सेंट्रल कोलफील्ड्स लिमिटेड
(कोल इंडिया लिमिटेड की अनुषंगी कंपनी /भारत सरकार का एक उपक्रम)
C.C.L.
CENTRAL COALFIELDS LIMITED
(A subsidiary of Coal India Limited/Govt. of India Public Sector Undertaking)
A Miniratna Cat –I Company

Ref No. :- PO /Bhurkunda Colliery/Env/2019/453 Dated 30.04.2019

To,
Member Secretary,
EAC (Violation),
Ministry of Environment, Forest and Climate Change,
Indira Paryawaran Bhawan, Vayu Wing,
JorBagh Road, Aliganj,
New Delhi-3

Sub: Reply to the proposal No. . IA/JH/CMIN/74128/2018 dated 13.04.2018] [F. No. 23-266/2018-IA.III (V)] Bhurkunda Colliery (2.05 MTPA)

Ref: MINUTES OF 14th and 17th MEETING OF EAC (VIOLATION) dated 22-24th Oct 2018 and 29-31st January 2019 respectively.

Dear Sir,

The EAC (Violation) for Bhurkunda Colliery (2.05 MTPA) was held on 23rd Oct 2018. The reply to the observation made by the EAC as detailed in the minutes of meeting is enclosed for kind consideration and issue of Terms of Reference.

Yours faithfully,

GM/Project Officer
Bhurkunda Colliery
30/4/19

प्रोजेक्ट कार्यालय , भुरकुंडा कोलियरी , पोस्ट ऑफिस :- भुरकुंडा , जिला :- रामगढ़ , राज्य :- झारखंड , पिन :- 829135
फोन नंबर :- 8987785264 ईमेल :- pobhurkunda@gmail.com

<table>
<tr><th>Sl No.</th><th>Observation</th><th>Action taken report/ Compliance</th></tr>
<tr><td colspan="3">OBSERVATIONS OF EXPERT APPRAISAL COMMITTEE IN RESPECT OF BHURKUNDA COLLIERY FOR THE PROPOSAL INVOLVING VIOLATION OF EIA NOTIFICATION, 2006 HELD ON 22TH - 24TH OCTOBER, 2018 AND THEIR COMPLIANCES/ACTION TAKEN REPORT.</td></tr>
<tr><td>1</td><td>As per the Form 1, no forest land is involved whereas from the annexures submitted by the PP, it manifested that Forest land of 625.47 ha is involved. KML file submitted by the PP with the Form 1 was also studied on DSS, according to which proposed Mine project involves Reserved Forest Land and project site is falling under Ramgarh Forest Division.</td><td>Forest land of 621.14 Ha exists within the lease hold boundry of Bhurkunda Colliery as per authenticated Land Schedule. Forestland is already broken before 1980 as mine is working since late 1920s.
Land details are as follows:
<table>
<tr><th>Bhurkunda Colliery</th><th colspan="3">Forest Land</th><th colspan="3">Non Forest</th><th rowspan="2">Total Land</th></tr>
<tr><th>Villages</th><th>Notified Forest</th><th>GM JJ</th><th>Sub Total</th><th>GMK</th><th>Tenancy</th><th>Sub total</th></tr>
<tr><td>1) Balkudra</td><td>4.37</td><td>37.68</td><td>42.05</td><td>36.74</td><td>1.53</td><td>38.27</td><td>80.32</td></tr>
<tr><td>2) Kurse</td><td>126.17</td><td>0.00</td><td>126.17</td><td>4.04</td><td>2.43</td><td>6.47</td><td>132.64</td></tr>
<tr><td>3) Deoria Bargawan</td><td>90.85</td><td>147.98</td><td>238.83</td><td>22.4</td><td>173.91</td><td>196.31</td><td>435.14</td></tr>
<tr><td>4) Dundua</td><td>0.00</td><td>214.09</td><td>214.09</td><td>9.67</td><td>38.3</td><td>47.97</td><td>262.06</td></tr>
<tr><td>Total</td><td>221.40</td><td>399.74</td><td>621.14</td><td>72.85</td><td>216.17</td><td>289.02</td><td>910.16</td></tr>
</table></td></tr>
<tr><td></td><td>Committee noted the same and asked PP to submit the copy of application for stage I Forest clearance and declaration about mining lease is not required for this project.</td><td>Application for Forest Clearance of Bhurkunda Colliery has been applied vide FP/JH/MIN/39387/2019 on 29.03.2019. Form A is attached as Annexure I.

Land was acquired for coal mining by the Government for the Railway Board under LA Act 1894 vide Gazette Notification published in Bihar & Orissa Gazette Dated 22.09.1924 issued by the Governor of Bihar & Orissa and by heads of department bearing No. 8990-1L-48-R-Declaration under Section 6 of 1894 and Section 8(1)of Act XVIII for Railway Board. Copy attached as Annexure-II.
The land was tranferred in 1956 to NCDC (a Government of India Undertaking). Bhurkunda Colliery is in operation in the acquired land since 1924 and at present it is under jurisdiction of Central Coalfields Limited (A subsidiary of Coal India Limited). Copy of land related documents is attached as Annexure –III.</td></tr>
<tr><td>2</td><td>On account of habitations existing in mining lease area, ecological sensitive areas such as Naikari river, Damodar river around the mines, the Committee Recommended site visit for assessment of environmental impacts of the above project.</td><td>EAC (sub-committee) visited the project site on 19.01.2019.</td></tr>
<tr><td colspan="3">COMPLIANCE TO RECOMMENDATIONS OF EAC (Violation Sub-Committee) MEETING HELD ON 30.01.2019</td></tr>
<tr><td>1</td><td>Submission of Detailed plan on diversion of roads along the Mine lease boundary</td><td>Detail plan on diversion of roads along the mine lease boundary is enclosed as Annexure-IV</td></tr>
<tr><td>2</td><td>Minimum distance to be maintained from the Damodar River as per the statutory requirement.</td><td>A minimum distance of 100 m will be maintained as per statutory requirement.</td></tr>
<tr><td>3</td><td>Copy of report of controlled blasting technique and the permission from DGMS for blasting within 300 meters of habitation.</td><td>Technical study report of Controlled Blasting Technique prepared by CMPDIL is enclosed as Annexure –V. Permission obtained from DGMS for blasting within 300 m of habitation is enclosed as Annexure VI.</td></tr>
<tr><td>4</td><td>Arrangement of static water sprinkling</td><td>Static water sprinkling system exists in all pit head coal dump yards. Photograph enclosed as Annexure-VII</td></tr>
<tr><td>5</td><td>Water spraying to be done along coal transport road.</td><td>Water spraying is done regularly through 5 Mobile Water Tankers along coal transport road. Photograph enclosed as Annexure-VIII
28 KL -01 No.
10 KL -04 No.</td></tr>
<tr><td>6</td><td>Black topping of permanent haul roads.</td><td>The observation is agreed and will be implemented.</td></tr>
<tr><td>7</td><td>Toe wall and garland drain to be constructed along the OB dump.</td><td>Construction of toe wall (800 m) and garland drain (2250 m) in the existing OB Dump has been done. The proposed OB dump will also be provided with toe wall and garland drain.
Photographs of existing toe wall and garland drain are enclosed as Annexure IX.</td></tr>
<tr><td>8</td><td>Reclamation to be done using geo-texturing technique of the dumps close to habitation and a cause of visual intrusion</td><td>Reclamation of new dumps will be done using geo texturing technique for dumps close to habitation so as to address the cause of visual intrusion.

24 Ha at OB Dump beside Sangam Quarry has been eco-restored, whose photographs are attached as Annexure X</td></tr>
<tr><td>9</td><td>Along the Nakari river, bund to be constructed and</td><td>Bund (1200 m) has been constructed in patches and action has been initiated for</td></tr>
</table>

<table>
<tr><td></td><td>protected with stone pitching and plantation has to be done along the bund.</td><td>protection of bund with stone pitching and plantation on the bund.</td></tr>
<tr><td>10</td><td>Water spraying to be done in permanent haul road with static water sprinklers</td><td>Mobile sprinklers are used and static sprinklers will be installed.</td></tr>
<tr><td>11</td><td>Minimum 100 m distance to be maintained from dumps to habitation and three tier green belt to be developed.</td><td>Minimum 100 m distance will be maintained between dumps and habitation and plantation is developed between dumps and habitation.

Till date 5,69,320.00 plants has been planted on an area of 385.70 Ha inside leasehold boundary of Bhurkunda Colliery.</td></tr>
<tr><td>12</td><td>ETP was not functional and need to be rectified</td><td>Maintenance and repair work were taken up in the ETP and same has been made operational.</td></tr>
<tr><td>13</td><td>Fencing of abandoned quarry as per statutory requirement, as the quarry is filled with water body and to prevent inadvertent entry of person and animals.</td><td>All working and abandoned quarries are properly fenced. Already fenced quarry photograph is enclosed as Annexure-XI.</td></tr>
<tr><td>14</td><td>Copy of permission from DGMS for control blasting</td><td>Copy of permission from DGMS for control blasting is enclosed as Annexure VI.</td></tr>
<tr><td>15</td><td>Massive plantation needs to be taken up along the boundary, inactive dumps and surrounding the colonies</td><td>Till date 5,69,320.00 plants has been planted on an area of 385.70 Ha in the project.</td></tr>
<tr><td>16</td><td>There is no STP/Solid waste treatment system as per S.W.Rules and STP rules.</td><td>Soak pit and septik tank were provided to treat domestic sewage from the colonies as per existing norms and practices when these colonies were constructed several decades ago. The observation is agreed and will be implemented..</td></tr>
<tr><td>17</td><td>The roads do not have proper gradient</td><td>The gradient of haul roads in mine is 1:18, 1:20 and flat at several places which is as per statutory norms and will be maintained accordingly.</td></tr>
<tr><td>18</td><td>Housekeeping needs improvement.</td><td>In workshop the burnt oil is segregated and collected separately and Oil & Grease Trap has been refurbished to improve the housekeeping.</td></tr>
<tr><td>19</td><td>Ground and surface water management systems are not in place.</td><td>Roof top Rain water harvesting system is installed at Bhurkunda Colliery's Project Office.
The existing mine voids store approximately 1,20,86,723 m^3 of water which is used for ground water recharge as well as development of fisheries .The mine void water is also used for domestic purpose. The detalis are given below:
<table>
<tr><th>Sl. No.</th><th>Quarry Name</th><th>Volume(cum)</th><th>Volume in Million Gallon</th></tr>
<tr><td>1</td><td>Quarry No.5</td><td>2729762.00</td><td>721</td></tr>
<tr><td>2</td><td>Quarry No.1</td><td>1290982.50</td><td>341</td></tr>
<tr><td>3</td><td>Quarry No.4</td><td>4662482.25</td><td>1231</td></tr>
<tr><td>4</td><td>Sangam OCP</td><td>2131580.00</td><td>589</td></tr>
<tr><td>6</td><td>Quarry No.3</td><td>1271916.25</td><td>336</td></tr>
</table>
Details of Ground water Augmentation is attached as Annexure XII</td></tr>
<tr><td>20</td><td>Mine illumination needs to be improved</td><td>Mine illumination around axcavators, benches,workshop, roads are as per Statutory requirement and these will be maintained.</td></tr>
<tr><td>21</td><td>Safe distance should be maintained between Naikiri river course and workings, the present dumps observed in close distance on the edges shall be removed and a three tier green belt shall be developed between the working and all along the bank on the quarry side.</td><td>Distance between Nakari and workings is 110 m.
The observation is agreed and will be implemented.</td></tr>
</table>

