pulpit.

21.2.2.3 Two (2) Nos. PC based Operator/HMI station with 19" TFT monitor for plant operation, monitoring of status, alarms, real time trending, historical trending etc.

Out of the above, one (1) no. PC shall also be provided with the engineering facility (PLC Programming and HMI development).

Operator-cum-Engineering station shall be located at PLC room in cast house pulpit platform and Operator station shall be located at BF-1 main control room.

All stations shall be identical in hardware and hardware specification shall be of latest configuration as available during engineering. Operating system for the PCs shall be Windows 2000 or advanced version.

21.2.2.4 Operator station and Operator-cum- Engineering station shall be installed in suitable metallic console (Stainless Steel top) with lock & key arrangement. No. of console shall be two (2) Nos.

21.2.2.5 All necessary communication/special cables. Ethernet switches including accessories as may be required for cable laying and termination of the cables. All communication bus (HMI and I/O bus) shall be in hot redundant configuration. GI conduit shall be supplied for unarmoured communication cable. Total length of PLC communication cable (I/O bus) shall be 700 meter (approx.).

21.2.2.6 Field proven operating system, diagnostic software, application and communication software packages.

21.2.2.7 Universal HART calibrator – 1 no. (for HART instruments)

21.2.2.8 Necessary transformer, conversion, stabilising and distribution units apart from the given power system as required for feeding power to all the equipment/instruments supplied by the tenderer as well as required for cover manipulator. Bulk power supply units shall be hot redundant.

21.2.2.9 Necessary filters, pressure regulators and other accessories for instrument air connection to instruments and pneumatic valves.

21.2.2.10 Hardware and software documentation in CD as well as in the form of hard copies.

21.2.2.11 Any item or accessories not included in this specification, but essential for proper functioning of the offered system shall be deemed to be included in the scope of the tenderer.

21.3 **Design basis**

21.3.1 New remote I/O panels for automation system shall be located at the existing control/electrical room at a level +12.1 m.

21.3.2 Hot redundant communication link between Mudgun and Drilling machine automation system and BF-1 main plant Level-1 automation system (Rockwell ControLogix located near BF-1 main control room) shall be considered along with few back-up hardwired signal exchanges (approx. 10 nos. analogue and digital signals) by the Tenderer for integrated control and monitoring, which shall be detailed out during engineering. Necessary provision for such interfaces shall be kept in the Mudgun and Drilling machine PLC system by the Tenderer. Tenderer's scope of work shall also include supply of cable, GI conduit and all required hardware and software at both ends for the above signal exchanges. Operation philosophy of cover manipulator shall be provided by Purchaser.

21.3.3 The instrumentation and control system shall be as per the approved P&I diagram to be finalized during engineering.

21.3.4 In general following shall be considered:

a) Pressure gauges shall have 3 way gauge cock. Pressure gauges at the pump discharge shall have snubbers. Material of gauge cock and snubber shall be SS316.

b) All ON-Off valves shall have open and close non-contact limit switches.

c) Generally all valves (regulating as well as ON-OFF service) shall be pneumatically operated. Hand-wheels, isolating valves and by-pass valves shall in general be provided. All solenoid valves shall have 24 VDC coil. Valves shall be suitable for operation on minimum 3 Kscg air pressure.

d) All the instrument impulse lines and fittings shall be of AISI SS316L material. Double compression type fittings shall generally be used. Suitable protection cover/canopy shall be provided for all instruments.

e) All RTD signals for measuring temperature of process shall be directly hooked up to PLC without any converter unit.

21.3.5 The Automation system shall be designed based on the requirement of manual as well as automatic control, sequencing, interlocking for various processes including pump/motor control function, alarm annunciation and monitoring for the entire system.

21.3.6 The Automation system shall be built around the state-of-the-art Programmable Logic Controller along with hot redundancy for data bus, PLC–processor, power supply, communication module and I/O bus as shown in the automation configuration, Drg. no. 26969-01-03-ELI-0003, Rev. 0.

21.3.7 The system shall be designed so as to ensure high plant availability by providing reliable system for easy maintainability and built-in safe operation and fault diagnosis facility.

21.3.8 PLC based automation system shall be envisaged for both plant instrumentation/automation system and electrical drives controls.

21.3.9 All type of fault and abnormalities shall be available to operator.

21.3.10 Operation and status monitoring of all the drives, motors,pumps, valves etc. shall be provided.

21.3.11 The operator communication interface through keyboard of the operator stations shall have the capability for starting or stopping of a drive or a group of drives as well as for providing manual control of output, change of set point and modes of operation (cascade, auto, manual) for each control loop while the system is in operation.

21.3.12 Proposed PLC hardware shall have UL/CSA/EN approval.

21.3.13 The PLC hardware plastic material flammability certification shall conform to UL 94VO/IEC 707 SEC9, IEC 695-2-1(FV1 OR FVO).

21.3.14 All the logic software shall be as per IEC 61131-3. System logic software shall have a provision to force any individual contact for day-to-day operation at site.

21.3.15 In all types of I/O modules 20% spare channels after commissioning shall be available for purchaser’s future use, these shall be wired up to the terminals. In addition to this, each row of I/O rack of the PLC cabinets shall be provided with spare I/O slots so that an addition of 30% in inputs and outputs modules (minimum 1 slot) can be made in future. The memory of the PLC system shall be provided in such a way that a spare capacity of 50% is kept for Purchaser's use after complete programming of the system. CPU average loading shall not exceed 50%.

21.3.16 All digital outputs shall be potential free. For digital inputs, interrogation voltage shall have to be arranged in the PLC cabinets over separate miniature circuit- breaker. Also, for analog inputs, the transmitter power supply, wherever required, shall have to be arranged from the PLC cabinets.

21.3.17 Voltage level of digital input and output cards shall be suitable for 24VDC. The digital outputs shall be through potential free relay suitable for 24 VDC, 5A (inductive). However, AC 15 category contactors/relays with 4 NO contacts shall be used for driving the power contactors of drive motor. Analog input and output cards shall be suitable for 4-20 mA DC isolated signals. The isolation levels shall be for a minimum of 600 VAC continuous in addition to opto isolation of 1500 VAC for one minute.

21.3.18 Terminals at PLC Cabinets shall be fuse protected with LED indication as per requirement.

21.3.19 3-wire RTDs (Pt-100/Duplex type) with SS316 sheath shall be considered for temperature measurements.

21.3.20 Display of barrel clay pressure in front of the operator panel shall be considered.

21.3.21 All field transmitters and conversion units shall be SMART type (HART protocol).

21.3.22 Necessary instruments for measurement of pressure, flow, temperature of all utility parameters at TOP, as applicable, shall be included.

21.3.23 All equipment shall be designed for voltage variation of ±6% and frequency variation of ± 3% unless powered by UPS.

21.3.24 All drawings/documents pertaining to cable engineering shall be submitted by the tenderer.

21.3.25 20% spare cores shall be provided for all type of cables.

21.3.26 The instrumentation and control system devices shall be capable of operating at their required capacity in ambient air temperature not exceeding 45°C and an average over a period of 24 hours not exceeding 40°C and mean relative humidity of 88 per cent. The field mounted instruments and control equipment shall, however, be suitable for operation under ambient temperature not less than 55°C and mean relative humidity of 88 per cent unless higher ambient is specifically mentioned elsewhere in this technical specification. Besides, due considerations shall also be given to the presence of dust (electrically conducting) laden atmosphere normally experienced in steel plants and salinity due to proximity of the site to sea.

21.4 **Equipment specification**

21.4.1 The instrumentation and Automation system shall be based on the latest 'State-of-the art' technology and spare parts & service support shall be available for a period of at least ten (10) years from the time of Contract.

21.4.2 The Instrumentation and Automation system shall generally conform to the General Specification Nos. VSP-6.3/GS–I–01 and VSP-6.3/GS–I–02.

21.4.3 Make of all indigenous items for Instrumentation and Automation system shall be as per list of preferred makes of VSP-BF-1 Category-1 Capital Repair.

22.0 UTILITY SYSTEM

22.1 Hydraulic systems

22.1.1 General

Hydraulic systems (Hydraulic power systems) complete in all respect shall be provided for the equipment of blast furnace & its accessories covered under this specification. The systems shall be complete with all equipment, electrics, pipework, instrumentation and controls as required and as specified in this specification as well as in General Specification of Hydraulic System (GS No.VSP/6.3-M-03).

22.1.2 Design basis

22.1.2.1 The Hydraulic systems referred herein shall generally cover the following:

- Hydraulic power packs consisting of hydraulic fluid reservoirs with accessories, pumps, motors, filters, coolers, isolation valves, check valves, instruments etc.
- Accumulator stands consisting of accumulators, safety shut-off block etc.
- Valve stands consisting of all direction, pressure and flow control valves, isolation valves, check valves & instruments.
- Hydraulic cylinders/actuators and motors.
- Hydraulic pipework complete with pipes, fittings, valves, hoses, clamps & supports.
- Instruments, controls and safety devices for indicating and recording of pressure, temperature & level of fluid in reservoir etc; for alarms for abnormal conditions and for interlocks for safe operation.
- Electrical control panel
- Hydraulic fluid

22.1.2.2 The hydraulic systems shall be designed for mineral oil of ISO VG46 grade.

22.1.2.3 Hydraulic fluid reservoirs shall include clean-out doors, inspection doors, sloping bottom, baffle plates, air breathers of 3 micron fineness and with silica gel, level gauge, level switches (high level, low level and low-low level), thermometer, thermostats, drain valves for each compartment, suction ports etc; two (2) Nos. isolation valves for electrostatic as and when

required. Mobile electrostatic oil filtering system and low vacuum dehydrator & degassing system (LVDS) are to be supplied by the tenderer.

22.1.2.4 The tanks of the hydraulic systems shall be adequately sized in line with General Specification of Hydraulic System (GS No.VSP/6.3-M-03).

22.1.2.5 The main pumps shall preferably be variable flow pressure compensated axial piston type. Each main pump shall be provided with stand-by pumps an unloading type relief valve. Main Pumps and motors shall be designed to meet at least 125% of system flow rates and 125% of system operating pressures, without overloading the motor.

22.1.2.6 Circulation pumps of adequate capacity with motors shall be provided for parallel filtration and cooling circuit. One working and one standby circulation pump shall be provided. The circulation pumps shall preferably be triple screw or Gear type with built-in relief valve.

22.1.2.7 Both main and circulation pumps shall be floor mounted with flooded suction and shall not be mounted inside reservoir or on top of reservoir without specific approval of Purchaser.

22.1.2.8 Hydraulic systems shall be provided with pressure line filters, circulation filters and return line filters for continuous removal, from the hydraulic fluid, of contaminants which are likely to cause malfunction of pumps, valves and actuators and to maintain desired cleanliness level of hydraulic fluid.

The circulation filters and return line filters shall be duplex type with built-in integral changeover valves. The fineness of filters shall depend on the components used in the hydraulic system. The fineness and capacity of various filters and cleanliness level of oil will be as per General Specification of Hydraulic System (GS No.VSP/6.3-M-03). All the filters of hydraulic systems shall be provided with mechanical as well as electrical clogging indicators.

22.1.2.9 The coolers shall be plate type of gasketted design. The plate type coolers shall be designed such that all the four (4) ports shall be on same side of cooler. Cooler shall be generously designed considering high ambient temperature and water inlet temperature of 35°C and shall have 20% spare capacity. Coolers shall be fitted external to the reservoir and shall be mounted on a frame with drip tray and drain valve. The pressure drop across cooler on oil circuit shall be less than one (1) bar and on water circuit shall be less than 0.5 bar.

Coolers shall be provided with Pressure gauges, temperature indicators on cooler water inlet & out lines, and oil inlet & outlet lines, Solenoid operated ON/OFF valve, strainer of 250 micron fineness on cooler water inlet line, Pressure check mini mess couplings and mini mess hose on oil inlet and outlet lines etc.

22.1.2.10 The accumulators shall be charged with nitrogen or inert gas, sized to meet the functional needs and designed to withstand at least 1.5 times the nominal design pressure of the hydraulic system and shall conform to the code for pressure vessels prevailing in the country of origin or to any equivalent international codes for pressure vessels.

Each accumulator shall be provided with safety shut-off block containing isolation valve, drain valve, safety relief valve, pressure gauge, pressure check minimess coupling and minimess hose. Necessary charging and testing kit for accumulators, complete with isolation valve, manifold, hose etc. shall be provided. Each accumulator stand shall be provided with drip tray and drain valve.

22.1.2.11 Necessary isolation valves shall be provided across pumps, filters, coolers, on the bypass lines across coolers, on the water inlet and outlet lines of coolers. Lockable adjusting type valves shall be used to prevent change of adjustment caused by equipment vibration and/or tampering.

22.1.2.12 All directional valves shall be sub-plate/manifold mounted. Directional valves of large capacity shall be hydraulic pilot operated type. Valves shall not be mounted on reservoir. Suitable valve stands shall be used for mounting valves for the ease of operation and maintenance.

22.1.2.13 Branch line connection with check valve and isolation valve with limit switch shall be provided on the upstream side of circulation filters for filling fresh hydraulic oil to the tanks of the hydraulic systems, through circulation filters. Similarly, branch line connection with check valve and isolation valve with limit switch shall be provided on the downstream side of circulation pumps for unloading spent oil from tanks.

22.1.2.14 Necessary pressure gauges and pressure switches shall be included in the circuit for monitoring pressure for low pressure alarm. Pressure gauge shall be included on the downstream side of each pump and pressure transducer shall be included on the downstream side of pumps. Sufficient pressure check points shall be included in the circuit at various points for connecting pressure gauge, as and when required. Each filter shall be provided with mechanical clogging indicator and pressure switch for audio-visual alarm for filter clogging.

22.1.2.15 All valve stands shall be provided with isolation valves on the pressure lines and check valves on the tank return lines and leakage lines near the valve stands.

22.1.2.16 Each pump-motor unit, return line filter unit,circulation filter-cooler unit, valve stand and accumulator stand shall be provided with drip tray and drain valve.

22.1.2.17 Tank units, pumping stations, filter-cooler units, valve stands and stands shall be provided with electrical junction box and shall be pre-wired upto junction box.

22.1.2.18 Anodised circuit plates shall be provided for the tank units, power units, parallel filtration-cooling units, valve stands and accumulator stands.

22.1.2.19 Hydraulic cylinders shall be provided with adjustable end cushions at both ends.

22.1.2.20 The Hydraulic pipelines shall be designed and sized such that the velocity of fluid in pipeline shall be as follows:

For hydraulic pressure line upto 150 bar pressure	..	Velocity max. 4.0 m/sec
For hydraulic pressure line above 150 bar pressure	..	Velocity max. 4.5 m/sec
For tank line	..	Velocity less than 2.0 m/sec
For suction line	..	Velocity less than 0.5 m/sec
For circulation line	..	Velocity approx. 1 to 1.5 m/sec

All pipes for hydraulic systems shall be stainless steel pipes as per DIN standard. The interconnecting piping inside the hydraulic station shall be of stainless steel. All other details of the interconnecting piping for hydraulic systems shall conform to General Specification for Pipework (GS No.VSP/6.3-M-01). Considering the tentative locations of Hydraulic pump station at zero meter level and valve stands at existing pulpits located at +12.5 mtr level, the pipe line route length will be 80mtrs from Hydraulic station to valve stands and 100 mtrs from Valve stands to equipment for each installation.

The pipework shall include the piping within the hydraulic tank-pump stations as well as complete interconnecting piping between hydraulic power packs and actuators via valve stands and accumulator stands.

For hose, the bursting pressure shall be not less than 5 times the maximum working pressure of the system. All the hoses in hot area shall be with stainless steel braided cover and silica cloth cover.

Pipework and hose assemblies shall be suitable for operating temperature between 10°C and 90°C.

Pickling and flushing of interconnecting piping for all hydraulic systems shall be carried out.

22.1.2.21 One (1) number loose pressure gauge of each range with hose and minimess coupling shall be provided for each hydraulic system for measuring pressure at different pressure check points. A total testing kit shall be provided.

22.1.2.22 The hydraulic systems shall be started from MCCs/ local control panels inside the hydraulic rooms. Remote controls shall also be provided in the control rooms or desks. The hydraulic directional control valves and other electrical valves shall be operated from control rooms/control desks.

22.1.2.23 Audible and visible alarms shall be provided in the control panel for indicating malfunctioning of any component leading to any of the following conditions:

a) High and low pressure in the system
b) Excessive temperature of hydraulic oil
c) High level of hydraulic oil in reservoir
d) Low level of hydraulic oil in reservoir

e) Low-low level of hydraulic oil in reservoir and pumps cut-off
f) Pipe fracture/leakage alarm facility
g) Clogging of filters
h) Motor overload

All the above fault alarms shall be duplicated in level-1, i.e. in the HMI in control room/desk. Fault alarms from field mounted devices near valve stands and/or equipment shall also be provided in the HMI in control room/desk.

22.1.2.24 Cylinders/Hydraulic motors

Hydraulic Linear Motors: Hydraulic cylinders shall be designed to meet the working pressure of the system and tested to a minimum of 150% of the nominal design pressure.

Hydraulic Rotary Motors: Hydraulic rotary motors shall be designed to meet at least 125% of the normal output torque and 125% of the maximum system pressure.

The hydraulic motor shall also be designed such that it will not be overloaded under all conditions of operation of equipment which is actuated by the motor.

22.1.2.25 Hydraulic oil shall be unloaded from barrels/tanker into the tanks of hydraulic systems by a mobile motorised transfer pump-motor-filter unit. The proposal for the removal of unusable spent hydraulic oil from the systems shall be clearly mentioned.

22.1.2.26 All hydraulic equipment, piping and components either located at an elevated height or otherwise shall be accessible, have adequate working clearance and be mounted in a position that will not interfere with the equipment adjustments or maintenance and shall not require the use of portable platforms or ladder. For maintenance, removal of equipment other than that requiring maintenance shall not be necessary.

22.1.3 **Scope of work**

22.1.3.1 Design, engineering, procurement, manufacture, fabrication, assembling, testing and supply of all hydraulic systems, valve stands/controls, accumulator stands including interconnecting piping.

22.1.3.2 Supply of all hydraulic systems for the actuation of hydraulic cylinders, hydraulic motors and actuators for cast house equipment, as required. The hydraulic systems shall include tank units, pump-motor units, circulation units, valve stands and accumulator stands.

22.1.3.3 Supply of all hydraulic cylinders, hydraulic motors and actuators, as required.

22.1.3.4 Supply of local control panel for each hydraulic system. Constructional features shall be as per VSP-GS-E-05.

22.1.3.5 Supply of one (1) No. mobile oil filling pump-motor-filter unit for unloading fresh hydraulic oil from barrels to the tanks of hydraulic systems.

22.1.3.6 Supply of one (1) No. electrostatic liquid cleaner for each hydraulic system containing proportional valve or servo valve, if any.

22.1.3.7 Supply of interconnecting piping between each hydraulic tank-pump unit and hydraulic cylinders/ actuators via valve stands & accumulator stands.

22.1.3.8 Supply of all 'Hilti' type foundation bolts, nuts and washers for the equipment of all hydraulic systems including electrical control panel.

22.1.3.9 Supply of one (1) No. loose pressure gauge of each range with minimess hose and minimess coupling for each hydraulic system.

22.1.3.10 Supply of one (1) set of accumulator charging set for filling nitrogen to the accumulator, for hydraulic system & its accessory equipment.

22.1.3.11 Supply of anodised circuit plates for tank units, pump-motor-filter units, valve stands and accumulator stands for each hydraulic system.

22.1.3.12 Supply of adequate number of flushing filter elements for flushing of hydraulic interconnecting piping including hydraulic systems.

22.1.3.13 Supply of first fill of hydraulic oil for each hydraulic system.

22.1.3.14 Supply of commissioning spares for hydraulic systems.

22.1.3.15 Supervision of erection, testing and commissioning of all equipment of hydraulic systems, control panels, complete interconnecting piping etc.

22.1.3.16 Pickling and flushing of interconnecting piping between each hydraulic tank-pump unit and hydraulic actuators via valve stands and accumulator stands are to be supervised by the tenderer.

22.1.3.17 Supply of flushing oil for flushing of interconnecting piping including systems. Adequate quantity of flushing filter elements shall be provided for flushing of hydraulic interconnecting piping including systems.

One (1) number mobile motorised transfer pump- motor-filter unit shall be provided for filling fresh hydraulic oil to the tanks of hydraulic systems from barrels. The fineness of filter shall be 5 micron. The mobile filling unit shall be complete with electrical

control box, 15 m long cable with 3-pin plug and 15 m suction & delivery hoses.

One (1) no. accumulator charging set complete with manifold block, isolation valve, hose and pressure gauge shall be provided for filling accumulators with nitrogen for hydraulic systems & its accessory equipment.

22.1.3.18 Necessary test kit for proportional valves and servo valves, if any, shall be provided.

22.1.3.19 The quantity and quality requirements of hydraulic oil shall be clearly indicated.

22.1.3.20 The space required for storage of fresh hydraulic oil barrels and spent hydraulic oil barrels and the quantity to be stored normally, shall be indicated.

