Contract No. CIL/C2D/20cum ERS/R-146/252 dated 28.07.2023

Contract

Among

Coal India Limited, Kolkata

And

M/s. Joy Global Surface Mining Inc, USA

And

M/s. Voltas Ltd., Mumbai

For

Supply, Installation and Commissioning of 2 nos. Joy Global Surface Mining Inc make, Model 2300XPC, 20 Cu.M. Electric Rope Shovels along with Consumable Spares and Consumables for 12 months of warranty period from the date of commissioning of the equipment and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Index		
A	**CONTRACT FORM**	**1**
B	**GENERAL CONDITIONS OF CONTRACT (GCC)**	**7**
1	Definitions	8
2	Application	9
3	Standards	9
4	Use of Contract Documents and Information	9
5	Patent Rights	9
6	Security Deposit	9
7	Performance Bank Guarantee	10
8	Inspections and Tests	11
9	Packing and Marking	12
10	Delivery and Documents	12
11	Insurance	13
12	Transportation	14
13	Warranty	14
14	Payment	15
15	Changes in Orders	15
16	Contract Amendments	15
17	Assignment	15
18	Subcontracts	15
19	Delays in the Supplier's Performance	16
20	Liquidated Damages	16
21	Termination for Default and breach of Contract	16
22	Force Majeure	17
23	Termination for Insolvency	18
24	Termination for Convenience	18
25	Governing Language	18
26	Taxes and Duties	18
27	Limitation of Liabilities	19
28	Settlement of Commercial Disputes in case of Contracts with PSEs / Govt. Deptts.	19
29	Progress Reports	19
30	Provisions of CIL's Purchase Manual	19
31	Applicable law	19
32	Jurisdiction of Courts	19
33	Notices	19
C	**SPECIAL CONDITIONS OF CONTRACT (SCC)**	**21**
1	Security Deposit (GCC Clause 6)	22
2	Performance Bank Guarantee (GCC Clause 7)	23
3	Inspection and Tests (GCC Clause 8)	25
4	Incidental Services	25
5	Insurance (GCC Clause 11)	26
6	Transportation (GCC Clause 12)	26
7	Warranty (GCC Clause 13)	27
8	Payment (GCC Clause 14)	27
9	Prices	33
10	Grace Period	34

4(u)	Layout drawing of all Machinery	244
4(v)	Details of type and method of Drive Systems offered	251
4(w)	Performance Curves of hoist, crowd, swing and propel motions	256
4(x)	Detail of Productivity and Health Management System offered.	260
4(y)	Description of protection instruments and monitoring features of supply circuit and drive system	264
4(z)	Complete technical specifications of all wire ropes including length, diameter , construction and lubrication	266
4(aa)	Comprehensive Commercial Literature	268
4(ab)	Shipping weight of all separate components	276
4(ac)	Details of basic functions of Graphic User Interface (GUI) installed in the offered model	277
5(a), (b) & (c)	Bank details for opening of LC in USD on M/s Joy Global Surface Mining Inc, USA, payment for facilitating Indian Agency Commission in INR to M/s Voltas Ltd. And payment for facilitating any other payment in INR to M/s Voltas Ltd.	281

पश्चिमबंगा पश्चिम बंगाल WEST BENGAL AP 126956

Agreement

THIS AGREEMENT made the 28th day of July, 2023 among Coal India Limited, Coal Bhawan, Premises No. 04, Plot No. AF-III, Action Area 1A, New Town, Rajarhat, Kolkata – 700156, India (hereinafter referred to as the "Purchaser" which expression shall unless repugnant to the context or meaning thereof, includes its successors) **on the FIRST PART,** M/s Joy Global Surface Mining Inc, 4400 West National Avenue, Milwaukee, WI 53214, USA (hereinafter referred to as "Manufacturer / Supplier" which expression shall unless repugnant to the context or meaning thereof, includes its successors and permitted Assigns) **on the SECOND PART,** and M/s Voltas Ltd., Voltas House A, Dr. Babasaheb Ambedkar Road, Chinchpokli, Mumbai – 400033 (authorized Indian agent which expression shall unless repugnant to the context or meaning thereof, includes its successors and permitted Assigns) **on the THIRD PART.**

WHEREAS the Purchaser invited bids for certain Goods and Ancillary Services viz. Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 dated 15.11.2021 for the Supply, Installation and Commissioning of 2 nos. 20 Cu.M. Electric Rope Shovels under Normal Customs Duty (NCD) along with Consumable Spares and Consumables for 12 months of warranty period from the date of commissioning of the equipment and thereafter Spares and Consumables for a period of 10 years under Spares Cost Cap to Dudhichua OCP of Northern Coalfields Ltd., (NCL), a subsidiary of CIL and has accepted the Bid No. Q15130 dated 14.12.2021 (e-BID ID 756605) to be read with letters/e-mails nos. Q15130/CIL/SM/Shortfall 1 dated 08.02.2022 & Q15130/CIL/SM/Shortfall 2 dated 07.03.2022 submitted towards shortfall documents, Q15130/CIL/SM/Validity dated 19.04.2022, Q14870/CIL/SM/Price Break-up dated 23.05.2022, Q15130/CIL/SM/Justification dated 12.07.2022, Q15130/CIL/SM/Validity-3 dated 30.08.2022, Q15130/CIL/SM/Validity-4 dated 29.09.2022, Q15130/ CIL/SM/Validity-

198752

COAL INDIA LIMITED
M. M. Division
1st Floor, Premises No. 4,
Plot No. AF-III, Action Area 1A,
New Town, Rajarhat,
Kolkata - 700 156

No.

Sold to

Address

Rs.

Date 18 MAR 2023

SIPRA DEY
Licence No.: 18A
Code : 1070
1, N. S. Road, Kolkata-700 001

5 dated 27.10.2022, Q15130/CIL/SM/Validity-6 dated 05.12.2022, Q15130/CIL/SM/Validity-7 dated 03.01.2023, JGSM/CIL/SM/Tenders/001-23 dated 12.01.2023 and Q15130/CIL/SM/Validity-8 dated 30.01.2023 submitted by the Manufacturer for the supply of those Goods and Ancillary Services for the sum of **US$ 15,579,652.00** (US$ Fifteen Million Five Hundred Seventy Nine Thousand Six Hundred and Fifty Two Only) **(FOB Value)**. This works out to **Rs. 188,17,11,083.16** (Rupees One Hundred Eighty Eight Crores Seventeen Lakhs Eleven Thousand Eighty Three and Paise Sixteen only) on **CIP basis** in Indian Rupees based on Exchange Rate of USD 1 = Rs. 78.12.

The total value of Consumable Spares & Consumables for 12 Months of warranty period under guaranteed parts consumption from the date of commissioning of equipment and thereafter spares and consumables for a period of 10 years under Spares Cost Cap for the said equipment shall be **Rs. 139,18,50,302.32** (Rupees One Hundred Thirty Nine Crores Eighteen Lakhs Fifty Thousand Three Hundred Two and Paise Thirty Two only) on **FOR Destination basis**.

The grand total shall be **Rs. 327,35,61,385.48** (Rupees Three Hundred Twenty Seven Crores Thirty Five Lakhs Sixty One Thousand Three Hundred Eighty Five and Paise Forty Eight Only) on **CIP basis** (hereinafter "the Contract Price").

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement, words and expressions, shall have the same meaning as are respectively assigned to them in the conditions of contract referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement viz.

   a. The Techno-Commercial Bid and Price-bid and subsequent letters / documents submitted by you as mentioned above.
   b. The General Conditions of Contract (GCC)
   c. The Special Conditions of Contract (SCC)
   d. The Schedule of Requirements (SoR) including Delivery Schedule
   e. The Technical Specifications
   f. The Price Schedule
   g. The Purchaser's Notification of Award (NoA)
   h. The Integrity Pact (IP)

3. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in all respects in conformity with the provisions of the Contract.

4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

5. Brief particulars of the Goods and Services which shall be supplied / provided by the Supplier are as under for various projects of NCL:

Sl. No.	Head	20 cu.m. Electric Rope Shovel under NCD for Dudhichua OCP, NCL	Grand Total (for 2 nos.)
A	**EQUIPMENT - Model – 2300 XPC Make - Joy Global Surface Mining Inc**	X (Unit Value)	Y = (X x 2)
1	FOB Value per equipment including Indian Agency Commission @ 1% (USD)	7,789,826.00	15,579,652.00
2	Indian Agency Commission @ 1% included in above FOB value (USD)	77,126.99	154,253.98
3	Marine Freight Charges upto Port of Entry in India (USD) *	500,000.00	1,000,000.00
4	Marine Insurance Charges upto Port of Entry in India (USD) *	40,000.00	80,000.00
5	CIF Value of equipment (USD)	8,329,826.00	16,659,652.00
6	CIF Value of equipment (Exchange Rate USD 1 = Rs 78.12) (Rs)	65,07,26,007.12	130,14,52,014.24
7	Total Customs Duty including IGST	18,04,78,858.08	36,09,57,716.16
8	Port charges, clearing forwarding charges and other incidental charges (Rs)	55,07,064.00	1,10,14,128.00
9	Inland Transportation for delivery upto Final Place of Destination (Rs) *	1,11,32,100.00	2,22,64,200.00
10	Inland Insurance for delivery upto Final Place of Destination (Rs) *	29,68,560.00	59,37,120.00
11	Erection & Commissioning Charges (Rs)	1,62,21,976.00	3,24,45,952.00
12	Total Price of all Items sourced in INR required for fitting in the equipment during commissioning of the equipment (Rs)	5,45,19,425.00	10,90,38,850.00
13	Total GST, as applicable, on above elements excluding Customs Duty	1,93,00,551.38	3,86,01,102.76
14	CIP Price per Equipment with GST (Rs)	94,08,55,541.58	188,17,11,083.16
B	**SPARES AND CONSUMABLES**		
1	Landed price of set of consumable spares and consumables required for first 12 months of operation from the date of commissioning of each equipment under guaranteed parts consumption (with GST) (Rs)	2,19,96,711.88	4,39,93,423.76
Landed price of spares and consumables required for concerned year of operation from the date of commissioning of each equipment (with GST) under Spares Cost Cap			
2	for 2nd year of operation (Rs)	2,91,56,533.86	5,83,13,067.72
3	for 3rd year of operation (Rs.)	2,94,52,128.58	5,89,04,257.16
4	for 4th year of operation (Rs.)	3,70,29,971.76	7,40,59,943.52
5	for 5th year of operation (Rs.)	5,59,04,105.98	11,18,08,211.96
6	for 6th year of operation (Rs.)	3,05,64,251.44	6,11,28,502.88
7	for 7th year of operation (Rs.)	23,07,60,534.50	46,15,21,069.00
8	for 8th year of operation (Rs.)	7,55,55,936.90	15,11,11,873.80
9	for 9th year of operation (Rs.)	9,90,99,042.02	19,81,98,084.04
10	for 10th year of operation (Rs.)	4,85,72,660.96	9,71,45,321.92
11	for 11th year of operation (Rs.)	3,78,33,273.28	7,56,66,546.56
12	Total Landed price for set of consumable spares and consumables for 12 months of warranty period under Guaranteed Parts Consumption and thereafter spares and consumables for a period of 10 years of operation under Spares Cost Cap (with GST) (Rs)	69,59,25,151.16	139,18,50,302.32
C	**Equipment & Spares and Consumables for 11 years of operation**		
1	Total Landed price for equipment along with set of consumable spares and consumables for 12 months of warranty period under Guaranteed Parts Consumption and thereafter spares and consumables for a period of 10 years of operation under Spares Cost Cap (with GST) (Rs)	163,67,80,692.74	327,35,61,385.48

NB : * - shall be payable at actuals subject to the maximum rate / amount mentioned above.

6. The Contract Price :

The Contract Price shall be **327,35,61,385.48** (Rupees Three Hundred Twenty Seven Crores Thirty Five Lakhs Sixty One Thousand Three Hundred Eighty Five and Paise Forty Eight Only) on CIP basis calculated as per the exchange rate of USD 1= Rs. 78.12 on the date of opening of price bid on 12.05.2022 and applicable statutory Customs Duty, GST and other taxes and levies based on the offer dated 14.12.2021 of the Manufacturer.

7. Price Basis

The contract is on CIP Basis (Final Place of destination) for Equipment and on FOR Destination basis for spares and consumables to be supplied during warranty period under guaranteed parts consumption and thereafter during 10 years from the date of commissioning under Spares Cost Cap.

8. Statutory Duties, Taxes and Other Levies

Statutory Duties, Taxes and Other Levies like Basic Customs Duty (BCD) under NCD, Social Welfare Surcharge on Basic Customs Duty, IGST, GST on Marine Freight, GST on Indian Agency Commission, GST on Port Charges, Clearing, forwarding and incidental charges, GST on Inland Transportation Charges & GST on Inland Insurance charges for delivery upto Final Place of Destination, GST on Erection and Commissioning charges, GST on all items sourced in INR required for fitting in the equipment during commissioning of the equipment, GST on spares and consumables for 11 years of operation as indicated in the Price Schedule, based on your offer dated 14.12.2021, shall be payable.

If there is any statutory change in GST within contractual delivery period, the same shall be admissible and will be paid at actual based on documentary evidence. Upward revision in GST beyond original delivery period may be admissible provided the concerned subsidiary gets 100% input tax credit for GST; otherwise increase in GST are not to be paid to the Supplier unless the delay is due to any lapse on the part of the purchaser. However, decrease in GST shall be availed by the concerned subsidiary.

CIL will pay Customs Duty applicable to imported Goods directly to Customs Authorities in accordance with Clause-8.6, SCC.

9. Agency Commission

Indian Agency Commission @ 1.00% (One percent) of FOB value of the equipment is included in the FOB price of the equipment mentioned in the Contract. Indian Agency commission along with GST as legally leviable in India shall be payable by the Purchaser (respective subsidiary Company i.e. NCL) to M/s. Voltas Ltd. in INR. The total value of the Indian Agency Commission to be paid in INR shall be equivalent of **USD 154,253.98** (US Dollar One Hundred Fifty Four Thousand Two Hundred Fifty Three and Cents Ninety Eight Only).

10. Execution of Contract

The contract is concluded among the Purchaser, the Manufacturer and the Supplier for supply, installation and commissioning of 02 nos. 20 Cu.M. Electric Rope Shovels under Normal Customs Duty (NCD) along with Consumable Spares and Consumables for 12 months of warranty period under guaranteed parts consumption from the date of commissioning of the equipment and thereafter Spares and Consumables for a period of 10 years under Spares Cost Cap to Dudhichua OCP of NCL.

The Equipment shall be supplied by the Manufacturer – M/s Joy Global Surface Mining Inc from its factory at 4400 West National Avenue, Milwaukee, WI 53214, USA in US Dollar.

Port Handling, Clearing & Forwarding, Inland Transportation, Inland Insurance and Erection & Commissioning will be carried out by M/s Voltas Ltd. for which payment will be made to them in INR. The indigenously sourced items required for fitment in

the equipment during its commissioning, the consumable spares and consumables for 12 months of warranty period under guaranteed parts consumption and thereafter spares and consumables for a period of 10 years under Spares Cost Cap will be supplied by M/s Voltas Ltd. on behalf of M/s Joy Global Surface Mining Inc for which payment will be made to them in INR.

The manufacturer/supplier shall supply the quantity of first lot (one machine) as indicated in Schedule of Requirements and furnish an additional Performance Bank Guarantee of 100% of the total landed value of equipment along with spares & consumables for warranty period for the quantity of first lot to the subsidiary company i.e. NCL. On satisfactory performance of the equipment of first lot for one year from the date of commissioning [to be certified by the General Manager (Excavation)/ HOD of the subsidiary company], clearance shall be obtained from the Order Issuing Authority for supply of the remaining one quantity as per Schedule of Requirements. The additional 100% Performance Bank Guarantee shall be returned only after satisfactory performance of the equipment supplied in first lot for one year from the date of commissioning. The original 10% PBG for the total contract value will be retained for entire contract period as per PBG clause of NIT.

In case of unsuccessful performance of the first lot of equipment supplied by the Manufacturer/Supplier, the following shall be applicable:

i) The 100% Additional Performance Bank Guarantee for the first lot of equipment (one machine) shall be encashed by CIL/NCL. Consequent upon the encashment of the 100% Bank Guarantee due to non-achievement of stipulated minimum availability percentage, the Manufacturer/Supplier shall take back the equipment at no cost to the Purchaser and the contract for the balance quantity shall be cancelled.
ii) The original 10% Performance Bank Guarantee shall be returned to the Manufacturer/Supplier after recovery of penalty for non-achievement of guaranteed availability in respect of first lot of equipment.
iii) The performance of the individual equipment under this clause shall not be considered for provenness in future tenders of CIL & subsidiaries for any capacity of this type of equipment.

11. Payment

Initially, a Letter of Credit for the first lot of 1 (one) machine shall be established by NCL (HQ) on the Manufacturer - M/s Joy Global Surface Mining Inc, 4400 West National Avenue, Milwaukee, WI 53214, USA for the net CIF Amount for Equipment after deducting Indian Agency Commission for Equipment in US Dollar for a total value of **USD 8,252,699.01** (US Dollar Eight Million Two Hundred Fifty Two Thousand Six Hundred Ninety Nine and Cents One Only).

Further, on successful performance of the first lot of 1 machine and clearance from the Order Placing Authority, another Letter of Credit for balance 1 (one) machine shall be established by NCL (HQ) on the Manufacturer - M/s Joy Global Surface Mining Inc,

4400 West National Avenue, Milwaukee, WI 53214, USA for the net CIF Amount for Equipment after deducting Indian Agency Commission for Equipment in US Dollar for a total value of **USD 8,252,699.01** (US Dollar Eight Million Two Hundred Fifty Two Thousand Six Hundred Ninety Nine and Cents One Only).

INR payment shall be made to M/s Voltas Ltd. for all activities done by them mentioned above.

Payment for foreign currency, INR, Indian Agency Commission and Customs Duty etc. shall be made as per provisions contained in Clause-8, SCC of the Contract.

IN WITNESS whereof the Parties hereto have caused this Agreement to be executed the day and year first above written.

Signed, sealed and Delivered by:

For the Purchaser

28/7/23

P.D. Sharma
Executive Director(M&C)
Coal India Ltd., Kolkata

COAL INDIA LIMITED
M. M. Division
1st Floor, Premises No. 4,
Plot No. AF-III, Action Area 1A,
New Town, Rajarhat,
Kolkata - 700 156

For the Manufacturer / Supplier

26/07/23

Jeffrey A. Rosobyk
Vice President, Surface Sales & Business Development
Joy Global Surface Mining Inc, USA

JOY GLOBAL SURFACE MINING INC

For the Indian Agent

28/7/2023

Sharad Thussu
Vice President, M & CE Division
Voltas Ltd., Mumbai

For VOLTAS LIMITED
By its Constituted Attorney
(SHARAD THUSSU)
Vice President

Witnesses

Fernando 28/7/23

A. Fernando
General Manager (MM)
Coal India Ltd., Kolkata

28/7/23

Russell Nathan Crosby
Director, Sales & Business Development
Joy Global Surface Mining Inc, USA

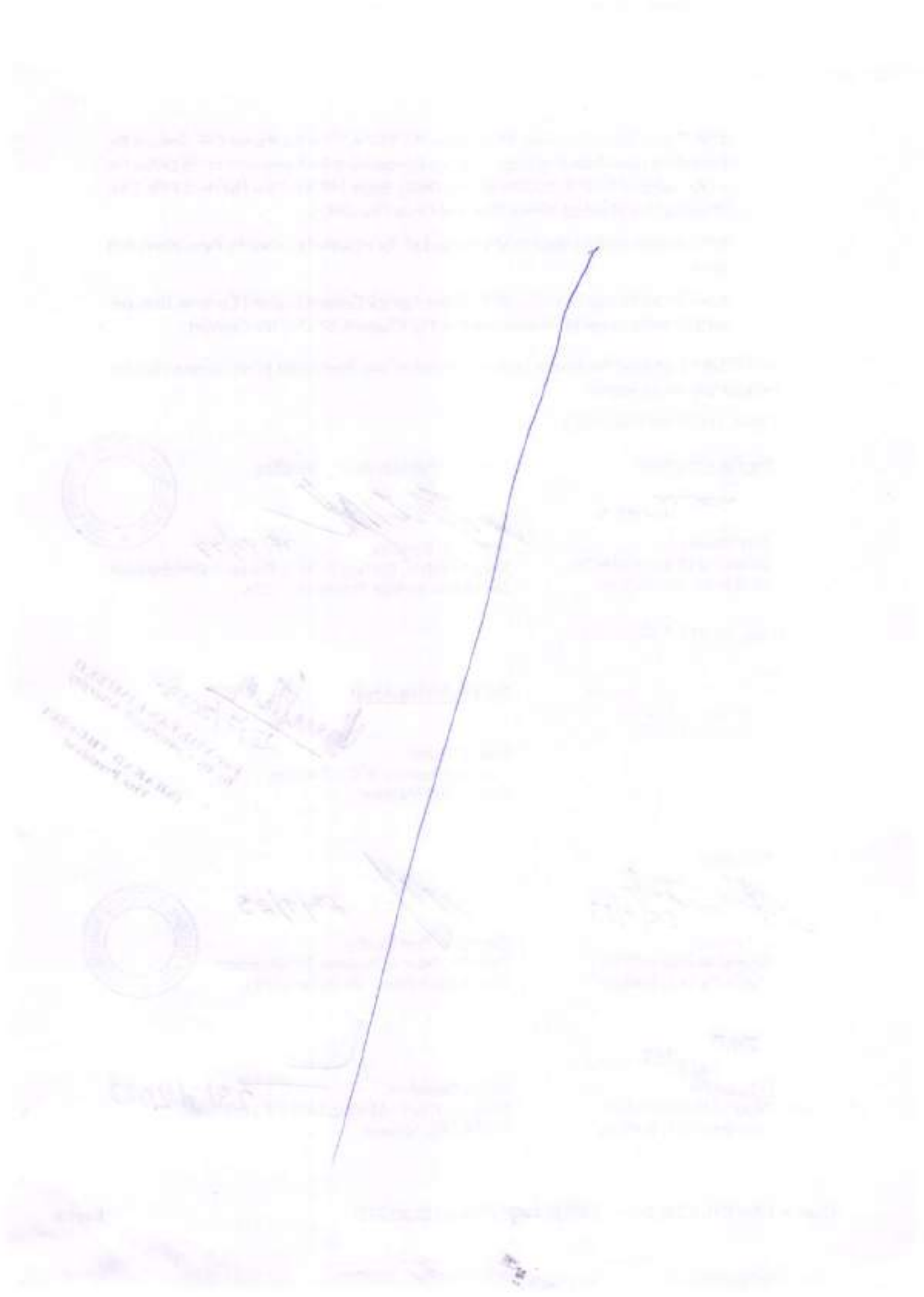
JOY GLOBAL SURFACE MINING INC

28/7/23

D.V. Sudha
Deputy Manager (MM)
Coal India Ltd., Kolkata

28/7/2023

Ranjit Ravindran
Business Head – Mining, M & CE Division
Voltas Ltd., Mumbai



General Conditions of Contract (GCC)

1. **Definitions**

In the interpretation of the contract and the general and special conditions governing it, unless the context otherwise requires, the following terms shall be interpreted as indicated below:

a) "The Contract" means the agreement entered into between the Purchaser and the Supplier including all attachments and appendices thereto and all documents incorporated by reference therein including Invitation to tender, Instructions to tenderers, Acceptance of tender, Particulars and the General and Special Conditions specified in the acceptance of tender;

b) "Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations;

c) "Goods" means all of the equipment, plant, machinery, and/or other materials which the Supplier is required to supply to the Purchaser under the Contract;

d) "Services" means those Services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental Services, such as installation, commissioning, provision of technical assistance, training and other such obligations of the Supplier covered under the Contract;

e) "GCC" means the Conditions of Contract contained in this section;

f) "SCC" means the Special Conditions of Contract;

g) "Purchaser" means the organisation purchasing goods and services, i.e., Coal India Limited or its subsidiaries or areas falling under various subsidiaries of Coal India Limited;

h) "Purchaser's country" is India;

i) "Supplier/Contractor" means the individual, firm or company with whom the contract has been concluded for supplying the Goods and Services under the Contract. The Supplier/Contractor shall be deemed to include its successors (approved by the purchaser), representatives, heirs, executors, administrators and permitted;

j) "CIL" means Coal India Limited or the Subsidiary Company of CIL or areas falling under various subsidiaries of CIL where Goods are deployed/ used;

k) "Year" means the Calendar Year.

l) "Chairman" means the Chairman of Coal India Limited.

m) "Chairman-cum-Managing Director" means Chairman-cum-Managing Director of any of the Subsidiary Companies of Coal India Limited, presently Central Coalfields Limited, Eastern Coalfields Limited, Western Coalfields Limited, Bharat Coking Coal Limited, Central Mine Planning & Design Institute Limited, South Eastern Coalfields Limited, Northern Coalfields Limited and Mahanadi Coalfields Limited.

n) "Drawing" means the drawing and plans specified in or annexed to the schedule or specifications.

o) "Inspector" means any person nominated by or on behalf of the purchaser to inspect supplies, stores or work under the contract or his duly authorized agent.

p) "Progress Officer" means any person nominated by or on behalf of the Purchaser to visit supplier's works to ascertain position of deliveries of Goods ordered.

q) "Materials" shall mean anything used in the manufacture or fabrication of the stores.

r) "Stores" means the goods specified in the Supply Order or schedule which the supplier/contractor has agreed to supply under contract.

s) "Test" means such test or tests as are prescribed by the specifications or considered necessary by the Inspector or any agency acting under direction of the Inspector.

t) "Site" mean the place or places named in the "Supply Order" or such other place or places at which any work has to be carried out as may be approved by the purchaser.

u) Words denoting the persons shall include any company or association or body of individuals whether incorporated or not.

v) Words in singular include the plural and vice-versa.

w) Words denoting the masculine gender shall be taken to include the feminine gender.

x) "Writing" shall include any manuscript, typewritten or printed statement under or over signature or seal as the case may be.

y) "Unit" and "Quantity" means the unit and quantity specified in the schedule.

z) "Purchase Order" or "Supply Order" or "Order" or "Contract" means an order for supply of stores and includes an order for performance. The terms "Supply Order", "Purchase Order", "Order" and "Contract" are interchangeable.

aa) "Particulars" shall mean the following:

i) Specifications;
ii) Drawing;
iii) Sealed pattern denoting a pattern sealed and signed by the Inspector;
iv) Certified or sealed sample denoting a copy of the sealed pattern or sample sealed by the purchaser for guidance of the Inspector;
v) Trade pattern denoting a standard of the ISI or other standardising authority or Coal India Ltd. and/ or any of its subsidiary companies or a general standard of the industry and obtainable in the open market;
vi) Proprietary make denoting the product of an individual manufacturer;
vii) Any other details governing the construction, manufacture and/or supply as existing in the contract.

bb) Terms and expressions not defined herein shall have the meanings assigned to them in the Indian Sale of Goods Act, 1930 or the Indian Contract, 1872 or the General Clauses Act, 1897, as amended, as the case may be.

2. Application

These Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

3. Standards

The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications. Such standards shall be the latest issued by the concerned institution.

4. Use of Contract Documents and Information

4.1. The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

4.2. The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information enumerated in sub-clause 4.1 above, except for purposes of performing the Contract.

4.3. Any document, other than the Contract itself, enumerated in sub-clause 4.1 above shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser on completion of the Supplier's performance under the Contract if so required by the Purchaser.

5. Patent Rights

The Supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof in the Purchaser's country.

6. Security Deposit

6.1. The successful tenderers will have to submit Security Deposit for the 10% value of the total landed value of the contract including all taxes, duties and other costs and charges, without considering Input Tax Credit.

6.2. The Security Deposit shall be in the form of a Bank Demand Draft or in the form of a Bank Guarantee in the prescribed format from a RBI Scheduled Bank in purchaser's country (on a non-judicial stamp paper) within 15 days from date of notification of award or placement of order.

6.3. The Security Deposit shall be in the same currency(ies) in which contract is to be signed/ issued. In case of multi-currency contract, separate Security Deposit Bank Guarantee (SDBG) in respective currency for required value as above shall be submitted.

6.4. In case of equipment, SDBG shall not be individual equipment wise. However, multiple Bank

Guarantees for Security Deposit shall be permissible provided value of all the SDBGs totals to 10% of the contract value, and all are submitted simultaneously within the specified time schedule and all of them are in the same prescribed format of SDBG without linking to any particular equipment.

6.5. The SDBG shall remain valid up to 3 months after completion of supplies and acceptance of materials by the consignee in case of supply contracts and in case of contracts for equipment involving installation and commissioning, 3 months after the supply and commissioning of all the equipment covered in the contract.

6.6. If the successful tenderer fails to deposit the security deposit within 15 (fifteen) days from date of notification of award/ placement of order, another opportunity may be given to them for submission of Security Deposit within next 15 days. If the successful tenderer still fails to deposit the security deposit within the extended period but executes the supplies within scheduled delivery period, the submission of Security Deposit may be waived, as the purpose of submission of SD is fulfilled.

If the Supplier fails to deposit the SD within the extended period and no supplies are made, the order shall be cancelled and the case shall be processed to order elsewhere at firm's risk and cost. Moreover, the firm's performance is to be kept recorded for future dealings with them. Further, if during execution of the contract, the firm fails to extend the Bank Guarantee for Security Deposit, suitably as required, the same shall be recorded as unsatisfactory performance for future dealings apart from taking any other penal action as may be deemed fit by CIL.

6.7. In cases where the successful tenderer did not submit the security deposit even within the extended period for SD submission but has supplied the materials either in full or in part after the extended period for SD submission, the SD may be deducted from the first bill or in case of insufficient amount from subsequent bill(s) of the supplier till the full SD amount is deducted. Further, a penalty equivalent to 0.5% (half percent) of SD amount for delay of each week or part thereof (period of delay is to be calculated from the 31st day from the date of notification of award/placement of order to the date of receipt of full SD/deduction of full SD) shall be levied subject to a maximum of 10% of the contract value.

6.8. Security Deposit will be released with the approval of HOD of MM Department/ Area GM within 30 days after completion of supplies and acceptance of material by the consignee in case of supply contractor after successful commissioning and on receipt of confirmation of Performance Bank Guarantee(s) for all the equipment covered in the contract in case of contracts for equipment and all those items/ goods involving installation and commissioning and PBG.

6.9. Security Deposit may be converted into Performance Bank Guarantee (PBG) wherever PBG is required at the option of the supplier. At the time of conversion of security money into PBG, it should be ensured that the amount of PBG should not be less than 10% of landed value of order. Wherever Security Deposit is converted into PBG, the operation of such SDBG/ Performance BG shall be guided by Performance Bank Guarantee Clause.

6.10. All Central/State Government Organization/PSUs shall be exempted from submission of Security Deposit. OEM/OES shall also be exempted from submission of Security Deposit in case of procurement of Spare Parts for equipment against Single Tender Enquiry/Open/Limited Tenders.

6.11. Submission of Security Deposit is exempted for the contracts having value upto Rs.2 lakhs.

6.12. The SDBG will be submitted Through Structured Financial Management System (SFMS).

7. Performance Bank Guarantee

7.1. Wherever applicable, the successful bidder shall be required to furnish a Performance Guarantee equivalent to 10% value of the total landed value of the contract including all taxes, duties and other costs and charges, without considering Input Tax Credit.

7.2. The Performance Guarantee shall be in the form of a Bank Guarantee issued by a RBI scheduled bank in India in the prescribed format on a non-judicial stamp paper.

7.3. The Performance Bank Guarantee (PBG) shall be in the same currency (ies) in which contract has been signed. In case of multi-currency contract, separate PBG in respective currency for required value shall be submitted.

7.4. If the contract is for procurement of equipment, the PBG (s) may be submitted equipment wise also. For this purpose, the value of each equipment will be worked out by dividing the total value of contract

for a particular item of NIT, worked out as per provisions contained in clause-7 above, by the number of equipment ordered for that particular item of the NIT.

7.5. The PBG (s) shall remain valid till 3 months after the completion of warranty period.

7.6. The PBG shall be submitted sufficiently in advance (say 3-4 weeks) to enable its verification from the issuing bank, before submission of the invoice for 80% payment of the particular goods/ equipment(s).

7.7. The release of the Performance Bank guarantee(s) after above indicated period, shall be subject to satisfactory performance of the equipment/ items during the warranty period and fulfillment of contractual obligations failing which, action for further extension or encashment of PBG, as deemed suitable shall be taken. The Performance Bank Guarantee shall be released after expiry of validity period if no claim is pending, with the approval of the concerned HOD (MM)/ Area GM.

7.8. In case of procurement of equipment, if the successful tenderer which does not have the After Sales Service Support facilities in India like Depot/ Warehouse for supply of spare parts, Workshop facilities for servicing and repair of assemblies, sub-assemblies and equipment, availability of trained technical manpower etc., training facilities for providing training to CIL's personnel, wherever required, additional Performance Bank Guarantee for the 30% value of the total landed value of the contract including all taxes, duties and other costs and charges shall have to be submitted. This 30% PBG will be released after establishment of After Sales Service Support facilities in India subject to confirmation of the same by concerned Head of Technical Department. However, the supplier shall have to submit PBG for 10% of the total contract value to be kept valid for the remaining period of the contract plus 3 months processing period before release of 30% PBG. This 10% PBG will be released after satisfactory performance of all equipment/ items and fulfillment of contractual obligations including warranty obligations.

7.9. The PBG will be submitted through Structured Financial Management System (SFMS).

8. Inspections and Tests

8.1. The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract Specifications at no extra cost to the Purchaser. Generally, the Goods shall be of the best quality and workmanship and comply with the contract or supply order in all respect. The Technical Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing, of the identity of the inspector(s). The Purchaser reserves the right, at the Purchaser's cost, to depute its own inspector(s) and/or to engage any other third party inspecting agency, to conduct inspections and tests pursuant to the Contract. Sufficient time, atleast 30 days in advance will be given for inspection.

8.2. The inspections and tests may be conducted on the premises of the Supplier, at point of delivery and/or at the Goods' final destination. If conducted on the premises of the Supplier, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser. However, any drawing and proprietary information provided for this purpose shall remain in control of the supplier. The inspector shall have full and free access at the supplier's works for the purpose of carrying out inspection. The Inspector shall have the right to put all the stores or materials forming part of the same or any part thereof to such tests as he may think fit and proper. The supplier shall not be entitled to object, on any ground whatsoever, to the method of testing adopted by the Inspector. Unless otherwise provided for in the contract, all stores/materials expended in test will be to supplier's account. In the event of Goods found acceptable by the Inspector during inspection, he shall furnish the supplier with necessary copies of Inspection notes for attaching to the supplier's bill.

8.3. Should any inspected or tested Goods fail to conform to the Specifications, including acceptance tests and periodic tests to verify guaranteed performance, the Purchaser may reject the Goods, and the Supplier shall either replace the rejected Goods or make alterations necessary to meet Specification requirements free of cost to the Purchaser within thirty days of such rejection. Replaced or altered goods shall be subjected to repeated inspection or tests to demonstrate conformity with the Specifications. In the event that replacement or alteration is not done within thirty day period as aforesaid, or, replaced or altered goods fail to demonstrate conformity with the Specifications in repeated inspections or tests as aforesaid, the Purchaser reserves the right to terminate the Contract in part or in whole and the Supplier shall repay forthwith to the Purchaser all monies paid including all costs incurred in the inspection and tests, in respect of Goods and Services associated therewith, for

which the termination is applicable and, subsequently remove the same from the Purchaser's Site at the Supplier's cost.

8.4. Any Goods rejected at a place other than the premises of the supplier, shall be removed by the supplier within 14 days of the date of receipt of intimation of such rejection. The Inspector may call upon the supplier to remove what he considers to be dangerous, infected or perishable Goods, within 48 hours of the receipt of such intimation. The rejected stores shall under all circumstances lie at the risk of the supplier from the moment of rejection and if such stores are not removed by the supplier within the above mentioned period, the Inspector/Purchaser may either return the same to the supplier at the supplier's risk and cost (a public tariff rate) by such mode of transport as the Purchaser or Inspector may select or dispose of such stores at the supplier's risk on his account and retain in such portion of the proceeds as may be necessary to cover any expense incurred in connection with such disposal. The purchaser shall also be entitled to recover handling and storage charges for the period during which the rejected stores are not removed.

8.5. The Purchaser's right to inspect, test and where necessary, reject the Goods after the Goods' arrival in the Purchaser's country shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods' shipment from the Supplier's premises.

8.6. Nothing in this clause shall in any way relieve the Supplier of any warranty or other obligations under this Contract.

9. Packing and Marking

9.1. The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2. All packing cases, containers, packing and other similar materials shall be supplied free by the Supplier and these shall not be returned unless otherwise specified in the Contract/Purchase order.

9.3. The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified in the contract and in any subsequent instructions ordered by the Purchaser. Packages will be stamped with identification marks both outside the packages as well as on the contents inside. Packages containing articles liable to be broken by rough handling like glass or machinery made of cast iron will be marked with cautionary works like 'Fragile' 'Handle with care'.

9.4. The marking of the Goods must comply with the requirements of the law relating to Merchandise Mark, in force in India.

9.5. Packing instructions: The Supplier will be required to make separate packages for each consignee. Each package will be marked on three sides with proper paint with the following:

i. Project;
ii. Contract No;
iii. Country of origin of Goods;
iv. Supplier's name;
v. Packing list Reference Number;
vi. The gross weight, net weight and cubic measurement;
vii. Consignee Name and Address;

9.6. A complete list of contents in each package called the packing list will be prepared and one copy of the packing list shall be inserted inside the package.

10. Delivery and Documents

10.1. The delivery period stipulated in the Contract/Purchase Order shall be deemed to be the essence of the contract and delivery of the Goods must be completed within the specified period.

10.2. Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in the Schedule of Requirements. The delivery of Goods shall be deemed to take place on delivery of the Goods in accordance with the terms of the contract after approval of Goods by the Inspector.

10.3. For purposes of the Contract, "EXW", "FOB", "FCA", 'CFR", "CIF", "CIP" and other trade terms used to describe the obligations of the Parties shall have the meanings assigned to them by the prevailing edition of *Incoterms* on the date of tender opening, published by the International Chamber of Commerce, Paris.

10.4. The details of shipping documents to be furnished by the Supplier are specified below:

(a) **For Imported Goods:**

Within forty eight (48) hours of shipment, the Supplier shall notify the Purchaser, Port Consignee and Ultimate Consignee by fax and email, full details of the shipment including Contract number, description of Goods, quantity, the vessel, the bill of lading number and date, port of loading, date of shipment, port of discharge, etc. The Supplier shall deliver by express courier service the following documents to the Purchaser, with a copy to the Port Consignee and Ultimate Consignee:

i. Supplier's shipping invoice showing Contract Number, Goods description, quantity, unit price, total amount and GST number of ultimate consignee;
ii. Clean on-board bill of lading indicating the Importer-Exporter Code (IEC) of the concerned Subsidiary Company of CIL and non-negotiable bill of lading;
iii. Packing list identifying contents of each package;
iv. Manufacturer's/Supplier's warranty /guarantee certificate;
v. Manufacturer's Test & Inspection certificate;
vi. Certificate of Country of Origin issued by the Chamber of Commerce of Manufacturer's Country;
vii. Documentary evidence of marine freight & marine insurance

The above documents shall be sent by supplier well in advance, so that the same are received by the Purchaser at least one (1) week before arrival of the Goods at the port or place of arrival and, if not received, the Supplier will be responsible for any consequent expenses.

(b) **For Domestic Goods from within India:**

Upon dispatch of the Goods to the consignee, the Supplier shall notify the Purchaser and Ultimate Consignee and deliver by express courier service the following documents to the Purchaser with a copy to the Ultimate Consignee:

i. Supplier's invoice showing Contract Number, Goods description, quantity, unit price, total amount;
ii. Railway receipt/ Transporter's consignment note /acknowledgement of receipt of Goods from the consignee(s);
iii. Manufacturer's/Supplier's warranty / guarantee certificate;
iv. Manufacturer's Test & Inspection certificate;

The above documents shall be provided by the supplier at the time of arrival of the Goods at the consignee's end. In case of delay, the Supplier will be responsible for any consequent expenses.

11. Insurance

11.1. Wherever necessary, the goods supplied under the contract, shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, delivery, storage and erection and commissioning at site (wherever applicable) in the manner specified in the contract. The insurance is to be done for coverage on "all risks" basis including war risks and strike clauses. The amount to be covered under insurance should be 110% of the invoice value to take

care of the overall expenditure to be incurred by the purchaser for receiving the goods at the destination.

11.2. Where delivery of imported goods is required by the purchaser on CIF/CIP basis, the supplier shall arrange and pay for marine/air insurance, making the purchaser as the beneficiary. Where delivery is on FCA/ FOB/ CFR basis, marine/air insurance shall be the responsibility of the purchaser.

11.3. In case of domestic supplies on Free Delivery at site/FOR Destination basis, the supplier has to arrange insurance at its cost. For Ex-works and FOR station of dispatch contracts, it is the responsibility of the purchaser to arrange for insurance.

11.4. Where the delivery of the Goods is on CIP Basis, the supplier shall deliver the goods at the named place of destination at its own risks and costs. CIL has no obligation to the supplier for arranging insurance. However, CIL will provide the supplier upon request, with necessary information for obtaining insurance.

11.5. Where the delivery of the Goods is on FOR destination Basis, the supplier shall deliver the goods at the FOR destination site at its own risks and costs. CIL has no obligation to the supplier for arranging insurance. However, CIL will provide the supplier upon request, with necessary information for obtaining insurance".

12. Transportation

12.1. In case of FOB (Port of Shipment) contracts, the purchaser has to arrange transportation its own cost and risk.

12.2. In case of CIF (Port of Destination) contracts, transport of the goods to the port of destination in the Purchaser's country, as shall be specified in the contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price. In case of inland transportation of goods, the same is to be done through registered common carriers only.

12.3. In case of CIP (Final Place of Destination) contracts, transport of the goods to the port of destination and further to the named place of Final Destination in the Purchaser's country, as shall be specified in the contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price. In case of inland transportation of goods, the same is to be done through registered common carriers only.

12.4. In case of FOR Destination contracts, transport of goods to the Destination site shall be arranged and paid for by the supplier and the cost thereof shall be included in the contract price. Transportation of goods is to be done through registered common carriers only.

13. Warranty

13.1. The Supplier warrants that the Goods supplied under the Contract are new, unused, of the most recent or current models and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect arising from design, materials or workmanship or from any act or omission of the Supplier that may develop under normal use of the supplied Goods in the conditions prevailing in the purchaser's country.

13.2. This warranty shall remain valid for twelve (12) months from the date of Commissioning of the equipment. However, in case of other Goods, warranty shall remain valid for eighteen (18) months from the date of receipt and acceptance of materials at consignee's end or twelve (12) months from the date of its use / fitment / commissioning, whichever is earlier.

13.3. The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty. The Supplier shall, within thirty days, repair or replace the defective Goods or parts thereof, free of cost at the ultimate destination. The Supplier shall take over the replaced parts/Goods at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts/Goods thereafter.

13.4. If the Supplier, having been notified, fails to remedy the defect(s) within thirty days, the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

13.5. For the goods whose life is less than twelve (12) months, the warranty period will depend on the nature of the item under procurement and shall accordingly be specified in SCC.

14. Payment

14.1. Specific payment terms may be stipulated in the NIT and the resultant contracts depending on the nature of goods to be procured, as per provisions contained in Chapter-22.

14.2. **Payment for Indian Agency Commission**

The payment of Indian Agency Commission, if any, involved, may be considered in case of necessity, subject to compliance of the Government of India guidelines issued from time to time. Agency commission, if any, shall be paid in equivalent Indian Rupees, after erection and commissioning of the equipment, wherever applicable, within twenty-one days of submission of bills along with following documents:

(A) Copy of foreign principal's invoice.
(B) Copy of bill of lading.
(C) Certificate from State Bank of India regarding Bill selling exchange rate ruling on the date of bill of lading (in case of bank holiday on date of bill of lading, Bill Selling exchange rate on next working day shall be considered).
(D) In case of procurement of equipment, commissioning certificate signed by the concerned officials of the Project and counter-signed by the Area General Manager and HOD of Technical Dept. of the subsidiary company, where the equipment has been deployed.

14.3. In order to enable the purchaser to avail Input Tax Credit as per applicable Indian laws, the supplier shall furnish all the necessary documents to the consignee / paying authority as required, failing which the equivalent deduction will be made from the supplier's bills. In case of successful bidder(s), if at the time of supply, it is found that Input Tax Credit as per Invoice (Credit available to CIL / Subsidiary on this account) is less than the "Input Tax Credit Amount" declared in the Price Bid, the differential amount between the two shall be deducted from the Supplier's bills while making payment to them. If the evaluation of the supplier has been made considering the concessional rate of customs duty applicable for import from certain countries under trade agreements / treaties with Govt. of India, all the required documentation for availing concessional customs duty and subsequent customs clearance etc. will be provided by the supplier failing which the equivalent deduction will be made from their bills.

15. Changes in Order

The Purchaser may at any time, by a written order given to the Supplier, make changes within the general scope of the Contract in any one or more of the following:

a) drawings, designs or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
b) the method of shipment or packing;
c) the place of delivery; and/or
d) the place of Services to be provided by the Supplier.

16. Contract Amendments

Subject to relevant clause of GCC, no variation in or modification of the terms of the Contract/ Purchase Order shall be made except by written amendment issued against the Contract/ Purchase Order.

17. Assignment

The Supplier shall not assign, in whole or in part, its obligations to perform under this Contract, except with the Purchaser's prior written consent. However, the consent of the Purchaser shall not relieve the supplier from any obligation, duty or responsibility under the contract.

18. Subcontracts

The Supplier shall notify the Purchaser in writing of all subcontracts awarded by it to discharge the works under this Contract. Such notification, in the original bid or later, shall not relieve the Supplier of any liability or obligation under the Contract and the supplier will be solely responsible for all obligations under the contract.

19. Delays in the Supplier's Performance

19.1. Delivery of the Goods and performance of Services shall be made by the Supplier in accordance with the time schedule prescribed by the Purchaser in the Schedule of Requirements.

19.2. If at any time during performance of the Contract, the Supplier or its Subcontractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may at its discretion extend the Supplier's time for performance, with or without liquidated damages, by way of an by amendment to the Contract/ Purchase Order.

19.3. Except as provided under Force Majeure clause, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of liquidated damages, unless an extension of time is agreed upon pursuant to relevant clause without the application of liquidated damages.

20. Liquidated Damages

20.1. In the event of failure to deliver or dispatch the equipment/stores within the stipulated date/period in accordance with the terms and conditions and the specifications mentioned in the supply order and in the event of breach of any of the terms and conditions mentioned in the supply order, the Purchaser shall have the right:

(a) To recover from the successful bidder as agreed liquidated damages, a sum not less than 0.5% (Half Percent) of the price of any equipment/ stores which the successful tenderer has not been able to supply as aforesaid for each week or part of a week during which the delivery of such stores may be in arrears limited to 10% (Ten Percent) of the total contract value, or

(b) To purchase elsewhere after due notice to the successful tenderer on the account and at the risk of the defaulting supplier, the equipment/stores not supplied or others of similar description without cancelling the supply order in respect of the consignment not yet due for supply, or

(c) To cancel the supply order or a portion thereof, and if so desired to purchase the equipment/ stores at the risk and cost of the defaulting supplier and also,

(d) To extend the period of delivery with or without penalty as may be considered fit and proper. The penalty, if imposed, shall not be more than the agreed liquidated damages referred to in clause (a) above.

(e) To forfeit the security deposit fully or in part.

(f) Whenever under this contract any sum of money is recoverable from and payable by the supplier, the Purchaser shall be entitled to recover such sum by appropriating in part or in whole by deducting any sum or which at any time thereafter may become due to the successful tenderer in this or any other contract. Should this sum be not sufficient to recover the full amount recoverable, the successful tenderer shall pay the Purchaser on demand the remaining balance. The supplier shall not be entitled to any gain on any such purchase.

20.2. For the purpose of the calculation of the liquidated damages amount, the basic FOR Destination price shall be considered. For direct imports, the CIP price at Final Place of destination will be considered. Taxes and duties shall not be taken into account for calculation of LD. However, when prices indicated in the order are inclusive of taxes and duties, such prices will be taken for calculation of LD.

21. Termination for Default and breach of contract

21.1. The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate the Contract in whole or in part:

(a) If the supplier fails to deliver any or all of the stores within the time period(s) specified in the contract, or any extension thereof granted by the Purchaser; or

(b) If the supplier fails to perform any other obligation under the contract within the period specified in the contract or any extension thereof granted by the purchaser; or

(c) If the Supplier, in the judgement of the Purchaser, has violated Code of Integrity for Public Procurement in competing for or in executing the Contract.

21.2. Code of Integrity for Public Procurement (CIPP):

The supplier shall observe the highest standard of ethics while competing for and during execution of contracts.

The following practices would amount to violation of CIPP:

i. "Corrupt Practice" means making offers, solicitation or acceptance of bribe, rewards or gifts or any material benefit, in exchange for an unfair advantage in the procurement process or to otherwise influence the procurement process or contract execution;

ii. "Fraudulent Practice" means any omission or misrepresentation that may mislead or attempt to mislead so that financial or other benefits may be obtained or an obligation avoided. This includes making false declaration or providing false information for participation in a tender process or to secure a contract or in the execution of a contract;

iii. "Anti-competitive Practice" means any collusion, bid rigging or anti-competitive arrangement, or any other practice coming under the purview of The Competition Act 2002, between two or more bidders, with or without the knowledge of the Purchaser, that may impair the transparency, fairness and the progress of the procurement process or to establish bid prices at artificial, non-competitive levels;

iv. "Coercive Practice" means harming or threatening to harm, directly or indirectly, at any stage, persons or their property to influence their participation in the procurement process or affect the execution of a contract;

v. "Conflict of interest" means participation by a bidding firm or any of its affiliates that are either involved in the consultancy contract to which this procurement is linked; or if they are part of more than one bid in the procurement; or if the bidding firm or their personnel have relationships or financial or business transactions with any official of Procuring Entity who are directly or indirectly related to tender or execution process of contract; or improper use of information obtained by the (prospective) bidder from the Procuring Entity with an intent to gain unfair advantage in the procurement process or for personal gain; and

vi. "Obstructive practice" means materially impede the Procuring Entity's investigation into allegations of one or more of the above mentioned prohibited practices either by deliberately destroying, falsifying, altering; or by concealing of evidence material to the investigation; or by making false statements to investigators and/or by threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or by impeding the Procuring Entity's rights of audit or access to information.In the event the Purchaser terminates the Contract in whole or in part, pursuant to relevant clause, the Purchaser may procure on such terms and in such manner as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar Goods or Services. However, the Supplier shall continue performance of the Contract to the extent not terminated.

22. Force Majeure

22.1 Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable. Such events may include, but are not restricted to, acts of the purchaser either in its sovereign or contractual capacity, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes, lockouts, freight embargoes and act of God.

22.2 If there is delay in performance or other failures by the supplier to perform its obligation under the contract due to an event of a Force Majeure and the contract is governed by Force Majeure Clause, the supplier shall not be held responsible for such delays/failures.

22.3 In such a situation, the supplier shall promptly notify the purchaser in writing of such conditions and the cause thereof, duly certified by the local Chamber of Commerce or Statutory authorities, the beginning and end of the causes of the delay, within twenty one days of occurrence and cessation of such Force Majeure Conditions. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

22.4 If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side.

22.5 For delays arising out of Force Majeure, the supplier will not claim extension in completion date for a period exceeding the period of delay attributable to the causes of Force Majeure.

22.6 There may be a Force Majeure situation affecting the purchaser also. In such a situation, the purchaser is to take up with the supplier on similar lines as above for further necessary action.

22.7 The contract shall be governed by the following Force Majeure Clause:

"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 reason of any wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes, lockouts, freight embargoes or act of God (hereinafter referred to "events") provided, notice of the happening of any such event is given by either party to the other within 21 days from the date of occurrence thereof, neither party shall by reason of such event, 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, and deliveries under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, PROVIDED FURTHER that if the performance in whole or part or any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 60 days, either party may at its option terminate the contract provided also that if the contract is terminated under this clause, the purchaser shall be at liberty to take over from the contractor at a price to be fixed by the CIL/Subsidiary Company, which shall be final, all unused, undamaged and acceptable materials, bought out components and stores in course of manufacture in the possession of the contractor at the time of such termination or such portion thereof as the purchaser may deem fit excepting such materials, bought out components and stores as the contractor may with the concurrence of the purchaser elect to retain."

23. Termination for Insolvency

The Purchaser may at any time terminate the Contract by giving written notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Purchaser.

24. Termination for Convenience

24.1 The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

24.2 The Goods that are complete and ready for shipment within thirty (30) days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:

a) to have any portion completed and delivered at the Contract terms and prices; and/or

b) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Services and for materials and parts previously procured by the Supplier.

25. Governing Language

The Contract shall be written in English language. All correspondence and other documents pertaining to the Contract which are exchanged by the Parties shall be written in the same language.

26. Taxes and Duties

26.1 A foreign Supplier shall be entirely responsible for all taxes, duties, license fees and other such levies imposed outside the Purchaser's country. The foreign supplier shall also be responsible for all taxes & duties in Purchaser's country legally applicable during execution of the contract other than those which are to be paid by purchaser, as specified in as per relevant clause of NIT.

26.2 A Domestic Supplier shall be entirely responsible for all taxes, duties, licence fees etc., incurred until the execution of the contract, other than those which are to be paid by purchaser, as specified in as per relevant clause of NIT.

27. Limitation of Liabilities

Except in cases of criminal negligence or wilful misconduct;

27.1 Notwithstanding anything herein to the contrary, no party shall be liable for any indirect, special, punitive, consequential or exemplary damages, whether foreseeable or not, arising out of or in relation to this contract, loss of goodwill or profits, lost business however characterised, any/ or from any other remote cause whatsoever.

27.2 The supplier shall not be liable to the purchaser for any losses, claims, damages, costs or expenses whatsoever arising out of or in connection with this contract in excess of the contract value of the goods and services supplied hereunder which caused such losses, claims, damages, costs or expenses.

27.3 However, the limitation of liability of the supplier indicated above shall not apply to Liquidated damages.

28. Settlement of commercial disputes in case of contracts with Public Sector Enterprises/ Govt. Dept.(s)

28.1 In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between CPSEs and Government Departments/ Organizations (excluding disputes concerning Railways, Income Tax, Customs & Excise Departments), such dispute or difference shall be taken up by either party for its resolution through Administrative Mechanism for Resolution of CPSEs Disputes (AMRCD), as per the guidelines stipulated in the Office Memorandum No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22.05.2018 of Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises, Govt. of India.

28.2 In case of contract with a Public Sector Enterprise or Govt. Dept., the following Arbitration Clause shall be incorporated in the contract:-

"In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs)/ Port Trusts inter se and also between CPSEs and Government Departments/ Organizations (excluding disputes concerning Railways, Income Tax, Customs & Excise Departments), such dispute or difference shall be taken up by either party for resolution through AMRCD as mentioned in DPE OM No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22.05.2018."

29. Progress Reports

29.1 The Supplier shall from time to time render such reports concerning the progress of the contract and/or supply of the stores in such form as may be required by the Purchaser.

29.2 The submission, receipt and acceptance of such reports shall not prejudice the right of the Purchaser under the contract nor shall operate as an estoppel against the Purchaser merely by reason of the fact that he has not taken notice of or objected to any information contained in such report.

30. Provisions of CIL's Purchase Manual

The provisions of CIL's Purchase Manual and its subsequent amendments (Available on CIL's website, www.coalindia.in) shall also be applicable, if not specified otherwise in this Bid document.

31. Applicable Law

The Contract shall be governed by the laws of the Republic of India, unless otherwise specified in the bid document.

32. Jurisdiction of Courts

32.1 Irrespective of the place of delivery, the place of performance or place of payment under the contract, the contract shall be deemed to have been made at the place from where the acceptance of tender or supply order has been issued.

32.2 The courts of the place from where the acceptance of tender has been issued shall alone have jurisdiction to decide any dispute arising out of or in respect of the contract.

33. Notices

33.1 Any notice given by one Party to the other pursuant to this Contract shall be sent to the other Party in writing or facsimile to be confirmed in writing, to the other Party's address. For the purpose of all notices, the following shall be the addresses of the Purchaser and the Supplier:

Purchaser:
General Manager (MM),
Coal India Limited or Subsidiary company,
[-----address-------
----------India]
Fax No.:+91 ----------
Phone: +91 ----------

Supplier:

[----------
Fax No.:+91 ----------
Phone: +91 ----------]

33.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

33.3 In case of change in address, the Supplier shall immediately notify the same to the Purchaser in writing. The supplier shall be solely responsible for the consequences of omission to notify the change of address to the Purchaser.

Special Conditions of Contract (SCC)

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions contained herein shall prevail over those in the General Conditions of Contract. The corresponding Clause number of the General Conditions is indicated in parentheses.

1. Security Deposit (GCC clause –6)

1.1 The supplier has deposited Security Deposit in two separate bank guarantees in terms of the NIT provisions for 03% (three percent) value of the total landed value of the contract including all taxes, duties and other costs and charges as detailed below:-

A. **Security Deposit in US Dollar for Equipment:** Bank Guarantee No. BDC-792-000206-001 dated 04.05.2023 issued by Mizuho Bank, Mumbai for **USD 722,624.00** (US Dollar Seven Hundred Twenty Two Thousand Six Hundred and Twenty Four only) has been submitted by M/s Joy Global Surface Mining Inc, USA which is valid upto 31.10.2026

The copy of Bank guarantee is enclosed as **Annexure-1(a).**

B. **Security Deposit in Indian Rupees for Consumable Spares and Consumables for 12 months of warranty period from the date of commissioning of the equipment and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap:** Bank Guarantee No. BDC-792-001206-001 dated 04.05.2023 issued by Mizuho Bank, Mumbai for **Rs. 4,17,55,510.00** (Rupees Four Crores Seventeen Lakhs Fifty Five Thousand Five Hundred and Ten only) has been submitted by M/s Joy Global Surface Mining Inc, USA which is valid upto 31.10.2026.

The copy of Bank guarantee is enclosed as **Annexure-1 (b).**

1.2 The Security Deposit Bank Guarantee shall remain valid upto 3 months after the supply and commissioning of all the equipment. The SDBG will be released within 30 days after successful commissioning of all the equipment covered in the contract and on receipt of confirmation of Performance Bank Guarantee(s) for all the equipment covered in the contract, as detailed in Clause-2 below. The Bank Guarantee for Security Deposit shall be extended till the Performance Bank Guarantee(s) are submitted by the Supplier, failing which Security Deposit will be forfeited.

1.3 Security Deposit may be converted into Performance Bank Guarantee (PBG) wherever PBG is required at the option of the supplier by increasing its value from 3% to 10% and validity accordingly. Also, the format needs to be modified to take into account the Contract no. and date instead of the NoA no. and date. At the time of conversion of security money into PBG, it should be ensured that the amount of PBG should not be less than 10% of landed value of order. Wherever Security Deposit is converted into PBG, the operation of such SDBG/PBG shall be guided by Performance Bank Guarantee Clause mentioned below.

2. Performance Bank Guarantee (PBG) (GCC Clause 7)

2.1 The supplier shall be required to furnish a Performance Guarantee equivalent to 10% value of the total landed value of the contract including all taxes, duties and other costs and charges.

2.2 The Performance Guarantee shall be in the form of a Bank Demand Draft or Bank Guarantee issued by a RBI scheduled bank in India in the format attached as **Annexure-2** on a non-judicial stamp paper. The PBG shall be submitted to the Paying Authority of the concerned Subsidiary Company i.e. NCL.

2.3 The PBG shall be in the same currency (ies) in which contract has been signed. In case of multi-currency contract, separate PBG in respective currency for required value shall be submitted. Total value of PBG in US Dollar shall be for **USD 2,408,746.00** (US Dollar Two Million Four Hundred Eight Thousand Seven Hundred Forty Six only) and total value of PBG in INR shall be for **Rs 13,91,85,032.00** (Rupees Thirteen Crores Ninety One Thousand Eighty Five Hundred and Thirty Two only)

2.4 The Performance Bank Guarantee (s) may be submitted equipment wise also. For this purpose, the value of each equipment will be worked out by dividing the total value of performance guarantee to be provided by the number of equipment ordered.

The equipment wise Performance Bank Guarantee(s) shall be as follows:

Project	PBG for equipment in USD	PBG for spares & consumables in INR
Dudhichua	1,204,373.00	6,95,92,516.00

2.5 The PBG (s) shall remain valid till 3 months after the completion of the contractual period of all the equipment covered in the contract.

2.6 The PBG shall be submitted, sufficiently in advance (say 3-4 weeks) to enable its verification before submission of the invoice for 80% payment of the particular equipment(s)

OR

in case the Supplier desires to convert SDBG into PBG at its option, extension of validity of SDBG for the requisite period as mentioned at Clause 2.5 above and increase of amount from 3% to 10% of total landed value of the contract including all taxes, duties and other costs and charges and suitable changes in format, is to be submitted before submission of the invoice for 80% payment of the first equipment of the contract

OR

in lieu of PBG, a letter be submitted sufficiently in advance (say 3-4 weeks) to the Paying Authority to deduct 10% of the total landed value of the contract including all taxes, duties and other costs and charges from the invoice for 80% payment of the particular equipment (s) which may be kept as PBG for that particular equipment(s).

2.7 The PBG issued by Issuing bank on behalf of the Supplier in favour of "concerned subsidiary

where the equipment will be supplied" shall be in paper form (Stamp Paper) as well as issued under "Structured Financial Messaging System". The details of beneficiary Bank for issue of BG through SFMS Platform will be provided by the concerned subsidiary. The date of SFMS confirmation to the concerned subsidiary shall be deemed to be the date of receipt of the BG. Original copy of the PBG issued by the Issuing Bank shall be sent by the issuing bank to concerned subsidiary i.e. NCL.

However, if the original copy of the PBG is handed over to the supplier by the Issuing bank, the issuing bank shall send an e-mail from their corporate e-mail id (on the date of handing over) directly to corporate e-mail id of the concerned subsidiary that they have handed over the original copy of the PBG to the supplier for handing over to the beneficiary, attaching a scanned copy of the PBG. In such case, the Supplier shall also submit a copy of the SFMS message as sent by the issuing bank branch along with the original Bank Guarantee.

2.8 The release of the Performance Bank Guarantee(s) / converted SDBG after above indicated period, shall be subject to satisfactory performance of the equipment during 11 years period from the date of commissioning of the equipment and fulfillment of contractual obligations failing which, action for further extension or encashment of PBG / converted SDBG, as deemed suitable shall be taken. Release of PBG for each equipment may be done separately on satisfactory performance of the respective equipment as above. In case of converted SDBG, the release will be done only after satisfactory performance of all the equipment covered in the Contract or in case of unsatisfactory performance of some equipment, on receipt of the Claim amount from the Supplier or with suitable deductions for unsatisfactory performance of equipment, if any from the converted SDBG.

Whenever deductions towards unsatisfactory performance of equipment or non-achievement of guaranteed availability in a particular year(s) are made within the tenure of the PBG/converted SDBG during the contract period, the amount deducted from the PBG/converted SDBG should be replenished within a month in order to ensure that the original value of the PBG/converted SDBG remains the same throughout the contract period.

2.9 Since the manufacturer/supplier is initially required to supply the quantity of first lot of equipment (one no.) along with spares & consumables for warranty period as indicated in Schedule of Requirements, an additional PBG for 100% of the total landed value of equipment along with spares & consumables for warranty period for the quantity of first lot is to be submitted. The amount of this additional PBG shall be **USD 12,325,298.00** (US Dollar Twelve Million Three Hundred Twenty Five Thousand Two Hundred Ninety Eight Only). This additional 100% PBG shall be submitted, sufficiently in advance (say 3-4 weeks) to enable its verification before submission of the invoice for 80% payment of the first lot of equipment. This PBG will initially be kept valid for 18 months from submission of the invoice for 80% payment of the 1st lot of equipment.

This additional 100% Performance Bank Guarantee shall be returned only after satisfactory performance of the equipment supplied in first lot for one year from the date of commissioning

after obtaining clearance for commencing balance supplies from the Order Placing Authority. In case of unsuccessful performance of any equipment of the first lot of equipment supplied by the Supplier, this 100% additional Performance Bank Guarantee for the first lot of equipment as mentioned above shall be encashed by CIL/NCL along with other measures as indicated under Clause-10, Execution of Contract of the Agreement .

3. Inspection and Tests (GCC Clause 8)

3.1 Pursuant to Clause 8.1 of the GCC, details of specific inspections and/or tests to be carried out at the Supplier's works and/or at the Site(s) are given in Technical Specifications.

3.2 Modify Clause 8.3 of the GCC to read as follows:
Should any inspected or tested Goods fail to conform to the Specifications, including acceptance tests and periodic tests to verify guaranteed performance, the Purchaser may reject the Goods, and the Supplier shall either replace the rejected Goods or make alterations necessary to meet Specification requirements free of cost to the Purchaser within sixty (60) days of such rejection. Replaced or altered goods shall be subjected to repeated inspection or tests to demonstrate conformity with the Specifications. In the event that replacement or alteration is not done within sixty day period as aforesaid, or, replaced or altered goods fail to demonstrate conformity with the Specifications in repeated inspections or tests as aforesaid, the Purchaser reserves the right to terminate the Contract in part or in whole and the Supplier shall repay forthwith to the Purchaser all monies paid in respect of Goods, and Services associated therewith, for which the termination is applicable and, subsequently remove the same from the Purchaser's Site at the Supplier's cost.

3.3 Add as Clause 8.7 to the GCC the following:

The Purchaser or its nominated representative shall have the right to conduct inspections or tests as set out in this Clause at any reasonable time. The Purchaser reserves the right, at the Purchaser's cost, to depute its own inspector(s) and/or to engage any other third party inspecting agency, other than the one recommended by the Supplier, to conduct inspections and tests pursuant to the Contract.

4. Incidental Services

The following Services, shall be provided by the Supplier:

(a) Erection, Testing and Commissioning

Erection, testing and commissioning of the Equipment as detailed in the Schedule of Requirements and the Technical Specifications

The supplier shall be responsible for the erection and commissioning within 90 (ninety) days from the receipt of equipment at site.

The purchaser will provide necessary cranes, electricity and fuel required for testing only. All other erection tools & tackles including manpower will be arranged by the

supplier. Any substantial delay in providing cranes from purchaser side will be recorded jointly for calculation purpose of erection & commissioning time.

If the supplier fails to commission the equipment within the specified period as mentioned above, Liquidated Damages will be recovered @ 0.5% of the landed price of the equipment along with accessories per week or part thereof for the delayed period subject to a maximum of 5% of the landed price of equipment along with accessories.

(b) Tools

Furnishing of tools required for assembly and maintenance of the supplied Goods as detailed in the Schedule of Requirements and the Technical Specifications. A complete list as per as per clause-A.2 of Technical Specifications is enclosed as **Annexure-4(a)** as furnished by the supplier.