ANNEXURE I

FORM - A

Form for seeking prior approval of Central Government under section 2 of the Forest(Conservation) Act,1980 for Diversion of fresh forest area

PART - I
(To be filled up by User Agency)

A. General Details

A-1. Project Details

(i). Proposal No. : FP/JH/MIN/39387/2019

(ii). Name of Project for which Forest Land is required : Bhurkunda Colliery

(iii). Short narrative of the proposal and Project/scheme for which the forest land is required : The proposed Bhurkunda Colliery is located in the South Karanpura Coalfield and falls in the Ramgarh district of Jharkhand. The block is bounded by latitudes 23o39'00" to 23o41'00" North and longitudes 85o21'00" to 85o23'30" East. The block is covered by Survey of India toposheet no. 73E/6 (in 1:50,

(iv). State : Jharkhand

(v). Category of the Project : Mining

(vi). Shape of forest land proposed to be diverted : Non Linear

(vii). Estimated cost of the Project(Rupees in lacs) : 3423

(viii). Total Area of Forest Land proposed for diversion(in ha.): 621.14

(ix). Non-Forest Land required for this project(in ha.): 289.02

(x). Total period for which the forest land is proposed to be diverted(in years): 30

A-2. Details of User Agency

(i). Name : Central Coalfields Limited

(ii). Address1 : DARBHANGA HOUSE, CCL, RANCHI

(iii). Address2 : NIL

(iv). State : Jharkhand

(v). District : Ranchi

(vi). Pin : 834029

(vii). Landmark : NIL

(viii). Email address : gmenvt.ccl@coalindia.in

(ix). Landline Telephone No. : 651-2365806

(x). Fax No. : 651-

(xi). Mobile No. : 8987787698

(xii). Website (if any) : www.centralcoalfields.in

(xiii). Legal status of User Agency : Central PSU

A-3. Details of Person Making Application

(i). First Name: GANESH

(ii). Middle Name: CHANDRA

(iii). Last Name: SAHA

(iv). Gender: Male

(v). Designation: PO

(vi). Address 1: Bhurkunda PO Office, PO-Bhurkunda

(vii). Address 2: NIL

(viii). State: Jharkhand

(ix). District: Ramgarh

(x). Tehsil: Patratu

(xi). Pin: 829135

(xii). Landmark: NIL

(xiii). Email Address: pobhurkunda@gmail.com

(xiv). Landline Telephone No.: 6553-258319

(xv). Fax No.: NIL

(xvi). Mobile No.: 8987785264

(xvii). Copy of documents in support of the competence/authority of the person making this application to make application on behalf of the User Agency:

B. Details of land required for the Project

B-1. Details of proposal seeking prior approval of Central Government under the Act for diversion of forest land for the Project already submitted in the past

List of proposal submitted in Past							
S.no	Proposal Status.	Proposal No.	Moef File No.	Area Proposed for Diversion(Ha.)	Area Diverted(Ha.)	Date of In-Principle Approval	Date of Final Approval
NIL							

B-2. Details of forest land proposed to be diverted

B-2.1 Details of Divisions involved

Details of Divisions involved			
S.no	Division Name	Forest Land(ha.)	Non-Forest Land(ha.)
1.	Ramgarh	621.14	289.02

B-2.2 Details of Districts involved

District wise breakup			
S.no	District Name	Forest Land(ha.)	Non-Forest Land(ha.)
1.	Ramgarh	621.14	289.02

B-2.3 Village wise breakup

Villages wise breakup			
S.no	Village	Forest Land(ha.)	Non-Forest Land(ha.)
1	balkudra	42.05	38.27
2	kurse	126.17	6.47
3	devarya bargawan	238.83	196.31
4	dundua	214.09	47.97

B-2.4 Component wise breakup

Component wise breakup			
S.no	Component	Forest Land(ha.)	Non-Forest Land(ha.)
1	Proposed Quarry 1	88.12	67.5
2	Proposed Quarry 2	28.99	12.12
3	Proposed OB Dump 1	87.43	20.44
4	Proposed OB Dump 2 (Only)	0.37	0
5	Undrground workings (Only)	53.42	8.46
6	Proposed OB Dump 2 and Underground workings (Commo	68.83	0
7	Infrastructure(Workshop, embankment)	19.47	0.48
8	Old OB dump and old quarry presently utilized for	266.48	157.8
9	Safety zone	8.03	0
10	Green belt	0	2.72
11	River and water body	0	19.5

C. Maps of forest land proposed to be diverted

Division 1. : Ramgarh

(i). Area of forest land proposed to be diverted(in ha.) : 621.14

(ii). : Non Linear

(a). No. of patches : Twelve

Patch wise details		
Patch No.	Area of Patch(in ha.)	Kml File of Patches
1.	7.14	View File
2.	34.93	View File
3.	211.4	View File
4.	0.26	View File
5.	0.22	View File
6.	0.22	View File
7.	365.31	View File
8.	1.17	View File
9.	0.06	View File

10.	0.17	View File
11.	0.07	View File
12.	0.19	View File

(iii). Copy of Survey of India Toposheet indicating boundary of forest land proposed to be diverted:

(iv). Scanned copy of the Geo-referenced map of the forest land proposed to be diverted prepared by using GPS or Total Station:

D. Justification for locating the Project in forest land and details of alternatives examined:

(i). Copy of note containing justification for locating the Project in forest land:

E. Employment likely to be generated

(i). Whether the Project is likely to generate employment ?: Yes

(ii). Permanent/Regular Employment(Number of persons): 1000

(iii). Temporary Employment(Number of person-days): 14600000

F. Displacement of People due to the Project, if any

(i). Whether Project involves displacement?: No

G. Details of Cost-Benefit analysis for the Project

(i). Whether the Project requires Cost-Benefit analysis?: Yes

(a). Copy of Cost-Benefit analysis:

H. Status of Environmental Clearance

(i). Whether the Project requires Clearance under the Environment (Protection) Act 1986 ? : Yes

(a). Status of the Environmental Clearance to the Project: EC under process

(ii). Environmental Clearance File No.: 23-266/2018-IA.III (V)

I. Status of Wildelife Clearance

(i). Whether the Project or a part thereof is located in any Protected Area or their Eco sensitive zone? : No

J. Applicability of special provisions governing Scheduled Areas

(i).Whether the Project or a part thereof is located in a Scheduled Area? : No

K. Status of settlement of rights under the Forest Rights Act,2006 on the forest land proposed to be diverted

(i). Whether the process for settlement of Rights under the Forest Rights Acts 2006 on the forest land proposed to be diverted has been completed? : No

L. Details of land identified for Compensatory Afforestation

(i). Whether non-forest or Revenue forest land is required to be provided by User Agency?: Not Applicable

(ii). Whether the area of non-forest land or Revenue forest land required to be provided by User Agency for raising Compensatory Afforestation is less than area of forest land proposed to be diverted ?: Not Applicable

(iii) . Reason for not providing Non-Forest Land: Not Applicable

M. Mining Details

M-1. Details of Mineral Concessions

(i). Whether the forest land is aquired under Coal Bearing Areas Act: No

(a). Reference number of Letter of Intent for grant of mining lease.(approval letter of the State Mines and Geology Department): 39

(b). Date of issue of the Letter of Intent(LOI) for grant of mining lease: 01 Oct 1924

(c). Copy the Letter of Intent(LOI):

(d). Total area of the mining lease(in ha.): 910.16

(e). Area of forest land located in the mining lease(in ha.): 621.14

M-2. Details of Mining Plan

(i). Date of approval of mining plan: 30 Dec 2017

(ii). Approval authority: CCL Board of Directors

(iii). Copy of approval of mining plan:

(iv). Copy of approved mining plan:

(v). Nature of mining (underground/opencast): Opencast+Underground

(vi). Copy of the detailed land use plan in 1:4,000 scale prepared by using GPS or Total Station :

(vii). Copy of map of the outer boundary of mining lease area: View file

M-2.1 Details of safety zone of mining lease (to be provided in case of opencast and opencast plus underground mines)

(a). Total area of safety zone of the mining lease in ha: 8.03

Breakup of safety zone			
S.no	**Location of safety zone**	**Forest Land(ha.)**	**Non-Forest Land(ha.)**
1	Any other	8.03	0

M-3. Details of prospecting undertaken to assess mineral reserves

(i). Whether detailed prospecting to assess mineral reserve in the lease has been undertaken: Yes

prospecting undertaken to assess mineral reserves					
S.no	**Designation of authority responsible for grant of the original propecting license**	**Date of grant of prospecting licence**	**Period of validity of extension prospecting licence From date**	**Period of validity of extension prospecting licence To date**	**Copy of prospecting licence**
NIL					

M-4. Details of extension (if any) of original prospecting licence issued in the past

(i). Whether detailed prospecting to assess mineral reserve in the lease has been undertaken: No

M-5. Brief details of prospecting activities undertaken in the mining lease :

(i). Detail of prospecting activity under taken in the mining lease: Different exploration borehole have made in mine lease area.