22.1.3.21 Supply of one (1) no. of low vacuum dehydrator anddegassing system by the tenderer.

23.0 QUESTIONAIRE

Mudgun:

- Quantity
- Make
- Drive
- Type of control
- Display locations
- Plugging pressure, unit
- Hydraulic pressure, unit
- Plugging speed, unit
- Nozzle diameter, unit
- Holding force, unit
- Life, unit
- Cooling of clay barrel
- Water requirement/nozzle, unit
- Clay volume indicator
- Mud charger
- Height
- Weight
- Nozzle adjustment - Upwards, downwards, horizontal
- Clay specification
  * Clay type
  * Clay shelf life
  * Grain size
  * Volatile matter
  * Bulk density
  * Workability index at 50 deg C
- Operation during power failure
- Interlocking with operation of other C/H equipment
- Holding time at tap hole after plugging

Taphole drilling machine:

- Quantity
- Make
- Drive
- Type of control
- Stroke Length, unit
- Hammering force - Forward direction, unit
- No. of Hammering cycles/min in forward direction
- Hammering force - Reverse direction, unit
- No. of Hammering cycles / min in Reverse direction
- Hydraulic pressure, unit
- Drill bit diameter, unit
- Soaking bar diameter, unit
- Drilling speed, unit
- Retraction speed, unit
- Rotation speed, unit
- Maximum Torque, unit
- Drilling angle, unit
- Slewing time & angle, unit
- Taphole length measurement system, unit
- Life
- Operation during power failure
- Interlocking with operation of other C/H equipment
- Weight

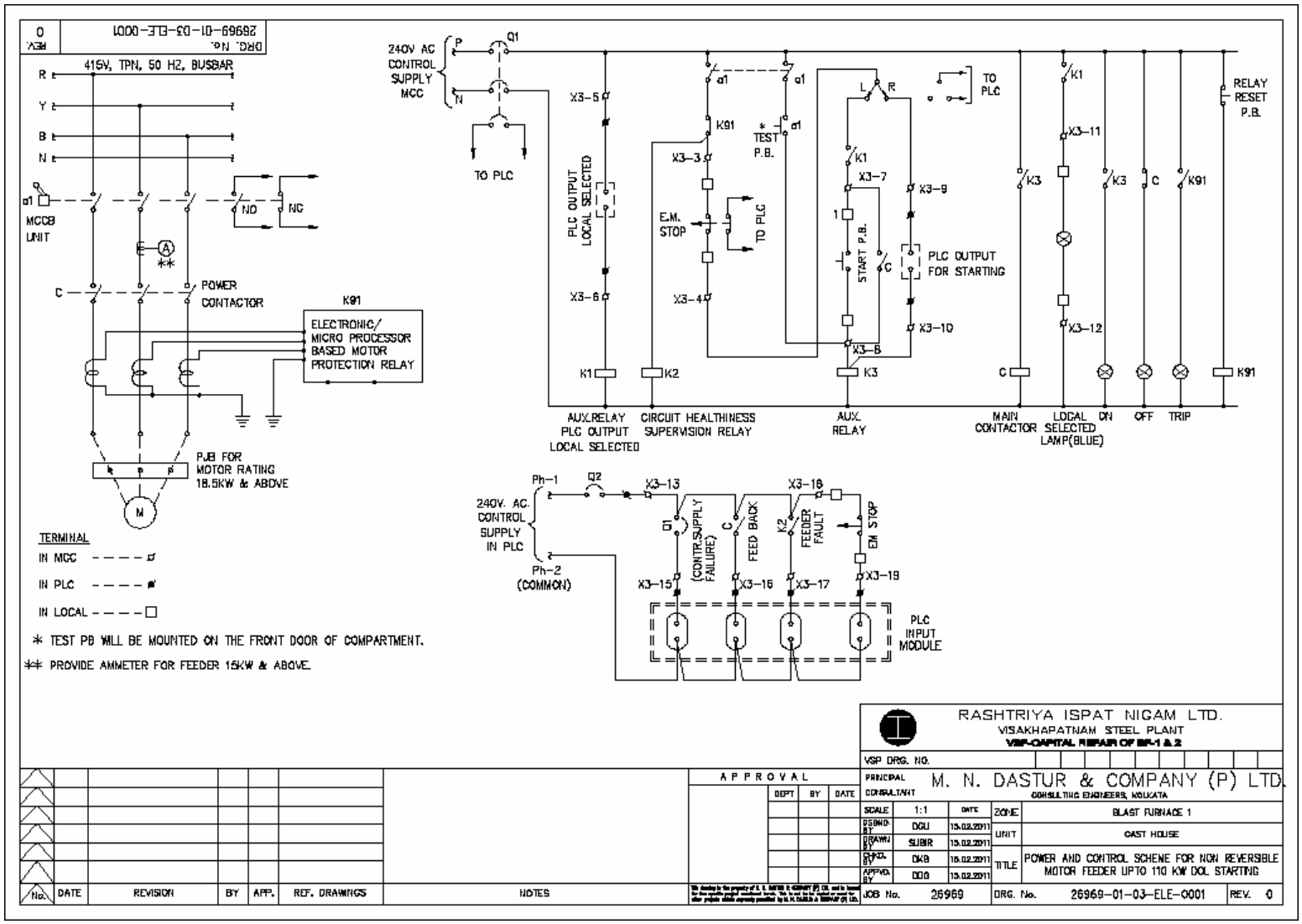
Hydraulic system:

- Hydraulic oil tank capacity, unit
- Electrostatic oil
- Capacities of hydraulic pumps
  * Main Pump, unit
  * Circulation pump, unit
  * Pilot pump, unit
- Operating pressure, unit
- Pilot pump pressure, unit
- Oil flow for drilling machine, unit
  * Drilling
  * Slewing
  * Hammer
  * Carriage Feed

- Oil flow for mudgun
  * Slewing Piston

- Nos. of accumulator station
- Type of accumulator

ANNEXURE - 1									
SCOPE MATRIX									
Sl.no		**Description**	**BD**	**BE**	**DE**	**SU**	**ER**	**CO**	**Remarks**
1		**Cast house Equipment**							
		Mud gun	Basic data by Purchaser						
		- Key components of mudgun	T	T	T	T	P	T+P	
		- Other components of mudgun	T	T	T	T	P	T+P	
		Drilling machine	Basic data by Purchaser						
		- Key components for drilling machine	T	T	T	T	P	T+P	
		- Other components for drilling machine	T	T	T	T	P	T+P	
		Hydraulic system	Basic data pertaining to Cover manipulator by Purchaser						
		- Powerpack	T	T	T	T	P	T+P	
		- Hydraulic piping and fittings	T	T	T	T	P	T+P	
		- Cooling pipelines for powerpack	T	T	T	T	P	T+P	
		- Valve stand	T	T	T	T	P	T+P	
		Electrical, instrumentation and automation							
		- Power, control and instrumentation cables	T	T	T	P	P	T+P	
		-Special cables	T	T	T	T	P	T+P	
		- Electrical equipment panel/MCC	T	T	T	T	P	T+P	
		- PLC based Automation system	T	T	T	T	P	T+P	
		- Control switchboard	T	T	T	T	P	T+P	
		- Control desks / Posts / stations / Local control stations / local control panels	T	T	T	T	P	T+P	
		- Electrical & instrumentation system	T	T	T	T	P	T+P	
		Utility services required for equipment	T	T	T	T	P	T+P	
		Water pipeline for cooling the equipment	T	T	T	T	P	T+P	
		Civil & structural	T	T	P	P	P	T+P	
BD		**Basic Document**							
BE		**Basic Engineering**							
DE		**Detail Engineering**							
SU		**Procurement and supply**							
ER		**Erection**							
CO		**Commissioning**							
T		**Tenderer**							
P		**Purchaser**							



RASHTRIYA ISPAT NIGAM LTD.
VISAKHAPATNAM STEEL PLANT
VSP-CAPITAL REPAIR OF BF-1 & 2

VSP DRG. NO.

PRINCIPAL CONSULTANT: M. N. DASTUR & COMPANY (P) LTD.
CONSULTING ENGINEERS, KOLKATA

No.	DATE	REVISION	BY	APP.	REF. DRAWINGS	NOTES

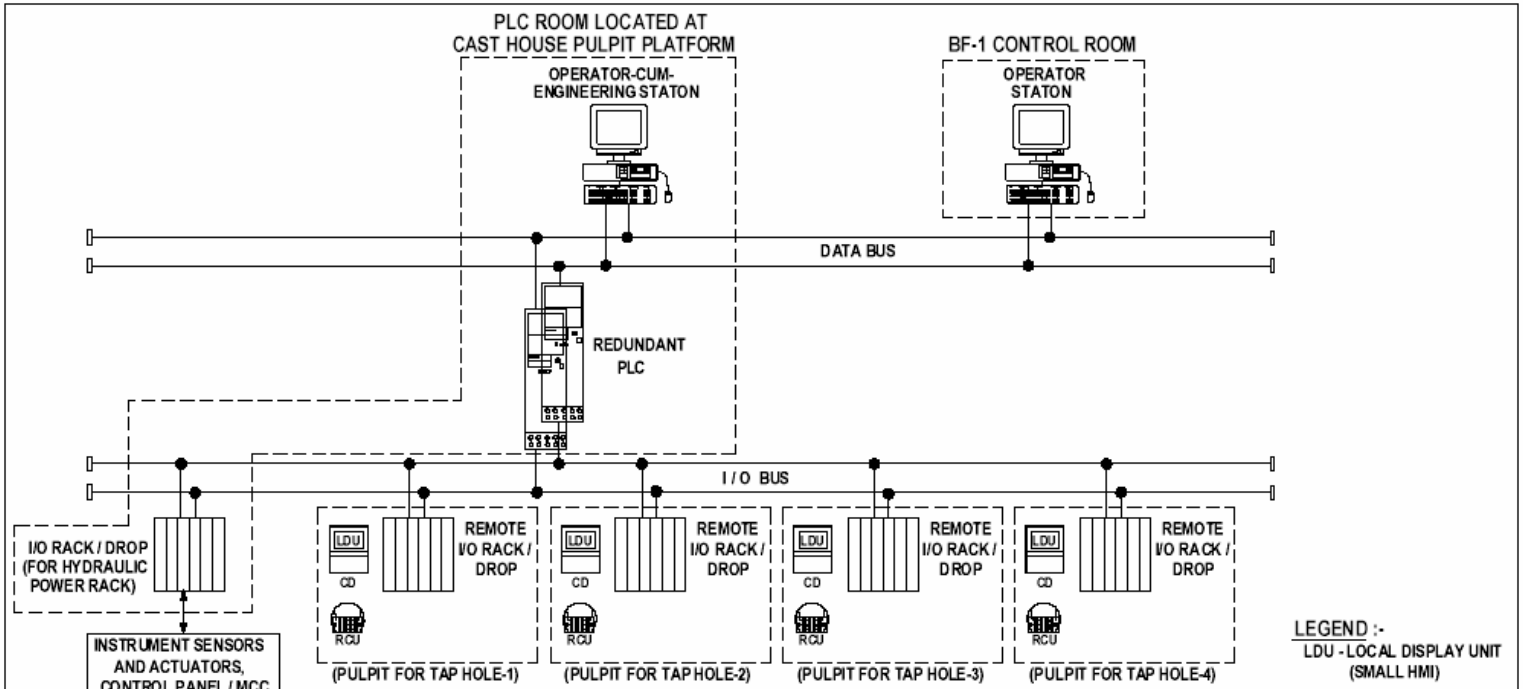
APPROVAL

DEPT	BY	DATE

SCALE	1:1	DATE
DSGND. BY	DGU	15.02.2011
DRAWN BY	SUBIR	15.02.2011
CHKD. BY	DKB	15.02.2011
APPVD. BY	DDB	15.02.2011

ZONE: BLAST FURNACE 1
UNIT: CAST HOUSE
TITLE: POWER AND CONTROL SCHEME FOR NON REVERSIBLE MOTOR FEEDER UPTO 110 KW DOL STARTING

JOB No. 26969
DRG. No. 26969-01-03-ELE-0001
REV. 0



LEGEND :-

LDU - LOCAL DISPLAY UNIT (SMALL HMI)

CD - CONTROL DESK

RCU - RADIO CONTROL UNIT

NOTE :-

1. INTERFACE BETWEEN MUDGUN & DRILLING MACHINE PLC SYSTEM AND BF-1 MAIN PLANT LEVEL-1 AUTOMATION SYSTEM SHALL BE CONSIDERED AS PER CLAUSE NO. 21.3.2 OF TS
2. HARDWIRED INTERFACE BETWEEN MUDGUN & DRILLING MACHINE PLC SYSTEM AND COVER MANIPULATOR SHALL BE CONSIDERED.
3. HOT REDUNDANCY SHALL BE PROVIDED FOR CPU, POWER SUPPLY, COMMUNICATION MODULE, I/O BUS, DATABUS.
4. DI / DO CARDS : 24VDC
   AI / AO CARDS : 4-20mA (ISOLATED)

RASHTRIYA ISPAT NIGAM LTD.
VISAKHAPATNAM STEEL PLANT
VSP-CAPITAL REPAIR OF BF-1 & 2

CLIENT DRG. NO.

PRINCIPAL CONSULTANT: **M. N. DASTUR & COMPANY (P) LTD.**
CONSULTING ENGINEERS, KOLKATA

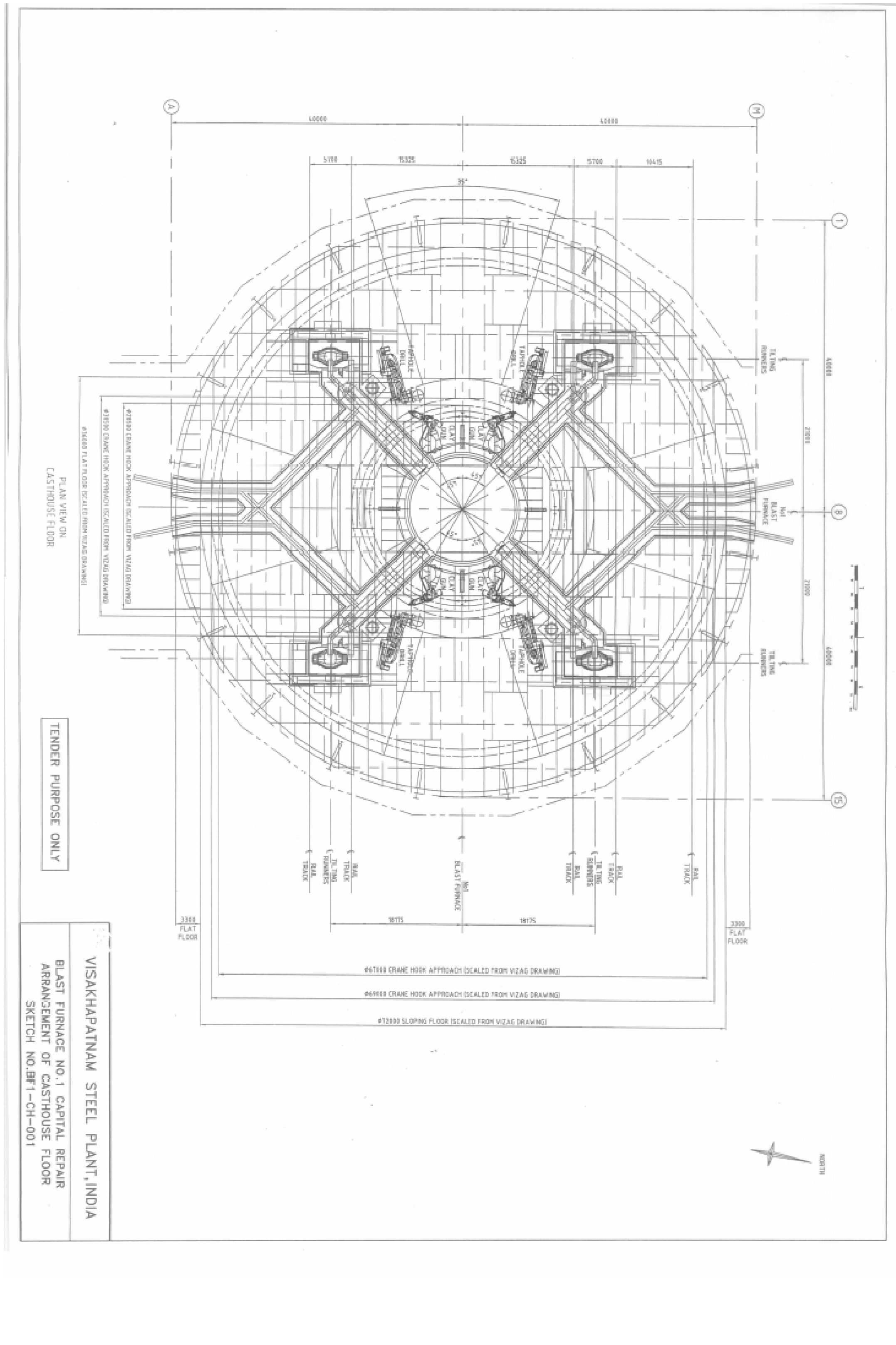
FOR TENDER PURPOSE ONLY

NOTES

No.	DATE	REVISION	BY	APP.

SCALE	1:1	DATE	
DSGND. BY	PRD	12.06.2010	ZONE: BLAST FURNACE 1
DRAWN BY	JND	12.06.2010	UNIT: CAST HOUSE
CHKD. BY	PRD	12.06.2010	TITLE: AUTOMATION SYSTEM CONFIGURATION DIAGRAM FOR MUDGUN & DRILLING MACHINE OF BF-1
APPVD. BY	UCH	12.06.2010	

JOB No. 26969 | DRG. No. 26969-01-03-ELI-0001 | REV. 0


VISAKHAPATNAM STEEL PLANT, INDIA
BLAST FURNACE NO.1 CAPITAL REPAIR
ARRANGEMENT OF CASTHOUSE FLOOR
SKETCH NO.BF1-CH-001
TENDER PURPOSE ONLY
PLAN VIEW ON CASTHOUSE FLOOR
NORTH
TILTING RUNNERS
RAIL TRACK
No1 BLAST FURNACE
TAPHOLE
DRILL
CLAY GUN
FLAT FLOOR
Ø67000 CRANE HOOK APPROACH (SCALED FROM VIZAG DRAWING)
Ø69000 CRANE HOOK APPROACH (SCALED FROM VIZAG DRAWING)
Ø72000 SLOPING FLOOR (SCALED FROM VIZAG DRAWING)

RASHTRIYA ISPAT NIGAM LIMITED
VISAKHAPATNAM STEEL PLANT
VISAKHAPATNAM

SPECIFICATION NO. VSP-BF.1-CR-PRI-002

for

HYDRAULIC MUDGUN AND DRILLING MACHINE OF BLAST FURNACE-1

PERFORMANCE GUARANTEE

PART – D

FEBRUARY 2011

M.N. DASTUR & COMPANY (P) LIMITED
Consulting Engineers
P-17, Mission Row Extension
Kolkata 700 013

PERFORMANCE GUARANTEE

1.0 PERFORMANCE GUARANTEE TESTS

1.1 All plant, machinery and equipment are guaranteed for design, materials, workmanship and satisfactory performance as stated in this specification and in accordance with relevant clauses of the Contract.

1.2 The successful tenderer shall be responsible for carrying out performance tests on the equipment supplied by him in the presence of the Purchaser and the engineer to demonstrate that the plant, machinery and equipment is capable of achieving the performance guarantees as specified in this specification and contracted for. Instrument gauges and flow meters installed for normal operation of the plant, machinery and equipment shall be made use of during the performance tests as far as practicable. The successful tenderer shall also provide any additional instrument required. Manning required for the performance tests shall not be more than the manpower required for normal operation. The performance tests shall be carried out by the successful tenderer as specified in this specification and contracted for.

1.3 The performance tests will be carried out after the commissioning of the BF-1 according to the stipulation of the Contract. The performance test of each equipment shall be carried out for twelve (12) tapping at normal operating conditions of blast furnace (i.e BF operating with a top pressure of 2.4 bar(g)) after ascertaining that the equipment is commissioned and is capable of conducting the performance guarantee test. During the PG test the tenderer shall demonstrate all the critical operating parameters for all the equipment.

2.0 PRECONDITIONS FOR PERFORMANCE TESTS

Conditions to be satisfied before the test period:

General:

- The equipment shall be in normal working condition at the start of the tests.
- Purchaser's blast furnace experienced personnel shall be available for the operation of the equipment and its auxiliaries.
- Purchaser's blast furnace supervision and operating personnel shall, before start of the performance tests, become familiar with the detailed test procedures.
- Instrument, gauges and flow meters installed for normal operation of the plant, machinery and equipment shall be used during the performance tests for the evaluation of the performances as far as practicable.

2.2 **Conditions to be satisfied during the performance tests:**

During the performance tests the equipment will be operated under the supervision

of Tenderer personnel. Purchaser will provide labour, power and utilities. Tenderer shall provide competent personnel with full access to supervise and verify operating records, delays and other pertinent data necessary to evaluate the tests.

2.2.1 Tests shall be carried out in accordance with the protocol for "Procedure for performance tests" developed and agreed upon by Purchaser and Tenderer before start of the performance tests.

2.2.2 The equipment operating conditions will be in accordance with the values as specified in the Contract Specification.

2.2.3 If the equipment operating conditions during the performance test execution period are different, the same will be revised according to the correction method to be mutually agreed upon and recorded in the "Procedure for performance tests".

2.2.4 Purchaser and Tenderer shall schedule tests during periods that are free from unusual distractions such as casual observers or visitors, major maintenance operations, operator training or other circumstances that may prevent efficient operations.

2.2.5 Purchaser shall provide the necessary experienced crew as required for normal operation. During the test period the equipment should not be put down for maintenance without mutual consent.

2.2.6 All the other related equipment and facilities shall be fully conditioned and maintained and further, normal and stable operation shall be maintained.

3.0 OTHER CONDITIONS

3.1 Should the continuous operation of the equipment during the performance test be interrupted due to:

- Difficulties with the plant, machinery and equipment supplied by Tenderer
- The inadequacy of Tenderer's supervision of erection, testing and start-up
- To defect in the erection work

then the performance test shall be re-started and run again for the whole of the specified period of performance test according to the stipulation of the Contract.

3.2 If the results of the performance tests are not satisfactory, then the tests shall be repeated after necessary rectification and adjustments in accordance to the stipulation of the Contract.

RASHTRIYA ISPAT NIGAM LIMITED
VISAKHAPATNAM STEEL PLANT
VISAKHAPATNAM

SPECIFICATION NO. VSP-BF.1-CR-PRI-002

for

HYDRAULIC MUDGUN AND DRILLING MACHINE OF BLAST FURNACE-1

GENERAL SPECIFICATION AND LIST OF PREFERRED MAKES

PART – C, VOLUME – III

FEBRUARY 2011

M.N. DASTUR & COMPANY (P) LIMITED
Consulting Engineers
P-17, Mission Row Extension
Kolkata 700 013

VSP-BF-1 CATEGORY – 1 CAPITAL REPAIR
LIST OF PREFERRED MAKES

Sl. No.	Component	Make
MECHANICAL (GENERAL)		
1	Helical/Bevel Helical Gear Box (Solid shaft)	ELECON/GREAVES/NAW/FLENDER/ SHANTI GEARS/ VULCAN ENGINEERS
2	Helical/Bevel Helical Gear Box (Hollow shaft)	ELECON/GREAVES/NAW/FENNER/CYCLO/ SHANTI GEARS/ VULCAN ENGINEERS
3	Planetary Gear Box	ELECON/CYCLO/ FLENDER/SHANTI GEARS ELECON/NAW/SHANTI/GREAVES
4	Worm Reducer	SEW/POWER BUILD/IC-BAUER/ GREAVES/ NAW/ SHANTI GEARS
5	Helical Geared Motor	SEW/POWER BUILD/IC-BAUER/ GREAVES/ NAW/ SHANTI GEARS
6	Worm Geared Motor	HAGGLUNDS
7	Low Speed High Torque Hydraulic Motor (complete with power unit and hy-draulic system)	VOITH/ELECON/FLUIDOMAT/PEMBRIL
8	Fluid Coupling	(GREAVES) LOVEJOY/FENNER/ ESBI
9	Tyre Coupling	NAW/FENNER/ELECON/FMG/HI-CLIFF /LOVEJOY/ WMI CRANES / FLENDER
10	Gear Coupling	NAW/FENNER/LOVEJOY/ELECON
11	Pin-Bush Coupling	LOVEJOY (BIBBY)/GBM/FENNER
12	Resilient Coupling	KATEEL/SVENDBORG
13	Disc Brake	SVENDBORG/STROM KRAFT/KAKKU
14	Thruster Brake	BCH/STROM KRAFT/ELEKTROMAG/ KAKKU SKF/ABL/SBL/NBC
15	D.C.E.M Brake	SKF/KOYO/NTN/INA/NBC/FAG/ZKL
16	Seize-Resistant Ball Bearing	SKF/KOYO/NTN/FAG/ZKL
17	Ball Bearing	COOPER/HKT (KOREA)/FAG
18	Roller Bearing	ROTHE-ERDE/DRE-CON/
19	Split Roller Bearing	
20	Large diameter Slew Bearing	
BELT CONVEYOR COMPONENTS		
1	Belt Conveyor Pulley	ELECON/TRF/KALI
2	Belt Conveyor Idler Set	ELECON/TRF/KALI
3	External Scraper for Belt Conveyor	HOSCH/SCORPIO/MARTIN (THEJO)