(c) Manuals

Furnishing of detailed operating, repair, maintenance and spare parts manuals as detailed in the Technical Specifications.

(d) Training

Training of the Purchaser's personnel shall be as detailed in the Schedule of Requirements and the Technical Specifications. The cost of such Services shall be included in the Contract Price.

The Supplier shall be responsible for arranging and the cost of all necessary tickets, visas, permits, foreign exchange and any other matter or facility for visits of the Supplier's personnel for the purposes of Erection, Testing and Commissioning the Equipment and/or Training of the Purchaser's personnel - the Purchaser shall have no responsibility in this regard except in respect of issuance of letters supporting visa applications as may reasonably be requested by the Supplier. The Supplier shall be responsible for paying taxes, if any, including personal income tax and surcharge on income tax, for which it or its personnel may become liable.

For visit of Purchaser's personnel to manufacturer's works/venue of training, the Purchaser shall arrange all necessary tickets, conveyance, lodging and boarding and any other matter or facility for visits of Purchaser's personnel.

5. Insurance (GCC Clause-11)

Pursuant upon Clause-11.1, GCC, the insurance coverage of the goods will be upto successful erection and commissioning of the equipment at site.

6. Transportation (GCC Clause-12)

Add the following paragraph to the Clause-12.3, GCC:

"Marine Freight Charges and Marine Insurance Charges shall be paid at actuals subject to the

ceiling of quoted amount under these heads. Inland Freight charges and Inland Insurance charges shall be paid at actuals but not beyond the rates/ prices mentioned in the Price Schedule."

7. Warranty (GCC Clause-13)

The "thirty days" mentioned in Clauses-13.3 and 13.4 of the GCC shall stand replaced by "sixty days".

For the purpose of Clause 13.5 of the GCC, "For the goods whose life is less than twelve (12) months, the warranty period will depend on the nature of the item under procurement" and the parts manufacturer's or supplier's guarantee /warranty certificate shall suffice.

8. Payment (GCC Clause 14)

8.1 Payment shall be made in the currency or currencies specified in the contract i.e. USD payments shall be paid to M/s Joy Global Surface Mining Inc, USA and all INR payments shall be paid to M/s Voltas Ltd. in the following manner:

8.2 **For Payment of equipment in foreign Currency**

i) Two separate unconfirmed, irrevocable letter of credit(s) will be established in the name of M/s Joy Global Surface Mining Inc, USA for net CIF value (after deducting Indian Agency Commission from the CIF value) by NCL (HQ) as follows:

- 1st Letter of Credit shall be opened for **USD 8,252,699.01** (US Dollar Eight Million Two Hundred Fifty Two Thousand Six Hundred Ninety Nine and Cents One Only) for 1 (one) machine of the 1st lot. This will be opened after signing of Contract.
- 2nd Letter of Credit shall be opened for **USD 8,252,699.01** (US Dollar Eight Million Two Hundred Fifty Two Thousand Six Hundred Ninety Nine and Cents One Only) for the balance 1 (one) machine. This will be opened on successful performance of the 1st machine in the 1st lot and clearance from Order Placing Authority.

ii) 80% payment of the net CIF value will be made through unconfirmed, irrevocable letter of credit against submission of:

A. Shipping documents;

B. Self-attested copy of acceptance letter of the PBG as per Clause-2, SCC, by the concerned subsidiary **OR** Self-attested copy of acceptance letter of the extended SDBG as per Clause-1.3, SCC by CIL **OR** letter for deduction of equivalent amount from their bills as per Clause-2.6, SCC above.

C. Copy of Receipted Challan/ Consignment Note of all the consignments.

iii) Balance 20% of the net CIF value will also be paid through same unconfirmed, irrevocable letter of credit(s) against submission of successful commissioning certificate, signed by the concerned officials of the Project and counter-signed by the Area General Manager and HOD of Excavation Deptt. of the subsidiary company, where the equipment has been deployed.

iv) The Marine Freight Charges and Marine Insurance charges shall be paid at actuals

subject to ceiling of the respective amounts mentioned in Price Schedule.

All bank charges incidental to opening of letter of credit(s) in purchaser's country shall be borne by purchaser and all charges in the seller's country shall be borne by the beneficiary.

The letter of credit(s) shall not be confirmed. In case the Supplier insists for confirmation of the letter of credit, the cost of confirmation shall be borne by the Supplier.

L/C shall be opened by the paying authority of the concerned subsidiary i.e. NCL only.

L/C shall allow partial shipment and trans-shipment.

INR Component of Equipment

80% payment of the INR component of CIP value of the equipment but excluding erection and commissioning charges and 100% taxes and duties shall be made within 21 days after receipt and acceptance of equipment at site at the consignee's end and submission of either (a) Performance Bank Guarantee having validity till 3 months after the completion of 11 years from the date of commissioning of all the equipment covered in the contract; or (b) Copy of validity extension of SDBG, in case SDBG is converted into PBG at the option of the supplier, till 3 months after the completion of 11 years from the date of commissioning of all the equipment covered in the contract. In case of non-submission of PBG or converted SDBG, payment may be made after deducting equivalent amount as PBG on specific request of the Supplier.

Balance 20% of the INR component of CIP value including 100% erection and commissioning charges shall be made after successful completion of erection, testing, commissioning and final acceptance of the equipment (along with the accessories) upon presentation of successful commissioning certificate, signed by the concerned officials of the Project and counter-signed by the Area General Manager and HOD of Excavation Deptt. of the subsidiary company, where the equipment has been deployed.

The Inland freight charges and Inland Insurance charges shall be paid at actual subject to ceiling of the quoted rate/ price quoted under these heads.

8.2.1 **Submission of Documents for Payment in foreign Currency for equipment**

For 80% Payment:

For Payment for equipment in foreign Currency, the Manufacturer/supplier will submit the following documents along with bills to the bank for negotiating L/C:

a) Two (2) copies of the Supplier's shipping invoice showing Contract Number, Goods description, quantity, unit price, total amount and GST No. of Ultimate Consignee.

b) Two (2) copies of the clean on-board bill of lading and four (4) copies of non-negotiable bill of lading. Importer Exporter Code (IEC) of concerned subsidiary Co. should be mentioned in Bill of Lading.

c) Two (2) copies of packing list identifying contents of each package.

d) Equipment Manufacturer's Warranty /Guarantee Certificate as per Technical Specification Clause-C.9.

e) Manufacturer's Test & Inspection Certificate

f) The following Lowest Price Certificate as per SCC clause-9.2 :
"We certify that prices for the items supplied are the lowest and not higher than as applicable to any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization and it will be our responsibility to inform the Purchaser in case items are supplied at a lower price".

g) The following Price Fall Certificate as per SCC Clause-9.3 :
"We certify that we have not offered to supply / supplied the ordered / similar item(s) at a lower rate to any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization during the currency of the Contract".

h) Certificate of Country of Origin issued by the Chamber of Commerce of Manufacturer's Country.

i) Self-attested copy of acceptance letter of the PBG as per Clause 2, SCC by the concerned subsidiary **OR** Self-attested copy of acceptance letter of the extended SDBG as per Clause 1.3, SCC by CIL **OR** self-attested letter for deduction of equivalent amount from their bills.

j) Confirmation of acceptance of additional 100% PBG of the total landed value of the equipment along with spares and consumables for warranty period for the quantity of the first lot (1st machine) as per Clause 2.9, SCC by NCL *(applicable for the supply of the 1st lot of 1 machine only).*

k) A certificate that no commission is payable by the principal supplier (the Manufacturer – M/s Joy Global Surface Mining Inc, USA) to any agent, broker or any other intermediary against this contract other than 1% of FOB value of the contract to M/s. Voltas Ltd., Mumbai (Indian Agent).

l) Copy of Goods Consignment Note supported by Challans of all the consignments, duly receipted by consignee, along with the certificate from supplier that all the consignments for commissioning of complete equipment have been delivered

m) Copy of Certificate of Insurance.

n) Documentary evidence for Marine freight and marine Insurance.

o) Any other document(s) required as per contract

For 20% Payment:

a) Self-attested copy of commissioning certificate, signed by the concerned officials of the Project and counter-signed by the Area General Manager and HOD of Excavation Deptt. of the subsidiary company, where the equipment has been deployed.

8.3 **For Payment of consumable spares and consumables for first 12 months of warranty period from the date of commissioning of the equipment in Indian Rupees:**

100% value of the consumable spares and consumables and 100% taxes and duties and other charges shall be made within 21 days of receipt and acceptance of materials at consignee's end, after commissioning of the equipment.

Submission of Documents for Payment in Indian Rupees for consumable spares and consumables for first 12 months of warranty period from the date of commissioning of the equipment

For payment for consumable spares and consumables in Indian Rupees, the supplier will submit the following documents along with bills to the paying authority:

a. Two copies of the Supplier's invoice, Pre-Receipted and Stamped showing Contract Number, Goods description, quantity, unit price, total amount and GST No. of Ultimate Consignee.
b. Copy of Receipted Challan/ Consignment Note of all the consignments.
c. Equipment Manufacturer's/Supplier's Warranty/Guarantee Certificate as per GCC Clause-13.2 and/or SCC Clause-7, as the case may be.
d. The following Lowest Price Certificate as per SCC clause - 9.2 :
   "We certify that prices for the items supplied are the lowest and not higher than as applicable to any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization and it will be our responsibility to inform the Purchaser in case items are supplied at a lower price".
e. The following Price Fall Certificate as per SCC Clause- 9.3 "
   "We certify that we have not offered to supply / supplied the ordered / similar item(s) at a lower rate to any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization during the currency of the Contract".
f. Any other document(s) required as per contract.

8.4 **For Payment of spares and consumables during 2nd year to 11th year of operations in Indian Rupees under Spares Cost Cap:**

100% value of the spares and consumables and 100% taxes and duties and other charges shall be made within 21 days after receipt and acceptance of materials at consignee's end.

Submission of Documents for Payment in Indian Rupees for spares and consumables during 2nd year to 11th year of operations under Spares Cost Cap:

For payment for Spares and consumables under Spares Cost Cap in Indian Rupees, the supplier will submit the following documents along with bills to the paying authority:

a. Two copies of the Supplier's invoice, Pre-Receipted and Stamped showing Contract

Number, Goods description, quantity, unit price, total amount and GST No. of Ultimate Consignee.

b. Copy of Receipted Challan/ Consignment Note of all the consignments.

c. Equipment Manufacturer's / Supplier's Warranty /Guarantee Certificate as per GCC Clause-13.2 and/or SCC, Clause-7, as the case may be.

d. The following Lowest Price Certificate as per SCC Clause - 9.2 :
"We certify that prices for the items supplied are the lowest and not higher than as applicable to any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization and it will be our responsibility to inform the Purchaser in case items are supplied at a lower price".

e. The following Price Fall Certificate as per SCC Clause- 9.3:
"We certify that we have not offered to supply / supplied the ordered / similar item(s) at a lower rate to any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization during the currency of the Contract".

f. Certificate that the spares and consumables being supplied during the ...th year of operation and for which payment is being sought, has not crossed the cumulative Spares Cost Cap value of the ... th year of operation of the Machine Sr. No. ..... .

g. Any other document(s) required as per contract.

8.5 **Payment for Indian Agency Commission (GCC Clause-14.2):**

The Clause-14.2, GCC is modified and the following is also added

Indian Agency Commission of **USD 154,253.98** (US Dollar One Hundred Fifty Four Thousand Two Hundred Fifty Three and Cents Ninety Eight Only) for the equipment shall be paid in equivalent Indian Rupees, within twenty-one days of submission of bills, after installation and commissioning of the equipment, on submission of the following documents:

(A) Copy of foreign principal's invoice.

(B) Copy of bill of lading.

(C) Self-attested copy of certificate from State Bank of India regarding Bill Selling exchange rate ruling on the date of bill of lading (in case of bank holiday on date of bill of lading, Bill Selling exchange rate on next working day shall be considered) or self-attested downloaded sheet from SBI portal containing Bill Selling exchange rate ruling on the date of bill of lading (in case of bank holiday on date of bill of lading, Bill Selling exchange rate on next working day shall be considered).

(D) Self-attested copy of commissioning certificate of the equipment signed by the concerned officials of the Project and counter-signed by the Area General Manager and HOD of Excavation Deptt. of the subsidiary company, where the equipment has been deployed.

The Indian Agency Commission will be released on each Equipment basis. Indian Agency

Commission per equipment is **USD 77,126.99** (US Dollar Seventy Seven Thousand One Hundred Twenty Six and Cents Ninety Nine only).

Paying Authority shall verify the self-attested downloaded sheet of SBI containing the Bill Selling Exchange Rate from the SBI portal/website and after verification, make payment.

8.6 **Payment of Customs Duty**

The Purchaser will only pay Customs Duties applicable to imported goods. The Purchaser's Port Consignee will undertake the above activity.

It shall be responsibility of the Manufacturer / Supplier to indicate the correct/exact rate of Customs Duty applicable to their goods taking into account all the relevant Customs Acts/rules /regulations/guidelines along with explanation notes to the notifications etc. If it becomes necessary for CIL to pay higher rate of Customs Tariff due to wrong quoting of customs rate by the Manufacturer / Supplier, the same shall be deducted from supplier's bill. However, if the higher rate is due to any statutory change, the same shall be borne by CIL.

Payment in respect of Custom Duties properly levied on the CIF value of the imported goods shall be made in INR in the following manner:

(i) The supplier shall submit Check List with appropriate Customs Code (H. S. Code) along with a copy each of the supplier's invoice, freight bill and insurance bill well in advance to the C&F Division of CIL,

(ii) After examination, the C&F Deptt. of CIL will inform the supplier the correctness of leviable customs duties for preparation of Bill of Entry,

(iii) Thereafter, the supplier will submit the final Bill of Entry to the C&F Deptt., CIL for payment of Customs Duties to Customs Authorities,

(iv) C&F Deptt., CIL will pay Customs Duty directly to Commissioner, Customs by Account Payee Cheque / Electronic Fund Transfer,

(v) After payment of customs duty by CIL, the supplier will arrange clearance of goods at Port. After final clearance of goods at Port, the supplier will submit duplicate Bill of Entry to HOD, C&F Deptt. of CIL.

8.7 **Statutory Variation:** If there is any statutory change in GST within contractual delivery period, the same shall be admissible and will be paid at actual based on documentary evidence. Upward revision in GST beyond original delivery period may be admissible provided the concerned subsidiary gets 100% input tax credit for GST; otherwise increase in GST are not to be paid to the Supplier unless the delay is due to any lapse on the part of the purchaser. However, decrease in GST shall be availed by the concerned subsidiary.

Further, it shall be the responsibility of the Supplier to indicate the correct rate of CGST/SGST/UT-GST/IGST applicable for their goods. If it becomes necessary for CIL to pay higher rate of CGST/SGST/UT-GST/IGST due to quoting lower than applicable rates by the Supplier, the excess amount paid by CIL shall be deducted from the supplier's bill. However, if higher rate is due to any statutory change, the same shall be borne by CIL.

8.8 **Paying Authority**

The Paying Authority shall be:

General Manager (Finance),
Northern Coalfields Ltd.,
Singrauli, P.O. – Singrauli Colliery - 486889
Distt. – Singrauli, Madhya Pradesh, India

Bank details for opening of LC in USD on M/s Joy Global Surface Mining Inc, USA and INR payments to M/s Voltas Ltd. are enclosed as Annexure 5(a), 5(b) and 5 (c) respectively.

9. Prices

9.1 Prices stated in the contract shall remain firm and fixed throughout the period of the Contract.

9.2 **Lowest Price Certificate**

The Supplier shall submit a certificate along with the Invoice(s) as follows:
"We certify that prices for the items supplied are the lowest and not higher than as applicable to any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization and it will be our responsibility to inform the Purchaser in case items are supplied at a lower price". This is applicable for equipment and spares and consumables of same specifications, as the case may be.

9.3 **Price Fall Clause**

The Supplier undertakes that it has not offered to supply/ supplied / is not supplying same or similar product / systems or sub systems at a price lower than that mentioned in the present contract in respect of any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization during the currency of the contract and if it is found at any stage that same or similar product / systems or sub systems was supplied by the bidder to any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization at a lower price during the currency of the contract, then that very price will be applicable to the present case and the difference in the cost would be refunded by the Supplier to the Purchaser, if the contract has already been concluded.

Note:

i) The currency of contract will mean the period till completion of supply.
ii) It shall be responsibility of the supplier to inform the purchaser of offer to supply / supply of the ordered / similar item(s) at a lower rate to any Organization / Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization during the currency of the contract.
iii) The supplier shall submit a certificate along with the bill(s) that it has not offered to supply / supplied the ordered / similar item(s) at a lower rate to any Organization / Ministry / Department of the Govt. of India or Coal India

10. Grace Period :

10.1 A grace period of 25% of original delivery period or 21 days, whichever is earlier, will be provided automatically in the contract, unless specifically disallowed. Where supplies are made within the grace period, there is no necessity for any extension in delivery period and the paying authority will make payment without any amendment to the contract delivery period. No liquidated damages are leviable in respect of supplies made within the grace period. The extra expenditure, the purchaser may have to incur on account of increase/fresh imposition of GST/CST/VAT, Excise/Customs Duty etc. which takes place within the above grace period will also not be recoverable from the supplier.

10.2 The grace period is allowed as a matter of grace and is not intended to operate as extension of the delivery period and the same will be available only for delivery and not for offering stores for inspection (in case of pre-dispatch inspections) which should be made within the original delivery period or the re-fixed date of delivery.

10.3 If the stores are tendered for pre-dispatch inspection within the original delivery period stipulated in the contract and the Supplier delivers the stores within the grace period, the purchaser is bound to accept the stores even though the inspection was completed after the delivery date.

10.4 The grace period will only apply to the original contract delivery period/re-fixed delivery period and will not be applicable once an extension of delivery has been granted.

11. Taxes and Duties (GCC Clause-26)

The following sub-clause is added to Clause-26, GCC:

Applicability of GST on Liquidated damages, EMD and/or Security Deposit forfeiture:

GST, if applicable, on Liquidated damages, EMD and/or Security Deposit forfeiture as per extant rules prevailing during the contract, shall be levied and recovered from the supplier.

12. Changes in Order (GCC Clause 15)

The Purchaser may at any time, by a written order given to the Supplier, make changes within the general scope of the Contract in any one or more of the following:

a) the place of delivery; and/or
b) the place of Services to be provided by the Supplier.

13. Provisions of CIL's Purchase Manual (GCC Clause 30)

The provisions of CIL's Purchase Manual and its subsequent amendments (Available on CIL's website, www.coalindia.in) prevailing on the date of opening of tender i.e. 27.12.2021 shall also be applicable, if not specified otherwise in the Bid document / Contract.

Schedule of Requirements
Including
Delivery Schedule

Schedule of Requirements

Part I

Sl. No.	Brief Description of Goods & Services	Quantity	Expected Delivery schedule at Site
1	20.13 Cu.M. (Bucket Struck Capacity) Electric Rope Shovel conforming to equipment specification (Part D) of the Technical Specifications. Make: Joy Global Surface Mining Inc Model: 2300XPC	02 nos.	01 (one) machine to be supplied within 12 months from the date of signing of Contract. **Project wise Allocation:** 1st machine at Dudhichua OCP, NCL. On successful performance of the supplied 1st machine for one year from the date of commissioning, clearance to be obtained from Order Issuing Authority for supply of the remaining 1 no. quantity (2nd machine). **After clearance of successful performance of the 1st Machine:** The delivery of the remaining 1 no. quantity (2nd machine) to Dudhichua OCP, NCL is to be completed within 06 (six) months from the date of clearance from Order Issuing Authority.
2	AFDSS and other commissioning requirements as per Price Schedule of the contract, and Ancillary Equipment as specified in Technical Specifications for each equipment of Sl. No. 1	In accordance with Sl. No.1	Delivery to be made along with the Machine.
3	Provision of spare parts; - Operational, Maintenance and Standby/Contingency spare parts, consumable items, wear materials, maintenance tools, and special tools in accordance with Part C.6 of the Technical Specifications. The cost of Spare Parts requirement is for each equipment.	11 (01+10) years	To comply with the terms of part C.6 of Technical Specifications and in consideration of Sl. No. 1 and 2 above. The delivery of spare parts and consumables should be made as follows: • Consumable spares and consumables required for first 12 months of warranty period for the 1st machine are to be supplied in two lots within six months from the date of commissioning of the first equipment. No consumable spares and consumables of warranty period will be accepted after completion of 12 months of warranty period. If the performance of the 1st machine is found successful, the delivery schedule of spares &

			consumables required from 2nd to 11th year of operation from the date of commissioning of the equipment shall be supplied as per requirement of the user under Spares Cost Cap. • For the 2nd machine to be supplied after issuance of clearance, consumable spares and consumables required for first 12 months of warranty period are to be supplied in two lots within six months from the date of commissioning of the 2nd machine. No consumable spares and consumables of warranty period will be accepted after completion of 12 months of warranty period of the 2nd machine. Spares and consumables required from 2nd to 11th year of operation from the date of commissioning of the equipment shall be supplied as per requirement of the user under Spares Cost Cap.

The quantities of equipment allocated to the mine projects are as follows:

Sl No.	Name of Project	Company	Consignee Address	Total Requirement	
				Under NCD	Under PCD
1	Dudhichua OCP	Northern Coalfields Limited	Depot Officer, Regional Stores, Dudhichua Project, Northern Coalfields Ltd., P.O. – Khadia, Dist. Sonebhadra, Uttar Pradesh (India), Pin – 231222	02	-
			TOTAL	**02**	-

Delivery Terms

A) **In case of Imported Portion of the Contract:** On CIP (Final Place of Destination) basis.

For Contract portion on CIP (Final Place of Destination) basis, it is the responsibility of the supplier to deliver the goods at the named place of destination at its own risks and costs. The supplier must contract at its own cost and risk for carriage of goods and insurance to the named place of destination. CIL has no obligation to the supplier on these accounts. However, CIL will provide the supplier upon request, with necessary information for obtaining insurance.

B) **In case of Indigenous Portion of the Contract:** On FOR Destination basis.

For Contract portion on FOR destination basis, it is the responsibility of the supplier to deliver the goods at the FOR destination site at its own risks and costs. The supplier must contract at its own cost and risk for carriage of goods and insurance to the FOR destination

site. CIL has no obligation to the supplier on these accounts. However, CIL will provide the supplier upon request, with necessary information for obtaining insurance.

Port Consignee:

The Purchaser's Port Consignee shall be:

GM(C&F), Clearing and Forwarding Division,
Coal India Ltd., Coal Bhavan,
Premises No.4, Plot No. AF-III, Action Area 1 A,
New Town , Kolkata 700 156, West Bengal, India.
Ph: +91 33 23246640
Fax: +91 33 23246000
e-mail id: gmcnf.cil@coalindia.in

All activities to clear goods through Customs and transport to Final Place of Destination will be undertaken by the Supplier at its cost. The Purchaser will pay Customs Duties only applicable to imported goods.

Delivery Schedule: Delivery schedule as indicated above, shall reckon from the date of Signing of Contract.

Country of Origin for the equipment: USA

Name of the Port of Shipment / Loading: Houston / Savannah / Hueneme / Long Beach / Los Angeles

Name of the Port of Arrival in India : Mumbai / Ennore / Kolkata

Final Place of Destination / FOR Destination / Ultimate Consignee
The Projects indicated above is the Final Place of Destination / FOR Destination for the purpose of delivery. The consignee mentioned therein is the ultimate consignee.

Schedule of Requirements of Services

Part II

Sl. No.	Brief Description of Services	Period/Quantum
1	Training of Purchaser's Personnel at Project Site and Manufacturer's Training Facility available in India	As per Schedule of Requirements of Services later in this Section and as per the Technical Specifications.
2	Assembly and erection of equipment at Site in accordance with the Technical Specification and Conditions of Contract.	As given in **Annexure 4 (o)**

The Supplier's scope of the Contract will include the following

I. Type test on each equipment included in the technical specification and offered in the bid.

II. Providing Services of Supplier's qualified engineer(s)/personnel for:

A. Unloading, transportation to site, storage at site and/or

B. Transportation from storage to erection site, installation, testing and commissioning.

III. Training of Purchaser's Personnel:

The Purchaser's estimates of the minimum training requirements within warranty period, (in terms of Purchaser's personnel, periods and locations) are given in the

following table. These estimates relate to the total number of equipment against each project as specified in Part I

Training Schedule per machine (as per Schedule of Requirement)

Name of the Project:- Dudhichua OCP, NCL

Type of Personnel	At Manufacturer's training facilities available in India					At Site				
	No.	Period		Total		No.	Period		Total	
Mech Engineer	01	01	week	01	week	01	01	Week	01	Week
Elec Engineer	01	01	week	01	week	01	01	Week	01	Week
Mech Supervisor	02	01	week	02	weeks	02	01	Week	02	Weeks
Elec Supervisor	02	01	week	02	weeks	02	01	Week	02	Weeks
Mech Fitter	00	00	week	00	week	04	01	Week	04	Weeks
Electrician	00	00	week	00	week	04	01	Week	04	Weeks
Operator	00	00	week	00	week	06	01	Week	06	Weeks
Total	**06**			**06**	**weeks**	**20**			**20**	**Total**

Definitions:

Mech. Engineer- Graduate Engineer having basic knowledge of the equipment
Elect./Mech. Supervisor - Diploma Holder Engineer having basic knowledge of the equipment
Mech Fitters/Electricians/Operators- Un-skilled, semi-skilled and skilled.

Note:- The training shall be completed in batches within warranty period from the date of commissioning of first equipment in the project.

IV. **Provision of additional training within the contract period after completion of warranty period.**

i. The Supplier will impart training to the CIL personnel, in addition to the contractual training provision, after completion of warranty period but at any time within the contract period.

ii. The additional training will be as per requirement of the user and shall cover the training scope same as per the mandatory training (within warranty period) of the contract.

iii. The training will be on chargeable basis and additional payment to the supplier will be made at the same rates which have been indicated for mandatory training (indicated in the Price Schedule).

Technical Specifications

Introduction

These Technical Specifications identify the technical requirements of the Goods and Services which are the subject of this tender.

The Technical Specifications of the Contract are presented in four parts as follows:

A. Scope of Supply

B. Specific Project Requirements

C. General Requirements
   1) Geography and Climatic Conditions
   2) Goods (Equipment and Machinery)
   3) Services
   4) Standards
   5) Supplier's Responsibility
   6) Spare Parts Provisions
   7) Availability Provisions
   8) Deemed Breakdown
   9) Composite Warranty / Guarantee
   10) Quality Assurance

D. Equipment Specifications

Part A

Scope of Supply

A.1 Equipment Package

The Supplier is required to provide a complete package of equipment for the supply of **20.13 CuM (Bucket Struck Capacity) Electric Rope Shovel [Make: Joy Global Surface Mining Inc, Model: 2300XPC]** to opencast (surface) coal mining projects as per the Technical Specifications provided in Part D.

The supplier is required to supply the equipment along with accessories, consumables, training, installation, commissioning and testing at the coal mining project.

The package also includes Consumable Spares and Consumables including oils, greases, lubricants and GETs for 12 months of warranty period from the date of commissioning of the equipment and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap.

300 mtr. trailing cable and suitable Field Switch as per Technical Specification mentioned in Clause D.5.4 & D.5.6 of Part D, shall be supplied initially along with the equipment as commissioning item.

The Scope and Phasing of supply for the above Electric Rope Shovel is given in Schedule of Requirement.

A.2 Supplementary Items

The equipment shall be provided with a comprehensive tool kit which shall include any special tools required for erection and commissioning of equipment.

List of special tools attached in Annexure-4 (a)

A.3 Information and Drawings

At least one month before the scheduled installation date, the Supplier shall provide not less than:

(a) Suitably illustrated copies of Operating, Repair and Maintenance Manuals for each type/model of equipment and accessories, written in English language, substantially bound in book form;
One hard copy along with soft/digital copy to each project site; and
Soft/digital copy of the same to the General Manager (Excv.)/HOD, Subsidiary Hqrs. and General Manager (EED), CIL.

(b) Suitably illustrated copies of detailed Spares Parts Manuals for each type/model of equipment and accessories, written in English language, substantially bound in book form;
One hard copy along with soft/digital copy to each project site; and
Soft/digital copy of the same to the General Manager (Excv.)/HOD, Subsidiary Hqrs., General Manager (EED), CIL; General Manager (MM)/HOD subsidiary Hqrs and General Manager (MM)/HOD, CIL.

In addition to the Equipment drawings, where appropriate the Supplier shall supply detailed relevant drawings (in the same number of copies) illustrating erection/assembly site(s), foundation and accommodation requirements for such items as drive motors, switch installations etc.

A.4 Erection/Assembly, Commissioning and Performance Testing:

The Supplier shall provide the Services of Specialist Technicians (refer Part – C.3) and required manpower (skilled/semi-skilled/unskilled) to undertake the installation/ erection/assembly, commissioning and performance testing of the Equipment and accessories supplied.

The technicians shall remain at site following commissioning and train all necessary personnel to make them conversant with the maintenance and operation of the equipment.

A.5 Training:

A.5.1 Compulsory Training

The training shall be completed in batches within warranty period from the date of commissioning of the equipment in the respective project. The supplier in consultation with the project in-charge / HOD [Excavation] of the respective site shall make available experienced personnel to conduct training of engineers, supervisors, technicians and operation personnel for specified period as mentioned in table given in 'Schedule of Requirement of Services' from the date of issue of acceptance certificate of the equipment. The training shall cover the following:

a) Training on simulator module by the bidder at their works/suitable location in India/suitable end user's location is mandatory.
b) Equipment system, safety and risk assessment.
c) Equipment operation and maintenance.
d) Trouble shooting, localization of fault and their remedies covering:
    1. Electrical and electronics
    2. Mechanical
    3. Hydraulic system
    4. Lubrication system
    5. Pneumatic system etc.
e) Training on maintenance of OEM bought out systems, e.g., engine, transmission, hydraulic aggregates / system, electrical drives system etc., by the manufacturer of the system.
f) Training on Digital system of the equipment including OBD (on board display) and communication port data management, Health and productivity management system of the equipment.

Comprehensive training manuals with clear illustration shall be provided to each participant in English language. The training courses shall be conducted in both English and Hindi language.

Details of purchaser's estimates of the minimum training programme required per equipment is described in Schedule of Requirement.

A.5.2 Additional training within the contract period after completion of warranty period

(a) The supplier has given an undertaking in their offer to impart training to the CIL personnel at any time within the contract period after completion of warranty, in addition to the compulsory training as per provision of clause A.5.1.

(b) The additional training will be as per requirement of the user and the scope of training will be same as per the compulsory training provision of clause A.5.1.

(c) The training will be on chargeable basis and additional payment to the supplier will be made at same rate what individual supplier will be charged for compulsory training (as mentioned in the Price Schedule).

Part B

Specific Site Requirements

B.1 Project Specific Requirements

The equipment shall be suitable for use at the specific site projects under the conditions detailed below.

B.1.1 DUDHICHUA OCP

The Dudhichua Opencast Project is owned by the Northern Coalfields Limited, a wholly owned subsidiary of Coal India Limited (the "Purchaser"). The mine is located partly in the Sidhi District of Madhya Pradesh and partly in the Sonebhadra District of Uttar Pradesh approximately 14 km from Singrauli railway station.

Geological Conditions

Soil & Sub soil, Sandstone and Shale.

Power Supply

The Project will receive power at 132/33 kV through the Morwa Sub- station of the MPEB..

Mine Water Quality

PH 7.72

Total Suspended Solid 100(mg/ ltr)

Water Supply

Linked to the IWSS (integrated water supply scheme) of the Singrauli coal fields.

Part C

General Requirements

C.1 Geography and Climatic Conditions

Elevation:-

The natural surface varies from 100 to 1000 m above mean sea level.

Climate:-

The climate of the coal mines, where the equipment will be deployed, is sub-tropical to tropical, dusty, with a hot and humid atmosphere. Monsoon rains occur in the period from June to October.

Ambient Conditions:-

Relative Humidity	-	Maximum 98%
Temperature	-	Minimum 0° C Maximum 50o C

Rainfall : - The mean annual rainfall is 1,000mm – 1,200mm, 90 to 95 % of which may fall in rainy season from June to October.

Wind:-	April to September	-	South to South Westerly
	October to March	-	North Westerly

Speed:-
- 8 km per hr average
- 100 km per hr maximum

C.2 Goods (Equipment and Machinery)

Detailed specifications of the Equipment to be supplied are given in **Part D** of this section.
In general, all items shall be:

- New, unused, of the current design [incorporating latest proven features] and not likely to be discontinued or become obsolete during the lifetime of the equipment.
- Designed and constructed to handle without overload and for the working hours stated, the maximum volumes/rates specified;
- Designed to facilitate ready access, cleaning, inspection, maintenance and repair of component parts;
- Designed to facilitate rapid changeover of consumable items.

The supplier shall ensure that suitable latest technology available worldwide as on date shall be adopted in the quoted model of equipment and shall not be discontinued during life time of

equipment. However, in case, technical up-gradation is unavoidable the same may be adopted in the supplied model of equipment with due clearance of Head of Excavation department of Subsidiary Co. Supplier shall not seek any technical modification / up-gradation at the cost of buyer before completion of 10 years from the date of completion of guaranteed availability contract period of the equipment except, when any modification / up-gradation is required for compliance of any statutory guideline issued from regulatory body of Govt. of India, DGMS, State Authority etc.

The component parts of all items shall, wherever possible, be selected from the standard ranges of reputable manufacturers and bidder shall disclose the manufacturer's name of all such items in their bid.

The Equipment and accessories shall be physically robust and where necessary capable of dismantling for transportation and ready re-assembly using simple tools. All Equipment items provided shall be designed to be compatible within the proposed overall Scope of Supply.

Electrical Equipment shall provide all protection devices, controls and interfaces for the Equipment to operate safely and efficiently.

All workmanship and materials shall be of first class quality in every respect.

All parts and surfaces, which are exposed to corrosive environment, shall be suitably protected to prevent any effects of corrosion or erosion.

C.3 Services

The supplier shall be responsible for the erection, testing and commissioning of the equipment at site for which the supplier shall depute qualified and competent Engineer(s) and specialist technicians.

C.4 Standards

The design, supply, erection, testing and commissioning of all Equipment under this Contract shall in all respects comply with the requirement of this specification and with the appropriate current Indian standards and codes, or relevant Standards issued by the Indian/International Standards Organization or any other equivalent international standards, which corresponds to specific IS/ISO indicated in the technical specification. Such equivalent international standards are to be supported by documentary evidence certifying that offered standards are identical to the corresponding IS/ISO.

The equipment shall comply with requirements of the statutory government authorities, including Director General of Mines Safety (DGMS) having jurisdiction over the equipment and its use.

The system of units for all measurements shall be the **Système International (d'unités) (S.I.)**

C.5 Suppliers Responsibility

The Purchaser requires that the Supplier shall accept responsibility for the provision of complete operable and compatible Equipment and systems within the Scope of Supply. This document

identifies only the major items required for the installation and the Supplier shall ensure that the total supply includes all necessary Equipment for it to function effectively, safely and efficiently. Any additional items the Supplier considers necessary to ensure compliance with such a requirement shall be identified and included.

If the Supplier observes that this Specification document contains any anomalies, ambiguities, flaws, errors or omissions, the Supplier shall immediately bring these to the attention of the Purchaser in the Pre-Bid Conference.

The Supplier shall be responsible for the erection, testing and commissioning of the Equipment and ensure that it meets the requirements as specified. The commissioning and setting to work of the whole Equipment Supply package shall be carried out by the Supplier in conjunction with the Purchaser's nominated personnel.

C.6 Spare Parts Provisions

C.6.1.a. Availability of Spare Parts

All items and Equipment proposed shall be of current design and manufacture. The Supplier shall warrant that sufficient spares and servicing facilities will be available to maintain the Equipment in use throughout its life.

C.6.1.b Bought-out assemblies and sub-assemblies

Detail given in Annexure- 4(b)

C.6.2 Provision of Spare Parts

C.6.2.1 Within the Contract Price, the Purchaser shall agree to purchase all Operational, maintenance and standby/contingency spare parts, consumable items, wear materials, maintenance tools and special tools (hereinafter collectively referred to as "Spare Parts", unless the context requires otherwise) in accordance with the Supplier's recommendations for 11 years for **20.13 CuM (Bucket Struck Capacity) Electric Rope Shovel [Make: Joy Global Surface Mining Inc, Model: 2300XPC]** from the date of issue of the Commissioning Certificate. Similarly, within the Contract Price, the Purchaser shall also agree to purchase consumable items (hereinafter referred to as "Consumables") in accordance with the Supplier's recommendations for 11 years for **20.13 CuM (Bucket Struck Capacity) Electric Rope Shovel [Make: Joy Global Surface Mining Inc, Model: 2300XPC]** from the date of issue of the Commissioning Certificate. The schedule of supply of spares and consumables shall be as indicated in Schedule of Requirement, In addition, the Supplier shall provide Spare Parts and Consumables for Commissioning.

Consumables shall include items such as oils, lubricants and fluids also. Trailing cable is not included in consumables.

The supplier has submitted a separate schedule showing consumable spares and consumables proposed to be supplied by them in the 1st (twelve) months period for each

equipment from the date of commissioning of equipment as per 'Schedule of Requirement' to comply with the provisions herein contained.

Management and storage of spares and consumables from 2nd year of operation from the date of commissioning onwards (i.e. after completion of warranty period) till completion of contract period will be under the scope of the supplier. The Spares Cost Cap shall be equipment-wise for each equipment. The modalities of operation of Spares Cost cap model shall be as follows:

i) Reconditioned/Repaired/Refurbished spares/assemblies/sub-assemblies will not be supplied under Spares Cost Cap.

ii) The Spares Cost Cap value and estimated GST has been indicated in the Price Schedule and in Indian Rupees (INR). The Spare Parts Stores/facility to be operated by the Supplier shall be GST registered storage facility or else the supplier will have to get the Stores/facility registered with GST authorities at least before commencement of Spares Cost Cap in the 2nd year of operation of the first equipment commissioned.

iii) The supplier shall submit the comprehensive Price List at least 6 months prior to the 2nd year of operation of the first equipment commissioned (in hard copy duly signed as well as in soft copy), covering all the spares and consumables and assemblies / sub-assemblies etc. required during lifetime of the equipment to CIL. CIL will examine the same with respect to any other Price List, if available, applicable on the first date of applicability like Depot Agreement Price List / RC prices etc. and after its approval, circulate the approved Price List to the concerned subsidiary HQ and mines/projects. This list may be different from the Depot Agreement price list to the extent that the Price List under Spares Cost Cap will be comprehensive one including all bought out items, oils and lubricants etc. whereas the Depot Agreement Price List normally excludes these items. The approved Price List will be valid at least for a period of one year from its applicable date. If any item appears in this Price List as well as in the Depot Agreement Price List / RC price list / any other approved Price List of the same firm for other equipment, the lowest price will be applicable against all such lists. The time period for such circulation of approved Price List shall be about 3 months prior to the 2nd year of operation of the first equipment commissioned. In case of delay in circulation of the approved Price List, the Supplier may continue to supply the items as per the Price List submitted to CIL but these provisional rates will be regularized subsequently when the approved Price List is circulated by CIL.

iv) For subsequent years during the contract period, the supplier may continue with the same approved Price List or submit the next Price List (in hard copy duly signed as well as in soft copy) which may include items with alternate part nos., if any. However, no new item shall be included. If a new Price List is submitted, it should be submitted at least 6 months prior to the applicable year of operation of the first

equipment commissioned to CIL along with the statement of increase / decrease in item-wise prices from the previous approved price list with proper justification for increase in prices. CIL shall examine the same especially in relation to the increase with the previous year etc. and after its approval, circulate the approved Price List to the concerned subsidiary HQ and mines/projects. The time period for circulation of approved Price List shall be approximately within 3 months after receipt of the new Price List. In case of delay in circulation of the approved Price List, the Supplier may continue to supply the items as per the previous approved Price List in operation but these provisional rates will be regularized subsequently when the approved Price List is circulated by CIL.

Further, if for the compliance of any statutory, regulatory or environmental regulation or guidelines from DGMS or other institutions / GOI, the new parts for compliance of such regulations may be included in the price list with documentary evidence related to implementation of such guidelines. Otherwise, no items will be included.

v) For items, which are not covered in the approved Price List(s), but need to be supplied, the supplier shall supply the same free of cost during the complete period of contract.

vi) The Supplier will assess the requirement of spares and consumables for the particular year of operation and submit the list of spares and consumables including quantity to the Excavation Engineer In-Charge of the Mine/Project, 3 months in advance of the respective year of operation. The Excavation Engineer In-Charge, after verifying that the same is in order, shall send the same to the Excavation Engineer In-Charge of the Area. The Area, shall proceed to place an Open Provisional Purchase Order, based on the prices as per available Price List, through the Area Purchase Cell on the Supplier within the Spares Cost Cap Value of the particular year. For placing the Open Provisional Purchase Order by the Area Purchase Cell, no formal approval is required. If any item is not appearing in the Price List, it will be supplied on FOC basis.

vii) Once the Open Provisional Purchase Order is placed by the concerned Area Purchase Cell, it is the responsibility of the Supplier to ensure that these spares and consumables are made available to the mine / project as and when required.

viii) Fortnightly Inspection Report(s) regarding the health of the equipment including all safety features etc. will be prepared jointly by the Supplier and the Excavation Engineer-In-Charge of the Mine/Project for short term and long term planning for requirement of spares and consumables and these joint Inspection Reports will be the basis for assessment and confirmation of requirement of spares and consumables under Spares Cost Cap.

ix) Based on the requirement generated as per the fortnightly Inspection Report(s), the Area Excavation Engineer-in-Charge will send to the Area Purchase Cell, the

complete details of those spares and consumables against the Open Provisional Purchase Order, which are required for the month/quarter depending on the nature of equipment. The Area Purchase Cell shall thereafter proceed to place Formal Order on the Supplier within 10 days with the concurrence of Area Finance and approval of Area GM. In case the items are not covered in the Open Provisional Purchase Order but the prices are indicated in the approved Price List, the same may also be taken into consideration as long as the limit for Spares Cost Cap is not exceeded. The delivery of the spares and consumables to the Regional/Area Stores shall be made thereafter within 15 days. The materials shall be routed through Regional/Area Stores of the concerned Area (not unit stores / charged off stores). The procedure for acceptance of materials, lifting of materials from Stores, use in the machine and payment to be made shall be as follows:

a) The supplier will supply the requisitioned spares and consumables along with copies of GST Invoices, delivery challans etc. to the Consignee duly indicating part no. description, quantity etc.

b) The Regional/Area Stores will enter the receipt of the items in the concerned register and arrange for inspection of the items by the concerned Area Engineer(s) or his authorized representative(s). On acceptance of the material, the Stores Receipt Voucher (SRV) will be raised by the Regional/Area Stores. The materials will then be moved from the Receipt Section to the Issue Section.

c) Based on requisition from the concerned Mine/Project Engineer(s), the Regional/Area Stores will issue the materials and complete the paper formalities for issue of the items.

d) Once the materials have been issued, the concerned Mine/Project shall keep record of the same when the material is used on the machine. All concerned details shall be recorded in a register (which may be in electronic form) to be maintained by the Excavation Engineer In-charge of the Mine/Project.

e) The Regional/Area Stores after issuance of SRV, shall send a copy of the SRV and other related documents like invoices, guarantee/warranty certificate etc. to the Area Finance dept. for payment purposes. A copy of the same will also be sent to the concerned Area Excavation Dept. for maintaining the records in respect of Spares Cost Cap value.

f) The Finance dept. at the Area will then verify the documents and thereafter send the same to the Paying Authority of the concerned subsidiary for payment. Once the payment is made, the Excavation dept. at the subsidiary / area / mine /project will be informed so that the equivalent amount may be reduced from Spares Cost Cap value for the particular year.

x) The unutilized Spares Cost Cap value for each year will be carried forward to the subsequent year till completion of contract. However, the unutilized value of Spares Cost Cap, if any, at the end of the contract, will lapse.

xi) In case of total value of spares and consumables for a particular year exceeding the Spares Cost Cap of a particular year, the additional spares and consumables shall have to be supplied on FOC basis. The procedure for accounting and maintenance of records to be followed for FOC supplies will also be the same as above.

However, in case the working hours of the equipment cross more than 10% of the maximum working hours in a particular year (i.e. 5500 + 550 = 6050 hours), the Spares Cost Cap value of the immediate succeeding year may be utilized in the immediate preceding year to the extent of 10% (ten percent) value of the succeeding year for the purpose of overhaul of major assembles. However, payment of such cost of spares and consumables shall be paid only in the subsequent year.

xii) The supplier shall stock & maintain sufficient inventory of spares and consumables, required for all kinds of maintenance and repairs of equipment during complete contract period.

xiii) The payment during the relevant year of operation shall be made as per the prevailing approved price list for Spares Cost Cap only. The payment by the Paying Authority of the concerned subsidiary shall be made within 21 days of receipt and acceptance of materials at Regional/Area Stores and after receipt of documents stipulated in the SCC.

xiv) Statement of consumption of spares and consumables with quantity and value for each month of the respective year of the Spares Cost Cap, shall be signed by the Mine/Project Excavation Engineer-In-Charge and the concerned representative of the Supplier. It shall be maintained by the Mine/Project and a copy of the same shall be sent to Excavation Engineer-In-Charge of the Area and Subsidiary HQ. The annual report of the consumption shall be maintained by the Excavation Engineer-In-charge of the Subsidiary HQ.

C.6.2.2 In the event that the spare parts and consumables, as recommended by the Supplier, in any way fall short of actual requirements during the period for which they are said to be adequate, the supplier shall provide such additional spare parts and consumables as are necessary at the final destination. Such additional spare parts and consumables shall be provided by the Supplier to the Purchaser beyond the Spares Cost Cap value free of all cost and shall be transported to Site by air freight internationally and by air, rail or fast road transport within India.

C.6.2.3 In the event that the spare parts, Insurance items and consumables, as recommended by the Supplier, are in excess of actual requirements, the Purchaser will require the Supplier to repossess or repatriate or otherwise dispose of such excess spare parts and

consumables in exchange for payment to the Purchaser of the Contract landed Price (with taxes and duties) of the spare parts and Consumables concerned.

The Purchaser shall notify the Supplier, in writing of its requirements under this Clause within thirty (30) days of completion of the contract period referred to in Clause C.6.2.1 hereof.

C.6.2.4. In the event that operation of the equipment is inhibited or frustrated as a direct result of lack of spare parts and consumables, pursuant to Clause C.6.2.2 hereof, then the period referred to in Clause C.6.2.1 hereof shall be extended by a period of not less than the period during which operation as aforesaid was inhibited or frustrated.

C.6.2.5. The supplier shall not be liable for the supply of additional spare parts and consumables, nor to extend the period referred to in Clause C.6.2.1 hereof, if and to the extent that, additional Spare Parts and Consumables are required by reason of unforeseen accidents, negligence or misuse on the part of the Purchaser.

C.6.2.6 The assessment of the Supplier of the spare parts requirements shall be based upon the expected working hours per year as defined in the individual Equipment Specifications included in the Technical Specifications.

In accordance with the provisions of clause D.8, Part-D of the technical specifications the expected working hours per annum is 5,000 (Five Thousand) hours. The expected working hours per annum as indicated are only approximate hours and may vary ± 500 hours.

Total duration of contract will be 11 years irrespective of working hours.

In case, actual working hour exceeds the expected total working hours of the equipment during the tenure of contract period, then consumable items (the details of the consumable items are to be declared by the bidder in the offer / Spares Cost Cap) will be procured by the purchaser from the Supplier.

C.6.3. **Emergency Spare Parts**

C.6.3.1. Emergency spare parts required by the Purchaser to repair breakdowns shall be dispatched to the site by the Supplier by the fastest, practicable means as directed from time to time by the Purchaser.

C.6.3.2. For the purpose of Clause C.6.2.6, "Emergency Spare Parts" shall mean those spare parts or components required by the Purchaser to repair any item of Equipment supplied pursuant to the Contract in the event of a breakdown not attributable to a failure covered by guarantee or a failure of the Supplier to provide adequate Spare Parts or Consumables.

C.6.3.3 Payment in respect of the supply and delivery of such Emergency Spare Parts shall be made promptly, retrospectively, by the Purchaser, in a manner consistent with the terms of payment described in the contract.

C.6.3.4 **Lifetime Spare Parts**

The Supplier undertakes and guarantees to produce and maintain stocks, to be available for purchase by the Purchaser under separate agreement, of all Spare Parts and Consumables as may be required for maintenance and repair of the Equipment throughout its working life. In the event that the Supplier wishes to terminate production of such Spare Parts, the Supplier shall:

(a) give not less than six months' notice in writing of its intention to terminate production in order to permit the Purchaser reasonable time in which to procure needed requirements; and

(b) immediately following termination, provide to the Purchaser at no cost, manufacturing drawings, material specifications and all necessary permissions to facilitate manufacture of the Spare Parts elsewhere.

(c) any change in part number or superseded part number should be informed to the HOD of Excavation department / MM department of subsidiary Hqrs. and the project site wherever the equipment is operating.

In any event, the Supplier shall not seek to terminate manufacture of spare parts for a period of not less than 15 years from taking over or the life time of the equipment whichever is later.

C.6.4 Oils, Lubricants and Fluids

Details are given in Annexure – 4(c).

C.6.5 General

C.6.5.1 Nothing in this Clause C.6 shall relieve the Supplier of any Guarantee, Availability, Performance or other obligations or liabilities under this Contract.

C.7 Guaranteed Availability Provisions:

Equipment	Minimum Annual Guaranteed Percentage (%) Availability		
20.13 CuM (Bucket Struck Capacity) Electric Rope Shovel [Make: Joy Global Surface Mining Inc, Model: 2300XPC]	1st to 5th Year	6th to 9th Year	10th to 11th Year
	85%	84%	83%

C.7.1 Introduction

C.7.1.1 The Supplier shall guarantee that the Equipment supplied pursuant to this Contract shall be available for use by the Purchaser and shall meet the performance criteria specifications at the level and in accordance with the terms and conditions of the Availability Guarantee herein contained.

C7.1.2 Where Equipment supplied under the Contract fails to meet the criteria of the Availability Guarantee, the Supplier shall, at its own cost, provide suitably qualified and experienced personnel at Site to demonstrate to the Purchaser's satisfaction that the required level of availability can be achieved and maintained.

C.7.1.3 The Supplier shall provide the Services of such personnel at Site within seven (7) days of notification by the Purchaser that the availability criteria have not been met in any one (1) month.

C.7.2 Guarantee

C.7.2.1 The Supplier shall guarantee that the Equipment supplied pursuant to the Contract shall be available to the Purchaser at the level hereinafter defined to perform to criteria of not less than that defined in the Technical Specifications incorporated in the Contract.

C.7.2.2 The Supplier shall guarantee that the Equipment shall be available to perform its duty to minimum criteria and to the minimum availability percentage level as defined in the individual Equipment specifications included in the Technical Specifications.

The method of assessment applied shall be as follows:

Method of Assessment:

The following calculation shall determine the availability of the Equipment:

$$\%\ \text{Availability} = \frac{\text{Scheduled Available Time} - \text{Downtime}}{\text{Scheduled Available Time}} \times 100$$

Scheduled Available Time shall equate to 24 hours daily.

Downtime:-

Downtime shall mean all hours of work lost due to mechanical, electrical or other failure, including:

a) routine servicing and maintenance in accordance with the manufacturer's published recommendations, including :

Changing oils, oil filters and air filters; lubrication; changing identified consumable or wear parts.

b) planned preventative maintenance programs;

It shall not however include:

I. damage due to abusive use or incorrect operation methods by the purchaser;

II. accidents;

III. strikes or stoppage of work by the Purchaser's personnel;

IV. natural disaster;

V. lack of Spare Parts not attributable to a failure of the Supplier.

Note – For (I) & (II), a joint inspection report will be prepared with supplier within 3 days from the date of occurrence of incident and repairing works will be done in consultation with supplier

Downtime shall also specifically include all hours lost due to failures determined to be guarantee failures.

The Supplier shall provide a schedule of maintenance required to carry out (a) and (b) above for the contract period of operation and shall state the number of hours required to carry out each maintenance task. The time stated shall, with the agreement of the Purchaser, form the basis of the assessment of the availability.

This schedule of tasks and time will be reviewed periodically by the Purchaser and the Supplier, jointly, to monitor the practicality of the schedule.

The Purchaser will assist the Supplier, without relieving the Supplier of any other obligations under the Contract, to achieve the guaranteed availability by:

1. Providing normal and proper maintenance, including preventative maintenance in accordance with the Supplier's standard/published recommendations, and making all necessary repairs using only spare parts provided by the Supplier in accordance with the requirements specified in part C6.
2. Providing co-operation to all Suppliers' authorized representatives, complying with all reasonable procedural suggestions to improve efficiency of machine operation or reduce downtime.
3. Where appropriate, providing and maintaining such conditions as:
   - Proper Electrical Supply
   - Terrain Area
   - Bench Preparation
   - Reasonable Floor Conditions
4. Providing all Suppliers' authorized representatives access at all reasonable times to the machine service and repair facilities.
5. Maintaining a logbook for each shift wherein the working hours, breakdown hours, maintenance hours, idle hours, etc. shall be recorded. This record will be available for examination and signature by the Supplier's representative.

C.7.3 Effect and Duration of Guarantee

C.7.3.1 This Guarantee shall become effective on the day on which the Equipment is commissioned at the Site. Commissioning shall be evidenced by the issue of the Purchaser's Acceptance Certificate.

C.7.3.2 This guarantee shall remain effective for the entire contract period from the date of commissioning irrespective of the hours operated by the Equipment during the period of the guarantee.

C.7.3.3 Compensation for not achieving Guaranteed Availability

In the event that Equipment fails to achieve the Availability herein provided, measured over each twelve (12) month period, the Supplier shall be liable for and pay to the Purchaser, as liquidated damages, a sum equal to as indicated hereunder for each equipment against the PBG / extended SDBG / bills submitted by the bidder as per clause-2 of SCC

a. 1% of the delivered landed price of the equipment including the Spares Cost Cap for the year in which the machine could not achieve guaranteed availability for reduction in every percentage or part thereof from the Guaranteed Availability for the first 5%.

b. 10% of the delivered landed price of the equipment including the Spares Cost Cap for the year in which the machine could not achieve guaranteed availability for reduction beyond 5% from the guaranteed availability.

Note: Whenever deductions for unsatisfactory performance of equipment are made within the tenure of the PBG/extended SDBG/amount held back as PBG, the amount deducted, from the PBG/extended SDBG/amount held back as PBG, should be replenished within a month in order to ensure that the original value, of the PBG/extended SDBG/amount held back as PBG, remains the same.

C.8 Deemed Breakdown

When the supplier is unable to supply the replacement of a failed part during the contract period, and if the machine is commissioned by using the spares from the stock of the project, the period after 21 days till the supplier replaces the part shall be treated as 'deemed breakdown' (the credit for keeping machine available shall not be given to the supplier.)

The supplier shall not in any way be allowed to take out spare parts from other equipment, which are under breakdown and covered within the scope of this contract. However, CIL, in the interest of work, reserves the right to advise the supplier to commission the breakdown equipment covered under this contract by taking out spare parts from other breakdown equipment. Nevertheless, during this period also, the equipment shall be treated as 'deemed breakdown' till the supplier replaces the spare parts.

C.9 Composite-warranty/guarantee

The supplier shall warrant that the equipment supplied under this contract is:

a) In accordance with the contract specifications.

b) The equipment shall have no defects arising out of design, material or workmanship & the complete equipment shall be warranted for 12 months from the date of commissioning. Any defect arising observed on this account will have to be attended immediately.

c) The supplier must ensure that there is no major breakdown due to manufacturing / design defects during the warranty period. In case such breakdown occurs, the purchaser reserves the right to extend the warranty period suitably.

The warranty shall cover for total equipment so that comprehensive responsibility lies only with the equipment supplier although components may be supplied by different suppliers to the Supplier.

C.10 Quality Assurance

C.10.1 The Supplier should furnish in detail its quality assurance plan for various stages of manufacture. The quality assurance plan shall be of the manufacturing plant where the bidder proposes to manufacture the equipment. The Quality Assurance plan shall comply with an internationally recognized quality assurance standard i.e. ISO 9000:2015 or its equivalent.

C.10.2 The Supplier shall provide facilities to Purchaser or their authorized representatives for progress inspection during manufacture at his works and furnish all test data available in this regard for quality control, both for bought-out items and his own manufactured items.

C.10.3 The Purchaser or its authorized representative, when so required by him, shall also be provided with samples of "bought-out" materials for the purposes of undertaking independent tests, which independent tests shall be at the expense of the Purchaser. **Details are given in Annexure – 4(d).**

Part D – EQUIPMENT SPECIFICATIONS

Equipment Specification of 20.13 CuM (Bucket Struck Capacity) Electric Rope Shovel [Make: Joy Global Surface Mining Inc, Model: 2300XPC]

D.1 Scope of Specification:

This specification is intended to cover the technical requirements for the design, manufacture, testing, delivery, on-site erection and commissioning of a self-propelled, crawler mounted, Electric Rope Shovel of 20.13 CuM (Bucket Struck Capacity) having bottom discharge bucket, conforming to relevant SAE/equivalent standard.

D.2 References:

The following Indian/International Standards as per latest amendment are referred to in, and form part of, the Specification. The superseded or equivalent standards, if any, to any of the following IS/ISO standards if offered are to be supported by documentary evidence in form of copies of the equivalent standards certifying that offered standards are identical to the corresponding IS/ISO standards of NIT.

IS/ISO Ref.	Description
IS/ISO 2867	Earth-moving machinery - Access system
IS/ISO 3457	Earth-moving machinery - Guard and Shields- Definitions and specification
IS 11252/ISO 6682	Earth-moving machinery - Zones of comfort and reach for controls.
IS/ISO 6405 : Part 1	Earth-moving machinery - Symbols for operator controls and other displays - Part 1 : Common Symbol
IS/ISO 6405 : Part 2	Earth-moving machinery - Symbols for operator controls and other displays - Part 2 : Specific symbols for machines, equipment & accessories
ISO 7000 / IEC60417	Graphical symbols for use on equipment
IS/ISO 6750 : Part 1 : 2019	Earth-moving machinery - Operator's Manual - Part1 : Contents & Formats
ISO/ TR 6750-2	Earth-moving machinery - Operation and Maintenance - Operator's Manual - Part2 : List of references
IS/ISO 10968	Earth-moving machinery - Operator's control
IS/ISO 20474 Part 1	Earth-moving machinery - safety - Part1 : General requirement
IS 17055 : Part 12/ ISO 20474-12	Earth-moving machinery - safety - Part12 : Requirement for cable excavators
Other IS/ISO standards mentioned in the specification of individual system of the equipment	

D.3 Design Criteria:

The shovel shall be capable of continuous digging for protracted periods on a system of 03 (three) shifts each of 8hrs duration per day throughout the year in hard, highly abrasive sandstone/ rock having average density of 1800 kg/ cum after blasting.

The ER shovel 20 CuM shall be suitable for 2:1 heaped loading of rear dumpers with capacities ranging from 190T to 220T. The shovel shall have the following working ranges:

Sl. No.	Description	Range
a	Maximum cutting height	not less than 13.25 m
b	Maximum cutting radius	not less than 18.50 m
c	Maximum dumping height(Door open)	not less than 8.00 m
d	Dumping radius at maximum height	not less than 16.00 m
e	Dumping height at maximum radius	not less than 5.50 m

D.4. Mechanical Specification:

D.4.1 Dipper:

The Rope Shovel shall be supplied with a hard faced, heavy-duty bottom discharge rock dipper of 20.13CuM struck Capacity as defined by the Society of Automotive Engineers (SAE) Rating/equivalent standard.

The specific weight of steel used in construction of bucket shall be not less than 7800 kg/ cum.

All consumable items of the bucket, including tooth points, shanks/ tooth adapters etc. are to be supplied along with the dipper. The tooth points, shanks, etc. should be wear resistant / hard faced and should have proper, durable, easily removable and shock absorbing type attachment with the dipper. The latch bar and lever should be of heavy-duty type.

Details are given in Annexure-4(p)

D.4.2 Boom & Dipper Handle:

The shovel boom and dipper handle should be rugged, durable construction of high strength impact resistant low alloy steel and free from any stress concentration. The design must take care of all forces i.e. bending, torsion, compression etc. encountered during operation of the shovel. Shock absorbers shall be incorporated in the boom to absorb the impact of the dipper or suitable arrangement shall be provided to absorb the shock and prevent dipper hitting the boom. Stoppers of suitable strength to be provided at the other ends of dipper handle.

D.4.3 Boom Point Sheaves:

The boom point sheaves shall be large of rugged construction, and mounted on low maintenance, anti-friction bearings / bushings, having auto lubrication facility.

Walkways with handholds shall be provided to allow easy access to the boom point sheaves.

D.4.4 Crawler Mounting:

Crawler frames shall be heavy welded box section design with bolted fit to car body. The

crawler side frames and load rollers shall be of sufficient strength to withstand the high loads, which may occur due to uneven ground conditions. They shall be of welded construction and preferably stress relieved.

The drive sprocket should be a single piece / segmented type and a reliable track tensioning arrangement should be provided. The front idler, load rollers, rear idler shall be mounted on low maintenance, anti-friction bearings/bushings. Crawler shoes shall be heavy duty and designed for ease of replacement whenever necessary.

D.4.5 Lower Frame:

The lower frame shall be a single unit of heavy welded high strength low alloy steel structure construction, designed to withstand repeated high loading under difficult digging conditions.

Suitable means of access with removable covers shall be provided for ease of maintenance.

The roller circle shall have lubricated rollers and be fitted with sealed bearings/bushings or are lubricated with open gear lubricant.

The ring gear shall be of high alloy steel for optimum wear resistance.

D.4.6 Propel:

An independent propel system for each track shall be provided, allowing for counter rotation. Propel brakes shall be provided to stop the machine during any travelling condition and shall be interlocked with the travel controller to prevent travel until the brakes are released.

D.4.7 Revolving frame:

The revolving frame shall be strong rigid unit of heavy section good quality high strength alloy steel. The design and manufacture of the frame must ensure proper and uniform load distribution. Suitable machined pads should be provided along the frame of mounting and aligning the various drive units and other accessories.
Mounting lugs for the boom and gantry should preferably be provided for the required counter-balance weight.
Ballast boxes of sufficient size and proper design shall be provided for required counter balance. The ballast shall be of cast iron ball / grinding media having diameter range as per design requirement.
The purchaser (concerned subsidiary) shall provide the ballast in time to avoid the delay in commissioning.

Ballast Box Detail – Annexure -4(c)

D.4.8 Machinery House:

The machinery house shall be made of steel sheet supported by a steel structure and shall cover the entire machinery deck. It shall be fitted with a filtered pressurized air system for ventilation, cooling and to prevent entry of dust into the machinery house with auto reversing fan to vent out

dust accumulated in the filter avoiding manual intervention. The machinery house shall be designed to give ready and safe access to personnel and equipment for inspection and maintenance. In particular, sufficient space shall be provided around all main drives and sub-assemblies for ease of inspection, maintenance and removal. Roof panels shall be strategically located to direct crane picks of major deck mounted components as required.

Rollers or suitable arrangement shall be provided as rope guides at the entrance to the machinery house for all ropes to prevent any abrasion and damage.

Inspection covers shall be provided on all gear-cases.

Non-slip type walkways and catwalks with handrails shall be provided in and around the machinery house, the operator's cab and service platforms shall comply with IS/ISO 2867.

D.4.9 Main Machinery:

All gears and shafts shall be manufactured from high quality steel and mounted in anti-friction bearings.
Gears and pinion should be suitably heat-treated.

Inspection covers shall be provided on all drive gear-cases.

All functions, such as Crowd, Hoist, Swing and Propel shall be provided with 'ON' type brake so that the brakes are applied automatically, in case of electrical power failure. All main drive motors shall be equipped with disc type brake.

D.4.10 Air Compressor:

Sullair, LLC , USA / Quincy Compressor, USA make air compressor of sufficient capacity with all required safety features shall be provided.

Test certificate of the air tank as per DGMS requirement to be submitted before commissioning.

D.4.11 Lubrication:

A centralized PLC based electrically operated, double / single line (as per manufacturer system design) automatic lubrication system shall be provided to service all lubrication points on the machine, including those points where use of high viscosity lubricants is required.

The lubrication system shall be fully monitored to ensure adequate lubricant flow is maintained to all points of major parts. The monitoring system shall, wherever necessary, be interlocked with the relevant control circuits to prevent damage due to lack of lubrication at any point. Alarms and indications for failure of lubrication system shall be provided and shall be repeated on the instrument/ test panel.

Lubricant containers of adequate size shall be located in a separate room/enclosure inside the machinery house and be large enough to cater lubrication needs for continuous operation between refills. Sufficient numbers of suitable capacity lubricating pumps shall be provided.

The containers shall be fitted with suitable arrangement for cleaning and refilling or replacement with fresh new barrels.

All lubrication lines and injectors shall be protected from damage. Location of all injectors shall be such that these can be conveniently inspected and repaired. The lubrication lines to the boom point should be properly guided. Flexible lines shall only be used where there is relative movement between parts and for final connection to movable components. Preferably steel piping shall be used for long runs and shall terminate in steel junction blocks or rigidly mounted bulk head connectors to prevent disturbance to steel piping when flexible hoses are replaced.

Fire/heat resistant/ retardant hydraulic hoses shall be provided in lubrication system. The vent valve on the top of hydraulic tank, if provided, shall be able to be removed without any tool. Lubricants recommended shall be of reputed make with Indian equivalent, if available.

Suitable motorized and manual Transfer Pumps as per design of the manufacturer to prevent contamination and mixing of different grade of lubricants.

Details given in Annexure – 4(f).

D.4.12 Operator's Cab:

A fully insulated, high-visibility, rigidly mounted, sound-suppressed, vibration-suppressed, FOPS operator's cab with standard air conditioning system containing environmentally safe refrigerant, tinted safety glass should be so positioned to facilitate a clear and unrestricted view of the travel & work areas of the machine necessary for its intended use. The performance criteria shall be in accordance with IS/ISO 5006. The sound level inside the cab shall be below 85 dBA while the equipment is operating, and with the door closed.
All operating controls, all monitoring, working signals and emergency power isolation switch to trip the field switch should be conveniently located in consoles within easy reach of the operator and shall comply with IS/ISO 6405 Part-1, IS/ISO 6405 Part-2, IS11252/ISO 6682 & IS/ISO 10968. The operator's cab shall be provided with an emergency exit gate in addition to primary access path to the cabin.

The operator's seat shall be ergonomically designed suspension type, which can be adjusted for operator's height and weight. The seat shall provide vertical and fore / aft adjustment / adjustable joysticks to allow custom fitting of the joysticks to individual operators for ease of operation. Seatbelt for operator with reminder shall be provided. The console shall have features an expandable media mounting post to which the Graphic User Interface (GUI) is mounted. The GUI shall have menus and information screens that allow the operator to display necessary basic information and perform various operation functions. Side / rear vision cameras / combination of rear and side vision camera shall be provided in the machine with remote display in operator's cab. The camera system shall also cover all the blind spots.