M-5.1 Details of bore holes drilled for prospecting :

Bore holes drilled for prospecting				
S.no	**No. of Bore holes (in forest land)**	**Diameters(in inch.) forest land**	**No. of Bore holes (in non-forest land)**	**Diameters(in inch.) non-forest land**
1	142	6.5	188	6.5

M-5.2 Estimated Reserve along with accuracy and confidence level

Estimated Reserve along with accuracy and confidence level						
Minerals	**Estimated Reserve (million tones)**	**% accuracy (+ -)**	**% confidence level**	**Estimated Reserve (million tones)**	**% accuracy (+ -)**	**% confidence level**
Coal and Lignite	12.69	95	95	5.38	95	95

M-6. Details of approval under the Forest (Consevation) Act,1980 obtained for undertaking prospecting activities in the forest land located in the mining lease

(i).Whether approval under the Forest (Conservation) Act, 1980 for undertaking prospecting activities in the forest land located in the mining lease have been obtained No

Details of approval under the Forest(Consevation) Act,1980					
S.no	**MoEF File No**	**Date of approval**	**Area of forest land diverted(in ha.)**	**From Date**	**To Date**
NIL					

M-7. Mineral wise details

(i). No. of minerals: One

Mineral wise details

Minerals	Estimated reserve in non forest land(million tons.)	Estimated reserve in forest land(million tons.)	Estimated annual extraction(million tons.)	Estimated life of mine(Yrs.)	Total estimated extraction during mining lease period(million tons.)	Estimated mineral reserve at the end of mining lease(million tons.)
Coal and Lignite	5.38	12.69	2.05	9	18.07	0

M-7.1 Proposed use of the minerals proposed to be raised from the mining lease

(i). Proposed use of the minerals proposed to be raised from the mining lease: NIL

(a).Copy note containing details of the linked end-use Project: No Data

(ii).Copy note containing details of the plan for the transportation of the minerals proposed to be raised from the mining lease: No Data

Additional information Details

Documents		
S.No	Documents	Remarks
1		Revenue Plan of Bhurkunda Colliery
2		Authenticated land schedule
3		Leter to DC and Undertaking for NOC under FRA
4		Letter to DC and Undertaking for NOC for GM Jungle Jhari
5		Letter to DFO and Undertaking for CA Land
6		Undertaking for EC.
7		Letter to DFO and undertaking for tree enumeration
8		Undertaking for R&R
9		Broken area plan showing history of Opencast and underground mines
10		Undertaking for Forest Land already broken within lease hold of Bhurkunda Colliery
11		Undertaking for Mine Lease
12		Undertaking Statutory Payments

Print page

ANNEXURE II

No. 39 1924

THE
Bihar & Orissa Gazette

PATNA, WEDNESDAY, OCTOBER 1, 1924.

Separate paging is given to this Part, in order that it may be filed as a separate compilation.

Published by Authority.

PART II.

Regulations, Orders, Notifications, Rules, etc., Issued by the Governor of Bihar and Orissa and by Heads of Departments.

POLITICAL AND APPOINTMENT DEPARTMENTS.

The 25th September 1924.

No. 3496-P.R.—In exercise of the powers conferred by section 31 of the Cantonments Act, 1924 (II of 1924), the Government of Bihar and Orissa are pleased to fix the 1st November as the date of election for the Cantonment Board of the Dinapore Cantonment, to be held in 1924.

Notification no. 1988-P.R., dated the 18th August 1924, is cancelled.

By order of the Governor in Council,

E. L. L. HAMMOND,

Chief Secretary to Government.

The 26th September 1924.

No. 3609-P. R.—The following notifications issued by the Government of India in the Home Department are republished for general information.

E. L. L. HAMMOND,

Chief Secretary to Government.

POLICE.

The 11th September 1924.

No. F.-27—LV-21.—In exercise of the powers conferred by section 27 of the Indian Arms Act, 1878 (XI of 1878), the Governor-General in Council is pleased to direct that the following further amendments shall be made in the Indian Arms Rules, 1924, namely:—

In Schedule I to the said rules, in the entry in the first column relating to item (1), ... shall be omitted and ... and ... shall be inserted ... and ... respectively.

The 22nd September 1924.

No. 5888—III-80-R.—DECLARATION.—Whereas it appears to the Government of Bihar and Orissa that land is required to be taken by Government at the public expense for a public purpose, viz., for the construction of an approach road to the Barakar bridge on its south embankment, in the village of Kumbarlalo, Thana Pirtand, thana no. 21, zila Hazaribagh, it is hereby declared that for the above purpose a piece of land measuring, more or less, 0·813 acre, bounded on the—

North—By the Barakar river,

East—By the Gairmazrooa khas land of the landlord,

South and West—By the Giridih-Dumri road,

is required within the aforesaid village of Kumbarlalo.

Mines of coal, iron-stone, slate or other minerals lying under the land or any particular portion of the land except only such parts of the mines and minerals as it may be necessary to dig, or carry away, or use in the construction of the work for the purpose of which the land is being acquired, are not needed.

This declaration is made, under the provisions of section 6 of Act I of 1894, and section 3, clause (f), of Act XVIII of 1885, to all whom it may concern.

A plan of the land may be inspected in the office of the Executive Engineer, Public Works Department, Hazaribagh.

The 22nd September 1924.

No. 5889—III-161-R.—DECLARATION.—Whereas it appears to the Government of Bihar and Orissa that land is required to be taken by Government at the expense of the district board of Manbhum for a public purpose, viz., for a cattle pound at Balarampur in the village of Rangadih, pargana Barabhum, zila Manbhum, it is hereby declared that for the above purpose a piece of land measuring, more or less, 7 kathas 8 chittaks of standard measurement, equivalent to 0·12 acre, bounded on the—

North—By the lands belonging to Srabon Patar and Surath, Jadu, Nisha and Keshab Gorain,

East—By the district board lands and a road from Balarampur to Bagmundi,

South—By the lands belonging to Jayram Datta Poddar,

West—By the lands belonging to Surath, Jadu, Nisha and Keshab Gorain,

is required within the aforesaid village of Rangadih.

Mines of coal, iron-stone, slate or other minerals lying under the land or any particular portion of the land, except only such parts of the mines and minerals as it may be necessary to dig or carry away, or use in the construction of the work for the purpose of which the land is being acquired are not needed.

This declaration is made, under the provisions of section 6 of Act I of 1894, and section 3, clause (f), of Act XVIII of 1885, to all whom it may concern.

A plan of the land may be inspected in the office of the Deputy Commissioner of Manbhum at Purulia.

The 22nd September 1924.

No. 5900—II-48-R.—DECLARATION.—Whereas it appears to the Government of Bihar and Orissa that land is required to be taken by Government at the public expense for a public purpose, viz., for a colliery for the Railway Board, in the villages of Kurse, Balkudra, Deoria and Dundua, thana Ramgarh, thana nos. 47, 26, 48 and 54, respectively, pargana Palanj, zila Hazaribagh, it is hereby declared that for the above purpose a piece of land measuring approximately 2248·1 acres, bounded on the—

North—By Nakari Nala and river Damodar,

East—By plot nos. 55, 164, 178, 197, and 201 and by waste lands of village Dundua and river Damodar,

South—By straight line drawn from Balkudra Nala at the south-west corner of plot 1244 to the eastern boundary of village Deoria at the south-eastern extremities of plot 669, thence along the eastern boundary of the said village Deoria up to the trijunction pillar of villages Ludi, Deoria and Dundua, thence along the western boundary of village Dundua up to the trijunction of villages Ludi, Dundua and Lapanga, thence eastwards along the southern boundary of village Dundua to the river Damodar,

West—By Balkudra Nala and Nakari Nala,

is required within the aforesaid villages of Kurse, Balkudra, Deoria and Dundua.

Mines of coal, iron-stone, slate or other minerals lying under the land or any particular portion of the land, except only such parts of the mines and minerals as it may be necessary to dig, or carry away, or use in the construction of the work for the purpose of which the land is being acquired are not needed.

This declaration is made, under the provisions of section 6 of Act I of 1894 and section 8, clause (1) of Act XVIII of 1885, to all whom it may concern.

A plan of the land may be inspected in the office of the Manager, Railway Board Colliery at Bhurkunda.

The 22nd September 1924.