Sl. No.	Component	Make
4	Internal Scraper for Belt Conveyor	HOSCH/SCORPIO/MARTIN (THEJO)
5	Modular Skirt & Skirt Rubber	TEGA/THEJO/TECHNOFAB/KAVERI/FORECH
6	Tracker Roller	HOSCH/KAVERI
7	Impact Pad for Belt Conveyor	TEGA/KAVERI/FORECH
8	Conveyor Belting (steel cord)	PHOENIX YULE/IMAS/DUNLOP
9	Conveyor Belting (fabric) (all categories) (for light duty conveyors)	PHOENIX YULE/MRF/NORTH LAND ORIENTAL/ HINDUSTAN /YOKOHAMA
10	Belt Vulcanising Unit	SV DATTER
CHUTE & HOPPER LINER		
1	Rubber Liner	TEGA/KAVERI/FORECH
2	UHMWPE Liner	KAVERI/POLI-HI SOLIDURE
3	Polyurethane Liner	ELASTOKART
4	Deposited Metal Liner/ Compound Wear Plates	CB&K/L&T/VAUDID
5	Cast Basalt Liner	DEMECH
MISCELLANEOUS COMPONENT & EQUIPMENT		
1	Over Band Magnetic Separator	ERIEZ/ELEKTROMAG/POWER BUILD/ ELECTROZAVOD/KAKKU
2	Suspended Electromagnet	ERIEZ/ELEKTROMAG/POWER BUILD/ ELECTROZAVOD/KAKKU
3	Metal Detector	THERMO-RAMSEY/ELEKTROMAG/ PBL
4	Belt Scale	SCHENCK J&N/ TRANSWEIGH/ KISTLER-MORSE/PBL
5	Belt Weigh Feeder	SCHENCK J&N/TRANSWEIGH/THERMO-RAMSEY/ PRL/KISTLER-MORSE
6	Motorised Linear Actuator	HEIN LEHMANN/INDIANA/PREPEC/ ACTUATOR INDIA
7	Electromagnetic Vibro Feeder	IC/ELECON/TRF/ELECKTROMAG/ SAYAJI/BHP (VIMEC)
8	Electromechanical Vibro Feeder	IC/ELECON/TRF/BHP (VIMEC)
9	Circular Motion Vibrating Screen	IC/TRF/MBE/SAYAJI/METSO/SANDVIK
10	Linear Motion Vibrating Screen	IC/TRF/MBE/ELECON/METSO/SANDVIK
11	Flexi-Deck Vibrating Screen	IC/MBE/TECPRO/TRF/METSO/SANDVIK
12	Apron Feeder	TRF/L&T/MBE/METSO/SANDVIK/ELECON
13	Crusher (Cone)	SANDVIK/METSO/KOBE/HEC

Sl. No.	Component	Make
14	Crusher (Hammer Mill, Roll & Ring gramulator)	SAYAJI /TRF /MBE/L&T/SANDVIK/METSO/ KOBE/KRUPP
15	Double Cone Valves	OLM/L&T
16	Burner	OLM
17	Combustion air blower	FLAKT / TLT /ARF
18	Transmission chains	ROLCON
19	Sprocket	ROLCON/TI/DIAMOND/ROLON
20	Hydraulic jack	IMPORTED
21	Puller	IMPORTED / MAX-PULL / TRACTEL-TIRFOR / PULLMAN
22	Flexowell type Conveyor	METSO/TRF/NAVIN
23	High tensile fasteners	GKW / SUNDARAM / FIT TIGHT / UNBRAKO
24	Paints	ASIAN / J&N / ADDISON / GAREWARE / BERGER/ SHALIMAR / ICI / GOODLAS NEROLAC/ CHESTERTON/ MAKKCHEM/CLEANCOATS
25	Manufacturing and Assembly of Mechanical items	L&T/ KCP/ SIMPLEX/ ISGEC/ BHILAI ENGG/BECO
26	Fabrication items	HMTC/METAL FAB/ ROURKELA FABRICATORS/ SRIKUMARAN/ MODERN ENGINEERS/ METCO/ L&T/ ISHA ENGINEERING/PAGODA/JAYA/VRINDA
REFRACTORY AND INSULATING MATERIALS		
1	Alumino silicate	TRL, OCL, MAITHAN, OIL, BRL, MPR REFRACTORIES, RASSI REFRACTORIES, VISHWAKARMA REFRACTORIES, KABITA REFRACTORIES, MAHAKOSHAL REFRACTORIES, VALLEY REFRACTORIES, MANISHRI REFRACTORIES, RAJHANS REFRACTORIES, SKG REFRACTORIES, NILACHAL REFRACTORIES ASSOCIATED CERAMICS LTD., NATIONAL REFRACTORIES Ltd.
2	Basic	TRL, OIL, OCL, MPR REFRACTORIES, BURN STANDARD, BRL, RASSI REFRACTORIES, SKG REFRACTORIES
3	Castables	TRL, ACC, OCL, MPR REFRACTORIES, BRL, VESUVIUS INDIA LTD., RASSI REFRACTORIES, REFCOM (INDIA) PVT. LTD., ASSOCIATED CERAMICS LTD., SKG REFRACTORIES, OAL, MAITHAN REFRACTORIES
4	Insulation materials	CUMI, MAITHAN, ACC REFRACTORIES, ACHINT CHEMICALS, RAJHANS REFRACTORIES, SHARAD REFRACTORIES (P) LTD., CHAMUNDA TAP NIRODHAK
5	Blanket, Fibre, Boards, Felts,	UNIFRAX, MMTCL, LLOYDS INSULATION,

Sl. No.	Component	Make
	Papers etc.	HYDRABAD INDUSTRIES, MEGHA INSULA-TION
HANDLING EQUIPMENT		
1	Elevator	OTIS / THYSSEN KRUPP ECE ELEVATOR/ KONE/ IBIJI
2	Tanker	NMF/ TPS
UTILITY SYSTEM		
A.	AIR CONDITIONING & VENTILATION SYSTEMS	
	CHILLER UNITS	BLUE STAR/CARRIER/DUNHAM BUSH/ VOLTAS/YORK/TRANE/KIRLOSKAR/ HITACHI
	AIR HANDLING UNITS	BLUE STAR/CARRIER/EMERSON/ VOLTAS
	PACKAGE AIR CONDITIONERS	BLUE STAR/CARRIER/EMERSON VOLTAS
	SPLIT AIR CONDITIONERS	BLUE STAR/CARRIER/EMERSON VOLTAS/HITACHI
	WINDOW AIR CONDITIONERS	BLUE STAR/CARRIER/VOLTAS/HITACHI
	PACKAGE TYPE FRP COOLING TOWERS	DBR/HAMMON/PAHARPUR/SREERAM/THERMOPAK
	VENTILATION SYSTEMS	C.DOCTOR/DUSTVEN/NADI/S.K SYSTEM/ VOLTAS/ABB
	CENTRIFUGAL/AXIAL FLOW FAN FOR VENTILATION SYSTEM	C. DOCTOR/DUSTVEN/NADI/FLAKT/ S.K.SYSTEM
	INSULATION	BEARDSHELL/FGP/LLOYD/UP TWIGA
	AIR FILTER	C.DOCTOR/DYNA/FMI/S.K SYSTEMS
	GI SHEETS	JINDAL/SAIL/TATA/ISPAT/BHUSAN
	ALUMINIUM SHEETS	BALCO/HINDALCO/INDAL
B.	AIR POLLUTION CONTROL SYSTEM	ALSTOM/ACC/THERMAX/RIECO/BHEL
	BAG FILTER	THERMAX/RIECO/ALSTOM PROJECTS INDIA LTD/ACC/ANFREW YULE
	ESP	THERMAX/BHEL/ACC/ALSTOM POWER
	FAN	FLAKT WOODS / TLT/C.DOCTOR/ANDREW YULE/BHEL/NADI AIRTECHNICS/ARF/ DUSTVEN/RITZ/ACCO/BATLIBOI
	CHAIN CONVEYOR	DEMECH/MECP
	EXPANSION JOINTS	KELD/GBM
	DAMPER	FOURESS/BACHMAN/TSC

Sl. No.	Component	Make
C.	PIPING SYSTEM	
	PIPES	TATA/BST/JINDAL/THE INDIAN SEAMLESS AND METAL TUBES/ MAHARASHTRA SEAMLESS LTD/SAIL, ROURKELA/ KALYANI SEAMLESS
	PIPE FITTINGS	N.L. HAZRA/SHYAM ENGG/LIFE STYLE MARKETING/M.S. FITTINGS/ TEEKAY TUBE/ CHARGESON/VIVIAL FORGE PVT. LTD./TRUE FORGE/TUBE BEND
	TRAPS & STAINERS	UNI KLINGER/ESCO/FORBES MARSHAL
	EXPANSION JOINTS (METTALIC & NON-METALLIC)	ZAVERCHAND/ANUP ENGG./METTALIC BELLOW/SYSTEC FLEXO/SUR INDUSTRIES/IWKA
	GAS TIGHT ISOLATOR	FOURESS/L&T
D.	VALVES	
	GATE, GLOBE & CHECK VALVES:	
	CAST IRON	GM DALUI & SONS/ LEADER VALVES/LEVCON VALVES/NECCO SCHUBERIL & SALZER LTD /UPADHYAYA VALVES/ H.SARKAR & CO./AV VALVES/IVC/SHIVA DURGA/VALTECH INDUSTRIES/FLUID LINE VALVES/HAWA ENGINEERING
	CAST CARBON STEEL	FISHER XOMER SANMAR/NECO SCHUBERT & SALZER/ LEADER VALVES/KSB PUMP/FOURESS/ BDK/AUDCO/ VALTECH INDUSTRIES/ HAWA ENGINEERING/AV VALVES/OSWAL INDUSTRIES
	FORGED STEEL	AUDCO/BDK/FOURESS/LEADER/ NECO SCHUBERT/FISHER-XOMOX/AV VALVES/ VALTECH INDUSTRIES/ HAWA ENGINEERING/OSWAL INDUSTRIES
	BALL VALVES :	
	CAST IRON	AUDCO/BDK/FOURESS/REYNOLDS/ VALTECH INDUSTRIES
	CAST CARBON STEEL	AUDCO/BDK/FOURESS/VIRGO/ FISHER-XOMOX SANMAR/OSWAL INDUSTRIES/REYNOLDS/ VALTECH INDUSTRIES/LEADER
	FORGED STEEL	AUDCO/BDK/FOURESS/VIRGO/ OSWAL INDUSTRIES/REYNOLDS/ VALTECH INDUSTRIES/LEADER
	BUTTERFLY VALVES:	
	Cast Iron	AUDCO/BDK/FOURESS/INTER VALVE (INDIA) KSB PUMPS/SHIVA DURGA/ UPADHAYA VALVES/HI-TECH BUTTERFLY VALVES
	CAST CARBON STEEL	AUDCO/BDK/FOURESS ENGG(INDIA)/ INTERVALVE/HI-TECH BUTTERFLY VALVES

Sl. No.		Component	Make
		FORGED STEEL	AUDCO/BDK/FOURESS ENGG(INDIA)/ INTERVALVE/HI-TECH BUTTERFLY VALVES
		PLUG VALVES :	
		CAST IRON	AUDCO/FISHER-XOMOX SANMAR
		CARBON STEEL	AUDCO/FISHER-XOMOX SANMAR
		FORGED STEEL	AUDCO/FISHER-XOMOX SANMAR
		GOGGLE VALVE	AUDCO LTD/FOURESS ENGG (INDIA)
		PRESSURE REDUCING VALVES :	JNM/FISCHER XOMOX/ILP
		CONTROL VALVES :	JNM/FISCHER XOMOX/FISHER ROSEMOUNT/METSO/R.K.CONTROL/ TOSHNIWAL/ILP
		PRESSURE RELEASE VALVES :	JNM/ FISCHER XOMOX/ AUDCO CROSBY
		NEEDLE VALVES :	FISCHER XOMOX/TUFLIN/AUDCO/BDK
		FLOAT VALVES :	LEVCON/LEADER/SHIVA DURGA/UPADHYAY/IVI/IVC/H.SARKAR/G.M.DALUI
		AIR RELEASE VALVES:	LEVCON/LEADER/SHIVA DURGA/UPADHYAY/IVI/IVC/H.SARKAR/G.M.DALUI
		SPRING SUPPORTS	SUPPORTS SYSTEM/TECHNO INDUSTRIES
		VALVE ACTUATORS	AUMA/LIMITORQUE/ROTORK CONTROLS/EL-O-MATIC
		AIR COMPRESSOR	ATLAS COPCO/IR/ELGI/KIRLOSKER PNEUMATICS
		AIR DRYER	DELAIR/INDCON/ATLAS COPCO/PACE
		INSULATION	LLOYDS INSULATION/ROCKWOOL INDIA/JAYASHREE INSULATORS/FGP LIMITED/U.P.TWIGA FIBREGLASS LTD.
E.		HYDRAULIC SYSTEM	
		HYDRAULIC SYSTEM	REXROTH/VICKERS/PARKER/YUKEN (JAPAN)
		PUMPS (MAIN PUMPS)	REXROTH/VICKERS/PARKER/KAWASKI
		CIRCULATION PUMPS:	
	a)	SCREW PUMPS	ALWEILER/IMO
	b)	GEAR PUMPS	REXROTH/PARKER/RICKMEIER
		COMPENSATOR IN SUCTION LINE`	REXROTH/PARKER/VICKERS/YUKEN (JAPAN)
		VARIOUS TYPES OF HYDRAULIC VALVES	REXROTH/VICKERS/PARKER/YUKEN (JAPAN)
		FILTERS	HYDAC/PALL/EPE-EPPEN-STEINER GMBH/PARKER/INTER NORMEN

Sl. No.	Component	Make
	HEAT EXCHANGER (PLATE TYPE), GASKETTED DESIGN	ALFA LAVAL/INDSWEP/G.E.A
	ACCUMULATORS	HYDAC/REXROTH/EPE-EPPEN-STEINER GMBH/PARKER
	COUPLING	LOVE JOY/ROTEX
	PRESSURE SWITCH	REXROTH/DANFOSS/SWITZER/ VICKERS/PARKER/HYDAC
	SHUT-OFF VALVE (BALL TYPE)	FLUTEC/AUDCO/PARKER/LEGRIS/ HYDAC
	SHUT-OFF VALVE (BUTTERFLY TYPE)	AUDCO/KEYSTONE
	MINIMESS COUPLING	STAUFF/HYDROTECNIK
	HYDRAULIC MOTORS	DANFOSS/STAFFA/VOLVO
	PROPORTIONAL VALVES	REXROTH/VICKERS/PARKER/MOOG
	SERVO VALVES	MOOG/REXROTH
	WELD-ON TYPE PIPE FITTINGS	HYLOC/PARKER/AVIT
	PIPE	GANDHI SPECIAL/INDIAN SEAMLESS/CHOWKSI TUBES/HEAVY METAL AND TUBES /AVIT
	PRESSURE INDICATOR	WIKA/STAUFF/SWITZER
	TEMPERATURE INDICATOR	SWITZER/WIKA/STAUFFF
	THERMOSTAT	INDFOSS/SWITZER/VARMA-TRAFAG
	LEVEL INDICATOR	REXROTH/LEVCON/STAUFF/ VICKERS/ DR. TIEFENBACH/TECHTROL
	LEVEL SWITCH	LEVCON/ STAUFF/SRIDHAN/DR. TIEFENBACH
	HYDRAULIC CYLINDER	HUNGER/REXROTH/PARKER/WIPRO
	SAE FLANGES	AVIT/PARKER/HYLOC
	BUTT/SOCKET WELD FITTINGS	AVIT/PARKER/HYLOC
	AIR BREATHER (WITH SILICA GEL)	HYDAC/STAUFF/PALL
	PIPE CLAMP	STAUFF/HYLOC/HYDAIR
	FLEXIBLE HOSE	A) HOSE FROM : GATES / AEROQUIP/MARRWEL B) HOSE ASSEMBLY BY: GATES/HYDROKRIMP A.C/INSAP/PARKER/K.B. ENGINEERS
	CENTRIFUGE	ALFA LAVAL
	MOBILE MOTORISED PUMP-MOTOR-FILTER UNIT FOR OIL FILLING	HYDAC/PALL/INTERNORMEN/PARKER

Sl. No.	Component	Make
	LVDH	KLEENTEK/FERRO-CARE
	ELECTROSTATIC LIQUID CLEANER	KLEENTEK/FERRO-CARE
	HYDRAULIC SEALS	MERKEL/BUSAK SHAMBAN/HUNGER/HALLITE/ PARKER
	QUICK RELEASE COUPLING	PARKER/STAUFF/GUYSEN (USA)
F.	LUBRICATION SYSTEM	
	GREASE LUBRICATION SYSTEM	
	GREASE LUBRICATION SYSTEM	LINCOLN HELIOS INDIA LTD/DELIMON/AFMC
	MAIN GREASE PUMPING STATION	LINCOLN HELIOS/DELIMON/AFMC
	METERING FEEDERS	LINCOLN HELIOS/DELIMON/AFMC
	CHANGEOVER VALVES	LINCOLN HELIOS/DELIMON/AFMC
	GREASE FILLING PUMP (ELECTRICAL)	LINCOLN HELIOS/DELIMON/AFMC
	GREASE FILLING PUMP (PNEUMATIC)	ELGI/LINCOLN HELIOS/DELIMON
	ISOLATION VALVES	FLUTEC/PARKER
	FLEXIBLE HOSES	GATES/HYDROKRIMP A.C/INSAP
	PIPES	GANDHI SPECIAL/INDIAN SEAMLESS/ CHOWKSI TUBES/HEAVY METALS & TUBES
	FITTINGS	HYLOC/PARKER/AVIT
	PRESSURE GAUGE	WIKA/SWITZER/STAUFF
	PRESSURE SWITCH	LINCOLN HELIOS/DELIMON/AFMC
	END OF LINE PRESSURE SWITCH	LINCOLN HELIOS/DELIMON/AFMC
	OIL LUBRICATION SYSTEM	
	OIL LUBRICATION SYSTEM	DECTEL/SHAAN LUBE/LINCOLN HELIOS
	SCREW PUMPS	ALWEILER/IMO
	GEAR PUMPS	TUSHACO/ROTODEL
	FILTERS	BOLL & KIRCH/PALL
	HEAT EXCHANGER (PLATE TYPE), GASKETED DESIGN	ALFA LAVAL/INDSWEP/G.E.A
	VALVES (GLOBE, CHECK, BALL)	AUDCO/KSB/FOURESS/XOMOX
	PLUG VALVES	AUDCO/XOMOX
	RELIEF VALVE	AUDCO/LEADER
	PRESSURE GAUGE	WIKA/STAUFF/SWITZER
	PRESSURE SWITCH	INDFOSS/SWITZER/DANFOSS

Sl. No.	Component	Make
	TEMPERATURE INDICATOR	BELLS CONTROL/SWITZER/WIKA/STAUFF
	TEMPERATURE SWITCH	INDFOS/SWITZER/WIKA
	LEVEL INDICATOR	LEVCON
	LEVEL SWITCH	LEVCON/BELLS CONTROL
	FLOW SWITCH	LEVCON
	COUPLING	LOVE JOY/ROTEX
	FLOW GAUGE	LEVCON
	DIAPHRAGM REGULATING VALVES	FOURESS
	VALVE POSITIONERS	FOURESS
	PNEUMATIC CONTROLLERS	TAYLOR
	AIR BREATHER	HYDAC/PALL
	COMPENSATOR(S.S)	SURLUB
	WATERLINE FILTER	SUPERFLO/OTO KLIN/J.N. MARSHALL
	HEATER	ALCO
	PIPES	TATA/BST/JINDAL/INDIAN SEAMLESS/MAHARAHSTRA SEAMLESS
	FITTINGS	N.L.HAZRA/CHARGESON/SHYAM ENG
	HOSES	GATES/INSAP/HYDROKRIMP A.C.
	CENTRIFUGE	ALFA LAVAL/WEST FALIA
	MOBILE MOTORISED PUMP-MOTOR FILTER UNIT FOR OIL FILLING	HYDAC/PALL/INTERNORMEN/PARKER
	AIR/OIL SYSTEM	REBS/WARNER/LINCOLN
G.	PNEUMATIC SYSTEM	
	PNEUMATIC SYSTEM	FESTO/NUCON/ROSS
	PNEUMATIC VALVES	FESTO/NUCON/ROSS/NORGREN/SMC(JAPAN)
	PNEUMATIC FRL UNIT	VELJAN/SHAVO NORGREN /ROSS/SMC (JAPAN)/FESTO
	PNEUMATIC CYLINDERS	VELJAN/NUCON/FESTO/SCHRADER /NORGREN/SMC(JAPAN)/PARKER
	PNEUMATIC AIR BOOSTER	SMC (JAPAN)
	PNEUMATIC CONVEYING SYSTEM	RIECO/MBE/MACAWBER-BEEKAY/MAHINDRA ASHTECH/ENERGO/VCC
	PNEUMATIC SAMPLE CONVEYING SYSTEM	INDO-BERG LTD./ KERRY DRYING & CONVEYING SYSTEM PVT. LTD.

Sl. No.	Component	Make
	GAS HOLDER	CLAYTON WALKER/SMS DEMAG
	PRESSURE VESSELS	BHARAT HEAVY PLATES & VESSELS/ISGEC/ASSOCIATED PLATES & VESSELS/DECTEL/LLOYDS STEEL/L & T/BOC
	FLARE STACK	AIROIL FLAREGAS/COMBUSTION CONTROL/JOHN ZINK/ADOR WELDING LTD.
	ELECTRICAL HEAT TRACING	ADOR COOPERHEAT/RAYCHEM/THERMOGUARD/ INDCON PROJECTS & EQUIPMENT/UNITECH SYSTEMS
H.	FIRE PROTECTION SYSTEM	
	DETECTOR (INTELLIGENT & ADDRESSABLE)	NOTIFIER/EDWARD/CERBERUS AND UL/FM/LPC/APPROVED
	ALL MODULES (INTELLIGENT & ADDRESSABLE)	NOTIFIER/EDWARD/CERBERUS AND UL/FM/LPC/APPROVED
	FIRE ALARM PANEL (INTELLIGENT & ADDRESSABLE)	NOTIFIER/EDWARD/CERBERUS AND UL/FM/LPC/APPROVED
	REPEATER PANELS (INTELLIGENT & ADDRESSABLE)	NOTIFIER/EDWARD/CERBERUS AND UL/FM/LPC/APPROVED
	CABLES	UNIVERSAL/FORT/GLOSTER/INCAB/ INDUSTRIAL/FINOLEX/NICCO
	BATTERY	AMCO/STANDARD/EXIDE
	MANUAL CALL POINTS (INTELLIGENT & ADDRESSABLE)	UL/FM/LPC AND TAC APPROVED
	ELECTRONIC HOOTER (ADDRESSABLE)	UL/FM/LPC AND TAC APPROVED

WATER SYSTEM

A.	PUMPSETS	
1	Horizontal Centrifugal	KSB / KBL / M&P
2	Vertical centrifugal	KBL / KSB/ SU MOTORS/ GRUNDFOSS
3	Vertical turbine	KBL/WPIL/JYOTI/M&P
4	Submersible (Borewell)	KSB/ GRUNDFOSS/ CALAMA/CRI
5	Submersible drainage/sewage	KSB/ GRUNDFOSS/ SU/ WASP/KISHOR/MBLI
6	Slurry/Sludge	WARMAN/ DENVER/ HDO/ AKAY/ BDK/ SAM TURBO
7	Sewage	KBL/ M&P/KISHOR/MBH/KSB/ SAM TURBO
8	Chemical (centrifugal)	AKAY/ KHIMLINE/ KSB/ KBL/ PROCESS PUMPS/ANTICO/ SAM TURBO

Sl. No.	Component	Make
9	Dosing (Pos. disp.)	ASIA-LMI/ PROMINENT/ SHAPOTOOLS/ VK PUMPS/ GRUNDFOSS
10	Blowers	KAY/ SWAM/ EVEREST
B.	COOLING TOWERS	
1	Cooling tower	PCT/ BALCKE-DURR/GAMMON/SHRIRAM EPC/ L&T
2	Cooling tower fan	COOL FLOW/RECONDO/GAMMON STORK/ PCT/ PARU
3	Cooling tower gear box	ELECON/ RADICON/ PREMIUM/ PCT
C.	ENGINE	KIRLOSKAR CUMMINS/KOMATSU/ CATERPILLAR
D.	HEAT EXCHANGER	
1	Plate type	ALFA LAVAL/ TRANTER/ GEA/ NATIONAL DAIRY DEVELOPMENT/ SCHMIDT-BRETTEN INDIA
2	Finned tube type	PCT/ GEA/ BHPV
E.	TREATMENT PLANTS	
1	Filtration Plant - High rate - Ordinary	 THERMAX / NICCO/ VATECH/ ION EXCHANGE THERMAX/ NICCO/MARS/ RESIN/VATECH/ ION EXCHANGE
2	Waste water treatment plant equip.	HDO/ DORR OLIVER/THERMAX/EIMCO KCP/ PARAMOUNT/TRIVENI
3	Reverse Osmosis (R.O.) Plant	THERMAX/VATECH/DEGREMONT
4	R.O. membrane	FILMTECH/ TORE/ HYDRONAUTICS
5	Ultra filtration membrane	KOCH/FILMTECH/HYDRONAUTICS
F.	PIPES AND PIPE FITTINGS	
1	Carbon steel pipes	ERW/ JINDAL / SAIL / TATA/MSL /RSP/BST/FW/ SPW/PSL, VIZAG/ RATNAMANI
2	Carbon steel pipes - seamless	TATA /GANDHI TUBES/ INDIAN SEAMLESS/ MAHARASHTRA SEAMLESS/JINDAL
3	Stainless steel pipes	CHOKSI / RATNAMANI/ZENITH/STERLING/ BHARAT PIPES & FITTINGS/STANDARD
4	F.R.P. pipes and fittings	FIBRO PLASTICHEM / NOCIL / PIL /COROMONDEL / ORISSA PLASTICS/ GRAPHITE INDIA
5	F.R.P. vessels/tanks/Lining of tanks	FIBRO PLASTICHEM / NOCIL / PIL / COROMONDEL / ORISSA PLASTICS/ DEVI POLYMERS/ SINTEX
6	C.I. pipes	ELECTROSTEEL/ASOKA FERROCAST/ KESORAM/ KEJRIWAL
7	DI pipes	ELECTROSTEEL/KALAHASTI