The air conditioner shall be heavy duty off-the-road equipment application type. The climate control ducting in the cab shall be located above and/ or below the operator. There should be controls to allow regulation of air flow and auto - defrosting arrangement. A cooling fan and a suitable operator's cab heater shall also be provided.

Horn / Alarm shall be provided on outer side of revolving frame, which shall be operated from operator's cab.

There should be a two-way communication system (preferably a wired communication system) other than mobile between operator's cab and the machinery house.

D.4.13 Guards & Shields:

Adequate guards and shields, which comply with IS/ISO 3457, shall be provided throughout the shovel.

D.4.14 Boarding Ladders:

Boarding ladders shall be provided on the both sides of the machinery house.

The ladders shall be equipped with suitable interlock so that when the ladder is put/pull down, the interlock switch shall control the propel and swing mechanism to prevent any rotational or travel movement of the equipment for safety of site people.

D.4.15 Fire Extinguishers:

An adequate number of fire extinguishers shall be provided at strategic points on the shovel, suitably mounted in heavy-duty brackets for ease of removal.

The extinguishers shall be both dry chemical powder (DCP type) and CO_2 type with a minimum capacity of 5 kg and shall comply with Indian Standard IS: 15683 with latest amendment.

Bidder shall submit a Certificate as an undertaking that, a valid Test Certificate (valid as on the date of commissioning of the equipment at site) shall be submitted at the time of supply of equipment along with other documents, for fire extinguisher including materials and chemicals used in fire suppression system from any Government or Government approved Laboratory in compliance with relevant Indian Standards as per DGMS (Approval) Circular No. 02 dated 08th July 2013.

Note : Periodical refilling is to be done by the supplier.

D.4.16 Automatic Fire Detection and suppression system:

A suitable automatic fire detection and suppression system of reputed manufacturer (indigenous or imported), shall be provided on the equipment complying DGMS (Tech) Circular No. 06 of 2020 dated 27.02.2020.

- Automatic fire detection and suppression system suitable for fire class A, B & C inside machinery house & below Deck of shovel.
- Bidder requires submitting a schematic drawing indicating Plan of the system with relative position of items to be protected from fire.

- Fire detection and suppression of fire may be either total gas flooding or dry chemical powder base spray through nozzle strategically through an actuation cartridge, located to the targets, or combination of the two.
- Fire suppression agent used in neighborhood of electrical appliances shall be clean and shall not damage electrical / electronic component.
- Fire suppression system shall be non-hazardous & safe for human and environment friendly. It should have quick cleanup and environmental sustainability.
- The sensor shall send the signal to the control unit integrated with a LED and/or alarm indicator to show the status of the detector.
- The system shall operate only in active fire area to supply adequate quantity of fire suppressing agent for effective firefighting and to avoid re-ignition and suitably designed to extinguish the fire as per class of fire (A, B & C) of that location.
- The system shall be actuated automatically by detection of fire and control unit to be installed within the Operator's cabin for automatic system operation.
- The system shall also have provision of actuating manually.
- The system shall provide facility for self-checking /testing/inspection without operating.
- The data regarding health & event shall be logged in the system with date & time, which can be downloaded to PC/ Laptop in latter stage with memory capacity to store data of at least 15 days.
- The system should be capable for efficient operation in the extreme mining conditions with dust, dirt, water & vibrations.

The high pressure storage vessels and hoses, if used with fire- fighting and fire suppression systems, shall conform to the requirements stipulated in the relevant Indian standards.

Bidder shall submit a Certificate as an undertaking that, a valid Test Certificate (valid as on the date of commissioning of the equipment at site) shall be submitted at the time of supply of equipment along with other documents, for AFDSS including materials and chemicals used in fire suppression system from any Government or Government approved Laboratory in compliance with relevant Indian Standards as per DGMS (Approval) Circular No. 02 dated 08th July 2013.

Note: Periodical refilling is to be done by the supplier.

Details given in Annexure – 4(g).

D.5 Electrical Specification

D.5.1 Power Supply:

The electrical power supply to the machine will be 6.6 kV (± 10 %), 50 Hz (± 3 %), 3 phase. This will be provided via a flexible trailing cable from the mine electrical distribution network.

All high-tension electrical equipment in the shovel shall be capable of withstanding 12 kV switching transients to protect against a rise in potential across any one phase of the supply.

This protection shall be provided in the shovel by suitable means preferably either by providing Lightening arrestor of requisite class or with the help of surge suppressor or combination.

In addition suitable arrangement shall be made in the field switch to trip at specific over/under voltage condition. Surge suppressors are also to be provided in the field switch as additional protection.

The supply shall be connected to machine via minimum four collector rings of adequate capacity.

A high voltage distribution switchboard shall be provided to supply the various machine drive, control and auxiliary sub-circuits. Each switch forming part of switchboard and /or controlled HV Motor and Transformer shall be fed from an on-load isolator, an electrically closed and tripped, vacuum circuit breaker / contactor and an appropriate control push buttons as per provision of Indian Electricity rule 1956 & DGMS requirement. Auxiliary Transformer to be fed from a fused HV grounding isolator. Indicators such as Main on, blown fuse indicator, PF meter, voltmeter, ammeter, elapsed time meter, start & stop button, emergency trip and alarms shall be provided.

D.5.2 Drive system:

AC electrical drive system shall be provided for motion control of the shovel. The AC drive system must be of latest established design, so that all the functions of the equipment i.e. Hoist, Crowd, Swing and travel / propel operation have optimum output with high mechanical efficiency, low maintenance cost and improved maintainability and component life. The drive shall be IGBT based VVVF active front end type drive or of equivalent / higher technology.

All motions of the machine shall be controlled by a variable torque/speed drive control system. The Supplier shall specify the proposed method of drive control, which is expected to utilize modern electronic techniques. The design of the drive system should ensure that in the event of any failure the machine is brought safely to rest.

Each drive control system shall be supplied from a suitably rated starter control panel with VCB / Suitable circuit breaker and providing overload, short circuit, single phase, earth fault, under & over-voltage protection, reverse sequence protection and any other protection as may be required for the supplied machine.

All drive systems shall be capable of being remotely started from a control/instrument panel located in the machinery house. A remote stop facility shall be provided in the operator's cab. The control circuits for each drive shall be housed in a steel cabinet provided with internal and external illumination. The cabinets shall be dust and vermin proof. Suitable cooling fans with dust filtering facilities for the cabinets shall be provided. The cabinets shall, preferably, be located on the operator's side of the machine.

Anti-condensation heaters shall be fitted to all major drives and electrical cabinets wherever applicable.

All control circuits shall operate up to 125 V (AC/DC), single-phase 50Hz. with earthed neutral. Lighting circuit maximum at 250V, midpoint grounded with dipolar circuit. The electrical supply for other items shall be either 415V, 3 phase, 50Hz, 220V L-N or 110V phase to phase, 50Hz, single phase with earthed neutral confirming standards and IE rule.

Control circuit transformers shall be protected on their primary side by isolation switches, fuses or circuit breaker. Control circuits shall be protected on one side of the transformer by a fuse with the opposite side connected to earth. All devices which operated at 415/220/110V, 3 phase or single phase, 50 Hz shall be provided with earth leakage and provided with rugged protection as appropriate conforming standards.

All cables used in the machine shall be of the fire resistant type.

Suitable rugged cooling system shall be provided for the electrical control cabinets as per design criteria of the manufacturer.

Details given in Annexure – 4(h).

D.5.3 Motors:

All motors shall be continuously rated for the duty specified and suitable for mining service duty. The AC drive motors should have high torque for fast acceleration / deceleration to ensure fast operating cycles. The insulation should be rated to a minimum Class – F insulation. Motors of suitable ratings as per annexure, with insulated bearings, force ventilated, inbuilt with needed sensors (like bearing temperature, winding temp etc.) and with suitable mounted brakes shall be provided.

Rotor shafts shall be mounted on insulated bearings preferably life-time sealed for ease of maintenance.

Terminal boxes shall be fully fault rated and provide for phase segregation of all terminals conforming to Indian or equivalent international standard. An earth connection stud shall be provided.

All AC drive motors shall be provided with temperature monitoring arrangement with RTD's (Resistance Temperature Detectors) incorporated in the windings and in the bearing housing. The monitoring circuit shall be suitably interlocked with the drive control circuit to alarm and trip in the event of an abnormal temperature rise.

Each motor shall have a stainless steel frame type rating plate giving full details including voltage, full-load current, power, frequency, serial number, weight, bearings and their lubricant details.

Details given in Annexure – 4(i).

D.5.4 Trailing cable:

The machine shall be provided with 300 meters of 6.6 kV, 6 core trailing cable of specification as per annexure.

Make: KEI Industries Limited

The trailing cable shall be suitable for operating at 50 degree C ambient temperature and supply should be as per Indian Electricity rule clause 123, sub clause 1 & 6. The cable shall be of the flexible type suitable for use with open pit mining machinery. The trailing cable to be provided only once along with the equipment and bidder shall provide complete technical specification and make in their technical offer.

The cable shall have 3 power cores of equal adequate cross section individually screened with metallic ATC (Annealed tinned copper) wire or specially designed formulated semi-conducting compound, 2 earth cores of equal cross section of minimum size of 50% of size of power core and one pilot core. The cable should have minimum insulation level of 12 kV.

The shovel shall be provided with a weatherproof box termination for trailing cable.

Details given in Annexure – 4(j).

D.5.5 Power Factor Correction and Harmonic Suppression:

The electrical circuit shall have suitable arrangements for power factor correction (if required) to ensure that the average power factor over the full operating cycle is not less than 0.95 lag. The Supplier shall provide a full description of the method of power factor correction proposed.

The electrical circuits shall have adequately designed to have only allowable harmonics as per IEEE519 or with suppression networks (if required) for reducing harmonics and transients to acceptable levels.

Details given in Annexure – 4(k).

D.5.6 Field Switch:

The shovel should be provided with a skid-mounted field switch of ELECTROTEKNICA Products Pvt. Ltd. make. The switch shall be of robust construction suitable for the rugged terrain and the mining conditions for which it will be used. It shall also be dust and vermin proof and protected to withstand torrential monsoon rains. Proper illumination shall be provided within the enclosure.

The switchgear should be of vacuum circuit breaker type with symmetrical rupturing capacity of 150MVA at 6.6 kV. The field switch shall also have earth fault, overload, short circuit, over voltage, under voltage, single phase, earth leakage and reverse phase sequence protection relays. In an emergency it should be possible to trip the field switch from operator's cabin by a push button switch and through inbuilt remote sensor. Provision to trip VCB mechanically and electrically shall also be provided.

Suitable arrangement shall be provided to suppress the damaging over voltage due to switching transients and lightning peaks.

Suitable facilities shall be provided for the termination of supply cables by plug & socket type cable coupler arrangement. Earth connection stud shall be provided on each terminal box and on the main body of the switch casing. It shall be possible to feed through the switch to other similar units. Blank plates and adapters shall be provided to safely seal the feed- through termination against the elements when not in use.

The HV junction Box shall be interlocked with tripping circuit of field switch and HT Isolator panel shall be mounted / placed in such a way that it should be easily accessible for the purpose of maintenance, repair and operation in compliance with Indian Electricity Rules and DGMS circulars.

The Field Switch confirming above specification to be provided only once along with the equipment.

D.5.7 Lighting:

Adequate LED flood lighting and illumination (Minimum 10Lux outside the machine, so as to cover the working area of the shovel and Minimum 30 Lux inside the machine) at strategic points both outside and inside of the shovel shall be provided for visual observation and night shift operation. The lighting fixtures shall be supplied at maximum 220 V AC / DC fed from main / auxiliary transformer (star point grounded). Earth leakage protection is to be provided with lighting circuit breaker.

Equipment shall be provided with emergency lighting system to illuminate inside& outside of the machine for a minimum period of continuous 30 minutes in case of power failure for safety of personnel. The detail of the emergency lighting system is given in the Annexure.

Details given in Annexure – 4(l).

D.5.8 Instrument/ Test/ Alarm Panels:

Instrument/test/alarm panels shall be provided to measure critical parameters of the power and control circuits to assist maintenance and repair operations. As a minimum, indications of the following are to be provided:

- Incoming voltage, current, frequency, power consumption and power factor.
- Loop voltage and current for hoist, crowd, swing and propel motors
- A computer based fault monitoring/alarm facility or similar arrangement shall be provided comprising monitoring circuits, annunciators, fault code indicators & recording, test push-button and "alarm accept" push button. Equipment should be fitted with suitable software based HMI system for quick fault finding and diagnosis.

Typically, monitoring facilities shall be provided for the following:

i) Hoist, crowd, swing and propel motor's, current/over current and voltage
ii) DC bus over-voltage

iii) Motor over-speed for all motions - Hoist, crowd, swing and propel
iv) AC and DC (if any) circuit earth faults
v) Transformer over-temperature
vi) Failure of any point of the Lubrication system
vii) Bearing over-temperature
viii) Air pressure loss
ix) Frequency fluctuation & tripping facility in the event of fluctuation beyond permissible set limit.
x) Power supply error & tripping facility in the event of fluctuation beyond permissible set limit.
xi) Blower motor fault indication
xii) Boom jacking indicator

All instruments provided with the machine shall comply with Indian Standard 1248 industrial accuracy and shall be vibration resistant type.

Comprehensive testing facility shall be provided on all control circuits in the form of jack sockets, screw connectors etc. for the use of test instrument such as X-Y plotters, oscilloscopes, multi -meters etc. Alternatively a computer based comprehensive testing system with the capability for digital interface for remote access shall be preferred.

D.5.9 Transformers:

1100 KVA main transformer and 300 KVA Auxiliary transformer of Hammond Power Solutions Pvt. Ltd., Hyderabad make.
The transformers shall be of reputable manufacture, suitably rated for the duty specified and the operating environment with necessary protection. Auxiliary transformers shall be delta - star connected with star points earthed for each fault protection.

Details given in Annexure – 4(m).

D.5.10 Auxiliary Equipment:

The power supply to any auxiliary equipment shall be either 415V 3 phase 50HZ or 220V/110V, 50HZ, single phase with earthed neutral as appropriate. Care should be taken with the use of single-phase circuits to ensure that the loads are balanced across the three-phase supply to avoid tripping on starter.

Controls for such equipment shall be housed in steel cabinets or wall mounted panels. The cabinet shall be dust and vermin proof. Suitable cooling fans with dust filtering facilities for the cabinet shall be provided where necessary.

Anti-condensation heaters shall be fitted to all cabinets wherever applicable.

Each auxiliary drive motor shall be supplied from a starter controlled panel having suitably rated circuit breakers for each motor, providing overload, short-circuit and single-phase, earth-fault, under voltage protection and reverse phase sequence protection (if necessary) shall also

be provided. Earth leakage protection shall be provided in each system of 415 / 220 / 110V to isolate main feeder in case of current leakage to the ground.

Control circuits of auxiliary equipment shall operate at 220V/110V single phase 50 Hz with earth neutral.

All cables used shall be of fire resistant type.

D.5.11 Limit Switches:

Limit switches/ resolvers / position sensors interlocked with the relevant control circuit shall be provided for the hoist and crowd motions and for the boom lift over travel (Boom Jacking).

D.5.12 Interlocks:

Interlocking shall be provided to allow safe access to all high voltage areas after isolation of the incoming supply to the shovel.

D.5.13 Safety Features

All safety features & devices as per Govt. Of India Gazette notification no. Z 20045/01/2018/S&T (HQ) dated 01.10.2018, DGMS (Tech) Circular No. 06 of 2020 dated 27.02.2020 and any subsequent amendments, if any, including following shall be provided in the equipment. Bidder shall submit a Certificate as an undertaking in this regard that all safety features and devices are incorporated in the equipment.

a. All function cut off switch shall be provided in operator's cabin & field switch.
b. Swing Motor Brake.
c. Seat Belt for Operator with reminder shall be provided.
d. Fire/ heat resistant/retardant hydraulic hoses in place of ordinary hoses to minimize the chance of fire. All the sleeves and conduits where cable/wires are passed shall be fire/ heat resistant.
e. Vent valve on top of hydraulic tank should be able to be removed without any tool.
f. A baffle plate between cold zone and hot zone.
g. Rear vision camera and warning system for Operator Fatigue shall be provided in compliance with DGMS (Tech) Circular No. 06 of 2020 dated 27.02.2020.
h. Protective measures & devices
i. Protection for Electrical and Electronic system
j. Two way communication system other than mobile phone in operator's cabin.

D.5.14. Warning devices and safety signs: -

a. The machine shall be equipped with an audible warning device (horn) controlled from the operator station.
b. Warning system for Operator's fatigue.
c. Audio Visual Alarm (AVA) for reversing
d. Safety signs and hazard pictorials shall be displayed at conspicuous places.

e. Retro-Reflective Reflectors shall be provided on all sides of the machine at suitable positions.

D.6. Ancillary equipment and other requirements

The following shall be provided on each shovel:

a. Air operated/ Electric drive winch motor fitted with drum and rope are part of the equipment provided at suitable location inside machinery house for fitting of hoist ropes.
b. Adequate 440/415 V 3-phase, 50 Hz welding power outlets are part of the equipment located so that welding can be carried out at any point on the shovel.
c. A 440/415 V 3-phase, 50 Hz, Fully thyristerised / inverter type welding machine with accessories suitable for welding and gouging purpose - ESAB make.
d. Adequate 220/110 V, single phase, hand-held inspection outlets, portable hand lamps and all necessary supporting equipment - EVEREADY make.
e. 220/110 V, single phase, portable electric blower with suction attachment and all necessary supporting equipment - BOSCH make.
f. Workbench fitted with vice and tool chest - VE WORKS make.
g. 2 nos. 150T Hydraulic jack – VANJAX make
h. 1 set Pneumatic Wrench of 1 inch drive as well as cassettes of suitable drive size to cover limited clearance nuts/bolts fitted in the offered machine along with various applicable sizes of sockets - IR make.
i. Crowd belt tightening tools - ENERPAC make
j. Center gudgeon nut tightening tools are part of special tools.
k. A suitably programmed laptop (programmer) for loading software in PLCs - DELL/HP make.
l. Portable Infra-Red Temperature Gauge (Digital) - 01 No FLUKE make
m. Digital multimeter-01 No FLUKE make
n. Digital Megger (100V to 1000V) -01 No FLUKE make
o. Digital Megger 5 KV -01 No FLUKE make
p. AC/DC digital clamp meter 2000 A -01 No FLUKE make.
q. Non-contact type tachometer-01 No FLUKE make
r. Digital portable type vibration meter with all accessories – 01 No BASELINE make

D.7 Productivity & Health monitoring system:

The equipment shall be provided with suitable licensed, on-line, real time, monitoring interface facility, compatible for GPS-based transfer of equipment performance data (commonly known as PMS and HMS) to third party equipment management system.

The system shall have measuring points and self-data capturing facility for followings -

i. Working hour, idle hour, based on the duration of a shift for which the equipment is switched on for operation.
ii. Cumulative qty. of material handled (both in terms of Cu. M. & No. of buckets)
iii. Average cycle time for each day
iv. Average swing angle per day

v. Incoming voltage, current, power consumption, frequency and power factor.
vi. All drive circuit loop vital parameters
vii. Transmission / gear box vital parameters
viii. Air / hydraulic system vital parameters
ix. All drive motors / transformer vital parameters
x. Preventive maintenance parameters
xi. Predictive health monitoring parameters.
xii. Additional parameters as per requirement of equipment manufacturer / user

This system shall have suitable memory capacity to store all captured vital parameter data in 6 hours or less interval batch form and all real time exception / error data for at least 30 days period and shall have suitable port to download these data to a laptop / data storage system.

The supplier shall provide the following:

1. There has to be one integrated single online port for capturing all the vital data.
2. The real time interface telemetry port will be provided in the equipment
3. All the data shall be available in the individual form through single port and its communication protocol must be as per global standards.
4. There shall be no additional requirement of any data converter for data capturing like Analog to Digital and vice-versa etc.
5. There shall be integrated on board data management system as explained at point no.3 as above.
6. Permission to third party for interfacing, data collection through online port.
7. Signing of Non-disclosure agreement to protect intellectual property right on either side.
8. To provide full technical support to third party vendor for interpretation and defining parameters for individual alarm to monitor equipment vital data.
9. The HEMM equipment supplier should provide access to data as required by end user without any financial implication to third party.

This interface facility shall be made available till the working life of equipment. However, the supplier shall provide this interface facility during the contract period as a part of contract cost.

To ensure the satisfactory operation of above system, a tripartite agreement shall be signed by the user, supplier and the service provider of OITDS / System Integrator.

Details given in Annexure – 4(x).

D.8 Performance Guarantee:

In accordance with the provisions of clause C 6.2.6 of the technical specifications the expected working hours per annum from 1st year to 11th year are 5000 (five thousand) hours. The expected working hours per annum as indicated are only approximate hours and may vary (+/-) 500 hours.

In case, actual working hours of the equipment exceeds 60,500 [(5500 x 11) = 60,500] hours during the tenure of 11 years (132 months) of contract period, then consumables items as per requirement (the details of the consumable items are to be declared by the bidder in the offer / Spares Cost Cap) shall be arranged by the Purchaser.

In accordance with the provisions of clauses C.7.2.2 and C.7.3.2 of the technical specifications the supplier shall guarantee that the availability of each equipment shall be not less than 85% (eighty-five percent) annually for a period of 1st year to 5th year of operation, 84% (eighty-four percent) annually for a period of 6th year to 9th year of operation and 83% (eighty-three percent) annually for a period of 10th to 11th year of operation from date of commissioning.

During contract period of 11 Years (132 Months), a period of 07 (Seven) days per year shall be allowed to equipment supplier in consultation with project Excavation head, from 6th year to 11th year for each machine for planned maintenance of equipment. This down time [maximum period of 07 (Seven) days] arising due to such maintenance of the equipment shall be treated as out of schedule for annual availability calculation in the relevant year. This period of 07 (Seven) days shall be provided once only in each applicable year and not in a staggered or partial manner. In case of any spillover of maintenance job(s) beyond such 07 (Seven) days period shall be treated as breakdown hours.

D.9 Expected life of major assemblies:

Details given in Annexure – 4(n).

D.10 Information to be provided by the supplier

The supplier shall furnish the following information.

D.10.1 General:

a. Details of special tools to be provided with the equipment – **Annexure-4(a)**
b. Details of erection programme for the bid - **Annexure-4(o)**

D.10.2 Technical Details

a. Calculations and drawings verifying the dipper capacity - **Annexure – 4(p)**
b. i) Curve of KW- Time for the following operating cycle
   Load the dipper to rated capacity over the maximum working range, swing through an angle 90 degree, dump and return to dig - **Annexure - 4(q)**
   ii) Calculations for determining the time and hourly power consumption for the following operating cycle
   Load the dipper to rated capacity over the maximum working range, swing through an angle 90 degree, dump and return to dig - **Annexure - 4(r)**

c. Calculation and drawings, etc. verifying the maximum value of the ratio of the overturning moment to the resisting moment under the following operating conditions: - **Annexure - 4(s)**
   i) Dipper at maximum force digging position with crawler tracks perpendicular to the face of the cut
   ii) Dipper at maximum force digging position with crawler tracks parallel to the face of the cut
d. Detailed mechanical and electrical descriptions and specifications of the shovel - **Annexure - 4(t)**

e. Layout drawings and detail description of all machinery including method of power transmission, mounting details and method of alignment - **Annexure - 4(u)**
f. Details of the type and method of drive systems offered - **Annexure – 4(v).**
g. Performance curves of hoist, crowd, swing and propel motions - **Annexure – 4(w)**
h. Schematic drawings of the automatic lubrication system, and the details of the supplier, number, type and function - **Annexure – 4(f)**
i. Details of Productivity and Health Management System of the equipment - **Annexure – 4(x).**
j. Details of major bought-out assemblies and sub-assemblies including manufacturer and complete addresses, type etc. **Annexure- 4(b)**
k. Operation and maintenance manuals in accordance with IS/ISO 6750 Part-1 and ISO 6750 Part-2
l. Description of protection instruments and monitoring features of the supply circuits and drive system - **Annexure- 4(y)**
m. Complete technical specification of all wire ropes including length, diameter, construction and lubrication. - **Annexure- 4(z)**
n. Comprehensive commercial literature specification complying relevant IS/ISO standard- **Annexure- 4(aa)**

D.10.3 Dimensions, Weight and Performance Details:

Sl No.	Description	Specifications
D.10.3.1 Working Ranges		
a	Maximum cutting height (m)	14.50
b	Maximum cutting radius (m)	20.60
c	Maximum dumping height (m)	11.30 (door close), 09.40(door open)
d	Dumping radius at maximum height (m)	17.00
e	Dumping height at maximum radius(m)	5.50
f	Dumping radius maximum (m)	17.00
g	Cutting depth below ground level (m)	0.80
h	Radius of clean up (m)	16.00
D.10.3.2 Basic Dimensions		
a	Clearance radius, boom point(m)	16.60
b	Clearance height, boom point(m)	17.50
c	Clearance radius, rear(m)	10.00
d	Clearance under upper frame(m)	2.40
e	Clearance under lower frame(m)	0.80
f	Clearance height, gantry(m)	11.80
g	Clearance height, cab(m)	9.00
h	Clearance width, cab without walkways(m)	8.80
i	Operator's eye level height(m)	7.90
j	Ground to Boom foot pin(m)	4.20
k	Center of rotation to boom foot (m)	3.40
D.10.3.3 Machine Weights		
a	Shipping weights of all separate components(kg)	Total component weight without ballast: 651344kg – **Annexure 4(ab)**

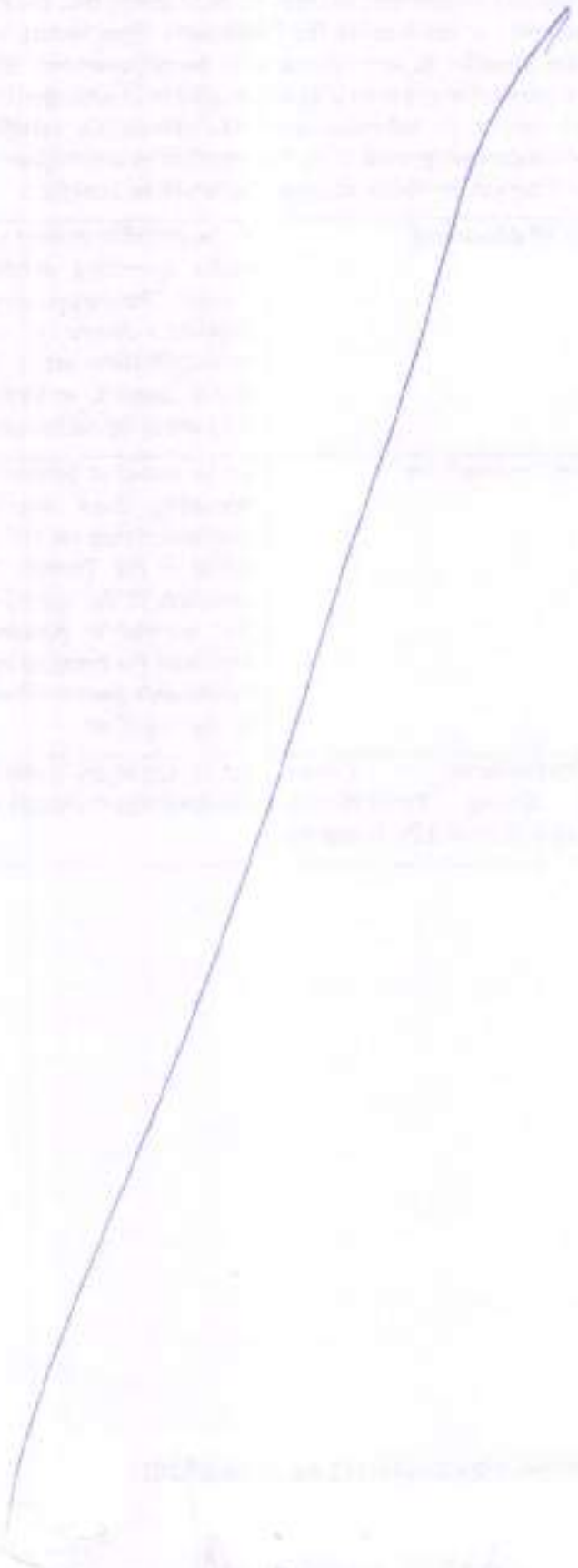
b	Working weights(kg)	751444kg (+/-5%)
c	Ballast (kg)	124738kg (+/-5%)
D.10.3.4 Performance		
a	Bail pull at peak power(kN)	1556.80
b	Bail speed at peak power(m/sec)	0.65
c	Crowd force at peak power(kN)	447.30
d	Crowd speed at peak power(m/sec)	0.57
e	Maximum digging force(kN)	507.10(W/ full dipper) 787.30 (W/ empty dipper)
f	Reach at maximum digging force(m)	20.60
g	Swing torque at peak power(kNm)	2284.80
h	Swing speed at peak power(rad/sec)	0.25
i	Maximum swing torque(kNm)	2284.80
j	Tractive effort at peak power (kN)	3139.60
k	Propel speed at peak power(m/sec)	0.17
l	Total cycle time (sec)	Under ideal digging condition (for 90 Deg.) - approx. time taken for each operation is:- 6 sec for dig positioning, 8 sec for hoist/ digging , 9 sec swinging to truck, 4 sec dumping, and 8 sec for returning.
	90 Deg.	35.00 sec
	120 Deg.	40.50 sec
D.10.3.5 Power ratings		
Power Voltages and frequency [indicating the fluctuations these can be subjected to]		6.6 kV (+/- 10%), 50 Hz (+/- 3%), 3 phase
Power factor at rated load		1.00
Continuous Motor KW ratings		
a	Hoist	1089 kW(total)
b	Crowd	272 kW
c	Swing	507 kW(total)
d	Propel	328 kW(total)
Peak Input Power in KW :		
a	Hoist	1161 kW(total)
b	Crowd	374 kW
c	Swing	688 kW(total)
d	Propel	557 kW (total)
D.10.3.6 Dipper		
a	Capacity(cu.m) and weight(kg)	Nominal capacity 25 m3 Offered capacity 20.13 m3 Nominal weight 45,300 Kg Offered weight 44400 Kg
b	Capacity range(cu.m)	16.1 m3 - 22.5 m3 (For 36.3 mt payload)

D.10.3.7 Front End		
a	Boom length, Centre to center (m) and weight(kg)	17.1m / 71596 Kg
b	Dipper handle, effective length (m) and weight(kg)	9.7 m / 23700 Kg
c	Point sheave pitch diameter (m)	2.159
D.10.3.8 Crawler Mounting		
a	Crawler lengh,standard(m)	9.98
b	Crawler width, standard(m)	8.79
c	Crawler belt width, standard(m)	1.40
d	Bearing area(m2)	21.30
e	Bearing pressure(kPa)	344.70
f	Load rollers, number per crawler	8.00
g	Load roller, diameter(m)	0.65
h	Driving sprocket, diameter(m)	1.18
i	Front idler roller, diameter(m)	1.68
j	Centre to Centre of sprockets and idlers(m)	8.04
k	Crawler shoes width and total number	1397 mm width, 76 nos.
l	Gradeability (%)	Uphill 15 % continuous
D.10.3.9 Circle gear and roller path		
a	Swing gear pitch diameter(m)	4.85
b	Width of teeth(m)	0.254
c	Roller path diameter(m)	4.05
d	Rollers, number and diameter(m)	54 nos. / 0.216m
D.10.3.10 Hoist.		
Hoist drum diameter(m)		1.42
D.10.3.11 General		
a	Quantity, size and specification of ballast required	124738 kg (+/- 5%) punching at min. density of 4245 kg/m3
b	Specification of all wire ropes including length, diameter and construction	**Suspension:** 15.39m x 83mm Galvanized Structural Strand Hoist: 92.7m x 57mm 8 strand of 37 wires dyformed, IWRC, Plow Steel grade, Plastic Impregnated. Dipper Trip Rope: 21.34m x 16mm Wire Rope **Details given in Annexure – 4(z)**
c	Details, number and location of fire extinguishers	1 off extinguisher, outside lube room 2 off extinguishers. One inside machinery house and one inside Operator Cab.
d	Details of the basic functions of the Graphic User Interface (GUI) installed in the offered model	**Details given in Annexure – 4(ac)**

Equipment Acceptance

The Equipment ordered will be finally accepted subject to the Supplier demonstrating to the Purchaser or its authorised representative (may be third party) that the equipment, or assembly or sub-assembly (selected at random by the Purchaser) when tested, meets the Performance Data provided by the Supplier in accordance with the requirements of clause 10. In case if testing facility for a particular parameter is not available at site, the Equipment ordered will finally be accepted subject to submission of Manufacturer's certified test copy for that parameter of performance data provided by the supplier in accordance with the requirements of clause 10. A detrimental deviation of up to 2½% will be accepted

1	Cycle Time at 90 deg swing	To be tested at project site after commissioning, under operating conditions as stated in the Tender. The equipment may be operated, at the Supplier's discretion, either by the Supplier's personnel (who are to be deployed for training as per contract) or by the Purchaser's personnel who are to be authorised by the Supplier.
2	Hourly Power Consumption	To be tested at project site after on 30 (thirty) operating days' average immediately after commissioning under operating conditions as stated in the Tender. The equipment may be operated, at the Supplier's discretion, either by the Supplier's personnel (who are to be deployed for training as per contract) or by the Purchaser's personnel who are to be authorised by the Supplier.
3	Hoist Performance, Crowd Performance, Swing Performance, Swing Loading and Propel Performance	To be tested by Equipment manufacturer and test data/report should be submitted.



PRICE SCHEDULE

Dudhichua OCP, NCL (under NCD)

Price Per Equipment

Exchange rate USD 1 = Rs 78.12

Sl. No.	Item Description	Equipment make & Model	Unit Values in Foreign Currency (USD): FOB Price (Per Equipment)	Unit Values in Foreign Currency (USD): Indian Agency Commission included in the quoted FOB Price as a % of said FOB price	Unit Values in Foreign Currency (USD): Marine Freight Charges upto Port of Entry in India	Unit Values in Foreign Currency (USD): Marine Insurance Charges upto Port of Entry in India	Unit Values in Foreign Currency (USD): CIF Price at Port of Entry in India	Unit Values in Foreign Currency (USD): Assessable Value	Values shown in USD but to be paid in INR: Basic Customs Duty (BCD) on Assessable CIF Value – Rate	Basic Customs Duty – Value	Social welfare Surcharge (SWS) on BCD – Rate	Social welfare Surcharge – Value	IGST – Rate	IGST – Value	Total Customs Duty	GST on overseas freight – Rate	GST on overseas freight – Value	GST on Indian Agency Commission – Rate	GST on Indian Agency Commission – Value	Unit Values in Indian Rupees: Port charges, clearing forwarding charges and other incidental charges	GST on Port charges, clearing forwarding charges and other incidental charges – Rate	GST on Port charges – Value	Inland Transportation for delivery upto Final Place of Destination	GST on Inland Transportation for delivery upto Final Place of Destination – Rate	GST on Inland Transportation – Value	Inland Insurance for delivery upto Final Place of Destination	GST on Inland Insurance for delivery upto Final Place of Destination – Rate	GST on Inland Insurance – Value	Erection & Commissioning Charges	GST on Erection & Commissioning – Rate	GST on Erection & Commissioning – Value	Total Price of all items sourced in INR required for fitting to the equipment during commissioning of the equipment – Value	Total GST applicable of all items sourced in INR required for fitting to the equipment during commissioning of the equipment – Value	CIF Final Place of Destination Price with Customs Duty – USD	CIF Final Place of Destination Price with Customs Duty – INR	Landed Price of Equipment with GST – INR
1	2	3	4	5	6	7	[illegible]	[illegible]	10	[illegible]	12	[illegible]	14	[illegible]	[illegible]	17	[illegible]	19	[illegible]	21	22	[illegible]	24	25	[illegible]	26	27a	[illegible]	27	28	[illegible]	30	31	[illegible]	[illegible]	[illegible]
1	20 Cum Electric Rope Shovel (under NCD) for Dudhichua OCP, NCL	Joy Global Surface Mining Inc Make 2300 XPC Model	7789826.00	1%	500000.00	40000.00	8329826.00	8329826.00	7.50%	624736.95	10%	62473.70	18%	1623066.59	2310277.24	5%	25000.00	18%	13882.46	5507064.00	18%	991271.52	11132188.00	18%	2003779.00	2968600.00	18%	534348.00	16222976.00	18%	2920135.68	54519425.00	9823496.50	1067896.10	104613317.28	94003541.38

For Consumables Spares & Consumables for first 12 months of warranty period from the date of commissioning of Equipment quoted in INR for Dudhichua OCP, NCL

Sl.No.	Item Description with part no. (if any)		Unit of Measurement (UOM)	Unit Values (in Rs.)						Quantity of Consumables Spares & Consumables Quoted per equipment	Total FOR Destination Price per equipment (In Rs)	Total GST Amount per equipment (in (Rs)	Total Landed Price for Consumables Spares & Consumables for first 12 months of warranty period per equipment without deducting Input Tax credit (in Rs.)
				FOR Destination Price	GST		Landed Price	Input Tax credit Amount	Net Landed Price after deducting Input Tax credit				
					Rate	Amount							
1	2		3	4	5	6=4*5	7=4+6	8=6	9=7-8	10	11=4*10	12=6*10	13=7*10
	Consumable Spares												
	Description	**Part No.**											
1	FILTER, FLUID	1046Z1039	Nos.	11,190.50	18%	2,014.29	13,204.79	2,014.29	11,190.50	1	11,190.50	2,014.29	13,204.79
2	ELEMENT, AIR FILTER	10462607	Nos.	14,154.00	18%	2,547.72	16,701.72	2,547.72	14,154.00	1	14,154.00	2,547.72	16,701.72
	Consumables												
	Description	**Full Specification**											
1	WIRE ROPE,PH177, 5/8 TYPE 12	017700074	Nos.	32,271.00	18%	5,808.78	38,079.78	5,808.78	32,271.00	1	32,271.00	5,808.78	38,079.78
2	WIRE ROPE SET, 2.25	R2342007	Set	14,06,381.00	18%	2,53,148.58	16,59,529.58	2,53,148.58	14,06,381.00	5	70,31,905.00	12,65,742.90	82,97,647.90
3	WEAR CAP,STANDARD	RC5404-1001D01	Nos.	20,060.00	18%	3,610.80	23,670.80	3,610.80	20,060.00	28	5,61,680.00	1,01,102.40	6,62,782.40
4	ADAPTER,STANDARD,CAP	RC5404-1000D01	Nos.	2,27,522.00	18%	40,953.96	2,68,475.96	40,953.96	2,27,522.00	7	15,92,654.00	2,86,677.72	18,79,331.72
5	TOOTH,STANDARD	RC5402-1000D01	Nos.	74,375.00	18%	13,387.50	87,762.50	13,387.50	74,375.00	63	46,85,625.00	8,43,412.50	55,29,037.50
6	WEDGE,FLUTED,STANDARD	RC5405-0001D01	Nos.	13,045.00	18%	2,348.10	15,393.10	2,348.10	13,045.00	7	91,315.00	16,436.70	1,07,751.70
7	'C' CLAMP,FLUTED	RC5405-0002D01	Nos.	17,291.00	18%	3,112.38	20,403.38	3,112.38	17,291.00	7	1,21,037.00	21,786.66	1,42,823.66
8	TOOTH LOCK	RC5602-0000D01	Nos.	1,156.00	18%	208.08	1,364.08	208.08	1,156.00	126	1,45,656.00	26,218.08	1,71,874.08
9	SHROUD,WH10,CENTER	RC5406-1000D280	Nos.	1,06,779.00	18%	19,220.22	1,25,999.22	19,220.22	1,06,779.00	6	6,40,674.00	1,15,321.32	7,55,995.32
10	SHROUD WEDGE,CENTER,WH10,HAMMERED,STD	RC5407-1001D01	Nos.	3,651.00	18%	657.18	4,308.18	657.18	3,651.00	6	21,906.00	3,943.08	25,849.08
11	SHROUD C-CLAMP,CENTER,WH10,HAMMERED	RC5407-1002D01	Nos.	3,859.00	18%	694.62	4,553.62	694.62	3,859.00	6	23,154.00	4,167.72	27,321.72
12	SHROUD,WH10,UPPER WING	RC5406-1001D495	Nos.	1,07,141.00	18%	19,285.38	1,26,426.38	19,285.38	1,07,141.00	4	4,28,564.00	77,141.52	5,05,705.52
13	SHROUD,WH10,LOWER WING,RIGHT	RC5406-1002D01	Nos.	1,13,341.00	18%	20,401.38	1,33,742.38	20,401.38	1,13,341.00	1	1,13,341.00	20,401.38	1,33,742.38
14	SHROUD,WH10,LOWER WING,LEFT	RC5406-1003D01	Nos.	1,13,341.00	18%	20,401.38	1,33,742.38	20,401.38	1,13,341.00	1	1,13,341.00	20,401.38	1,33,742.38
15	SHROUD C-CLAMP,WING,WH10,HAMMERED	RC5407-1004D01	Nos.	1,979.00	18%	356.22	2,335.22	356.22	1,979.00	10	19,790.00	3,562.20	23,352.20
16	SHROUD WEDGE,WING,WH10,HAMMERED,STD	RC5407-1003D01	Nos.	2,458.00	18%	442.44	2,900.44	442.44	2,458.00	10	24,580.00	4,424.40	29,004.40
17	GEAR OIL	NPGEAROIL	Ltr.	256.38	18%	46.15	302.53	46.15	256.38	1680	4,30,718.40	77,529.60	5,08,250.40
18	Ep2 Grease	NPLI-GR	Kg.	286.20	18%	51.52	337.72	51.52	286.20	4320	12,36,384.00	2,22,566.40	14,58,950.40
19	Open Gear Lube	NPOGL	Kg.	573.88	18%	103.30	677.18	103.30	573.88	2176.8	12,49,221.98	2,24,863.44	14,74,085.42
20	LUBRICANT AIR SULLUBE (Non-hazmat)	R57933D3	Nos.	52,099.50	18%	9,377.91	61,477.41	9,377.91	52,099.50	1	52,099.50	9,377.91	61,477.41
										Total	**1,86,41,261.38**	**33,55,458.50**	**2,19,96,711.88**

Spares Cost Cap Values for Spares & Consumables from 2nd to 11th year of operations from the date of commissioning of Equipment (equipment-wise) in INR for Dudhichua OCP, NCL				
Sr. No.	Year of Operation	Spares Cost Cap Value (Rs.)	Estimated GST (Rs.)	Total (Rs.)
1	2nd Year	2,47,08,927.00	44,47,606.86	2,91,56,533.86
2	3rd Year	2,49,59,431.00	44,92,697.58	2,94,52,128.58
3	4th Year	3,13,81,332.00	56,48,639.76	3,70,29,971.76
4	5th Year	4,73,76,361.00	85,27,744.98	5,59,04,105.98
5	6th Year	2,59,01,908.00	46,62,343.44	3,05,64,251.44
6	7th Year	19,55,59,775.00	3,52,00,759.50	23,07,60,534.50
7	8th Year	6,40,30,455.00	1,15,25,481.90	7,55,55,936.90
8	9th Year	8,39,82,239.00	1,51,16,803.02	9,90,99,042.02
9	10th Year	4,11,63,272.00	74,09,388.96	4,85,72,660.96
10	11th Year	3,20,62,096.00	57,71,177.28	3,78,33,273.28

Price for items sourced indigenously in INR for fitment in the equipment during commissioning of the equipment for Dudhichua OCP, NCL

Unit Values (in Rs.)

Sl.No	Item Description with Make, Model & Part No. 1 (if applicable)			Unit of Measurement (UOM)	FOB Destination Price	GST Rate	GST Amount	Landed Price	Input Tax credit Amount	Net Landed Price after deducting Input Tax credit (in Rs.)	Quantity of items required per equipment	Total FOB Destination Price of all items sourced indigenously for fitment in the equipment during commissioning of the equipment (in Rs)	Total GST Amount of all items sourced indigenously for fitment in the equipment during commissioning of the equipment (in Rs)	Total Landed Price for all items sourced indigenously in INR for fitment in the equipment during commissioning of the equipment per equipment without deducting Input Tax credit (in Rs.)
	2			3	4	5	6=4*5	7=4+6	8=6	9=7-8	10	11=4*10	12=6*10	13=7*10
	Item Description	Item Make & Model	Part No./Full Specification											
1	AFDSS	ANSUL	Automatic Fire Detection & Suppression System	Nos.	42,48,210.00	18%	7,64,677.80	50,12,887.80	7,64,677.80	42,48,210.00	1	42,48,210.00	7,64,677.80	50,12,887.80
2	TRAILING CABLE	KEI	50 SQMM (300m)	Nos.	16,52,876.30	18%	2,97,517.73	19,50,394.03	2,97,517.73	16,52,876.30	1	16,52,876.30	2,97,517.73	19,50,394.03
3	FIELD SWITCH	ELECTROTEKNICA	(P66 rating) (350MVA)	Nos.	7,34,415.92	18%	1,32,194.87	8,66,610.79	1,32,194.87	7,34,415.92	1	7,34,415.92	1,32,194.87	8,66,610.79
4	CRAWLER SHOES	STEELCAST (P&H DIVISION)	8502012D1 - 53 INCH WIDTH	Nos.	2,80,335.00	18%	50,460.30	3,30,795.30	50,460.30	2,80,335.00	76	2,13,05,460.00	38,34,982.80	2,51,40,442.80
5	FIRE EXTINGUISHER	CEASE FIRE	MAP 90 5 kg-1 nos; CO2 6.5 Kg - 2 nos	Set	48,743.00	18%	8,773.74	57,516.74	8,773.74	48,743.00	1	48,743.00	8,773.74	57,516.74
6	HOIST ROPE	USHA MARTIN	K7302807	Set	14,06,381.00	18%	2,53,148.58	16,59,529.58	2,53,148.58	14,06,381.00	1	14,06,381.00	2,53,148.58	16,59,529.58
7	TRIP ROPE	USHA MARTIN	17730014	Nos.	32,271.00	18%	5,808.78	38,079.78	5,808.78	32,271.00	1	32,271.00	5,808.78	38,079.78
8	GREASE	SHELL	NPLI-GR	Kg	286.20	18%	51.52	337.72	51.52	286.20	402	1,15,052.40	20,711.04	1,35,763.44
9	OPEN GEAR LUBE	PETRON	NPOGL	Kg	573.88	18%	103.30	677.18	103.30	573.88	303	1,73,885.64	31,299.90	2,05,185.54
10	GEAR OIL	SHELL	NPGEAROIL	Ltr.	256.38	18%	46.15	302.53	46.15	256.38	1,536	3,93,799.68	70,886.40	4,64,686.08
11	ANCILLARY & SAFETY ITEMS	AS INDICATED IN CONTRACT		Set	12,38,660.00	18%	2,22,958.80	14,61,618.80	2,22,958.80	12,38,660.00	1	12,38,660.00	2,22,958.80	14,61,618.80
12	TRANSFORMERS	HAMMOND	PRIMARY & AUXILLARY TRANSFORMERS	Set	2,13,05,444.00	18%	38,34,979.92	2,51,40,423.92	38,34,979.92	2,13,05,444.00	1	2,13,05,444.00	38,34,979.92	2,51,40,423.92
13	AUTO LUBE	LINCOLN SKF	AUTO LUBE SYSTEM	Set	18,64,226.00	18%	3,35,560.68	21,99,786.68	3,35,560.68	18,64,226.00	1	18,64,226.00	3,35,560.68	21,99,786.68
											TOTAL	5,45,19,424.94	98,13,501.04	6,43,32,925.98

Details of Training Charges (Per Equipment) for Dudhichua Project, NCL

1	2	3	4	5	6	7	8	9	10	11
Sl. no.	Type of Personnel	At Manufacturer's Training Facility available in India				At Site				Total Charges
		No.	Period (Week)	Total Man Weeks (3x4)	Rate Per Man Per Week	No.	Period (Week)	Total Man Weeks (7x8)	Rate Per Man per week	(5x6)+(9x10)
					Rs				Rs	Rs
1	Mech Engineer	1	1	1	70,000.00	1	1	1	55,000.00	1,25,000.00
2	Elec Engineer	1	1	1	70,000.00	1	1	1	55,000.00	1,25,000.00
3	Mech Supervisor	2	1	2	70,000.00	2	1	2	55,000.00	2,50,000.00
4	Elec Supervisor	2	1	2	70,000.00	2	1	2	55,000.00	2,50,000.00
5	Mech Fitter					4	1	4	35,000.00	1,40,000.00
6	Electrician					4	1	4	35,000.00	1,40,000.00
7	Operator					6	1	6	1,05,355.00	6,32,130.00
		6		**6**		**20**		**20**		**16,62,130.00**

Notification

of

Award

कोल इंडिया लिमिटेड
(महारत्न कंपनी)
कोयला भवन
सामग्री प्रबंधन विभाग,
परिसर संख्या ४,एक्शन एरिया १ए
न्यू टाउन, राजरहाट , कोलकाता- ७०० १५६.
फोन : ०३३-२३२४ ४१२७, फैक्स : ०३३-२३२४ ४११५
वेबसाइट: www.coalindia.in,
ई मेल: admnc.cil@coalindia.in

COAL INDIA LIMITED
(A MAHARATNA COMPANY)
Coal Bhavan,
Materials Management Division
Premises No.04,Action Area 1A,
New Town, Rajarhat, Kolkata – 700 156
PHONE:033-2324 4127, FAX: 033-2324 4115
Website : www.coalindia.in,
E mail : admnc.cil@coalindia.in

Ref: **CIL/C2D/20cum ERS/R-146/2021-22/856** **Date: 14.02.2023**

To
M/s Joy Global Surface Mining Inc., e-mail : jason.suzik@joyglobal.com
4400 West National Avenue,
Milwaukee, WI 53214,
USA.

Notification of Award

Dear Sirs,

Sub: Supply, Installation and Commissioning of 02 nos. of 20 Cu.M. Electric Rope Shovels along with Consumable Spares and Consumables for 12 months of warranty period from the date of commissioning of the equipment under Guaranteed Parts Consumption and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Ref: i) Our Global e-Tender no. CIL/C2D/20cum ERS/R-146/2021-22/381 dated 15.11.2021 opened on 27.12.2021
ii)Your e-offer no. Q15130 dated 14.12.2021 having BID ID 756605 and subsequent correspondence.

With reference to the above and in terms of the Clause-32 of Section-II – Instructions to Bidders (ITB) of the Tender Document, Notification of Award is hereby issued confirming CIL's acceptance of your offer for Supply, Installation and Commissioning of 02 nos. of 20 Cu.M. Electric Rope Shovels along with Consumable Spares and Consumables for 12 months of warranty period from the date of commissioning of the equipment under Guaranteed Parts Consumption and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap on CIP (Final Place of Destination) basis for Dudhichua Project of Northern Coalfields Limited (NCL) under Normal Customs Duty (NCD) at the prices mentioned hereinunder and at the terms and conditions of the Tender Document. The salient terms are mentioned below :-

1. A Tripartite Contract shall be concluded by CIL with you and your Indian Agent, M/s Voltas Ltd., Mumbai after receipt of Security Deposit as detailed in Clause – 7 below.
2. The Contract shall be issued on CIP (Final Place of Destination) basis.
3. The equipment will be supplied by M/s Joy Global Surface Mining Inc., USA in US Dollars. Port, Clearing Forwarding and other Incidental Charges, Inland Transportation, Inland Insurance and Erection & Commissioning will be carried out by M/s Voltas Ltd. for which payment will be made to them in Indian Rupees (INR). The indigenously sourced items required for fitment in the equipment during its commissioning, the consumable spares and consumables for 12 months of warranty period under guaranteed parts consumption and thereafter spares and consumables for a period of 10 years under Spares Cost Cap will be

supplied by M/s Voltas Ltd. in INR.. Payment in US Dollar and INR shall be made as per relevant clauses of SCC – Section IV of the Tender Document.

4. The Prices shall be as under :

Sl. No.	Head	20 cu.m. Electric Rope Shovel under NCD for Dudhichua OCP, NCL	Extended Value (for 2 nos.)
A	EQUIPMENT - Model – 2300 XPC Make - Joy Global Surface Mining Inc	X (Unit Value)	Y= (Xx2)
1	FOB Value per equipment including Indian Agency Commission @ 1% (USD)	7,789,826.00	15,579,652.00
2	Indian Agency Commission @ 1% included in above FOB value (USD)	77,126.99	154,253.98
3	Marine Freight Charges upto Port of Entry in India (USD) *	500,000.00	1,000,000.00
4	Marine Insurance Charges upto Port of Entry in India (USD) *	40,000.00	80,000.00
5	CIF Value of equipment (USD)	8,329,826.00	16,659,652.00
6	CIF Value of equipment (Exchange Rate USD 1 = Rs 78.12) (Rs)	65,07,26,007.12	130,14,52,014.24
7	Total Customs Duty including IGST	18,04,78,858.08	36,09,57,716.16
8	Port charges, clearing forwarding charges and other incidental charges (Rs)	55,07,064.00	1,10,14,128.00
9	Inland Transportation for delivery upto Final Place of Destination (Rs) *	1,11,32,100.00	2,22,64,200.00
10	Inland Insurance for delivery upto Final Place of Destination (Rs) *	29,68,560.00	59,37,120.00
11	Erection & Commissioning Charges (Rs)	1,62,22,976.00	3,24,45,952.00
12	Total Price of all items sourced in INR required for fitting in the equipment during commissioning of the equipment (Rs)	5,45,19,425.00	10,90,38,850.00
13	Total GST,as applicable, on above elements excluding Customs Duty	1,93,09,551.38	3,86,01,102.76
14	CIP Price per Equipment with GST (Rs)	94,08,55,541.58	188,17,11,083.16
B	SPARES AND CONSUMABLES		
1	Landed price of set of consumable spares and consumables required for first 12 months of operation from the date of commissioning of each equipment under guaranteed parts consumption (with GST) (Rs)	2,19,96,711.88	4,39,93,423.76
Landed price of spares and consumables required for concerned year of operation from the date of commissioning of each equipment (with GST) under Spares Cost Cap			
2	for 2nd year of operation (Rs)	2,91,56,533.86	5,83,13,067.72
3	for 3rd year of operation (Rs.)	2,94,52,128.58	5,89,04,257.16
4	for 4th year of operation (Rs.)	3,70,29,971.76	7,40,59,943.52
5	for 5th year of operation (Rs.)	5,59,04,105.98	11,18,08,211.96
6	for 6th year of operation (Rs.)	3,05,64,251.44	6,11,28,502.88
7	for 7th year of operation (Rs.)	23,07,60,534.50	46,15,21,069.00
8	for 8th year of operation (Rs.)	7,55,55,936.90	15,11,11,873.80
9	for 9th year of operation (Rs.)	9,90,99,042.02	19,81,98,084.04
10	for 10th year of operation (Rs.)	4,85,72,660.96	9,71,45,321.92
11	for 11th year of operation (Rs.)	3,78,33,273.28	7,56,66,546.56
12	Total Landed price of set of consumable spares and consumables for 12 months of warranty period under Guaranteed Parts Consumption and thereafter spares and consumables for a period of 10 years of operation under Spares Cost Cap (with GST) (Rs)	69,59,25,151.16	139,18,50,302.32
C	Equipment & Spares and Consumables for 11 years of operation		
1	Total Landed price of equipment along with set of consumable spares and consumables for 12 months of warranty period under Guaranteed Parts Consumption and thereafter spares and consumables for a period of 10 years of operation under Spares Cost Cap (with GST) (Rs)	163,67,88,692.74	327,35,61,385.48

NB : * - shall be payable at actuals subject to the maximum rate / amount mentioned above.

5. Two (2) separate Letter of Credits (LCs) for the foreign currency component of the equipment will be opened in the name of M/s Joy Global Surface Mining Inc., USA for CIF value less Indian Agency Commission. The 1st LC for the 1st machine shall be opened after signing of Contract and the 2nd LC for the 2nd machine shall be opened after issuance of clearance from the Order Placing Authority.

6. Indian Agency Commission @ 1% (one percent) of FOB value of the Equipment is included in the FOB Price indicated above. It shall be payable to M/s Voltas Ltd. in INR only as per Clause-8.5, SCC, Section–IV of Tender Document.

7. **Security Deposit:**

You are requested to arrange to furnish the following Security Deposit as per Clause-34 of ITB, Section-II and Clause-1 of SCC, Section-IV of the NIT, within 30 days from the date of Notification of Award:

A. Security Deposit for Equipment quoted in US$: For **USD 722,624.00** (US Dollar Seven Hundred Twenty Two Thousand, Six Hundred and Twenty Four only) in the form of a Bank Demand Draft or in the form of a Bank Guarantee as per format enclosed as Annexure-10, Sample Forms, Section-VII of the tender document, from a RBI Scheduled Bank in India (on a non-judicial stamp paper). The Security Deposit Bank Guarantee should be valid upto 3 months after the supply and commissioning of all the equipment covered in the contract.

B. Security Deposit for Consumable Spares and Consumables for 12 months of warranty period from the date of commissioning of the equipment under guaranteed parts consumption and thereafter Spares & Consumables for a period of 10 years under Spares Cost cap quoted in INR: For **Rupees 4,17,55,510.00** (Rupees Four Crores Seventeen Lakhs Fifty Five Thousand Five Hundred and Ten only) in the form of a Bank Demand Draft or in the form of a Bank Guarantee as per format enclosed as Annexure-10, Sample Forms, Sec.-VII of the tender document, from a RBI Scheduled Bank in India (on a non-judicial stamp paper). The Security Deposit Bank Guarantee should be valid upto 3 months after the supply and commissioning of all the equipment covered in the contract.

In case the SDBGs are not submitted within 30 days from the date of NoA, a penalty equivalent to 0.5% (half percent) of SD amount for delay of each week or part thereof (period of delay is to be calculated from the 31st day from the date of NoA to the date of receipt of full SD) shall be levied which will be paid by you along with the SDBG. However, subject to force majeure conditions, delay in submission of SDBG beyond 90 days from the date of NoA may attract annulment of the award and invocation of Bid Security Declaration in lieu of EMD.

The SDBG issued by issuing bank on behalf of the bidder in favour of "Coal India Ltd.," shall be in paper form (Stamp Paper) as well as issued under "Structured Financial Messaging System". Confirmation of the SDBGs as per Clause-1.8, SCC, Section-IV of the NIT should be complied with.

8. **Delivery Schedule :** 01 machine within 12 months from the date of signing of Contract. After successful performance of the 1st machine for one year from the date of commissioning, delivery of the balance 01 machine i.e. 2nd machine, is to be completed within 06 months from the date of clearance from the Order Issuing Authority.

9. **Signing of Contract:**

As per Clause–33.1, ITB, Section-II of the Tender Document, the draft copy of the Agreement containing detailed technical specifications, terms and conditions and Scope of Supply, to be signed by you, M/s Voltas Ltd., Mumbai and CIL, will be sent in due course. The agreement shall be signed within 15 days of receipt of draft copy of agreement as per Clause–33.2, ITB, Section-II of the Tender Document.

You are requested to intimate the names and designation of the persons who will sign the agreement on your behalf along with the names and designation of witnesses. The authorized representatives of M/s Voltas Ltd., Mumbai will also be signatories to the contract agreement and the Integrity Pact.

This Notification of Award will be binding on you until a formal contract is signed as per Clause–32.2 of ITB, Section-II of the Tender Document.

You are requested to confirm receipt of this Notification of Award within 7 days of its issue and arrange to furnish the above Security Deposit(s).

Yours faithfully,
For & on Behalf of Coal India Limited

14/02/2023
(A. Fernando)
Chief Manager(MM)

14/02/23
(P.D. Sharma)
General Manager (MM)

INTEGRITY PACT

INTEGRITY PACT

General

This Agreement (hereinafter called the Integrity Pact) is made on 28th day of the month of July, 2023, between, on one hand, Coal India Limited/Subsidiary Cos. acting through Shri P.D. Sharma, Executive Director (Materials & Contracts), (hereinafter called the "BUYER / Principal", which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s Joy Global Surface Mining Inc, USA represented by Mr. Jeffrey A. Roschyk, Vice President, Surface Sales & Business Development and M/s Voltas Ltd., Mumbai represented by Shri Sharad Thussu, Vice President, M&CE Division (hereinafter called the "BIDDER/Seller/Contractor" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the BUYER proposes to procure 20 cu.m. Electric Rope Shovels along with Consumable Spares and Consumables for 12 months of warranty period from the date of commissioning of the equipment and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a private company~~/public company/Government undertaking/ partnership/registered export agency~~, constituted in accordance with the relevant law in the matter and the BUYER is a Central Public Sector Unit.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to :-

Enabling the BUYER to obtain the desired said stores/equipment at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERs to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the BUYER will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

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 for , or the execution of a contract, demand ; take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

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

c. 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 IPC/ PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

(1) The Bidder(s) / Contractor(s) commit themselves to take all measures necessary to prevent corruption. The Bidder(s) / Contractor(s) commit themselves to observe the following principles during participation in the tender process and during the contract execution.

a. The Bidder(s) / Contractor(s) 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.

b. The Bidder(s) / Contractor(s) will not enter with other Bidders info 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 cartelisation in the bidding process.

c. The Bidder(s) / Contractor(s) will not commit any offence under the relevant IPC/ PC Act; further the Bidder(s) / Contractor(s) 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(s) / Contractors(s) of foreign origin shall disclose the name and address of the Agents/ representatives in India , if any, Similarly the Bidder(s) /Contractors(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s) / Contractor(s).Further, as mentioned in the Guidelines all the payments made to the Indian agent/ representative have to be in Indian Rupees only. *The guidelines and terms and conditions for India agents of foreign supplier shall be as per the provisions mentioned in the NIT.*

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

f. Bidder(s) / Contractor(s) who have signed the Integrity Pact shall not approach the Courts while representing the matter to IEMs and shall wait for their decision in the matter.

(2) The Bidder(s) / Contractor(s) 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

If the Bidder, before contract award, has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or credibility as Bidder into

question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

(1) If the Bidder / Contractor / Supplier has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal is also entitled to exclude the Bidder / Contractor / Supplier from future contract award processes. The imposition and duration of the exclusion will be determined by 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 and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.

(2) A transgression is considered to have occurred if the Principal, after due consideration of available facts and evidences within his / her knowledge concludes that there is a reasonable ground to suspect violation of any commitment listed under Section 2 i.e " Commitments of Bidder(s) / Contractor(s).

(3) The Bidder accepts and undertakes to respect and uphold the Principal's absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.

(4) If the Bidder / Contractor / Supplier can prove that he has restored / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely."

Section 4 - Compensation for Damages

(1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 - Previous transgression

(1) The Bidder declares that no previous transgressions occurred in the last three years with any other Company in any country conforming to the anti-corruption approach or with any Public Sector Enterprise in India 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 or action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".

Section 6 - Equal treatment of all Bidders / Contractors / Subcontractors

(1) In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor.

(2) The Principal will enter into agreements with identical conditions as this one with all Bidders and 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 or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8 - Independent External Monitor

(1) The Principal appoints competent and credible Independent External Monitor for this Pact after approval by Central Vigilance Commission. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

(2) The Monitor is not subject to instructions by the representatives of the parties and performs his/ her functions neutrally and independently. The Monitor would have access to all Contract documents, whenever required. It will be obligatory for him / her to treat the information and documents of the Bidders/Contractors as confidential.
He/ she reports to the Chairman, Coal India Limited / CMD, Subsidiary Companies

(3) The Bidder(s) / Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his/ her request and demonstration of a valid interest, unrestricted and unconditional access to their project documentation. The same is applicable to Sub-contractors.

(4) The Monitor is under contractual obligation to treat the information and documents of the Bidder(s) / Contractor(s) / Sub-contractor(s) with confidentiality. The Monitor has also signed declarations on 'Non-Disclosure of Confidential Information ' and of 'Absence of Conflict of Interest'. In case of any conflict of interest arising at a later date, the IEM shall inform Chairman, Coal India Limited / CMD, Subsidiary Companies and recuse himself / herself from that case.

(5) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

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

(7) The Monitor will submit a written report to the Chairman, Coal India Limited / CMD, Subsidiary Companies within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

(8) If the Monitor has reported to the Chairman, Coal India Limited / CMD, Subsidiary Companies, a substantiated suspicion of an offence under relevant IPC/ PC Act, and the Chairman, Coal India Limited / CMD, Subsidiary Companies has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

(9) The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by Chairman Coal India Limited / CMD, Subsidiary Companies.

Section 10 - Other provisions

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

(2) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

(3) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

(4) Issues like Warranty / Guarantee etc. shall be outside the purview of IEMs.

(5) In the event of any contradiction between the Integrity Pact and its Annexure, the Clause in the Integrity Pact will prevail.

Section 11- Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of commission, the BUYER or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

Section 12- Law and Place of Jurisdiction

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the BUYER.

Section 13 - Other Legal Actions.

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

The parties hereby sign this Integrity Pact at Kolkata on 28.07.2023.

For the Buyer/Purchaser

28/7/23

P.D. Sharma
Executive Director(M&C)
Coal India Ltd., Kolkata

COAL INDIA LIMITED
M. M. Division
1st Floor, Premises No. 4,
Plot No. AF-III, Action Area 1A,
New Town, Rajarhat,
Kolkata - 700 156

For the Manufacturer/Supplier

28/07/23

Jeffrey A. Raschyk
Vice President, Surface Sales & Business Development
Joy Global Surface Mining Inc, USA

For the Indian Agent

28/7/2023

Sharad Thussu
Vice President, M&CE Division
Voltas Ltd., Mumbai

For VOLTAS LIMITED
Its Constituted Attorney
(SHARAD THUSSU)
Vice President

Witnesses

28/7/23

A. Fernando
General Manager(MM)
Coal India Ltd., Kolkata

28/7/23

D.V. Sudha
Deputy Manager(MM)
Coal India Ltd., Kolkata

Witnesses

28/7/23

Russell Nathan Crosby
Director, Sales & Business Development
Joy Global Surface Mining Inc, USA

28/7/2023

Ranjit Ravindran
Business Head – Mining, M&CE Division
Voltas Ltd., Mumbai

Annexure(s)

Annexure-1(a)

महाराष्ट्र शासन
GOVERNMENT OF MAHARASHTRA
ई-सुरक्षित बँक व कोषागार पावती
e-SECURED BANK & TREASURY RECEIPT (e-SBTR)

19570397095452

Bank/Branch: [illegible] - [illegible]/DADAR [illegible]
Pmt Txn id : 726221789
Pmt DtTime : 02-MAY-2023@17:05:27
ChallanIdNo: [illegible]
District : 7101-MUMBAI

Stationery No: 19570397095452
Print DtTime : 04-MAY-2023 12:51:26
GRAS GRN : [illegible]
Office Name : IGR182-BOM1_MUMBAI CITY
GRN Date : 03-May-2023@17:05:28

StDuty Schm: 0030046501-75/STAMP DUTY
StDuty Amt : R 1,15,909/- (Rs One, One Five, Nine Zero Nine only)

RgnFee Schm: 0030063301-70/Registration Fees
RgnFee Amt : R 0/- (Rs Zero only)

Article : 13--Bond
Prop Mvblty: N.A.
Prop Descr : BANK GUARANTEE
Consideration: R 1,15,909/-

Duty Payer: PAN-[illegible],MIZUHO BANK LIMITED
Other Party: PAN [illegible],COAL INDIA LIMITED

Bank official1 Name & Signature
[illegible] ROY
Manager

Bank official2 Name & Signature

Space for customer/office use - - - Please write below this line

THIS FORMS AN INTEGRAL PART OF OUR BANK GUARANTEE REF NO. BDC-792-000206-001 DATED 04/05/2023 FAVOURING COAL INDIA LIMITED

Authorised Signatory

Authorised Signatory

e-SBTR IS VALID UPTO SIX MONTHS FROM THE DATE OF PAYMENT

2.