No. 8990—III.-894-R.—Whereas it appears to the Government of Bihar and Orissa that land is required to be taken by Government at the expense of the District Council of Sambalpur, for a public purpose, viz., for the construction of Bargarh-Bijepur lik road running through the villages of Saresra, Dumerpali, Gudesira, Nilesar, Bandeibahal, Podhamunda, Sukajbahal, Nuapali, Dumerpali, Sarandapali, Samaisapadar, Mancharpali, Gondpali, Jaring, tahsil Bargarh, Bijepur and Kendipali in Bijepur zamindari, tahsil Bargarh, zila Sambalpur, it is hereby notified that for the above purpose a strip of land measuring, more or less, 41·78 acres and consisting of khasra nos. 3/4 (0·24), 5/5 (0·24), 77/2 (0·35), 77/3 (0·06), 78/2 (0·24), 12/4 (0·15), 12/6 (0·11), 125/2 kha (0·12), 113/2 (0·32), 127/2 kha and 127/1 kha (0·32), 1499/2 (0·04), 20/2 (0·01), 136/2 (0·85), 143/2 (0·05), 148/2 (0·85), 138/2 (0·10), 133/2 (0·02), 144/2 (0·44), 145/2 (0·32), 156/2 (0·45), 157/2 (0·45), 1491/2 (0·85), 1492/4 (0·36), 1494/2 (0·95), 1493/2 (0·84), 1489/2 (0·01), 6/3 (0·01), 1488/2 (0·45), 1500/2 (0·14), 1501/1 kha (0·01), 2/3 (0·01), 5/4 (0·09), 5/5 (0·09), 10/4 (0·05), 10/5 (0·05), 11/4 (0·05), 11/5 (0·03), 12/6 (0·05), 12/7 (0·03), 54/4 (0·05), 54/5 (0·12) of mauza Saresra; 812/2 (1·10), 337/2 (0·05), 803/2 (0·75), 409/2 (0·02), 328/2 (0·03), 810/2 (0·12), 402/2 (0·24), 401/2 (0·06), 410/2 (0·15), 980/1 kha (0·27), 980/1 ga (0·56), 802/2 (0·12) of mauza Dumerpali; 1003/3 (0·06), 996/3 (0·02), 1004/3 (0·42), 1002/2 (0·40), 1002/3 (0·09), 1002/4 (0·06), 997/3 (0·05), 997/7 (0·07), 999/4 (0·03), 999/5 (0·12), 1001/1 (0·14), 1001/5 (0·24), 1000/3 (0·01) and 100/4 (0·01) of mauza Gudesira; 774/1 kha (0·09), 774/3 kha (0·09), 804/5 kha (0·01), 804/1 kha (0·91), 817/1 kha (0·02), 817/3 kha (0·02), 813/2 (0·11), 772/1 kha (0·14), 772/3 kha (0·14), 775/1 kha (0·03), 778/2 kha (0·01), 773/2 ga (0·01), 822/1 kha (0·01), 822/3 kha (0·01), 819/4 (0·02), 819/5 (0·01), 825/1 kha (0·12), 825/4 kha (0·12), 823/1 kha (0·07), 823/3 kha (0·01), 820/4 kha (0·01), 709/1 gha (0·01), 820/1 kha (0·02), 820/2 kha (0·04), 820/1 cha (0·02), 820/4 kha (0·01), 709/1 gha (0·01), 709/1 nan (0·01), 700/1 kha (0·23), 700/3 kha (0·21), 993/4 (0·05), 993/5 (0·05), 993/3 (0·05), 701/1 kha (0·02), 701/3 kha (0·01), 694/5 kha (0·02); 694/1 gha (0·15), 695/1 nan (0·15), 694/3 kha (0·03), 694/2 kha (0·05), 694/6 kha (0·02), 697/1 kha (0·05), 695/1 kha (0·19), 698/3 kha (0·01), 698/4 kha (0·01), 496/1 kha (0·19), 728/1 ga (0·13), 818/3 (0·02), 815/4 (0·02), 822/1 ga (0·04), 826/1 gha (0·09), 826/2 ga (0·01), 826/3 gha (0·04), 826/3 kha (0·01), 987/1 ga (0·04), 987/1 gha (0·04), 987/1 jha (0·01), 987/3 gha (0·04), 987/3 cha (0·03), 987/3 ga (0·02), 987/3 ja (0·05), 987/3 gha (0·03), 987/3 nan (0·08), 994/3 (0·0), 993/3 (0·04), 998/4 (0·07), 999/4 (·11), 999/5 (0·07), 1000/3 (0·03), 998/3 (0·01), 693/3 (0·04), 992/4 (0·10), 992/5 (0·12), 820/1 ja (0·03), 820/1 jha (0·01), 827/3 (0·05), 990/3 (0·02), 557/4 (0·01), 557/5 (0·01), 696/4 (0·04), 696/6 (0·03), 695/5 (0·03), 696/7 (0·05), 807/3 (0·02), 807/4 (0·02), 983/3 (0·01) and 989/4 (0·02) of Nilesar; 1/3 (0·13), 1/4 (0·06), 2/2 (0·03), 2/3 (0·03), 3/2 (0·17), 3/3 (0·11), 23/2 (0·02), 7/3 (0·02), 7/4 (0·04), 5/2 (0·06), 5/3 (0·05), 6/3 (0·02), 21/2 (0·12) and 34/3 (0·10) of Bandeibahal; 207/3 (0·15), 425/3 (0·06), 496/4 (0·03), 211/4 (0·32), 211/3 (0·11), 482/2 (0·01), 461/4 (0·14), 461/3 (0·07), 209/4 (0·03), 209/5 (0·04), 209/4 (0·01), 209/5 (0·01), 497/3 (0·03), 497/4 (0·03), 205/4 (0·06), 208/5 (0·01), 210/4 (0·06), 210/5 (0·04), 212/4 (0·05), 512/5 (0·09), 216/4 (0·04), 216/5 (0·03), 213/2 (0·01), 216/3 (0·02), 216/3 (0·02), 218/3 (0·02), 220/2 (0·02), 219/2 (0·02), 219/3 (0·03), 221/3 (0·01), 222/4 (0·07), 223/5 (0·07), 215/3 (0·03), 217/3 (0·04), 321/2 (0·01), 322/2 (0·01), 323/2 (0·01), 434/4 (0·15), 434/5 (0·13), 440/5 (0·02), 491/3 (0·03), 410/4 (0·05), 504/2 (0·01), 493/3 (0·10), 498/4 (0·10), 498/5 (0·10), 458/1 (0·02), 415/4 (0·03), 415/5 (0·06), 415/3 (0·02), 416/5 (0·05), 417/4 (0·02), 417/5 (0·02), 438/4 (0·05), 438/5 (0·06), 40/4 (0·01), 40/5 (0·03), 40/6 (0·03), 40/7 (0·02), 319/3 (0·02), 319/4 (0·01), 450/3 (0·02), 450/5 (0·02), 493/5 (0·01), 494/6 (0·01) and 318/3 (0·02) of Podhamunda; 865/4 (0·07), 865/5 (0·03), 828/3 (0·10), 828/8 (0·05), 866/4 (0·05), 866/5 (0·01), 867/4 (0·05), 827/4 (0·01) and 827/5 (0·02) of Sabajbahal; 10/3 (0·03), 10/5 (0·06), 12/4 (0·04), 12/5 (0·04), 13/4 (0·02), 13/5 (0·03), 13/4 (0·02), 13/5 (0·02), 50/4 (0·12), 50/5 (0·11), 51/4 (0·05), 51/5 (0·01), 54/4 (0·05), 54/5 (0·02), 94/2 (0·01), 88/2 (0·01), 85/2 (0·01), 90/1 kha (0·11), 90/1 ga (0·06), 87/2 (0·10), 86/2 (0·03), 91/3 kha (0·01), 94/1 kha (0·05), 94/1 ga (0·02), 96/4 (0·04), 95/5 (0·04), 82/3 (0·01), 6/4 (0·01), 6/5 (0·01), 52/4 (0·05), 52/5 (0·01), 58/6 (0·01), 86/4 (0·18), 86/5 (0·04), 24/4 (0·01), 24/5 (0·01), 55/3 (0·09), and 55/5 (0·04) of Nuapali; 173/4 (0·02), 173/5 (0·02), 706/169—3 (0·02), 706/169—5 (0·04), 174/4 (0·03), 174/5 (0·04), 278/3 (0·01), 279/3 (0·02), 280/3 (0·08), 175/4 (0·04), 175/5 (0·04), 172/4 (0·01), 172/5 (0·06), 178/4 (0·04), 176/5 (0·04), 180/4 (0·01), 180/5 (0·01), 181/2 (0·01), 183/3 (0·03), 514/4 (0·02), 514/5 (0·02), 538/3 (0·02), 540/1 (0·02), 276/4 (0·07), 276/5 (0·07), 538/6 (0·01), 538/4 (0·06), 538/5 (0·01), 427/3 (0·03), 542/4 (0·05), 542/5 (0·01), 547/3, (0·01), 528/4 (0·04), 528/5 (0·04), 615/4 (0·06), 615/5 (0·06), 614/4 (0·02), 614/5 (0·01), 616/4 (0·03), 616/5 (0·02), 619/4 (0·01), 483/4 (0·01), 488/4 (0·03), 509/4 (0·03), 509/5 (0·06), 513/4 (0·01), 518/5 (0·02), 516/3 (0·04), 589/3 (0·04), 649/3 (0·01), 266/4 (0·06),

परिशिष्ट 53 प्रपत्र सं० 175. कोषागार संहिता प्रपत्र सं० 7.
Schedule LIII, Form No. 175. T. C. Form No. 7.

रसीद-बही

RECEIPT BOOK

(कोष० सं० नियम/T. C. Rule 92.)

तिथि/Dated 28/03/2014

160450

RECEIVED FROM .... Rupees ...... Paise ....

account of .... and credited to ....

/Rs .... 16/- पैसे/P ......

अधिकारी का हस्ताक्षर और पदनाम
Signature and designation of Officer.

PROJECT OFFICER
PIPERKUNDA COLLIERY
C.C.Ltd.

ANNEXURE III

AGREEMENT

BETWEEN

GOVERNMENT OF INDIA

AND

NATIONAL COAL DEVELOPMENT CORPORATION LTD.

FOR

TRANSFER OF ASSETS OF STATE COLLIERIES

223

NATIONAL COAL DEVELOPMENT CORPORATION LIMITED
DARBHANGA HOUSE, RANCHI

THIS INDENTURE made this Twentyeighth day of December, One thousand nine hundred sixty seven BETWEEN the President of India (hereinafter called "the Government" which expression shall, unless excluded by or repugnant to the context, include his successors and assigns) of the one part and the National Coal Development Corporation Limited, a Company registered under the Companies Act, 1956 (1 of 1956) having its registered office at Darbhanga House, Ranchi (hereinafter called "the Corporation" which expression shall, unless excluded by or repugnant to the context, include its successors and permitted assigns) of the other part :

WHEREAS :

1. The Government in the former Ministry of production by their letter bearing No. C2-8 (29)/56 dated 8-10.1956 informed the Corporation that subject to the vote of Parliament, the Government were willing to transfer to the Corporation the ownership and management of their Industrial Undertaking known as "State Collieries" with effect from the 1st day of October, 1956, *inter alia* on the following terms and conditions :

(1) That the value of the said undertaking would be the book value as on the 1st day of October, 1956 after allowing for depreciation.

(2) That the value determined as aforesaid would be treated as part of the Government contribution to the share capital of the Corporation and would be paid to the Government by allotment of shares in the capital of the Corporation.

(3) That the finalisation of accounts and determination of the value would be carried out in consultation with the Accountant General concerned.

(4) That existing officers and staff both temporary and permanent and quasi-permanent employed in the undertaking would be taken over by the Corporation on their existing terms and conditions of service and that the final terms and conditions of service of such officers and staff specially those having a lien in the Government would be further communicated to the Corporation.

(5) That the Corporation, if so desired by the Government will enter into a formal agreement with the Government for the transfer of the State Collieries to the Corporation.

(6) That the Corporation would be responsible for the planning and development of additional coal production in the public sector and for carrying out all the schemes connected with such increase in coal production.

2. The Corporation agreed to the said terms and conditions for transfer of the said undertaking.

3. Having taken the vote of Parliament, the Government handed over the said State Collieries and entrusted the management thereof to the Corporation with effect from the 1st day of October, 1956 subject, nevertheless to the condition that the points of disagreement between the Government and the Corporation would be settled expeditiously in consultation with the Corporation.