Sl. No.	Component	Make
8	RCC pipes	IHP / OCL
9	HDPE/ PVC pipes (with ISI mark only)	PIL/CPE/MANIKYA/ HASTI/ ORIPLAST NOCIL/GODAVARI/MARUTI
10	Pipe fittings (MS/SS/CI)	N.L.HAZRA/M.S. FITTINGS/ SHYAM ENGG.
11	Gaskets	CHAMPION / IGP /REINZ/ TALBROS / ZAVERCHAND/ UNIKLINGER/ MECH PICK-LING/ PRIMER GASKET
12	Expansion joints (metallics & non-metallics)	METALLIC BELLOW / IWKA/ KELD-ELENOTOFT/ SUR INDUSTRIES / D WREN/ SYSTEC
13	Hoses including rubber steel cladding	HYDROCRIMP / SENIOR INDIA/ BENGAL INDUSTRIES/ PAREKH BROTHERS
14	Stainless steel hoses	BENGAL INDUSTRIES/ SENIOR INDIA/ PAREKH BROTHERS
G.	VALVES	
1	CI valves (gate, globe, NRV)	IVC/ KBL/ BDK/H. SARKAR/ DURGA/ AV VALVES/ L&T (MS fabricated)
2	Gates (CS)	L&T/ KSB/ FOURESS/ BDK/ KBL/NECO/ AV VALVES/IVC/XOMOX / LEADER/BHEL
3	Globe (CS)	L&T/ KSB/ FOURESS/ BDK/ KBL/NECO/ BHEL/AV VALVES/LEADER
4	Swing check (CS)	L&T/ KSB/ FOURESS/ BDK/ KBL/ BHEL/ NECO/ LEADER
5	Lift check	LEADER/ UPADHYAY/ IVC
6	Check valve	L&T/ ADVANCE/BDK/ R&D MULTIPLE/ LEADER KBL/ AV/ IVC
7	Strainer (with SS wedge wire fitter element)/ filters (manual)	SUPERFLO/ FILTRATION ENGG/ BOLL & KIRCH/ IMETROL/ OTOKLIN/ JPG
8	Sluice gate	IVC/ JASH/ DURGA
9	Globe, non-return, clock (less than DN 50, only ball valves)	BDK/ GG /LEADER/ IVC/ XOMOX
10	Safety valves	JNM / FOURESS / DANFOSS
11	Pressure reducing valves (S.S. and carbon steel)	JNM / FISCHER XOMOX/ METSO (BLUESTAR)
12	Butterfly valves	L&T / FOURESS / AUDCO/ FISCHER XOMOX /BDK
13	Control valves	JNM / FISCHER XOMOX/ FISHER ROSE-MOUNT/ METSO/ TOSHNIWAL
14	Solenoid valves	BS / AVCON / REXROTH
15	Needle valves	FISCHER XOMOX / TUFLIN/ L&T/ AUDCO/ BDK/ METSO

Sl. No.	Component	Make
16	Ball Valves	L&T / KSB / BDK/ VIRGO/ FISCHER XOMOX /VAAS
17	Float valve	LEADER / UPADHYAY/ IVC/ H. SARKAR/ DURGA
18	Air release valve	LEADER/ UPADHYAY/ IVC/ H. SARKAR/ FLUID CONTROL
19	Plug valves	AUDCO/FISCHER XOMOX/ SANMAR/ CHEMTROL/ BDK
20	Knife gate valve	VAAS/FOURESS/BDK
21	Diaphragm valve	BDK/SAUNDERS
22	Landing valve	ASCO STRUMECH/ NEW AGE/ STEELAGE INDUSTRIES
H.	MISCELLANEOUS	
1	Chlorination Equipment	CAPITAL CONTROL/ BANACO/ PENWALT
2	Chemical dosing system	BETZ/ NALCO/ DREW
3	Fire fighting system	M&P/ VIJAY/NEW AGE
4	Surge/water hammer control system	SURE-SEAL/ FOURESS
5	Clarifier/thickener mechanism	HDO/ TRIVENI/ EIMCO-KCP/THERMAX/ VATECH
6	Sludge scrapper	MATA/ RAMKRISHNA ENGG.
7	Mechanical seal	SEALOL/DURAMETALLIC/ BURGMANN
8	Chemical dosing equipment (Stirrer, flocculator etc)	REMI/ VOLTAS/HDO/GRUNDFOSS/KSB/ ABS/DRIPLEX/NALCO/VATECH
9	Oil skimmer (endless tube)	OIL SKIMMER INC., USA
10	Auto backwash strainer	AMIAD/ HYDAC/ BOLL & KIRCH/ FILTOMAT/ DANGO & DANEIL
11	Centrifugal solid liquid separator	LAKOS/TIMEX
12	Float type level indicator	LEVCON/ DK INSTRUMENTS/CHEMTROLS SAMIL
13	Dust suppression system (Sprinkler/Dry-fog type)	TPS/F.HARLEY/ KAVERI / PROJECTS & CONTROL
14	Chemical dosing and chlorination system	NALCO/BETZ
15	Tape (buried pipelines)	IWL/ CARPOTES
LABORATORY EQUIPMENT		
1	INSTRUMENTAL ANALYSIS EQUIPMENT	SPECTRO/PANALYTICAL/THERMO ELECTON/LECO/ROSE MOUNT/ ARUN TECHNOLOGY
2	WET CHEMICAL EQUIPMENT	NIULAB/SREEMA/SCIENTIFIC INSTRU-MENT/B.B. ENG./ METTLER TOLEDO/ NETEL/LABMAN

Sl. No.	Component		Make
3	SAMPLE PREPARATION EQUIPMENT		SREEMA/M.P. EQP./ B.B. ENG./BIEN ARTIUM/ AMALGAMETED/ INSMART/ EASTMAN CRUSHER/ SAYAJI
4	PHYSICAL TEST EQUIPMENT		BIENARTIUM/AMALGAMATED/B.B.ENG /M.P. EQP./SREEMA ENG./LABINDIA /NASKAR
5	METALLOGRAPHY (IMPORTED)		LEITZ/CARL ZESIS /BUEHLER/ LECO/ OLYMPUS
6	MECHANICAL TESTING (IMPORTED)		ZWICK/ INSTRON
ELECTRICAL			
A.	EXTRA HIGH TENSION (EHT) SUBSTATION EQUIPMENT (OUTDOOR)		
1	220 kV SF6 Circuit Breakers (SPRING-SPRING)	-	ABB / AREVA / BHEL/ CGL / SIEMENS (BHEL is manufacturing SF6 breaker hydraulic operated)
2	220 kV Disconnecting Switch/ Isolators	-	ELPRO / HIVELM/ ALLIANCE
3	220 kV Lightning Arrestors	-	ELPRO / AREVA (WSI) / CGL / ABB
4	220 kV CTs	-	BHEL / ABB / TELK / CGL / AREVA(WSI)
5	220 kV Electromagnetic PTs	-	BHEL / ABB / TELK / CGL / AREVA(WSI)
6	220 kV Class Power Transformers	-	BHEL / TELK / CGL / ABB
7	220 kV Insulators (Disc & solid core)	-	Jayashri Insulator / WSI / Modern Insulator / BHEL
B.	HIGH TENSION (HT) SUBSTATION EQUIPMENT (INDOOR)		
1	33/11/6.6 kV Vacuum Circuit Breakers	-	BHEL / SIEMENS / AREVA / ABB
2	33/11/6.6 kV PTs (Panel mounted type)	-	AEP / PRAGATI /AREVA/Prayog Electricals/ SILKANS
3	33/11/6.6 kV CTs (Panel mounted type)	-	AEP/PRAGATI / AREVA / Prayog Electricals / SILKANS
4	HT Busduct (Phase-Segregated)	-	C&S/ ECC/ STAR DRIVE/ ENPRO
5	HT Reactor Air Cored Dry Type	-	INDCOIL / HIND RECTIFIER / PS Electricals
6	HT Capacitors	-	BHEL / ABB / UNISTAR
7	11/6.6 kV Vacuum Contactors	-	AREVA / BHEL / SIEMENS / ABB
8	11/6.6 kV Lightning Arrestors & ZnO CR type surge suppressors	-	ELPRO / RAYCHEM / AREVA / SIEMENS AG (Imported)
9	HT HRC Fuses	-	AREVA / DP / S&S/ COOPER BUSSMAN
10	Neutral Grounding Resistor	-	NARKHADE / PEFCO / RESITECH / NATIONAL
11	Indoor HT Isolators	-	DP / A BOND STRAND / ESWARI

Sl. No.	Component		Make
12	11 kV and 6.6 kV HVLC Power Transformers (Oil-filled) & Earthing Transformers	-	BHEL / BB / CGL / AREVA / VOLTAMP / EMCO/ TELK /KIRLOSKAR(KEC)/ ABB/
13	11kV & 6.6kV LCSS power transformers (Oil-filled)	-	BB / CGL / AREVA / VOLTAMP / EMCO / KEC / TRANSFORMERS & RECTIFIERS
14	11kV & 6.6kV Cast Resin type power transformers	-	INDCOIL/ ABB / VOLTAMP / BHEL / HOLEC/ KIRLOSKAR (KEC)
15	11 kV & 6.6 kV Dry type power transformers	-	KIRLOSKAR(KEC)/ABB/BHEL/VOLTAMP/BB/CGL/ INDCOIL/AIMES IMPLEX
16	Winding and Oil Temperature Indicator	-	SKII / PRECI MEASURE / PRECISION INSTRUMENT /PERFECT CONTROL / OSMADIAL
17	Control and Relay Panel	-	AREVA / ABB / SIEMENS (All work in own works)/ ENPRO (for 33kV & below)
18	Magnetic Oil Level Indicator	-	SUKRUT
19	Buchholz Relay	-	PRAYOG / ATVUS
20	Battery (Lead Acid)	-	CHLORIDE (EXIDE) /AMCO / STANDARD /HBL-NIFE (SABNIFE)/ AMAR RAJA
21	Battery Charger	-	HBL-NIFE(SABNIFE)/ CHHABI ELECTRICALS/ DEBIKAY/ CALDYNE / AMAR RAJA/ HCE
22	Power Socket outlets	-	BCH / A BOND STRAND / INDO ASIAN
C.	MEDIUM VOLTAGE SWITCHGEAR AND CONTROL GEAR		
1	L.T. Air Circuit Breaker Distribution Board, fully drawout, single front (including circuit breaker), for main substation (process)	-	GE-POWER / L&T / SIEMENS / ABB / BCH / SCHNEIDER /COSMIC POWER SYSTEM / CONTROL & SWITCHGEAR (All work in own works)
2	L.T. Busduct	-	STARDRIVE/ ECC/C&S/PCE/HCE/ BRIGHT ENGINEERS/UNITED ELECTRIC/ Cosmic Power System / MK Engineers / Power Media
3	415 V Air Circuit Breaker	-	SIEMENS / GE-POWER / L&T / ABB / SCHNEIDER
4	Moulded Case Circuir Breaker (MCCB)	-	SIEMENS / GE-POWER / L&T / ABB / SCHNEIDER / BCH/ANDERW YULE
5	LT Switch board (semi drawout) for auxiliaries & Non process units	-	SIEMENS / BCH / L&T / GE-POWER / SCHNEIDER / ABB /COSMIC POWER SYSTEM / SEN&SINGH / ECC/ HCE/ Vijoy Switchgear Controls/ MK Engineers/ ELECMECH /Power Media, Hydrabad/ Industrial Switchgear Ltd, Mumbai/ Control & Switchgear (C&S)
6	415V Motor Control Centre for process units	-	SIEMENS / GE-POWER / L&T / ABB / SCHNEIDER (All work in own works)

Sl. No.	Component		Make
7	415V Motor Control Centre for non-process units / Power Distribution Boards(Single front) / Outdoor Distribution Boards	-	SIEMENS / BCH / GE-POWER / L&T / C&S / ECC/ SWITCHING CIRCUIT/ HCE / TECHNOCRATS/ TECHNO COMMERCE / SEN & SINGH / MK Engineers/ POWER & PROTECTION / Cosmic Power System/ Power Media / Switchgear Controls / SCHNEIDER / INDPOWER, Vizag/Industrial Switchgear Ltd, Mumbai
8	Power Distribution Boards (single front below 630A), Outdoor distribution boards (below 630A) and Lighting Distribution Boards	-	SIEMENS / BCH / GE-POWER / L&T / CGL / C&S / SWITCHING CIRCUIT / HCE / TECHNO COMMERCE/ SEN & SINGH / ECC / IND POWER / MK Engineers / 'TECHNOCRATS / POWER & PROTECTION / Cosmic Power System/Power Media/ Vijay Switchgear Controls/ SCHNEIDER/ SONTOSH ENGG WORKS, VIZAG
9	MPCB	-	SIEMENS/GE-POWER/L&T/ABB/SCHNEIDER/INDO ASIAN
D.	MOTORS		
1	HT AC Motor (1000 kW and above)	-	KEC /BHEL / CGL / AREVA
2	HT AC Motor (200 kW - 1000 kW)	-	SIEMENS / CGL / KEC / BHEL / AREVA
3	Synchronous & Sq. Cage Motors above 3000 kW	-	BHEL / SIEMENS / ABB
4	LT AC Sq-cage induction Motor (General purpose)	-	SIEMENS / CGL / ABB / AREVA /BB / ELGI / WEG / BHEL /KIRLOSKAR / Westing House / HINDUSTAN ELECTRIC MOTORS
5	LT AC Motor (Flame proof)	-	KIRLOKAR (KEC) / CGL / SIEMENS / BBL / AREVA
6	L.T. Geared Motor	-	KIRLOSKAR (KEC)/POWER BUILD/IC/BHARAT BIJLEE / SEW/FIMET
7	DC Mill Motor (Main Drive)	-	KRILOSKAR (KEC) / BHEL
8	DC Mill Motor (Auxiliary Drive) (AISE Type)	-	KIRLOSKAR (KEC) / BHEL
9	DC Motors (Industrial type)	-	CGL / AREVA / KIRLOSKAR (KEC) / BHEL
10	Roller Table Motors (AC)	-	BHARAT BIJLEE/ KIRLOSKAR(KEC)/ CGL/ AREVA/ BHEL / IC/ ABB/ SIEMENS
11	AC Drives, VVVF drive for non process units & auxiliary motors	-	SIEMENS/ ABB / L&T(Yasakawa)/ Control Technique/ SCHNEIDER/ TB Woods/ Rockwell/ AREVA/ EUROTHERM
12	DC Drives	-	SIEMENS / ABB / L&T / Control Technique / ANSALDO SCHNEIDER / AREVA / ROCKWELL AUTOMATION
13	VVVF Motors(AC) for process units	-	ABB / SIEMENS / HITACHI/AREVA/CGL/KEC/BBL

Sl. No.	Component		Make
E.	DRIVES AND CONTROL EQUIPMENT		
1	Converter duty cast resin transformer (6.6 kV)	-	BHEL / AREVA / ABB / HOLEC / KEC / VOLTAMP / BB/ INDCOIL / JYOTI / CGL
2	Thyristor Converter Unit	-	BHEL / SIEMENS / ROCKWELL/ AREVA/ ABB/SCHNEIDER
3	VVVF drive, AC drive for process units & mills	-	BHEL / SIEMENS / ABB / ROCKWELL / AREVA / L&T / SCHNEIDER
4	VVVF Drive (Flux Vector Control) - 2 level & 3 level Controller	-	ABB / SIEMENS / AREVA / HITACHI / ROCKWELL
5	UPS	-	KELTRON / GUJRAT HI-REL / SIEMENS / EMERSON / GE / DB POWER CONTROLS / IL Kota
6	Isolator	-	SIEMENS / L&T / AREVA / C&S / ABB / BCH
7	HRC Fuses	-	SIEMENS / AREVA / STANDARD (INDO ASIAN) / ABB / GE POWER / ESWARAN
8	AC Power Contactor	-	SIEMENS / L&T / BCH / ABB / SCHNEIDER / GE-POWER
9	DC Power Contactor	-	BCH / BHEL / SIEMENS / L&T / ABB
10	Bimetallic Relay	-	SIEMENS / L&T / BCH / GE
11	Single Phase Preventer	-	L&T/ MINILEC / SIEMENS / GE
12	Resistor boxes	-	SIEMENS/BCH/RSI/PEFCO/ELECTROMAG / Resistors India/ RESITECH /NARKHADE / KAKKU / Industries Syndicate
13	L.T. Capacitor	-	UNISTAR / CGL / AREVA / DANDAPANI
14	Semiconductor Fuse	-	ALSTOM / SIEMENS / FERRAZ / COOPER BUSSMAN /ABB
15	Thyristor	-	SIEMENS/ BHEL/ HIND RECTIFIER / ABB
16	LT Vacuum Contactor	-	GE / SCHNEIDER / L&T / SIEMENS / ABB
17	Soft-starter (LT)	-	ABB/ ROCKWELL/ SIEMENS/ AREVA/ SCHNEIDER/ LG/ BCH
F.	CONTROL DESKS AND CONTROL DEVICES		
1	Control Desk/ Control Panel/ Control Station	-	SIEMENS / L&T / BCH / BHEL/ C&S / TECHNOCRAT / B&C / MEDITRON /ELECTRO FABRIC / HCE /SEN & SINGH TECHNO COMMERCE /SWITCHING CIRCUIT / ECC / POWER & PROTECTION / Vijay Switchgear / Cosmic Power System

Sl. No.	Component		G. PROTECTION RELAYS
			Make
2	Control Switch	-	SIEMENS / KAYCEE / AREVA / L&T / VAISHNO / C&S
3	Push Button	-	SIEMENS / BCH / L&T / VAISHNO / C&S / SCHNEIDER / TECHNIC / KAYCEE
4	Limit Switch	-	AG SYSTEMS/JAY BALAJI/TECHNOCRATS/ ELECTROMAG/ JSI/ TECHNIC (SIEMENS / BCH may be considered only for light duty)
5	Change Over Switch/Selector Switch	-	C&S / STANDARD / HHE /KAYCEE / SIEMENS/ BCH/L&T/ INDOASIAN
6	Discrepancy Control Switch	-	ABB / AG SYSTEMS
7	Timer/Time Delay Relay	-	BCH / L&T / SIEMENS / ABB / CGL
8	Emergency Switch/Belt Sway Switch/Pull Cord Switch/ Belt Slip Switch	-	JSI / AG SYSTEMS / PB / JAI BALAJI
9	Semaphore Indicator	-	ALSTOM / SIEMENS
10	Auxiliary Relay/ Control Contactor	-	SIEMENS / L&T / BCH / C&S (TM) / ABB / GE POWER /SCHNEIDER / ROCKWELL
11	Master Controller	-	SIEMENS / STROMKRAFT / ELECTROMAG AG Magnetics / Perfect Electrics/ KAKKU (EPC)
12	Control Transformer	-	INDCOIL / SIEMENS / AEP / INDUSREE / KAPPA
13	Voltage/Power/Current/Frequency/Energy Transducers	-	ABB / AEP / SIEMENS / AREVA / ELSTER/ ADEPT
14	Indicating Lamp (Cluster LED type)	-	SIEMENS / VAISHNO / TECHNIK / BINAY/ J-AUER
15	Temperature Scanner	-	JYOTI /APLAB / SYSTECH / MASIBUS
16	Photo-cell transducer	-	SYSTECH / TSC
17	Hooter/Buzzer/Bell	-	GETCO / KHERAJ / EDISON / KAKKU
18	Solid State Annunciator	-	APLAB / L&T / PROCON / CONTROL AND DYNAMICS / MINILEC / ELECMECH
19	Proximity Limit Switches (Non-contact type)	-	JSI / AG SYSTEMS / ROCKWELL / TELEMECHANIQUE
20	Zero Speed Switches	-	JAYSHREE / TELEMECHANIQUE / AG MECHANICAL / KAKKU / TECHNOCRATS
21	Current Transformer	-	AEP / KAPPA / INDCOIL
22	Voltage Transformer	-	AEP / KAPPA / INDCOIL
23	Tachos/Encoders	-	AREVA / HUBNER / IFM / VURLEY-TELEDYNE / Leine & Linde
24	Hot Metal Detector (HMD)	-	DELTA / DANIELI
25	Loop Scanner	-	DELTA / DANIELI

Sl. No.		Component		Make
1	a)	Electronic Motor Protection Relays	-	GE POWER / SCHNEIDER / L&T / SIEMENS / ABB / C&S / Sprecher & Schuh/ SANWA
	b)	Microprocessor based Motor Protection Relays for LT Motors	-	SIEMENS / L&T / AREVA / Sprecher & Schuh
	c)	Microprocessor based Protection Relays for HT Motors		- L&T (MM 30) / ABB (SPAM 150) / Areva (motpro/micom) /SIEMENS (7SJ)
2		Auxiliary Relays	-	AREVA / EASUN / ABB / L&T / SCHNEIDER / SIEMENS /BCH / ROCKWELL / GE
3		Numerical Protection Relays (for HT system)	-	ABB / SIEMENS / AREVA / GE(Multilin) / L&T
4		Numerical Protection Relays (for LT system)	-	ABB/SIEMENS/AREVA/GE(Multilin)/SCHNEIDER/L&T(MM30) / ASHIDA
H.		ELECTRICAL MEASURING AND TESTING EQUIPMENT		
(i)		ELECTRICAL MEASURING INSTRUMENTS		
1		Ammeter/Voltmeter/Wattmeter/Var-meter	-	AEP / IMP / MECO
2		Watt-hour meter	-	ALSTOM / BHEL / IMP / MECO / HPL
3		PF meter	-	AEP / IMP / MECO
4		Frequency meter	-	AEP / IMP
5		Multimeter	-	MECO / MOTWANE / RUTTONSHAW
6		Low resistance ohm-meter and kelvin double bridge	-	MOTWANE / AGRONIC / TOSHNIWAL
7.		Electronic energy meter	-	CONZERV (ENERCON) / SEMS / SATEC / PML / L&T /HOTLINE / IMP / MOTWANE / HPL
(ii)		SPECIAL INSTRUMENTS		
1		Microprocessor based digital power meter	-	AEP/MECO/ALACRITY/DIGI
2		Maximum demand meter	-	AEP / MECO
3		True RMS' digital panel ammeter/voltmeter	-	AEP/MECO/ALACRITY
4		Intelligent P.F. regulator	-	AEP/MECO/ALACRITY
5		Transducer operated metering system	-	AEP / MECO
I.		LIGHTING AND POWER WIRING EQUIPMENT AND ACCESSORIES		
1		Lighting Fitting (SV/MV/MH/FLUROESCENT/CFL)	-	PHILIPS / GE / BAJAJ / CGL / FLOROCRAFT/ WIPRO