BDC-792-000206-001

NAME & ADDRESS OF THE BANK:
MIZUHO BANK, LTD.
MUMBAI BRANCH,
LEVEL 17, TOWER –A,
PENINSULA BUSINESS PARK,
SENAPATI BAPAT MARG,
LOWER PAREL,
MUMBAI 400 013- INDIA
BANK GUARANTEE NO.
BDC-792-000206-001
DATE: **04.05.2023**
LIMIT OF LIABILITY: **USD 722,624.00**

TO:
COAL INDIA LIMITED
COAL BHAWAN, PREMISES NO-04 MAR,
PLOT NO-AF-III, ACTION AREA-1A, NEW TOWN, RAJARHAT, KOLKATA-700156

FROM:
MIZUHO BANK, LTD
MUMBAI BRANCH
LEVEL 17, TOWER- A
PENINSULA BUSINESS PARK, SENAPATI BAPAT MARG
LOWER PAREL, MUMBAI- 400 013
MAHARASHTRA, INDIA

BANK GUARANTEE (BG)

BANK GUARANTEE (BG) NO	: BDC-792-000206-001
ISSUANCE DATE OF BG	: 04.05.2023
AMOUNT OF BG (IN FIGURE AND WORDS)	: USD 722,624.00 (SEVEN HUNDRED TWENTY TWO THOUSAND SIX HUNDRED TWENTY FOUR ONLY)
DATE OF EXPIRY OF BG	: OCTOBER 31, 2026
LAST DATE OF LODGMENT OF CLAIM (INCLUDING CLAIM PERIOD)	: OCTOBER 31, 2026
NAME OF BG APPLICANT	: JOY GLOBAL SURFACE MINING INC
NAME OF BG BENEFICIARY	: COAL INDIA LIMITED
BG ISSUING BANK	: MIZUHO BANK, LTD., MUMBAI BRANCH

CONTD...3...

FOR MIZUHO BANK, LTD.
AUTHORIZED SIGNATORY

FOR MIZUHO BANK, LTD.
AUTHORIZED SIGNATORY

3.

BDC-792-000206-001

ANNEXURE-11

PERFORMANCE BANK GUARANTEE

COAL INDIA LIMITED
COAL BHAWAN, PREMISES NO-04 MAR,
PLOT NO-AF-III, ACTION AREA-1A,
NEW TOWN, RAJARHAT, KOLKATA-700156

RE : BANK GUARANTEE IN RESPECT OF NOTIFICATION OF AWARD VIDE NO. CIL/C2D/20CUM ERS/R-146/2021-22/856 DATED 14/02/2023 BETWEEN COAL INDIA LIMITED AND JOY GLOBAL SURFACE MINING INC

MESSERS JOY GLOBAL SURFACE MINING INC, A COMPANY/ FIRM HAVINGITS OFFICE AT 4400 WEST NATIONAL AVENUE, MILWAUKEE, WI 53214,UNITED STATES OF AMERICA (HEREINAFTER CALLED "THE CONTRACTOR") HAS RECEIVED THE NOTIFICATION OF AWARD VIDE NO. CIL/C2D/20CUM ERS/R-146/2021-22/856 DATED 14/02/2023 (HEREINAFTER CALLED "THE SAID AGREEMENT") WITH COAL INDIA LIMITED (HEREINAFTER CALLED "THE COMPANY) FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF 02NOS. OF 20 CUM. ELECTRIC ROPE SHOVELS ALONG WITH CONSUMABLE SPARES AND CONSUMABLES FOR WARRANTY PERIOD OF ONE YEAR AND THEREAFTER SPARES & CONSUMABLES FOR A PERIOD OF 10 YEARS UNDER SPARES COST CAP AMOUNTING TO RS. 327,35,61,385.48 (INDIAN RUPEES THREE HUNDRED TWENTY SEVEN CRORES THIRTY FIVE LAKHS SIXTY ONE THOUSAND THREE HUNDRED EIGHTY FIVE AND FORTY EIGHT PAISE) ON THE TERMS AND CONDITIONS CONTAINED IN THE SAID AGREEMENT.

THE MIZUHO BANK, LTD. (HEREINAFTER CALLED "THE BANK") HAVING ITS OFFICE AT LEVEL-17, TOWER-A, PENINSULA BUSINESS PARK, SENAPATI BAPAT MARG, LOWER PAREL, MUMBAI, MAHARASHTRA - 400 013, INDIA HAS AT THE REQUEST OF THE CONTRACTOR AGREED TO GIVE THIS GUARANTEE AS HEREINAFTER CONTAINED.

WE MIZUHO BANK, LTD. DO HEREBY UNCONDITIONALLY AGREE WITH THE COMPANY THAT IF THE CONTRACTOR SHALL IN ANY WAY FAIL TO OBSERVE OR PERFORM THE TERMS AND CONDITIONS OF THE SAID AGREEMENT OR SHALL COMMIT ANY BREACH OF ITS OBLIGATIONS THEREUNDER, THE BANK SHALL ON DEMAND AND WITHOUT ANY OBJECTION OR DEMUR PAY TO THE COMPANY, THE SAID SUM OF USD722,624.08 (SEVEN HUNDRED TWENTY TWO THOUSAND SIX HUNDRED TWENTY FOUR ONLY) OR ANY PORTION THEREOF WITHOUT REQUIRING THE COMPANY TO HAVE RECOURSE TO ANY LEGAL REMEDY THAT MAY BE AVAILABLE TO IT TO COMPEL THE BANK TO PAY THE SAME OR CALLING ON THE COMPANY TO COMPEL SUCH PAYMENT BY THE CONTRACTOR.

CONTE...4...

FOR MIZUHO BANK, LTD.
AUTHORIZED SIGNATORY

FOR MIZUHO BANK, LTD.
AUTHORIZED SIGNATORY

ANY SUCH DEMAND SHALL BE CONCLUSIVE AS REGARDS THE LIABILITY OF THE CONTRACTOR TO THE COMPANY AND AS REGARDS THE AMOUNT PAYABLE BY THE BANK UNDER THIS GUARANTEE. THE BANK SHALL NOT BE ENTITLED TO WITHHOLD PAYMENT ON THE GROUND THAT THE CONTRACTOR HAS DISPUTED ITS LIABILITY TO PAY OR HAS DISPUTED THE QUANTUM OF THE AMOUNT OR THAT ANY ARBITRATION PROCEEDING OR LEGAL PROCEEDING IS PENDING BETWEEN THE COMPANY AND THE CONTRACTOR REGARDING THE CLAIM.

WE, THE BANK, FURTHER AGREE THAT THE GUARANTEE SHALL COME INTO FORCE FROM THE DATE HEREOF AND SHALL REMAIN IN FULL FORCE AND EFFECT TILL THE PERIOD THAT WILL BE TAKEN FOR THE PERFORMANCE OF THE SAID AGREEMENT WHICH IS LIKELY TO BE THE 31ST DAY OF OCTOBER, 2026 BUT IF THE PERIOD OF AGREEMENT IS EXTENDED EITHER PURSUANT TO THE PROVISIONS IN THE SAID AGREEMENT OR BY MUTUAL AGREEMENT BETWEEN THE CONTRACTOR AND THE COMPANY, THE BANK SHALL RENEW THE PERIOD OF THE GUARANTEE FAILING WHICH IT SHALL PAY TO THE COMPANY THE SAID SUM OF USD722,624.00 (SEVEN HUNDRED TWENTY TWO THOUSAND SIX HUNDRED TWENTY FOUR ONLY) OR SUCH LESSER AMOUNT OUT OF THE SAID SUM OF USD 722,624.00 (SEVEN HUNDRED TWENTY TWO THOUSAND SIX HUNDRED TWENTY FOUR ONLY) AS MAYBE DUE TO THE COMPANY AND AS THE COMPANY MAY DEMAND. THIS GUARANTEE SHALL REMAIN IN FORCE UNTIL THE DUES OF THE COMPANY IN RESPECT OF THE SAID SUM OF USD 722,624.00 (SEVEN HUNDRED TWENTY TWO THOUSAND SIX HUNDRED TWENTY FOUR ONLY) ARE FULLY SATISFIED AND THE COMPANY CERTIFIES THAT THE AGREEMENT HAS BEEN FULLY CARRIED OUT BY THE CONTRACTOR AND DISCHARGES THE GUARANTEE.

THE BANK FURTHER AGREES WITH THE COMPANY THAT THE COMPANY SHALL HAVE THE FULLEST LIBERTY WITHOUT THE CONSENT OF THE BANK AND WITHOUT AFFECTING IN ANY WAY THE OBLIGATIONS HEREUNDER TO VARY ANY OF THE TERMS AND CONDITIONS OF THE SAID AGREEMENT OR TO EXTEND THE TIME FOR PERFORMANCE OF THE SAID AGREEMENT FROM TIME TO TIME OR TO POSTPONE FOR ANY TIME OR FROM TIME TO TIME ANY OF THE POWERS EXERCISABLE BY THE COMPANY AGAINST THE CONTRACTOR AND TO FORBEAR TO ENFORCE ANY OF THE TERMS AND CONDITIONS RELATING TO THE SAID AGREEMENT AND THE BANK SHALL NOT BE RELIEVED FROM ITS LIABILITY BY REASON OF SUCH FAILURE OR EXTENSION BEING GRANTED TO THE CONTRACTOR OR THROUGH ANY FORBEARANCE, ACT OR OMISSION ON THE PART OF THE COMPANY OR ANY INDULGENCE BY THE COMPANY TO THE CONTRACTOR OR ANY OTHER MATTER OR THING WHATSOEVER WHICH UNDER THE LAW RELATING TO SURETIES WOULD BUT FOR THIS PROVISIONS HAVE THE EFFECT OF RELIEVING OR DISCHARGING THE GUARANTOR.

CONTD...5...

FOR MIZUHO BANK, LTD.

AUTHORIZED SIGNATORY

FOR MIZUHO BANK, LTD.

AUTHORIZED SIGNATORY

BDC-793-080290-001

THE BANK FURTHER AGREES THAT IN CASE THIS GUARANTEE IS REQUIRED FOR A LONGER PERIOD AND IT IS NOT EXTENDED BY THE BANK BEYOND THE PERIOD SPECIFIED ABOVE, THE BANK SHALL PAY TO THE COMPANY THE SAID SUM OF USD 722,624.00 (SEVEN HUNDRED TWENTY TWO THOUSAND SIX HUNDRED TWENTY FOUR ONLY) OR SUCH LESSER SUM AS MAY THEN BE DUE TO THE COMPANY AND AS THE COMPANY MAY REQUIRE.

NOTWITHSTANDING ANYTHING HEREIN CONTAINED THE LIABILITY OF THE BANK UNDER THIS GUARANTEE IS RESTRICTED TO USD 722,624.00 (SEVEN HUNDRED TWENTY TWO THOUSAND SIX HUNDRED TWENTY FOUR ONLY) ONLY. THIS GUARANTEE SHALL REMAIN IN FORCE TILL THE 31ST DAY OF OCTOBER, 2026 AND UNLESS THE GUARANTEE IS RENEWED OR A CLAIM IS PREFERRED AGAINST THE BANK WITHIN THE VALIDITY PERIOD AND/OR THE CLAIM PERIOD FROM THE SAID DATE, ALL RIGHTS OF THE COMPANY UNDER THIS GUARANTEE SHALL CEASE AND THE BANK SHALL BE RELEASED AND DISCHARGED FROM ALL LIABILITY HEREUNDER EXCEPT AS PROVIDED IN THE PRECEDING CLAUSE.

THE BANK HAS UNDER ITS CONSTITUTION POWER TO GIVE THIS GUARANTEE AND MR AMIT RAI (SENIOR VICE PRESIDENT) & MR RAMCHANDRA KULKARNI (VICE PRESIDENT) WHO HAVE SIGNED IT ON BEHALF OF THE BANK HAS AUTHORITY TO DO SO.

FOR MIZUHO BANK, LTD.

AUTHORIZED SIGNATORY

AMIT RAI
Senior Vice President

FULL NAME:
OFFICIAL ADDRESS:
MIZUHO BANK, LTD.
LEVEL 17, TOWER –A,
PENINSULA BUSINESS PARK,
SENAPATI BAPAT MARG,
LOWER PAREL,
MUMBAI 400 013- INDIA

PLACE: MUMBAI
DATE: 04.05.2023

FOR MIZUHO BANK, LTD.

AUTHORIZED SIGNATORY

FULL NAME: RAMCHANDRA KULKARNI
OFFICIAL ADDRESS: Vice President
MIZUHO BANK, LTD. K-603
LEVEL 17, TOWER –A,
PENINSULA BUSINESS PARK,
SENAPATI BAPAT MARG,
LOWER PAREL,
MUMBAI 400 013- INDIA

Annexure – 1(b)

महाराष्ट्र शासन
GOVERNMENT OF MAHARASHTRA
ई-सुरक्षित बँक व कोषागार पावती
e-SECURED BANK & TREASURY RECEIPT (e-SBTR)

195703975000502

Bank/Branch: IBKL - 6X10582/DADAR (WEST)
Pmt Tran Id : T26221689 Stationery No: 195703975000502
Pmt DtTime : 03-MAY-2023 17:04:13 Print DtTime : 04-MAY-2023 13:54:32
ChallanIdNo: 6510333202305035107 GRAS GRN : MH001560674202324S
District : 7101-MUMBAI Office Name : IBK183-MUM1 MUMBAI CITY
GRN Date : 03 May 2023 17:04:14

StDuty Schm: 0030045531-75/STAMP DUTY
StDuty Amt : ₹ 83,512/- (Rs Eight Three, Five One Two only)

RgnFee Scom: 0030043331-73/Registration Fees
RgnFee Amt : ₹ 0/- (Rs Zero only)

Article : 13 Bond
Prop Mkt/ty: N.A. Consideration: ₹ 83,512/-
Prop Descr : BANK GUARANTEE

Duty Payer: PAN-AADCM0040D,MIZUHO BANK LIMITED

Other Party: PAN-AABCC3529J,COAL INDIA LIMITED

Bank official1 Name & Signature
SHRIRAV ROY
Bank official2 Name & Signature
e-bondsewa

--- --- Space for customer/office use - - - Please write below this line --- ---

THIS FORMS AN INTEGRAL PART OF OUR BANK GUARANTEE REF. NO. BDC-792-001206-001 DATED 04/05/2023 FAVOURING COAL INDIA LIMITED

For MIZUHO BANK, LTD.
Authorised Signatory

For MIZUHO BANK, LTD
Authorised Signatory

e-SBTR IS VALID UPTO SIX MONTHS FROM THE DATE OF PAYMENT

2.

BDC-792-001206-001

NAME & ADDRESS OF THE BANK:
MIZUHO BANK, LTD.
MUMBAI BRANCH,
LEVEL 17, TOWER –A,
PENINSULA BUSINESS PARK,
SENAPATI BAPAT MARG,
LOWER PAREL,
MUMBAI 400 013. INDIA
BANK GUARANTEE NO.
BDC-792-001206-001
DATE: **04.05.2023**
LIMIT OF LIABILITY: **INR 4,17,55,510.00**

TO
COAL INDIA LIMITED
COAL BHAWAN, PREMISES NO-04 MAR,
PLOT NO-AF-III, ACTION AREA-1A,
NEW TOWN, RAJARHAT, KOLKATA-700156

FROM:
MIZUHO BANK, LTD
MUMBAI BRANCH
LEVEL 17, TOWER- A
PENINSULA BUSINESS PARK, SENAPATI BAPAT MARG
LOWER PAREL, MUMBAI- 400 013
MAHARASHTRA, INDIA

BANK GUARANTEE (BG)

BANK GUARANTEE (BG) NO	: **BDC-792-001206-001**
ISSUANCE DATE OF BG	: 04.05.2023
AMOUNT OF BG (IN FIGURE AND WORDS)	: INR 4,17,55,510.00 (INDIA RUPEES FOUR CRORES SEVENTEEN LAKHS FIFTY FIVE THOUSAND FIVE HUNDRED TEN)
DATE OF EXPIRY OF BG	: OCTOBER 31, 2026
LAST DATE OF LODGMENT OF CLAIM (INCLUDING CLAIM PERIOD)	: OCTOBER 31, 2026
NAME OF BG APPLICANT	: JOY GLOBAL SURFACE MINING INC
NAME OF BG BENEFICIARY	: COAL INDIA LIMITED
BG ISSUING BANK	: MIZUHO BANK, LTD., MUMBAI BRANCH

CONTD...3...

FOR MIZUHO BANK, LTD.
AUTHORIZED SIGNATORY

FOR MIZUHO BANK, LTD.
AUTHORIZED SIGNATORY

BDC-792-001206-001

ANNEXURE-11

PERFORMANCE BANK GUARANTEE

COAL INDIA LIMITED
COAL BHAWAN, PREMISES NO-04 MAR,
PLOT NO-AF-III, ACTION AREA-1A,
NEW TOWN, RAJARHAT, KOLKATA-700156

RE : BANK GUARANTEE IN RESPECT OF NOTIFICATION OF AWARD VIDE NO. CIL/C2D/20CUM ERS/R-146/2021-22/856 DATED 14/02/2023 BETWEEN COAL INDIA LIMITED AND JOY GLOBAL SURFACE MINING INC.

MESSERS JOY GLOBAL SURFACE MINING INC, A COMPANY/ FIRM HAVING ITS OFFICE AT 4400 WEST NATIONAL AVENUE, MILWAUKEE, WI 53214, UNITED STATES OF AMERICA (HEREINAFTER CALLED "THE CONTRACTOR") HAS RECEIVED THE NOTIFICATION OF AWARD VIDE NO. CIL/C2D/20CUM ERS/R-146/2021-22/856 DATED 14/02/2023 (HEREINAFTER CALLED "THE SAID "AGREEMENT") WITH COAL INDIA LIMITED (HEREINAFTER CALLED "THE COMPANY) FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF 02NOS. OF 20 CU.M. ELECTRIC ROPE SHOVELS ALONG WITH CONSUMABLE SPARES AND CONSUMABLES FOR WARRANTY PERIOD OF ONE YEAR AND THEREAFTER SPARES & CONSUMABLES FOR A PERIOD OF 10 YEARS UNDER SPARES COST CAP AMOUNTING TO RS. 327,35,61,385.48 (INDIAN RUPEES THREE HUNDRED TWENTY SEVEN CRORES THIRTY FIVE LAKHS SIXTY ONE THOUSAND THREE HUNDRED EIGHTY FIVE AND FORTY EIGHT PAISE) ON THE TERMS AND CONDITIONS CONTAINED IN THE SAID AGREEMENT.

THE MIZUHO BANK, LTD. (HEREINAFTER CALLED "THE BANK") HAVING ITS OFFICE AT LEVEL-17, TOWER-A, PENINSULA BUSINESS PARK, SENAPATI BAPAT MARG, LOWER PAREL, MUMBAI, MAHARASHTRA - 400 013, INDIA HAS AT THE REQUEST OF THE CONTRACTOR AGREED TO GIVE THE GUARANTEE AS HEREINAFTER CONTAINED.

WE MIZUHO BANK, LTD. DO HEREBY UNCONDITIONALLY AGREE WITH THE COMPANY THAT IF THE CONTRACTOR SHALL IN ANY WAY FAIL TO OBSERVE OR PERFORM THE TERMS AND CONDITIONS OF THE SAID AGREEMENT OR SHALL COMMIT ANY BREACH OF ITSOBLIGATIONS THEREUNDER, THE BANK SHALL ON DEMAND AND WITHOUT ANY OBJECTION OR DEMUR PAY TO THE COMPANY, THE SAID SUM OF INR 4,17,55,510.00 (INDIAN RUPEES FOUR CRORES SEVENTEEN LAKHS FIFTY FIVE THOUSAND FIVE HUNDRED TEN ONLY) OR ANY PORTION THEREOF WITHOUT REQUIRING THE COMPANY TO HAVE RECOURSE TO ANY LEGAL REMEDY THAT MAY BE AVAILABLE TO IT TO COMPEL THE BANK TO PAY THE SAME OR CALLING ON THE COMPANY TO COMPEL SUCH PAYMENT BY THE CONTRACTOR.

CONTD...4...

FOR MIZUHO BANK, LTD.
AUTHORIZED SIGNATORY

FOR MIZUHO BANK, LTD.
AUTHORIZED SIGNATORY

ANY SUCH DEMAND SHALL BE CONCLUSIVE AS REGARDS THE LIABILITY OF THE CONTRACTOR TO THE COMPANY AND AS REGARDS THE AMOUNT PAYABLE BY THE BANK UNDER THIS GUARANTEE. THE BANK SHALL NOT BE ENTITLED TO WITHHOLD PAYMENT ON THE GROUND THAT THE CONTRACTOR HAS DISPUTED ITS LIABILITY TO PAY OR HAS DISPUTED THE QUANTUM OF THE AMOUNT OR THAT ANY ARBITRATION PROCEEDING OR LEGAL PROCEEDING IS PENDING BETWEEN THE COMPANY AND THE CONTRACTOR REGARDING THE CLAIM.

WE, THE BANK, FURTHER AGREE THAT THE GUARANTEE SHALL COME INTO FORCE FROM THE DATE HEREOF AND SHALL REMAIN IN FULL FORCE AND EFFECT TILL THE PERIOD THAT WILL BE TAKEN FOR THE PERFORMANCE OF THE SAID AGREEMENT WHICH IS LIKELY TO BE THE 31ST DAY OF OCTOBER, 2026 BUT IF THE PERIOD OF AGREEMENT IS EXTENDED EITHER PURSUANT TO THE PROVISIONS IN THE SAID AGREEMENT OR BY MUTUAL AGREEMENT BETWEEN THE CONTRACTOR AND THE COMPANY, THE BANK SHALL RENEW THE PERIOD OF THE GUARANTEE FAILING WHICH IT SHALL PAY TO THE COMPANY THE SAID SUM OF INR 4,17,55,510.00 (INDIA RUPEES FOUR CRORES SEVENTEEN LAKHS FIFTY FIVE THOUSAND FIVE HUNDRED TEN) OR SUCH LESSER AMOUNT OUT OF THE SAID SUM OF INR 4,17,55,510.00 (INDIAN RUPEES FOUR CRORES SEVENTEEN LAKHS FIFTY FIVE THOUSAND FIVE HUNDRED TEN ONLY) AS MAYBE DUE TO THE COMPANY AND AS THE COMPANY MAY DEMAND. THIS GUARANTEE SHALL REMAIN IN FORCE UNTIL THE DUES OF THE COMPANY IN RESPECT OF THE SAID SUM OF INR 4,17,55,510.00 (INDIA RUPEES FOUR CRORES SEVENTEEN LAKHS FIFTY FIVE THOUSAND FIVE HUNDRED TEN) ARE FULLY SATISFIED AND THE COMPANY CERTIFIES THAT THE AGREEMENT HAS BEEN FULLY CARRIED OUT BY THE CONTRACTOR AND DISCHARGES THE GUARANTEE.

CONTD...5...

FOR MIZUHO BANK, LTD.

AUTHORIZED SIGNATORY

FOR MIZUHO BANK, LTD.

R.R.Kulkarni

AUTHORIZED SIGNATORY

IIDC-792-001206-001

THE BANK FURTHER AGREES WITH THE COMPANY THAT THE COMPANY SHALL HAVE THE FULLEST LIBERTY WITHOUT THE CONSENT OF THE BANK AND WITHOUT AFFECTING IN ANY WAY THE OBLIGATIONS HEREUNDER TO VARY ANY OF THE TERMS AND CONDITIONS OF THE SAID AGREEMENT OR TO EXTEND THE TIME FOR PERFORMANCE OF THE SAID AGREEMENT FROM TIME TO TIME OR TO POSTPONE FOR ANY TIME OR FROM TIME TO TIME ANY OF THE POWERS EXERCISABLE BY THE COMPANY AGAINST THE CONTRACTOR AND TO FORBEAR TO ENFORCE ANY OF THE TERMS AND CONDITIONS RELATING TO THE SAID AGREEMENT AND THE BANK SHALL NOT BE RELIEVED FROM ITS LIABILITY BY REASON OF SUCH FAILURE OR EXTENSION BEING GRANTED TO THE CONTRACTOR OR THROUGH ANY FORBEARANCE, ACT OR OMISSION ON THE PART OF THE COMPANY OR ANY INDULGENCE BY THE COMPANY TO THE CONTRACTOR OR ANY OTHER MATTER OR THING WHATSOEVER WHICH UNDER THE LAW RELATING TO SURETIES WOULD BUT FOR THIS PROVISIONS HAVE THE EFFECT OF RELIEVING OR DISCHARGING THE GUARANTOR.

THE BANK FURTHER AGREES THAT IN CASE THIS GUARANTEE IS REQUIRED FOR A LONGER PERIOD AND IT IS NOT EXTENDED BY THE BANK BEYOND THE PERIOD SPECIFIED ABOVE, THE BANK SHALL PAY TO THE COMPANY THE SAID SUM OF INR 4,17,55,510.00 (INDIAN RUPEES FOUR CRORES SEVENTEEN LAKHS FIFTY FIVE THOUSAND FIVE HUNDRED TEN ONLY) OR SUCH LESSER SUM AS MAY THEN BE DUE TO THE COMPANY AND AS THE COMPANY MAY REQUIRE.

NOTWITHSTANDING ANYTHING HEREIN CONTAINED THE LIABILITY OF THE BANK UNDER THIS GUARANTEE IS RESTRICTED TO INR 4,17,55,510.00 (INDIAN RUPEES FOUR CRORES SEVENTEEN LAKHS FIFTY FIVE THOUSAND FIVE HUNDRED TEN ONLY) ONLY. THIS GUARANTEE SHALL REMAIN IN FORCE TILL THE 31ST DAY OF OCTOBER, 2026 AND UNLESS THE GUARANTEE IS RENEWED OR A CLAIM IS PREFERRED AGAINST THE BANK WITHIN THE VALIDITY PERIOD AND/OR THE CLAIM PERIOD FROM THE SAID DATE, ALL RIGHTS OF THE COMPANY UNDER THIS GUARANTEE SHALL CEASE AND THE BANK SHALL BE RELEASED AND DISCHARGED FROM ALL LIABILITY HEREUNDER EXCEPT AS PROVIDED IN THE PRECEDING CLAUSE.

CONTD...6...

FOR MIZUHO BANK, LTD.

AUTHORIZED SIGNATORY

FOR MIZUHO BANK, LTD.

R V Kulkarni

AUTHORIZED SIGNATORY

6.

BDC-792-001206-001

THE BANK HAS UNDER ITS CONSTITUTION POWER TO GIVE THIS GUARANTEE AND MR AMIT RAI (SENIOR VICE PRESIDENT) & MR RAMCHANDRA KULKARNI (VICE PRESIDENT) WHO HAVE SIGNED IT ON BEHALF OF THE BANK HAS AUTHORITY TO DO SO.

FOR MIZUHO BANK, LTD.

AUTHORIZED SIGNATORY

AMIT RAI
Senior Vice President
R-045

FULL NAME:
OFFICIAL ADDRESS:
MIZUHO BANK, LTD.
LEVEL 17, TOWER –A,
PENINSULA BUSINESS PARK,
SENAPATI BAPAT MARG,
LOWER PAREL,
MUMBAI 400 013- INDIA

FOR MIZUHO BANK, LTD.

AUTHORIZED SIGNATORY

RAMCHANDRA KULKARNI
Vice President
K-803

FULL NAME:
OFFICIAL ADDRESS:
MIZUHO BANK, LTD.
LEVEL 17, TOWER –A,
PENINSULA BUSINESS PARK,
SENAPATI BAPAT MARG,
LOWER PAREL,
MUMBAI 400 013- INDIA

PLACE: MUMBAI
DATE: 04.05.2023

Annexure-2

Performance Bank Guarantee Format

..... (Name & address of the concerned subsidiary
..... Company ~~/ Purchaser~~ Company)

Re: Bank Guarantee in respect of Agreement / Contract vide no. ….. dated ..... between Coal India Ltd. on behalf of …… (Name of concerned subsidiary Company) and …….. (Name of Supplier Company) ***{applicable for CIL Contracts}***

Messers .....a Company / Firm having its office at No. ..... (hereinafter called 'the Contractor') has entered into the Agreement / Contract / Purchase Order vide no ..... dated ..... (hereinafter called 'the said Agreement') with Coal India Limited, Kolkata on behalf of ..... / Purchaser Company (Name of the concerned subsidiary Company) (hereinafter called 'the Company') to supply ..... stores/ materials amounting to Rs. .....on the terms and conditions contained in the said Agreement.

The..... (Name of the Bank) (hereinafter called 'the Bank') having its office at..... has at the request of the Contractor agreed to give the guarantee as hereinafter contained.

We.....(Name of the Bank) do hereby unconditionally agree with the Company that if the Contractor shall in any way fail to observe or perform the terms and conditions of the said Agreement or shall commit any breach of its obligations thereunder, the Bank shall on demand and without any objection or demur pay to the Company, the said sum of Rs..... or any portion thereof without requiring the Company to have recourse to any legal remedy that may be available to it to compel the Bank to pay the same or calling on the Company to compel such payment by the Contractor.

Any such demand shall be conclusive as regards the liability of the Contractor to the Company and as regards the amount payable by the Bank under this guarantee. The Bank shall not be entitled to withhold payment on the ground that the Contractor has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between the Company and the Contractor regarding the claim.

We, the Bank, further agree that the guarantee shall come into force from the date hereof and shall remain in full force and effect till the period that will be taken for the performance of the said Agreement which is likely to be the ..... day of..... but if the period of Agreement is extended either pursuant to the provisions in the said Agreement or by mutual agreement between the Contractor and the Company, the Bank shall renew the period of the guarantee failing which it shall pay to the Company the said sum of Rs....., or such lesser amount out of the said sum of Rs.....as maybe due to the Company and as the Company may demand. This guarantee shall remain in force until the dues of the Company in respect of the said sum of Rs..... are fully satisfied and the Company certifies that the Agreement has been fully carried out by the contractor and discharges the guarantee.

The Bank further agrees with the Company that the Company shall have the fullest liberty without the consent of the Bank and without affecting in any way the obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend the time for performance of the said Agreement from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the contractor and to forbear to enforce any of the terms and conditions relating to the said Agreement and the Bank shall not be relieved from its liability by reason of such failure or extension being granted to the contractor or through any forbearance, act or omission on the part of the Company or any indulgence by the Company to the contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provisions have the effect of relieving or discharging the Guarantor.

The Bank further agrees that in case this guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above, the Bank shall pay to the Company the said sum of Rs..... or such lesser sum as may then be due to the Company and as the Company may require.

Notwithstanding anything herein contained the liability of the Bank under this guarantee is restricted to Rs.....only. The guarantee shall remain in force till the.....day of .....20... and unless the guarantee is renewed or a claim is preferred against the Bank within the validity period and/or the claim period from the said date, all rights of the Company under this guarantee shall cease and the Bank shall be released and discharged from all liability hereunder except as provided in the preceding clause.

The Bank has under its constitution power to give this guarantee and..... [(Name of the person(s)] who have signed it on behalf of the Bank has authority to do so.

Dated this.....day of .....20.....
Place.....

Signature of the authorized person(s)
For and on behalf of the Bank.

Annexure-3

Pro-forma of Commissioning Certificate to be issued by the Purchaser after Successful Commissioning of Equipment

No. : Date :

M/s:

Sub : Certificate of Commissioning of Equipment

1. This is to certify that the equipment as detailed below has been received in good condition along with all the standard and special accessories in accordance with the Contract / specifications. The same has been installed and commissioned as detailed below:

   (a) Contact No._____ Date_____

   (b) Description and Model of the Equipment _____

   (c) Details of Commissioning:

Manufacturer's Equipment / Sl. No.	Date of Commissioning (date/month/year)

   (d) Bill of Lading No. & Date _____
   (for imported contract)

   (e) Name of the Vessel / Transporter _____

   (f) R/ R Consignment Note/ Challan No. _____ Date_____

   (g) Date of receipt of last consignment of equipment _____

   (h) Name of the Project/ Consignee _____

2. Details of Accessories not yet supplied and recoveries to be made on that account :

   Sl. No. Description Amount to be recovered

3. The proving test has been done to our entire satisfaction and operators have been trained to operate the equipment.

4. The supplier has fulfilled his contractual obligations for successful commissioning satisfactorily:
   Or
   The supplier has failed to fulfil his contractual obligations with regard to the following:
   (a)
   (b)

(c)
(d)

5. The amount of recovery on account of non-supply of accessories is given under paragraph number 2.

6. The amount of recovery on account of failure of the Supplier to meet his contractual obligations is as indicated in endorsement of the letter.

Signature (s)

Name(s)

Designation(s) with Stamp

Explanatory notes for filling up the commissioning certificate by the Purchaser

(a) He has adhered to the time schedule specified in the contract in dispatching the documents / drawings pursuant to Technical Specifications.
(b) He has supervised the commissioning of the equipment in time, i.e. within the period specified in the Contract from the date of intimation by the Purchaser in respect of the installation of the Equipment.

The commissioning certificate shall be signed by the concerned officials of the Project and counter-signed by the Area General Manager and HOD of Excavation Deptt. of subsidiary company.

In the event of documents / drawings having not been supplied or installation and commissioning of the Equipment having been delayed on account of the Supplier, the extent of delay should always be mentioned.

Annexure to Technical Specifications

Annexure 4(a)

KOMATSU Annexure 4(a)

Komatsu Mining Corp.

Joy Global Surface Mining Inc
4400 West National Avenue,
Milwaukee,
WI 53214 USA
+1 414 670 4400 Phone
www.mining.komatsu

Ref: Q15130/CIL/SM/Special Tools
December 14, 2021

To,
General Manager (MM)-HOD
Coal India Limited,
Coal Bhawan, MM Department,
1st Floor, Premises No. 04,
Action Area 1 A, New Town, Rajarhat,
Kolkata -700 156

Subject: Special Tools

Reference: Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021 for the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

Reference is made to the Special Tools clause no. 10.1.b of Section VI – Technical Specifications of the subject NIT and we confirm that the list of special tools indicated below will be provided to you with each shovel and are sufficient for maintenance of the shovel.

Item	Component No.	Object description	Qty	UoM	MAKE
0001	21P48D2	WRENCH CENTER GUDGEON	1	EA	P&H
0002	R108889F1	ASSY, SPACER, SWING	1	EA	P&H
0003	21P42	WRENCH-SHIPPER SHAFT NUT	1	EA	P&H
0004	21P85D1	TOOL HOIST DRUM SEAL PUSHER	1	EA	P&H
0005	R109668F1	TOOL KIT HYDRAULIC	1	EA	ENARPAC, P&H

Other basic tools / rigging materials required for commissioning and maintenance are generally available at all CIL mine sites and not special / specific to the offered model. If any additional tools other than the listed tools in our offer is required for maintenance, erection and commissioning of the Equipment, same shall be provided at free of cost

Thanking you,

Yours faithfully,
For Joy Global Surface Mining Inc

JOY GLOBAL SURFACE MINING INC

Jeffery A. Roschyk
Vice President, Surface Sales & Business Development

Annexure 4(b)

KOMATSU

Komatsu Mining Corp.

Joy Global Surface Mining Inc
4400 West National Avenue,
Milwaukee,
WI 53214 USA
+1 414 670 4400 Phone
www.mining.komatsu

Ref: Q15130/CIL/SM/SF1/Bought-out
February 08, 2022

To,
General Manager (MM)-HOD
Coal India Limited,
Coal Bhawan, MM Department,
1st Floor, Premises No. 04,
Action Area 1 A, New Town, Rajarhat,
Kolkata -700 156

Subject: Bought out list including Ancillary

Reference: Your shortfall document Ref. No. CIL/C2D/20cum ERS/R-146/2021-22/1009 dated 01.02.2022

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021 for the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

Below is the major bought-out assemblies and sub-assemblies list per the clause D.10.2.(j) Section VI – Technical Specifications, including the Ancillary equipment per clause D.6 Section VI – Technical Specifications.

Vendor Name	Address	Item Description
Bridon American Corp	27857 Network Place, Chicago, IL 60673 +1-800-521-5555	Suspension Cable
Usha Martin Ltd.	2A, Shakespeare Sarani, Kolkata – 700 071, India +91-33-22823965	Wire Ropes
MACO CORPRATION (ANSUL)	2 / 5, Sarat Bose Road, Lala Lajpat Rai Sarani, Kolkata – 700 020 +91 33 30294100	AFDS in line with DGMS
Sullair, LLC	North America Operations 1 Sullair Way, Michigan City, IN 46360 +1-219-879-5451	Air Compressor
Electroteknica Switchgears	1/5A, Raja Basanta Roy Road, Kolkata – 26 +91-33-24632519	Skid mounted Field Switch
KEI Industries Limited	Arihanth Benchmark, 4th Floor 113-F Matheshwartola Road Ps: Tiljala, Kolkata: 700 046 +91 33 - 4062 0820 / 0822	Trail Cable

KOMATSU

Vendor Name	Address	Item Description
SKF Engineering and Lubrication India Private Limited	Plot No. 249 & 250, Bommasandra Industrial Area, Phase 3, Hosur Road, Bengaluru - 560 099 Karnataka India + 91-80-61301000	Automatic Lubrication System
Siemens Corporation	300 New Jersey Avenue Suit 1000 Washington, D.C. 20001 +1 202-434-4800	I/O Devices
ABB Automation GmbH	Gaglower Street 17-18, Cottbus, GE 03048 +49 355 791519	Digital Controller
ABB Automation GmbH	Gaglower Street 17-18, Cottbus, GE 03048 +49 355 791519	AC Drive Cabinet, Active Front end's & AC Motor Drives
Hammond Power Solutions Pvt. Ltd.	D. No. 5-2/222/IP/B, II-Floor, Icon Plaza Allwyn X-Roads, Miyapur, Hyderabad 500 049 Tel: +91-994-995-0009	Main transformer and Auxillary transformer
Cease Fire	Bhakta Tower, Sector-III, Salt Lake Kolkata - 91, +91 33-40031452	Fire Extinguishers
Shell India Market Pvt Ltd	Plot No.C-60, Trents House, Bandra Kurla Complex, Bhandara (E), Mumbai - 51 +91 22-671-63847	Gear Oil & Grease
Focus Infra Engineering India Pvt. Ltd. (Petron)	No.7, 17th Cross, Off Margosa Road, Malleshwaram, Bangalore 560 055 +91 80 2344 9517	Open Gear Lube
Steelcast Limited	Ruvapari Road; Bhavnagar, Gujarat India 364 005 Phone Nos: +91 278 251 9062	P&H Design 55" Width Crawler Shoes.
Ancillary Equipment	Various make (Provided in Annexure 23 Tech Doc 4 of Bid)	Ancillary Equipment per the clause D.6 of NIT

We trust the above is in line with your query and is acceptable to you.

Thanking you,

Yours faithfully,
For Joy Global Surface Mining Inc

JOY GLOBAL SURFACE MINING INC

Jeffrey A. Roschyk
Vice President, Surface Sales & Business Development

KOMATSU

APPENDIX – 2

Revision to Bought-out List Annexure 4(h) of Draft Contract

Sullair, LLC	North America Operations 1 Sullair Way, Michigan City, IN 46360 +1-219-879-5451	Air Compressor
OR		
Quincy Compressor	Quincy Compressor 701 North Dobson Avenue Bay Minette, AL 36507, United States +1-(251) 937-5900	Air Compressor
Electrotechnica Products Pvt. Ltd.	23A, Netaji Subhas Road, 10th Floor, Room No. 44, Kolkata, 700001 +91-33-40638267	Skid mounted Field Switch

KOMATSU

Komatsu Mining Corp.

Joy Global Surface Mining Inc
4400 West National Avenue
Milwaukee
WI 53214 USA
+1 414 475 4400 Phone
www.miningkomatsu

Ref: Q15130/CIL/SM/Ancillary Items
December 14, 2021

To,
General Manager (MM)-HOD
Coal India Limited.
Coal Bhawan, MM Department
1st Floor, Premises No. 04,
Action Area 1 A, New Town, Rajarhat,
Kolkata -700 156

Subject: Ancillary equipment and other requirement as per Clause D.6

Reference: Tender No. CIL/C2D/20cum ERS/R-146/2021-22/361 Dated 15.11.2021 for the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

In reference to the above tender clause D.6 Part D of Section VI – Technical Specification, below is the details for the make of item provided as per list of Ancillary: -

Sl. No.	Description of Item	Make of Item
a)	Air operated/ Electric drive winch motor fitted with drum and rope shall be provided at suitable location inside machinery house for fitting of hoist ropes	Part of the equipment
b)	Adequate 440/415 V 3-phase, 50 Hz welding power outlets suitably located so that welding can be carried out at any point on the shovel.	Part of the equipment
c)	A 440/415 V 3-phase, 50 Hz, Fully thyristerised / inverter type welding machine with accessories suitable for welding and gouging purpose.	ESAB
d)	Adequate 220/110 V, single phase, hand-held inspection outlets, portable hand lamps and all necessary supporting equipment.	EVEREADY
e)	220/110 V, single phase, portable electric blower with suction attachment and all necessary supporting equipment.	BOSCH
f)	Workbench fitted with vice and tool chest	VE WORKS
g)	2 nos. 150T hydraulic jack of reputed make.	VANJAX
h)	1 set Pneumatic Wrench of 1 inch drive as well as cassettes of suitable drive size to cover limited clearance nuts/bolts fitted in the offered machine along with various applicable sizes of sockets of reputed make	IR

KOMATSU

i)	Boom foot cushion tightening wrench - 2 nos. if required	NOT APPLICABLE
j)	Crowd Belt Tightening Tools (if crowd has belt drive)	ENERPAC
k)	Centre gudgeon nut tightening tools.	Part of Special Tools
l)	A suitably programmed laptop (programmer) for loading software in PLCs	DELL / HP
m)	Portable Infra-Red Temperature Gauge (Digital) – 1 No.	FLUKE
n)	Digital multimeter – 1 No	FLUKE
o)	Digital Megger (100V to 1000V) – 1 No.	FLUKE
p)	Digital Megger 5 KV – 1 No.	FLUKE
q)	AC/DC digital clamp meter 2000 A – 1 No	FLUKE
r)	Non-contact type tachometer – 1No.	FLUKE
s)	Digital Portable type vibration meter with all accessories – 1 no.	BASELINE
t)	Any other jacks and jigs to be supplied with machine to attend all types of maintenance and breakdowns	NOT APPLICABLE

We further confirm that items covered in ancillary equipment, required for maintenance of the offered equipment are sufficient to cater the erection and maintenance of the equipment.

Thanking you,

Yours faithfully,
For Joy Global Surface Mining Inc

JOY GLOBAL SURFACE MINING INC

Jeffrey A. Roschyk
Vice President, Surface Sales & Business Development

Annexure 4(c)

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

DETAILS OF OILS LUBRICANTS AND FLUIDS

ESTIMATED ANNUAL CONSUMPTION

Product	Part No.	Yearly Req. (in Barrel)	Barrel Capacity	UOM	OEM SPECIFICATION
Transmission Oil	NPGEAROIL	08	210	Ltr.	P&H 497
Open Geer Lube	NPOGL	12	181	kg	P&H 464
Grease	NPLI-GR	24	180	kg	P&H 472

Encl:

Appendix 01.i — *OEM Material Specification for Lubricants and fluids*
Appendix 01.ii — *Indian Equivalent Specification*

APPENDIX GL-1

JOYGLOBAL

MATERIAL SPECIFICATIONS

Procedure: GEAR OIL - SINGLE VISCOSITY GRADE; EXTREME PRESSURE (EP)		
Version: Ver. 07, 02-93	Page: Page 1 of 4	Document ID: P&H 497

1.0 SCOPE / PURPOSE

This specification covers premium single grade gear oils produced from refined mineral oil base stocks, and compounded with extreme pressure additives for high load carrying ability. Synthetic lubricants are not covered in this specification.

Materials furnished under this specification are intended to lubricate gears, bushings, plain and rolling element bearings, sprockets, chain drives and other components enclosed in oil-tight housings, and operating under high speed, high torque, high shock load, and/or high speed, low torque conditions.

NOTE: Do not use oils containing EP additives or other friction modifiers in applications containing internal mechanical load brakes, backstops or clutches. Additionally, certain EP formulations may not be compatible with bronze gears as found in worm gear cases.

Materials furnished under this specification may be used in sump (splash) circulating, or total loss applications.

When extremes in ambient temperatures may dictate seasonal changes to different viscosity grades, or where MIL-L-2105 oils are required, P&H specification 496 or 498 gear oils may be suitable substitutions for these single grade EP gear oils. Consult P&H Engineering or Service prior to making such a substitution.

The designations 497A and 497B are being reserved for lighter viscosities than ISO VG 68 if required in the future. P&H 497A, B, and C from Issue No. 6 do not match the same designations in this specification.

Materials furnished under this specification are not intended for use in applications where MIL-L-2105 (latest issues), and/or API Service GL-5 gear oils are a requirement.

2.0 PROCEDURE

2.1 PHYSICAL CHARACTERISTICS

These gear oils must be manufactured from highly refined mineral oil base stocks.

These lubricants may not contain viscosity or viscosity index enhancers that are subject to breakdown under extended shearing conditions.

These lubricants must have chemical and physical stability to maintain viscosity, and performance characteristics throughout their intended service life.

Any EP or other friction modifiers used in the formulation of these lubricants must be fully oil soluble, and/or be in a stable colloidal suspension.

These materials shall meet applicable safety, health and environmental regulations.

JOYGLOBAL

MATERIAL SPECIFICATIONS

Procedure: GEAR OIL - SINGLE VISCOSITY GRADE; EXTREME PRESSURE (EP)		
Version: Ver. 07. 02-93	Page: Page 2 of 4	Document ID: P&H 497

2.2 P&H IDENTIFICATION NUMBER AND VISCOSITY GRADE

- P&H No. 497C, ISO VG 68, AGMA 2 EP, SAE 80W
- P&H No. 497D, ISO VG 100, AGMA 3 EP, SAE 80W
- P&H No. 497E, ISO VG 150, AGMA 4 EP, SAE 85W
- P&H No. 497F, ISO VG 220, AGMA 5 EP, SAE 90
- P&H No. 497G, ISO VG 320, AGMA 6 EP, SAE 90
- P&H No. 497H, ISO VG 460, AGMA 7 EP, SAE 140
- P&H No. 497I, ISO VG 680, AGMA 8 EP, SAE 140
- P&H No. 497J, ISO VG 1000, AGMA 8 A EP, SAE 250
- P&H No. 497K, ISO VG 1500, AGMA 9 EP, SAE 250

2.3 PERFORMANCE REQUIREMENTS

Viscosity Grade		ISO VG 68 - 1500, AGMA 2EP-9EP, in accordance with ASTM D2422/ISO 3448	
Viscosity		In accordance with ASTM D445/ISO 3104/12161	
Viscosity index, ASTM D2270/ISO 2909, Min.		90	
Cleanliness		Must be free of visible contaminants	
Additive solubility		Must be miscible to 25 mm²/sec (Rank 25 – 200 filter rating) without loss of additive(s)	
Pour point, ASTM D97/ISO 3016 Max.		5°C/9°F below the lowest anticipated ambient temperature	
Flash point, ASTM D92/ISO 2592, Min.		204°C/400°F	
Rust test, ASTM D665/ISO 7120,	Procedure A Procedure B	Pass Pass	
Copper strip corrosion, ASTM D130/ISO 2160 3 hrs @ 100°C/212°F, Max.		1b	
Oxidation stability, ASTM D2893, @ 121.1°C/250°F Max. % viscosity increase		6 (Viscosity grades 68 thru 460) 10 (Viscosity grades 1000 thru 1500)	
Foam Suppression, ASTM D892	Must be within these limits:		
	Temperature	Max. volume of foam (ml) after:	
		5 min blow	10 min blow
	Seq. I 24±0.5°C/75±1°F Seq. II 93.5±0.5°C/200±1°F Seq. III 24±0.5°C/75±1°F	75 75 75	10 10 10
Demulsibility, ASTM D2711	Must be within these limits:	Viscosity Grades	
		68-460	680-1500
	Max % water in oil after 1 hr test Max muff after centrifuging Min total free water collected during entire test (start with 80 ml water)	2.0 1.0 ml 80.0 ml	2.0 1.0 ml 80.0 ml
4 Ball Soll EP test, ASTM D2783 Weld Load, Min. kgf Load wear index, Min. kgf		250 35	
Timken OP test, ASTM D2782 Min. OK value, kg/lbs		27/60	
FZG test, ASTM D5182 with A/8.3/90°C parameters, Min. fail stage		>12	

Table 1: Performance Requirements

2.4 IDENTIFICATION AND PACKAGING

Containers must be clearly identified by the supplier with the following information:

- Purchase Order Number
- Suppliers Name and Product Trade Name
- P&H Material Specification Number followed by a letter which will indicate a particular viscosity grade in accordance with the following:
  - P&H No. 497C, ISO VG 68, AGMA 2 EP, SAE 80W
  - P&H No. 497D, ISO VG 100, AGMA 3 EP, SAE 80W
  - P&H No. 497F, ISO VG 150, AGMA 4 EP, SAE 85W
  - P&H No. 497F, ISO VG 220, AGMA 5 EP, SAE 90
  - P&H No. 497G, ISO VG 320, AGMA 6 EP, SAE 90
  - P&H No. 497H, ISO VG 460, AGMA 7 EP, SAE 140
  - P&H No. 497I, ISO VG 680, AGMA 8 EP, SAE 140
  - P&H No. 497J, ISO VG 1000, AGMA 8 A EP, SAE 250
  - P&H No. 497K, ISO VG 1500, AGMA 8 EP, SAE 250
- Material Safety Data Sheet (MSDS) - One (1) with each shipment.

The lubricant furnished under this specification shall be supplied in clean containers of the size(s) as specified on the purchase order.

2.5 INSPECTION AT PURCHASER'S WORKS

Acceptance of material furnished under this specification shall be subjected to confirmation by purchaser's Quality Assurance Department.

The purchaser shall have the option of accepting or rejecting any material failing to meet the requirements of this specification.

2.6 ADDITIONAL CRITERIA OF ACCEPTANCE

Conformance to all specified requirements shall not constitute the sole basis of acceptance, since all lubricants must be judged further on their satisfactory field performance in P&H equipment.

Lubricant change frequency, or relubrication volume and frequency, can directly affect the performance of a lubricant and the economics of operation. Consult the equipment shop manual, and with the lubricant supplier for the proper change frequency, or relubrication volume and frequency, for each application.

The suitability of a lubricant is highly dependent upon environmental conditions. It is the consumer's responsibility to provide lubricant suppliers with the following:

- Actual application and copy of this specification.
- Environmental data - ambient temperature range and weather conditions.

- Type of centralized lubrication system(s), including pump, filtration and reservoir data, when applicable.

It is the responsibility of the consumer to verify that lubricants conform to applicable environmental and safety codes governing their use and disposal.

3.0 REFERENCES

- ASTM D92/ISO 2592, Latest Issue: Flash Point, COC Method
- ASTM D97/ISO 3016, Latest Issue: Pour Point
- ASTM D130/ISO 2160, Latest Issue: Copper Strip Corrosion Test
- ASTM D445/ISO 3104, D2161, Latest Issue: Kinematic Viscosity
- ASTM D892, Latest Issue: Foam Stability
- ASTM D665/ISO 7120, Latest Issue: Rust Test
- ASTM D2270/ISO 2909, Latest Issue: Viscosity Index
- ASTM D2422/ISO 3448, Latest Issue: ISO Viscosity Classifications
- ASTM D2711, Latest Issue: Demulsibility
- ASTM D2782, Latest Issue: Timken EP Test
- ASTM D2783, Latest Issue: Four Ball EP Test
- ASTM D2893, Latest Issue: Oxidation Stability
- DIN 51 354, Latest Issue: FZG Test

Procedure: OPEN GEAR LUBRICANT			JOYGLOBAL
Document ID: P&H 464	Page: Page 1 of 4	Version: Ver. 10.0, 06-16	
Business: SURFACE	Region: MILWAUKEE OPs	Site: 1A1	MATERIAL SPECIFICATION

1.0 SCOPE / PURPOSE

This specification qualifies the use of open gear lubricants defined in ISO / TR 18792: 2008(E) as Residual Compounds 6.2.1.1 (asphaltic or bituminous), Greases 6.2.1.2 and Lubricating Compounds 6.2.1.4. These lubricants contain highly fortified blends of viscous oils combined with additives to form a stable, long lasting, high load carrying and wear resistant film that lubricates under boundary conditions as found in a variety of large surface mining equipment continuous operation applications.

Materials furnished under this specification are intended to lubricate open gears, racks, bushings, rails, rollers, dipper handles and walk mechanisms. These applications are subject to extreme contact pressures, reversing loads that may dwell at zero velocity while loaded and operation under varied weather conditions.

Materials furnished under this specification are not intended for use in moderate to high speed anti-friction bearings, electric motor bearings, Magnetorque® clutches, and other applications where there may be service requirements of the lubricant that differ from or are beyond those described in this specification. Depending upon the consistency of products, they may not be appropriate for use in couplings or with labyrinth seals.

Lubricants specified herein must be capable of being dispensed through the components of a centralized lubrication system (spray nozzles, injectors, lines and metering blocks) without plugging or plating. They must also be capable of being dispensed at the lowest anticipated operating temperature to the most remote application point.

This specification covers all grades of open gear lubricants that are useable from -50°C (-58°F) to +60°C (+140°F) ambient temperature. The particular grade selected must perform in the specific temperature range in which it is utilized.

Materials specified herein must meet the performance requirements of section 2.2.

The open gear lubricants specified herein must have the necessary adhesive and cohesive properties to resist chipping, throw off, and run off, and provide the necessary film thickness and lubricating properties to prevent metal to metal contact between application intervals under all operating conditions.

These lubricants must be specifically formulated to protect surfaces from wear, have excellent water resisting and rust preventing properties, and have the necessary properties to provide exceptional service life of the components which they lubricate under all operating conditions.

The material furnished under this specification may contain an evaporative solvent to improve dispensability. The solvent must be compatible with all centralized lubrication system components (gaskets, o-rings, vent valves, etc).

2.0 PROCEDURE

2.1 PHYSICAL CHARACTERISTICS

2.2 PERFORMANCE REQUIREMENTS

PROPERTY	TEST METHOD	REQUIREMENT
Flash point (finished product with solvent)	ASTM D92/ISO 2592	65°C (185°F) minimum
Copper Strip Corrosion	ASTM D130 ASTM D4048 24 hours @ 100°C	2a maximum
Rust Protection	ASTM D1743	Pass
Four Ball Wear Test (without solvent)	ASTM D2266, scar diameter 60 minutes at 40 kgf	0.7mm maximum
Weld Point (without solvent) Load Wear Index (without solvent)	ASTM D2596 (Four Ball EP Test)	800 kgf pass minimum 120 minimum
Adhesive properties		Must adhere to surfaces and not become brittle and flake off at lowest operating temperature
Minimum Base Fluid Viscosity Ambient Temperature at point of lubricant application °C (°F) -50 to 0 (-58 to +32) -20 to +40 (-4 to +104) 0 to +60 (+32 to +140)	ASTM D445/IEC31104/D2161	680 cSt at 40°C 1900 cSt at 40°C 4600 cSt at 40°C
Solid Lubricant Particle Size		20 micron maximum average particle size with 99% of solid particles smaller than 44 micron (passing 325 sieve)
Lubricating Solids Content (Molybdenum Disulfide, Graphite, Etc.)		6% Minimum
Pumpability (finished product with solvent)	Lincoln Ventmeter test, nominal maximum psi @ lowest operating temperature. Test run for 30 seconds. The test sample to be acclimatized to the test temperature for 6 hours when this test is performed.	Vent from 1800 psi to 600 psi maximum

2.3 SPECIAL CONSIDERATIONS

2.4 IDENTIFICATION AND PACKAGING

Containers must be clearly marked by the supplier with the full product name.

Identification must remain legible upon outdoor storage of the containers.

If appropriate, a shelf life of 12 to 36 months should be clearly marked on the container.

Any special considerations regarding the storage of the product such as protection of container openings, elimination of water build up, etc. should be clearly communicated to the end user.

Material Safety Data Sheet (SDS) must be supplied to the end user for each product delivered.

2.5 INSPECTION AT PURCHASER'S WORKS

2.6 ADDITIONAL CRITERIA OF ACCEPTANCE

Conformance to all specified requirements shall not constitute the sole basis of acceptance since all lubricants must be judged further on their satisfactory field performance on the type and model equipment which they are intended to lubricate.

Re-lubrication volume and frequency can directly affect the performance of a lubricant and the economies of operation. Consult the equipment shop manual and lubricant supplier for the re-lubrication volume and frequency for each application.

The suitability of a lubricant is highly dependent upon environmental conditions. It is the consumer's responsibility to provide the lubricant supplier(s) with the appropriate application data, material specification(s), environmental data such as temperature and weather conditions and type of centralized lubrication system.

Materials specified herein shall meet all applicable safety, health, and environmental regulations.

It is the responsibility of the consumer to verify that lubricants conform to applicable local environmental and safety codes governing their use and disposal.

3.0 REFERENCES

- ASTM D92/ISO 2592, Latest Issue - Flash Point, COC Method
- ASTM D1743, Latest Issue - Rust Protection
- ASTM D2266, Latest Issue - Four Ball Wear Test
- ASTM D2596, Latest Issue - Four Ball EP Test and Load Wear Index (LWI)
- ASTM D4048, Latest Issue - Copper Strip Corrosion Test
- ASTM D130, Latest Issue - Copper Strip Corrosion Test
- ASTM D445, Latest Issue – Kinematic Viscosity
- Lincoln Ventmeter Test - Operation and Technical Manual (section 4.1 – operating procedure)

JOYGLOBAL

MATERIAL SPECIFICATIONS

Procedure: MULTIPURPOSE GREASE EXTREME PRESSURE (EP)		
Version: Ver. 12. 03-01	Page: Page 1 of 4	Document ID: P&H 472

1.0 SCOPE / PURPOSE

This specification covers premium multipurpose, extreme pressure greases with essential properties and characteristics that make them suitable for use in diversified applications through a wide range of ambient temperatures. Both mineral and synthetic base oils may be used to formulate greases that comply with this specification.

Materials furnished under this specification are intended to lubricate bushings, plain and rolling element bearings, and miscellaneous items on P&H equipment requiring grease.

Materials furnished under this specification may be applied by hand, hand pressure guns, pneumatic or electric pressure guns, or centralized lubrication systems of the single line parallel, single line progressive series, and/or dual line progressive construction.

P&H 472 (no suffix) from Issue No. 9 is the same as P&H 472C in this specification.

P&H 472D is primarily intended to lubricate bearings in Magnetorque Assemblies, and bearings and gears in hoists and cranes where long life of lubricant is demanded, and high temperature operation may be expected in both intermittent and continuous duty. Other product uses include high speed electric motor bearings; ball, roller and journal bearings - medium to high temperature and high temperature applications; bearings subject to water, steam, chemicals and contaminants; and bearings subject to heavy thrust or shock loads.

2.0 PROCEDURE

2.1 PHYSICAL CHARACTERISTICS

These lubricating greases shall be manufactured with a lithium 12-hydroxystearate, lithium complex, or other thickeners provided care is taken by the end user to avoid grease incompatibility in P&H equipment. Thickeners such as clay base, polyurea or calcium may result in incompatibilities. Always consult lubricant suppliers before changing types or brands of greases.

These lubricating greases must contain extreme pressure additives, and be formulated to resist oxidation, corrosion, separation, and water washout.

These lubricating greases must have chemical and mechanical stability to maintain consistency and performance characteristics throughout their intended service life.

The NLGI grade of the grease must be appropriate for the prevailing ambient temperature range. A lithium complex synthetic grease which meets the requirements of P&H 472B is the preferred grade for all temperature ranges. A lithium complex non-synthetic grease which meets the requirements of P&H 472C is a suitable alternative. At lower ambient temperature ranges, a lithium complex non-synthetic grease which meets the requirements of P&H 472A or P&H 472B may be recommended by the lubrication supplier.

These materials shall meet applicable safety, health, and environmental regulations.

JOYGLOBAL

MATERIAL SPECIFICATIONS

Procedure: MULTIPURPOSE GREASE EXTREME PRESSURE (EP)

Version:	Page:	Document ID:
Ver. 12. 03-01	Page 2 of 4	P&H 472

Performance Requirements

P&H GRADE	472A	472B	472C	472D
NLGI grade [1]	0	1	2	2
Worked penetration ASTM D217/ISO 2137 @ 60 strokes, 25C/77F	355-385	310-340	265-295	265-295
Dropping point, ASTM D566/ISO 2176 or ASTM D2265, Min., C/F	Not Applicable	177/350	177/350	204/400
Base fluid viscosity, ASTM D445/ISO 3104, D/100, Min., mm2/s @ 40C	68	100	220	220
Oxidation stability, ASTM D942, Max. pressure drop @ 100 hrs., kPa/psi	35/5	35/5	35/5	35/5
Roll stability, ASTM D1831 Max. points change	30	30	30	30
Water washout, ASTM D1264, Max. % loss @ 79C/175F	Not Applicable	10	10	10
Rust Protection, ASTM D1743 Rating	Pass	Pass	Pass	Pass
EMCOR Rust Protection DIN 51802/IP 220, Min. rating	0.0	0.0	0.0	1.0
Copper strip corrosion, ASTM D4048 Max. rating, 24 hrs @ 100C/212F	2	2	2	2
Timken EP Test, ASTM D2509 Min OK value, kg/lbs	20/45	20/45	20/45	20/45
Four ball EP, ASTM D2596 - Weld load, Min. kgf Load wear index, Min. kgf	315 45	315 45	315 45	315 45
Deleterious particles, ASTM D1404, Max. number of scratches	20	20	20	20
Pumpability [3], Lincoln Variability test, Nominal max. psi @ lowest anticipated ambient temperature,	400 [2]	400 [2]	400 [2]	400 [2]

(1) The preferred grade is NLGI #2. However, an NLGI #1 or #0 may be required for proper dispensing at low temperatures, or by centralized lubrication systems. See section 2.4

(2) This is applicable for use only in centralized lubrication systems.

(3) Consult lubrication system component manufacturer regarding any deviations from this requirement.

Table 1: Performance Requirements

2.2 IDENTIFICATION AND PACKAGING

Containers must be clearly identified by the supplier with the following information:

- Purchase Order Number
- Supplier's Name and Product Trade Name
- P&H Material Specification Number followed by a letter which will indicate a particular consistency grade in accordance with the following:
  - a. P&H Number 472A - NLGI #0 EP

- P&H Number 472B - NLGI #1 EP
- P&H Number 472C - NLGI #2 EP
- P&H Number 472D - NLGI #2 EP

- Material Safety Data Sheets (MSDS) - One (1) with each shipment.

The lubricant furnished under this specification shall be supplied in clean containers of the size(s) as specified on the purchase order.

2.3 INSPECTION AT PURCHASER'S WORKS

Acceptance of material furnished under this specification shall be subjected to confirmation by purchaser's Quality Assurance Department.

The purchaser shall have the option of accepting or rejecting any material failing to meet the requirements of this specification.

2.4 ADDITIONAL CRITERIA OF ACCEPTANCE

Conformance to all specified requirements shall not constitute the sole basis of acceptance, since all lubricants must be judged further on their satisfactory field performance in P&H equipment.

Relubrication volume and frequency can directly affect the performance of a lubricant and the economies of operation. Consult the equipment shop manual and lubricant supplier for the proper relubrication volume and frequency for each application.

The suitability of a lubricant is highly dependent upon environmental conditions. It is the consumer's responsibility to provide lubricant suppliers with the following:

- Actual application and copy of this specification.
- Environmental data - ambient temperature range and weather conditions.
- Type of centralized lubrication system(s).

It is the responsibility of the consumer to verify that lubricants conform to applicable environmental and safety codes governing their use and disposal.

NOTE: The preferred grade is a synthetic grade NLGI #1. A non-synthetic grade NLGI #2 is a suitable alternative. A non-synthetic NLGI #1 or #0 may be required for proper dispensing at low temperatures or by centralized lubrication systems. See Section 2.4.

JOYGLOBAL

MATERIAL SPECIFICATIONS

Procedure: MULTIPURPOSE GREASE EXTREME PRESSURE (EP)		
Version: Ver. 12, 03-01	Page: Page 4 of 4	Document ID: P&H 472

3.0 REFERENCES

- ASTM D217/ISO 2137 - Determination of Cone Penetration
- ASTM D445/ISO 3104, D 2161 - Kinematic Viscosity
- ASTM D566/ISO 2176 - Determination of Dropping Point
- ASTM D942 - Oxidation Stability, Oxygen Bomb Method
- ASTM D1264 - Water Washout Resistance
- ASTM D1404 - Deleterious Particles Test
- ASTM D1743 - Rust Protection
- ASTM D1831 - Roll Stability Test
- ASTM D2265 - Determination of dropping point over a wide temperature range
- ASTM D2509 - Timken EP Test
- ASTM D2596 - Four Ball EP Test
- ASTM D4048 - Copper Strip Corrosion Test
- DIN 51 802/IP220, EMCOR Rust Protection Test
- Grease Pumpability, Lincoln Ventability (Ventmeter) Test

Technical Data Sheet

Shell Omala *S2 GX 320*

- *EXTRA PROTECTION*
- *Against contamination*
- *Against oxidation*
- *Against micropitting*

Industrial Gear Oils

Shell Omala S2 GX oils are high quality extreme-pressure oils designed primarily for the lubrication of heavy duty industrial gears. Their high load carrying capacity and anti-friction characteristics combine to offer superior performance in gears.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

Performance Benefits can be summarised in OMALA, C O M (Protection against Contamination, Oxidation and Micropitting)

- **Handling Contamination and hence maintaining system efficiency**

  Shell Omala S2 GX oils display a combination of excellent water shedding capability and low foaming tendency. The oils are designed to minimize the potential for foaming in the most testing of environments.

  Shell Omala S2 GX oils have excellent water separation properties, such that excess water can be drained easily from lubrication systems to help extend the life of the gears and ensure efficient lubrication of the contact areas.

  Water can greatly accelerate surface fatigue of gears and bearings as well as promoting ferrous corrosion on internal surfaces. Water contamination should therefore be avoided or removed as quickly as possible after the occurrence.