4. That Corporation requested the Government to execute in its favour a formal deed of transfer in respect of certain assets as on 1st day of October, 1956 of the said Industrial Undertaking of the Government known as "State Collieries" namely, FIRSTLY all that property situate at

1. Argada Colliery, Hazaribagh District in the State of Bihar.
2. Bhurkunda Colliery, Hazaribagh District in the State of Bihar.
3. Bokaro -do- -do-
4. Jarangdih -do- -do-
5. Kargali -do- -do-
6. Sawang -do- -do-
7. Giridih (comprising of Kuriurbaree and Serampore Colliery) -do-

PROJECT OFFICER
BHURKUNDA COLLIERY
BARKA-SAYAL AREA
C.C.Ltd.

8. Kurasia Colliery, Surguja District to the State of Madhya Pradesh.
9. Deulbera -do- Dhenkanal District in the State of Orissa.
10. Talcher -do- -do-

SECONDLY all contracts, engagements, benefits and advantages which have been entered into with the Government or to which the Government was entitled on account of or in respect of the said Industrial Undertaking and THIRDLY all the stock in trade, goods, fixture, furniture, articles and other things which on the 1st day of October, 1956, belonged to the Government or in any wise were used in the said Industrial Undertaking.

5. On account of unavoidable reasons it has not so far been possible to settle and finalise the details of the said Industrial Undertaking known as "State Collieries" intended to be formally transferred to the Corporation.

6. It has been agreed between the parties that transfer deeds may be executed in stages as and when the details thereof are settled and finalised from time to time.

7. Pursuant to the said Agreement it has now been agreed by and between the parties hereto that for the present the properties and assets mentioned in the first second and third schedules hereunder written shall be transferred by the Government in favour of the Corporation at or for the value or consideration of Rs. 5, 54, 03, 679/-(Rupees five crores fifty four lakhs three thousand six hundred and seventynine only) (details of such valuation are set out in the First and Second parts of the First Schedule hereunder written) by these presents and other transfer deeds shall be executed when the details thereof are settled and finalised between the Government and the Corporation.

NOW THIS INDENTURE WITNESSETH THAT in pursuance of the said Agreement and in consideration of the said sum of Rs. 5,54,03,679 paid and satisfied by the Corporation by allotment in favour of the Government of India of 5,54,03, Equity Shares of Rs. 1,000 each fully paid up in the share capital of the Corporation the Government doth hereby grant convey transfer and assure unto the Corporation FIRSTLY ALL THAT THE Industrial Undertaking of the Government known as State Collieries" consisting of several collieries including all the fixed assets mentioned in the First Part of the First Schedule hereunder written the full particulars of the collieries being set out in the Second Schedule hereunder written including all mines beds veins and seams of coal and all underground and mining surface and other rights in respect thereof to which Government is entitled together with buildings erections structures fixtures fittings thereon or therein and all other rights members easements and appurtenances thereto SECONDLY ALL THOSE the plants machinery boilers engines tools equipments stock-in-trade goods furniture trade and other fixtures and all other articles effects and things which on the 1st day of October, 1956 belonged to the Government or in anywise were used by the said Industrial Undertaking known as "State Collieries" THIRDLY ALL THOSE floating assets belonging to the Government as on 1st October, 1956 to the extent set out in the Second part of the schedule hereunder written on account of the said Industrial Undertaking known as "State Collieries" and FOURTHLY full benefits and advantages of all contracts and engagements which have been entered into with the Government or to which the Government was entitled as on 1st October, 1956 on account or in respect of the said Industrial Undertaking known as "State Collieries" and set out in the Third Schedule hereunder written and all the estate right title interest property claim and demand whatsoever the Government into or upon the various properties rights and claims hereby assigned or expressed so intended so to be together with full power and absolute authority for the Corporation to ask demand sue for recovery receive and give effectual receipts and discharges in the name of the Government TO HAVE AND TO HOLD and to receive and to take the said several properties rights and claims hereby assigned conveyed and transferred unto the Corporation absolutely as from 1st October, 1956.

AND THE Government doth hereby covenant with the Corporation that they have not done anything whereby they are prevented from transferring or assigning the premises hereby transferred or assigned in the manner aforesaid.

AND THE Government doth hereby lastly covenant with the Corporation that the Government will from time to time upon the request of the Corporation do and execute, or cause to be done executed all such acts, deeds and things whatsoever for further and more perfectly assuring the premises hereby assigned, conveyed and transferred unto the Corporation according to the true intent and meaning of these presents, as shall or may reasonably be required.

AND the Corporation doth hereby covenant with the Government as follows :

(1) That the Corporation shall take over the officers and staff both permanent quasi-permanent and temporary employed in the Undertaking as also the Officers and staff working in the headqu

known as the Coal Production and Development Commissioner as on 1st October, 1956 on terms not favourable than their then existing conditions of service, as from such date as may be mutually agreed.

(2) That the Corporation shall duly pay all the dues payable by the Government in respect of said State Collieries and also the dues under any contract or other engagement entered into by Government in relation to the said state collieries and hereby transferred to the Corporation.

(3) That the Corporation shall be responsible for planning and development of additional c production in the public sector and for carrying out all schemes connected with such increase in c production.

(4) That the Corporation shall duly observe, perform and carry out all the terms, conditions obligations to be observed, performed and discharged on the part of the Government under the vario contracts and other engagements and set out in the said Third Schedule hereunder written and shall demnify and keep the Government indemnified against all losses, damages, costs, charges and expenses t the Government may suffer and/or incur due to any fault or breach on the part of the Corporation observance and performance of the several terms and conditions as aforesaid and shall further indemn the Government if any claim be made against the Government by any person whose services are tak over by the Corporation.

And It is Hereby agreed and declared by and between the parties that other transfer deeds will executed between them when the details thereof are settled and finalised between the Government and Corporation.

AND IT IS HEREBY AGREED AND DECLARED that the Government has agreed to bear stamp duty on these presents.

IN WITNESS WHEREOF the parties hereto have executed these presents the day and the ye first above written.

Signed by N.D. Gupta, Joint Secretary to Govt. of India Ministry of Mines & Metals New Del for and on behalf of the President of India in the presence of ...

(1) M.S.R. Ramaswamy.

(2) H. H. Ramchandani

The common seal of the National Coal Development Corporation Limited has been hereun affixed pursuant to a resolution of the Board of Directors by circulation in the presence of R. Prasa Managing Director, National Coal Development Corporation.

Signed by R. Prasad (Ranchor Prasad) Managing Director

in the presence of (1) Gouri Shankar Pd. Sinha, L.A.
(2) R.K. Ojha, F.C.

FIRST SCHEDULE

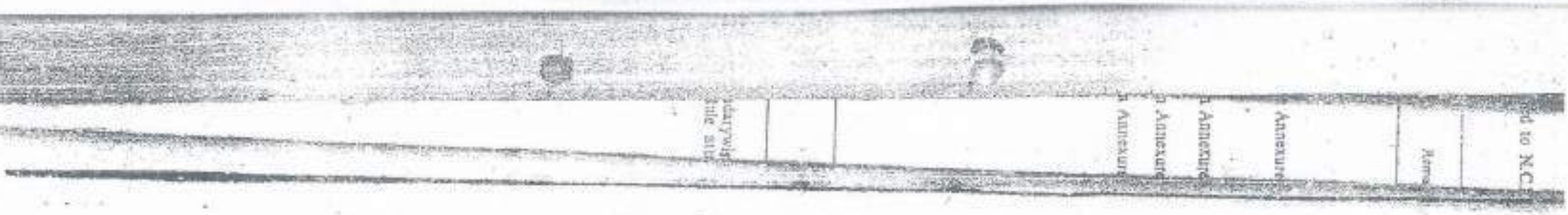
Net Book Value of the Assets of the ex-State Collieries transferred to N.C.D.C. Ltd. as on 1st October, 1956.

Particulars	Amount acceptabe & transferred to the N.C.D.C. Ltd.	Remarks
	Rs.	
PART-I		
1. Fixed Assets	3,89,41,720	Details in Annexure-I attached
PART-II		
2. Floating Assets	66,72,819	Details in Annexure-I attached
3. Permanent Advance	5,80,426	Details in Annexure-II attached
4. Advance	92,08,714	Details in Annexure-III attached
5. Total (1–4)	5,54,03,679	

SECOND SCHEDULE

Boundarywise description of ex-State Collieries as they stood on 1st October, 1956.

Name of Colliery	Situation	Remarks
1. Argada	Hazaribagh District in the State of Bihar	Boundarywise maps and schedule attached.
2. Bhurkunda	-do-	-do-
3. Bokaro	-do-	-do-
4. Jarangdih	-do-	-do-
5. Kargali	-do-	-do-
6. Sawang	-do-	-do-
7. Giridih (Comprising of Kurhurbaree & Serampore)	-do-	-do-
8. Kurasia	Surguja District in the State of Madhya Pradesh.	-do-
9. Deulbera	Dhenkanal District in the State of Orissa	-do-
10. Talcher	-do-	-do-



THIRD SCHEDULE

All Contracts, benefits, engagements and advantages which have been entered into with the Government or to which Government were entitled on 1st October, 1956 in respect of the State Collieries.

Colliery	Name of executant	In whose favour	Nature of documents	Date of Documents	Period for which documents are in force
ARGADA	Sri Premchand Ladhabhai	Ex-Bengal Nagpur Railway	License for temporary occupation for shop	1-7-1935	Period not specified until & unless terminated.
	Sri Sakarchand Moji	-Do-	Lease against license for temporary occupation for shop	1-7-1935	-Do-
	Sri Jamuna Das	-Do-	-Do-	5-5-1939	-Do-
	Sri Jamuna Khalifa	-Do-	-Do-	Not available	-Do-
	Sri Premchand Ladhabai	President of the Republic of India	-Do-	1-1-1951	-Do-
	Sri Puran Singh	Governor General of India (State Rly's Coal Deptt.)	-Do-	16-4-1947	-Do-
	Sri Mahabir Sahu	President of the Republic of India	-Do-	1-2-1952	-Do-
	Sri Raghab Lal	Governor General of India (State Rly's Coal Deptt.)	-Do-	13-7-1947	-Do-

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CCLtd.