Sl. No.	Component		Make
2	Flameproof Lighting Fittings and Accessories	-	BAJAJ / BALIGA / CGL / SUDHIR / FCG / CEAG/ PROMT/ GOVAN
3	a) 240 V Switch Socket Outlet (10A & 20A)	-	HANSEL / HAVELL'S / BCH / ABB / LEGRAND/ SUDHIR/ INDO ASIAN
	b) 415 V Switch Socket Outlet (30A, 63A & 100A)	-	BCH / ABB / HANSEL /LEGRAND/INDO ASIAN
4	Flame-proof Equipment	-	BALIGA / FLAME PROOF EQPT. MFG. CO./ SUDHIR/ FCG/PROMPT/GOVAN/CEAG
5	MCB	-	MDS / STANDARD / CGL / SIEMENS / GE / HPL / HAVELL'S / MERLIN GERIN / GUTS / INDO ASIAN
6	ELCB	-	MDS / SIEMENS / GE / MARLINGERIN / HAVELL'S / HPL/ HAGER / GUTS/ INDOASIAN
7	MCB DB	-	MDS / HAVELL'S / MERLIN GERIN / SIEMENS / GE / HPL/ GUTS / INDOASIAN
8	Single-core flexible copper wire	-	RAJNIGANDHA / HAVELL'S / FINOLEX / THERMO PAD/ 'NICCO / RPG / FINECAB / RADIANT / POLYCAB / LAPP/ DELTON / UNIFLEX / KDK
9	High Mast Towers	-	BAJAJ / BP Projects / PHILIPS / CGL / VENTURA
10	Street Light Poles		
-	Octagonal Type	-	BAJAJ / BP Projects / PHILIPS / CGL /BMW
-	Tubular Type	-	Electro Steel / Quality Steel / Calcutta Poles &Tubes / Steel Pole Corporation / BMW / JINDAL
J.	CABLES AND CABLING ACCESSORIES		
1	33kV/ 11kV/ 6.6 kV XLPE Cable	-	RPG / UNIVERSAL / CCI/NICCO / TORRENT CABLES / INDUSTRIAL/INCAB / CRYSTAL/ UNIFLEX
2	a) 1.1 kV PVC/XLPE/HRPVC Cable (Power)	-	RPG / UNIVERSAL /CCI /NICCO/TORRENT/ INDUSTRIAL/ POLYCAB / FINECAB / INCAB / RADIANT / CRYSTAL / KEI / SPECIAL
	b) 1.1 kV PVC/XLPE/HRPVC Cables (Control)	-	RPG / UNIVERSAL / NICCO / TORRENT / INDUSTRIAL /POLYCAB / DELTON /CCI / CORDS / SPECIAL / CAPCAB/ FINECAB/ RADIANT/ INCAB/ CRYSTAL/ LAPP/Thermopads
3	Silicon Rubber insulated copper Cable	-	RPG / UNIFLEX / UNIVERSAL / NICCO / INCAB / CCI / INDUSTRIAL / POLYCAB / LAPP / TORRENT /
4	Flexible trailing copper cable	-	RPG/ UNIVERSAL/ NICCO/ INCAB/ CCI/LAPP/ Thermopads/ INDUSTRIAL / POLYCAB / TORRENT/ KEI
5	HT Cable Termination Kit/straight through jointing kits	-	RAYCHEM / M-SEAL(MECP) /YAMUNA GASES(DENSION)/
6	LT Cable Termination Kit/straight through jointing kits	-	RAYCHEM / M-SEAL(MECP) / DENSION/CCI

Sl. No.	Component		Make
7	Cable Reeling Drum (Stacker Reclaimer)	-	ELECTRO ZAVOD / ELECTROMAG / TECHNOCRATS/STEMMANN TECHNIC/ IS
8	Cable Reeling Drum (Cranes, Hoists, Transfer Trolleys)	-	ELECTRO ZAVOD / ELECTROMAG / IS / TECHNOCRATS/ STEMMANN TECHNIC
9	Cable Lugs	-	DOWELLS / FORWARD / COMMET / 3D / KALTER
10	Cable Gland	-	ELECTROMAG / CC I/ COMMET / PHOENIX / DOWELLS/ KALTER
11	Terminal Block	-	ELMEX / ESSEN / CONNECTWELL / C&S/WAGO/PHOINEX
K.	MISCELLANEOUS		
1	Diode	-	HIND/USHA RECTIFIER/BHEL/RUTTON SHAW
2	Battery (SMF)/ NiCd Battery	-	EXIDE / HBL-NIFE / AMAR RAJA / AMCO
3	Braking Resistance Panel	-	RESISTEC / BCH / KAKKU/ KINH ELECTRIC
4	DC EM Brake	-	BCH/STROM KRAFT/ELECTROMAG/ ELECTROMECH CORPN./ EPC/IS
5	Thrustor brake	-	IS / STROMKRAFT / ELECTROMAG / ELECTROMECH / EPCC / TECHNOCRAT
6	Lifting Magnet	-	ELECTROMAG / SUPERLIFT / EPCC / Electro Zavod
7	Power Pack for Magnet	-	ELECTROMAG / SUPERLIFT
8	Earthing Resistor	-	BHEL / BCH / IS /EEF / RESITECH / NARKHADE
INSTRUMENTATION AND CONTROL			
A.	CONTROL ROOM EQUIPMENT		
1	Distributed Control System (DCS)	-	YOKOGAWA / HONEYWELL / EMERSON / INVENSYS/(FOXBORO) / ABB / SIEMENS
2	PLC	-	ROCKWELL AUTOMATION / SIEMENS /ABB /SCHNEIDER/ GE-FANUC
3	Controller	-	YOKAGAWA/HONEYWELL/SIEMENS/ABB/EUROTHERM/ INVENSYS (FOXBORO)
4	Recorder	-	YOKOGAWA/LAXONS(CHINO)/EUROTHERM/ABB/ HONEYWELL
5	Bargraph & Digital Indicator	-	MASIBUS/ EUROTHERM/ YOKOGAWA/ HONEYWELL
6	Totaliser	-	YOKOGAWA / ABB / MASIBUS/ HONEYWELL
7	Scanner	-	MASIBUS/APLAB/ECIL/WAAREE/M B CONTROLS / PROCON

Sl. No.	Component		Make
8	Alarm Annunciator	-	IIC/ MINILEC/ PROCON/ PIRI/ APLAB/ ICA/ DIGICONT / MB CONTROLS&SYSTEM / MINILEC/PROCON / SEMUDA
9	Signal Isolator/Multiplier	-	MTL/ YOKOGAWA/ MASIBUS/ PEPPERL & FUCHS
10	Instrument Panel/Cabinet/Desk	-	RITTAL/RKC/SIMCON/VERO/PYROTECH SIEMENS /
11	Power Supply Unit	-	PHOENIX / MTL/ COSEL
12	Intrinsic Safety Barrier	-	MTL/P&F/ABB/ENDRESS-HAUSER
B.	FIELD INSTRUMENTS		
1	Pressure Gauge	-	GIC/ H.GURU /FEIBIG/ WAREE/ PRICOL /WALCHANDNAGAR/ Y2K/GE GAUGES PVT LTD/INDUSTRIAL INSTRUMENTATION/ MANOMETER / WIKA/ FROBES MARSHALL
2	Draught gauge & DP gauge	-	SWITZER/GIC/ANI/H.GURU/PRICOL/GEG/WAREE/WIKA
3	Pressure and DP (Flow and Level) Transmitters (Electronic/SMART Type)	-	EMERSON / YOKOGAWA / HONEYWELL / ABB / FUJI /INVENSYS(FOXBORO) / SIEMENS
4	Pressure Switch/DP Switch (SOLID STATE)	-	WIKA / ABB / E+H / SCHNEIDER / HONEYWELL
5	Temperature Gauge	-	WIKA/GIC/ANI/H.GURU/ GEG/FEIBIG /A N INSTRUMENTS/ ASIATIC ENGINEERS / HIRLEKAR PRECISION/ ALTOP/ WAAREE/ FROBES MARSHALL/ MANOMETER / PRECISION INDUSTRIES/SREE GURU INSTRUMENTS/ WAREE/INDUSTRIAL INSTRUMENTATION
6	RTD and Thermocouple	-	NAGMAN/TOSHBRO/TEMPSENS/TOSHNIWAL INDUSTRIES/ GIC
7	Temperature Transmitter	-	YOKOGAWA / ABB / HONEYWELL/ EMERSON/SIEMENS/ EUROTHERM/MOORE CONTROLS/ MEDICAL & CONTROL INSTRUMENTS/ PEPPREL FUCHS LTD/ MTL/ TOSHNIWAL INDUSTRIES
8	Temperature Switch	-	SWITZER/ INDFOS/ HONEYWELL/ VERMA TRAFAG/ P&F
9	Level Gauge	-	GIC/DKI/BLISS ANAND/LEVCON/V.AUTOMAT
10	Level Switch/Transmitter	-	LEVCON/ TOSHBRO/ KRHONE/ ENDRESS-HAUSER/ SWITZER/ S.B.ELECTROMECHANICAL
11	Nucleonic Level Gauge	-	CONCORD (BERTHHOLD)/ THERMO-FISHER SCIENTIFIC / ECIL/ ENDRESS HAUSER
12	Ultrasonic / Rader type Level transmitter	-	MILTRONICS/ ENDRESS-HAUSER/ ABB/ SIEMENS /MAGNETROL INTERNATIONAL/ VEGA / EMERSON (SAAB)/ FROBES MARSHALL/ PEPPERL FUSHS LTD / MATSUSHIMA

Sl. No.	Component		Make
13	Rotameter	-	KHRONE /IEPL /EMERSON(BROOKS) /EUREKA/AL FLOW/ TRANSDUCERS & CONTROLS / FROBES MARSHALL / INSTRUMENTATION ENGINEERS / KROHNE MARSHALL/ INSTRUMENTS / PLACKA / ROTA
14	Flow Elements (Orifice Plate, Nozzle, Ventury Tube)	-	ENGG. SPL/MECH. ENGR./ MICRO/ PRECISION
15 Flowmeter	Magnetic Flowmeter/Ultrasonic	-	ENDRESS-HAUSER/KHRONE/ABB/ INVENSYS(FOXBORO)/ EMERSON/YOKOGAWA
16	Positive Displacement Flowmeter	-	TOSH. HYD(BOPP&REUTHER)/ ROCKWIN/ABB/ SWITZER
17	Vortex Flowmeter	-	ENDRESS HAUSER/YOKOGAWA/KRHONE/ EMERSON/ABB
18	Mass Flowmeter	-	EMERSON/ABB/ENDRESS HAUSER/YOGOKAWA
19	Control Valve and On-off Valve	-	IL/FISHER-XOMOX/SAMSON/ DRESSER MASONEILAN / FOURESS/FORBES MARSHALL(ARCA)/ R.K.CONTROLS / MIL / ABB (INTROL)
20	Electric Actuator	-	AUMA / IL / LIMITORQUE / ROTORK / ABB
21	I/P Converter	-	YOKOGAWA / EMERSON / MOORE / ABB / HONEYWELL
22	Solenoid Valve	-	AVCON/ROTEX/ASCO/VICKERS/SCHRADER
23	Air filter regulator	-	PLACA/SHAVO NORGREN
24	Encoder	-	P&F/ROCKWELL/HUBNER
C.	SPECIAL INSTRUMENTS		
1	Electronic Weighing System	-	ABB/SCHENCK/SARTORIOUS MECHATRONICS/ TRANSWEIGH/ METTLER-TOLEDO/ KLISTER-MORSE
2	Gas Analysers	-	EMERSON / ABB ANALYTICAL / SIEMENS /YOKOGAWA/ HONEYWELL (TELEDYNE)
3	Water Analysers	-	FORBES MARSHALL/ ABB ANALYTICAL /YOGOKAWA/ E+H / EMERSON
4	pH and Conductivity Meter	-	EMERSON / ABB ANALYTICAL / YOKOGAWA/ FORBES MARSHALL /INVENSYS(FOXBORO)/ TOSHBRO CONTROLS
5	Infrared Pyrometer	-	NAGMAN (IRCON) / EUROTHERM (LAND) / LAXSON (CHINO)/HONEYWELL/ FLUKE/ TOSHNIWAL (RAYTEK)
6	Molten Metal Temperature/ Oxygen Measurement system	-	ARDEE (ELECTRONITE)/FERROTRON Gmbh/ SEIDERMES (ITALY)

Sl. No.	Component		Make
7	Moisture Analyser	-	CONCORD (BERTHHOLD) / EMERSON (K-RAY) / ECIL/ ENDRESS HAUSER / EMERSON / YOKOGWAWA /CHINO-LAXSONS / ABB ANALYTICAL
8	Vibration Sensor & Monitor	-	BENTLEY-NEVADA / FROBESMARSHALL (SHINKAWA)/ SHERMAN(SKF)/ SCHENCK/ ROCKWELL AUTOMATION/ HONEYWELL
9 system	Pollution Control & Stack monitorinr	-	DRAGER/ HONEYWELL/ ENVIROTECH/ EMERSON/ FROBES MARSHALL/ DURAG/ OPSIS
10	Flame detector	-	HONEYWELL/ FIRE-EYE/ KROM SCHODER/ DURAG
11	Calorific value analyser	-	UNION/REINEKE
12	Hot metal detector	-	WEBER SENSORS / DELTA / IMPAC ELECTRONICS / P&F/ AMERICAN SENSORS
D.	INSTRUMENT CABLES AND ACCESSORIES		
1	Screened Cables, Control Cables & Compensating Cables	-	DELTON / FINOLEX / SPECIAL CABLES / ELKAY-TELELINKS / CORDS / TOSHNIWAL / GOYOLENE/ THERMOPAD / UNIVERSAL /CMI / LAPP / Toshniwall Cables/ Reliance Cables /Brooks Cables
2	Ball Valve	-	AUDCO / KSB / VIRGO / BDK
3	Instrument Fittings	-	SWAGALOK / PARKER/ EXCEL HYDRO PNUEMATICS

Sl. No.	Component		Make
COMMUNICATION			
A.	**PLANT TELEPHONE SYSTEM**		
1	**EPABAX System**	-	**AVAYA / TADIRAN /GTL (NORTEL) / SIEMENS**
2	**Telephone Handset**	-	**AVAYA/BEETEL/BPL/SIEMENS/ITI/SONY**
3	**Power Supply Unit**	-	**AMARA RAJA/PULSE POWER/SIGNOTRON**
4	**Battery**	-	**EXIDE/AMARA RAJA**
B.	**LOUDSPEAKER INTERCOMMUNICATION (PA) SYSTEM**		
1	**Selective Calling Type**	-	**INDUSTRONICS/NEUMANN**
2	**Page Party Type**	-	**MICO BOSCH(PHILIPS)/INDUSTRONICS/NEUMANN**
C.	**RADIO COMMUNICATION SYSTEM**	-	**MOTOROLA/SIMOCO/KENWOOD**
D.	**Telecom Cables**	-	**CMI / DELTON / FINOLEX / HCL / RELIANCE / RPG**
CRANE EQUIPMENT & ELECTRICS			
A.	**MECHANICAL**		
1	**Gear Box**	-	**Own make/ Shanti/ ELECON/NAW**
2	**Wheels**	-	**Own make/ Simplex/ Kran Radar**
3	**Bearings**	-	**SKF/ FAG/ ZKL/ NORMA/ NTN**
4	**Geared Coupling**	-	**Hicliff/ Uniflex/ Alflex/ NAW/ Rathi**
5	**Barrel Coupling**	-	**Malmedie/ Jaure**
6	**Hooks**	-	**HERMAN MOHATTA/STEEL FORGING/Forging Enterprise/ Free Trading Corpn.**
7	**Wire Rope**	-	**Usha Martin/Fort William/Casar/Aradhya Wire Ropes**
8	**Lubrication**	-	**Teclamit/ Lubcon/ AFMC**
9	**C-Hook**	-	**Concast/ Jessop/ Armatic / Own make**
10	**Tong/Lifter**	-	**Concast/ Somers/ Armatic**

Sl. No.	Component		Make
11	Oil Seals	-	Vaco Sil Seals/ Rubber Equipment &Engg. Co.
B.	ELECTRICAL		
1	Motors	-	KIRLOSKAR (KEC)/AREVA/BBL/ Siemens/CGL/ ABB/ GEC/ BHEL (CGL motor shall not be used for extra heavy duty/heavy duty crane)
2	Limit Switch	-	EPC/ EMM/ IS/ Dynatrol/ Stromkraft
3	Contactor	-	Siemens/ BCH/ L&T/ ABB
4	Electronic Overload Relay	-	Siemens/ GE/ L&T/ ABB/ Schneider
5	Push Button	-	Siemens/ L&T/ C &S/ BCH
6	Master Controler	-	Siemens/ EPC/ Stromkraft/ EMM
7	Fuses - Control - Power	- -	GE GE/ SIEMENS/ L&T
8	Isolating Switch	-	GE/ Siemens/ L&T
9	Resistance	-	EPC/ BCH/ Resitech /SOC/ EMM/ Stromkraft
10	Terminal(Screw type hex head)	-	Essen/ ODN/ ELMEX
11	Safety Switch	-	Siemens/ L&T/ Kaycee/ KAKKU
12	Timer	-	BCH/ Siemens / L&T
13	Socket Outlets	-	Crompton/ Reyrolle/ BCH/ Siemens/ INDO ASIAN
14	Control Panel	-	Siemens/ BCH/ Dynatrol/ Own make
15	Crane Power Conductor Assessories	-	Power & Protection/Armatic/IMSS/ Engg. Spares/ Stromag/ Vahle
16	Brake - DCEM Shoe	-	BCH/ KAKKU (EPC)/EMM/IS (only BCH& KAKKU (EPC) makes shall be used for all motions of extra heavy duty crane & hoist motion of heavy duty crane)
	- DCEM Disc	-	Pathe / EMCO
17	Cable	-	CCI / Universal / Asian / NICCO / Polycab / RPG /KEI / CRYSTAL / FINECAB
18	Cable reeling drum	-	Electro Zavod/EMM/IS/BTC
19	415 V Air Circuit Breaker	-	ABB/L&T/Siemens/Schneider/GE-Power
20	M C C B	-	L&T/ GE/ Crompton/ Siemens/ABB/BCH/ANDREW YULE/ SCHNEIDER
21	MCB	-	Siemens/ MDS/ Havell's/ GE/ Standards/ HPL/ GUTS/ INDOASIAN
22	Thyristor	-	ABB/Siemens
23	Remote Radio Control	-	Control Chief / EMM / ACROPOLIS / Stromag / SPEED-O-CONTROL

Sl. No.	Component		Make
24	VVVF drive	-	Siemens/ABB/ROCKWELL/Control Technique/ Schneider/ L&T
25	Air Conditioner	-	Lintern/ Sulzer/ Daiken/ IPW
26	Control Transformer	-	Indcoil / Kappa / AE
27	LED Indicating Lamp	-	Siemens/ Binay/ Vaishno/ Technik/ J-AUER
28	Electro magnet	-	EPC/ EMM/ Superlift/ Ohio/ Demag/ Steinert/Boxmag (For finished product handling, imported magnet shall be used)
C.	SUPPLIERS FOR CRANES & HOISTS		
1	Four Girder EOT cranes	-	Tata Growth Shop, Jamshedpur / HEC Ltd, Ranchi / Kone Cranes, Finland / Hyndai Samho, Korea / Demag Cranes, South Africa / Mitsubishi Heavy Industries Ltd, Japan
2	Extra Heavy/ Heavy duty DG EOT Cranes	-	Tata Growth Shop, Jamshedpur / HEC Ltd, Ranchi / Mukand Ltd, Thane / WMI Cranes, Mumbai / FAFECO,Mumbai
3	Medium duty DG EOT Cranes	-	Mukand Ltd, Thane / WMI Cranes, Mumbai / FAFECO, Mumbai
4	Single girder EOT Cranes / Jib Cranes / HOT Crane / Electric Hoists	-	Armsel MHE, Bangalore / MM Engineers, Coimbatore /Process Plant corporation, Mumbai / Brady & Morris,Delhi / Bombay Cranes
5	Mechanical Hoists	-	Brady & Morris, Delhi / Hercules Hoists, Mumbai /Crushmore Maxban, Kolkata / Armsel MHE, Bangalore /Bombay Cranes

NOTES: Any change /addition/deletion in the above makes list shall be done with the approval of VSP

ANNEXURE - II TO TENDER NO.PUR. 1.90.0830/0077 dt.14.05.2011

INSTRUCTIONS TO TENDERERS

1.0 **ESTABLISHMENT OF CREDENTIALS OF UN-LISTED VENDORS**: If a tenderer who responds to this tender is not presently enlisted with RINL, such tenderers are requested to furnish copies of the following documents separately in a sealed envelope superscribing "**CREDENTIALS" and the ITT REFERENCE OR ADVERTISED TENDER REFERENCE** as the case maybe along with the tender:

A) **INDIGENOUS**:

a) Statutory Industry Registration Certificate.
b) Excise, sales Tax and copy of PAN card for the last three years.
c) Financial worth and audited financial statements for the last 3 years.
d) Other credentials like ISO certificate etc.
e) List of Purchase orders / contracts executed for PSUs for same or similar items.

B) **IMPORT**:

a) Registration certificate from Chamber of Commerce / their respective designated Govt. Agency.
b) Audited financial statement for the last three years of their company.
c) Other Credentials like ISO Certificates etc.
d) List of Purchase Orders / Contracts for the same or similar items executed by the Tenderer in respect of other major customers.

Kindly note that the above information is required to assess the credibility of the vendor not presently enlisted with RINL. The tender of un-listed vendor shall be rejected in case of non-submission or incomplete submission of the above documents or RINL finds that the credibility of the un-listed Vendors is not satisfactory on the basis of the documents furnished. The Vendor shall produce originals of the above documents for verification, if RINL so desires. RINL decision in this regard is final.

2.0 **GENERAL INFORMATION / DATA / DOCUMENTS TO BE FURNISHED BY TENDERERS:**

2.1 Tenderers who may be Manufactures of **Hydraulics Mudgun & Drilling Machine** shall furnish information / data / documents / printed and illustrated literature/ brochures covering the following aspects:

a) Detailed information of the Manufacturer along the latest copies of the executed / on going orders (during the last 1 year) of similar type of material with different clients.

b) Documents showing the exact nature of ownership.
c) Country of Origin of material (In case of Import offer).
d) Production capacity of and annual production during the last three years.
e) A recent Test and Inspection Certificate (dated not later than one year from the date of tender) issued for the material by a reputed International test house / Government approved test house in case the tenderer is a new Supplier to RINL.

2.2 **Offers from both Imported and Indigenous manufacturers will be accepted.** Tenderer(s) who may be suppliers of Hydraulic Mudgun & Drilling Machine offering on

behalf of a Principal Manufacturer, shall furnish in original the Letter of Authority of the concerned manufacture, as per the proforma at **Annexure - VI** of the Tender document, specifically authorising the said supplier to make an offer in response to this Invitation to Tender. This Letter of Authority should be submitted along with Part I : Pre-Qualification bid. Such tenderers shall, in addition, furnish all the data as called for in Paragraph 7.0 below (Indian Agent) if any, appointed should be given a proper Letter of Authority.

2.3 In case the Principal Manufacturer wants to supply from their Works located at more than one place, the details of the Works should be indicated in the tender (Part-A). They should also give clear price breakup and quantities (**in Part III: Price bid**) for supplying the material from different Works.

2.4 Only one offer should be received from each principal manufacturer either directly or through their Agents. In case more than one offer is received from the same Principal Manufacturer, then all the offers of the same Principal Manufacturer will be rejected including the direct offer, if any.