- **Long oil life through Oxidation stability – leading to maintenance saving**

  Shell Omala S2 GX oils are formulated to reduce the risk of thermal and chemical breakdown throughout the maintenance interval. They withstand high thermal loading and resist the formation of sludge to provide extended oil life capability, even with bulk oil temperatures of up to 100°C in certain applications.

- **Excellent wear & corrosion protection incl. protection against Micro-pitting**

  Shell Omala S2 GX oils have superb load carrying capacity that helps reduce gear tooth and bearing wear on steel components.

Shell Omala S2 GX oils offer:

- Excellent micropitting performance to help prolong component life
- Low sludge tendency, which reduces wear on rollers and helps ensure bearing protection.
- Outstanding corrosion protection, protecting steel components even in the presence of contamination by water and solids.

  Shell Omala S2 GX oils offers excellent shear stability by maintaining its viscosity, thereby protecting the component from friction and wear.

Main Applications

- **Enclosed industrial gear systems**

  Shell Omala S2 GX technology provides an extreme EP system which allows trouble-free application in most enclosed industrial gearboxes using steel spur and helical gear drives with circulation or splash lubrication systems.

- **Highly loaded gears**

  Shell Omala S2 GX oils have an effective full extreme pressure (EP) additive system allowing them to be used in highly-loaded gear systems.

- **Other applications**

  Shell Omala S2 GX oils are suitable for lubrication of bearings and other components in circulating and splash-lubricated systems. For loaded worm drives Shell Omala S4 WE, Shell Morlina S4 B and Shell Omala S1 W are recommended. For automotive hypoid gears, the appropriate Shell Spirax Oil should be used.

  Shell do not recommend/support use in systems with fine filtration (<10 microns) because sustained foam control performance is not assured. Please consult your Shell Local Technical Advisor and Product Application Specialist.

Specifications, Approvals & Recommendations

Meets requirements of:

- ISO 12925-1 Type CKD (ISO 68 through 460)
- ISO 12925-1 Type CKC (ISO 680, 1000)
- DIN 51517- Part 3 CLP (ISO 68 through 1000)
- AGMA EP 9005-E02 (ISO 68 through 1000)
- AIST (US Steel) 224 (ISO 68 through 680)
- Flyes Cincinnati P-62 (ISO 68), P-76 (ISO 100), P-77 (ISO 150), P-74 (ISO 220), P-59 (ISO 320), P-35 (ISO 460), P-34 (ISO 680), P-78 (ISO 1000)
- Siemens AG

  Shell Omala S2 GX 150, 220, 320, 460 and 680 are approved by Siemens AG for use in Flender gearboxes

  For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Help Desk.

Compatibility & Miscibility

Shell Omala S2 GX oils are compatible with various seal materials to help prevent premature failure of seals and thus avoid leakage.

Typical Physical Characteristics

Properties			Method	Shell Omala S2 GX 320
Kinematic Viscosity	@ 40°C	mm²/s	ISO 3104	320
Kinematic Viscosity	@ 100°C	mm²/s	ISO 3104	34.4
Viscosity Index			ISO 2909	97
Flash Point COC		°C	ISO 2592	>220
Pour Point		°C	ISO 3016	-18
Density	@ 15°C	kg/m³	ISO 12185	877

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

Health, Safety & Environment

- **Health and Safety**

  This product is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

  Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

  Guidance on health and safety is available on the appropriate Material Safety Data Sheet (MSDS), which can be obtained from http://www.epc.shell.com

- **Protect the Environment**

  Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

- **Advice**

  Advice on applications not covered here may be obtained from your Shell Representative

PETRON CORPORATION

OPEN GEAR LUBE 595NC

Open Gear Lubricant

Product Data Sheet

Product Description

Petron Open Gear Lube 595NC is a non-polymer, viscous, semi-fluid lubricant designed to lubricate open gears on shovels, drag lines, and associated milling equipment under all conditions. Open Gear Lube 595NC is part of a proven family of open gear lubricants and is designed to be applied through all automatic lubrication equipment.

Features & Benefits

- High Viscosity Fluid designed to lubricate heavily loaded open gears and extend component life while reducing consumption.
- Solid and organo-metallic anti-wear and extreme pressure additives provide unparalleled protection in the most heavily loaded zones of gear tooth mesh.
- Open Gear Lube 595NC is recommended for use in ambient temperatures ranging from 32°F (0°C) and higher. For applications below 32°F (0°C) use Open Gear Lube 585NC or Open Gear Lube 585W.
- Lubricant resists wash-off in rain and snow, peeling in dusty environments and clings tenaciously to gear teeth in vertical position.
- Doesn't use polymers to attain its high viscosity.
- Environmentally friendly.

Product Application

Mining applications include all types of open gears, rails and rollers, racks and pinion, dipper sticks and other slides in Shovels and Draglines.

Petron Open Gear Lube 595NC may be applied by spraying, brushing, or dripping. Open Gear Lube 595NC is designed to be applied through all automatic lubrication equipment. Petron Open Gear Lube 595NC is available in pails, kegs, drums, bin tanks, fluid bags, and tank truck.

Notes

Petron Open Gear Lube 595NC exceeds OEM base oil viscosity requirements for open gear lubricants on shovels and draglines. Petron Open Gear Lube 595NC is not intended for general use in bushings and bearings except in slow moving, heavily loaded applications.

If you require further information contact Petron at: info@petroncorp.com

Petron Corporation
16300 W Glendale Drive, New Berlin, Wisconsin 53151
Tel: (262) 797-4660 · Fax: (262) 796-1660
Web: http://www.PetronCorp.com

ISO Certified

PETRON® CORPORATION

OPEN GEAR LUBE 595NC

Open Gear Lubricant

Property	Test Method	Typical Data
Color	Visual	Black
Appearance	Visual	Viscous, Semi-Fluid
Specific Gravity	ASTM D-1298	0.99
Flash Point	ASTM D-92	>320°F (>160°C)
4 Ball EP, Weld Point (Kg)	ASTM D-2596	400
Rust	ASTM D-1743	Pass
Ventmeter, 600 psi	Lincoln VF-1	32°F @ <30 seconds
Base Oil Viscosity, cSt @ 40 °C	ASTM D-445	50,000

In extremely cold weather conditions it is important that you are able to slow down the actuation of the pump and extend rest time between cycles in order to be successful as you approach extreme cold conditions. You must also make sure your motor cranking in seconds to prevention PDS are acceptable for the injector model and machinery you plan to lubricate. The published rest time, when added to the required time to reach system pressure must be less than the cycle time set on the PLC of the auto lube system. Injector blocks should be as close as possible to site of application.

Testing listed is typical, no warranty is expressed or implied regarding results obtained from use. Information contained on this product data sheet is subject to change without notification. Before using product name, always be sure to read and follow precautions and directions for use appearing on the product container. Seller shall not be liable for any loss or damage.

Petron Corporation
16800 W Glendale Drive, New Berlin, Wisconsin 53151
Tel: (262) 797-4880 Fax: (262) 796-1080
Web: http://www.PetronCorp.com

ISO Certified

Technical Data Sheet

Shell Alvania Grease FW(F), Barbora EP

Shell Gadus S2 *V220*

High Performance Multipurpose Extreme Pressure Grease

- *Reliable Protection*
- *Multipurpose*
- *Lithium*

Shell Gadus S2 V220 greases are high quality multipurpose, extreme-pressure greases based on a blend of high viscosity index mineral oils and a lithium hydroxystreate soap thickener and contain extreme-pressure and other proven additives to enhance their performance in a wide range of applications.

Shell Gadus S2 V220 greases are designed for multipurpose grease lubrication of rolling element and plain bearings as well as hinges and sliding surfaces such as those found in throughout most industrial and transport sectors

---

Applications

Shell Gadus S2 V220 greases 0 are specifically designed for:

- Steel mill lubrication where a softer grease is necessary for specialised dispensing systems
- Heavy duty plain and rolling element bearings operating under harsh conditions including shock loading in wet environments

Shell Gadus S2 V220 grease 1 is designed for:

- Heavy duty bearings served by centralised dispensing equipment
- Extreme-pressure gear grease for applications at normal ambient temperature
- Heavy duty plain and rolling element bearings operating under harsh conditions including shock loading in wet environments
- Low temperature greasing applications

Shell Gadus S2 V220 greases 2 & 3

are designed for:

- Heavy duty bearings and general industrial lubrication
- Heavy duty plain and rolling element bearings operating under harsh conditions including shock loading in wet environments
- Operation over the temperature range -20°C to 100°C for bearings operating at 75% of the maximum rated speed (Can withstand up to 120°C intermittently)

Performance Features

- ***Outstanding load carrying capacity***
  Shell Gadus S2 V220 greases contain special extreme-pressure additives which enable them to withstand heavy and shock loads without failure of the lubricant film
- ***Improved mechanical stability***
  This is particularly important in vibrating environments where poor mechanical stability can lead to grease softening with subsequent loss of lubrication performance and leakage.
- ***Good resistance to water wash-out***
  Shell Gadus S2 V220 greases have been formulated to offer resistance to water wash out
- ***Oxidation stability***
  Specially selected base oil components have excellent oxidation resistance. Their consistency will not alter in storage and they withstand high operating temperatures without hardening or forming bearing deposits
- ***Anti- corrosion protection***

Shell Gadus S2 V220 greases have an affinity with metal and have the ability to protect bearing surfaces against corrosion, even when the grease is contaminated with water.

Performance Specifications
Meets ASTM D4950-08 LB
Meet the British Timken specification for Steel Mill applications

Re-greasing Intervals
For bearings operating near their maximum recommended temperatures, re-greasing intervals should be reviewed

Health & Safety
Shell Gadus S2 V220 greases are unlikely to present any significant health or safety hazard when properly used in the recommended application, and good standards of industrial and personal hygiene are maintained.

For further guidance on Product Health & Safety refer to the appropriate Shell Product Safety Data Sheet.

Note
Care should be taken to ensure that the grease does NOT come into contact with hydraulic brake rubber components.

Technical Data Sheet

Typical Physical Characteristics

Shell Gadus S2 V220	00	0	1	2	3
Soap Type	Lithium	Lithium	Lithium	Lithium	Lithium
Base Oil	Mineral	Mineral	Mineral	Mineral	Mineral
Kinematic Viscosity @ 40°C cSt 100°C cSt (IP 71/ASTM-D445)	220 19	220 19	220 19	220 19	220 19
Dropping Point °C (IP 132)	-	-	180	180	180
Cone Penetration Worked @ 25°C 0.1mm (IP 50/ASTM-D217)	400- 430	355- 385	310- 340	265- 295	220- 250

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

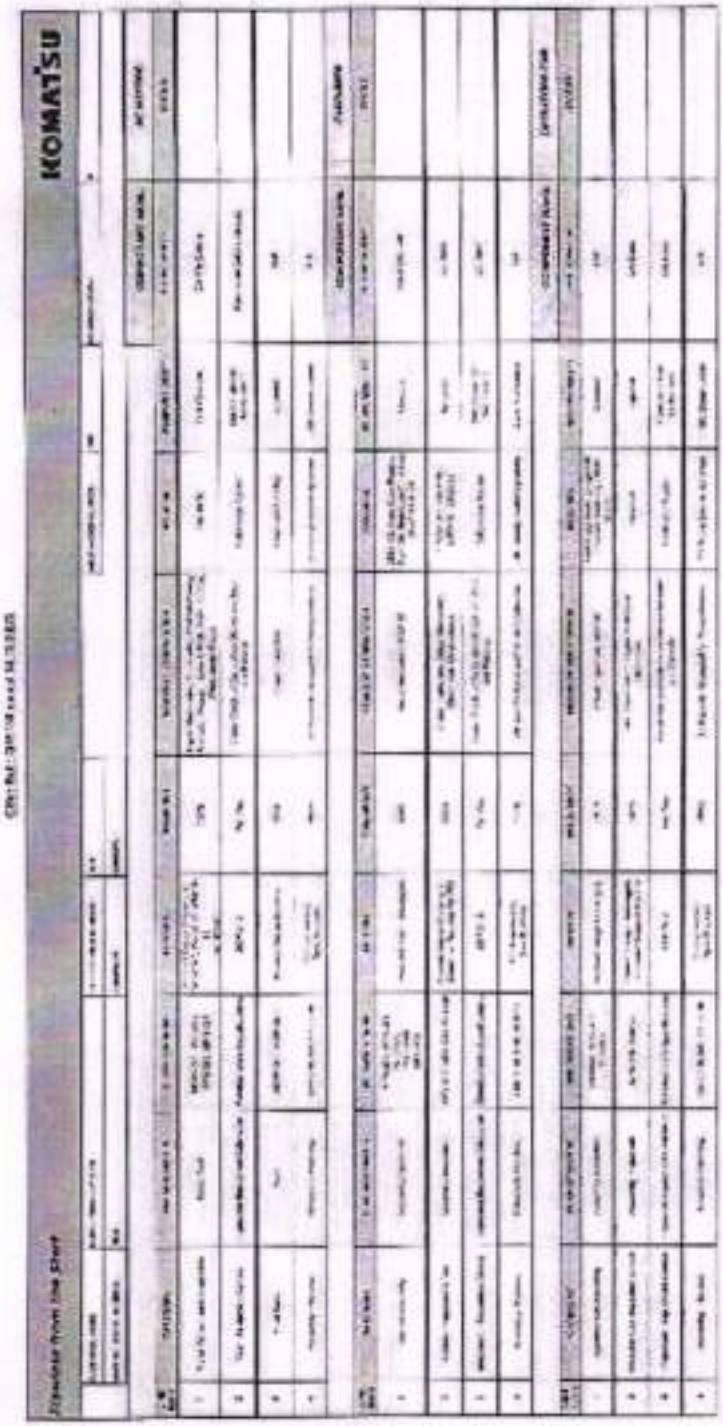
Annexure 4(d)


KOMATSU


KOMATSU


KOMATSU


KOMATSU


KOMATSU


KOMATSU

Annexure 4(e)

ANNEXURE 4(e)

KOMATSU

Komatsu Mining Corp.

Joy Global Surface Mining Inc
4400 West National Avenue
Milwaukee
WI 53214-USA
+1 414 670 4400 Phone
(Additional mailing information)

Ref: Q15130/CIL/SM/Ballast
December 14, 2021

To,
General Manager (MM)-HOD
Coal India Limited,
Coal Bhawan, MM Department,
4th Floor, Premises No. 04,
Action Area 1 A, New Town, Rajarhat,
Kolkata -700 156

Subject: Ballast Specification

Reference: Tender No. CIL/C2D/20cum ERS/R-146/2021-22/351 Dated 15.11.2021 for the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

Reference is made to the **Clause no. D.10.3.11(a)** of Section VI – Technical Specifications of the subject NIT. **Please** find given below the recommended specification for ballast to be used in the quoted model of shovel.

- The counterweight punishing (ballast) to be supplied by Coal India would be **124,738 kg with ± 5% variation.**
- The ballast furnished under these specifications shall preferably be washer centers and similar stamping of iron or steel or a mixture of both having a minimum density of **4245 kg/m³** with a preferred size range of 1/4" to 2" in diameter and perhaps no more than an inch thick with no inclusions of stamping strips or skeletons.
- The material furnished shall have a self-compacting weight density as specified above for the corresponding material specification number and shall be capable of being poured, shoveled or dropped into a container having a maximum top opening of 10" in diameter.
- Minimum weight density must be attainable without tamping, shaking or vibrating.
- The material furnished shall be shipped in 55-gallon steel drums with suitable side cutouts near the top for lifting hooks. The drums are to be filled to a level which prevents spillage of material over the top or thru the lifting holes during normal handling.
- Each drum shall be clearly marked with the total weight of the contents less the drum weight and the supplier's name.

KOMATSU

- Galvanized material, chemically inactive, or electrochemicaly active materials is not preferable
- Furnished material must be free of any oils or residue
- Drums will be free of any oils or residue and properly cleaned prior to filing with the ballast and clearly marked with a verification date

Thanking you.

Yours faithfully,
For Joy Global Surface Mining Inc

Jeffrey A. Roschyk
Vice President, Surface Sales & Business Development

Annexure 4(f)

ANNEXURE 4(f)

JOY GLOBAL SURFACE MINING INC

Tender No: CIL/C2D/20cum ERS/R-146/2021-22/391 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

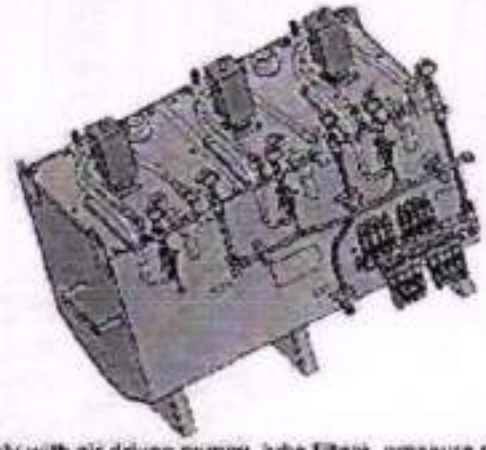
Offer Ref.: Q15139 dated 14.12.2021

AUTOMATIC LUBRICATION SYSTEM

An automatic centralized lubrication system is standard. The system provides metered amounts of lubricant to major systems requiring grease and open gear lubrication. The centralized lubrication system utilizes a three (3) pump, three (3) zone arrangement.

- Multi-Purpose Grease, P&H Specification No. 472
- Open Gear Lubricant, P&H Specification No. 461

The lube system is controlled by the Centurion Shovel Control System and can be monitored and adjusted through the touch-screen GUIs. The large lube tank reservoirs, 50gal (190 L) OGL open gear lube and 30gal (114 L) MPG multi purpose grease, to maximize operating time without replenishing. All gear cases are designed with bath and splash lubrication for all gears and bearings.



Lube tank assembly with air driven pumps, lube filters, pressure relief valves, vent valves and upper grease injectors

The shovel uses a combination of lubrication techniques and systems.

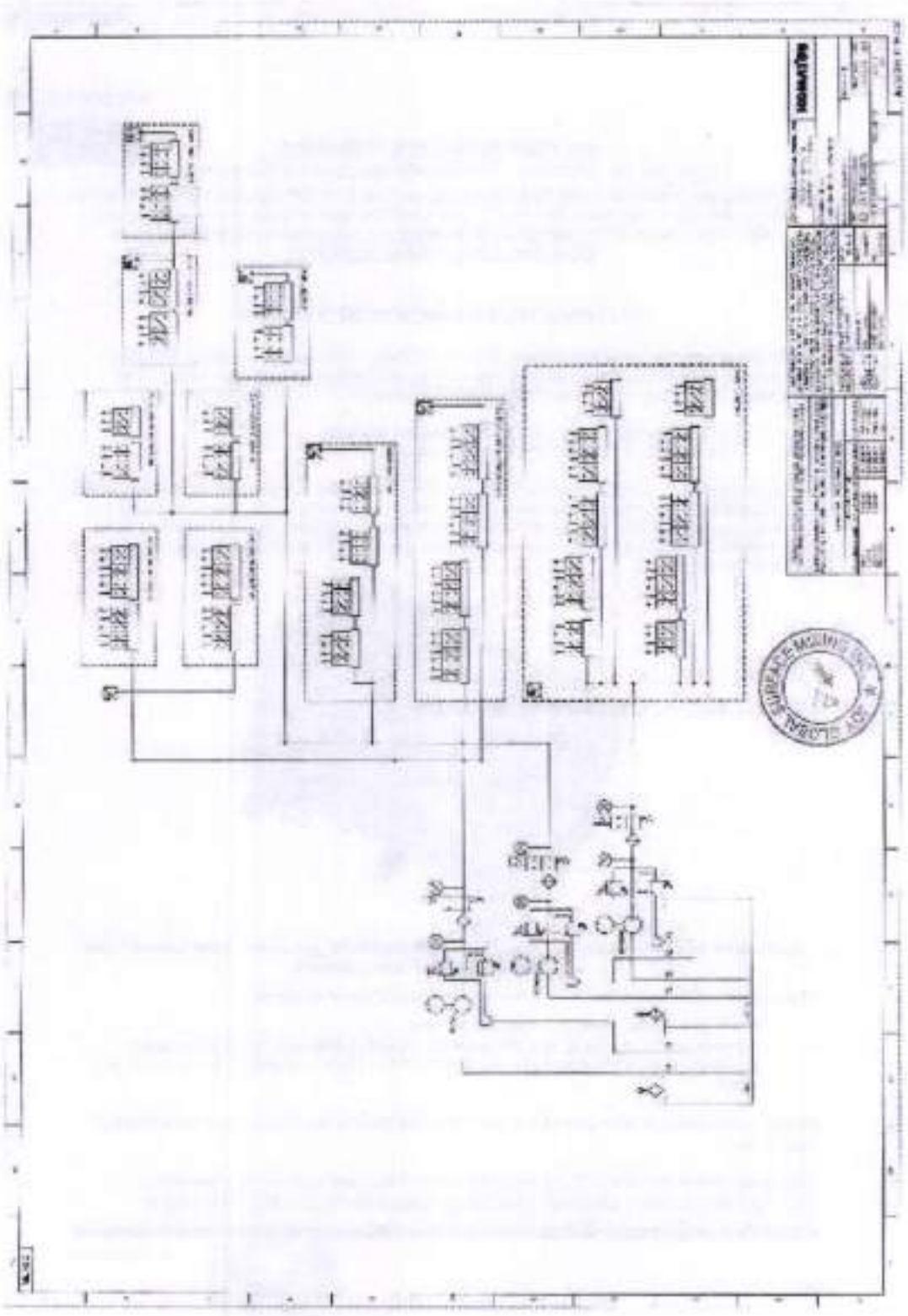
- **Manual fittings** for single lubrication points.
- All gear cases are designed with bath and splash Lubrication for all gears and bearings. A lube filtration system with 20-micron filters is standard on the hoist gear case.

Details of the recommended lubricant and Indian equivalent is indicated in Annexure-01 of Tech Doc 2.

The equipment will utilize SKF (Lincoln) Automatic Lubrication system, and details of manufacturer and item indicated in the Bought-Out list (Annexure 15.) Tech Doc 4)

KOMATSU

Page 1 of 1



Annexure 4(g)

ANNEXURE 4(g)

P&H

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D-20cum ERS/R-146/252-22/381 Dated 16.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Service Cost Cap

Offer Ref.: Q15120 dated 14.12.2021

TECHNICAL DETAILS OF AUTOMATIC FIRE DETECTION AND SUPRESSION SYSTEM

BRIEF DESCRIPTION OF GASEOUS SYSTEM

The gaseous fire suppression system is an engineered system utilizing a Total Flooding agent distribution network. The Inergen gaseous suppression system is to extinguish Fire in Class A, B and C hazards within the control panels by lowering the oxygen concentration below the level that supports combustion.

The system designed to be activated automatically by detection of fire. There is Manual System also. One RED PUSH BUTTON to press for manual operation.

When the gaseous agent is discharged into the area, it will create an inert gas which will allow a person to breathe in a reduced oxygen atmosphere. Activation pressure of the Inergen Gas system is 2175 psi

BRIEF DESCRIPTION OF DRY CHEMICAL SYSTEM

The Dry Chemical Fire Suppression System has four major components: a container to store the extinguishing agent which is a fine powder; a gas expellant cartridge; flexible hose which delivers the dry chemical to the fire area; and adjustable nozzles set to discharge the agent in a particular pattern over a pre-calculated area. When a fire activates the system, a gas – Nitrogen is released into the extinguishing agent's container, pushing the agent out to the nozzles where it is discharged.

Volume per volume, dry chemical system gives quicker and more efficient extinguishment than other agents. It is applicable where dry chemical should not be a threat to damage components other covered area.

The following is a list of typical hazards protected by Dry Chemical Powder system:

Enclosed Cable Tray
Hydraulics Area
Gear Oil Pump Room Area etc.

All normally unoccupied areas where equipment is either non-sensitive or inaccessible.

KOMATSU

JOY GLOBAL SURFACE MINING INC

P&H

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.202

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15139 dated 14.12.2021

DESCRIPTION OF MAJOR COMPONENTS

AGENT TANK ASSEMBLY (p/n 53003):-

The System contains sufficient quantity of multi-purpose Dry Chemical (Mono Ammonium Phosphate base) Extinguishing Agent to tackle enrichment open/closed structure fire hazard areas with in heavy earthmoving machinerics. The Agent Tank capacity is 25 lb and in multiple thereof. Agent Tank is suitably mounted on the equipment with heavy duty bracket assembly. The Dry Chemical Powder is not stored under any gas pressure.

LT-A-101-30 CARTRIDGE ASSEMBLY (p/n 24685):-

A Nitrogen expellant gas cartridge assembly of 1800 psi is mounted adjacent to each agent tank to provide pressurization of Dry Chemical upon actuation. The Dry Chemical Powder is filled in a shell contained tank with the cartridge which is mounted on the outer side.

SAFETY PRESSURE RELIEF VALVE (p/n 15677):-

This is a safety device acts when the system goes to discharge dry chemical power.

NOZZLES:-

a) V ½ NOZZLE (p/n 56716)
The V ½ nozzle creates a fan shaped discharge pattern of 180° and has maximum discharge range of 4 ft in length and by 10 inch in height with a maximum width of 6 ft.

b) C ½ NOZZLE (p/n 53791):
This gives cone shaped discharge pattern which widens at a 3ft diameter at the maximum effective discharge length of 6 ft.

TYPES OF ACTUATIONS:-

a) Electric:- Electric actuation used through CheckFire MP-N assembly connectible with the Gas Suppression.
b) Manual:- Manual actuation can be used with or without automatic detection.

JOY GLOBAL SURFACE MINING INC

P&H

Tender No. CIL/C2D/20cum ERS/R/ 46/2021-22/321 Dated 10.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CUM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year etc. Thereafter Spares & Consumables for a period of 10 years under Rolling Down Cap

Offer Ref.: Q15130 dated 14.12.2021

TYPES OF DETECTION

Linear Fire Detection Wire (p/n 512201) used for detection of fire in the protected areas.

FIRE DETECTION SYSTEM

Linear detection wire consisting of two spring special metal conductors which are separated by a heat sensitive insulator. This wire is routed throughout the protected fire prone areas throughout all panels to be protected from fire hazard. Should there any flame fire or a temperature rise the insulator of the detection wire melts allowing the internal conductors to touch each other completing the detection circuit and resulting in an alarm input at the control module which is located at Operator's cabin. It triggers the fire suppression system discharge within 60 seconds (max). However, control module function is provided with a bypass for trying the system on Manual Actuation mode.

DETAILS OF CHECKFIRE (MP-N) ASSEMBLY (p/n 527372): -

The assembly located at operator's cabin, contains five LED indicators and an in-built audio alarm to provide a continuous update of system status.

FEATURES OF CHECKFIRE MP-N ASSLY: -

a. **Battery Trouble (Yellow)**
LED pulses once every 10 seconds when indicating battery trouble.
The yellow Battery Trouble LED will pulse when a low power condition is detected in either of the connected supplies (internal or external). If only one power source is used, the control module will automatically ignore the unconnected circuit upon resetting the control module. If a power source is once connected and recognized, a subsequent loss of that power source will be recognized as a Battery Trouble condition. If a power source is once connected, recognized and then disconnected, the disconnected supply can be ignored by operating the RESET button.

b. **Power Normal (Green)**
LED pulses once every 3 seconds when indicating normal power.
The green Power Normal LED pulses on once every 3 seconds indicating power is normal from both sources of input power. If the power drops below an acceptable level from either the internal or external source of input power, the green Power LED will be extinguished. If only one source of power is used, the green Power LED will extinguish when the voltage level drops below an acceptable level.

c. **Alarm (Red)**
The alarm LED will flash if an alarm condition exists. An alarm condition is caused by operation of the detection circuit or operation of the manual pull/pressure switch input circuit. The alarm condition will continue until the source of the alarm is removed and the control module is reset.

d. **Detection Circuit Activation mode**
Upon receipt of an input to the detection circuit, the Alarm LED and the sounder will pulse at a rate of 2 times per second and will continue at this rate until the first-time delay period has expired.

After the first-time delay, a second time delay mode is initiated. This causes the LED and sounder to pulse at a rate of 4 times per second

After discharge, the LED and sounder will continue to pulse at a rate of 4 times per second for 30 seconds. After that, it will switch to the trouble mode and pulse once every 10 seconds.
ELECTRIC MANUAL RELEASE MODE – The first-time delay mode will be by-passed, and the LED will pulse at a rate of 4 pulses per second. After the time delay setting is reached, it will pulse another 30 seconds at the same rate. After that, the control module will go into the post-discharge mode, at which time the Alarm LED and Release LED will pulse at a rate of one pulse per 10 seconds.

e. **Release Trouble (Yellow)**
The Yellow Release LED and the audio will pulse at a rate of once every 10 seconds when a trouble condition is detected in the release circuit. The control module will return to normal when the trouble condition is cleared.
The Release trouble will also pulse after the system has completed a discharge cycle or a pressure switch feedback signal has been received. The trouble signal in this condition is used to indicate a recharge of the fire suppression system is necessary. A Release trouble under either of these conditions can only be cleared by resetting the control module.

f. **Detection Trouble (Yellow)**
The Yellow Detection Trouble LED and the audio pulse once every 10 seconds when the control module defects a trouble in the detection circuit. The control module will automatically return to normal when the trouble is cleared.

g. **Control Module Sounder (Audio)**
The sounder gives the audio indication for all alarm and trouble outputs. The sounder will pulse at the same rate as the visual corresponding LED.
The sounder gives the audio indications of the various outputs.
The sounder is rated at 85 Db at 10 feet.
The pulse rates are as follows: -

Alarm –	Time Delay 1 = 2 pulses per second Time Delay 2 = 4 pulses per second
Trouble –	1 pulse per 10 seconds.
Loss of Power –	1 pulse per 10 seconds
Release Circuit Fired –	4 pulses per second for 30 seconds, then 1 pulse per 10 seconds.
Low Battery –	1 pulse per 10 seconds.

LT-30-R CARTRIDGE (p/n 5373): -
This expellant gas cartridge is used on the Ingergen system contains nitrogen as it's expellant gas at 1800 PSI pressure. When the cartridge seal is punctured by pneumatic actuator pin, the gas flows up to the Inergen Valve to release the gas from cylinder.

INERGEN CYLINDER ASSEMBLY (p/n 442787/442130): -
The Cylinder assembly is of solid drawn steel construction with a red standard finish. Each Cylinder is equipped with a pressure seal type valve and gauge. The valve is constructed of forged brass and attached with the cylinder providing a leak tight seal. The valve to also included a safety pressure relief valve.

NOZZLES (p/n 417362): -
Inergen Nozzles are designed to direct the discharge of gaseous agent using the stored pressure from the cylinder. Nozzles are 360 deg discharged patterns.

PRESSURE REDUCING ORIFICE UNION (p/n 416679): -
The pressure reducer is needed in the distribution piping to regulate the flow of agent, thus reducing the agent pressure downstream of the orifice union. The pressure reducer contains a stainless steel orifice plate which is drilled to the specific size hole required.

MANUAL LEVER (p/n 423309): -
This is made from brass fitted on Inergen cylinder to operate gas system locally.

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

1. **Details of Fire Suppression (INERGEN gas) system for medium voltage room, mv switch gear, main & auxiliary transformer area: -**

SL. NO.	PART NO.	DESCRIPTION	QTY.
1	442130	CYLINDER INERGEN STD 575 Cu.ft. W/CV-98 VALVE	01
2	427082	FLEXABLE DISCHARGE BEND FOR CV-98	01
3	417362	NOZZLE INERGEN, ½ inch, NPT, 360 deg	08
4	416679/ 416677	ORIFICE UNION	01
5	423309	MANUAL LEVER	01
6	5373	LT-30-R CARTRIDGE	01
7	427312	CHECKFIRE MP-N ASSEMBLY	01
8	71230	LINEAR DETECTION WIRE	01
9	427308	BATTERY MODULE	01
10	MCI002	COMPLITE KIT OF PIPES & FITTINGS (Indigenous)	LOT

2. **Details of Automatic fire suppression (Inergen gas) system for ac drive cabinet area: -**

SL. NO.	PART NO.	DESCRIPTION	QTY.
1	442130	CYLINDER INERGEN STD 575 Cu.ft. W/CV-98 VALVE	01
2	427082	FLEXABLE DISCHARGE BEND FOR CV-98	01
3	417362	NOZZLE INERGEN, ½ inch, NPT, 360 deg	08
4	416679/ 416677	ORIFICE UNION	01
5	423309	MANUAL LEVER	01
6	5373	LT-30-R CARTRIDGE	01
7	427312	CHECKFIRE MP-N ASSEMBLY	01
8	71230	LINEAR DETECTION WIRE	01
9	427308	BATTERY MODULE	01
10	MCI001	COMPLITE KIT OF PIPES & FITTINGS (Indigenous)	LOT

JOY GLOBAL SURFACE MINING INC

P&H

Tender No. CIL/C2D/20cum ERS/R-146/0021-22035 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15136 dated 14.12.2021

3. Details of Automatic Fire Suppression (Inergen gas) system for motor control room: -

SL. NO.	PART NO.	DESCRIPTION	QTY.
1	442 3C	CYLINDER INERGEN 310.575 Cu.ft. W/CV-68 VALVE	01
2	427082	FLEXIBLE DISCHARGE BEND FOR CV-68	01
3	417382	NOZZLE INERGEN, 4 hole, NPT, 360 deg.	08
4	415579 416077	ORIFICE UNION	01
5	429339	MANUAL LEVER	01
6	8373	LT-30-R CARTRIDGE	01
7	427312	CHECKFIRE (MP-N) ASSEMBLY	01
8	7'220	LINEAR DETECTION WIRE	01
9	427308	BATTERY MODULE	01
10	MC 002	COMPLETE KIT OF PIPES & FITTINGS (Indigenous)	LOT

4. Details of Automatic Fire Suppression (DCP type) for lube reservoir room & cable trench: -

SL. NO.	PART NO.	DESCRIPTION	QTY.
1	433786	LT-A-101-30 AGENT TANK & BRACKET ASSEMBLY	02
2	24583	LT-A-101-30 DAKO HOSE, PNEUMATIC ACTUATOR AND BRACKET ASSEMBLY	02
3	16077	SAFETY PRESSURE RELIEF VALVE	01
4	16474	TRIPLE TEE	02
5	57345	C1-2 NOZZLE (PKG OF 4)	02
6	57344	V-2 NOZZLE (PKG OF 4)	02
7	7'220	LINEAR DETECTION WIRE (100 FT)	01
8	427312	CHECK FIRE (MP-N) ASSEMBLY	01
9	427308	BATTERY MODULE	01
10	57464	ACTUATOR WIT- LT-*CR CARTRIDGE AND BRACKET	01
11	MCI-55002	COMPLETE KIT OF ADAPTORS AND INDEGENOUS ITEMS	01

KOMATSU

Komatsu Mining Corp.

Joy Global Surface Mining Inc
4400 West National Avenue,
Milwaukee,
WI 53214 USA
+1 414 670 4400 Phone
www.mining.komatsu

Ref: Q15130/CIL/SM/SF1/AFDSS
February 08, 2022

To,
General Manager (MM)-HOD
Coal India Limited,
Coal Bhawan, MM Department,
1st Floor, Premises No. 04,
Action Area 1 A, New Town, Rajarhat,
Kolkata -700 156

Subject: Schematic drawing of the AFDSS system along with Zones

Reference: Your shortfall document Ref. No. CIL/C2D/20cum ERS/R-146/2021-22/1009 dated 01.02.2022

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021 for the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

A high-resolution scan of the offered AFDSS system is being enclosed.

The system provided has 4 (four) zones covering: -

1. Zone 1 – INERGEN Gas System covering MV Room, MV Switch Gear and Transformer Area.
2. Zone 2 – INERGEN Gas System covering AC Drive Cabinet
3. Zone 3 – INERGEN Gas System covering Motor Control Room
4. Zone 4 – DCP System covering Lube Room and Cable trench.

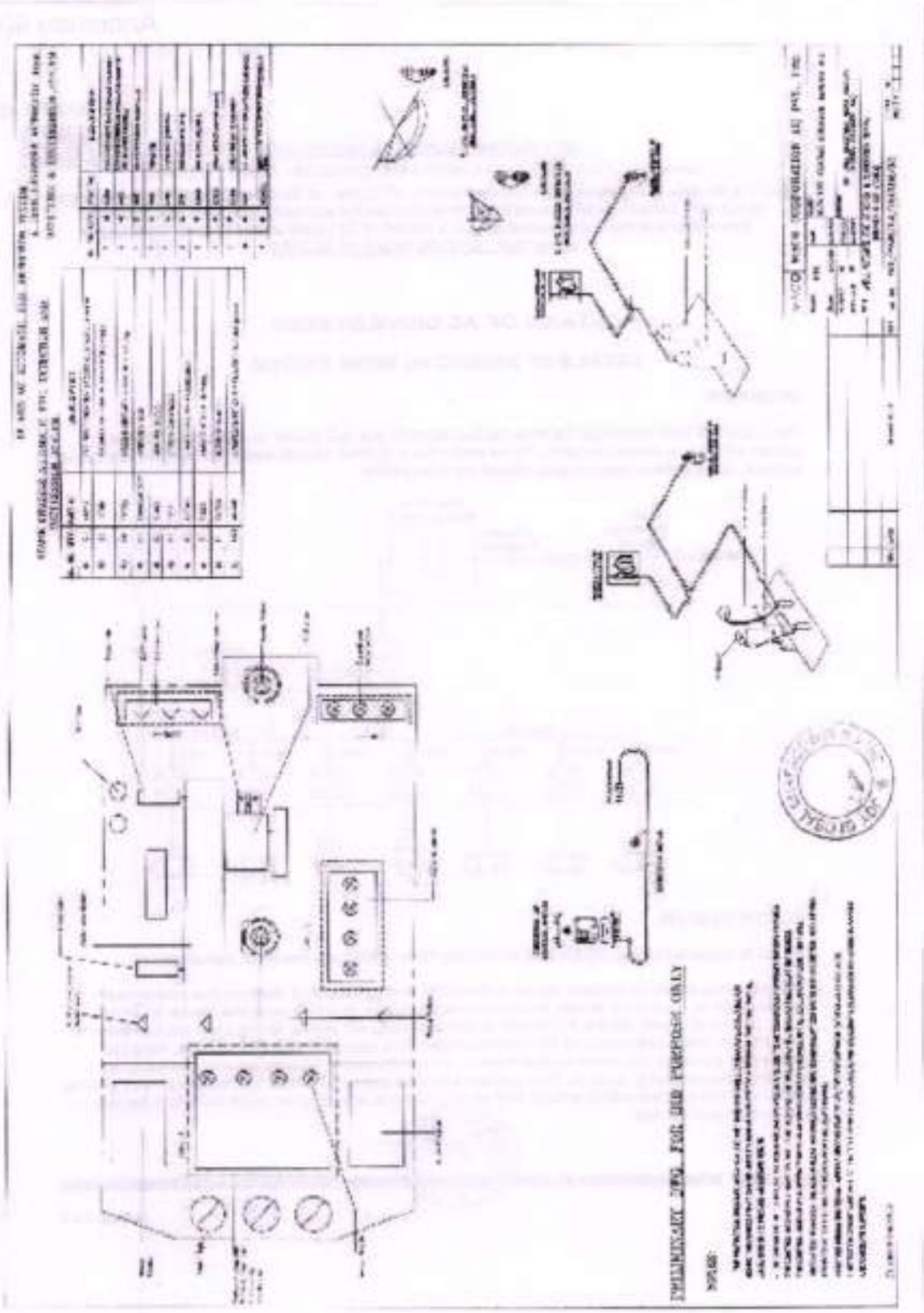
We trust the above is in line with your query and is acceptable to you.

Thanking you,

Yours faithfully,
For Joy Global Surface Mining Inc

Jeffrey A. Roschyk
Vice President, Surface Sales & Business Development

Encl: As above.



Annexure 4(h)

ANNEXURE 4(h)

P&H

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

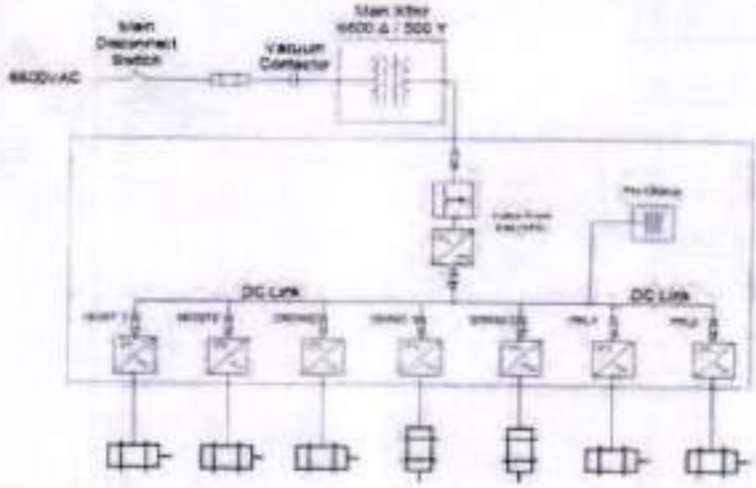
Offer Ref.: Q15130 dated 14.12.2021

DETAILS OF AC DRIVE SYSTEM

DETAILS OF 2300XPC AC DRIVE SYSTEM

OVERVIEW

The CENTURION Electrical Control system controls the AC power to drive hoist, crowd, propel and swing motion motors. Three major area defines shovel electrical system: the power system, drive control system and shovel control system



POWER SYSTEM

Power is supplied to the AC Lineup In Coming Unit (ICU) from the main transformer.

The AC drive cabinets contain (a) an active front end system that controls the power factor dynamically to near unity levels and maintains harmonic injection onto the feeder to within IEEE 519 levels, and (b) the AC motor drives providing AC power to the main motion motors. The drive system cabinets use IGBT technology. This provides variable voltage, variable frequency power to the main motion motors while minimizing harmonics and providing an excellent power factor always. This system includes separate drives for the two propel motors, which are not shared with the hoist and crowd motions, allowing for quick transfers between dig and propel modes

KOMATSU

Page 1 of 4

JOY GLOBAL SURFACE MINING INC

P&H

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/351 Dated 16.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: 015136 dated 14.12.2021

Hoist2 Rear 2xRBi 800x800	Hoist1 Front 2xRBi 800x800	Swing1 1xRBi Propel 1&2 Qty. 2 (1xRBi) 800x800	JC 400 x 600 (SCU's)	Swing2 1xRBi Crowd 1xRBi 800x800
ICU 800 x 800	ISU1 LCL 2xLCL 800x800	ISU 1 800 x 800	JC 400 x 600 (SCU's)	ACU 800 x 800

DRIVE CONTROL SYSTEM

The shovel utilizes Drive Control Units (DCUs) to control the AC motors. The drive system uses a reference from the operator's controller, and motor limits, to control the inverters to maintain desired torque and speed.

The hoist, crowd, and propel motions are speed controlled. The motors develop torque required within preset limit to attain and maintain the speed called for by the operator. For example: The operator requests full-speed movement through the controllers in the operator's cab; the drive system develops the required torque within the limits to maintain the requested speed. As the operator returns the controller to the NEUTRAL position, the drive system develops the required torque to attain and maintain zero speed.

The swing motion is torque controlled. The operator controls the motion by regulating the amount of torque applied to the motor. If the motor attempts to attain maximum speed in the direction of the controller motion. For example: The operator requests full torque and the shovel accelerates rapidly to the right or left to maximum speed. As the operator returns the controller to the NEUTRAL position, the shovel continues to move in the original requested direction until inertia is overcome by swing component friction, stopping the shovel.

The AC controller and drives work together; subroutines in the controller are used for general areas of control such as drive networking. The independent hoist, crowd, swing and propel drives are linked via a dedicated high-speed fiber-optic network with the controller. Many decisions can be made simultaneously, allowing accurate, predictable control and fast response.

SHOVEL CONTROL SYSTEM

The P&H Centurion™ Shovel Control System provides the supervisory control of the shovel drives and executes sequencing and monitoring. The Centurion System calculates interdependent motion speeds through an integrated approach to machine and drive control, helping operators optimize each portion of the dig cycle.

KOMATSU

Page 2 of 4

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/C21-20/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

The system consists of the supervisory control computer, supporting hardware devices and software programs.
The system is comprised of five basic control functions:

- Supervisory Controller
- The onboard graphical user interface (GUI)
- The remote input/output (I/O) devices and communication interface
- The individual drive controllers

The control architecture provides connectivity for the various machine components on the shovel allowing user interface via the cab mounted GUI providing diagnostic and monitoring capabilities. The application code residing within the supervisory controller is based on the IEC 61131 standard. The control system utilizes PROFIBUS network for primary communications with the various system controllers.

INVERTER SUPPLY UNIT (ISU)

Housed in a rugged, ventilated cabinet, the Inverter Supply Unit performs three functions:

1. Converts fixed voltage AC from the main transformer to the fixed voltage DC supplied to the motor inverter modules.
2. Provides dynamic power factor correction in fixed 45 pole to correct unity power factor (1.0 PF) as present technology allows.
3. Provides active harmonic correction to maintain full compliance with IEEE-519 guidelines under the extreme conditions encountered in surface mines.

The ISU consists of inductive-capacitive filters, coupled with the same IGBT power inverter hardware that is used to supply power to the main AC drive motors. The ISU is a full four quadrant device, which allows the regenerated energy to flow back to the mine power grid as required. IGBT's and inductive / capacitive filters are mounted in readily accessible and removable modules and are forced air cooled. All cabinets include door mounted air filters.

POWER INVERTER CABINETS

The AC power conversion system contains six-pulse IGBT (Insulated Gate Bipolar Transistor) of three-phase bridges used to statically convert DC bus by the ISU section to variable voltage variable frequency AC supply power for each of the main AC drive motors. These inverters inherently allow for regenerated AC energy flow back to the DC bus during motion deceleration. The regenerated power is used to supply the on-board motors with any excess flowing back through the ISU section to the mine network for energy savings.

AC DRIVE MOTORS

P&H AC motors are designed and manufactured specifically for mining service duty. Using an AC3 mining-duty traction drive system with direct torque control, they have a unique ISU architecture for energy efficiency and performance mapping. The motors use a proven and rugged air-cooled drive technology facilitated by independent blowers. The drive motors

KOMATSU

operate at 500V and are equipped with RTD's to monitor the temperature of motor bearings and windings.

P&H AC motor Characteristics:

- Heavy duty mechanical design
- Proven bearing designs
- Replaceable, non-destructive INPRO type brass bearing seals for improved contaminate protection
- Low inertia for improved system performance
- Insulated bearing and a shaft grounding feature

A remote hoist pendant controller is included in the machinery house. It has single speed control, set at 10% of full speed, to turn the hoist drum during hoist rope changes.

UPPER CONTROL CABINET

The upper control cabinet is a rugged, maintenance friendly cabinet located in the machinery house. Housed within the cabinet are components for the P&H Centurion™ Shovel Control System, and contains individual motor starters and circuit breakers, providing thermal and short circuit protection for each auxiliary motor. In addition to motor control, there are contactors to control the lights as needed.

LOWER CONTROL CABINET

The lower control cabinet is mounted on the back of the carbody. It contains remote I/O, motor starters for the propel motor blowers, and a 110VAC electrical convenience outlet.

REMOTE I/O'S

The supervisory control system functions with remote I/O in several locations, such as the lower propel, LH lube area, AC drive cabinet, Upper Control Cabinet, and the operator's cab

Annexure 4(i)

ANNEXURE 4(I)

P&H

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021 22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15139 dated 14.12.2021

DETAILS OF DRIVE MOTORS

Motion	Each motor continuous kW	Each motor peak kW	No. of motors	Total continuous kW	Total peak kW
Hoist	544.5	805.5	2	1089	1161
Swing	253.5	344	2	507	688
Crowd	272	374	1	272	374
Propel	184	278.5	2	368	557

AC MOTORS

P&H AC motors are designed and manufactured specifically for mining service duty. Using an ABB mining-duty multi-drive system with direct torque control, they have a unique ISU architecture for energy efficiency and performance recycling. The motors use a proven and rugged brushless drive technology facilitated by independent blowers. The drive motors operate at 500V and are equipped with RTD's to monitor the temperature of motor bearings and windings.

P&H AC motor Characteristics:

- Heavy duty mechanical design
- Proven bearing design
- Replaceable, non-destructive INPRO type labyrinth bearing seals for improved contaminate protection
- Low inertia for improved system performance
- Insulated bearing and a shaft grounding feature

HOMATSU

Page 3 of 3

JOY GLOBAL SURFACE MINING INC

P&H

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/051 Dated 15.11.2021

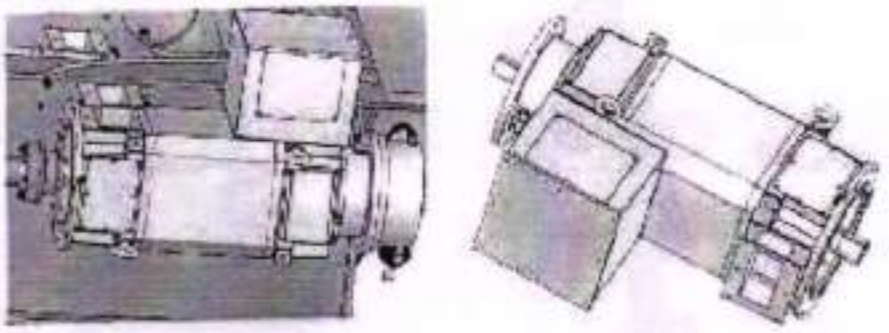
For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref : O15130 dated 16.12.2021

Dual Propel Motors

Two (2) independent P&H AC drive motors, with a total continuous power rating of 440 HP (328 kW) at 550V, and a total peak developed power of 747 HP (557 kW) drive the propel system and are load sharing controlled. The motors are mounted in a propel motor base which is bolted to the rear of the carbody.

The motors are directly connected to P&H planetary propel transmissions with a gear coupling and a long coupling spacer that eliminates the need for motor alignment.



Propel motor, coupling and brake (blower not shown)

Hoist Motor

Two (2) P&H AC motors, with a total continuous power rating of 1460hp (1089kW) at 503 volts, and a total peak developed power of 1557hp (1161kW) drive a ring gear case pinned to the revolving frame.

Hoist motor. Coupling is aligned with use of shims under motor feet

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref : Q15130 dated 14.12.2021

Swing Motors

Swing power is supplied through the use of two (2) series connected AC drive motors, with a total continuous power rating of 680hp (507kW) at 500 volts, and a total peak developed power of 922hp (688kW).

The motor is directly connected to swing planetary transmission and there is no requirement for alignment.

Swing motors bolt directly to swing transmission brake controls

Swing motor, blower, brake and

Crowd Motor

Crowd and retract of the dipper is accomplished using one (1) P&H AC motor, with a continuous power rating of 365hp (272kW) at 500 volts, and a peak developed power of 501hp (374kW).

The motor drives the P&H - POWERBAND "V" BELT™ - shock absorbing/system. V-belt sheaves are fully machined and balanced.

Crowd motor assembly

KOMATSU

Page 3 of 3

Annexure 4(j)

KOMATSU ANNEXURE 4(j)

Komatsu Mining Corp

Joy Global Surface Mining Inc
4400 West National Avenue
Milwaukee
WI 53214 USA
+1 414 382 [illegible]
www.komatsu.com

Ref: Q16130/CIL/SM/Trail Cable
December 14, 2021

To,
General Manager (MM)-HOD
Coal India Limited,
Coal Bhawan, MM Department,
1st Floor, Premises No. 04,
Action Area 1 A, New Town, Rajarhat,
Kolkata -700 156

Subject: Trail Cable

Reference: Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021 for the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

In reference to your above tender, please find below the detailed specification of trailing cable: -

3 X 50 Sqmm (Screened Power Cores) + 2 X 25 Sqmm (Earth Conductor) + 1 X 25 Sqmm (Screened Pilot Core), 11kV (E) Grade flexible trailing cable generally conforming to IS:14494 - 1998

3 Power Cores: Annealed, flexible, tinned Copper Conductor, Shielded with Black Extruded Semiconducting Compound, EPR insulated, Core shielded with Black Extruded Semiconducting Compound, followed by Annealed Tinned Copper Wires + Nylon Composite braiding

2 Earth conductors: Annealed, flexible, tinned Copper conductor and taped with Open Spiral Green Colored PC tape

1 Screened Pilot Core: Annealed, flexible, tinned Copper conductor, Polyester taped, EPR (Type IE2 to IS:638084) insulated, taped with a Black colored PC tape for core identification and Screened with Annealed Tinned Copper wires braiding.

We further confirm that the cable will comply with the Indian Electricity rule clause 123, sub clause 1 & 6.

Thanking you,

Yours faithfully,
For Joy Global Surface Mining Inc

JOY GLOBAL SURFACE MINING INC

Jeffrey A. Roschyk
Vice President, Surface Sales & Business Development

Annexure 4(k)

ANNEXURE 4(k)

JOY GLOBAL SURFACE MINING INC

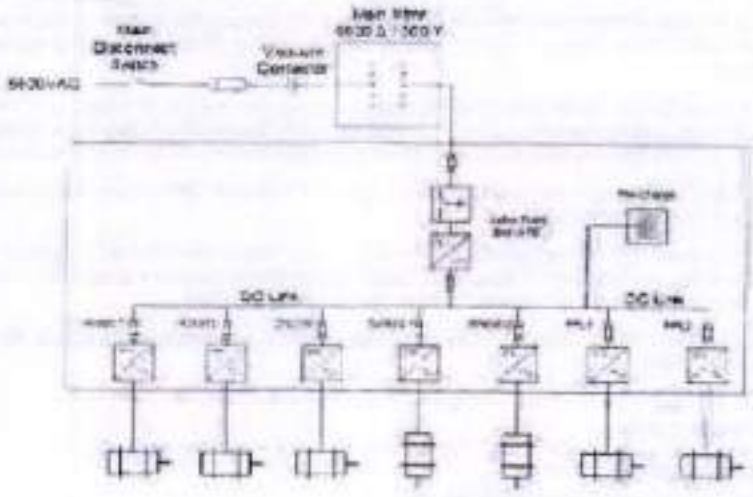
Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and Insurance Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q19139 dated 14.12.2021

The 2800XPC-AC Shovel Drive System utilizes an IGBT Supply Unit (ISU) which consists of IGBT supply modules, a line filter (LCL filter) and AC & DC fuses. The ISU rectifies three-phase AC current to DC current for the intermediate DC link of the drive system. The intermediate DC link is further supplying the inverters that run the Hoist, Crowd, Swing, and Propel motors that are also connected to the intermediate circuit. The line filter suppresses the AC voltage distortion and current harmonics.

The ISU is a four-quadrant switching-mode converter i.e., the power flow through the converter is reversible. The converter controls the DC link voltage to the peak value of the line-to-line voltage. Shovel supply line currents and the DC link voltage are measured and used for the control of power factor and harmonic mitigation to ensure that only active power is delivered to and from the system to maintain near unity power factor.



During normal machine operation, the AC current is sinusoidal with a 0.99 lag average power factor and harmonic compliance is within IEEE519 limits. The ISU does not generate characteristic current or voltage overtones like a traditional 6- or 12-pulse bridge does.

The Total Harmonic Distortion (THD) in voltage is dependent on the Short Circuit Current supplied to the shovel. Minimum short circuit current levels for the 2800XPC-AC have been supplied separately and are a critical customer requirement to achieve IEEE519 limits.

KOMATSU

Page 2 of 3

Annexure 4(I)

KOMATSU

ANNEXURE 4(I)

Komatsu Mining Corp.

Joy Global Surface Mining Inc
4400 West National Avenue
Milwaukee,
WI 53214 USA
+1 414 672 4400 Phone
www.mining.komatsu

Ref: Q15130/CIL/SM/Emergency Lighting
December 14, 2021

To,
General Manager (MM)-HOO
Coal India Limited,
Coal Bhawan, MM Department,
1st Floor, Premises No. 04,
Action Area 1 A, New Town, Rajarhat,
Kolkata -700 156

Subject: Emergency Lighting

Reference: Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021 for the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

In reference to your above tender, please find below the write up on emergency lighting to be provided in the offered shovel: -

220VAC power from the main panelboard (which is supplied by the Auxiliary Transformer) will be connected to the emergency lighting enclosure. Within the enclosure is a battery unity, a sealed dust tight relay, a test switch, and a diagnostic indicator light which continuously monitors the status of the unit: Battery Disconnected, Charger Failure, Lamp Failure, Service Alarm, AC "ON". The unit will also perform the following self-tests: 1 minute every 30 days, 10 minutes on the 6th month, and 30 minutes every 12 months.

OPERATION: With power on the unit, it will maintain full charge of the battery. In the event of power loss to the machine, the unit will activate the battery to supply power to qty. 6 LED low voltage floodlights mounted inside & outside the machine in specific locations for approximately 90 minutes without machine power.

Thanking you,

Yours faithfully,
For Joy Global Surface Mining Inc

Jeffrey A. Roschyk
Vice President, Surface Sales & Business Development

Annexure 4(m)

KOMATSU ANNEXURE 4(m)

Komatsu Mining Corp.

Joy Global Surface Mining Inc
[illegible]
Milwaukee
[illegible]
[illegible] 3400 Phone
[illegible]

Ref: Q15139/CIL/SM/TRANSFORMER
December 14, 2021

To
General Manager (WM)-HOD
Coal India Limited,
Coal Bhawan, Mid Departmental,
1st floor, Premises No. 04,
Action Area 1A, New Town, Rajarhat,
Kolkata 700 156

Subject: Transformer

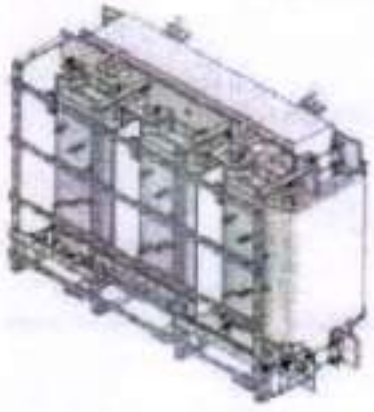
Reference: Tender No. CIL/C2D/20cum ERS/R-148/2021-22/381 Dated 15.11.2021 for the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

In reference to your above tender, please find below the details for the transformers to be provided in the offered shovel: -

Main Transformer (1100 kVA)

The single voltage main transformer is designed for a frequency of 50Hz and a trail cable voltage of 3,600VAC. The main transformer provides power for the AC drive system, providing power to the AC drive motors. The transformer is designed for mining shovel service. It is a [illegible] air cooled, dry type, Delta/Wye connected and has a rectified ground fault detector. The transformer can accommodate unequal loading, has ±5% voltage taps and has [illegible] insulated windings. The Main Transformer provides power for the AC Drive system consisting of the ISU (Inverter Supply Unit) and the IGBT (Insulated Gate Bipolar Transistor) AC motor power inverter modules.



MAIN TRANSFORMER

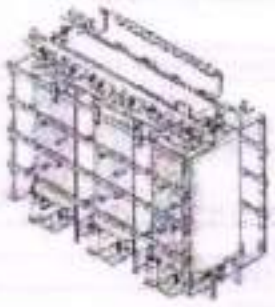
Page 1 of 2

KOMATSU

Auxiliary Transformer (300 kVA)

From the main transformer, the auxiliary transformer is designed for mining shovel service, is convection air cooled, dry type, and is Delta/Wye connected.
Three (3) secondary windings provide power for:

1. 415V/3Ph/50Hz, for utilities and auxiliary motors. Power from the transformer flows to an auxiliary load center, an auxiliary cabinet, and motors.
2. Shielded 190-110V/3Ph/50Hz, winding supply for the control system.
3. 50Hz, 220V/3Ph/50Hz, GPO's supply and distributed through the 220VAC load center.



AUXILIARY TRANSFORMER

Thanking you,

Yours faithfully,
For Joy Global Surface Mining Inc

JOY GLOBAL SURFACE MINING INC

Jeffrey A. Roschyk
Vice President, Surface Sales & Business Development

Annexure 4(n)

ANNEXURE 4(n)

P&H

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/351 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

EXPECTED LIFE OF MAJOR ASSEMBLIES BEFORE FIRST OVERHAUL

EQUIPMENT	MAJOR ASSEMBLIES	EXPECTED LIFE* (In Hours)
2300XPC AC Electric Rope Shovel	AC Main Drive Motor	Hoist – 30,000 hrs Swing – 30,000 hrs Crowd – 40,000 hrs Propel – 40,000 hrs
	Undercarriage & steering system	60,000 hrs
	Transmissions (Hoist, Swing, Crowd & Propel)	Hoist – 30,000 hrs Crowd – 30,000 hrs Swing – 30,000 hrs Propel – 30,000 hrs
	Transformer	45,000 hrs
	Boom	45,000 hrs
	Dipper handle	20,000 hrs
	Dipper	10,000 hrs
	Brakes	Hoist – 15,000 hrs Swing – 15,000 hrs Crowd – 15,000 hrs Propel – 15,000 hrs
	Track Chain	30,000 hrs
	Track Rollers, Sprocket, Idler	40,000 hrs
	Swing Roller & Swing Gear	Roller – 50,000 hrs Gear – 50,000 hrs
	Field Switch	10,000 hrs

Note - * Expected life means life before first Overhaul

KOMATSU

Page 1 of 1

Annexure 4(o)

Annexure 4(p)

ANNEXURE 4(p)

KOMATSU

Technical Description

DIPPER

Specifications

The P&H Optima 40 Dippers have been designed specifically for the 2300XPC for proper filling and low cost of operation. Standard equipment on the dipper includes latch braces and snubbers to prevent damaging impact from dipper door closing. Typical nominal rated dipper size is 26 cubic yard (20.0 cubic meter).

Dipper Capacity	26.33 yd³ (20.13m³)	Dipper Class	Optima w/Raised Heel
Bail	Dovetailed on dipper bore	Snubber	P&H Snubbers
Tooth Specification	WB-45	Pitch Braces	Fixed Length
Lip	Standard	Corner Protector	1 Set
Capacity Adjustment	None	Lip Protector	1 Set
Wear Plate Coverage	Tier 3	Inner Body Wear Package	Tier 3 Hardened ([illegible])
Dipper Latch	Standard		

20 Cubic Meter dipper assembly

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

DIPPER CAPACITY PROGRAM

CUSTOMER: Coal India Ltd.

MACHINE: 2300XPC AC

INPUT DATA

	INCH	CM
A =	82.00	208.3
B =	82.00	208.3
C =	83.50	212.1
D =	129.00	327.7
(INSIDE LIP WIDTH) E =	146.50	372.1
R1 =	15.00	38.1
T =	10.00	10.0
R =	449.00	1140.5
BR =	14.50	36.8
LIP EXTEN. =	0.00	0.0
a =	52.72	133.9
b =	23.44	59.5
c =	93.78	238.2

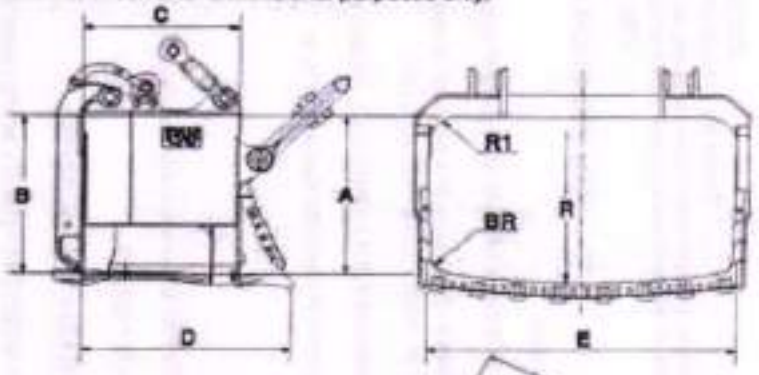
COMPARATIVE RATIOS

C/A =	1.02
D/A =	1.57
E/A =	1.79

CAPACITY

		CU YDS.	CU. M.
SAE STRUCK (DIPPER SIZE) =	Vs	26.33	20.13
SAE HEAPED =	Vh	2.72	2.08
SAE RATED =	Vr	29.05	22.21

NOTE: The illustrations below is for *dimensional purposes only.*



KOMATSU

P&H

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R 146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 05 nos. of 20 Cum Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15139 dated 14.12.2021

CALCULATION OF STRUCK CAPACITY OF DIPPER

SAE STRUCK (Cu Yds)

= [[π x R²(a/π)] - {(E/2-BR)² x TAN(π/2 - α)} + {π x BR² x (0.5+(α/ π))} + {F x (A -(R -√(E/2) - BR) x TAN((π/2) - α))} – {R² x (α/2 - π/2)}] x {(C+D/2) / 36³

= [[π x 449²(0.1356/π)] - {(146.5/2-14.5)² x TAN (π/2 - 0.1356)}] + {π x 14.5² x (0.5+(0.1356/π))} + {(146.5 x (89.0 - [449 - {(146.5/2) – 14.5) x TAN((π/2) – 0.1356)}] – (15² x (2 - π/2))} x {(83.50+129.00/2) / 36³

= [[77337.10] - {25292.80} + {301.76}] x {9317.52} - {96.57}] x {138.25} / 56³

= [11582.00] x [0.0022773] = 26.33 Cu Yard = 20.13 Cu M

Where α =ASIN((E/2-BR)/(R-BR))

= ASIN(146.5/2 / 14.5)/(449-14.5))

=ASIN(56.75/434.5) = ASIN(0.130713) = 0.1356

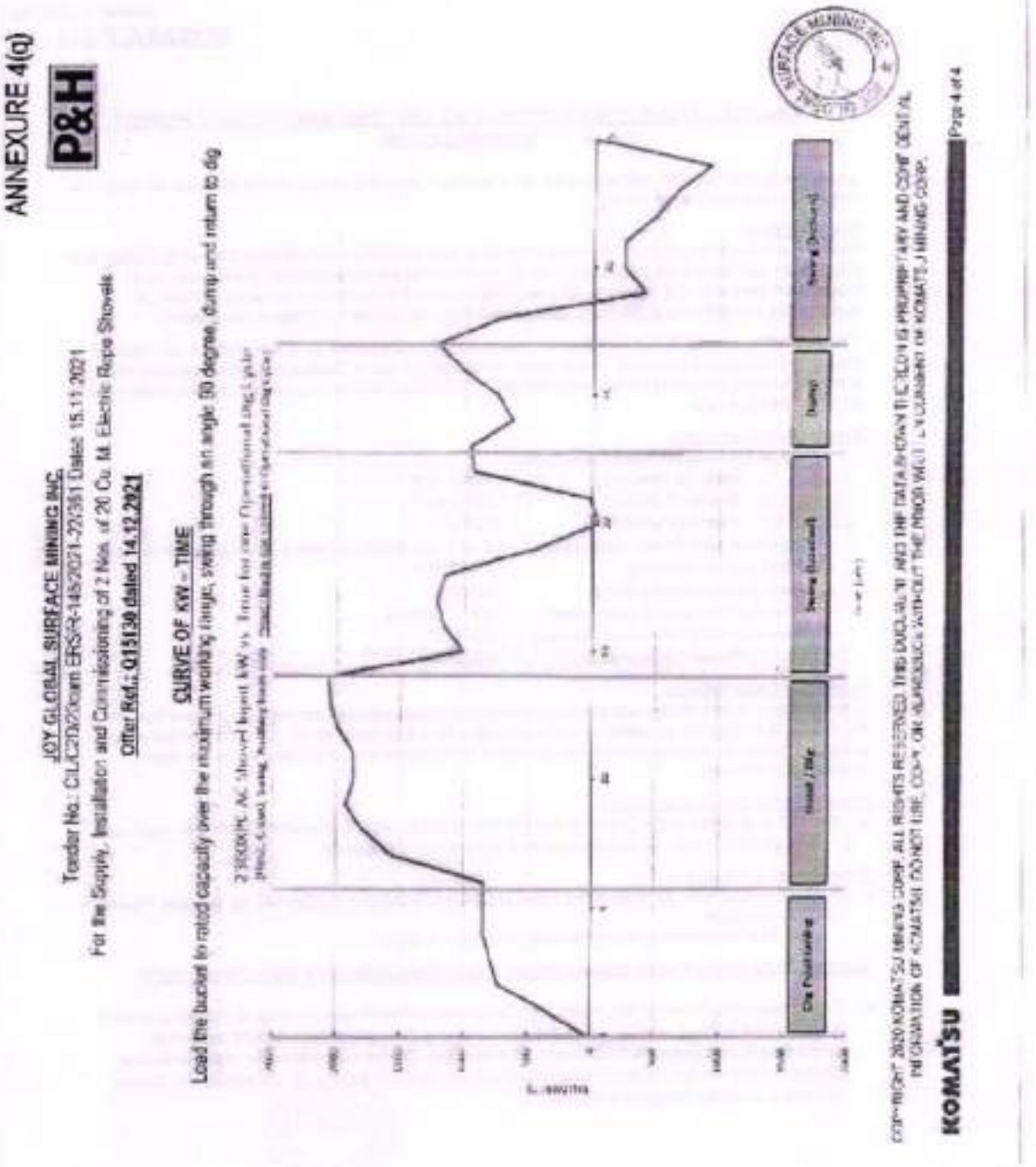
Ve = SAE HEAP (Cu Yds) (Approximately up above Dipper Capacity using the formula mentioned above)

= [(c x b / 6) x (2 x E) + a)] / (36³)

= [(93.78 x 23.44 / 6) x (2 x 146.5) + 52.72)] / (36³)

= [366.37) x (293 + 52.72)] / (36³) = [366.37 x 345.72] / 46656 = 2.72 Cu Yard = 2.08 Cu M

Annexure 4(q)


ANNEXURE 4(q)
P&H
JOY GLOBAL SURFACE MINING INC
Tender No.: CIL/C2D/20cum ERS/R-146/2021-22/351 Dated 15.11.2021
For the Supply, Installation and Commissioning of 2 Nos. of 20 Cu. M. Electric Rope Shovels
Offer Ref.: Q15130 dated 14.12.2021
CURVE OF KW – TIME
Load the bucket to rated capacity over the maximum working range, swing through an angle 90 degree, dump and return to dig
KOMATSU
Page 4 of 4

Annexure 4(r)

ANNEXURE 4(r)

KOMATSU

CALCULATIONS FOR DETERMINING THE TIME AND HOURLY POWER CONSUMPTION

Load the dipper to rated capacity over the maximum working range, swing through an angle 90-degree, dump and return to dig.