1	2	3	4	5	6
	Sri Baijnath Sahu	Governor General of India (State Rly's Coal Deptt.)	Lease against license for temporary occupation for shop	17-11-1949	Period not specified until & unless terminated
	Sri Prabhu Nath Pandey	Ex-Bengal Nagpur Railway	do	Not available	do
	Sri Rajdeo Singh	do	do	Not available	do
	Sri Ram Krishun	do	do	Not available	do
	Sri Mahabir Sao	do	do	Not available	do
	Divisional Engineer, Telephone, Ranchi	Manager, Argada Colliery	Hiring contract for connection in departmental Telephone Exchanges charged for at standard rates	4-1-1952	10 years
BHURKUNDA	M/s. Karanpura Development Co. Ltd.	Secretary of State for India in council	Lease	1924	999 years
	President of India through CME State Collieries.	M/s. G.N. & N. G. Prasad	Agreement for removal of overburden	18-9-1954	Two years from 1-5-54 to 30-4-1956 extended upto 30-11-1956.
	do	Sri Anant Singh	Agreement for manufacture of 15,00,000 Nos. Brick.	1-8-1956	upto 31-3-1957
BOKARO	The President of India	M/s Hind Strip Mining Corporation (P) Ltd.	Agreement	14-5-1955	1-3-56 to 29-2-60
DEULBERA	Sri Sohanlall Agarwalla.	M/s. Nandram Hupatram	Work order for construction of Septic Tank Latrine	16-2-1956	20-2-1956 to 21-10-1957
	do	do	Work order for construction of extension of Hospital Build-	10-2-1954	1-3-1954 to 5-12-1956

1	2	3	4	5	6
DEULBERA	A. Sahu	D. Sahu & A. Sahu	Work order for construction of stationary bridge in Sand line.	2.7.1956	2.7.1956 to 31.5.1958
	–do–	–do–	Work order for construction of sand line in river bed.	2.7.1956	2.7.1956 to 31.3.1957
	Sri Mangilal	M/s. Harshimlal Mangilal	Work order for construction of cement flooring of 75 units of Miners Dhawras	13.1.1956	22.6.1956 to 31.3.1957
	Sri Kalia Bhukta	Sri Kalia Bhukta	Work order for shifting East Haulage underground.	20.4.1956	20.4.1956 to 31.3.1957
	–do–	–do–	Work order for construction of ventilation stoppings, Air Crossing underground.	3.5.1956	3.5.1956 to 31.3.1957
	D.G.S. & D., New Delhi.	M/s. Macneill & Barry Ltd., Calcutta.	A.T. for suyply of sand gathering plants including erection.	11.11.1953	11.11.53 to 31.3.57
JARANGDIH		NIL	NIL	NIL	NIL
KARGALI	The President of India	M/s. Hind Strip Mining Corporation (P) Ltd.	Agreement	1.3.1956	5 Years with effect from 1.10.1956.
BHURKUNDA	Secretary of State for India. (Lessor)	East India Rly. Co., (Leasee)	Registered Lease No. 29c of 1874	10.7.1874	82 years & 46 days computed from and including the 1st day of January 1871.
	Secretary of State for India.	East India Railway Co.	Sale deed purchased from Bengal Coal Co.	24.5.1907	Does not arise it is a sale deed.

1	2	3	4	5	6
KURASIA	Manager, Kurasia Colliery	Superintendent of Post Office North Chattisgarh Division, Bilaspur.	Agreement for rental of one block of dhawarah for combined post office.	1.12.1953	Upto 30.11.1958
	Addl. Chief Mining Engineer, State Collieries	Sri R. S. Tewary	Work Order No. B/4 dated 28-6-1956	28.6.1956	Upto 31.3.1957
	do	M/s R. T. & T. Co.	Work Order No. B/8	6.1.1956	Upto 28.2.1958
	do	do	Work Order No. B/7	6.1.1956	Upto 28.2.1958
	do	do	Work Order No. B/10	1.2.1956	Upto 31.12.1957
	do	Sri S. R. Tewari	Work Order No. B/11	1.2.1956	Upto 20.4.1957
	do	Sri B. K. Bose	Work Order No. B/5	7.7.1955	Upto 30.4.1957
	do	Sri R. S. Tiwari	Work Order No. B/4	28.8.1956	Upto 31.10.1957
	do	do	Work Order No. B/3	7.7.1955	Upto 30.4.1957
	Manager, Kurasia Colliery	Sri B. K. Bose	Work Order No. B/C	7.7.1955	Upto 30.4.1957
	do	do	Work Order No. B/3	15.6.1956	Upto 11.3.1957
	Addl. Chief Mining Engineer, State Collieries.	Sri R. S. Tewari	Work Order No. B/2	7.6.1956	Upto 31.12.1956
	do	M/s R. T. & T. Co.	Work Order No. M/3	1.1.1956	Upto 31.12.1956
	do	M/s. R. S. Tewari	Work Order No. B/9	1.2.1956	Upto 31.1.1957
	Jt. Secretary, Ministry of Production	M/s. R. T. & T. Co.	Work Order No. M/4	30.4.1956	Upto 31.12.1956
			Agreement dt. 8-9-1954	1.5.1954	Upto 30.11.1956

PROJECT OFFICER
BHURKUNDA COLLIERY
BARKA-SAYAL AREA
C.C.Ltd.

1	2	3	4	5	6
SAWANG	NIL	NIL	NIL	NIL	NIL
SERAMPORE	Rajah Guru Narayan Singh of Serampore	East India Railway Co. afterwards vested in Secretary of State for India by virtue of the E. I. Rly. Co., Purchase Act, 1897.	Registered Pattah Regn. No. 77 pages 174 to 185—Vol. V.	30-9-1863	Perpetual lease
TALCHER	Sri Bhikari Sahu, Talcher	Sri Bikhari Sahu	Work Order	15-7-1956	From 6-8-1966 to 31-1-1958
	Sri Sohanlal Agarwal	M/s. Nandram Hemaram, Talcher	Work Order	6-2-1956	From February 1955 to March 1957
	M/s. D. Sahu & A. Sahu	M/s. D. Sahu & A. Sahu	Work Order	10-2-1954	From April, 1954 to April, 1955.
	Sri Sohanlal	M/s. Nandram Hemaram	Work Order	5-2-1956	From February, 1956 to October, 1967.

Stock-in-trade, goods, fixture furniture, articles which on 1-10-56 belonged to Govt. or in anywise were used in the State Collieries

Particulars	Value of taken over by the Corporation as on 1-10-1956 Rs.
FIXED ASSETS	Rs.
1. Land	83,12,770
2. Buildings :	
(a) Residential	1,15,94,413
(b) Colliery	38,77,861
3. Plant and Equipment :	
(a) Power Plant	87,36,597
(b) Electric Plant	65,78,319
(c) Coke Plant	15,91,968
(d) Other Plant	78,56,503
4. Wagons and Locomotives	4,18,840
5. Furniture & Fittings	91,540
6. Railway Siding	43,88,128
7. Development	1,17,85,934
8. Prospecting & Boring	18,98,930
TOTAL FIXED ASSETS	6,71,31,703
Less Sinking Fund	2,81,89,983
Net Total-Fixed Assets	3,89,983
FLOATING ASSETS	
1. Stock and Stores	61,59,734
2. Coal	3,67,840
3. Coke, Coaltar, etc.	28,645
4. Workshop Suspense	30,925
5. London Invoice	175
6. London Stores	85,500
TOTAL FLOATING ASSETS	66,72,819

ANNEXURE-II

PERMANENT ADVANCE

Colliery/Unit	Amount accepted and transferred to the Corporation	Remarks
1	2	3
GENERAL IMPREST	Rs.	
1. Bokaro	1,24,000	
2. Sawang Swang Office	15,000 50	
3. Giridih	1,25,925	
4. Jarangdih	20,000	
5. Kargali	90,000	
6. Kurasia	67,193,46	
7. Argada	12,000	
8. Deulbera	38,000	
9 Talcher	30,000	
10. Bhurkunda	43,000	
11. Kurba	3,000	
12. C.P.O.	200	
13. M.D.(C.P.D.C.)	300	
14. C.M.E.	200	
15. C.A.O. (C.C.A.)	250	
C.M.P.F. (Imprest)		
16. Giridih	—	
17. C.S. Giridih	6,102.86	
18. Bokaro	—	
19. Bhurkunda	—	
20. Argada	—	
21. Kargali	—	
GRAINRSHOP IMPREST		
22. Giridih	5,000	
Total	5,80,426	

PROJECT OFFICER
BHURKUNDA COLLIERY
BARKA - SAYAL AREA
C.C.Ltd.

ANNEXTU

ADVANCES

Particulars	Amount accepted & transferred to the Corporation.	Remarks
(a) Deferred Revenue Expenditure on overburden removal.	Rs. 92,08,714	

PROJECT OFFICER
BHURKUNDA COLLIERY
BARKA - SAYAL AREA
C.C.Ltd.

SCHEDULE

Surface Right

Sl. No.	Village	Thana	Thana No.	District	Area	Remarks
1.	Orlang	Ramgarh	78	Hazaribagh	20.65	Part
2.	Tongi	Mandu	135	"	1.20	"
3.	Sirka	"	136	"	13.30	"
4.	Argada	"	137	"	702.45	"
5.	Husla	"	138	"	7.10	"
				Total Area:	744.70 acres (Appros)	

SCHEDULE

Mining Right

Sl. No.	Village	Thana	Thana No.	District	Area	Remarks
1.	Tongi	Mandu	135	Hazaribagh	1.20	Part
2.	Sirka	Mandu	136	"	13.30	"
3.	Argada	Mandu	137	"	714.10	"
				Total area :	728.60 acres (Appros)	

SCHEDULE OF BOUNDARY

ARGADA

(Surface Rights)

1-2 line starts at point 1, then passes along the common boundary of villages Argada and Chapri and ends at point 2.

2-3 line starts at point 2, then passes along the part common boundary of villages Hesla and Argada and ends at point 3.

3-4-5-6 line starts at point 3, then passes through plot No. 968 and 50 and 968 of village Hesla and ends at point 6.

6-7-8-9 line starts at point 6, then passes throug plot Nos. 148, 137, 128 and 147 of village Argada and ends at point 9 (on the central line of Pararu nala).

9-10 line starts at point 9, then passes along the part common boundary of villages Argada and Sirka and ends at point 10.

10-11-12 line starts at point 10, then passes through plot Nos. 854, 969, 858, 857, 856, 853, 849, 807, 806, 805, 812, 814, 801, 799, 800, 799, 798, 799, 895, 1021, of village Sirka, then passes for a small distance (200' towards west from the trijunction pillar situated on Rightside of Pararu Nala through village Tongi and ends at point 12 (400' towards North from the Trijunction pillar situated on the Right side of Pararu Nala) and meets on the common boundary line i.e. Central line of Pararu nala.