2.5 The tenderers are requested to fill up the check list as at **Annexure - IV** of the Tender document.

2.6 **Integrity Pact**: The Tenderer is required to unconditionally accept the "Integrity Pact" as per **Annexure – IX** of the tender document and shall submit the same duly signed along with his offer. ***Offer of the tenderer received without Integrity Pact duly signed, shall not be considered.(VITAL)*** The details of the Nodal Officer and External Independent Monitor (EIM) are as given here under:

NODAL OFFICER

Shri P.P.Moharikar
GM (Marketing)
Rastriya Ispat Nigam Limited
Visakhapatnam – 530031, INDIA
Phone No : 0891- 2518539
Fax No : 0891-25183753/756
Email:ppmoharikar@vizagsteel.com

EIM

Shri P.C.Prakash, IAS(Retd)
4A-1, Jaagruthi Residency
East Maredpalli
SECUNDERABAD – 500026
INDIA
(2) Sri Velayudham, Ex.DG(RD) &SS,
Flat No.4, Nalanda Apartments,
"D" Block , Vikaspuri,
NEW DELHI - 110018
NEW DELHI – 110018,
Ph. No. 011 – 28530407
Email : vtham26@yahoo.co.in

3.0 **QUOTING OF PRICE(S)**:

3.1.1 **IN CASE OF INDIGENOUS OFFER**: The price quoted should be on FOR VSP Stores basis inclusive of applicable taxes, duties, levies and Freight. However, the rate of taxes, duties, levies and freight considered are to be indicated separately. The prices shall remain firm and fixed during the period of the contract. However, any change in statutory

taxes and duties shall be reimbursed at actual during the original contractual delivery period. Any change in taxes and duties beyond the original contractual delivery period is to be borne by the Supplier.

3.1.2 **VALUE ADDED TAX (VAT)**: VAT in the State of Andhra Pradesh (A.P) is introduced with effect from 01.04.2005. This replaces APGST Act from that date. Tenderers from the State of Andhra Pradesh should be registered under VAT and shall confirm submission of VAT invoice to enable RINL/VSP to avail the input tax credit. Also, the tenderers from A.P shall indicate the TIN (Taxpayer Identification Number) under VAT. Evaluation of such offers will be done considering this credit that would be available to RINL/VSP.

3.1.3 **IN CASE OF IMPORTED OFFER:** The tenderer should quote the price as per the following alternatives, giving break up of FOB cost and Freight:

a) FOB Load port basis
b) CFR, Visakhapatnam / Chennai Seaport, India basis

The tenderer shall indicate the mode of shipment (Container / break bulk etc) in Techno-Commercial bid as follows:

a) Full Container Load: No. of containers and type of container
b) Break bulk: Gross Weight/ Net weight (in Kgs) and dimensions/ volume (in meters)

However, PURCHASER at its option reserves the right to place the order on FOB Loadport or CFR, Chennai or Visakhapatnam Port basis.

4.0 TERMS OF PAYMENT:

4.1 Payment shall be made as follows:

a) 85% of the value of materials shall be made against submission of invoice, Bill of Lading / LR, Pre-despatch Inspection Certificate, Manufacturer Test Certificate, Certificate of Origin, within 30 days of acceptance of materials. Accepted GARN (Goods Acceptance/ Rejection Note) issued by PURCHASER shall be reckoned as the document for acceptance of materials. In other words, accepted GARN copy to be submitted along with invoice and other documents.

b) Balance 15% value of materials along with 100% charges towards supervision of Erection, Testing & commissioning , demonstration of performance of Hydraulic Mudgun & Drilling shall be released on successful supervision of Erection, Testing & commissioning, demonstration of performance of Hydraulic Mudgun and Drilling Machine for BF-1 at RINL, VSP duly certified by DGM(Mech) /BF.

4.2 Incase of Indigenous offers, PURCHASER encourages Electronic Fund Transfer / RTGS for payment direct to Seller's Bank account on due date for which Seller has to furnish Bank account details in the format prescribed by PURCHASER. Cheque date will be considered for arriving at 30th day wherever payment is made by Cheque. Any other mode of payment term will be suitably loaded while evaluating the tender.

4.3 In case of Imports, L/C payment shall be made upon presentation of documents specified at Para 8.1 of **Annexure – VII** of tender document. All Bank charges outside India are to SELLER's account and within India are PURCHASER's account. In case L/C is required

to be amended at the instance of SELLER, bank charges for the same within India shall also be borne by the SELLER.

4.4 The price bid should contain only the price. All other financial terms should be given in the techno-commercial bid and not in any other accompanying documents or statement. No extra weightage shall be given for any extra credit offered beyond ITT payment terms of 30 days interest free credit from the date of acceptance of material for ranking / evaluation purpose.

4.5 In case an offer with deviations to payment terms is considered, it shall be loaded suitably for the purpose of comparison with other offers. The general principle is to load for the additional financial implication to which RINL may possibly be exposed on account of such deviation. The decision of RINL in this regard shall be final. Since the deviations that might be stipulated by the tenderer cannot be foreseen, the illustrations given below are not exhaustive. RINL reserves the right to load the offers at its sole discretion for other deviations also, which in the opinion of RINL, have financial implications to RINL.

4.6 Evaluation of Payment Terms

4.6.1 Illustration- I: (Deviation in payment terms by Overseas Firm):

On acceptance of NIT payment term by the overseas tenderer(s) , initial payment of 85% is required to be released on 95th / 110th day from date of B/L as follows.

Voyage Time without transhipment	: 45 /60 days days
Custom clearance & transportation to VSP	: 15 days
Inspection of mtrls & raising GARN	: 05 days
Credit for payment against GARN	: 30 days

Total	95 /110 days.

(European countries (Germany, UK, France, Italy,--, etc) : 45 days
Asian countries (Russia, Ukraine, etc) : 60 days
USA : 60 days)

However, in case of deviation to payment term by the overseas tenderer(s) to 85% against L/C at sight , payment is required to be released by the negotiating Bank on the first day. Hence, the difference in deviation to payment term works out to 95/110 days depending on country of Load port. Accordingly, loading for the additional financial implication to which RINL may possibly be exposed on account of such deviation shall be carried out and ranking of tenderers done.

4.6.2 Illustration- II: (Deviation in payment terms by Indigenous Firm):

Description	As per Tender terms	**As per deviation**
Payment terms	100% value against submission of bills within 30 days of acceptance of material at VSP.	**100% against L/C with 30 days** interest free period from the date of receipt and acceptance at

		VSP (All bank charges to Seller's a/c)
Landed cost per Ton on FOR VSP Stores basis / CIF basis	**Landed cost: Rs.10,000/-**	
Loading per Ton due to deviation in payment terms	5% of 10% of landed value per quarter	**0.05*0.10*10,000/4 = Rs.12.50/-**

4.6.3 Illustration- II: (Deviation in payment terms by Indigenous firm)

Description	As per Tender terms	**As per deviation**
Payment terms	100% value against submission of bills within 30 days of acceptance of material at VSP.	**100% against L/C at sight.** (All bank charges to VSP's a/c)
Landed cost per Ton on FOR VSP Stores basis / CIF basis	**Landed cost: Rs.10,000/-**	
Loading per Ton due to deviation in payment terms	(i) L/C Margin Money @ 5% of 10% of landed / CIF value per quarter (ii) 15% interest for 30 days on landed / CIF value (iii) L/c charges on landed / CIF value	**0.05*0.10*10,000/4 = Rs.12.50/-** **0.15*30*10,000/365 = Rs.123.29** **0.0375%*10,000 = Rs.3.75**

RINL / VSP at its sole discretion may consider the benefits available under Duty Entitlement Pass Book (DEPB) or any other scheme under Export – Import Policy in evaluation of the offers.

5.0 **CURRENCY AND UNIT OF WEIGHT**: The price of **Hydraulic Mudgun & Drilling Machine** per set should be quoted in US Dollars or Euro only in case of imported offer and in INR in case of indigenous offer.

6.0 **LANGUAGE OF BID**: The offer and complete correspondence must be effected only in English language. The Bid prepared by the tenderer and all correspondence and documents relating to the bid exchanged by the tenderer and the PURCHASER, shall be written only in the English language, provided that any printed literature furnished by the tenderer may be written in another language so long as it is accompanied by an English translation of its pertinent passages in which case, for purposes of interpretation of the bid, the English translation shall govern.

7.0 **DISCLOSURE OF PARTICULARS OF INDIAN AGENT, IF ANY**:

7.1 RINL/VSP would not like the tenderers to appoint any Indian agents. In case the Tenderer has an Indian agent, the following details shall be furnished in the offer.

The name and address of the Indian agent. In case the Agent/ Representative be a Foreign Company, it shall be confirmed whether it is a real substantial company and details of the same shall be furnished.

a) What service the Agent renders. Extent of authorisation and authority given to commit the Tenderer. The amount of commission/ remuneration included in the quoted price(s) for such Indian agent.

b) Confirmation of the Tenderer that the commission/ remuneration, if any, payable to his Indian agent, shall be paid by RINL in India in Indian Rupees. Such commission/ remuneration payable to the Indian agent will be converted to Indian Rupees at the TT buying rate as on date of BL as per "State Bank of India" and shall not be subject to any further exchange variation. In addition, any other relevant detail as may be asked for by the PURCHASER subsequently shall also be furnished by the Tenderer.

7.2 There shall be compulsory registration of Indian agents with Purchaser. Information shall be sent to the Indian agents after they are registered.

7.3 The Indian agent's commission, if any, should be included in the quoted prices and indicated separately.

7.4 Failure to furnish correct and detailed information as called for in sub para 7.1 herein above, will render Tenderer's bid liable to rejection or in the event of an agreement materialising, the same is liable to termination by RINL. Besides this, there would be a penalty of banning business dealings with RINL or damage or payment of a named sum.

7.5 In the event of an Agreement materialising, the terms of payment will provide for payment of the net value of the materials delivered in each consignment, after deduction of the amount of commission/remuneration, if any, payable to Indian agent. The Indian agents commission will be normally released in equivalent Indian rupees to the Indian agents after 90 (ninety) days of discharge of the cargo in India. A confirmation is to be given by the tenderer that the commission / remuneration to the Indian agent, shall be paid by RINL in India in Indian rupees.

7.6 The Indian agents shall represent only one Foreign Tenderer in the tender. In case, it is found that the Indian agent is representing more than one Tenderer then all the offers represented by this Indian agent will be rejected.

8.0 **VALIDITY OF THE OFFER**:

Each tenderer shall keep his offer firm and valid for acceptance by RINL for a period of **120** (One hundred and Twenty) days from the date of opening of tenders at VSP.

9.0 **BID MONEY/BID BOND**:

9.1 Each tender shall be considered only if Bid money in US Dollars/EUROs or in Indian Rupees by means of either a Demand Draft/ Cheque/(both subject to realization)

/Electronic Mode drawn on any Scheduled Bank and payable to Rashtriya Ispat Nigam Ltd. at Visakhapatnam or a Bid Bond in the form of Bank Guarantee (as per the prescribed proforma at **Annexure -V** of the Tender Documents) established in favour of RINL for an amount **Rs. 37,50,000/-** (Rupees Thirty Seven Lakhs Fifty thousand only) **or US$ 83,350** (US Dollars Eighty Three Thousand Three Hundres and Fifty only) or EUROs **EURO 58,600** (EURO Fifty Eight Thousand and Six Hundreds only) is submitted along with or prior to opening of Part I: Pre-Qualification Bid. No change in the prescribed proforma of Bank Guarantee for Bid Bond is acceptable. Further, the tenderer is required to submit the duly filled in CHECK LIST for Bank Guarantee as at **Annexure-V(A)** along with tender.

9.2 The Bid Bond as mentioned above should be either in the form of Bank Guarantee issued by any of the Nationalized Bank (whether situated at Visakhapatnam or outstation) **with a clause to enforce the same on their local branch at Visakhapatnam** or by way of Account payee Demand Draft payable at Visakhapatnam in favour of Rashtriya Ispat Nigam Limited. The Bank Guarantees from other Scheduled Banks (other than Nationalized) Banks) should however be from the branch located in Visakhapatnam. The bond established through Co-operative Banks are not acceptable. The Bid Bond should be valid for 180 (One hundred and Eight) days from the date of tender opening. Tenders received without the Bid Bond / bid Money of requisite value will summarily rejected. Bid money, if paid in cash, shall not accrue interest.

Bid Bond / Bid Money submitted shall be returned to the unsuccessful tenderers on finalization of the tender and clearance from Nodal Officer of Integrity Pact. However, Bid Bond / Bid Money submitted by the successful tenderer shall be returned to them on finalization of the tender and upon submission of Performance Guarantee Bond and clearance from Nodal Officer of Integrity Pact.

9.3 The Bid Bond / Bid Money must be submitted along with or prior to opening of Pre-Qualification Bid (Part I). Tenders received without the Bid Bond / Bid Money of requisite value will not be considered by RINL.

9.4 The submission of Bid Bond shall be exempted for SSI Unit Registered with Industries Dept. or NSIC Ltd. This exemption is applicable only to those SSI units which are having permanent Registration numbers for SSI Units should submit a copy of Permanent Registration certificate along with the techno-commercial bid. Non-submission of this document by SSI units shall debar them from consideration of their offer.

9.5 The Bid bond / Bid money shall be encashed by RINL, VSP without any further reference to the tender and forfeited.

a) In case the offer submitted by the tenderer is withdrawn or modified his bid in a manner not acceptable to RINL, VSP before expiry of validity.

b) In case Performance Guarantee Bond is not submitted within the time allowed as per the terms and conditions, after RINL/VSP communicated acceptance to tender in accordance with clause 10 of Annexure - II of the Tender documents.

10.0 **PERFORMANCE GUARANTEE BOND**:

10.1 The successful tenderer should submit Performance Guarantee within 30 days from the date of Acceptance to Tender (A/T). The Performance Guarantee Bond is to be furnished

in the form of Bank Guarantee as per Proforma at **Annexure - VIII** of the tender document, covering 5% (Five percent) of the ordered value. No change in the prescribed Proforma of the Bank Guarantee for Performance Guarantee bond is acceptable. Further, the successful tenderer is required to submit the duly filled in CHECK LIST for Performance Bank Guarantee as at **Annexure-VIII (A)** .

10.2 The Performance Guarantee Bond should be established in favour of Rashtriya Ispat Nigam Limited through any Nationalised Bank situated at Visakhapatnam or outstation (but in India) **with a clause to enforce the same on their local branch at Visakhapatnam**. If the bond is issued by any scheduled bank (other than nationalised bank), bond is to be issued by the branch located in Visakhapatnam only. Bonds from Co-operative banks are not accepted.

10.3 This **Performance Guarantee** Bond shall be for the due and faithful performance of the contract and shall remain binding, notwithstanding such variations, alterations or extensions of time as may be made, given, conceded or agreed to between the successful tenderer and the Purchaser under the terms & conditions of Acceptance to Tender.

10.4 The successful tenderer is entirely responsible for the due performance of the Contract in all respects according to the spirit, intent and meaning of the terms and conditions and specifications and all other documents referred to in the Acceptance to Tender.

10.5 The Performance Guarantee Bond shall be kept valid and in full force and effect during the period of the contract and shall continue to be enforceable for a period of 180 (One hundred and Eighty) days from the date of scheduled delivery of the last consignment.

10.6 Performance Guarantee Bond shall be released after 180 days from the date of scheduled Delivery of the last consignment or 90 days after commissioning of the total Equipment supplied, subject to clearance from user department, whichever is earlier, under the Acceptance of Tender.

11.0 **STATEMENT OF DEVIATIONS**:

11.1 If any tenderer is unable to accept any particular term(s) as incorporated in the Tender document, or proposes any deviation there from, the Tenderer shall enclose along with his offer, a statement of deviations clearly spelling out the deletions / deviations proposed, which may, however, have an impact on the evaluation of his offer or rejection by Rashtriya Ispat Nigam Limited. ***Each tenderer shall submit a letter as per Proforma at Annexure – X of tender document duly signed by the tenderer along with his offer confirming his acceptance to all the terms and conditions of the Tender document, except for the deletions / deviations specifically proposed by them in their offer as stated in the statement of deviations, if any, enclosed to the letter as per proforma at Annexure – X.***

12.0 OTHER GENERAL POINTS RELATING TO THE PREPARATION / SUBMISSION / DESPATCH OF THE OFFER:

12.1 The detailed offer together with its enclosures, **in THREE Sets** , should be submitted in three parts:
Part I: Pre-qualification Criteria Bid , **Part II :** Techno-Commercial Bid and **Part III :** Price Bid in three separate sealed envelopes.

Part I should contain all details as envisaged at **PART A of ANNEXURE I** along with Bid Bond / Bid Money if not submitted prior to opening of Tender.

Part II should contain all details as envisaged on technical specifications (refer Part C, Volume II& III) & Part D of **Annexurel I**) , other information / data / documents / confirmations/ deviations, if any . A price format as in the Part III after blanking the prices indicating the country of origin and port of loading with specific confirmation that except the data asked for in the price bid no other information conditions is given in the price bid may also be placed in the Part-III. However, no indication of price in any form, shall be given in Part II.

Part - III: Price Bid should be submitted separately in the prescribed Proforma as at **Annexure-III** to the Tender Documents.

12.1 Each page of the offer should be numbered consecutively, referring to the total number of pages comprising the entire offer, at the top right-hand corner of each page.

12.2 Each page of the offer should be signed by the authorised officer(s) of the Tenderer.

12.3 The **Part-I, Part-II & Part-III** of the offer together with its enclosures in separate sealed envelopes, should be placed in an envelope which should bear, in Block capital letters, superscription **"Tender for supply of Hydraulics Mudgun & Drilling Machine against Tender No. Pur.1.90.0830/0077 dt.14.05.2011"** and should also bear superscription:

Part I: Pre-qualification Criteria Bid
Part II : Techno-Commercial Bid
Part III : Price Bid

The three envelopes should then be sealed separately. The name and address of the tenderer should be mentioned on this envelope.

12.4 The envelopes referred to in para 12.3 above should be placed in another envelope which should be addressed to the **General Manager (MM) I/C, Administration Building, Block-A, Purchase Dept, Visakhapatnam Steel Plant, Visakhapatnam 530 031, Andhra Pradesh, India** and should bear in Block Capital Letters the superscription **"OFFER IN RESPONSE TO TENDER NO. PUR. 1.9.0830/0077 dt.14.05.2011 ".** This envelope should also be sealed. The name and address of the Tenderer should be mentioned on this envelope as well.

12.5 Tenders will be accepted up to **1030 Hrs (IST) on 04.07.2011.** The **Pre-qualification Bid (Part I)** of the tenders shall be opened immediately thereafter in the presence of the tenderers or authorised representative of the tenderers, who may choose to be present.

The date and time of **Techno - Commercial Bid (Part -II)** opening shall be intimated separately to those Tenderers who have been qualified in Pre-qualification Criteria. Techno- Commercial Bid **(Part II)** of those Tenderers who have been qualified in Pre-qualification Criteria shall be opened in the presence of the Tenderers or Authorised Representatives of the Tenderers who may choose to be present.

The date and time of **PRICE BID (Part III)** opening shall be intimated separately to Technically and Commercially acceptable tenderers. Price Bids (Part III) of those Tenderers who have been Techno-Commercially accepted shall be opened in the presence of the Tenderers or Authorised Representatives of the Tenderers who may choose to be present.

12.6 ***In case any tenderer is silent on any clauses mentioned in this tender document, VSP shall construe that the tenderer had accepted the clauses as per this Invitation to Tender.***

12.7 ***The price quotations should be given in the Part III : Price bid and not in any other accompanying documents or statement. No revision in the price (s), terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.***

12.8 ***Offers received by VSP by cable, e-mail, telex, fax or telegrams and tenders received late / delayed will not be considered.***

12.9 Amendment to Tender Terms and Conditions:

12.11.1 At any time prior to the deadline for submission of the bids, the PURCHASER may, for any reason, modify the tender terms and conditions by way of an amendment.

12.11.2 Such amendments will be notified on RINL's website **www.vizagsteel.com** and will be binding on the tenderers. The intending tenderers are, therefore, advised to visit RINL's website at regular intervals.

13.0 **COMPLETENESS OF THE TENDER**:

13.1 Each Tenderer should ensure that the aforesaid conditions for submission of offers are duly complied with. Failure to furnish correct and detailed information as called for will render the concerned tender liable to rejection.

14.0 **PUNITIVE ACTIONS TO BE TAKEN AGAINST AGENCIES WHO SUBMIT FALSE/FORGED DOCUMENTS TO VSP:**

14.1 If it comes to the notice of RINL at any stage from request for enlistment/ tender document that any of the certificates / documents submitted by applicants for enlistment or by bidders are found to be false/ fake/ doctored, the party will be debarred from participation in all RINL tenders for a period of 5 years including termination of contract, if awarded. EMD/ Security Deposit etc. if any, will be forfeited. The contracting Agency in such cases shall make good to RINL any loss or damage resulting from such termination. Contracts in operation anywhere in RINL will also be terminated with attendant fall outs like forfeiture of EMD/ Security Deposit, if any, and recovery of risk and cost charges etc. Decision of RINL Management will be final and binding.

15.0 The tenderer(s) may be invited, if necessary for technical discussions during the evaluation stage of offer(s) submitted. However in such a scenario, the intimation will be given in advance.

ANNEXURE-III TO TENDER NO.PUR. 1.90.0830/0077 dt.14.05.2011

PROFORMA FOR PART III : PRICE BID (FOR IMPORTED SUPPLIES)

1.*Name of the Tenderer :

2.*Address :

3.*Country of Origin of commodity :

4. **FOB Load port basis** : (Price per set in words as well as in figures)

a) Design and engineering, manufacture, supply of Hydraulic Mud gun and Drilling Machine of BF 1 (1 set) as envisaged in specification NO. VSP-BF-CR-PRI-002) : ----------

b) **CFR Visakhapatnam** / **Chennai Sea Port** : (Price per set in words as well as in figures)

Design and engineering, manufacture, supply of Hydraulic Mud gun and Drilling Machine of BF 1 (1 set) as envisaged in specification NO. VSP-BF-CR-PRI-002) : ----------

Price Break-up	
FOB ,designated Load port price (A)	
Freight (B)	
Total (A+B): CFR, Visakhapatnam/ Chennai	

c) Supervision of Erection, commissioning, testing, demonstration of performance guarantee tests of Hydraulic Mud gun and Drilling Machine of BF 1 (1 set) as envisaged in specification NO. VSP-BF-CR-PRI-002) : ----------

5. Total value [4.b) + 4.c)] :

6. Delivery schedule for supply :

7. *Port of loading for price quoted : (on FOB basis / CFR basis)

* (Also to be indicated in Part II : Techno - Commercial Bid)

Signature and Name of the Tenderer

ANNEXURE-III TO TENDER NO.PUR. 1.90.0830/0077 dt 14.05.2011

PROFORMA FOR PART III : PRICE BID (FOR INDIGENOUS SUPPLIES)

The price bid should contain the following data:

1) .*Name of the Tenderer :

2.*Address :

3) **BASIC PRICE** : Design and engineering, manufacture, supply of Hydraulic Mud gun and Drilling Machine of BF 1 (1 set) as envisaged in specification NO. VSP-BF-CR-PRI-002) : ----------

4) P&F Charges:
5) Excise Duty (in %):
6) Educational Cess (%):
7) Higher Secondary Educational Cess (%) :
8) CST/VAT:
9) Freight upto VSP Stores:
10) Insurance :

11) SUPERVISION CHARGES: Supervision of Erection, commissioning, testing, demonstration of performance guarantee tests of Hydraulic Mud gun and Drilling Machine of BF 1 (1 set) as envisaged in specification NO. VSP-BF-CR-PRI-002) : ----------

Note: Only prices to be quoted in this document. No other condition or information , having any bearing on the quoted price , shall not be considered.

* (Also to be indicated in Part II : Techno - Commercial Bid)

Signature and Name of the Tenderer Or
his authorized representative with seal

Station:
Date:

ANNEXURE-IV TO TENDER NO PUR. 1.90.0830/0077 dt 14.05.2011

(see para 2.5 of instructions to tenderers)

CHECK LIST TO BE FILLED UP AND SENT ALONG WITH PART II :TECHNO - COMMERCIAL BID OF THE OFFER TO BE SUBMITTED.