Calculations

Power consumption for each element utilized in the operating cycle (Hoist, Crowd & Swing) are calculated with idealized duty cycles for all motions, motor performance envelopes, and interaction between the motions. All power calculations include an estimated 200kW of continuous auxiliary load (blowers, pumps, ancillary equipment utilized in run mode).

The PROPEL motion is not included in power consumption data as this motion is not used in the machine digging cycle nor in the cyclic consumption curve. Included below are estimated electrical power parameters for the 2300XPC AC Shovel during 1 cycle with fully loaded bucket at a 90° swing angle.

Electrical Parameters

- Peak Developed Power per motion
  - Hoist (2 motors) 1,151 kW
  - Crowd (1 motor) 374 kW
  - Swing (2 motors) 688 kW
- Potential Max Power Calculated 2,423 kW (Motor peak + 200kW Aux load)
- Peak power motoring 2,079 kW
- Peak power regenerating 925 kW
- Average Range kW Consumed 400 – 800kW
- Average kW Consumed (typical) 600 kW
- Hourly Power Consumption 590 kWh

Notes for Calculations

The numbers in this document are conservative estimates based on calculation and field data. All numbers should be considered approximate with a tolerance of +/- 10%. Power parameters greatly depend on digging conditions, operator techniques and proficiency and general pit operating conditions.

Potential Max Power Calculated:

- (HOIST + SWING + CROWD @ THEIR POTENTIAL PEAK POWER) + 200kW Aux Load
  - This condition will not likely occur in a truck loading situation.

Peak Power Calculated:

- (HOIST + CROWD @ THEIR POTENTIAL PEAK POWER) + (SWING @ ¼ Peak Power) + 200kW Aux Load
  - The occurrence is momentary, less than 1 SEC.

Detailed Duty Cycle Power Consumption Calculation (reference kW – Time graph)

- Dig Positioning (0 seconds): Hoist and Crowd motion contribution only with Swing at zero speed and machine positioned at dig face. Hoist is brought to zero speed at lowest tensioned rope position with Crowd fully retracted. Crowd extends while Hoist is slowly raised to position for bank penetration. Bank penetration begins at low Hoist and Crowd speeds and motor torques increase.

Page 2 of 4

KOMATSU

- Hoist / Dig (6 seconds): Hoist and Crowd reach torque limit. Hoist and Crowd speeds increase as the dipper moves through the bank. Hoist approaches peak power, Crowd achieves peak power until maximum reach. Swing moves to torque limit after breakout and speed begins to increase.

a. HOIST + CROWD @ Peak Power	1,535 kW
b. (HOIST + CROWD @ Peak Power) + (SWING @ ½ Peak Power)	1,879 kW
• Motion Peak Power Motoring	
c. Motion Peak Power Motoring + 200 kW Aux Load	2,079 kW
d. Motion Average kW during 6 sec. digging peak	1,662 kW
e. Motion Average kW during 6 sec. digging peak + 200kW Aux Load	1,879 kW

- Swing Loaded (9 Seconds): Swing motoring at torque limit with increasing speed to maximum speed. Hoist and Crowd speeds reduced to position dipper for dump with high load torques. Swing torque direction change at maximum speed to full plugging (Swing in generating) reducing system input kW to near zero. Swing generating power reduces as Swing speed slows to zero speed during transition to Dump phase.
- Dump (4 seconds): Swing at zero speed. Hoist lowers (generating) and Crowd extends (motoring) as the dipper dumps the load. Hoist and Crowd motoring at higher speeds to clear the empty dipper from the load and truck with Swing at torque limit and speed increases to transition to Swing Return phase.
- Swing Return (8 seconds): Swing continues motoring with empty dipper as Crowd retracts and Hoist is lowered. Peak power regenerating is achieved with Hoist at full lowering speeds, beginning of Swing deceleration from maximum speed, and Crowd retract motoring to tuck. Swing deceleration continues to zero speed as shovel returns to Dig Positioning phase.

• SWING @ Peak Power	- 888 kW
• HOIST @ Full Lowering Speed Empty	- 811 kW
• CROWD @ Peak Power Retract Motoring	357 kW
• Continuous Aux Load	200 kW
• Peak Power Regenerating	- 925 kW

Average kW and Hourly Power Consumption

• Average kW for single dig cycle kW – Time graph	773 kW
• Average Range kW Consumed	400 – 800 kW

a. The range is given because of the wide range of operational and digging conditions relative to the idealized duty cycle proposed.
b. The Shovel is not continuously loading 100% of operating time, therefore factors such as truck spotting time, Propel time, and wait time further reduce average machine kW.
c. Operator techniques also factor into potentially reduced average kW, such as maximum motion speeds achieved (in particular Swing and Hoist Lowering).

- Average kW Consumed (typical) 600 kW
  a. The typical value is most likely to be encountered over the entire cycle

- Hourly Power Consumption (estimated) 690 kWh
  a. (1.15) x (AVERAGE kW CONSUMED) x (1 hour)

Page 3 of 4

ANNEXURE 4(s)

P&H

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/351 Dated 16.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

STABILITY CALCULATIONS

STABILITY FACTOR 1

(SHOVEL WITH CRAWLER PERPENDICULAR TO CUT & FULL DIPPER)

$$Stability\ Factor\ 1 = \frac{Maximum\ Digging\ Force\ (N) \times Reach\ from\ Central\ Axis(m)}{Working\ Wt\ (N) \times Distance\ of\ CG\ from\ Central\ Axis(m)}$$

$$Stability\ Factor\ 1 = \frac{507,072 \times 17.11}{7,724,984 \times 2.45}$$

$$\therefore Stability\ Factor\ 1 = \frac{8,676,002\ (N-m)}{18,926,211\ (N-m)} = 46\%$$

STABILITY FACTOR 1

(SHOVEL WITH CRAWLER PERPENDICULAR TO CUT & EMPTY DIPPER)

$$Stability\ Factor\ 1 = \frac{Maximum\ Digging\ Force\ (N) \times Reach\ from\ Central\ Axis(m)}{Working\ Wt\ (N) \times Distance\ of\ CG\ from\ Central\ Axis(m)}$$

$$Stability\ Factor\ 1 = \frac{787,296 \times 17.11}{7,369,144 \times 3.29}$$

$$\therefore Stability\ Factor\ 1 = \frac{13,470,635\ (N-m)}{24,244,484\ (N-m)} = 55\%$$

STABILITY FACTOR 2

(SHOVEL WITH CRAWLER PARALLEL TO CUT & FULL DIPPER)

$$Stability\ Factor\ 2 = \frac{Maximum\ Digging\ Force\ (N) \times Reach\ from\ Central\ Axis(m)}{Working\ Wt\ (N) \times Distance\ of\ CG\ from\ Central\ Axis(m)}$$

$$Stability\ Factor\ 2 = \frac{507,072 \times 16.84}{7,724,794 \times 2.46}$$

$$\therefore Stability\ Factor\ 2 = \frac{8,539,093\ (N-m)}{19,002,989\ (N-m)} = 45\%$$

KOMATSU

JOY GLOBAL SURFACE MINING INC

P&H

Tender No: CIL/C2D/20cum ERS/R-146/2021-22/081 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

STABILITY FACTOR 2

(SHOVEL WITH CRAWLER PARALLEL TO CUT & EMPTY DIPPER)

$$Stability\ Factor\ 2 = \frac{Maximum\ Digging\ Force\ (N) \times Reach\ from\ Central\ Axis(m)}{Working\ Wt\ (N) \times Distance\ of\ CG\ from\ Central\ Axis(m)}$$

$$Stability\ Factor\ 2 = \frac{787,296 \times 16.84}{7,369,144 \times 3.28}$$

$$\therefore Stability\ Factor\ 2 = \frac{13,258,065\ (N-m)}{24,170,792\ (N-m)} = 54\%$$

STABILITY FACTOR 3 (EMPTY DIPPER)

$$Stability\ Factor\ 3 = \frac{Maximum\ Digging\ Force\ (N)}{Working\ Weight\ (N)} = \frac{787,296}{7,369,144} = 10.7\%$$

STABILITY FACTOR 3 (FULL DIPPER)

$$Stability\ Factor\ 3 = \frac{Maximum\ Digging\ Force\ (N)}{Working\ Weight\ (N)} = \frac{507,072}{7,724,784} = 6.5\%$$

KOMATSU

Page 2 of 4

P&H

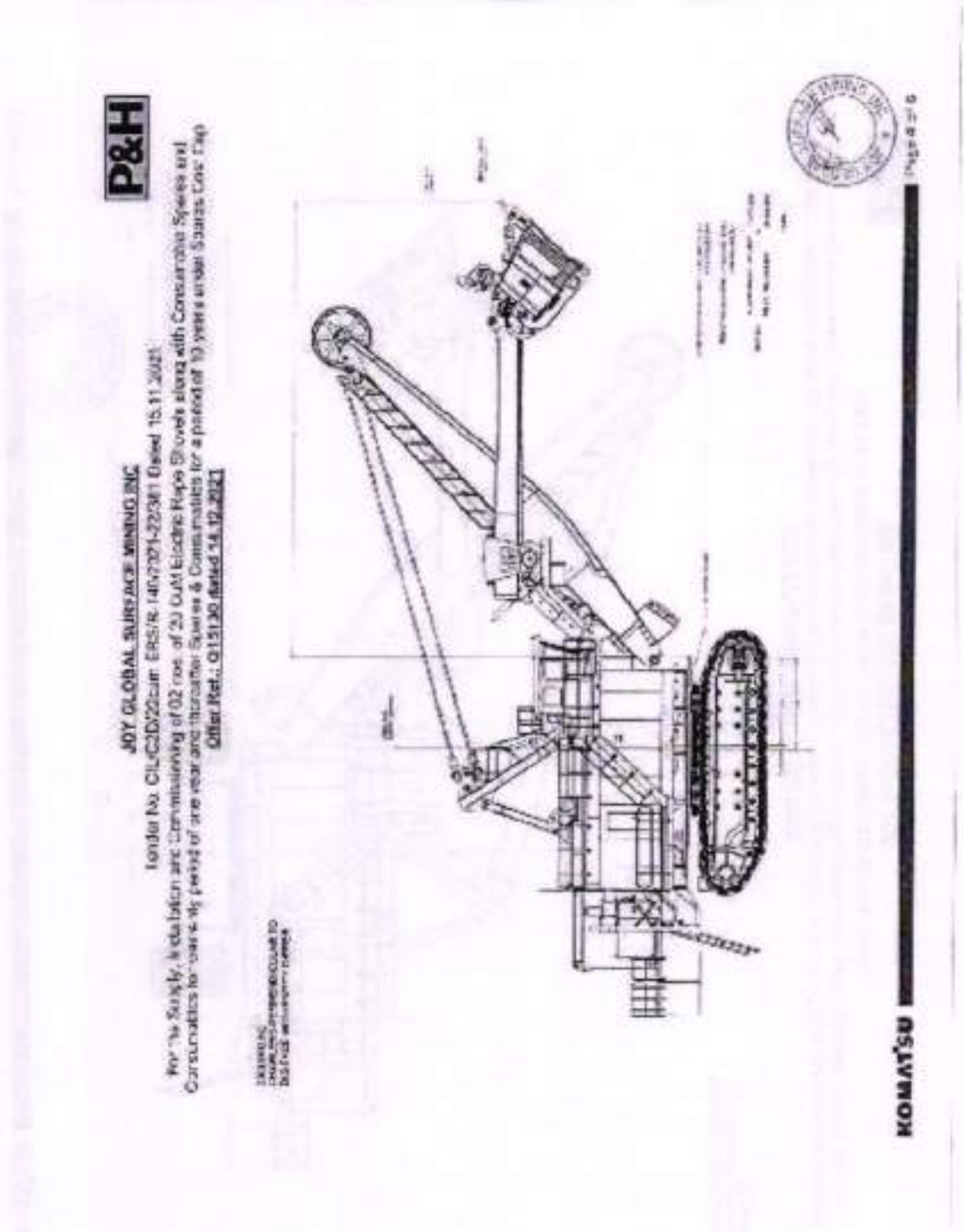
JOY GLOBAL SURFACE MINING INC

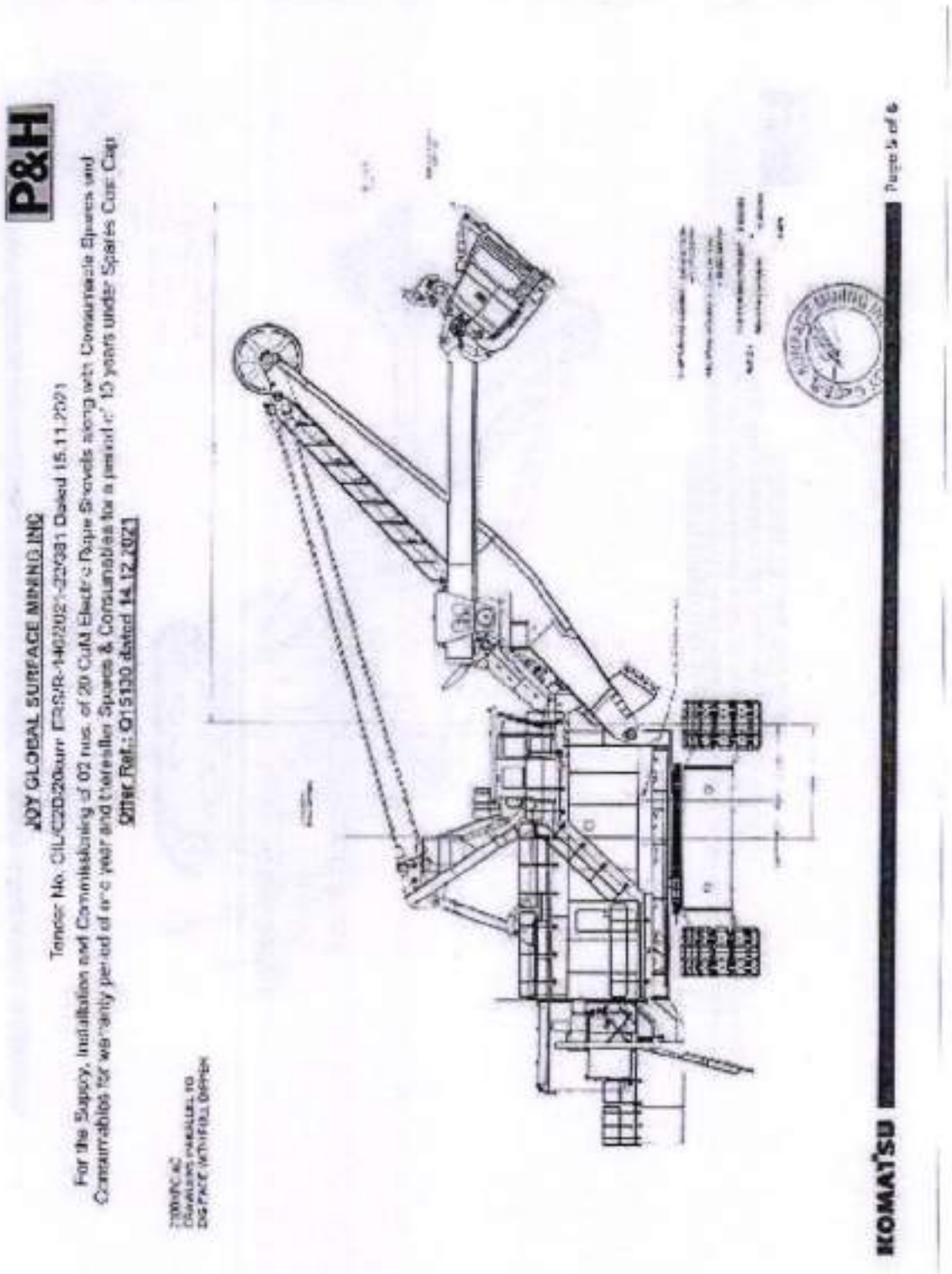
Tender No: CIL/C2D/20cum ERS/R-146/252/[illegible] Dated: 16.11.2021

For the Supply, Installation and Commissioning of 20 cum (P&H Electric Rope Shovels along with Consumables Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: 011738 dated 14.12.2021

KOMATSU


P&H
JOY GLOBAL SURFACE MINING INC
KOMATSU


P&H
JOY GLOBAL SURFACE MINING INC
Tender No. CIL/C2D/20cum ERS/R-146/252-22/031 Dated 15.11.2021
For the Supply, Installation and Commissioning of 02 nos. of 20 Cum Electric Rope Shovels along with Consumable Spares and
Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 15 years under Spares Cost Cap
Offer Ref.: Q15130 dated 14.12.2021
KOMATSU

P&H

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 01 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for 48 months period of one year and thereafter Spares & Consumables for a period of 10 years under Spare Cost Cap

Offer Ref.: 0116130 dated 14.12.2021

KOMATSU

Annexure 4(t)

ANNEXURE 4(t)

KOMATSU

TECHNICAL DESCRIPTION D

2300XPC
with P&H Digital AC Drive System
20 Cubic Meter

2300XPC

Mine Name:	TBD
Quote Version:	12/14/2021
Deliver Date (to site):	TBC

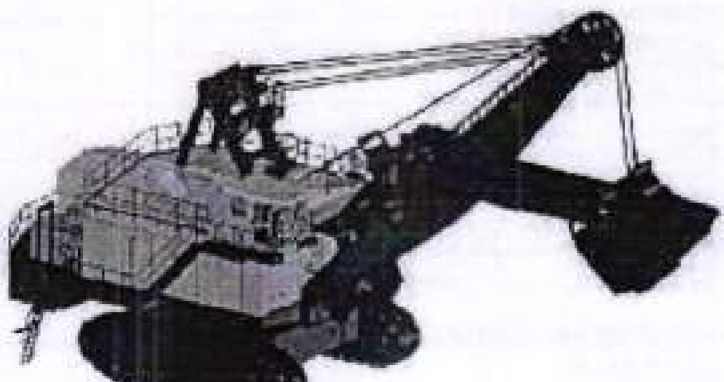
KOMATSU

Technical Description

Table of Contents

KOMATSU

Technical Description



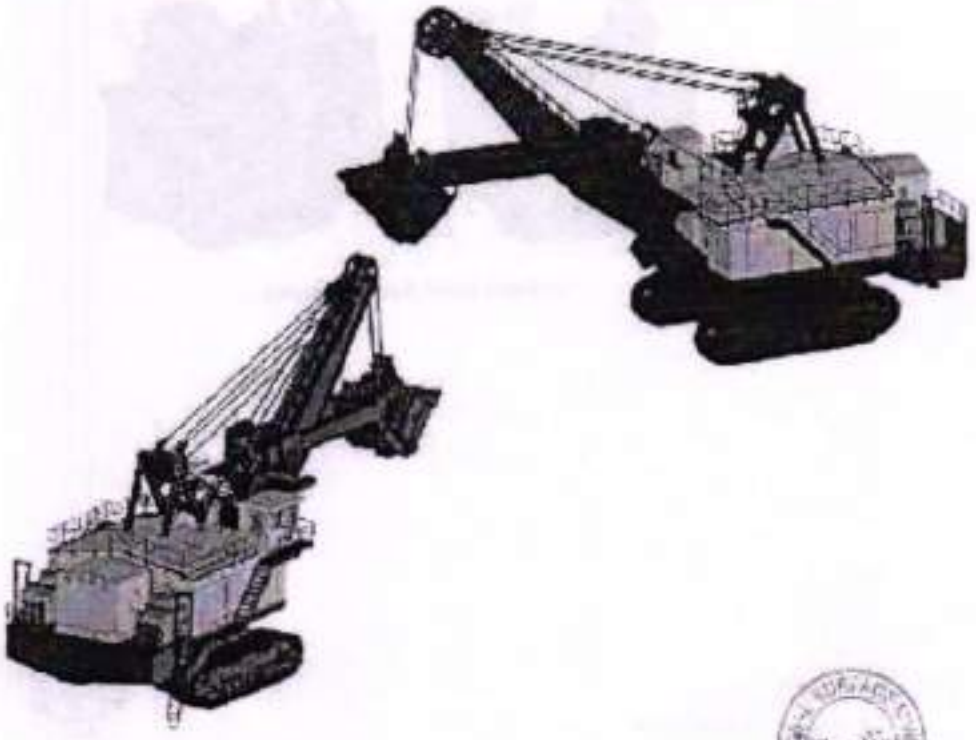
KOMATSU

Technical Description

Technical Description
2300XPC
with P&H Digital AC Drive System

MINE INFORMATION

Mine Name:	Mine Name SDN
Kirk Key Address:	TBD
Ship Date (Ex Works):	TBD
Material to be Mined	Coal Overburden
Altitude of Mine	100 to 1000 m above mean sea level
Mineside Frequency	50Hz
Mineside Voltage	6600 volts



KOMATSU

Technical Description

DIPPER

Specifications

The P&H Ocelin a 40 Dippers have been designed specifically for the 230EXPC for proper filling and low cost of operation. Standard equipment on the dipper includes pitch brass and rubbers to prevent damaging impact from dipper door closing. Typical nominal rated dipper size is 20 cubic yard (23 cubic meter).

Dipper Capacity	[illegible]	Dipper Class	Ocelin w/Heavy Duty
Bail	Pin retained on dipper body	Shrouds	Mid Shrouds
Tooth Specification	W9-13	Pitch Brace	Tread Length
Lip	Standard	Corner Protector	1 Set
Capacity Adjustment	None	Lip Protector	1 Set
Wear Plate Coverage	1/2	Inner Body Wear Package	Fine Hardness (500 BHN)
Dipper Latch	Standard		

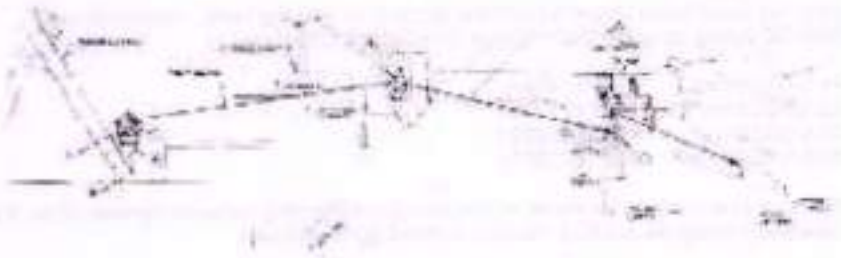
20 Cubic Meter dipper assembly

KOMATSU

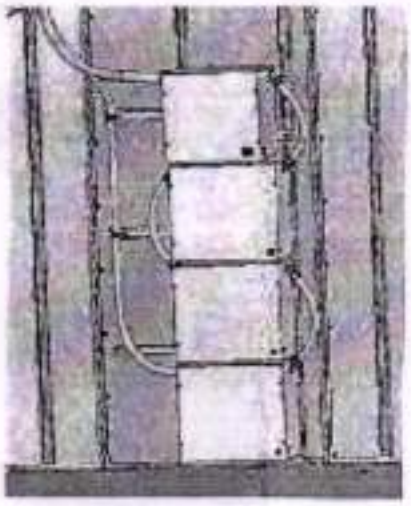
Technical Description

Dipper Trip

Tripping of the dipper is accomplished through a 18kW (~1kW) AC torque motor with a single gear reduction to the cable winding drum and controlled via operator joystick pushbutton



Dipper trip system layout



Dipper trip resistors control dipper trip motor torque.

KOMATSU

Technical Description

ELECTRICAL POWER SYSTEM

Power Supply

Electrical power to the shovel is supplied via a trailing cable. Recommended SHD-GC trailing cable maximum lengths for 6,600 volt supply are:

#1 AWG/50mm²	2160 ft / 659m
#2 AWG/35mm²	3291 ft / 1003m
#1 AWG/50mm²	4035 ft / 1232m
#1/0 AWG/53mm²	5007 ft / 1527m

Electrical equipment on the shovel is designed for an incoming supply of 3-phase, 50Hz, 6,600 volts. Secondary voltage for auxiliary motors is 3-phase, 50Hz, 415 volts.

Recommended voltage variation is ±10% for the 50Hz, 6,600 volts application. The control system is programmed to shut the machine down if voltage variation reaches -20%.

Recommended 16 MVA short circuit capacity at the shovel.

Lower Medium Voltage (MV) Disconnect Switch

Electrical power is brought to the shovel by connection of the trailing cable to the lower MV disconnect switch which is mounted on the rear of the carbody. The switch provides a visible disconnect, grounding, and a safety key interlock which energizes or disconnects electrical power to the entire machine. MV wiring runs from the switch through the carbody to the MV collector rings on the upper deck.

Lower medium voltage disconnect switch

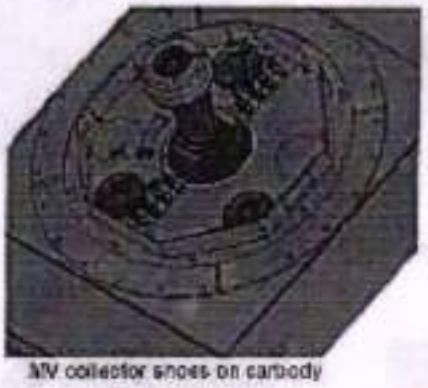
KOMATSU

Technical Description

Medium & Low Voltage (LV) Collector Rings

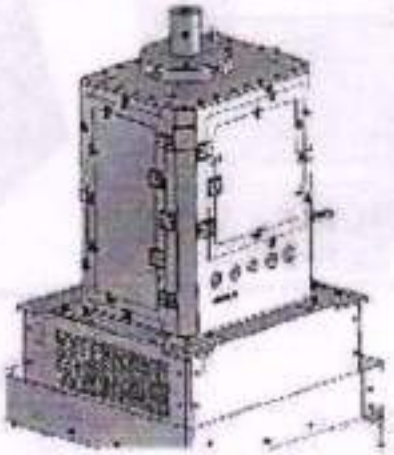
Medium voltage collector rings consist of three (3) power and one (1) ground ring and are mounted to the underside the revolving frame. All rings are astride each other to provide proper contact with collector shoes which are mounted on top of the carbody. Ring access is protected by bolted carbody side covers. A safety key interlock is provided on hinged door access to the Medium Voltage collector rings.

Low voltage collector rings, which transmit low voltage power (< 600V) from the upper assembly to the lower assembly, are deck mounted above the center gudgeon.



MV collector shoes on carbody

MV collector rings on the revolving frame



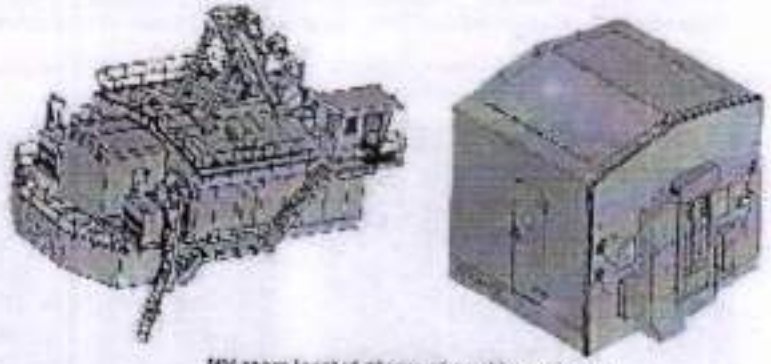
Low voltage collector, grease and air swivel on the revolving frame

KOMATSU

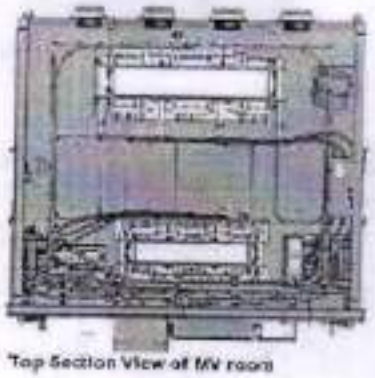
Technical Description

Medium Voltage Room

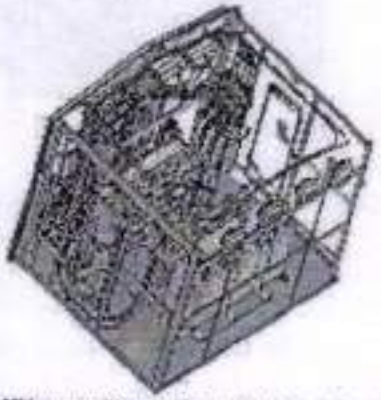
A separate room at the rear of the shovel is provided that contains all the Medium Voltage Disconnect switches & auxiliaries, Main and Aux transformer components. The room is well insulated, interlocked with a Safety key interlock system. The room allows for service and inspection of all components while the machine is disconnected from power.



MV room located at rear of machinery house.



Top Section View of MV room



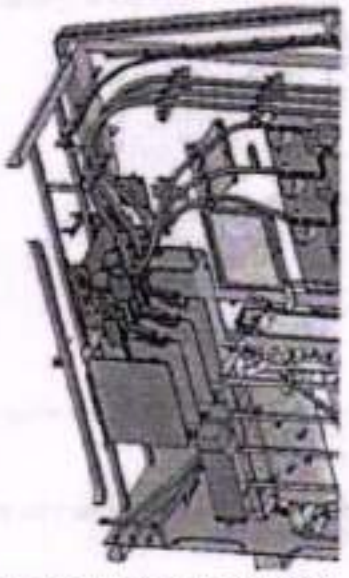
MV room with outside walls hidden to show interior layout.

KOMATSU

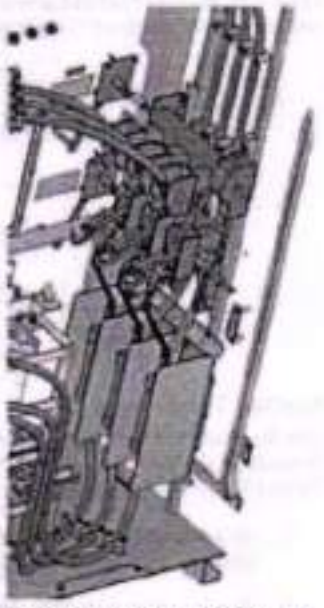
Technical Description

Upper Medium Voltage Disconnect

The Medium Voltage Room contains two visible medium voltage disconnects. (1) Isolates and grounds the entire upper MV supply and (2) isolates the primary of the main transformer, vacuum contactor. Line-to-line and line-to-ground lightning arrestors are provided for surge suppression. Current limiting MV fuses provide short circuit protection for the primary of the main transformer and the primary of the auxiliary transformer. The main transformer vacuum contactor is controlled from Start-Stop pushbuttons, mounted in the operator's cab, to isolate the main motion drives.



Disconnect, fuses and vacuum contactor to main transformer



Disconnect, grounding and fuses to main and aux transformer

KOMATSU

Technical Description

Main Transformer

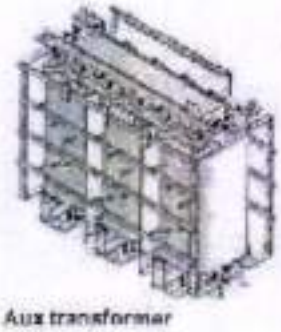
The single voltage main transformer is designed for a frequency of 50Hz and a rated cable voltage of 6,600VAC. The main transformer provides power for the AC drive system, providing power to the AC drive motors. The transformer is designed for mining shovel service. It is convection air cooled, dry type, Delta/Wye connected and has simplified ground fault detection. The transformer can accommodate unequal loading, has ±5% voltage taps and has temperature monitored windings. The Main Transformer provides power for the AC Drive system consisting of the ISU (Inverter Supply Unit) and the IGBT (Insulated Gate Bipolar Transistor) AC motor power inverter modules.

Main transformer

Auxiliary Transformer

Like the main transformer, the auxiliary transformer is designed for mining shovel service, is convection air cooled, dry type, and is Delta/Wye connected.
Three (3) secondary windings provide power for:

1. 415V/3Ph/50Hz for utilities and auxiliary motors. Power from the transformer flows to an auxiliary load center on auxiliary cabinet and motors.
2. Shielded 190-1 10V/3Ph/50Hz winding supply for the control system.
3. 50Hz 220V/3Ph/50Hz GPO's supply and distributed through the 220VAC load center.



Aux transformer

415V Load center

115V and 220V panelboards

KOMATSU

Technical Description

Lighting

The primary exterior floodlights are LED units (83,650 lm total).
Standard floodlight locations and size (Lumens - lm) are as follows:

- Two (2) on front of operator's cab, above the front window (2x4200 lm).
- One (1) on top right side of operator's cab (1x750 lm).
- One (1) on top rear side of operator's cab (1x4200 lm).
- Four (4) on bottom of left front of house (4x4200 lm).
- Two (2) on top of left front of house (2x4200 lm).
  One (1) bottom left side of house (1x4200 lm).
- Four (4) on bottom of right front of house (4x4200 lm).
- Two (2) top right side of house (2x750 lm).
- One (1) bottom right side of house (1x4200 lm).
- Two (2) top rear of house (2x4200 lm).
- Two (2) top left side of house (2x750 lm).
- Two (2) on rear of house over counterweight (2x1294 lm).

Interior lighting consists of Nine (9) LED lights (7,500 lm total) in the machinery house (9x794 lm).

The operator's cab consists of ten (2) LED lights (1400 lm total).

Exterior lights circled in blue

Interior lights circled in blue

KOMATSU

Technical Description

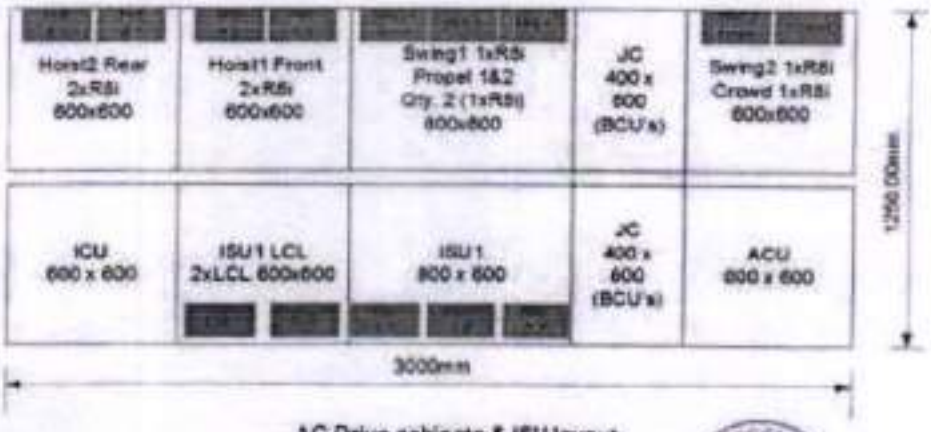
Electrical Convenience Outlets confirmed.

There are five (5) electrical outlets (for 220VAC supply) conveniently located in the following locations:

- Four (4) in the four corners of the machinery house
- One (1) in the Operator's cab

AC Drive Cabinets

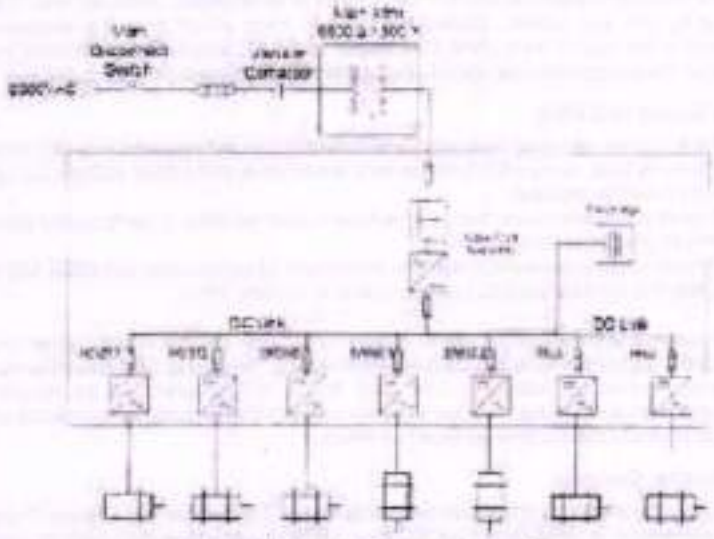
The AC drive cabinets contain (a) an active front end system that controls the power factor dynamically to near unity levels and maintains harmonic injection onto the feeder to within IEEE 519 levels, and (b) the AC motor drives providing AC power to the main motion motors. The drive system cabinets use IGBT technology. This provides variable voltage, variable frequency power to the main motion motors while minimizing harmonics and providing an excellent power factor at all times. This system includes separate drives for the two propel motors, which are not shared with the hoist and crowd motions, allowing for quick transfers between dig and propel modes.



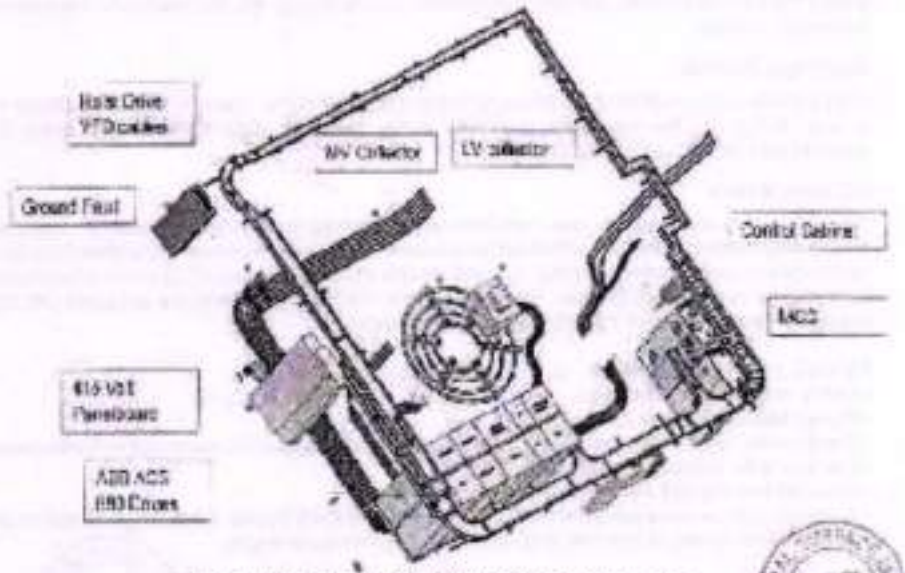
AC Drive cabinets & ISU layout

KOMATSU

Technical Description



Schematic layout of power conversion



Layout of major electrical low voltage components.

KOMATSU

Technical Description

Power Distribution

All medium voltage cables are run in metal conduit or an enclosed dedicated wire trough, or are protected by kirk key access. Cables are used to carry power from the secondary of the main transformer to the inverter supply unit (ISU) section of the AC drives. Power cables to the motors are special three phase variable speed drive cable with concentric grounding and overall shielding.

Inverter Supply Unit (ISU)

Housed in a rugged, ventilated cabinet, the Inverter Supply Unit performs three functions:

1. Converts fixed voltage AC from the main transformer to the fixed voltage DC supplied to the motor inverter modules.
2. Provides dynamic power factor correction to hold as close to perfect unity power factor (1.0 PF) as present technology allows.
3. Provides active harmonic correction to maintain full compliance with IEEE-519 guidelines under the extreme conditions encountered in surface mines.

The ISU consists of inductive/capacitive filters, matched with the same IGBT power inverter hardware that is used to supply power to the main AC drive motors. The ISU is a full four-quadrant device, which allows the regenerated energy to flow back to the mine power grid as required. IGBTs and inductive/capacitive filters are mounted in easily accessible and removable modules and are force air cooled. All cabinets include door mounted air filters.

Power Inverter Cabinets

The AC power conversion system contains six pulse IGBT (Insulated Gate Bipolar Transistor) of three-phase bridges used to digitally convert DC from the ISU section to variable voltage, variable frequency AC supply power for each of the main AC drive motors. These inverters thereby allow for regenerated AC energy flow back to the DC bus during motion deceleration. The regenerated power is used to supply the on-board needs, with any excess flowing back through the ISU section to the mine network for energy savings.

Dig/Propel Transfer

P&H shovels utilize dedicated AC drives for the two propel motors. Transfer is easily made through a push button on the operator's controller in the operator's cab, with all sequencing handled automatically by the supervisory controller.

AC Drive Motors

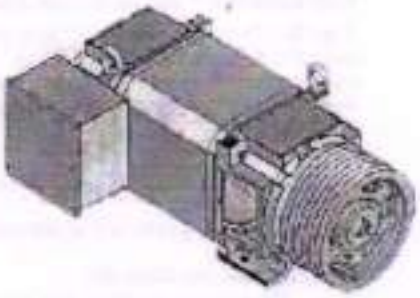
P&H AC motors are designed and manufactured specifically for mining service duty. Using an ABB mining-duty multi-drive system with direct torque control, they have a unique ISU architecture for energy efficiency and performance ramping. The motors use a proven and rugged air-cooled drives technology facilitated by independent blowers. The drive motors have an IP 56 rating and are equipped with RTD's to monitor the temperature of motor bearings and windings.

P&H AC motor characteristics:
- Heavy duty mechanical design
- Proven bearing designs
- Replaceable, non-destructive INPRO type grease bearing seals for long power relubricate protection
- Low inertia for improved system performance
- Insulated bearing and a shaft grounding feature
- A remote hoist encoder is mounted in the machinery house. It has single-speed mains, set at 75% of full speed, to turn the hoist drum during hoist operations.

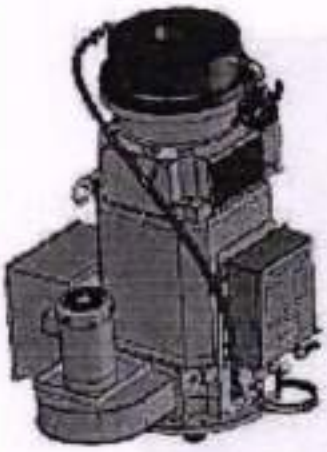
KOMATSU

Technical Description

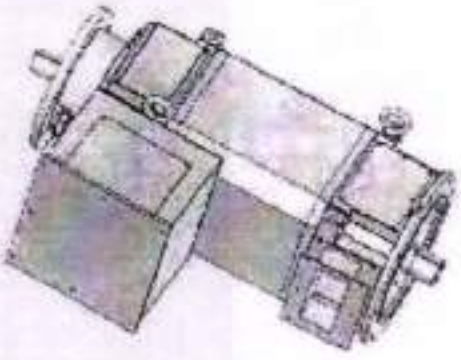
Hoist motor with blower and gear coupling



Crowd motor with belt sheave.



Swing motor with blower, brake & brake control box.



Propel motor

KOMATSU

Technical Description

ELECTRICAL CONTROL SYSTEM

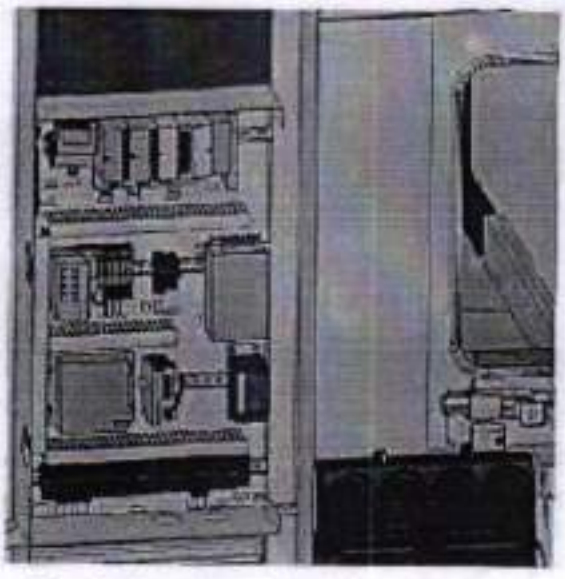
P&H Centurion™ Shovel Control System

The P&H Centurion™ Shovel Control System provides the supervisory control of the shovel drives and execution sequencing and monitoring. Centurion coordinates all major shovel operations, raising the bar on productivity and reliability. The Centurion System balances interdependent motion speeds through an integrated approach to machine and drive control, helping operators optimize each portion of the dig cycle.

The system consists of the supervisory control computer supporting hardware devices and software programs.
The system is comprised of four basic control functions:

- Supervisory Controller
- The onboard graphical user interface (GUI)
- The remote input/output (I/O) devices and communication interface
- The individual drive controllers

The control architecture provides connectivity for the various machine components on the shovel allowing user interface via the cab mounted GUI, providing diagnostic and monitoring capabilities. The application code residing within the supervisory controller is based on the IEC 61131 standard. The control system utilizes PROFIBUS network for primary communications with the various system components.



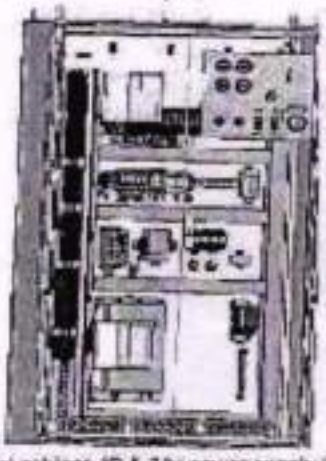
Control system & cab IO housed in operator's cab

KOMATSU

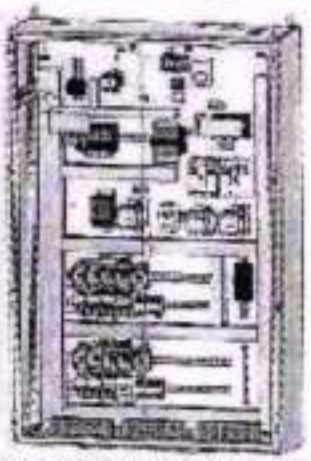
Technical Description

Upper Control Cabinet

The upper control cabinet is a rugged, maintenance friendly cabinet located in the machinery house. Housed within the cabinet are components for the P&H Centurion™ Shovel Control System, and contains individual motor starters and circuit breakers, providing thermal and short circuit protection for each auxiliary motor. In addition to motor control, there are contactors to control the lighting circuit



Control cabinet, IO & 24v power supply located in front of machinery house.

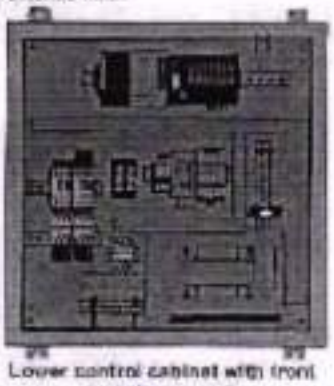


Motor control center located in front of machinery house

Lower Control Cabinet

The lower control cabinet is mounted on the cab of the carbody. It contains remote IO, motor starters for the swing motor blowers, and a 120VAC electrical convenience outlet

Lower control cabinet



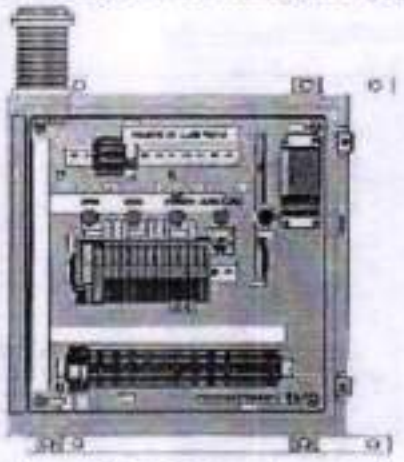
Lower control cabinet with front panel removed

KOMATSU

Technical Description

Remote I/O'S

The supervisory control system functions with remote I/O in several locations, such as the lower propel, L- lube area, AC drive cabinet, Upper Control Cabinet, and the operator's cab.

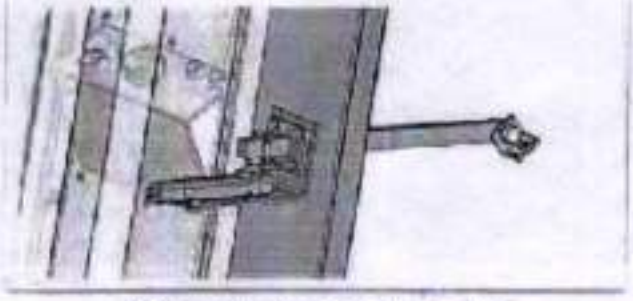


Lube room IO with front panel removed

Automatic Attachment Protection Systems

Hoist and crowd/retract limits are set on the GUI touch screen, located in the operator's cab. A boom pacing limit is included to help prevent contact of the handle torsion box and dipper with the boom.

The ABSS™ (Automatic Boom Soft Set-down) feature is part of the control system. The ABSS™ minimizes boom jacking and the associated impact of abruptly lowering the boom from a jacked condition.



ABSS resolver located on front wall of house, attaches to boom

KOMATSU

Technical Description

AIR & LUBRICATION SYSTEMS

Centralized Lubrication System

An automatic centralized lubrication system is standard. The system provides metered amounts of lubricant to major systems requiring grease and open gear lubrication. The centralized lubrication system utilizes a three (3) pump, three (3) zone arrangement.

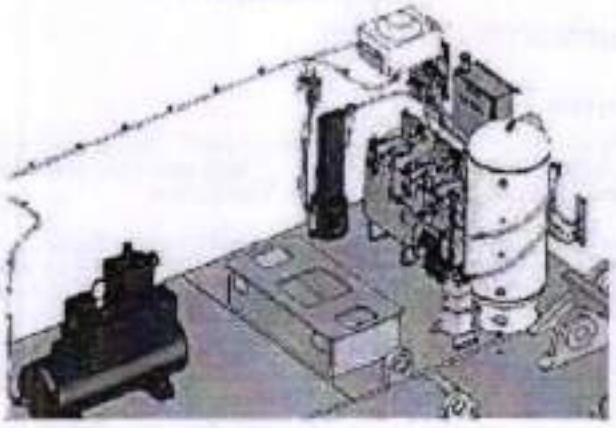
The lube system is controlled by the Centurion Shovel Control System and can be monitored and adjusted through the touch-screen GUI's. The large lube tank reservoirs, 80gal (303l) OGL/open gear lube and 106gal (401l) MPG/multi purpose grease, to maximize operating time without replenishing. All gear motors are designed with bath and splash lubrication for all gears and bearings.

A lube filtration system with 20-micron filters is standard on the hoist gear case.

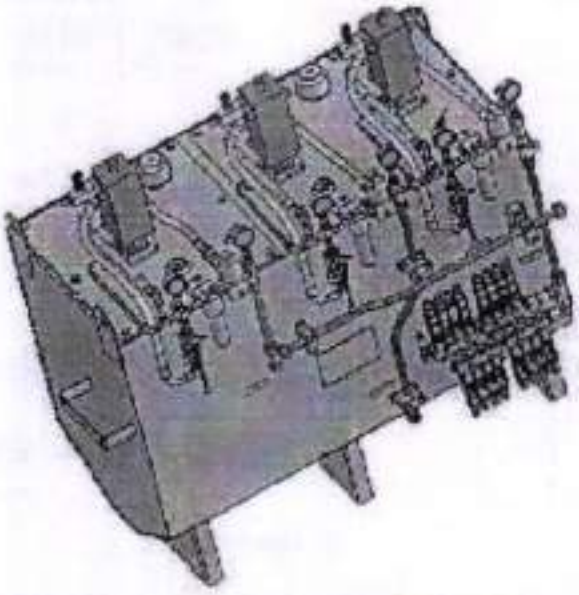
Lube schematic

KOMATSU

Technical Description



Layout of air and lube systems with air dryer system



Lube tank assembly with air driven pumps, lube filters, pressure relief valves, vent valves and upper grease injectors.

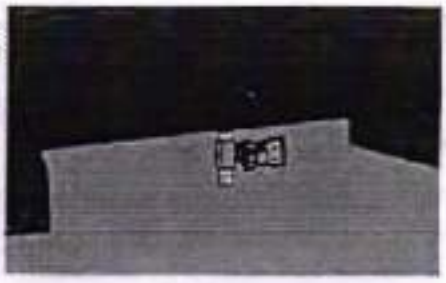
KOMATSU

Technical Description

Air System

Compressed air is provided for the tire sprayers, disc brakes, cab, house ventilator system cleaning, and the operator's seat.

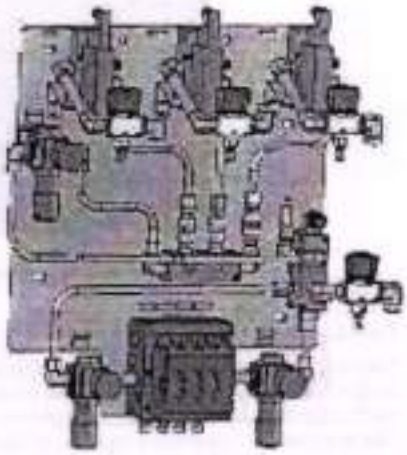
The air system consists of a, rooftop cooling air compressor with a 120-gal (500) air receiver. The compressor has a 15-hp (11.2-kW) motor rated at 46 CFM (1.1cm/m) at 55 psi. Automatic tank drain, water separator and lubricator are included.


Air Compressor, Drain Valve & Lubricator

To improve air quality to the compressed air system, a dryer is provided. This system reduces maintenance costs and improves the reliability of downstream components. It consists of an aftercooler, prefilter, Desiccant dryer, post filter and a 200 gallon (757 l) dry air tank.

After cooler, water separator, prefilter, desiccant dryer, post filter, & dry receiver.



Air control and brake isolation panel.

KOMATSU

Technical Description

OPERATOR INTERFACE

Operator Cab

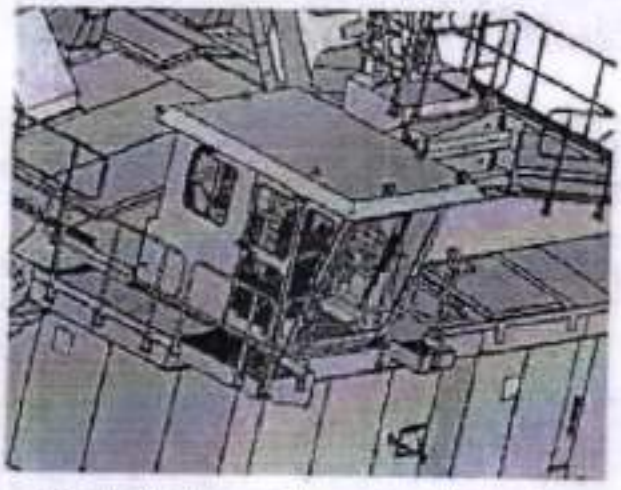
The operator's cab is vibration-isolator mounted and located on the front right-hand side of the machine. From this position, the operator has a wide view of the dipper, bank and the surrounding loading area. The cab supports sound levels below 75dBA during shovel operation (with the doors closed). A catwalk system provides access to the windows for cleaning and maintenance. A lockable air-horn is mounted on the front wall of the shovel machinery house.

All windows are made of laminated safety glass. The front window incorporates an electric wiper and spray wash system. The side and door windows are tinted and fixed in place.

Options: .75" (20mm) safety glass is available for the front window.

A trainers' seat is located behind the operator.

An emergency egress is provided in the window over the trainers' seat at the rear of the cab.



Operator's cab mounted on machinery house roof.

P&H Loading Control Center

The P&H C-Series shovel control center is defined by the C-Series Seat and Joystick(s). The adjustable seat is flanked by adjustable armrests containing the primary controls (i.e. joysticks and switches). The seat base utilizes an air suspension system, which can be adjusted for the operators' height and weight. The seat has an automotive style control providing vertical and fore/aft adjustments allowing for custom fitting of the joysticks to individual operators. Additionally, the seat has heat, massage and lumbar support. The backrest swivels in two positions. The seat is designed to keep the operator alert and comfortable during long shifts for safer, more productive operation of the shovel. Seat belts for both operator and trainer are included as standard.

KOMATSU

Technical Description

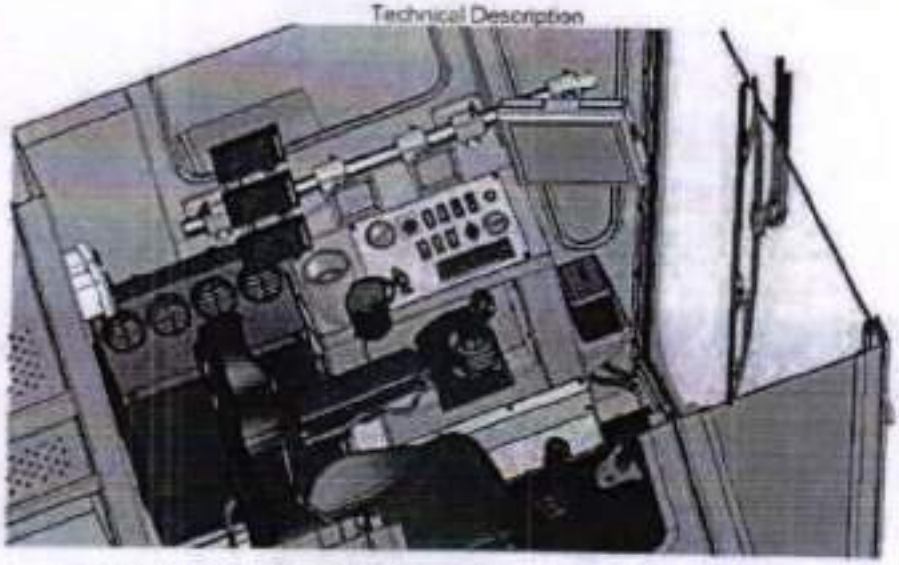
Operator's seat and controls.

The joystick controllers are ergonomically designed in a pistol grip style, utilizing non-contacting Hall-Effect technology for increased life and more dependable performance. The joysticks incorporate push buttons and trigger switches for additional machine functions. There is a single console at the left side of the operator that facilitates lesser used functions all located within reach of the seated operator. The console has provisions for mounting the standard PSH touch screen GUI, as well as optional and niche supplied items such as; camera monitors, mine radios, dispatch screens etc. Space for an AM/FM radio is also provided.

Joystick controllers

KOMATSU

Technical Description



Operator console, GUI, optional camera monitors and air conditioner shown

Graphic User Interface (GUI)

The GUI has menus and information screens that allow the operator to display information and perform various operation functions.
The basic functions performed by the GUI are:

- Displays machine operating status
- Displays and sets hoist and crowd limit setting (boom profiling)
- Displays temperature monitoring
- Displays boom jacking status
- Displays boarding ladder positions
- Displays lubrication system settings and status
- Provides manual initiation of lubrication cycles

Standard Diagnostics

The Centurion™ GUI provides the following standard diagnostics:

- Provides fault enunciation and alerts
- All system faults and alerts have an associated help file which provides detailed diagnostic information to troubleshoot and remedy the fault or alarm. All faults and alarms can be acknowledged via the GUI. A fault history with all logged faults and timestamps can be exported from the GUI via USB for additional analysis.
- Drive programming and analysis software to allow maintenance personnel to record and perform on-line diagnostics of main motion drive parameters, settings, and performance.

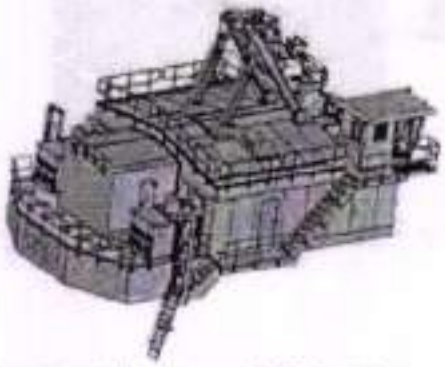
KOMATSU

Technical Description

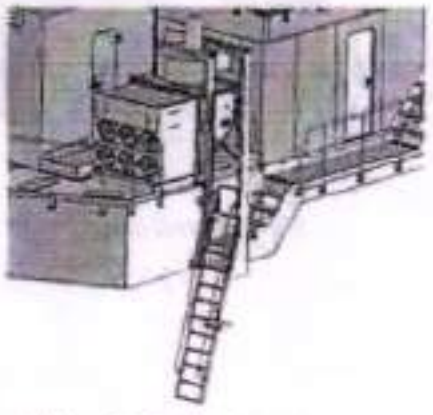
- Many drive signals are available for recording via the GUI and supplied drive analysis software. Data recordings taken with the software can be exported to standard file formats (*.csv / *.txt) for additional analysis.
- Example list of available signals for recording:
- ISU (AFE): Input Current (A), Reactive Current (A), Input Frequency (Hz), Input Voltage (V), Power (kW), Cos phi, Reactive Power (kVAr), DC Link Voltage (V)
- Motion Drives: Motor Speed (rpm), Output Frequency (Hz), Motor Current (A), Motor Torque (%), DC Link Voltage (V), Output Voltage (V), Output Power (kW), U/V/W Phase Currents (A), Flux (%)
  - Drive system updates can easily be transferred to each drive via the GUI and provided Drive programming software. The Drive programming software allows for saving / restoring / loading drive parameters and updated firmware.
- Control logic software to allow maintenance personnel to view controller logic program, verify functions, and force parameters for diagnostic purposes. System software updates can be loaded to the control system via the supplied Control logic software on the GUI.
- Input/Output (I/O) device monitoring and fault detection system to identify location and type of fault.
- Standard temperature monitoring system (See Technology section)

Boarding & Access

Right & left side boarding ladders provide access to the shovel. Ladders are interlocked to de-energize the swing and propel functions when in the down position for safety. All Catwalks, platforms, stairs and ladders are designed in compliance with ISO 2867 and ISO 14122 incorporating features such as: grated metal walking platforms, hand rails with toe boards and non-slip surfacing.



Overall machine layout with RH boarding access shown



RH boarding ladder shown

KOMATSU

Technical Description

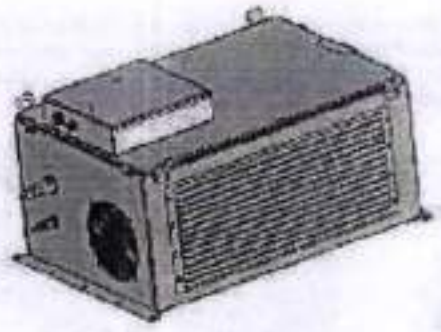
CLIMATE CONTROL

Climate Control

The installed cab is thermostatically cooled with a Mine Air HARC (High Ambient Remote Compressor) unit mounted on the machinery house roof and a evaporator, blower and filter unit mounted adjacent to the operator in the cab. The HARC unit is capable of cooling the cab in ambient temperatures up to 131°F (55°C) and is capable of 20,000 BTU (5.9 KW) of capacity. The HARC utilizes a hermetically sealed compressor with 134a refrigerant for maximum system life and minimal maintenance. No belts are used. Two auxiliary functions provided near the windshield for additional directed air circulation. A variable speed pressurizer is provided to pressurize the cab based on cab pressure, which minimizes the heat load while providing controlled pressurization.

The standard cab heater is a 1.5 kW heater mounted near the operator's feet.

Vehicle temperature critical electronics / controls are mounted in the operator's cab.



Mine Air HARC unit

Cab pressurizer

KOMATSU

Technical Description

MECHANICAL SYSTEMS (LOWER)

Overall layout of lower systems

Crawler Drive System

The crawler drive system incorporates a unique sprocket design concept resulting in good engagement, even with loose tracks. Low track tension results in smooth shoe engagement and low stress. On the PC&H sprocket style drive system, the shoe and number engagement is close to the link pin centerlines.

Final drive shaft, sprocket and bearing.

KOMATSU

Technical Description

Crawler Shoes

Dead section, cast manganese shoes are connected with 4.5-inch alloy steel, induction hardened pins, through machined, tapered holes. The shoes are designed specifically for the P&H product style drive system. Shoes are available in 55-inch (1.4m) and 70-inch (1.78m) widths, created at sun-crawler.