12-1 line starts at point 12, then passes along the common boundary of villages Argada and Tougi, Argada and Barbachumon and ends at point 1.

16-17-19-20 line starts at point 16, then passes through plot No. 137, 138, towards south and East through village Argada and ends at point 20.

20-21 line starts at point 20 then passes along the common boundary of villages Argada and Hesa and Argada and Orlong and ends at point 21.

21-22 line starts at point 21, then passes along the Right bank of River Damodar and ends at point 22.

22-23 line starts at point 22, then passes along the common boundary of villages Argada and Orlong and Argada and Sirka & ends at point 23.

23-24 line starts at point 23, then passes the left boundary of Damodar River and ends at point 24.

24-14-15-16 line starts at point 24, then passes through plot Nos 137 and 135 of village Argada and ends at point 16.

SCHEDULE OF BOUNDARY

ARGADA

(Mining Right)

9-10-11-12-1-2-3-5-18 is the common boundary of Mining Right and surface Right.

18-17-14-13 line starts at point 18 then passes through plot Nos. 148, 137, 135, 134, 133, 131, 130, 147 of village Argada and ends at point 13.

13-9 line starts at point 13, then passes along the part common boundary of villages Argada and Sirka and ends at point 9.

PROJECT OFFICER
BHURKUNDA COLLIERY
BARKA-SAYAL AREA
CCL Ltd.

BHURKUNDA

A. R. & M. P.

SCHEDULE

Sl. No.	Village	Thana	Thana No.	Pargana	Distt.	Area in acres	Remarks
1.	Dundun	Ramgarh	54	Pdani	Hazaribagh		Part
2.	Deoriabarganwa	"	48	"	"		"
3.	Kurse	"	47	"	"		"
4.	Balkudra	"	26	"	"		"

Total area : 6800.50 Bighas
or 2248.10 acres (approx.)

BOUNDARY DESCRIPTION :

1-2 line passes through middle of the Nala, R. S. plot No. 815 (land acquisition plot No. 2) of village Balkudra.

2-3 line passes through R. S. Plot Nos. 815, 1243, 1244, 1274, 1242, 1228, 1277, 1314, 1317, 1315, 1316, 1310, 1307, 1303, 1304, 1299, 1298, 1287 (Nala) (land acquisition plot Nos. 2, 78, 6, 36, 4, 3, 39, 74, 77, 75, 76, 79, 67, 63, 64, 62, 61, 60 and 49 of village Balkudra).

line passes through R. S. Plot Nos. 4, 5, 207 and 210 (Land acquisition plot Nos. 4, 5, 6 and 9) of village Kurse.

line passes through R. S. Plot Nos. 1836, 770, 769, 766, 767, 713, 714, 715, 716, 712, 719, 710, 727, 728, 734, 732 and 669 (Land acquisition plot Nos. 813, 729, 730, 725, 726, 713, 714, 715, 716, 712, 706, 710, 717, 718, 724, 722 and 669) of village Deoria Barganwa (4200' through village Balkudra, 5315' through village Kurse and 3607' through village Deoria Barganwa).

3-4 line passes along the part common boundary of villages Deoria Barganwa and Markuma, common boundary of village Deoria Barganwa and Ladi common boundary of villages Dundua and Chordhara.

4-5 line passes through R. S. Plot Nos. 197, 201, 177, 164, 163, 88, 87, 55 and 1- (Land Acquisition No. 77, 76, 72, 29, 149, 58, 146, 145, 57, 56, 55, and 1) of Village Dundun.

5-6 line passes along the middle of the Damodar River.

6-1 line passes along the middle of the Nakari River.

PROJECT OFFICE
BHURKUNDA COLLIERY
BARKA-SAYAL AREA
CCL Ltd.

SCHEDULE

BOKARO-COALFIELD

Sl No.	Village	Pargana	District	Area	Remarks
1.	Jaridih	Rampur	Hazaribagh	99.564	Part
2.	Bermo	"	"	595.754	Part
3.	Baidkaro	"	"	542.395	Part

Total area : 1236.713 acres (approx.)

Schedule of Boundaries

1–2 line starts at Revenue Survey plot No. 1035 (L. A. Plot No. 2) of village Jaridih then pa straight for a distance of 6811'—0" through villages Jaridih and Bermo and ends at R. S. No. 178 (L. A. Plot No. 838A) of village Bermo.

2–3 line starts at R. S. Plot No. 178 (L.A. plot No. 838A) of village Bermo then passes straight f distance of 8452'—8" through villages Bermo and Baidkaro and ends at R. S. plot No. (L.A. plot No. 2345) of village Baidkaro.

3–4 line starts at R. S. plot No. 126 (L. A. plot No. 2345) of village Baidkaro then passes stra for a distance of 5177'-0" through village Baidkaro and ends at the Central line of R Damodar R. S. Plot No. 1269 (L. A. Plot No. 2050A) of village Baidkaro.

4–5 line passes along the Central line of River Damodar for a distance of 4156'-0".

5–1 line starts at Central line of River Damodar and then passes straight for a distance of 4631'- through villages Bermo and Jaridih and ends at R. S. Plot No. 1035 (L. A. Plot No. 2) of vil Jaridih.

SCHEDULE OF LAND

Surface Right — For Magazine

Sl. No.	Village	Pargana	Distt.	Area	Remar
1.	Bermo	Rampur	Hazaribagh	30.80	Part

Total :-30.80 acres (approx)

Surface Right

Boundary description :

A–B line passes through Revenue survey plot no. 221 of village Bermo

B–A line passes through Revenue Survey plot no. 221 of village Bermo

C–D line passes through Revenue Survey plot no. 221 and also Land acquisition plot no. 174 village Bermo.

D–E line passes through Revenue Survey plot no. 221 and also Land Acquisition plot No. 1749, etc. of village Bermo.

E–F line passes through land acquisition plot no. 1753 and also Revenue plot No. 221 of vi Bermo.

F–A line passes through Revenue Survey plot no. 221 of village Bermo.

SCHEDULE OF LAND

Acquired for Road Off Hazaribagh Mines.

Surface Right — Board Road. (Bokaro coalfield)

Sl. No.	Village	Pargana	District	Area	Remarks
1.	Bermo	Rampur	Hazaribagh	1.12	Part
2.	Jaridih	"		0.04	Part

Total :- 1.16 acres (approx)

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BHURKUNDA COLLIERY
BARKA - SAYAL AREA
C.C.Ltd.

Boundary description :

G–H	line passes through Revenue Survey plot no. 221 of village Bermo
H–I–J–K	line passes through Revenue Survey plot no. 221 of village Bermo.
K–L–G	line passes through Revenue Survey plot no. 221 of village Bermo
M–N	line passes through Revenue Survey plot no. 221 of village Bermo
M–N–O	line passes through Revenue Survey plot no. 221 of village Bermo
O–P	line passes through Revenue Survey plot no. 221 of village Bermo
P–M	line passes through Revenue Survey plot no. 221 of village Bermo
Q–R	line passes through Revenue Survey plot no. 221 of village Bermo
R–S	line passes through Revenue Survey plot no. 221 of village Bermo
S–T	line passes through Revenue Survey plot no. 221 of village Bermo and 26 of village Jaridih
T–Q	line passes along the northern boundary of the Hazaribagh Mines Board Road through Revenue Survey no. 26 of village Jaridih. line passes through Revenue Survey plot no. 26 of village Jaridih and 221 of village Bermo.

PROJECT OFFICER
BHURKUNDA COLLIERY
BARKA-SAYAL AREA
CCL Ltd.

ANNEXURE IV

NOTES

SL. No.	PARTICULARS
	ALL DIMENSIONS ARE IN METERS

LEGENDS

SL. No.	PARTICULARS	SYMBOL
01	BORE HOLES	
02	SURFACE CONTOUR	
03	QUARRY / OB DUMP BOUNDARY	
04	FLOOR CONTOUR OF ARGADA-D SEAM	140
05	FLOOR CONTOUR ARGADA-K SEAM	
06	10TH YEAR QUARRY	
07	10TH YEAR OB DUMP	
08	RIVER / NALA	

REFERENCE DRAWINGS

SL No	NAME OF THE DRAWINGS	DRG. No.
01	GEOLOGICAL MAP	MEC/RNC/Plate-III
02	GEOLOGICAL MAP OF BHURKUNDA NORTH EXTENSION	MEC/RNC/200/87
03	FLOOR CONTOUR OF ARGADA - D SEAM	MEC/RNC/Plate-XXIIA
04	FLOOR CONTOUR OF ARGADA - K SEAM	MEC/RNC/238/87
05	SURFACE PLAN OF BHURKUNDA COLLIERY, dated-09/11/2015	--

(15)

Customer	CENTRAL COALFIELDS LIMITED				
Job Title	PR FOR BHURKUNDA OCP (3.5 MTY)			Job No. 341585	
Subject	Activity	Name	Designation	Signature	Date
FINAL STAGE QUARRY PLAN	Created	S. Chatterjee	Sr. Mgr. (Min)		1/2016
	Checked	J. Chakravarty	Dy GM (Excv)		
	Approved	Dr. A. Sinha	R D, R I - 3		
cmpdi A Mini Ratna Company REGIONAL INSTITUTE - III	Scale 1 : 4000			Sheet	
	Drg.No. RIII OCM 001313			Rev.No.	

ANNEXURE V

cmpdi

सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीच्यूट लिमिटेड
(कोल इण्डिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)
गोन्दवाना प्लेस, कांके रोड, राँची - 834 031, झारखंड (भारत)

Central Mine Planning & Design Institute Limited
(A Subsidiary of Coal India Limited / Govt. of India Public Sector Undertaking)
Gondwana Place, Kanke Road, Ranchi - 834 031, Jharkhand (INDIA)

CIN NO-U14292JH1975GOI001223

पत्रांक : सीएमपीडीआई/विसफोटन/2014-15/ 50 दिनांक: 16.02.2015

सेवा मे
General Manager (P & P),
Central Coalfields Limited,
Darbhanga House,
Ranchi-834 001.

Fax No: 0651-2360132

Sub: Report on conducting Controlled Blasting and Vibration study at Balkudra outsourcing Patch, Barka Sayal Area, CCL (Job No.284314201)

महाशय,

With reference to your work order No GM (P&P)/Barka Sayal Area/2015/2294 dated 11.02.2015, a study has been conducted by Blasting Cell of CMPDI (HQ) on the above subject. One copy of the report is hereby enclosed for your kind perusal.