SL. NO.	TENDER TERMS	AS REQUIRED BY VSP	To be confirmed by party accepted / not accepted	DEVIATIONS, IF ANY
1	Name and address of the Tenderer			
2	Quantity offered	To be confirmed as per Annx-I of ITT		
3	Technical specification	To be confirmed as per Annx-I of tender document (ITT)		
4	Delivery schedule	To be confirmed as per Para 3.0 of ITT		
5	Average annual production capacity	To be confirmed as per Clause 2.1 of Annx-II of ITT		
6	Letter of Authority from Manufacturer	To be submitted as per Clause 2.2 of Annx-II of ITT.		
7	Payment terms	To be confirmed as per Clause 4.0 of Annx-II of ITT		
8	Bid Bond / Bid Money	To be confirmed as per Clause 9.0 of Annx-II of ITT		
9	Country of Origin	To be confirmed (in case of imported source)		
10	Price Basis	To be confirmed as per Clause 3 of Annx-II of ITT		
11	Price firmness	To be confirmed as per Clause 3 of Annx-VII of ITT		
12	Insurance	To supplier's a/c (for indigenous supply) & To VSP's account (for imports)		
13	Packing	To be confirmed as per Clause10 of Annx-VII of ITT		
14	Load Port	To confirm the details of load port		
15	Validity of offer	To be confirmed as per Clause 8 of Annx-II of ITT		
16	Test cum Guarantee certificate	To be confirmed as per Clause 12 of Annx-VII of ITT		
17	Liquidated damages	To be confirmed as per Clause 13 of Annx-VII of ITT		
18	Default	To be confirmed as per Clause14 of Annx-VII of ITT		
19	Risk Purchase	To be confirmed as per Clause15 of Annx-VII of ITT		
20	Arbitration & Jurisdiction	To be confirmed as per Clause 23 of Annx-VII of ITT		
21	Force Majeure	To be confirmed as per Clause 22 of Annx-VII of ITT		
22	Performance Guarantee Bond	To be confirmed as per Clause10 of Annx-II		

		of ITT		
23	Indian Agent details	To be confirmed as per Clause 7 of Annx-II of ITT		
24	Other terms and condition of ITT / GCC	To confirm acceptance.		
25	Submission of documents by un-listed vendors of RINL / VSP.	To be confirmed as per Clause 1.0 of Annx – II of ITT.		
26	Submission of signed Integrity Pact	To be confirmed as per Clause 2.6 of Annx-II of ITT.		

……..
Signature and Name of the Tenderer

ANNEXURE-V TO TENDER NO PUR. 1.90.0830/0077 dt. 14.05.2011

PROFORMA OF BANK GUARANTEE FOR BID BOND
(refer Para 9.0 of Annexure – II)

(To be typed on Non-judicial stamp paper of the value of Indian Rupees of One Hundred)
TO BE ESTABLISHED THROUGH ANY OF THE NATIONALISED BANKS (WHETHER SITUATED AT VISAKHAPATNAM OR OUTSATTION) WITH A CLAUSE TO ENFORCE THE SAME ON THEIR LOCAL BRANCH AT VISAKHAPATNAM OR ANY SCHEDULED BANK (OTHER THAN NATIONALISED BANK) SITUATED AT VISAKHAPATNAM. BONDS ISSUED BY CO-OPERATIVE BANKS ARE NOT ACCEPTED.

To
Rashtriya Ispat Nigam Limited
Visakhapatnam Steel Plant,
Admn. Building,
Visakhapatnam-530 031.
INDIA.

Bank Guarantee No. ---------- dt.

LETTER OF GUARANTEE

WHEREAS Rashtriya Ispat Nigam Ltd., Visakhapatnam Steel Plant (hereinafter referred to as RINL) have invited Tenders vide Tender No. Pur. **PUR. 1.9.0830/0077 dt. 14.5.2011** (hereinafter referred to as the said Invitation to Tender) for purchase of Hydraulic Mudgun & Drilling Machine AND WHEREAS the said Invitation to Tender requires that any eligible Tenderer wishing to make an offer in response thereto shall establish an irrevocable Bid Bond in favour of RINL in the form of Bank Guarantee for (**) Rs. ……. and valid upto ……. as guarantee that the tenderer:

a) shall keep his offer firm and valid for acceptance by RINL for a period of 120 (One Hundred and Twenty) days from the date of opening of tenders.

b) shall, in the event of the offer being accepted by RINL, establish a Performance Guarantee (PG) Bond in favour of RINL, in the form of Bank Guarantee covering 5% (Five percent) of the value of Hydraulics Mudgun & Drilling Machine ordered at the price and on the terms accepted by RINL, within 30 (Thirty) days from the date of Acceptance to Tender / LOA .

AND WHEREAS M/s.....(hereinafter referred to as the said Tenderer) wish to make an offer in response to the said Invitation to Tender for the supply of Hydraulic Mudgun & Drilling Machine on the basis of (**)FOR VSP Stores / FOB /CFR.

NOW THIS BANK HEREBY GUARANTEES that in the event of the said Tenderer failing to abide by any of the conditions referred to in any of the preceding paragraphs, this Bank shall pay to Rashtriya Ispat Nigam Ltd., Visakhapatnam Steel Plant, Visakhapatnam, INDIA on demand and without protest or demur (**) Rs…… (Rupees……...).

This Bank further agrees that the decision of RINL as to whether the said Tenderer has committed a breach of any of the conditions referred to in the preceding paragraphs, shall be final and binding.

We, ..…… (name of bank & branch) hereby further agree that the Guarantee herein contained shall not be affected by any change in the constitution of the Tenderer and/ or RINL.

This Bank further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our Branch office at Visakhapatnam situated at …….. (Address of local branch at Visakhapatnam).

THIS BANK FURTHER undertakes that this Guarantee shall remain irrevocably valid and in force up to 180 days from the due date of opening the tenders.

For and on behalf of

_____

(Name of the Bank)

Signature
Name
( )

Duly constituted attorney and
authorised signatory

Designation :

Name and Address of the Bank

** - To be modified based on the source of supply i.e., Indigenous or Import.

ANNEXURE-V (A) TO TENDER NO PUR. PUR. 1.90.0830/0077 dt. 14.05.2011

CHECK LIST FOR THE BANK GUARANTEE FOR BID BOND

Name of the party submitting BG:

Party Code: Tender No:
Name of the Bank issuing BG:
Branch issuing the BG:
BG No.: BG Date:
BG Value:

1 Is the BG as per the approved format of VSP ? Yes / No
2 Is the BG issued by the specified category of Banks (Scheduled commercial bank / nationalized bank etc. as specified in the contract) ? Yes / No
3 Is the BG executed on stamp paper of adequate value under the relevant state rules ? Yes / No
4 Is the stamp paper obtained in the name of the bank issuing the BG ? Yes / No
5 Is the date of sale of stamp paper prior to the date of the BG ? Yes / No
6 Does the BG refer to the concerned tender with reference to which the BG is issued ? Yes / No
7 Does the BG bear the number, date and seal of the issuing Bank ? Yes / No
8 Is the BG signed on all pages ? Yes / No
9 Whether the name, designation & code number of the officer/officers singing the BG are mentioned against the signatures of respective officer/officers ? Yes / No
10 Whether the BG validity period is as per the concerned contractual requirement ? Yes/ / No
11 Whether the BG format contains a foot note regarding the details of the controlling office / higher authority from which confirmation regarding issuance of BG may also be obtained as given below: “Issuance of this bank guarantee may also be got confirmed from our controlling branch / office / Higher Authority (Name & Address)” Yes / No
12 BG contains the clause for ‘Enforceability of the same at Visakhapatnam*’ and the address for the same is also specified in the BG. Yes / No
13 Enclosed is the Original confirmation letter from the BG enforcing and paying Bank/Branch at Visakhapatnam in the case BG is issued from a Bank outside Visakhapatnam. Yes / No

Note: The BGs can be accepted only when reply to all the above are ‘Yes’

Signature of the Tenderer
Date: ……

ANNEXURE-VI TO TENDER NO PUR. 1.90.0830/0077 dt. 14.05.2011)

LETTER OF AUTHORITY FROM ESTABLISHED MANUFACTURER OF HYDRAULIC MUDGUN & DRILLING MACHINE

(See 2.2 of Annexure -II of the Tender Documents)

Ref: Date:

AUTHORISATION CERTIFICATE

To,
M/s Rashtriya Ispat Nigam Ltd.,
Visakhapatnam Steel Plant,
Purchase Department,
Main Administrative Building,
Visakhaptnam -530 031.
Attn: (Name of the Dealing Officer)

Dear Sir,

Sub: **Authority Letter Against**

ITT No …… dated ……
Item/s quoted ……
…….

We …….. who are established and reputed manufacturers of ……having factory at…… hereby authorize M/s ……(name and address of agent/dealer/stockist/distributor) to Bid, negotiate and conclude the contract with you against above ITT No., for the abovementioned goods manufactured by us.

No company or firm or individual other than M/s ……. are authorized to Bid, negotiate and conclude the contract in regard to this business against this specific tender.

The agency commission of **… (*1)**... **%** included in the gross FOR/ex-works/FOB/CIF/others (to be specified**)(*2)** price is payable to M/s …….. in Indian Rupees. / No agency commission is payable to M/s ……..

We hereby extend our full guarantee /warranty as per your clause at Sl No **..(*3)..** of the General Conditions of Contract for the goods offered against this Invitation to Tender, by the above firm.

We also confirm that the spares and any other miscellaneous items(as applicable), of the equipment quoted will be freely available for at least five years after expiry of warranty/ guarantee period.

Our other responsibilities are as follows:

Information regarding the name of new agent/dealer/stockist/distributor, in case of change.
Other responsibilities : …….
(To specify, if any)

Our agent/dealer/stockist/distributor's responsibilities are as follows:
(To specify, if any)

Yours faithfully,

(Name of Manufacturer)

For and on behalf of M/s _____ (Name of Manufacturer & Signatory)

Notes:

a)Whenever OEMs authorize their (agent/dealer/stockist/distributor) to quote against the tender, they shall submit an authorization certificate as per the format given above. This certificate of authorization should be **submitted on the letter head** of the manufacturing concern and should be signed by a person on behalf of the manufacturer, who is competent to authorize the agent/dealer/stockist/distributor. If the authorization certificate is not furnished as per the above format, the tender shall be liable for rejection.

b) (*1) To strike out whichever is not applicable. If agency commission is payable % is to be furnished.

c) (*2)To indicate exact basis of offer - FOR/ex-works/FOB/CIF/others (to be specified)

d) (*3) To fill in the relevant clause of the applicable GCC as per the scope of tender i.e. Supply/Supply & Installation/Supply& Application/Supply & Supervision/Supply & Erection /others – to specify.

ANNEXURE-VII TO TENDER NO. PUR. 1.90.0830/0077 dt.14.05.2011

GENERAL CONDITIONS OF TO INVITATION TO TENDER

1.0 MARINE INSURANCE (IN CASE OF IMPORT OFFER):

1.1 The insurance shall be arranged by the Purchaser. Within 5 working days of shipment, the supplier shall furnish by fax / e-mail the following particulars of the shipment to the Underwriters of the Purchaser:

(a) Purchaser Order Number, (b) Purchaser's Marine insurance open cover number, (c) Name of the vessel, (d) Port of shipment, (e) Date of sailing of the vessel from port of shipment, (f) Bill of Lading number and date with description of the materials, (g) number of packages/ bundles/ containers, (h) quantity shipped including gross and net weight, (i) invoiced value of the materials shipped, (j) port of discharge.

Further, the above cable/telex/fax intimation must invariably be repeated to the main office of the Purchaser. The address and other details of the Underwriters and the Purchaser shall be informed at the time of Placement of order.

2.0 **PRICE VARIATION**: Price shall remain firm till completion of supplies and supervision of Erection, Testing & commissioning, demonstration of performance of Hydraulic Mudgun & Drilling Machine.

3.0 **TERMS OF PAYMENT**:

3.1 Payment shall be made as follows:

(a) 85% of the value of materials shall be made against submission of invoice, Bill of Lading / LR, Pre-despatch Inspection Certificate, Manufacturer Test Certificate, Certificate of Origin within 30 days of acceptance of materials. Accepted GARN (Goods Acceptance/ Rejection Note) issued by PURCHASER shall be reckoned as the document for acceptance of materials. In other words, accepted GARN copy to be submitted along with invoice and other documents.

(b) Balance 15% value of materials along with 100% charges towards supervision of Erection, Testing & commissioning , demonstration of performance of Hydraulic Mudgun & Drilling shall be released on successful supervision of Erection, Testing & commissioning, demonstration of performance of Hydraulic Mudgun and Drilling Machine for BF-1 at RINL, VSP duly certified by DGM(Mech) /BF

3.2 In case of Indigenous offers, PURCHASER encourages Electronic Fund Transfer / RTGS for payment direct to Seller's Bank account on due date for which Seller has to furnish Bank account details in the format prescribed by PURCHASER. Cheque date will be considered for arriving at 30th day wherever payment is made by Cheque. Any other mode of payment term will be suitably loaded while evaluating the tender.

3.3 In case o f Imports, L/C payment shall be made upon presentation of documents specified at Para 8.1 of **Annexure – VII** of tender document. All Bank charges within and outside

India are to SELLER's account. In case L/C is required to be amended at the instance of Seller, bank charges for the same shall be borne by the Seller.

4.0 **PORT OF DESTINATION**: Visakhapatnam / Chennai Sea Port , India

4.1 **PORT OF SHIPMENT**: Please indicate the details of Port of Shipment.

5.0 **SHIPPING PROCEDURE (IN CASE OF IMPORT OFFER)**:

6.1 In case the order is finalised in FOB terms the shipping arrangements will be made by the Shipping Co-ordination and Chartering Division, Ministry of Shipping and Transport, New Delhi (Cable: TRANSCHART, NEW DELHI, TELEX: VAHAN ND.2312, 2448 AND 3104) through their respective forwarding agents/ nominees to whom adequate notice of readiness should be given by the supplier from time to time for finalising the shipping arrangements. The details of forwarding agents / nominees will be indicated in the order.

6.2.1 The Bills of Lading shall be drawn so as to show:

Consignee : Rashtriya Ispat Nigam Ltd.,
Visakhapatnam Steel Plant,
Visakhapatnam 530 031

6.3 In case the order is finalised on FOB terms, the two non-negotiable copies of the Bills of Lading indicating the gross freight amount and rebate allowed, should be forwarded to the Shipping Co-ordination Officer, Ministry of Shipping and Transport, New Delhi after the shipment of each consignment is effected.

7.0 **CONDITIONS FOR SHIPMENT (IN CASE OF IMPORT OFFER)**:

7.1 The materials shall always be shipped UNDER DECK only. Under No circumstances, shipment "On Deck" will be permitted or accepted.

7.2 In case the order is finalized in FOB terms every shipment against this Purchase order must be made under Bill (s) of Lading marked "Freight to Pay" providing for discharge on Liner terms on Quay/Wharf/Berth at the port of discharge, free of risk and expense to the Purchaser. The date of the Bill of Lading shall be treated as the date of Shipment.

8.0 **SHIPPING DOCUMENTS (IN CASE OF IMPORT OFFER)**:

8.1 In respect of each shipment against the order, if any, placed by the Purchaser, each of the under mentioned documents shall be made out separately by the Seller:

Advance set of documents to be airmailed by the Seller to the Purchaser's Transport and Shipping Department within 7 working days from the date of shipment			Original set of documents to be presented by the Seller to the negotiating bank for drawl of payment / negotiation against Purchaser's Letter of Credit		
Sl. No.	Description of the document	No. of copies to be sent	Sl. No.	Description of the document	No. of copies to be sent
1	First Original (1/3) negotiable clean on	One Original	1	Duplicate & Triplicate original (2/3) & (3/3)	Two Originals

	board ocean Bill of Lading stamped, signed marked "Freight To Pay / Pre-paid" made out to the order of Rashtriya Ispat Nigam Ltd., & Notify: Rashtriya Ispat Nigam Ltd. (Office at the Port of discharge)			negotiable clean on board Ocean Bill of Lading stamped, signed, marked "Freight To Pay / Pre-paid" made out to the order of Rashtriya Ispat Nigam Ltd., & Notify: Rashtriya Ispat Nigam Ltd. (Office at the Port of discharge)	
2.	Non-negotiable Bill of Lading	5 copies	2.	Non-negotiable Bill of Lading	5 copies
3.	Seller's commercial Invoice	5 signed copies	3.	Seller's commercial Invoice	5 signed copies
4.	Manufacturer's Test cum Guarantee Certificate	5 signed copies	4.	Manufacturer's Test cum Guarantee Certificate	5 signed copies
5.	Packing list	5 signed copies	5.	Packing list	5 signed copies
6.	Certificate of Origin	5 signed copies	6.	Certificate of Origin	5 signed copies
7.	Certificate of shipment by seaworthy vessel by Lloyds or equivalent classification society	3 signed copies	7.	Seller's certificate to the effect that shipment has been made as per Clause-8.0 for FOB shipments	3 signed copies
			8.	Seller's fax intimation of shipment to the main office of the Purchaser and underwriters	3 signed copies
			9.	Seller's certificate confirming despatch of advance set of documents which also includes (1/3) original B/L within 7 working days from the B/L date	3 signed copies

Note: The above shipping clauses shall be suitably amended in case of C&F Order.

9.0 **INDIGENOUS :** The Seller shall despatch materials on door delivery basis ensuring that the ED Gate Pass 'duplicate copy' for the transporter (for availing CENVAT) and "Tax Invoice" (for availing VAT) is handed over by the transporter to VSP. In case of non-submission of this document, the amount equivalent to the loss of CENVAT / VAT shall be recovered from the amount due.

10.0 **PACKING AND MARKING**:

10.1 The Supplier shall include and provide for securely protecting and sea worthy packing the material in accordance with best established practices so as to protect the contents from damage during transit from point of production until after arrival at Purchaser's site under conditions which may involve multiple handling, transport by ship, rail and road, storage, exposure, to heat moisture rain etc. Wherever considered

necessary, the Purchaser or his representative may check the packing before despatch and may ask for modifications to the extent considered necessary to be carried out in the packing and the Supplier shall carry out the same free of charge. All packing shall allow for removal and checking at site.

10.2 **MARKING**:

10.2.1 All packages shall be clearly and properly marked in English language with indelible paint stenciling. All previous irrelevant markings shall be carefully obliterated. The Supplier shall ensure that the following are clearly and legibly stenciled with good quality non-fading paint on the packages.

a) Name and address of the Consignee : Rashtriya Ispat Nigam Ltd.
Visakhapatnam Steel Plant,
Visakhapatnam 530 - 031
Andhra Pradesh, INDIA.

b) Name of the Supplier :
c) Order No. :
d) Description :
e) Quantity :
f) Package number :
g) Gross and nett weights :
h) * Port of loading & unloading :

11.0 **PACKING LISTS (IN CASE OF IMPORT)**:

11.1 Each package shall have a detailed packing list quoting specifically the name of the Seller, number and date of the order, the name of the Purchaser and the description of the stores and the quantity contained in the package. Duplicate copy of the packing list shall be put in a water proof envelope and fastened securely to the outside of the package.

11.2 Notwithstanding any thing stated in this Article, the Seller shall be entirely responsible for loss, damage or depreciation to the materials occasioned by faulty, defective or insecure packing or due to improper or insufficient protective measures.

12.0 **TEST CUM GUARANTEE CERTIFICATE**:

12.1 The Seller should submit Manufacturer's Test cum Guarantee certificate along with every consignment, clearly indicating the relevant Parameters and batch no. and other identification marks, if any and give guarantee for replacement in case of any deviations / manufacturing defects.

12.2 Replacement of defective materials shall be made free of cost (including duties in India to Seller's account) at Purchaser's site by the Supplier and the collection of the defective material to the Supplier's works shall be the Supplier's responsibility and shall be made at his expenses.

13.0 **LIQUIDATED DAMAGES:**

13.1 Delivery is the essence of the Contract and hence should any consignment be delayed, liquidated damages @ 0.5% of the price of the delayed consignment, for each week or part thereof shall be levied and recovered subject to a maximum of 10% of the total order value.

14.0 **DEFAULT**:

14.1 Should the SELLER fail to provide the MATERIAL for delivery by the time or times agreed upon or should the SELLER in any manner or otherwise fail to perform the Acceptance to Tender or should a receiver be appointed on its assets or make or enter into any arrangements or composition with Creditors or suspend payments (or being a company should enter into liquidation either compulsory or voluntary), the PURCHASER shall have power to declare the Acceptance to Tender as at an end at the risk and cost of the SELLER in every way. In such a case, the SELLER shall be liable for any expenses, damages or losses which the PURCHASER may incur, sustain or be put to by reason of or in connection with SELLER's default. This Clause is however subject to Force Majeure vide 24.0 herein below.

15.0 **RISK PURCHASE:**

15.1 The PURCHASER reserves the right to take Risk Purchase action at the cost and risk of the SELLER, in case he fails to deliver the materials in the specified schedule and the differential cost shall be recovered. The cancellation of the Acceptance to Tender as stated in para 15 herein above may be either for whole or part of the Acceptance to Tender at PURCHASER's option. In the event of the PURCHASER terminating the Acceptance to Tender in whole or in part, he may procure, on such terms and in such manner as he deems appropriate, supplies similar to those so terminated and the SELLER shall be liable to the PURCHASER for any excess costs for such similar supplies. However, in case of part termination of Acceptance to Tender by the PURCHASER, the SELLER shall continue the performance of the Acceptance to Tender to the extent it is not terminated under the provisions of this Clause.

16.0 **RECOVERY OF SUMS DUE:**

16.1 Whenever under this Acceptance to Tender any sum of money is recoverable from and payable by the SELLER, the PURCHASER shall be entitled to deduct such sum from any amount then found payable to the SELLER by the PURCHASER or which at any time thereafter may be found to be payable to the SELLER by the PURCHASER under this or any other Acceptance to Tender with the PURCHASER. Should this sum be not sufficient to cover the full amount recoverable, the SELLER shall pay to the PURCHASER on demand the remaining balance amount. This action shall be without prejudice to the right of the PURCHASER to take legal action against the SELLER for the breach of the Acceptance to Tender.

17.0 **RESPONSIBILITY:**

17.1 The PURCHASER on the one hand and the SELLER on the other hand shall be responsible for the performance of all their respective obligations under this Acceptance to Tender.

18.0 **TRANSFER AND SUB-LETTING:**

18.1 The SELLER shall not sublet, transfer, assign or otherwise part with the Acceptance to Tender or any part thereof, either directly or indirectly, without the prior written permission of the PURCHASER.

19.0 **EXPORT LICENCE**:

19.1 It shall entirely be the responsibility of the SELLER to obtain the requisite Export Licence and to comply fully and to honor all procedures, regulations, policy, relevant laws of his country for export of the MATERIAL to India and he shall keep the PURCHASER indemnified for any losses which may accrue to the PURCHASER because of any defect therein.

20.0 **TAXES AND DUTIES**:

20.1 The SELLER shall be entirely responsible for all taxes, stamp duties, Licence fees and other such levies imposed outside the PURCHASER'S country.

21.0 **WAIVER**:

21.1 Failure to enforce any condition herein contained shall not operate as a waiver of the condition itself or any subsequent breach thereof.