P&H DELTA 55" crawler shoe

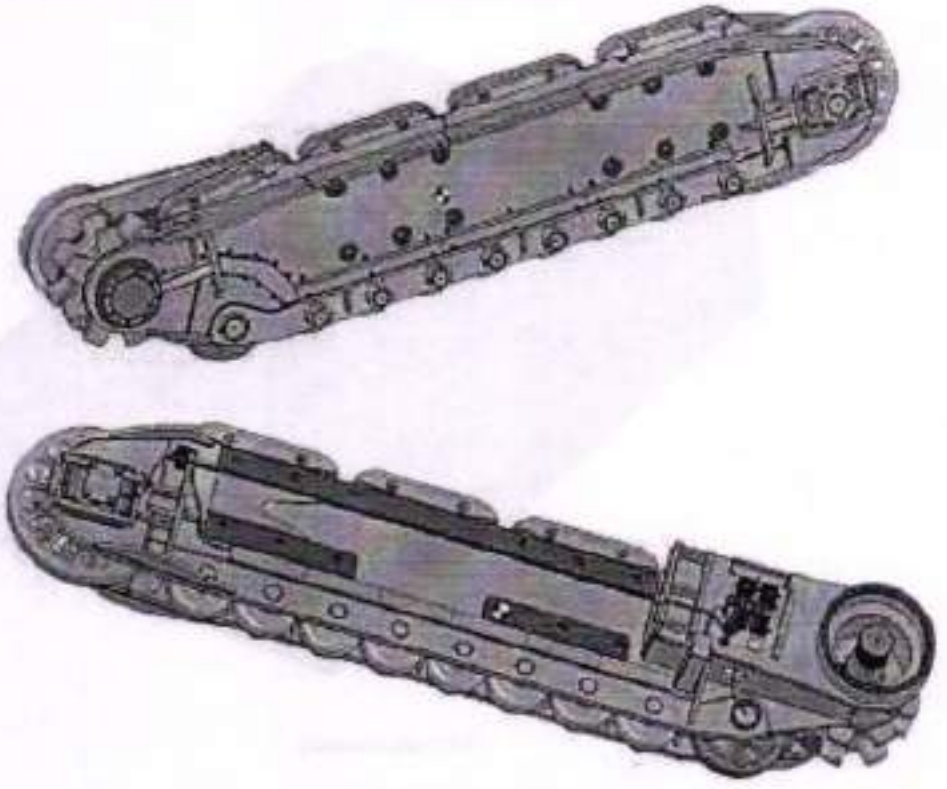
KOMATSU

Technical Description

Crawler Frames

The frames are a heavy welded, box section design. Separate bolt connections attach the frames to the car body undercarriage shear edge support. Large dowels prevent movement in the bolted connection. There is no field welding required in the connection.

There are eight (8) lower rollers a front idler and a rear idler in each frame. The front idler is manufactured from a large diameter manganese casting, which is mounted on two (2) heavy duty bushings. Hardened wear surfaces protect the crawler frame from wear. Rollers and idlers are double mounted with special alloy brass bushings. Replaceable pin-on, high hardness, wear resistant, cast slide pads on top of each frame support the crawler shoes.



Crawler frame assembly

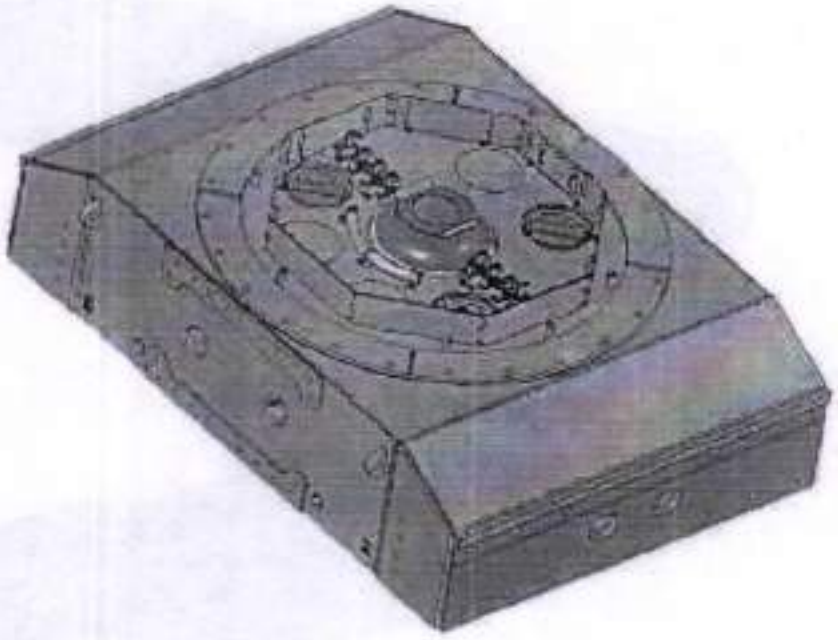
KOMATSU

Technical Description

Carbody

The carbody is a heavy welded, high strength, low alloy steel structure of cellular deep box sections. It is built around a large center hull casting. The flat-top design, with deep section diaphragm plates, provides direct support for the roller path. The carbody interior is painted white. The sliding idler end over which roller path are mounted on the top of the carbody with flowers and nuts.

The crawler frames are connected to the carbody using a full length shear ledge and long rod bolts. The crawler frame carries the pivots and the very high clamping forces between the crawler frame and the carbody machined surfaces. The tensioning system for the rod bolts consists of a simple bolt and Supomur nut arrangement. Both the carbody and the crawler frames are designed to withstand the high levels of crawler frame connection bolt tension.



Carbody assembly

KOMATSU

Technical Description

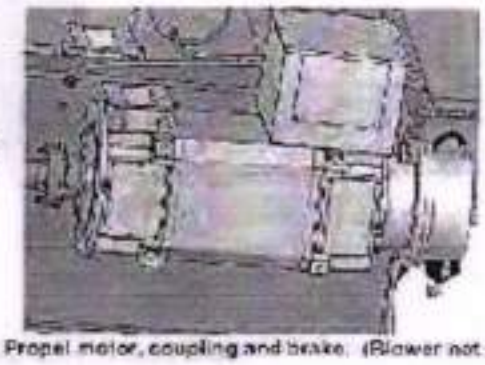
Dual Planetary Propel System

Two (2) independent P&H AC drive motors, with a total continuous power rating of 440hp (328kW) at 600 volts, and a total peak developed power of 747hp (557kW), drive the propel system and are load sharing controlled. The motors are mounted in a propel motor base which is bolted to the rear of the carbody.

The motors are directly connected to P&H planetary propel transmissions with a gear coupling and a ring coupling spacer that eliminates the need for motor alignment. The planetary propel transmissions are directly mounted to each crawler frame and provide differential speed and counter-rotational steering capability. All gearing is forged, shot-blast on bearing rotational, and all external gears are case hardened and ground. The propel transmissions are designed with bath and splash lubrication to all gearings and bearings.

The propel drive system has a raised final propel drive shaft and bumper. The final propel drive shaft is splined to the planetary transmission and rubber and is mounted on anti-friction bearings. The shaft can be replaced with the transmission in place, and the transmission can be replaced with the shaft in place. The outboard spherical bearing is encapsulated to prevent crawler frame damage in the event of a bearing failure. O-ring seals are used to seal out dirt and seal in lubricant.

Propel drive system layout



Propel motor, coupling and brake. (Blower not shown)

KOMATSU

Technical Description

Center Gudgeon

The center gudgeon is a hollow, heavy-duty forging, used to connect the upper revolving frame to the lower carbody. Acme threads are provided on the upper end of the gudgeon. The gudgeon uses an interference type fit in the center hub casting of the carbody. A locking mechanism on the upper threads allows fine adjustment capabilities and positive retention of nut position. The gudgeon center hole is used for electrical wiring, tube, and airlines between the upper revolving frame and the lower track frame.

Center gudgeon, center gudgeon nut and thrust washer.

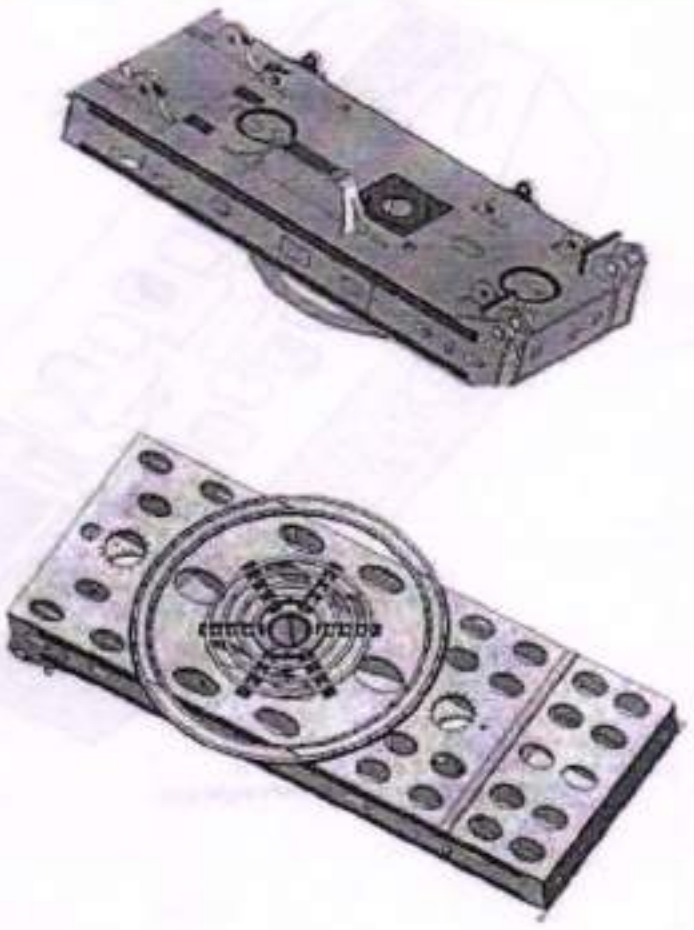
KOMATSU

Technical Description

MECHANICAL SYSTEMS (UPPER)

Revolving Frame

The revolving frame is a heavy welded, high strength, low alloy, steel structure of cellular deep box sections, built around a large center casting. The rolled, full depth, internal turret plates align with the swing roller path and provide support for direct load transfer. The roller path is directly bolted to the bottom plate of the revolving frame. Deck machinery is mounted via tapped holes or pin supported.



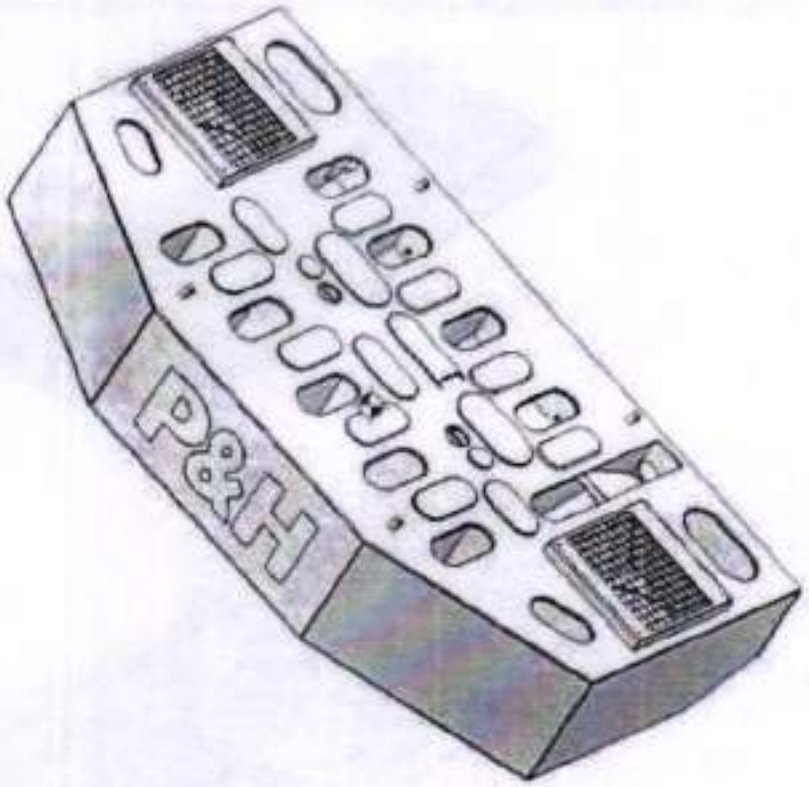
Revolving frame assembly

KOMATSU

Technical Description

Counterweight Box

A sectioned counterweight box is mounted to the rear of the revolving frame to accommodate the counterweight ballast. The counterweight box is bolted, and field welded to the revolving frame.



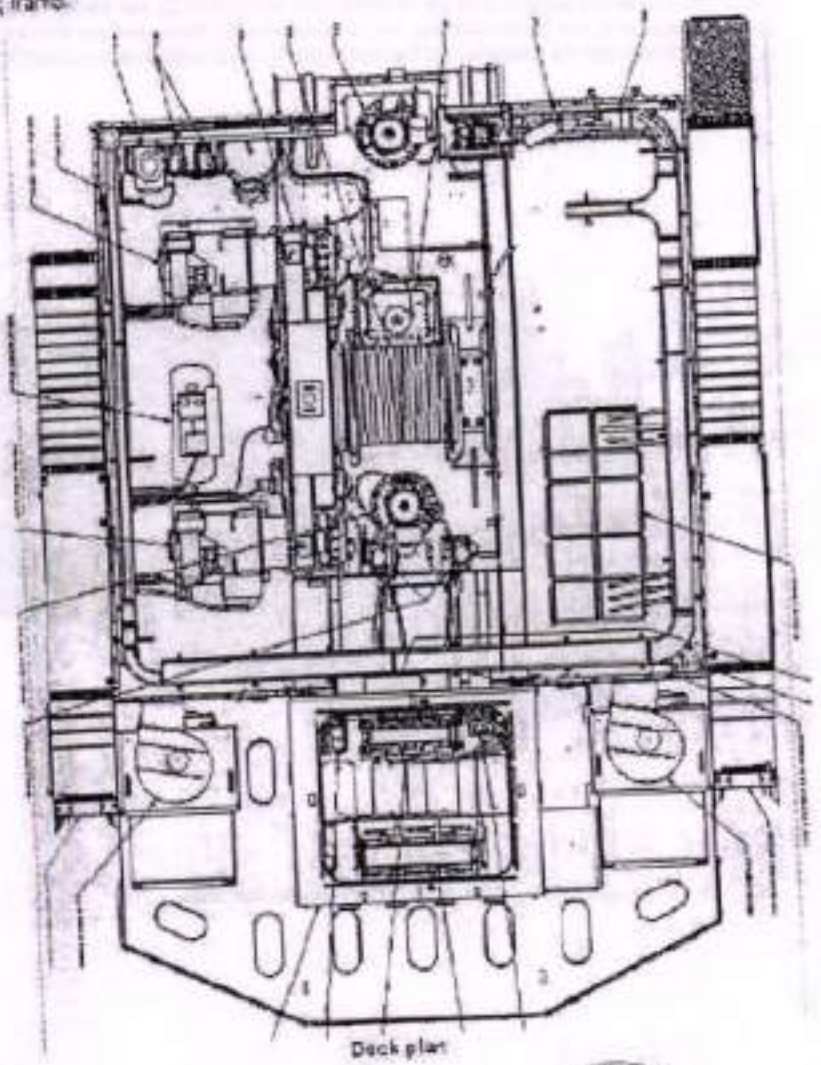
Counterweight box

KOMATSU

Technical Description

Deck Plan

Side platforms mount to the revolving frame, extending the deck width. A conveniently arranged floor plan with abundant space facilitates maintenance. Side platform assemblies extend to the full depth of the revolving frame.



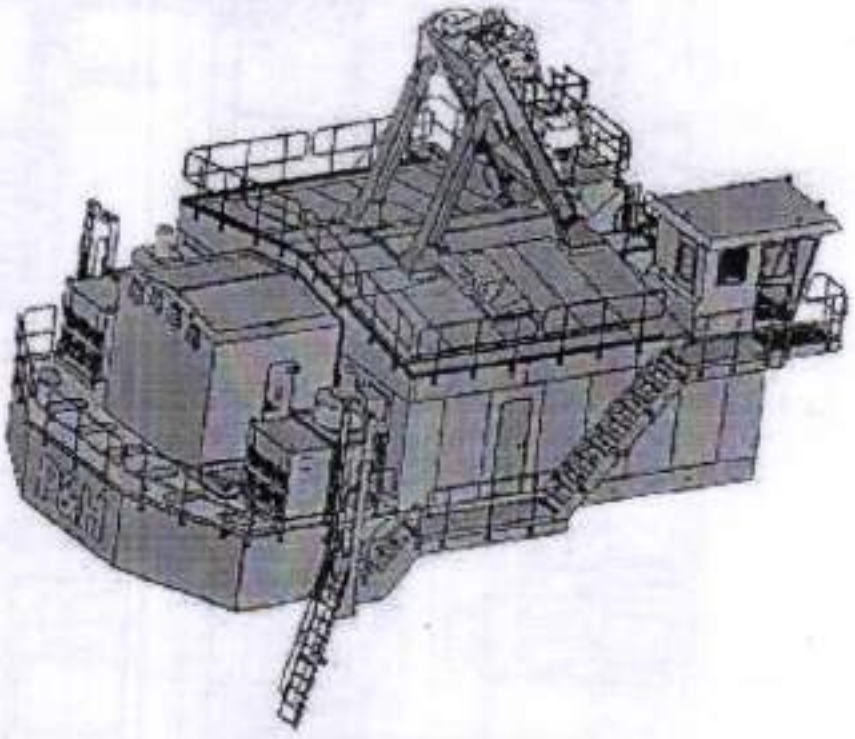
Deck plan

KOMATSU

Technical Description

Machinery House

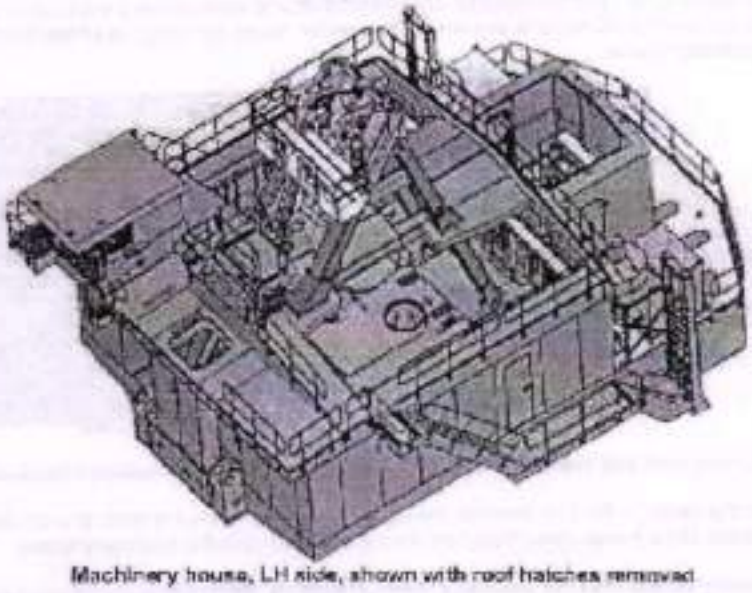
The machinery house fully encloses all critical components on the machine upper in two rooms: the main machinery house and medium-voltage room. Removable roof panels allow direct crane pick of major deck mounted components as required. The entire roof center section is also removable for complete access to the rotation drum and low voltage collector. Roof sections are sloped to shed water. A door section across the entire front of the machinery house provides secure mounting of the operator's cab.



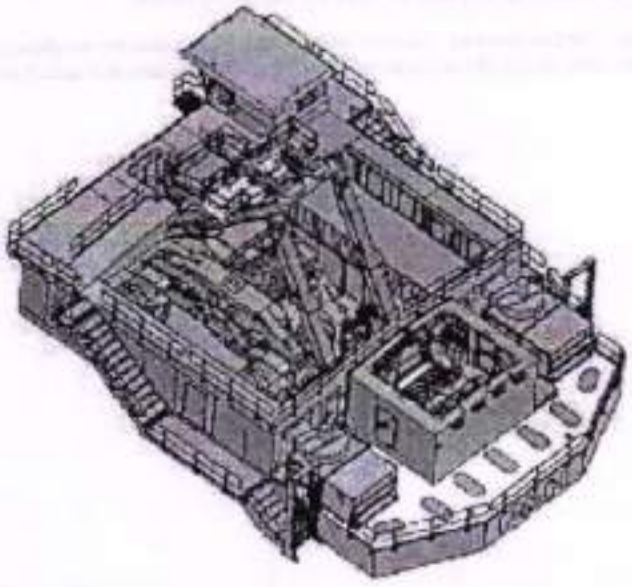
Machinery house, RH side

KOMATSU

Technical Description



Machinery house, LH side, shown with roof hatches removed

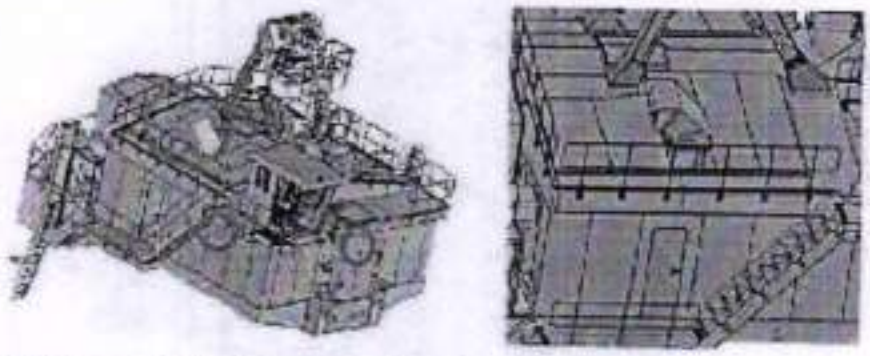


Machinery house shown with all roof panels removed

KOMATSU

Technical Description

AC Drive venting - For hot climates, an exhaust duct and exhaust fan is available to directly vent the hottest air from the AC motor drives directly outside the house, reducing the ambient temperature inside the machinery house.



AC Drives vent and venting locations for swing and dipper trip resistors exhaust are circled.

Dipper trip venting - For Hot climates, the dipper trip resistors are enclosed in a cabinet that vents to the outside of the house, reducing ambient temperatures inside the machinery house.

After cooler venting - For Hot climates, the Air Compressor Aftercooler is vented outside the machinery house, reducing ambient temperatures inside the machinery house.

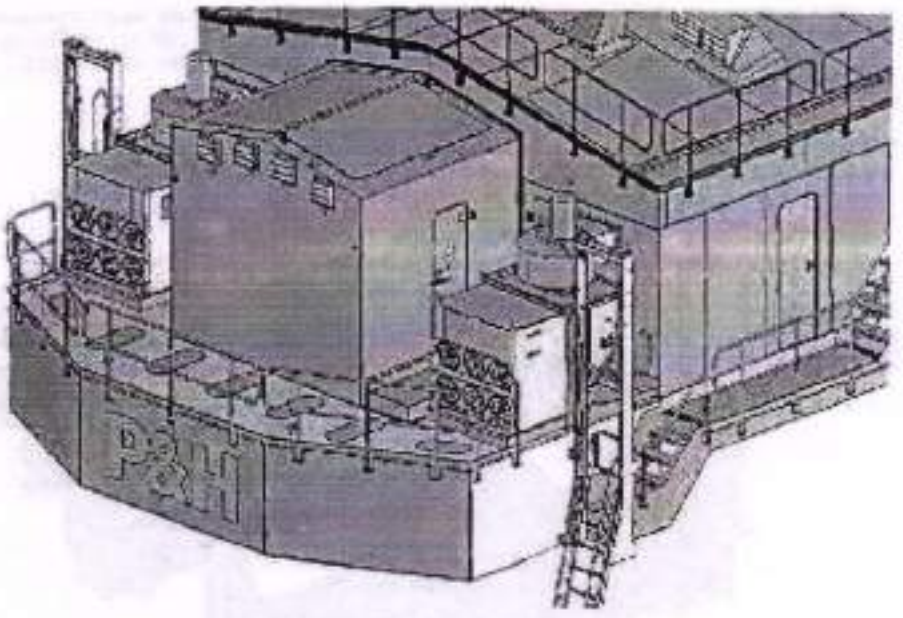
Swing Exhaust - For hot climates, the front swing is ducted outside the machinery house and the rear swing is ducted towards the dirt chute to reduce ambient temperatures inside the machinery house.

KOMATSU

Technical Description

House Pressurization & Filtration

This shovel is equipped with the P&H AirScrubPro™ high efficiency house air filtration system which pressurizes the machinery house with filtered air to reduce dust ingress and to provide clean cooling air for components. The AirScrubPro™ system is a cartridge-based filtration system that is 99.9% efficient by weight at .3 µm and greater particulate size. Dirty air is trapped at the outside of self-cleaning, replaceable fiber cartridges, while clean airflow continues through the cartridges into the machinery house. The life of the filter cartridges is extended by means regularly timed blasts of pressurized air, that reverse the airflow forcing the heavier particulate from the cartridge units. Two independent Air Scrub pre-filter units are mounted directly on the Counterweight box, allowing for easy maintenance access.



Air Scrub Pre units on counterweight box

KOMATSU

Technical Description

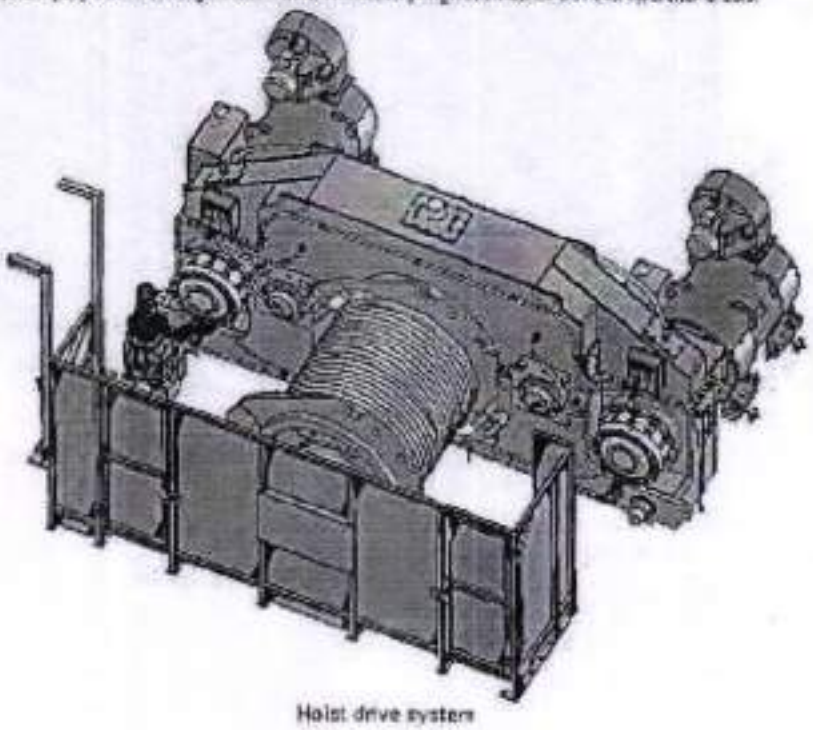
Hoist Drive System

Two (2) P&H AC motors, with a total continuous power rating of 1460hp (1089kW), at 600 volts, and a total peak torque load power of 1557hp (1161kW), drive a modular gear case pinned to the revolving frame. The first reduction is a helical gear set and the second reduction is a spur and a reversible spur drum gear. All gearing is forged, machined, case hardened and ground.

The transmission is oil-tight with anti-friction bearings. The hoist gear case 20-micron oil filtration system uses a positive displacement, piston and magnetic strainer to filter the oil. Oil is returned over the first reduction gear mesh on each side of the case. All bearings are splash and drip lubricated for simple reliable lubrication.

The hoist drum is a large 48inch (1473 mm) pitch diameter drum, with through shaft and flame hardened grooves.

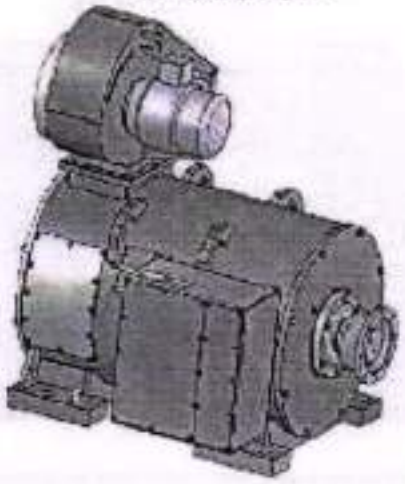
The hoist rope is 2.25" (57mm) diameter x 364 long 6x37 RL cable, fully plastic impregnated and compacted for longer life. The hoist drum and cable are provided with high capacity ferrule socket fittings to simplify cable change outs. Hoist limits are programmable from the operator's cab.



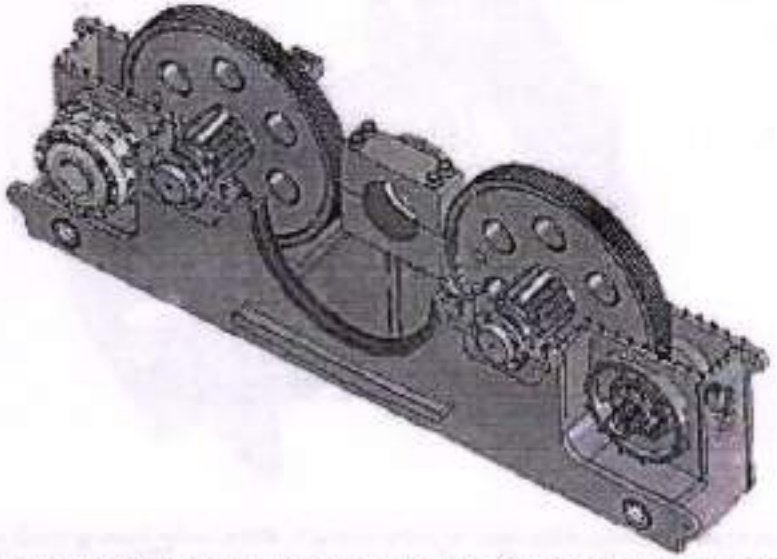
Hoist drive system

KOMATSU

Technical Description



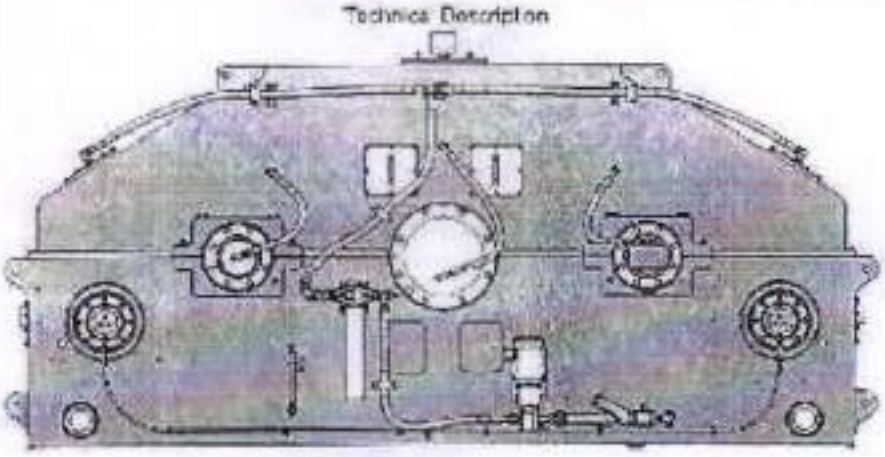
Hoist motor. Coupling is aligned with use of shims under motor feet.



Hoist gearcase with cover removed to show gearing. Gearcase pins to revolving frame.

KOMATSU

Technical Description



Hoist gearcase with lube filtration system shown

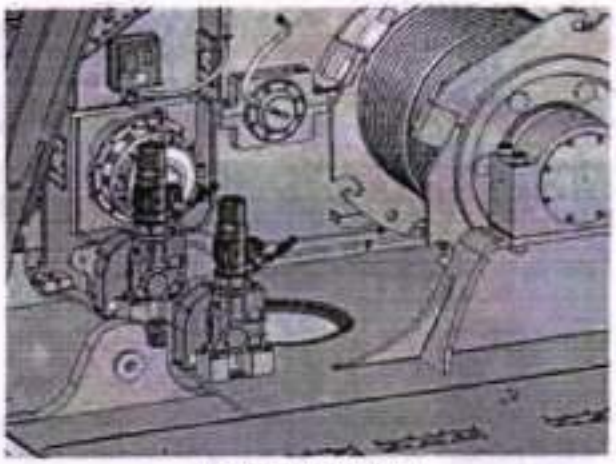
Hoist drum assembly. Alignment is completed with shims under bearing block on RH side.

KOMATSU

Technical Description

Hoist Cable Tugger

Dual electric driven tuggers mounted to the revolving frame assist with hoist cable changes. Each tugger has a rated pulling capacity of 3000 lb. (1361 kg).



Hoist tugger system

Hoist tugger

KOMATSU

Technical Description

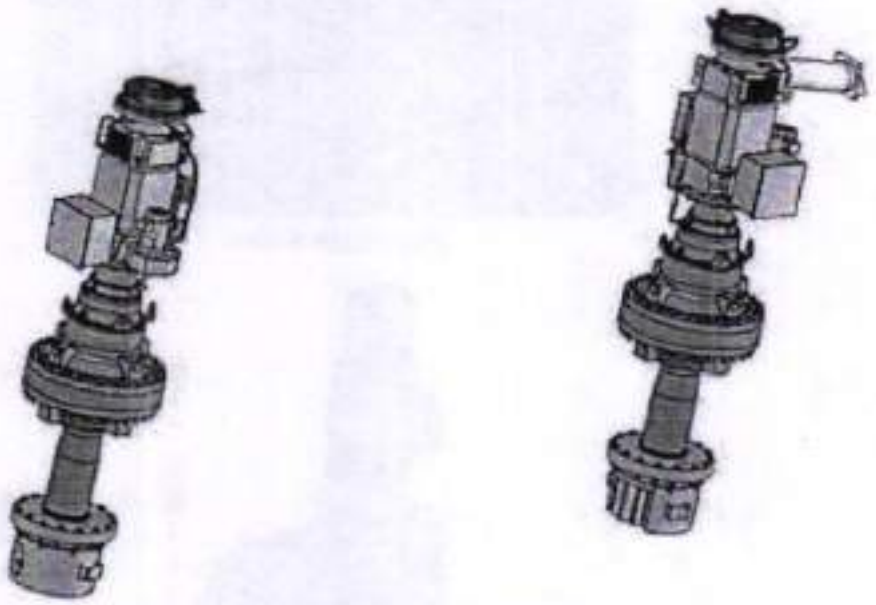
Swing Drive System

Swing power is supplied through the use of two (2) series connected AC drive motors, with a total continuous power rating of 680hp (507kW) at 500 volts, and a total peak developed power of 922hp (688kW).

P&H planetary transmissions are mounted front and rear of the swing gear for even loading. Planetary swing transmissions are designed with bath and splash lubrication for all bearings and gears.

The swing drive-shafts are mounted on anti-friction bearings. The forged swing gear has a 191-inch (4.85m) pitch diameter and a large 10-inch (254mm) tooth face width for reduced loading.

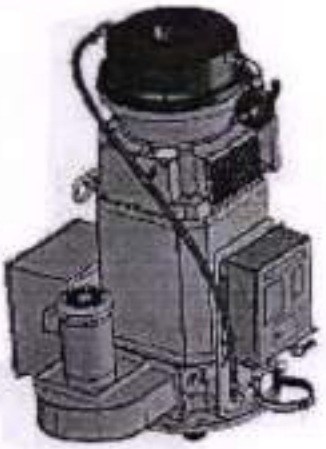
The swing circle uses a quantity of 54 tapered, 8.5-inch (216mm) diameter rollers, carried on self-lubricating bushings. Rollers are forged and quenched and tempered to the proper hardness.



Swing System. Swing motors bolt directly to swing transmission. No alignment required.

KOMATSU

Technical Description



Swing motor, slower, brake and brake controls.

Planetary swing transmission

KOMATSU

Technical Description

Swing shaft assembly

Ring gear and roller path assembly

KOMATSU

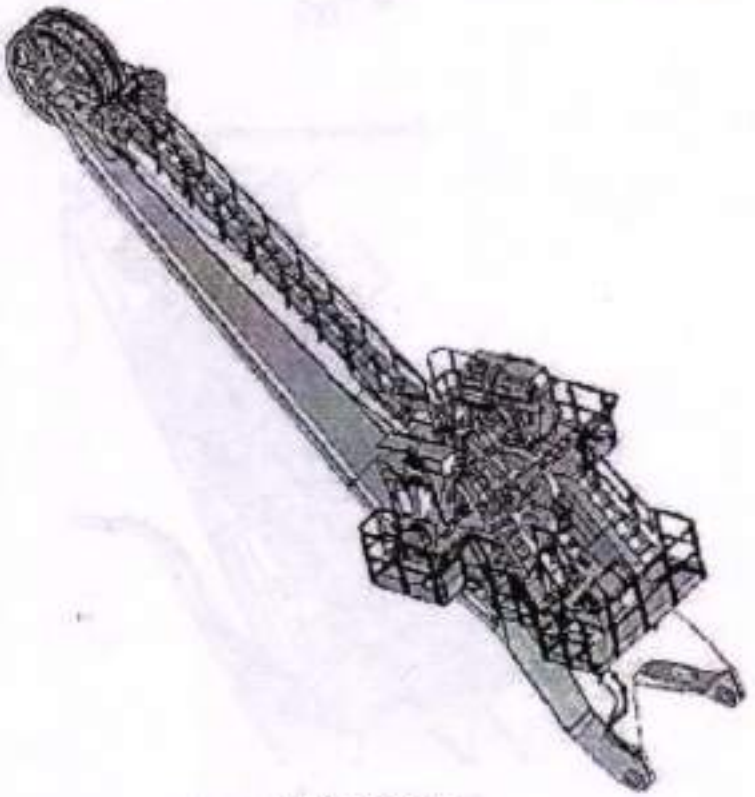
Technical Description

Crowd System

Crowd and retract of the dipper is accomplished using one (1) P&H AC motor, with a continuous power rating of 365hp (272kW) at 500 volts, and a peak developed power of 501hp (374kW).

The motor drives the P&H - POWERBAND V® BELT™ shock absorbing system in modular, enclosed gear transmission with spur gear reduction to manganese racks and forged, machined and hardened crowd pinions. V-belt sheaves are fully machined and balanced. Gearing is forged, case hardened, ground and mounted with antifriction, pre-adjusted bearings.

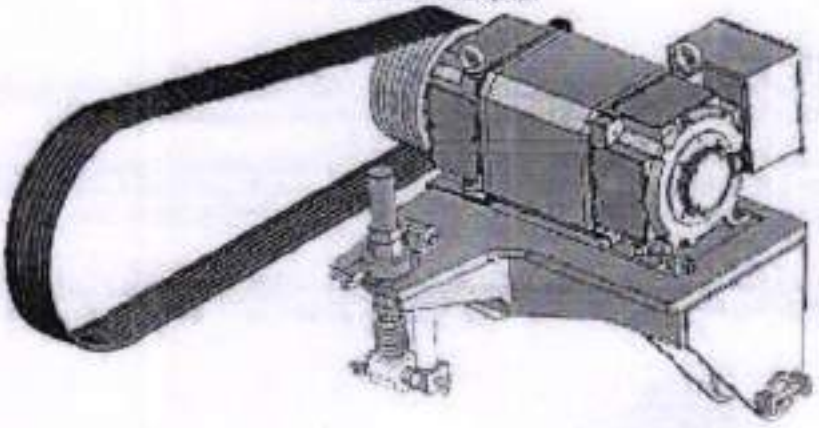
Single piece saddle blocks are adjusted with a separate hydraulic jacking tool which also allows for removal of crowd pinions. Crowd/retract limits are programmable from the operator's cab.



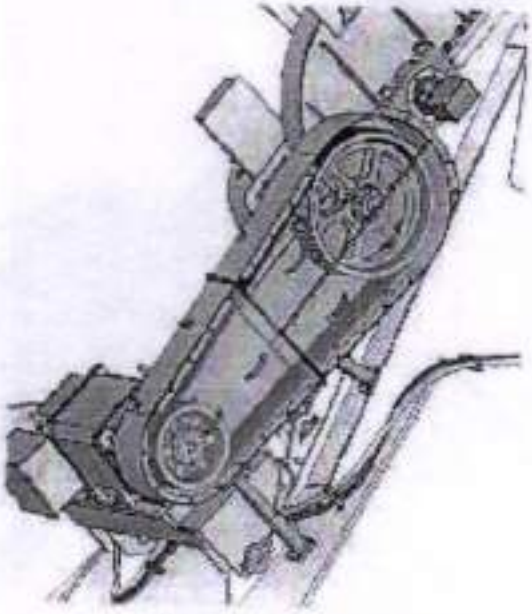
Boom assembly

KOMATSU

Technical Description



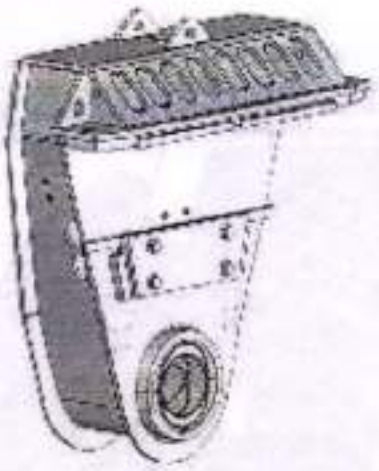
Crowd motor assembly



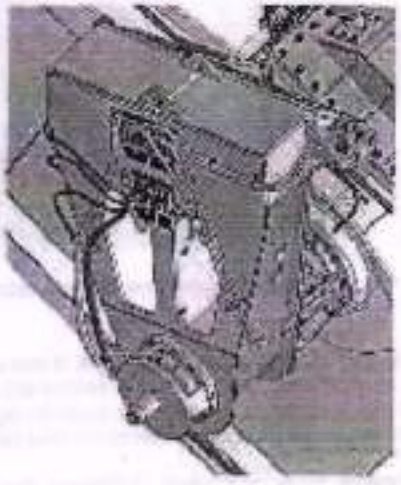
Crowd drive and belt assembly.

KOMATSU

Technical Description



Saddle block



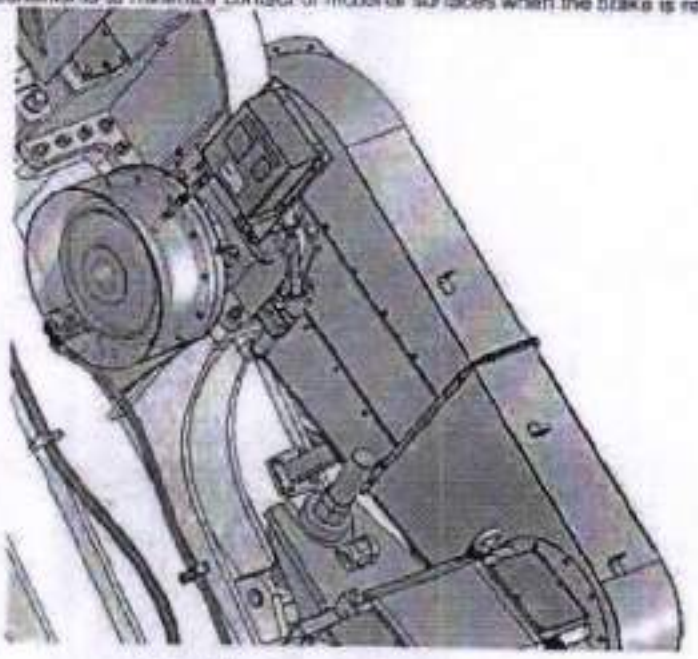
Saddle block assembly

KOMATSU

Technical Description

Brakes

All motions have disc brakes, which are spring set-air released. The brakes have replaceable wear surfaces, using a low abrasion, high heat capacity, friction material. Each brake is equipped with centering mechanisms to minimize contact of frictional surfaces when the brake is released.



Crowd brake and brake controller shown

Boom

The 56 ft (17.07m) length boom is set at a 45° angle. It has a robust, twin handle design, excellent for heavy duty digging applications. The boom is a welded structure of high strength, low alloy steel for cold weather toughness, and has extra width and depth for high load capability. The boom is connected to the revolving frame lugs with heavy duty lubricated pins retained with split collars.

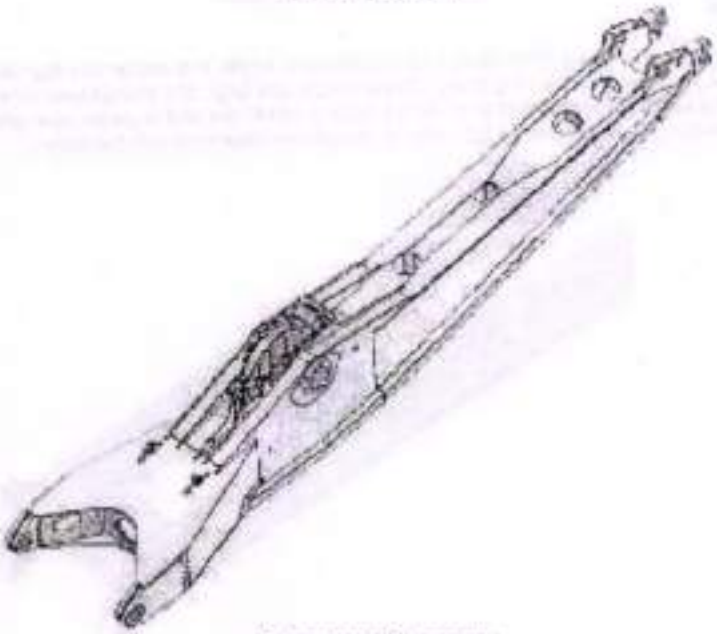
The boom point sheaves have an 85-inch (2159mm) diameter, with split bearings and are block mounted for ease of maintenance.

The boom suspension cables utilize four (4) 3.25-inch (83 mm) structural strand cables.

Integral lifting lugs and wear resistant side boxes are incorporated. Boom bumpers are mounted at the base of the boom to reduce damage from contact with the handle torsion box.

KOMATSU

Technical Description



Boom assembly shown

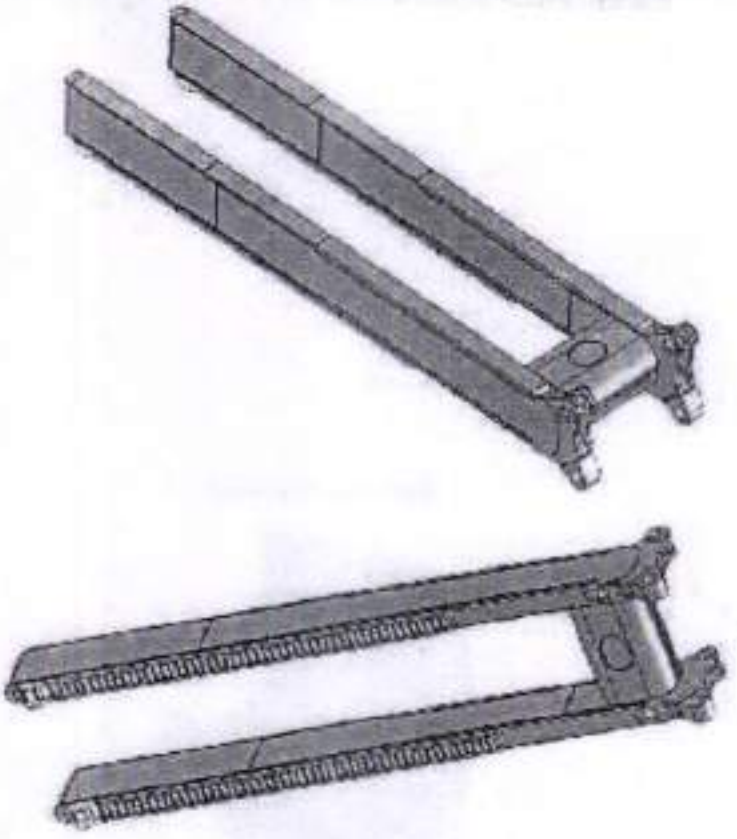
Boom joint assembly cross section shown

KOMATSU

Technical Description

Handles

The clique handle has a 31 ft-10 inch (9.7 m) effective length. It is made from high strength, low alloy, cold weather steel. The twin leg design, straight legs, and large size manganese locks deliver a stable caliper trajectory, providing better fill for all digging conditions and superior strength for corner tooth digging loads. Handle generally provides for torsion bar clearance with the boom.



Handle assembly shown

KOMATSU

Technical Description

Fire Suppression

Fire suppression systems are locally contracted by KMD Services. Typical systems consist of clean agent extinguishing system for machinery house including electrical cabinets, auxiliary system area, and detection and actuating assembly.

Adequate number of fire extinguishers are provided.

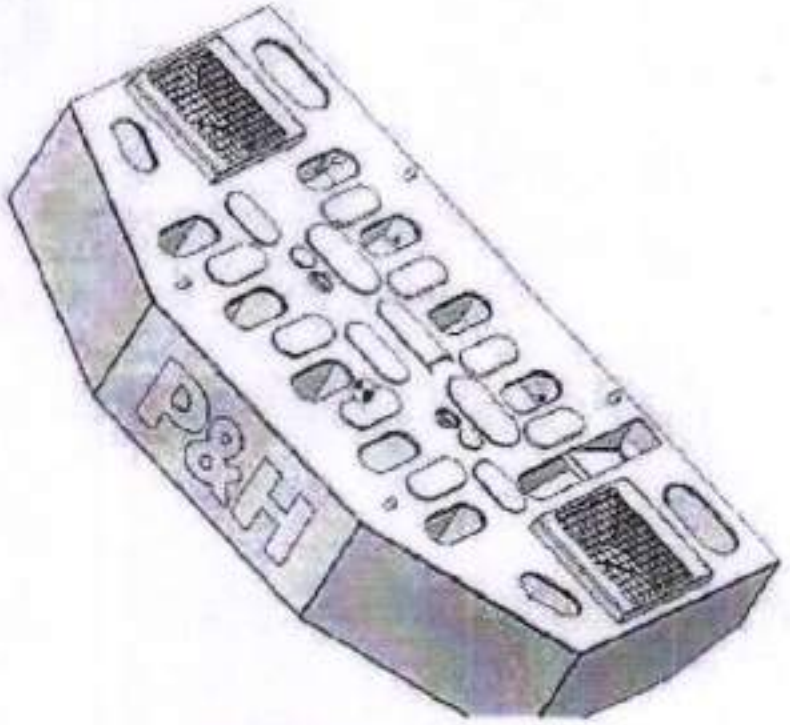
KOMATSU

Technical Description

Miscellaneous Mechanical (UPPER)

Fall Protection - Lanyard attachment points are field installed

Counterweight Ballast – Approximately 309,000 lb (140,160 kg) of ballast is required, but note that the exact weight will vary based on final dipper selection. Options exist for traditional steel punchings, concrete ballast, or a combination of the two. Contact Product Engineering for final ballast requirements.



Standard counterweight box shown

KOMATSU

Technical Description

TECHNOLOGY & SOFTWARE

ABSS - The ABSS™ (Automatic Door Self Secured) feature is part of the control system. ABSS™ eliminates boom jerking and the associated impact of abruptly lowering the boom from a locked condition.

Slack Hoist Cable Detection - (Optional)

Optidig - The Optidig II operator assistance coordinates the hoist and crowd motions to prevent the dipper from stalling while digging.

Motivator Mode - Software that modifies drive performance and TPC function in order to allow mine electrician motivator all the haul cable voltage to be used to propel.

Temperature Monitoring System (Standard) – The standard system provides temperature monitoring for all main motor motors, hoist gearcase oil temp, crowd gearcase oil temp, swing shaft bushings, Ambient, MV room and Main Vector AC Drive air temperature sensors utilized. The temperature readings are graphically displayed on touch screens.

Payload – Dipper payload weighing system.

Centurion Shovel Interface - The Centurion Shovel Dispatch interface provides for the transfer of payload and shovel fault information from the shovel to the mine's dispatch system. The supported systems are Modular, Wenco, and Jigsaw. Customers will be required to activate and update their dispatch software for the shovel data to be utilized. NOTE: the customer will be charged a fee for the software update activation, and necessary hardware by the respective Dispatch companies.

Prevail (Optional) - Hosted remote health monitoring solution providing advanced reliability, productivity and predictive modeling capabilities and reporting for optimal shovel performance. Standard for 1 year, yearly subscription renewal required thereafter.

KOMATSU

Technical Description

TECHNICAL DOCUMENTATION

Technical Documentation:	STD Copies	Extra Copies
Manual's on CD	3	4
Operators Suite, Color Hard Copy	3	4
Mechanical Suite, Color Hard Copy	1	6
Electrical Suite, Color Hard Copy	1	6
Parts Manuals	**LinkOne**	**Hard Copy**
Parts & Electrical Data Manual	1	6
ProManual Application, Initial 5 users	0	0
ProManual Application, Additional 5 users	0	0
Documentation Language		
Manual Language	English	
Parts Manual Language	English	
GUI Language	English	

Note: The LinkOne Viewer allows the end user to print individual pages or complete parts manuals. Komatsu grants the end users of its parts manual the authority to print hard copy manuals as required. The electronic copy can be installed on as many computers as desired.

Note: Consult Peak Services for other language requirements.

KOMATSU

Technical Description

PAINT, PACK & SHIP

Paint

Standard Paint Scheme: P&H Yellow and Black - Standard exterior is P&H Yellow and Black. Yellow on machinery house and operator's cab. Black on lower, attachment, catwalks and handrail. Interior of house, carbody, revolving frame, boom and all electrical cabinet interiors are painted high visibility white. (Lower HV disconnect switch is painted red).

KOMATSU OR CUSTOMER SUPPLY ITEMS

Unless otherwise stated in the proposal, required items that are not included in our basic machine supply include:

- Machine erection, including erection tools and equipment
- Fluids/lubricants
- Trailing cable and electrical power supply
- Counterweight ballast per description on page 55.

*****

Annexure 4(u)

ANNEXURE 4(u)

P&H

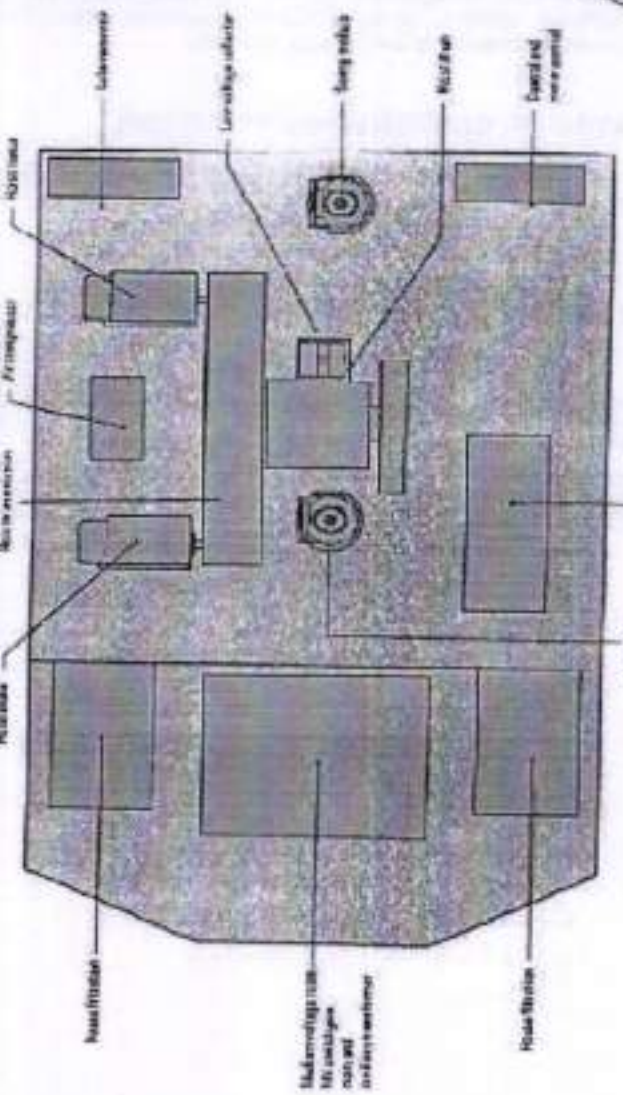
JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021 22/051 Dated 15.11.202[illegible]

For the Supply, Installation and Commissioning of 02 nos. of 20 C.Y. Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

LAYOUT DRAWINGS ALL MACHINERY



KOMATSU

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

Propel

The motors are directly connected to P&H planetary propel transmissions with a gear coupling. The planetary propel transmissions are directly mounted to each crawler frame and provide differential speed and counter-rotational steering capability. All gearing is forged, anti-friction bearing mounted, and all external gears are case hardened and ground. The propel transmissions are designed with bath and splash lubrication to all gearings and bearings.

The P&H DELTA™ drive system has a raised final propel drive shaft and tumbler. The final propel drive shaft is spline connected to the planetary transmission and tumbler and is mounted on anti-friction bearings. The shaft can be replaced with the transmission in place, and the transmission can be replaced with the shaft in place. The outboard spherical bearing is encapsulated to prevent crawler frame damage in the event of a bearing failure. V-ring seals are used to seal out dirt and seal in lubricant

Motors are mounted to a propel motor base structure. Gear couplings and a long input shaft provide a large misalignment capability that eliminates the need for motor alignment of the motors to the transmission. Axial adjustment is completed with shims that adjust the overall length of the input coupling assembly. The propel transmission drives a final drive shaft that powers a drive sprocket to propel the crawler tracks.

OVERALL VIEW

Overall view of propel system with various components removed to show all critical components. No alignment required.

JOY GLOBAL SURFACE MINING INC

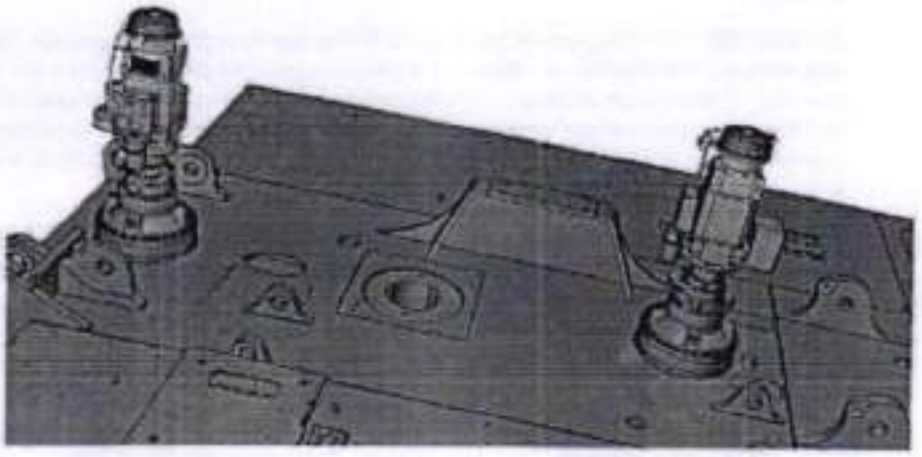
Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

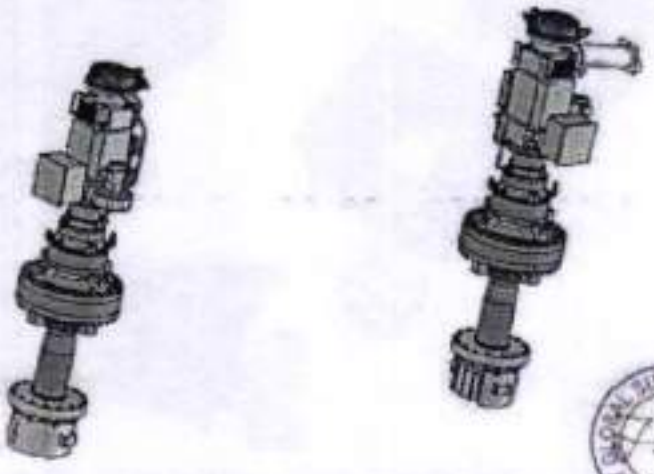
Offer Ref.: Q15130 dated 14.12.2021

Swing

The swing motor is fitted to the planetary swing transmission with a solid mount and gear coupling. No alignment required. The planetary transmission is a 3-reduction transmission that is mounted to the top of the revolving frame. The swing shaft is bearing mounted in the bottom of the revolving frame and the swing pinion provides rotation about the ring gear that is mounted to the carbody.



Overall view of swing system



Swing System. Swing motors bolt directly to swing transmission. No alignment required.

KOMATSU

JOY GLOBAL SURFACE MINING INC

P&H

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

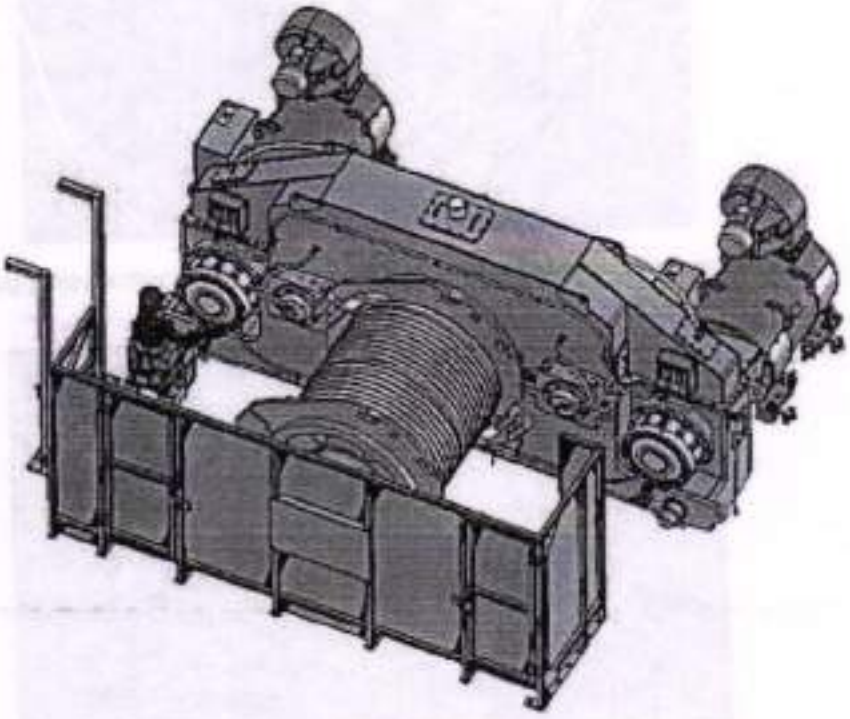
For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

Hoist

The hoist motors are mounted on a hoist motor base that is attached to the revolving frame. Each hoist motor is coupled to the hoist transmission with a gear coupling. Each hoist motor is fully adjustable with shims and jacking screws to achieve very close alignment well within the capability of the gear coupling.

The hoist gearcase is pinned to the Revolving frame. The hoist drum is set on bearings in the hoist gearcase and the hoist side stand. The side stand is adjustable with shims to achieve alignment of the hoist drum gear with the intermediate gears in the hoist transmission.



Overall view of Hoist system

KOMATSU

Page 4 of 7

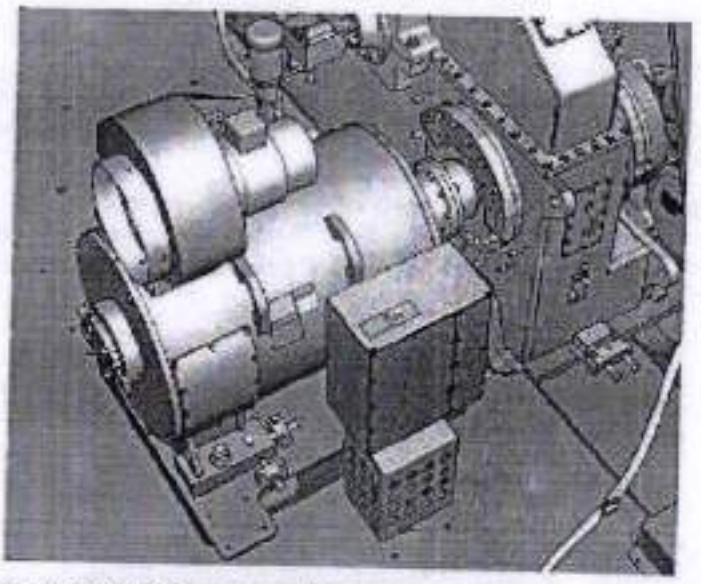
JOY GLOBAL SURFACE MINING INC

P&H

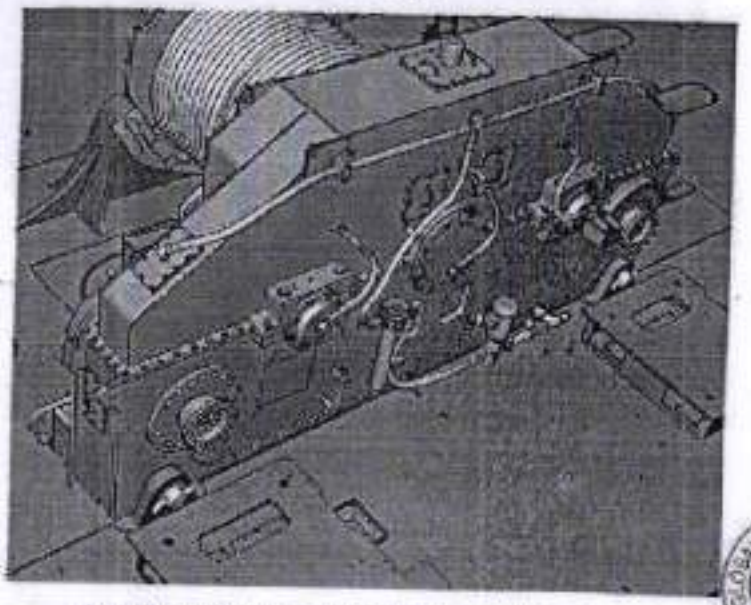
Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021



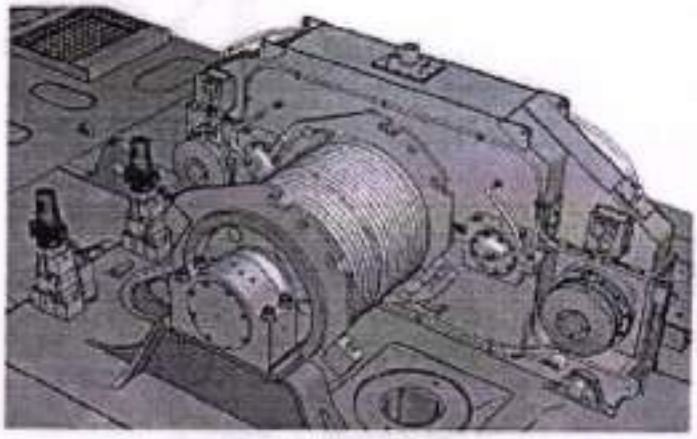
View of hoist motor base, motor adjustment and coupling with coupling guard removed.



View of hoist Gearcase pinned to the Revolving frame.

KOMATSU

Page 5 of 7

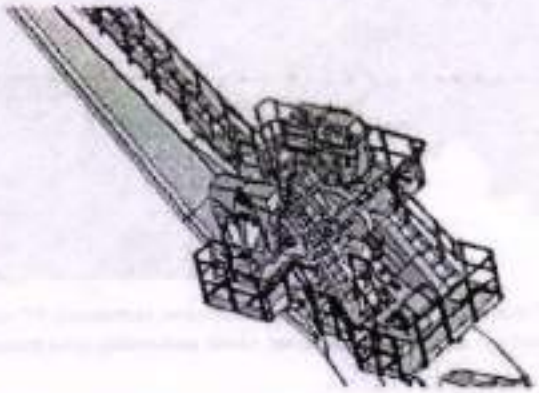


View of the side stand and the hoist gearcase with an inner wall removed to show the alignment of the hoist drum gear.

Crowd

The Motor is connected to the transmission through a 7 strand V belt. The crowd motor is set on an adjustable motor base that is adjusted with a hydraulic ram and held in place with a jacking screw to maintain a specific belt tension.

The crowd transmission is integral with the boom. First and second reduction shaft assemblies are secured with the crowd gearcase cover. The Boom contains the shipper shaft and shipper shaft gear which then are connected to the final rack and pinion drive, that powers the handle.



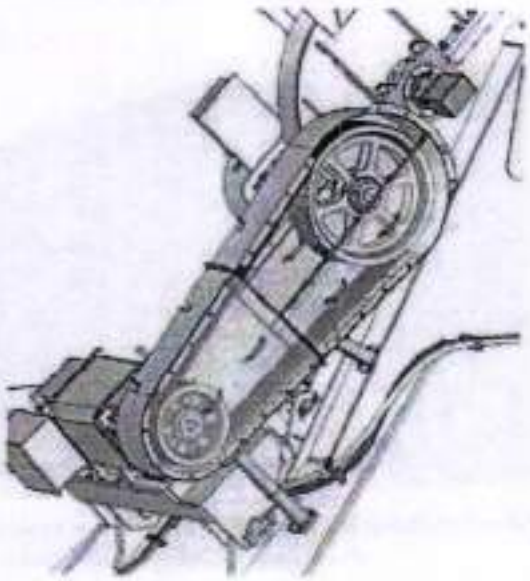
Overall view of Boom and crowd drive system

JOY GLOBAL SURFACE MINING INC

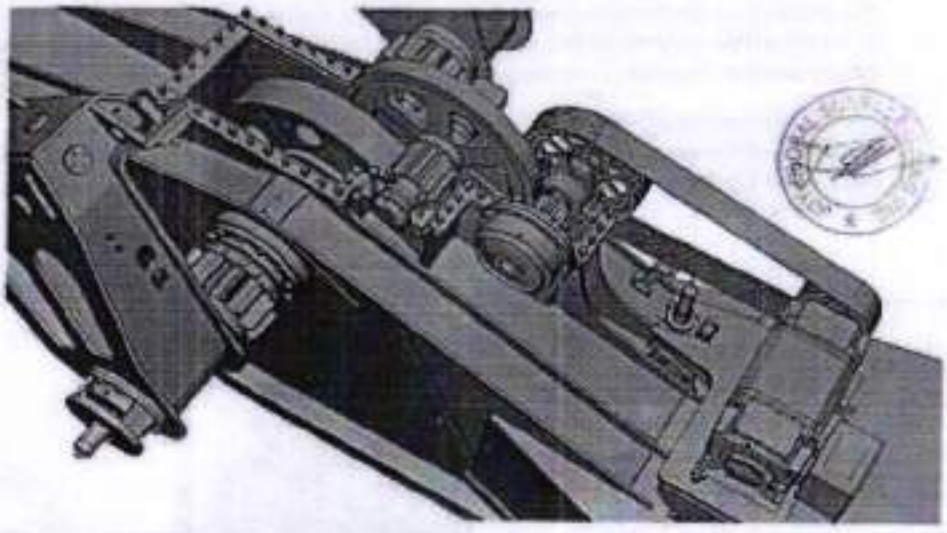
Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021



View of crowd drive with belt case removed.



Crowd drive with gearcase cover and belt case removed. 1st reduction shaft assembly, 2nd reduction shaft asm, Shipper shaft assembly and motor assembly shown.

KOMATSU

Page 7 of 7

Annexure 4(v)

ANNEXURE 4(v)

P&H

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

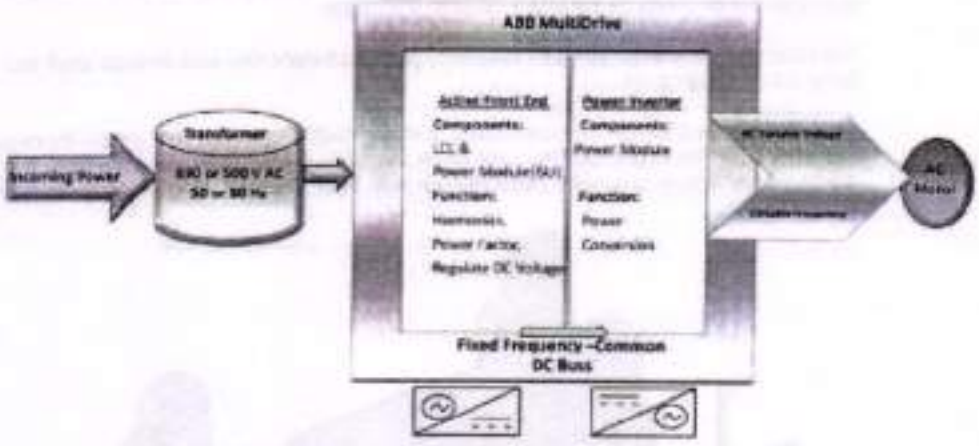
For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

TYPE AND METHOD OF ELECTRICAL DRIVE SYSTEM

P&H Centurion™ Shovel Control System

The P&H Centurion™ Shovel Control System provides the supervisory control of the shovel drives and executes sequencing and monitoring. Centurion coordinates all major shovel operations, raising the bar on productivity and reliability. The Centurion System balances interdependent motion speeds through an integrated approach to machine and drive control, helping operators optimize each portion of the dig cycle.



KOMATSU

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021 22/361 Dated *5.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15139 dated 14.12.2021

MECHANICAL DRIVE SYSTEM

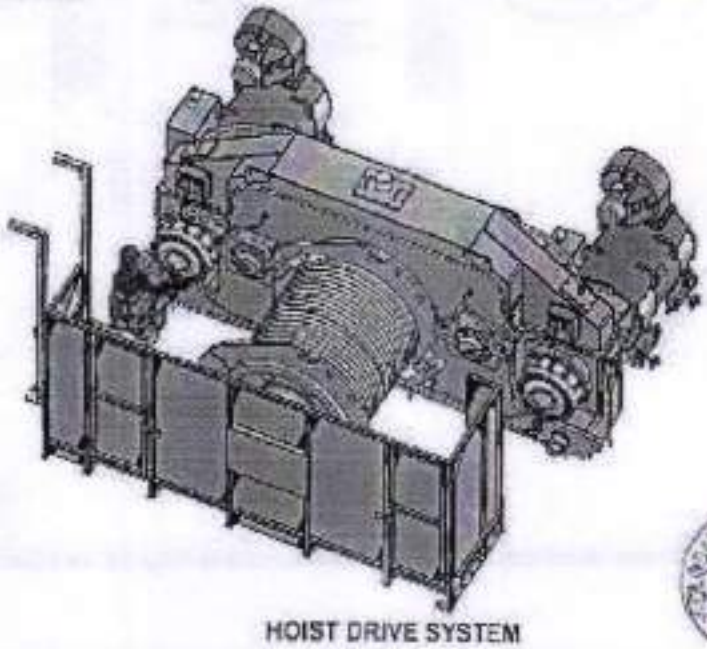
Hoist Drive System

Two (2) P&H AC motors, with a total continuous power rating of 1460hp (1089kW) at 600 volts, and a total peak developed power of 1557hp (1161kW), drive a modular gear case pinned to the revolving frame. The first reduction is a helical gear set and the second reduction is a spur and a reversible spur drum gear. All gearing is forged, machined, case hardened and ground.

The transmission is oil right with anti friction bearings. The hoist gear case 20-micron oil filtration system uses a positive displacement pump and magnetic screener to filter the oil. Oil is returned over the first reduction gear mesh on each side of the case. All bearings are splash and drip lubricated for simple reliable lubrication.

The hoist drum is a large 56-inch (1422 mm) pitch diameter drum, with through shaft and flame hardened grooves.

The hoist rope is 2.25" (57mm) diameter x 304' long 6x37 RLL cable, fully plastic impregnated and compacted for longer life. The hoist drum and cable are provided with high capacity spelter socket fittings to simplify cable change outs. Hoist limits are programmable from the operator's cab.



HOIST DRIVE SYSTEM

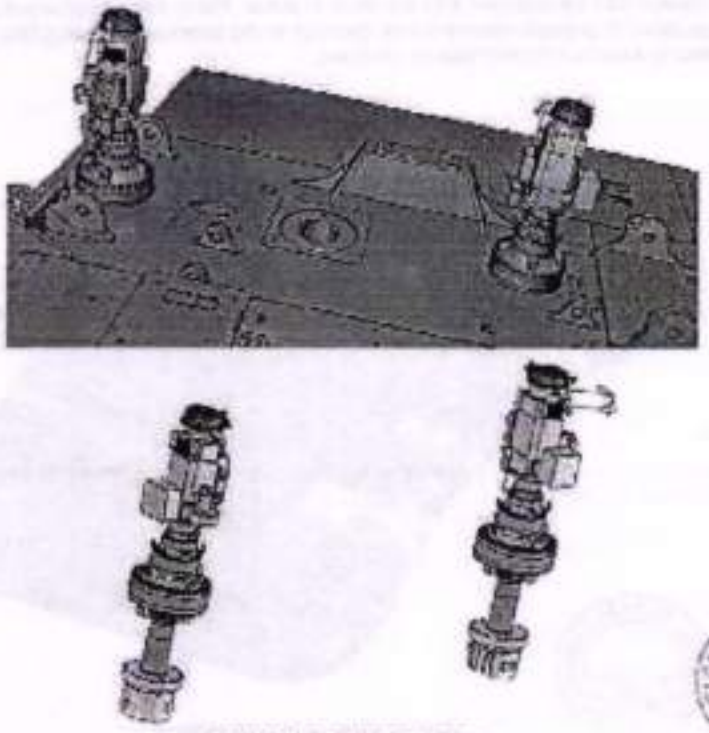
Swing Drive System

Swing power is supplied through the use of two (2) series connected AC drive motors, with a total continuous power rating of 680hp (507kW) at 500 volts, and a total peak developed power of 922hp (555kW).

P&H planetary transmissions are mounted front and rear of the swing gear for even loading. Planetary swing transmissions are designed with built-in splash lubrication for all bearings and gears.

The swing drive shafts are mounted on anti-friction bearings. The forged swing gear has a 191-inch (4.8m) pitch diameter and a large 10-inch (254mm) tooth face width for reduced loading.

The swing circle uses a quantity of 54 tapered, 8.5-inch (216mm) diameter rollers, carried on self-lubricating bushings. Rollers are forged and quenched and tempered to the proper hardness.



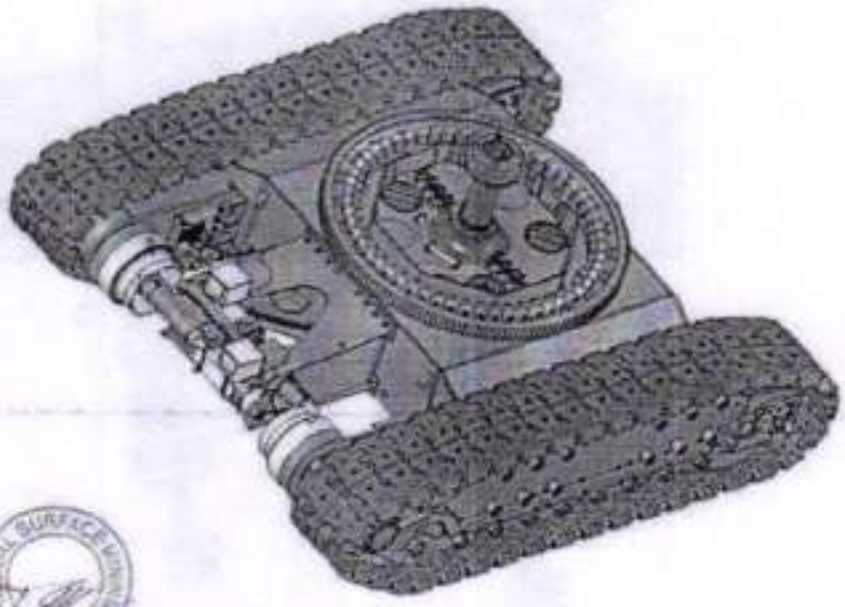
OVERALL SWING SYSTEM

Dual Planetary Propel System

Two (2) independent P&H AC drive motors, with a total continuous power rating of 440hp (328kW) at 500 volts, and a total peak developed power of 747hp (557kW), drive the propel system and are load sharing controlled. The motors are mounted in a propel motor base which is bolted to the rear of the carbody.

The motors are directly connected to P&H planetary propel transmissions with a gear coupling and a long coupling spacer that eliminates the need for motor alignment. The planetary propel transmissions are directly mounted to each crawler frame and provide differential speed and counter-rotational steering capability. All gearing is forged, anti-friction bearing mounted, and all external gears are case hardened and ground. The propel transmissions are designed with bath and splash lubrication to all gearings and bearings.

The propel drive system has a raised final propel drive shaft and tumbler. The final propel drive shaft is spline connected to the planetary transmission and tumbler and is mounted on anti-friction bearings. The shaft can be replaced with the transmission in place, and the transmission can be replaced with the shaft in place. The outboard spherical bearing is encapsulated to prevent crawler frame damage in the event of a bearing failure. V-ring seals are used to seal out dirt and seal in lubricant.



Overall view of propel system

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.1*.202*

For the Supply, Installation and Commissioning of 02 nos. of 20 Cum Electric Hope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

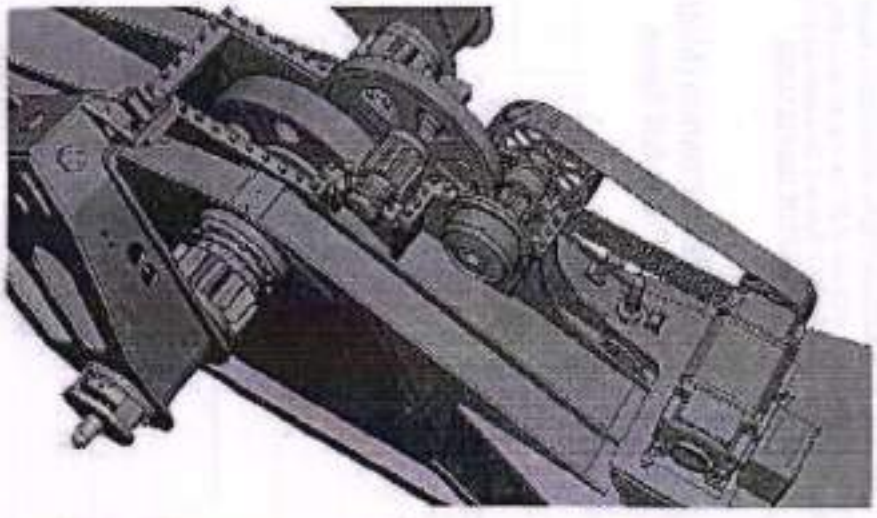
Offer Ref.: Q15130 dated 14.12.2021

Crowd System

Crowd and retract of the dipper is accomplished using one (1) P&H AC motor with a continuous power rating of 365 hp (272kW) at 500 volts, and a peak developed power of 50 hp (37kW).

The motor drives the P&H POWERBAND "V" BELT™ shock absorbing system to modular, enclosed transmission with spur gear reduction to manganese racks and forged, machined and hardened crowd pinions. V-belt sheaves are fully machined and balanced. Gearing is forged, case hardened, ground and mounted with encapsulated, pre-adjusted bearings.

Single piece saddle blocks are adjusted with a separate hydraulic jacking tool which also allows for removal of crowd pinions. Crowd/retract limits are programmable from the operator's cab.

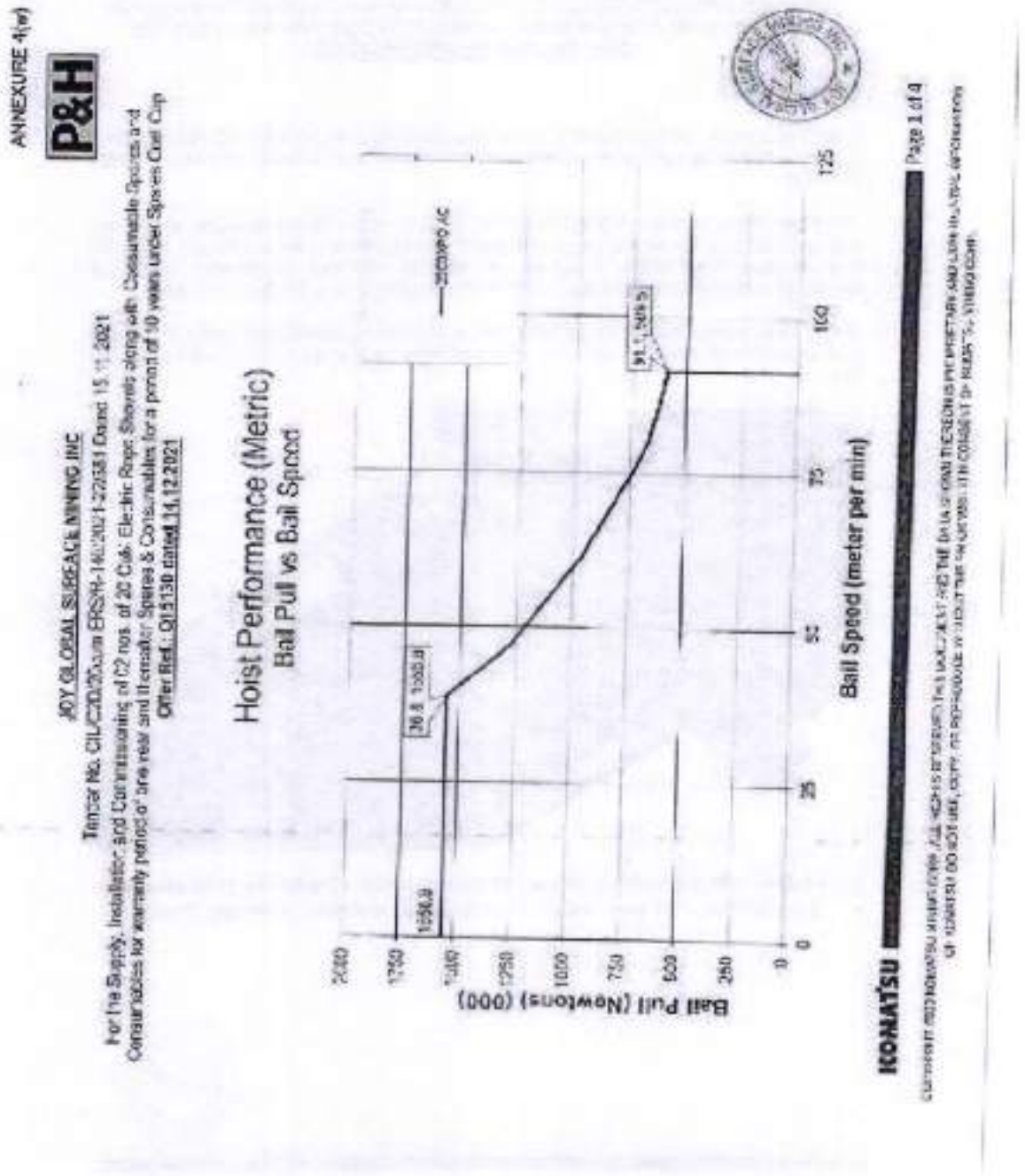


Crowd drive with gearcase cover and belt case removed, 1st reduction shaft assembly, 2nd reduction shaft asm, Shipper shaft assembly and motor assembly shown.

KOMATSU

Page 5 of 5

Annexure 4(w)


ANNEXURE 4(w)
P&H
JOY GLOBAL SURFACE MINING INC
Tender No. CIL/C2D/20cum ERS/R-146/252/1-220381 Dated 15.11.2021
For the Supply, Installation and Commissioning of 02 nos. of 20 Cub. Electric Rope Shovels along with Consumable Spares and
Consumables for warranty period of one year and Recmmended Spares & Consumables for a period of 10 years under Spares Cost Cap
Offer Ref.: Q15130 dated 14.12.2021
Hoist Performance (Metric)
Ball Pull vs Ball Speed
Ball Pull (Newtons) (000)
Ball Speed (meter per min)
KOMATSU
Page 1 of 9

P&H

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021-22361 Dated 15.11.2021

For the Supply, Installation and Commissioning of 20 nos. of 20 Cuft Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: 015130 dated 14.12.2021

Swing Performance (Metric)

Swing Torque vs Swing Speed

KOMATSU

Page 3 of 4

JOY GLOBAL SURFACE MINING INC

Tender No. CIL/C2D/20cum ERS/R-146/2021 22551 Dated 15.11.2021

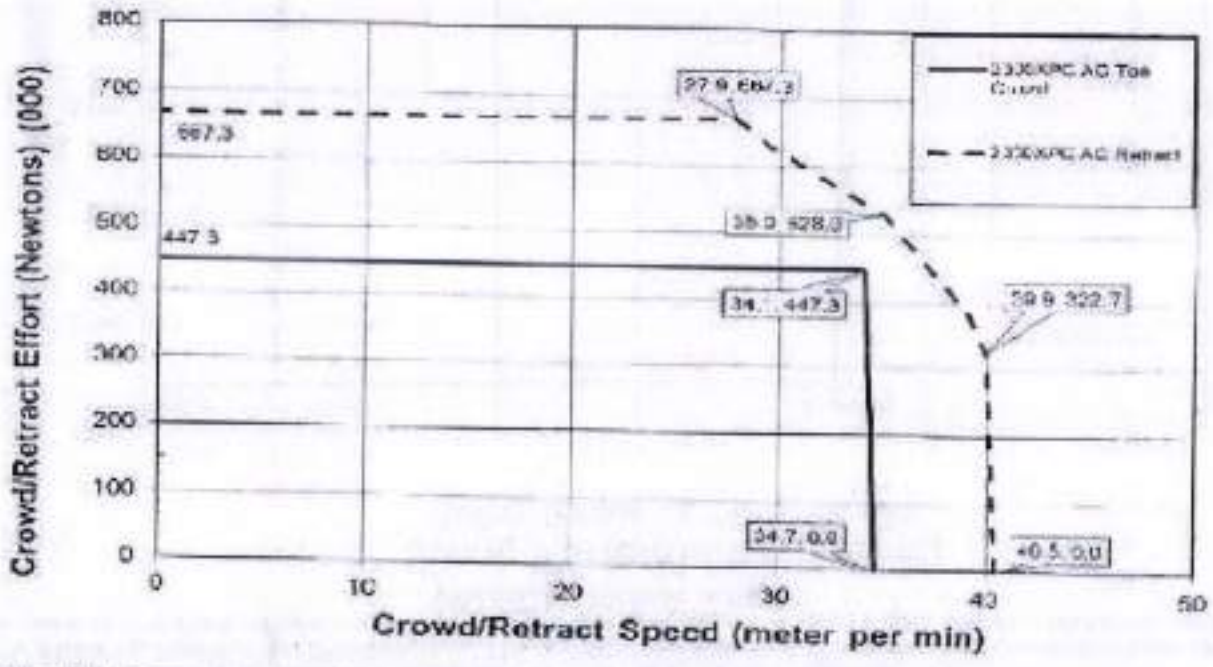
For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Con Cap

Offer Ref.: Q15130 dated 14.12.2021

P&H

Crowd Performance (Metric)

Crowd/Retract Effort vs Speed



KOMATSU

JOY GLOBAL SURFACE MINING INC

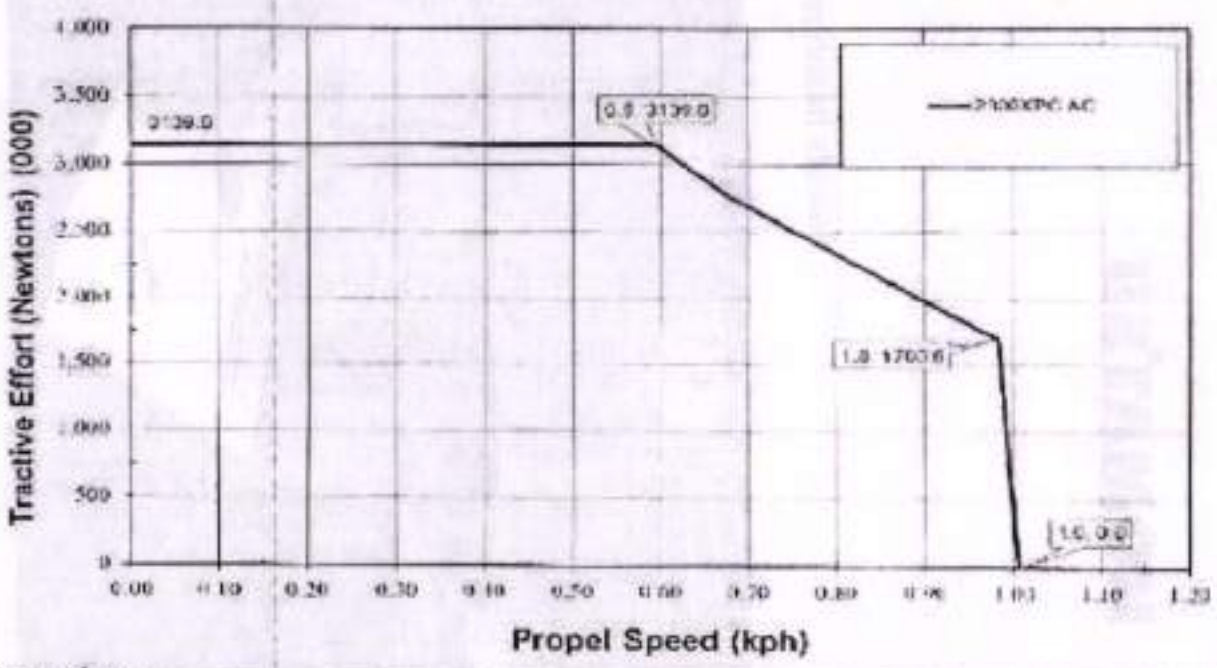
Tender No. CIL/C2D/20cum ERS/R-146/2021-22/581 Dated 19.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

P&H

Propel Performance (Metric)
Tractive Effort vs Propel Speed



KOMATSU

Annexure 4(x)

ANNEXURE 4(x)

KOMATSU

P&H

PreVail

Remote health management system

PreVail Remote Health Management System
PreVail RHM helps sharpen your competitive edge
PreVail RHM helps unify maintenance and operations
Data
Information
Results
PreVail RHM is set up to deliver valuable knowledge

PreVail Remote Health Management System

Crowd gearcase temperature faults

Reserving hoist motor over-temp faults

The PreVail RHM system helps reduce cost per ton/metal through early warnings

PreVail Remote Health Management System
KOMATSU

Annexure 4(y)

ANNEXURE 4(y)

JOY GLOBAL SURFACE MINING INC

Tender No: CIL/C2D/20cum ERS/R-146/2021-22/351 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15139 dated 14.12.2021

DESCRIPTION OF PROTECTION INSTRUMENTS AND MONITORING FEATURES OF THE SUPPLY CIRCUITS AND DRIVE SYSTEM

P&H Centurion™ Information System's enhanced color Graphical User Interface (GUI) features intuitive, icon-based screens to display vital information such as dragline status, troubleshooting information, schematics. The primary unit is located in the operator's cab.

Displays all the system & drive faults and alarms that are generated. Files time & date stamped faults and alarms to the hard drive. Files can be download locally or over the mine network if one is installed in the Mine

Protective features and Safety Devices

1. Hoist and Crowd resolvers are provided and Hoist and Crowd / Retract limits are set on the GUI touch screen located in the operator's cab. A boom profiling limit is included, to help prevent contact of the handle function box and dipper with the boom

2. The ABSS™ (Automatic Boom Soft Set down) feature of the control system minimizes boom jacking and the associated impact of abruptly lowering the boom from a jacked condition.

3. The AC motion controls are interlocked in such a manner to prevent operation in the event that:
   a. The air pressure is below minimum.
   b. A drive motor blower is not energized.
   c. A lubricating pump motor is not energized.
   d. A motion drive detects a problem

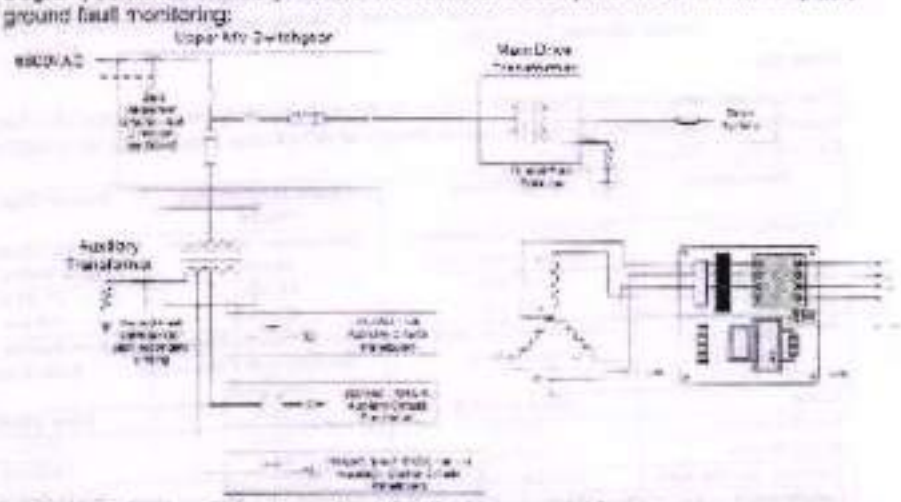
4. Anti-condensation space heaters are provided in the main drive, AC motors, high voltage switchgear and motor control center. The space heaters automatically energize when the main Drive system is not running based on temperature and humidity settings

5. Emergency Lighting Detail: 220VAC power from the main panelboard (which is supplied by the Auxiliary Transformer) will be connected to the emergency lighting enclosure. Within the enclosure is a battery unit, a sealed dust tight relay, a test switch, and a diagnostic indicator light which continuously monitors the status of the unit. Battery Disconnected, Charger Failure, Lamp Failure, Service Alarm, AC "ON". The unit will also perform the following self-tests: 1 minute every 30 days, 10 minutes on the 6th month, and 30 minutes every 12 months.

OPERATION: With power on the unit, it will maintain full charge of the battery. In the event of power loss to the machine, the unit will activate the battery to supply power to six, 6 LED low voltage floodlights mounted inside & outside the machine in specific locations for approximately 90 minutes without machine power.

KOMATSU

6. Auxiliary Equipment Protection: The 6600V primary of the Auxiliary Transformer is protected via fuse. The Auxiliary Transformer has qty. 3 secondary windings (415V, 380V, 190V, all three phase star with neutral) that each feed a steel wall mounted distribution panelboard each filled with a main circuit breaker. Each panelboard utilizes individually sized circuit breakers for each auxiliary equipment circuit. All circuit supplies have suitably rated circuit breakers to provide overload protection. All necessary 3-phase auxiliary equipment have reverse phase sequence protection via a phase monitoring relay. Earth Fault protection is utilized via monitoring at the star point of the Auxiliary Transformer. All single phase circuits (220V/110V) operate with earthed neutral. See SLD (single-line diagram) below with Auxiliary Transformer outline and example of 415V switch receptacle ground fault monitoring:



7. Arc Flash Protection: The primary Electrical Equipment and AC Drive system each have their own Arc Flash Protection systems installed. Protection relays combine light-sensing technology with fast overcurrent protection to provide high-speed arc-flash detection. The systems allow for high-speed tripping during arc-flash events without overtripping for external faults and provides comprehensive feeder protection and arc-flash mitigation. Reducing the typical overcurrent or instantaneous trip response times allows the relays to improve safety and enhance protection for standard switchgear in medium and low-voltage applications.
   a. Primary Electrical Equipment Arc Flash utilizes primary current feedback and 4 point sensor locations: Main Tranformer, Auxilary Transformer, MV Switchgear, and Auxiliary Circuit Panelboard
   b. AC Drive System Arc Flash utilizes a bare fiber loop sensor routed through all drive cabinet cubicles, specifically incoming power cable connections to the drive system and motor cable connections from inverter modules to the motors.

Motivator Mode - Centurion™ Software that modifies drive performance and RPC function in order to allow mine supplied motivator at the rail cable voltage to be used to propel the machine in lieu of managing trailing cable.

Annexure 4(z)

KOMATSU ANNEXURE 4(z)

Ref: Q15130/CIL/SM/Wire Ropes
December 14, 2021

Komatsu Mining Corp.

Joy Global Surface Mining Inc
4400 West National Avenue
Milwaukee,
WI 53214 USA
+1 414 810 4400 Phone
www.joyglobal.com/sm

To,
General Manager (MM)-HOD
Coal India Limited,
Coal Bhawan, MM Department
1st Floor, Premises No. 04,
Action Area 1 A, New Town, Rajarhat,
Kolkata -700 156

Subject: Wire Rope Details

Reference: Tender No. CIL/C2D/20cum ERS/R-146/2021-22/351 Dated 15.11.2021 for the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

This is in reference to the Clause D.10.2.m for **Wire Rope Details** of Section VI – Technical Specification and below are the technical details of Wire Rope used in offered 2300PXC AC Electric Rope Shovel.

Description	Hoist Rope	Boom Suspension Rope	Dipper Trip Rope
Construction	8 x 37SF (Compacted, Plastic valley filler)	Galvanized Structural Strand	6x36WS (Compacted, Plastic Valley Filler)
Length(m)	92.70m	15.35m	21.34m
Dia.(mm)	57mm	83mm	16mm
Splicing	Bulldog Socket Loop – Both Ends	Open Structural Strand Sockets with Pins – Both Ends	Bulldog Socket Loop – Both Ends
Core	Steel (IWRC)	N/A	Steel (IWRC)
Lay Direction	RHLL	N/A	RHLL
Rope Grade	EIP Gr	N/A	1960 Gr
Coating on the wire	Un Galvanized	Galvanized	Un Galvanized
Lubrication	Nyrostan T -55	N/A	Nyrostan T - 55
Standard	Generally, in accordance with IS 2266	ASTM A586	Generally, in accordance with IS 2266
Approx. Unit Mass	1420 kg	1186 kg	117.4.3 kg / 100 m
Make	Usha Martin	Sirdon Amerdeal Corp.	Usha Martin

Also, enclosed is the technical literature for Wire Ropes.

Yours faithfully,
For Joy Global Surface Mining Inc

Jeff Roschyk
Vice President, Surface Sales & Business Development

Encl: Appendix 15.m.i

JOY GLOBAL SURFACE MINING INC

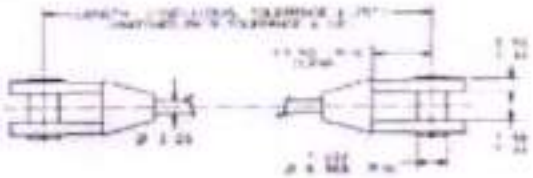
P&H

Tender No. CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

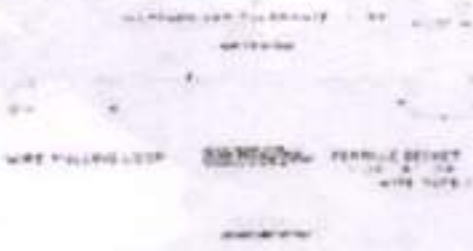
For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

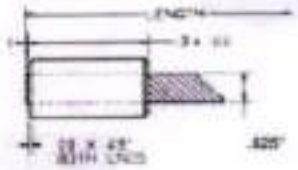
Suspension Cable: -



Hoist Rope: -



Trip Rope: -



"A" CABLE DIA.	"B" CABLE LENGTH
[illegible]	[illegible]

Annexure 4(aa)

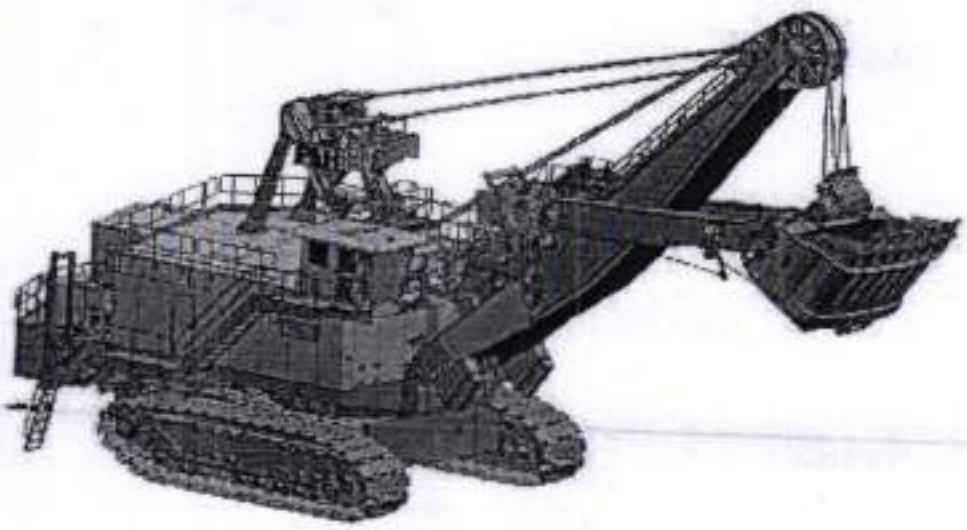
ANNEXURE 4(aa)

KOMATSU

2300XPC

Electric Mining Shovel – AC Drive

Product Overview



P&H

P&H 2300XPC AC Shovel building on proven success

Mine operators and maintenance managers demand the best from their loading tools. For this reason, Komatsu Mining has been the electric mining shovel market share leader and preferred equipment supplier to the world's toughest mining environments for over 100 years.

Komatsu is proud to offer the **P&H 2300XPC AC** electric mining shovel. The P&H shovel line is combining its solid reputation of reliability with the proven Centurion electrical control system, industry leading IGBT AC technology, rugged structures and the industry's leading direct field service and support network to set the industry standard for electric mining shovels.

Increases in availability and productivity ultimately lead to the lowest cost per ton and the most efficient ultra-class loading tool available in the industry today. P&H shovels dig deeper into the realms of productivity, safety and reliability with greater control, comfort and convenience.

Proven performance

P&H electric shovels have been exceeding customer requirements and expectations since 1920.

- Up to 3% faster cycle times
- Up to 2.9% increase in availability
- Up to 9% increase in productivity

Providing our customers

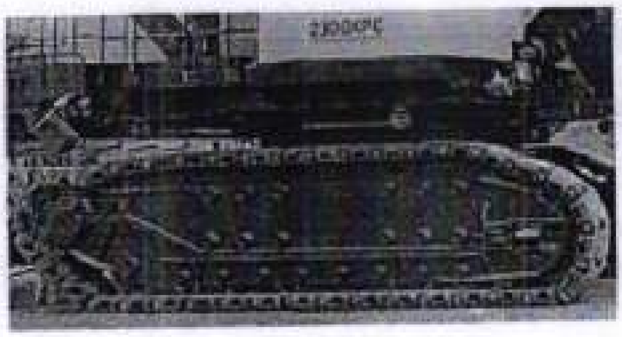
- Low total cost of ownership
- High productivity
- Excellent machine reliability and durability

We set the industry standard for electric mining shovels

A closer look

The P&H 2300XPC AC features

- IGBT AC technology
- Dual planetary drive
- Proven steel structures



The P&H performance edge

Attachment of choice for the world's toughest applications

- [illegible]
- [illegible]
- [illegible]

Technology

- [illegible]
- [illegible]
- [illegible]

Operator cab

[illegible]

- [illegible]
- [illegible]
- [illegible]
- [illegible]

Smart Solutions

[illegible]

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

Komatsu Mining is the worldwide leader in electric mining shovels. The P&H 2300XPC AC sets the standard in performance and productivity.

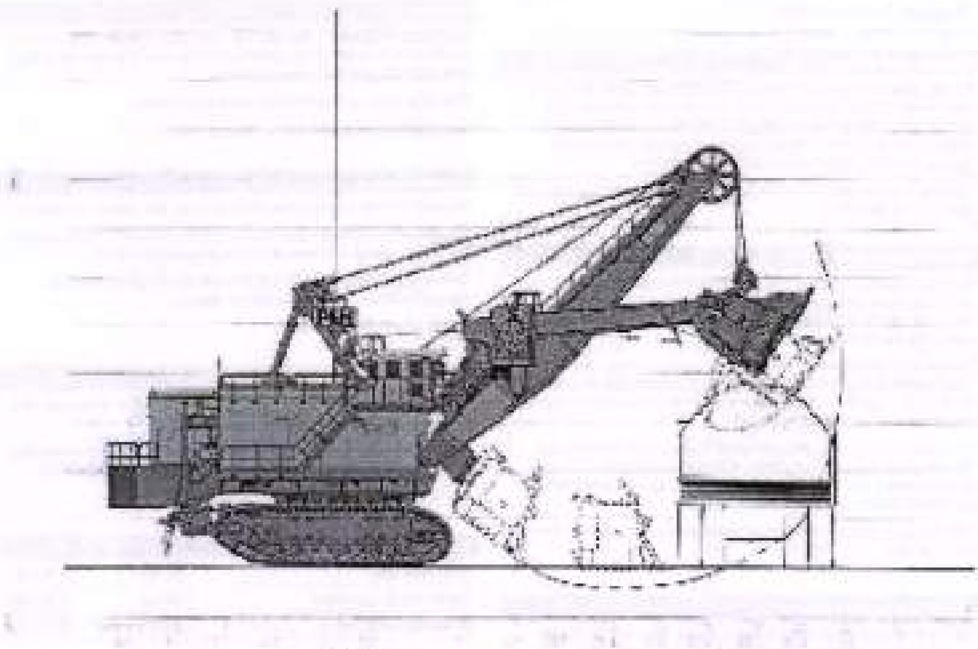
- [illegible]
- [illegible]
- [illegible]

We are driven by achieving the lowest total cost of ownership for our customers:

- [illegible]
- [illegible]
- [illegible]
- [illegible]

P&H 2300XPC Electric Mining Shovel – AC Drive

General Specifications



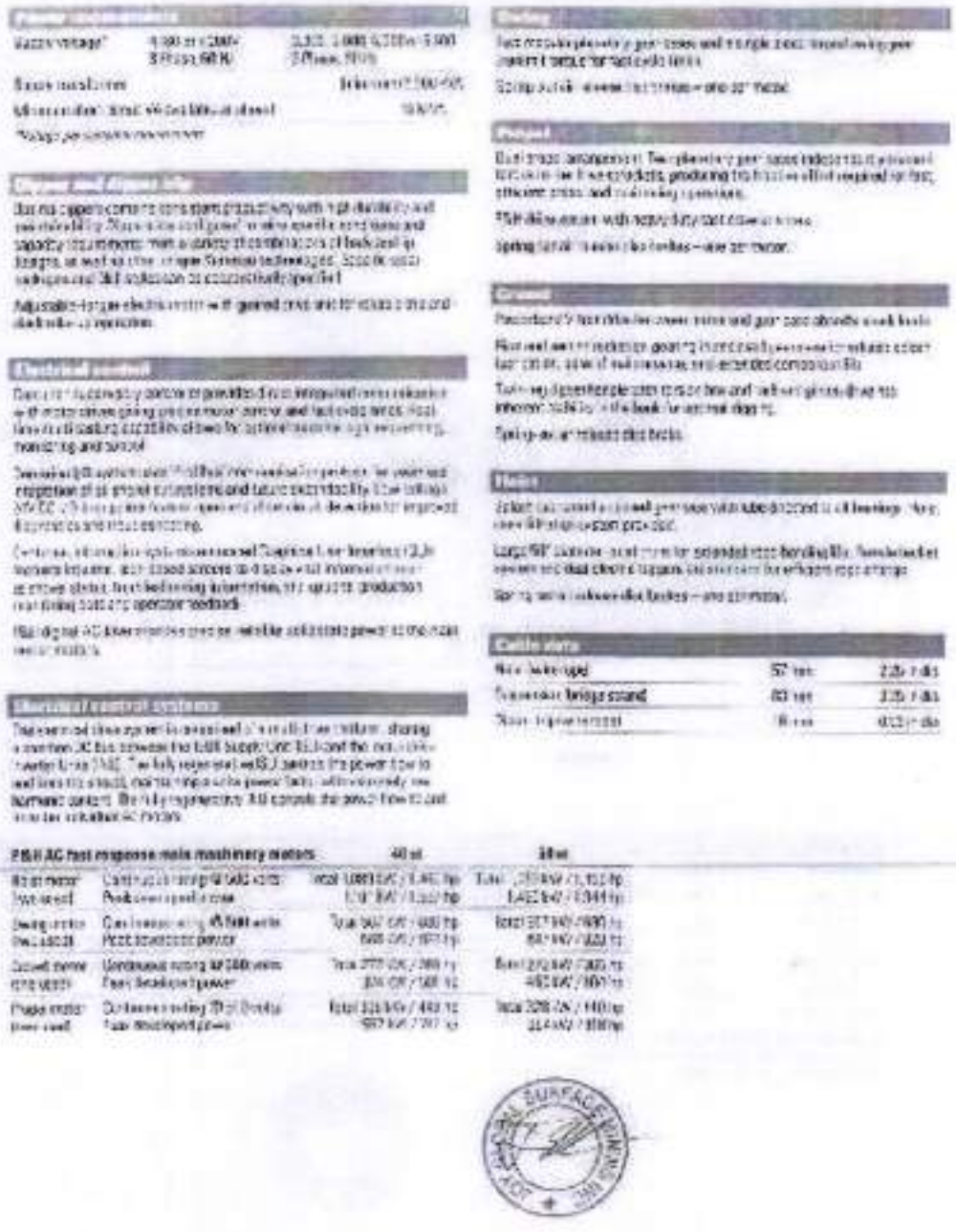
℄ rotation

[illegible]		
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

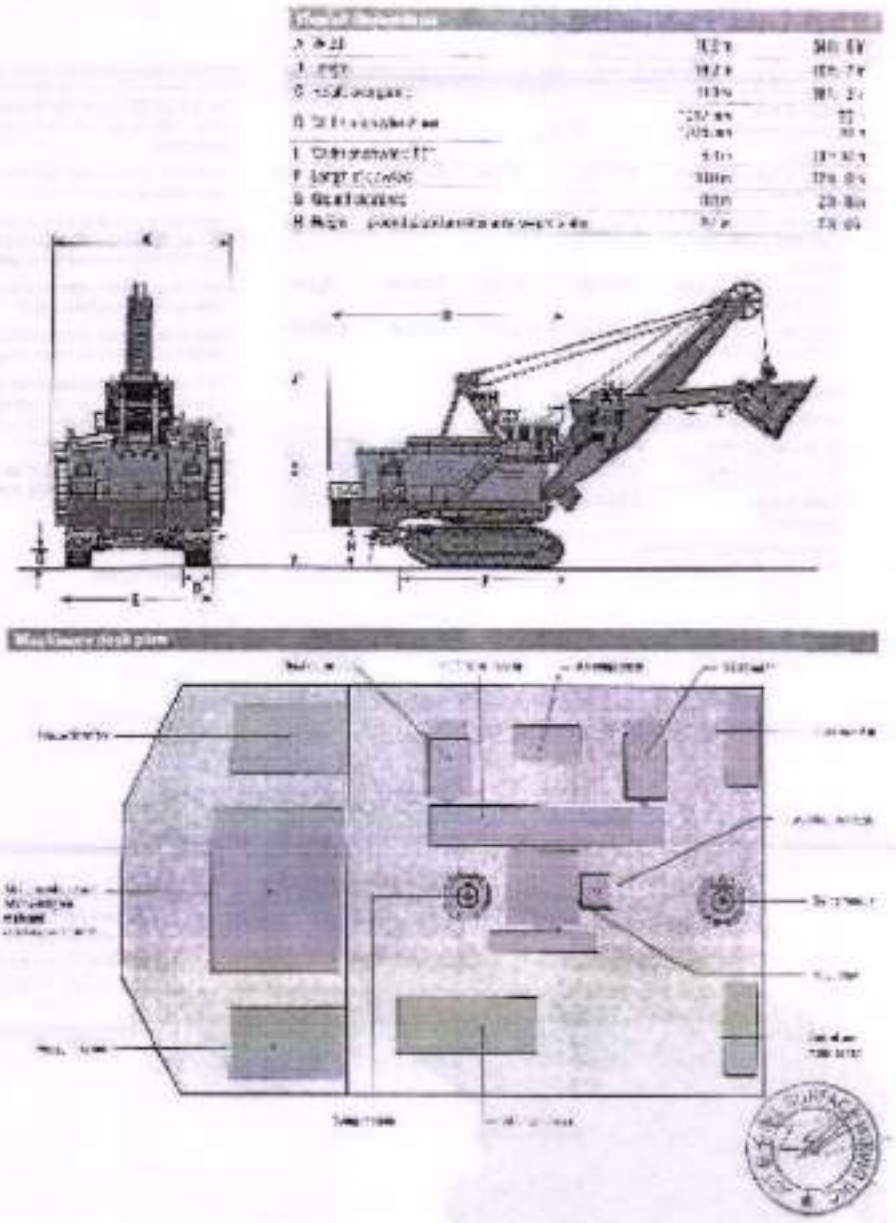
Capacity	[illegible]		[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

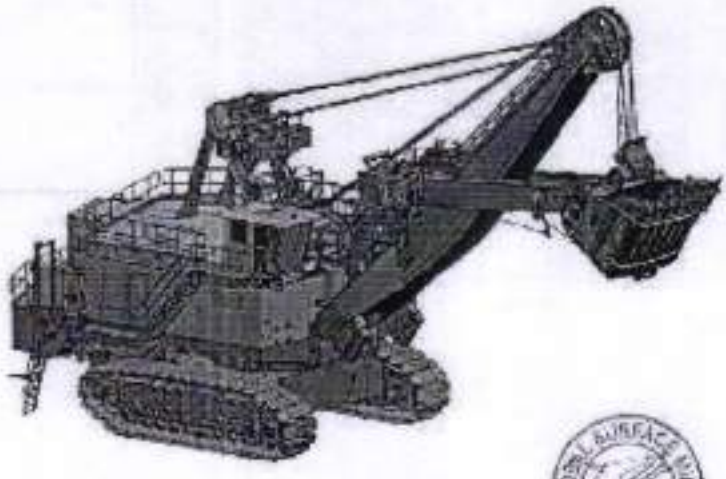
[illegible]

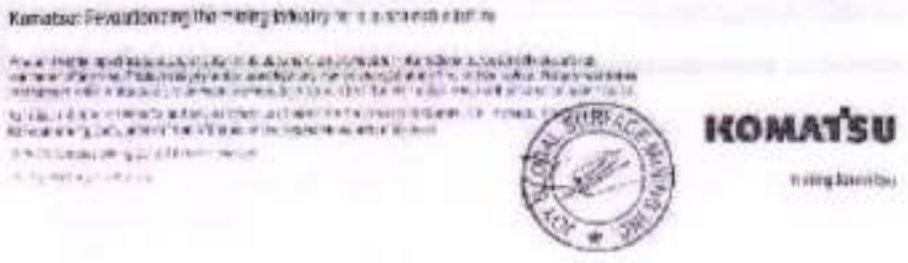


P&H AC fast response main machinery motors

		40 st	30 st
Hoist motor	Continuous rating @ 690 volts	Total 1000 kW / 1,340 hp	Total 750 kW / 1,010 hp
	Peak overload power	1,100 kW / 1,500 hp	1,400 kW / 1,900 hp
Swing motor	Continuous rating @ 690 volts	Total 500 kW / 680 hp	Total 375 kW / 500 hp
	Peak acceleration power	600 kW / 800 hp	600 kW / 800 hp
Crowd motor	Continuous rating @ 690 volts	Total 270 kW / 360 hp	Total 270 kW / 360 hp
	Peak acceleration power	324 kW / 435 hp	405 kW / 540 hp
Propel motor	Continuous rating @ 690 volts	Total 315 kW / 420 hp	Total 225 kW / 300 hp
	Peak acceleration power	378 kW / 507 hp	337 kW / 450 hp






KOMATSU

Annexure 4(ab)

ANNEXURE 4(ab)

P&H

JOY GLOBAL SURFACE MINING INC

Tender No: CIL/C2D/20cum ERS/R-146/2021-22/381 Dated 15.11.2021

For the Supply, Installation and Commissioning of 02 nos. of 20 CuM Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Offer Ref.: Q15130 dated 14.12.2021

APPROX. SHIPPING WEIGHTS EXCLUDING BALLAST

Item #	CONTENTS DESCRIPTION	Approx Net Weight Kgs	Item #	CONTENTS DESCRIPTION	Approx Net Weight Kgs
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
				Total Component Weight without Ballast	[illegible]

KOMATSU

Page 1 of 1

Annexure 4(ac)

ANNEXURE 4(ac)

KOMATSU

Technical Description

OPERATOR INTERFACE

Operator Cab

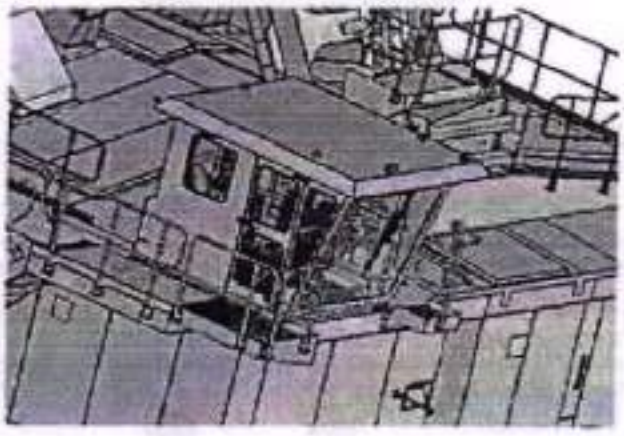
The operator's cab is vibration isolation mounted and located on the front right-hand side of the machine. From the position, the operator has a wide view of the dipper, bucket and the surrounding loading area. The cab supports sound levels below 75dBA during shovel operation (with the doors closed). A catwalk system provides access to the windows for cleaning and maintenance. A two-tone air horn is mounted on the front wall of the shovel machinery house.

All windows are made of tempered safety glass. The front window incorporates an electric wiper and spray wash system. The side and door windows are fitted and fixed in place.

Optional .75" (20mm) safety glass is available for the front window.

A trainees' seat is located behind the operator.

An emergency egress is provided in the window near the trainees' seat at the rear of the cab.



Operator's cab mounted on machinery house roof.

P&H Loading Control Center

The P&H C-Series shovel control center is defined by the C-Series Seat and Joystick(s). The adjustable seat is flanked by adjustable armrests containing the primary controls (i.e., joysticks and switches). The seat base uses an air suspension system, which can be adjusted for the operators height and weight. The seat has an automotive style control providing vertical and fore/aft adjustments allowing for easier fitting of the joysticks to individual operators. Additionally, the seat has heat, massage and lumbar support. The footrest evolves in two positions. The seat is designed to keep the operator alert and comfortable during long shifts for safer, more productive operation of the shovel. Seat belts for both operator and trainer are included as standard.

KOMATSU

Technical Description

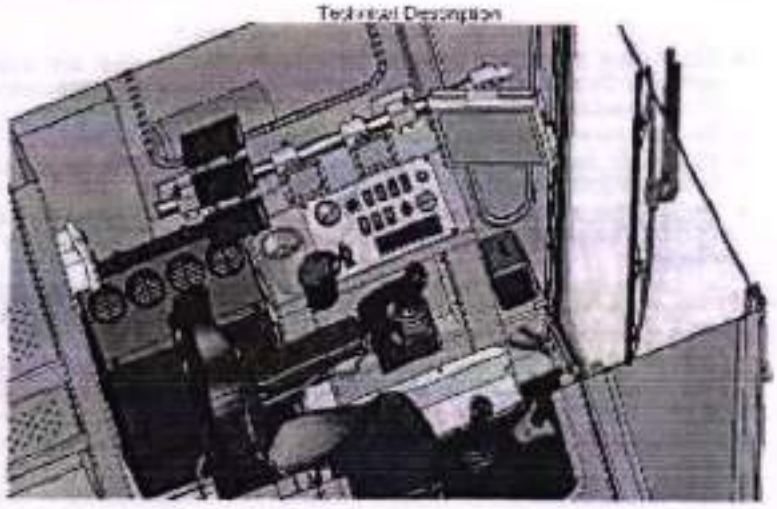
Operator's seat and controls.

The joystick controllers are ergonomically designed in a pistol grip style, utilizing non-contacting Hall-Effect technology for increased life and more dependable field performance. The joysticks incorporate such buttons and toggle switches for additional machine functions. There is a single console to the right side of the operator that facilitates lesser used functions all located within reach of the operator. The console has provisions for mounting the standard 7"&H touch screen GUI, as well as optional and more application items such as; camera monitors, mini radios, dispatch screens, etc. Space for an AM/FM radio radio is also provided.

Joystick controllers

KOMATSU

Technical Description



Operator console, GUI, optional camera monitors and air conditioner shown

Graphic User Interface (GUI)

The GUI has menus and information screens that allow the operator to display information and perform various operation functions.
The basic functions performed by the GUI are:

- Displays machine operating status
- Displays and sets fault and user limit setting (boom profiling)
- Displays temperature monitoring
- Displays boom parking status
- Displays boarding ladder position
- Displays lubrication system setting and status
- Provides manual initiation of lubrication cycle

Standard Diagnostics

The Centurion™ GUI provides the following standard diagnostics:

- Provides fault annunciation and alerts
- All system faults and alerts have an associated help file screen provides detailed diagnostic information to troubleshoot and remedy the fault or alert. All faults and alerts can be acknowledged via the GUI. A fault history with all logged faults and timestamps can be exported from the GUI via USB for additional analysis
- Drive programming and analysis software that allows maintenance personnel to read and perform onsite diagnostics of main motor drive parameters, settings, and performance.

KOMATSU

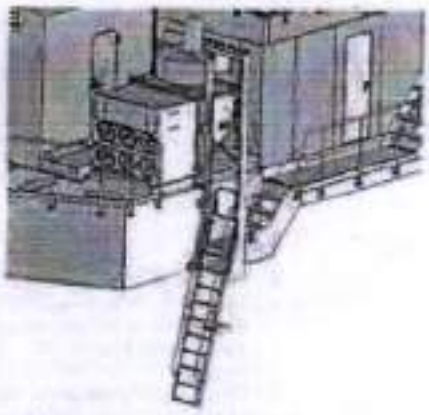
Technical Description

- Many drive signals are available for recording via the GUI and supplied drive analysis software. Data recordings taken with the software can be exported to standard file formats (*.csv / *.txt) for additional analysis.
- Example list of available signals for recording:
- ISU (AFE): Input Current (A), Reactive Current (A), Input Frequency (Hz), Input Voltage (V), Power (kW), Cos phi, Reactive Power (kVAr), DC Link Voltage (V)
- Motion Drives: Motor Speed (rpm), Output Frequency (Hz), Motor Current (A), Motor Torque (%), DC Link Voltage (V), Output Voltage (V), Output Power (kW), U/V/W Phase Currents (A), Flux (%)
  - Drive system updates can easily be transferred to each drive via the GUI and provided Drive programming software. The Drive programming software allows for saving / restoring / loading drive parameters and updated firmware.
- Control logic software to allow maintenance personnel to view controller logic program, verify functions, and force parameters for diagnostic purposes. System software updates can be loaded to the control system via the supplied Control logic software on the GUI.
- Input/Output (I/O) device monitoring and fault detection system to identify location and type of fault.
- Standard temperature monitoring system (See Technology section)

Boarding & Access

Right & left side boarding ladders provide access to the shovel. Ladders are interlocked to de-energize the swing and propel functions when in the down position for safety. All Catwalks, platforms, stairs and ladders are designed in compliance with ISO 2867 and ISO 14122 incorporating features such as; grated metal walking platforms, hand rails with toe boards and non-slip surfacing.

Overall machine layout with RH boarding access shown



RH boarding ladder shown

Annexure – 5(a)

KOMATSU

APPENDIX LI BANK MANDATE FOR FACILITATING FOREIGN CURRENCY PAYMENTS

KOMATSU

Ref: CI/1133/CIL/SII/Bank Details
December 03, 2021

To,
M/s. Coal India Ltd.,
1st Floor, Premises No. 04,
Plot no. AF-III, Action Area 1A,
New Town, Kolkata – 700 156.

Komatsu Mining Corp.

Joy Global Surface Mining Inc
4400 West National Avenue
Milwaukee,
WI 53214 USA
+1 414 670 4400 Phone
www.mining.komatsu

Subject: Authorization of all our payments through Electronic Fund Transfer system/RTGS/NEFT/I.C

Reference: Tender No. CIL/C2D/20cum ERS/R-146/2021-22/281 Dated 15.11.2021 for the Supply, installation and Commissioning of 02 nos. of 20 Cum Electric Rope Shovels along with Consumable Spares and Consumables for warranty period of one year and thereafter Spares & Consumables for a period of 10 years under Spares Cost Cap

Dear Sir,

We hereby authorize Coal India Ltd. to disburse all our payments through Electronic Fund Transfer system / RTGS / NEFT / I.C. The details for facilitating the foreign currency payment are given below:

1	Name of the Beneficiary, address with Telephone No.	Joy Global Surface Mining Inc 4400 West National Avenue Milwaukee, WI 53214 USA Ph: +1 414 670 4400
2	Bank name, address with Telephone No.	Bank of America, N.A. Charlotte, NC Account Officer: Masahiko Ando +1 646 855 3754
3	Branch name & code	N/A
4	Bank account number with style of account (Savings/Current)	Current (Demand Deposit Account) Account No. 3755391184
5	IFSC Code No./Swift Code of the Bank	BOFAUS3N Wire Routing Number: 026 009 593
6	PAN No. of the Beneficiary	N/A
7	E-Mail No. and Mobile No. of the Beneficiary for intimation of release of payment.	pooja.gupta@global.komatsu +1 414 670 4400

TRUE COPY ATTESTED

REKHA TEWARI
NOTARY
CMP's Court
Kolkata - 700 001

17 DEC 2021

KOMATSU

APPENDIX II BANK MANDATE FOR FACILITATING FOREIGN CURRENCY PAYMENTS (contd..)

KOMATSU

I/We hereby declare that particulars given above are correct and complete and if the remittance is delayed or credit is not effected due to incorrect information, I/we will not hold Coalindia Ltd. responsible

Authorised Signatory
Patil Shyna

Official Stamp with date
12/14/2021

Caroline D. Yetka
Comm. Exp. 5/15/2024

CAROLINE D. YETKA NOTARY PUBLIC STATE OF WISCONSIN

BANK CERTIFICATION

It is certified that above mentioned beneficiary holds a Bank Account No. 3755361154 with our branch and the Bank particulars mentioned above are correct.

Authorized Signatory Name: Masahiko Ando
12/14/2021

Official Stamp with date

Page 2 of 2

TRUE COPY ATTESTED
REKHA TEWARI
NOTARY
C.M.M's Court
17 DEC 2021

Annexure – 5(b)

KOMATSU

APPENDIX I.II BANK MANDATE FOR FACILITATING AGENCY COMMISSION PAYMENTS

VOLTAS

Format for Bank Details for Electronic Payment

To,
M/s. Coal India Ltd.
1st Floor, Premises No. 04
Plot no. AF-III, Action Area 1A
New Town, Kolkata – 700 156

Dear Sir,

Sub: Authorisation of all our payments through Electronic Fund Transfer system / RTGS / NEFT / LC

We hereby authorise Coal India Ltd. to release all our payments through Electronic Fund Transfer system/RTGS/NEFT/LC. The details for facilitating the payment are given below:

1	Name of the Beneficiary, address with Telephone No	VOLTAS LIMITED MMCE Division Unitech Signature Tower – 2, Plot No. 15, 5th Floor, Block No. 5, Block GP, Sector – V, Salt Lake, Kolkata – 700 091 Tel. No. 033-66 [illegible] Mob: 9432430816
2	Bank name, address with Telephone No	Citibank, Nirmal Building, Nariman Point, Mumbai 400 021
3	Branch name & code	Main Branch & Code [illegible]
4	Bank account number with date of opening (Savings/Current)	1364317, Current A/c
5	PIN Code No./Swift Code of the Bank	[illegible]
6	PAN No. of the Beneficiary	AAACV1[illegible]
7	E-Mail No. and Mobile No. of the Beneficiary for [illegible] intimation of release of payment	[illegible]@voltas.com

I/We hereby declare that particulars given above are correct and complete and if the transaction is delayed or not effected due to incorrect information, I/we will not hold Coal India Ltd. responsible.

For VOLTAS LIMITED

(V. C. GADKARI)
AGM-Central F&C

Authorised Signatory

Name

Official Stamp with date

Bank Certification

It is certified that above mentioned beneficiary holds a Bank Account No. [illegible] with our branch and the Bank particulars mentioned above are correct.

Authorised Signatory

Name

Official Stamp with date

VOLTAS LIMITED

TRUE COPY ATTESTED

REKHA TEWARI
NOTARY
C.M.M's Court
Kolkata - 700 001

17 DEC 2021

Annexure – 5(c)

KOMATSU

APPENDIX I.III BANK MANDATE FOR FACILITATING ANY OTHER INR PAYMENTS

VOLTAS

Format for Bank Details for Electronic Payment

M/s. Coal India Ltd.
Premises No. 04
Plot no. AF-III, Action Area 1A
New Town, Kolkata – 700 156

Dear Sir

Sub: Authorization of all our payments through Electronic Fund Transfer system / RTGS / NEFT / LC

We hereby authorize Coal India Ltd. to disburse all our payments through Electronic Fund Transfer system/RTGS/NEFT/LC. The details for facilitating the payment are given below

1	Name of the Beneficiary, address with Telephone No.	VOLTAS LIMITED MSO I Division Godrej Waterside Tower - 1 Plot No. 83/1, 5th Floor, Plot No. 2, Block DP, Sector – V, Salt Lake, Kolkata - 700 091 Tel. No. 033-66246111, Mob.9903408946
2	Bank name, address with Telephone No.	Citibank, Nariman Point Mumbai Branch, Nariman Point, Mumbai-400021
3	Branch name & code	Fort Branch & Code 0001
4	Bank account number with style of account (Savings/Current)	0061670, Current A/c
5	IFSC Code No./Swift Code of the Bank	CITI0000001
6	PAN No. of the Beneficiary	AAACV5509D
7	E-Mail No. and Mobile No. of the Beneficiary for intimation of release of payment	nerajmishra@yahoo.com

We hereby declare that particulars given above are correct and complete and if the transaction is delayed or credit is not affected due to incorrect information, I/we will not hold Coal India Ltd. responsible.

For VOLTAS LIMITED
M C. GADKARI
Addl-Central F&C
Bank Certification

Authorised signatory
Name
Official Stamp with date

It is certified that above mentioned beneficiary has a Bank Account No [illegible] with the branch and the Bank particulars mentioned above are correct.

Authorised signatory
Official Stamp with date

VOLTAS LIMITED

TRUE COPY ATTESTED
REKHA TEWARI
NOTARY
5, Ma Court
Kolkata - 700 001

17 DEC 2021