22.0 **FORCE MAJEURE**:

22.1 If at any time during the continuance of this Contract, the performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by reasons of war, hostility, acts of public enemy, civil commotion, sabotage, fire, floods, explosions, epidemics, quarantine restriction, or acts of God (herein after referred to as "eventualities") and provided notice of happenings of any such eventuality (duly certified by International Chamber of Commerce in case of foreign parties) is given by either party to other within 21 days from the date of occurance therof, neither party shall by reasons of such eventuality be entitled to terminate this Contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance. Deliveries under this Contract shall be resumed as soon as practicable after such eventuality has come to an end or ceased to exist and the decision of the Purchaser as to whether the deliveries have so resumed or not shall be final and conclusive. Provided further that if the performance in whole or in part of any obligations under this Contract is prevented or delayed by reasons of any such event for a period exceeding 60 days either party may at its option terminate the Contract. Provided also that the Contract, if terminated under this clause, the Purchaser shall be at liberty to take over from the Contractor at a price to be fixed by the Purchaser which shall be final, all unused, undamaged and acceptable material, bought out components and stores in course of manufacture in the possession of the Seller at the time of such termination or such portion thereof as Purchaser may deem fit except such material, bought out components and stores as the Seller may with the concurrence of the Purchaser, elect to retain.

23.0 **ARBITRATION AND JURISDICTION:**

23.1 All disputes arising out of or in connection with the Acceptance to Tender shall be finally settled by Arbitration in accordance with the rules of Arbitration of the Indian Council of Arbitration and the Award made in pursuance thereof shall be binding on the parties. The Arbitration bench shall give a reasoned award. Cost of arbitration to be borne

by the losing party. The venue of arbitration shall be Visakhapatnam, India and language of arbitration shall be in English.

23.2 In case of any legal proceedings are instituted against Rashtriya Ispat Nigam Limited, Visakhapatnam Steel Plant, they shall be instituted in the appropriate Civil courts of Visakhapatnam and the Courts at Visakhapatnam only shall have Jurisdiction.

24.0 **LEGAL INTERPRETATIONS**:

24.1 The Acceptance to Tender and the arbitration shall be governed by and construed according to the laws of India for the time being in force.

24.2 **IMPORT**: To interpret all the commercial terms and abbreviations used herein which have not been otherwise defined, the rules of "INCOTERMS 2000" shall be applied.

25.0 **LIABILITY OF GOVT. OF INDIA:**

25.1 It is expressly understood and agreed by and between the SELLER and the PURCHASER that the PURCHASER is entering into this Acceptance to Tender solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that the Govt. of India is not a party to this Acceptance to Tender and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that the PURCHASER is an independent legal entity with power and authority to enter into contracts solely in its own behalf under the applicable laws of India and general principles of Contract Law. The SELLER expressly agrees, acknowledges and understands that the PURCHASER is not an agent, representative or delegate of the Govt. of India. It is further understood and agreed that the Govt. of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of this Acceptance to Tender. Accordingly, the SELLER hereby, expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Govt. of India arising out of this Acceptance to Tender and covenants not to sue the Govt. of India as to any manner, claim, cause of action or thing whatsoever arising of or under this Acceptance to Tender.

26.0 All other terms and conditions shall be as per RINL's G.C.C for supply of Material. Tenderer(s) may download the same from our official website www.vizagsteel.com and confirm their acceptance in Part II.

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ANNEXURE-VIII TO TENDER NO. PUR. 1.90.0830/0077 dt. 14.05.2011.)

PROFORMA OF BANK GUARANTEE FOR PERFORMANCE GUARANTEE BOND

(To be submitted on Non-judicial stamp paper of value of Indian Rupees one Hundred drawn on the name of the issuing Bank)

TO BE ESTABLISHED THROUGH ANY OF THE NATIONALISED BANKS (WHETHER SITUATED AT VISAKHAPATNAM OR OUTSTATION) WITH A CLAUSE TO ENFORCE THE SAME ON THEIR LOCAL BRANCH AT VISAKHAPATNAM OR ANY SCHEDULED BANK (OTHER THAN NATIONALISED BANK) SITUATED AT VISAKHAPATNAM. BONDS ISSUED BY CO-OPERATIVE BANKS ARE NOT ACCEPTED.

To
Rashtriya Ispat Nigam Limited,
Visakhapatnam Steel Plant,
Administrative Building,
Visakhapatnam-530031

Bank Guarantee No Dt

LETTER OF GUARANTEE

WHEREAS M/s_____hereinafter referred to as the SELLER) and M/s RASHTRIYA ISPAT NIGAM LIMITED (hereinafter referred to as the PURCHASER) have entered into an AGREEMENT vide ACCEPTANCE TO TENDER (A/T) No._____ Dated_____(hereinafter called the said A/T) for the supply of the Hydraulics Mudgun & Drilling Machine (hereinafter referred to as the MATERIALS) on the terms and conditions mentioned therein.

2. We, ……..... (name of bank & branch) at the request of the SELLER, do hereby undertake and indemnify and keep indemnified the PURCHASER to the extent of Rs. _____(Rupees_____) against any loss or damage that may be caused to or suffered by the PURCHASER, by reason of any breach by the SELLER of any of the terms and conditions of the said A/T and/or in the performance of the said A/T by the SELLER. We agree that the decision of the PURCHASER as to whether any breach of any of the terms and conditions of the said A/T or in the performance thereof has been committed by the SELLER and the amount of loss or damage that has been caused to or suffered by the PURCHASER shall be final and binding on us and the amount of the said loss or damage shall be paid by us forthwith to the PURCHASER on demand and without protest or demur.

3. We, ……. (name of bank & branch) hereby further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for satisfactory performance and fulfillment in all respects of the said AGREEMENT and that it shall continue to be enforceable for (a) 180 days after the date of Bill of Lading of the last consignment of the MATERIALS under the said AGREEMENT or (b) in the event of any dispute(s) between the PURCHASER and the SELLER, until such period(s) the dispute is settled fully, whichever date is the latest and that if any claim accrues or arises against us, ……..(name of bank & branch) by virtue of this guarantee before the dates

referred to at (a) and (b) herein above, the same shall be enforceable against us, …….. (name of bank & branch), not withstanding the fact that the same is enforced after the dates referred to at (a) or (b) herein above, whichever date is the latest, provided that notice of any such claim has been given by the PURCHASER before the dates referred to at (a) or (b) herein above, as the case may be. Payments under this LETTER OF GUARANTEE shall be made promptly upon our receiving the notice to that effect from the PURCHASER on demand and without protest or demur.

4. We, ……. (Name of bank & branch) undertake not to revoke this Guarantee during its currency without the prior written consent of the PURCHASER.

5. We, …….. (name of bank & branch) hereby further agree that the PURCHASER shall have the fullest liberty, without affecting in any manner our obligations here under, to vary any of the terms and conditions of the said A/T or to extend the time of performance of the said A/T by the SELLER from time to time or to postpone for any time or from time to time any of the powers exercisable by the PURCHASER against the SELLER and to forbear or to enforce any of the terms and conditions relating to the said A/T and We, ... (name of bank & branch) shall not be released from our liability under this Guarantee by reason of any such variation or extension being granted to the SELLER or any forbearance and/ or omission on the part of the PURCHASER or any indulgence by the PURCHASER or by any other matter or thing whatsoever which under the law relating to sureties would, but for this provision, have the effect of so releasing us from our liability under this Guarantee.

6. We, …….. (name of bank & branch) hereby further agree that the Guarantee herein contained is initially valid upto _____and that the same shall be extended further according to the provisions contained herein above.

7. We, ...…… (Name of bank & branch) hereby further agree that the Guarantee herein contained shall not be affected by any change in the constitution of the SELLER and/ or the PURCHASER.

8. We, ……(name of bank & branch) hereby further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our Branch office at Visakhapatnam situated at …….. (Address of local branch at Visakhapatnam).

Note: The expression "SELLER" wherever appearing in this Performance Guarantee Bond shall also include the "PRODUCER".

FOR AND ON BEHALF OF
(Name of bank & branch)
Signature:
Name:
DULY CONSTITUTED ATTORNEY
& AUTHORISED SIGNATORY
Designation
(Name of bank & branch)

ANNEXURE-VIII (A) TO TENDER NO. PUR. 1.90.0830/0077 dt. 14.05.2011

CHECK LIST FOR BANK GUARANTEE FOR PERFORMANCE GUARANTEE BOND

Name of the party submitting BG:
Party Code: Job Code / AT No/ LOI No:
Name of the Bank issuing BG:
Branch issuing the BG:
BG No.: BG Date:
BG Value:

1 Is the BG as per the approved format of VSP ? Yes / No
2 Is the BG issued by the specified category of Banks (Scheduled commercial bank / Nationalized bank etc. as specified in the contract) ? Yes / No
3 Is the BG executed on stamp paper of adequate value under the relevant state rules ? Yes / No
4 Is the stamp paper obtained in the name of the bank issuing the BG ? Yes / No
5 Is the date of sale of stamp paper prior to the date of the BG ? Yes / No
6 Does the BG refer to the concerned agreement / tender with reference to which the BG is ssued ? Yes / No
7 Does the BG bear the number, date and seal of the issuing Bank ? Yes / No
8 Is the BG signed on all pages ? Yes / No
9 Whether the name, designation & code number of the officer/officers singing the BG are Mentioned against the signatures of respective officer/officers ? Yes / No
10 Whether the BG validity period is as per the concerned contractual requirement ? Yes / No
11 Whether the BG format contains a foot note regarding the details of the controlling office / higher authority from which confirmation regarding issuance of BG may also be obtained as given below: “Issuance of this bank guarantee may also be got confirmed from our controlling branch / officer / Higher Authority (Name & Address)” Yes / No
12 BG contains the clause for ‘Enforceability of the same at Visakhapatnam*’ and the address for the same is also specified in the BG. Yes / No
13 Enclosed are the Original confirmation letter from the BG enforcing and paying Bank/Branch at Visakhapatnam in the case BG is issued from a Bank outside Visakhapatnam. Yes / No

Note: The BGs can be accepted only when reply to all the above are ‘Yes’

Signature of the Supplier
Date: …….

ANNEXURE- IX TO TENDER NO.PUR.1.90.0830/0077 dt. 14.05.2011

(Refer Para 2.5of Annexure-II instruction to tenderers)

INTEGRITY PACT

Rashtriya Ispat Nigam Limited (RINL) hereinafter referred to as **"The Principal",**

And

……. hereinafter referred to as **"The Bidder/Contractor"**

Preamble

The Principal intends to award, under laid down organizational procedures, a contract for ***supply and supervision of Erection, Testing & commissioning , demonstration of performance of Hydraulic Mudgun & Drilling Machine***. The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources, and of fairness/transparency in its relations with its Bidder(s) and /or Contractor(s).

The Principal will nominate Independent External Monitor(IEM) by name, from the panel of IEMs, at the tender stage, for monitoring the tender process and the execution of the contract in order to ensure compliance with the Integrity Pact by all the parties concerned.

Section 1 – Commitments of the Principal:

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

a. No employee of the Principal, personally or through family members, will in connection with the tender or the execution of a contract, demand/take a promise/accept for self or for third person, any material or non material benefit which the person is not legally entitled to.

b. The Principal will, during the tender process treat all Bidders with equity and reason. The Principal will in particular, before and during the tender process,provide to all Bidders the same information and will not provide to any Bidder confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c. The Principal will exclude from the process all known prejudiced persons.

(2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the PC Act/ applicable law, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer of RINL and in addition can initiate disciplinary action.

Section 2 – Commitments of the Bidder(s)/contractor(s):

(1) The Bidder/ Contractor commits to take all measures necessary to prevent corruption and commits to observe the following principles during his participation in the tender process/during the contract execution(in case of Bidder to whom the contract has been awarded).

a. The Bidder/Contractor will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain, in exchange, any advantage of any kind whatsoever during the tender process or during the execution of the contract or to vitiate the Principal's tender process or contract execution.

b. The Bidder/ Contractor will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process or to vitiate the Principal's tender process or execution of the contract.

c. The Bidder/Contractor will not commit any offence under the PC Act/ Applicable law, like paying any bribes or giving illegal benefit to anyone including employees of RINL, to gain undue advantage in dealing with RINL or for any other reason etc. Further, the Bidder/Contractor will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship regarding plans, technical proposals and business details including information contained or transmitted electronically.

d. The Bidder/Contractor of foreign origin shall disclose the name and address of their Agent(s)/representative(s) in India, if any. Similarly the Bidder/Contractor of Indian Nationality shall furnish the name and address of the foreign supplier/contract Agency, if any. Further details, as mentioned in the Guidelines on Indian Agents of Foreign "Suppliers/contract agencies", shall be disclosed by the Bidder/Contractor, wherever applicable. Further, as mentioned in the Guidelines, all the payments made to the Indian agent(s)/representative(s) have to be in Indian Rupees only. Copy of the Guidelines on Indian Agents of Foreign "Suppliers/contract agencies" is enclosed.

e. The Bidder/ Contractor will, when presenting his bid, disclose any and all payments he has made or committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

(2) The Bidder/Contractor will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future contracts:

(1) A transgression is considered to have occurred, if the Principal after due consideration of the available evidence, concludes that a reasonable doubt is possible.

(2) If the Bidder/Contractor, before award of contract or after award of contract has committed a transgression through a violation of Section 2 above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already awarded, for that reason, without prejudice to other remedies available to the Principal under the relevant GCC of the tender/contract.

(3) If the Bidder/Contractor has committed a transgression through a violation of any of the terms under Section 2 above or in any other form such as to put his reliability or credibility into question, the Principal is entitled also to exclude the Bidder / Contractor from future tenders/Contract award processes. The imposition and duration of the exclusion will be determined by the Principal keeping in view the severity of the transgression. The severity will be determined by the circumstances of the case, in particular the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder /Contractor and the amount of the damage.

(4) If it is observed after payment of final bill but before the expiry of validity of Integrity pact that the Contractor has committed a transgression through a violation of any of the terms under Section 2 above during the execution of contract, the Principal is entitled to exclude the Contractor from future tenders/Contract award processes.

(5) The exclusion will be imposed for a Period not less than six (6) months and, up to a maximum period of three (3) years.

(6) If the Bidder / Contractor can prove that he has restored/ recouped the damage to the Principal caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion before the expiry of the period of such exclusion.

Section 4 – Compensation for Damages:

(1) If the Principal has disqualified the bidder from the tender process prior to the award in accordance with Section 3 above, the Earnest Money Deposit (EMD)/Bid security furnished, if any, along with the offer as per the terms of the Invitation to Tender (ITT) shall be forfeited. This is apart from the exclusion of the Bidder from future tenders as may be imposed by the Principal, as brought out at Section 3 above.

(2) If the Principal has terminated the Contract in accordance with Section 3 above, or if the Principal is entitled to terminate the Contract in accordance with Section 3 above, the Security Deposit/performance bank guarantee furnished by the Contractor, if any, as per the terms of the ITT/Contract shall be forfeited without prejudicing the rights and remedies available to the Principal under the relevant General conditions of contract. This is apart from the exclusion of the Bidder from future tenders as may be imposed by the Principal, as brought out at Section 3 above.

Section 5 – Previous transgressions:

(1) The Bidder declares that, to the best of his knowledge, no previous transgression occurred in the last five (05) years with any Company or Organization or Institution in any country or with any Government in any country conforming to the anticorruption approach that could justify his exclusion from the tender process.

(2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process. The contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidders / Contractors / Subcontractors:

(1) The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors, he desires to appoint, a commitment in conformity with this Integrity Pact, and to submit it to the Principal at the time of seeking permission for such subcontracting.

(2) The Principal will enter into agreements with identical conditions as this one with all Bidders/ Contractors.

(3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 – Criminal charges against violating Bidder(s)/ Contractor(s)/ subcontractor(s) :

If the Principal obtains knowledge of conduct of a Bidder, Contractor, Sub-contractor or of any employee or a representative or an associate of a Bidder/Contractor/ Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the CVO of RINL.

Section 8 – Independent External Monitor(s)(IEM(s)):

(1) The Principal appoints competent and credible Independent External Monitor with the approval of Central Vigilance Commission. The IEM reviews independently, the cases referred to him or written complaints with all details received directly by him to assess whether and to what extent the parties concerned complied with the obligations under this Integrity Pact,

(2) In case of complaint/representations on compliance of the provisions of the Integrity Pact by any person/agency, the complaint/representation can be lodged by the aggrieved party with the Nodal Officer for IP of RINL or directly with the IEM. The Nodal Officer shall refer the complaint /representation so received by him to the IEM for his examination. Similarly, RINL in case of any doubt regarding compliance by any or all the bidders can lodge its complaint / make a reference to IEM through Nodal Officer. For ensuring the desired transparency and objectivity in dealing with the complaints arising out of the tendering process, the matter should be examined by the full panel of IEMs who would look into the records, conduct an investigation and submit their joint recommendations to the Management.

(3) The IEM is not subject to instructions by both the parties and performs his functions neutrally/independently. The IEM will submit report to the CMD, RINL.

(4) The Bidder(s)/Contractors(s) accepts that the IEM has the right to access without restriction, to all tender/contract documentation of the Principal including that provided by the Bidder/Contractor. The Bidder/Contractor will also grant the IEM, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his tender/contract documentation. The same is applicable to unrestricted and unconditional access to tenders / contract documentation of Subcontractors also. The IEM is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s)/Subcontractor(s) with confidentiality.

(5) IEM will have the right to attend any meeting between RINL and Counterparties in respect of the cases falling under the purview of IP.

(6) As soon as the IEM notices, or believes to notice, a violation of this Pact, he will inform the Principal and request the Principal to discontinue or take corrective action or to take other relevant action. The IEM can, in this regard, submit non binding recommendations. Beyond this, the IEM has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

(7) The IEM will submit a written report to the CMD-RINL within four (04) to six (06) weeks from the date of reference or intimation to him by the Principal/ receipt of the complaint and, should the occasion arise, submit proposals for corrective actions for the violations or the breaches of the provisions of the agreement noticed by the IEM.

(8) IEM may also submit a report directly to the CVO of RINL and the Central Vigilance Commission, in case of suspicion of serious irregularities attracting provisions of the PC Act/ applicable Law.

(9) Expenses of IEM shall be borne by RINL/VSP as per terms of appointment of IEMs.

(10) The word 'Monitor' means Independent External Monitor and would include both singular and plural.

Section 9 – Duration of the Integrity Pact:

(1) This Pact comes into force upon signing by both the Principal and the Bidder/Contractor. It expires for the Contractor twelve (12) months after the last payment under the contract, and for all unsuccessful Bidders, six (06) months after the contract has been awarded and accordingly for the Principal after the expiry of respective periods stated above.

(2) If any claim is made/ lodged during the valid period of the IP, the same shall be binding and continue to be valid even after the lapse of this Pact as specified above, unless it is discharged/determined by CMD of RINL.

Section 10 – Other provisions:

(1) This Pact is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. Visakhapatnam, State of Andhra Pradesh, India.

(2) Changes and supplements as well as termination notices need to be made in writing. Side agreements to this pact have not been made.

(3) If the Contractor is a partnership firm/ Consortium, this Pact must be signed by all partners/ Consortium members, or their Authorized Representative(s) by dulyfurnishing Authorization to sign Integrity Pact.

(4) Should one or several provisions of this Pact turnout to be invalid, the remaining part of the Pact remain valid. In this case, the parties will strive to come to an agreement with regard to their original intentions.

(5) Wherever he or his is indicated in the above sections, the same may be read as he/she or his/her, as the case may be. Similarly, wherever Counterparty or Bidder or Contractor is mentioned, the same would include both singular and plural.

_____	_____
(For & On behalf of the Principal)	(For & On behalf of Bidder/ Contractor)
(Office Seal)	(Office Seal)
Place ----------	
Date ----------	
Witness 1:	Witness 2:
(Name & Address)	(Name & Address)
_____	_____
_____	_____

GUIDELINES FOR INDIAN AGENTS OF FOREIGN SUPPLIERS / CONTRACT AGENCIES

1.0 There shall be compulsory registration of Indian Agents of foreign suppliers/contract Agencies with RINL in respect of all Global (Open) Tenders and Limited Tenders. An agent who is not registered with RINL shall apply for registration in the prescribed Application Form.

1.1 Registered agent needs to submit before the placement of order by RINL, an Original certificate issued by his foreign supplier/ contract Agency (or an authenticated Photostat copy of the above certificate duly attested by a Notary Public) confirming the agency agreement and giving the status being enjoyed by the agent alongwith the details of the commission/ remuneration/ salary/ retainer being paid by them to the agent(s).

1.2 Wherever the Indian representative has communicated on behalf of their foreignsupplier/contract Agency and/or the foreign supplier/contract Agency have stated that they are not paying any commission to their Indian agent(s) but paying salary or retainer, a written declaration to this effect given by the foreign supplier/contract Agency should be submitted before finalizing the contract.

2.0 DISCLOSURE OF PARTICULARS OF AGENT(S)/REPRESENTATIVE(S) IN INDIA, IF ANY:

2.1 Bidders of Foreign nationality shall furnish the following details in their quotation/bid:

2.1.1 The name and address of their agent(s)/representative(s) in India, if any, and the extent of authorization and authority given to them to commit them. In case the agent(s)/representative(s) is a foreign Company, it shall be confirmed whether it is a really substantial Company and details of the company shall be furnished.

2.1.2 The amount of commission/remuneration included in the quoted price(s) for such agent(s)/representative(s) in India.

2.1.3 Confirmation of the Bidder that the commission/remuneration if any, payable to his agent(s)/representative(s) in India, may be paid by RINL in Indian Rupees only.

3.0 DISCLOSURE BY INDIAN AGENT(S) OF PARTICULARS OF THEIR FOREIGN SUPPLIER/CONTRACT AGENCY AND FURNISHING OF REQUISITE INFORMATION:

3.1 Bidders of Indian Nationality shall furnish the following details/certificates in/alongwith their offers:

3.1.1 The name and address of foreign supplier/contract agency indicating their nationality as well as their status, i.e., manufacturer or agent of manufacturer holding the Letter of Authority.

3.1.2 Specific Authorization letter by the foreign supplier/contract agency authorizing the agent to make an offer in India in response to tender either directly or through their agent(s)/representative(s).

3.1. 3 The amount of commission/remuneration included for bidder in the price (s) quoted.

3.1.4 Confirmation of the foreign supplier/contract Agency of the Bidder, that the commission/remuneration, if any, reserved for the Bidder in the quoted price (s), may be paid by RINL in India in equivalent Indian Rupees.

4.0 In either case, in the event of materialization of contract, the terms of payment will provide for payment of the commission/remuneration payable, if any, to the agent(s)/representative(s) in India in Indian Rupees, as per terms of the contract.

4.1 Failure to furnish correct information in detail, as called for in para 2.0 and/or 3.0 above will render the bid concerned liable for rejection or in the event of materialization of contract; the same is liable for termination by RINL. Besides this, other actions like banning business dealings with RINL, payment of a named sum etc., may also follow.

ANNEXURE - X TO TENDER NOTICE NO. PUR.1.90.0830/0077 dt.14.05 .2011

LETTER OF ACCEPTANCE OF THE TERMS AND CONDITIONS MENTIONED IN THE TENDER

To

GENERAL MANAGER (MM)I/C
BLOCK 'A' PURCHASE DEPARTMENT,
ADMINISTRATIVE BUILDING,
RASHTRIYA ISPAT NIGAM LTD.,
VISAKHAPATNAM STEEL PLANT,
VISAKHAPATNAM 530 031.

Dear Sir,

Sub: Your Tender Notice No. **Pur.1.90.0830/0077 dt.14.05.2011**

With reference to your Tender Notice No. **Pur.1.90.0830/0077 dt.14.05.2011** for supply and supervision of Erection, Testing & commissioning , demonstration of performance of Hydraulic Mudgun & Drilling Machine for BF-I , we hereby give our confirmation and acceptance of the terms and conditions mentioned in the above captioned tender.

** There are no other deviations to the above captioned tender / Statement of deviations is enclosed to this letter.

Thanking you,

Yours faithfully,

(Signature and Seal of Tenderer)

Note: If there are any deviations / deletions from the terms and conditions mentioned in the tender document, a separate statement duly signed should be sent along with offer (Part `A' - Techno-Commercial bid).

** Strike off whichever is not applicable.

RINL VIGILANCE → TOLL FREE NUMBER : 1800 425 8878