सधन्यवाद,

भ व दी य

16.2.2015
(असीम कुमार चक्रवर्ती)
(महाप्रबन्धक (पी.ए.डी./विस्फोटन)

Copy to:

1. The General Manager, Barka Sayal Area, CCL, Jharkhand (With a copy of report), and a copy of bill having invoice no. D.3.1/COST-C/03/2014-15/297, dated 16.02.2015 of Rs. 976577.00 (Rupees Nine lakh seventy six thousand five hundred and seventy seven) only as consultancy charge is hereby enclosed for an early payment from your end. (Bill to be send by CMPDI (HQ), Ranchi)

2. The Project Officer, Balkudra outsourcing patch, Barka Sayal Area,CCL. - With 2 copies of report.

3. The GM (Finance), CMPDIL, Ranchi, Pin-834031-for kind information.

4. The RD, RI-III, CMPDI, Ranchi - a copy of bill for kind information.

5. The GM (BD), CMPDI (HQ), Ranchi - for kind information.

फोन नम्बर / Phone No. : +91 651 2230483
फैक्स नम्बर / Fax No. : +91 651 2231447
ई-मेल / e-mail: ts@cmpdi.co.in; वेब साईट / Website Address: www.cmpdi.co.in

सीएमपीडीआई
cmpdi
A Mini Ratna Company

REPORT

ON

CONTROLLED BLASTING & VIBRATION STUDY AT BALKUDRA OUTSOURCING PATCH, BHURKUNDA COLLIERY, BARKA SAYAL AREA, CCL

(JOB NO. 284314201)

FEBRUARY, 2015
BLASTING CELL
CENTRAL MINE PLANNING & DESIGN INSTITUTE LIMITED
GONDWANA PLACE, KANKE ROAD
RANCHI-834031

RESTRICTED CIRCULATION

REPORT

ON

CONTROLLED BLASTING & VIBRATION STUDY AT BALKUDRA OUTSOURCING PATCH, BHURKUNDA COLLIERY, BARKA SAYAL AREA, CCL

(JOB NO. 284314201)

FEBRUARY, 2015
BLASTING CELL
CENTRAL MINE PLANNING & DESIGN INSTITUTE LIMITED
GONDWANA PLACE, KANKE ROAD
RANCHI-834031

Contents

REPORT ON CONTROLLED BLASTING & VIBRATION STUDY AT BALKUDRA OUTSOURCING PATCH, BHURKUNDA COLLIERY, BARKA SAYAL AREA, CCL (Job no. 284314201)

1.0 INTRODUCTION

At the request of the General Manager (P&P), CCL vide work order no. GM (P&P)/Barka Sayal Area/2015/2294, dated 11.02.2015 a study was undertaken by Blasting Cell of CMPDI (HQ) to assess the effects of blast induced ground vibration on nearby villages/hutments or dwellings not belonging to the owner of the mine.

2.0 OBJECTIVES

2.1 To establish site-specific maximum explosive charge per delay and distance relationship through on site measurement of vibration levels, so that prediction of safe explosive charge may be made for different distances.

2.2 To evolve suitable blast parameters and to estimate safe explosive charge to control flying fragments within 10m in any direction from the source of blast.

2.3 To conduct controlled blasting at Balkudra Quarry Outsourcing patch of Bhurkunda Colliery for working falling within radius of 300m but beyond 100m distance from nearby villages/hutments or dwellings of Manjhitola(Madnatand) and disputed boundary of JSPL, Balkudra using SME based on established system of blasting parameters.

3.0 SCOPE OF WORK

The scope of work includes:

3.1 Study of mine plans, mine site, geology, surface structures and their distances from the blast point, fixing of stations and setting of geophones in consultation with the mine management.

3.2 Recording of ground vibration by vibration monitor..

3.3 Analysis of blast data and design of blast parameter for safe blasting at any distance within 300m but beyond 100m of nearby villages/hutments or dwellings not belonging to CCL.

4.0 DETAILS OF BLASTING SITE

4. 1 LOCATION

Balkudra OCP, Barka-Sayal Area, CCL is located in Ramgarh district in the state of Jharkhand. The project is situated at a distance of 20 km (Approx.) from Ramgarh Township. The nearest railway station is Bhurkunda Railway Station, situated at a distance of approx. 03 km from the project.

The project is well connected to all parts of Jharkhand by an all-weather metal road. The details of adjoining areas are given below:

NORTH	-	Nakari River
SOUTH	-	JSPL Boundary
EAST	-	Kurse nallah and Old Balkudra Quarry
WEST	-	Balkudra nallah

4.2 GEOLOGY

Brief description of OB benches and coal seams are mentioned below:

Sl. No.	Description	Thickness (in Meters)
1.	TOP COVER/DEAD LOAD	31.87
2.	SAYAL SEAM	4.36
3.	PARTING	17.61
4.	UPPER BALKUDRA SEAM	8.61
5.	PARTING	5.55
6.	LOWER BALKUDRA SEAM	5.93
7.	PARTING	8.73
8.	BALKUDRA – A SEAM	2.23

Excavation of OB is being done by shovel dumper combination. Stripping ratio of the project is 4.55 cum/te Gradient of the seam is 1 in 6. Grade of the coal is G-7.

5.0 INSTRUMENTATION

Blast induced ground vibration at Balkudra OCP was measured by two (2) nos. of Blastmate III vibration monitors. These instruments are microprocessor-based unit having tri-axial transducers. It measures Peak Particle Velocity (PPV) in three mutually perpendicular directions, i.e. longitudinal, transverse and vertical along with respective frequencies.

6.0 EXPERIMENTATION

Details of the blast monitored at OB benches are summarized below:

Details of Blast	OB
No. of observations	32
No. of rounds	11
Dia of drill holes (mm)	160
Depth of holes(m)	5.6 – 6.2
Burden (m)	3.0-4.0
Spacing (m)	4.0-4.5
Explosive charge/hole (kg)	40.0-55.0
Maximum charge/delay (kg)	45.0-55.0
Maximum charge/round (kg)	1785.0-5835.0

Adequate care was taken in respect of blast design, proper use of explosives, length of stemming column for controlling flying fragments within 10m in any direction and minimizing the level of ground vibration. Loose pieces of stones/ debris were removed from the blast site before commencing blasting operations. The initiation was done by non-electric detonators.

The instruments were fixed at a distance of 65m to 340 m from the blast point where the levels of ground vibration were recorded.

The details of each trial , blast, blast geometry, explosive charge distribution, sequence of delay etc. are shown in the enclosed Annexure 1 to 11 and summarized in Table-1. Summarized statement of the levels of PPV and frequency recorded during trial period and its distances from blast point are shown in Table-2.

7.0 ANALYSIS OF VIBRATION DATA

The blast sites were fixed in consultation with mine officials at a distance of more than 100 m from nearby villages/hutments or dwellings not belonging to the owner of the mine. However, geophones were fixed at distances ranging from 65 m to 340 m from overburden blasting faces to simulate the future conditions when blasting may be extended close to the neighboring structures/houses/dwellings etc not belonging to owner of the mine. The data obtained from these observations were recorded by two nos. of Instantel-make Blastmate III vibration monitors and data analysis was carried out by a computer software package for deriving the site-specific propagation equation.

During trial period total 11 blasts were done in OB benches and 32 observations were recorded at different distances from blast site.

The PPV (V), maximum explosive charge/delay (Q), and the distance (D) between blasting site and vibration monitoring stations were grouped together, and by least mean square root method of regression analysis, a propagation equation valid for the site i.e. site specific propagation equation, has been established in the form of a Square Root Scaled Distance formula as given below:

$V = K (D/ Q^{1/2})^{-A}$

Where, V= Peak particle velocity in mm/sec.

Q = Maximum explosive charge per delay in kg.

D = Distance from point of observation to the blasting site in m, and

K & A are regression co-efficient and whose values are as follows.

K = 133.704

A = - 0.8410

The predictor equations estimating the peak particle velocity using the power function (Non linear) and Log-Log (linear) graph are shown in graph1 and graph 2 respectively. The regressional output in respect of peak particle velocity estimator equation is mentioned in Table- 3. The data report containing the PPV measurements is shown in Table- 2.

8.0 THRESHOLD VALUE OF GROUND VIBRATION

The study has been conducted keeping in view the norms set for the threshold value of PPV by DGMS.

As per DGMS Circular No.7 dated 29.8.97, depending on the type of structures and the dominant excitation frequency, the peak particle velocity (PPV) on the ground adjacent to structures should not exceed the values given in the following table.

Permissible peak particle velocity (PPV) at the foundation level of structures in mining area is in mm/sec.

	TYPE OF STRUCTURES	DOMINANT EXCITATION FREQUENCY (Hz)		
		< 8 Hz	8-25 Hz	> 25 Hz
(A)	**Building/structures not belonging to owner**			
	(i) domestic houses/structures (Kuchha, Brick in cement).	5	10	15
	(ii) Industrial building (RCC) framed structures	10	20	25
	(iii) Object of historical importance and sensitive structures.	2	5	10
(B)	**Building belonging to owner with limited span of life**			
	(i)domestic houses/structures (Kuchha, Brick in cement)	10	15	25
	(ii) Industrial building (RCC) framed structures	15	25	50

9.0 TRAINING OF MINE OFFICIALS

Adequate training was imparted to Blasting Officer, Overman and to the Mining Sirdar who were continuously associated with blasting operations during the period of design of blast to the final observation of the blast. They have picked up the technique of controlled blasting as applicable to prevailing condition at Balkudra OCP, Barka Sayal Area, CCL.

10.0 RECOMMENDATIONS

10.1 From the on-site measurements of Peak Particle Velocity (PPV) and analysis of results of trial blasts at Balkudra OCP, under the existing geo-mining conditions, it may be recommended that the workings of Balkudra OCP can be extended within 300m but beyond 100m from nearby villages/hutments or dwellings etc, not belonging to CCL with a maximum explosive charge per delay of 48.10 kg for a distance of 100m with other established blasting parameters, considering the threshold value of PPV 10mm/sec for a dominant frequency range of 8-25 Hz. The charge distance relationship considering dominant frequency recorded has been given in Table 4 for different distances.

10.2 The suggested blasting patterns derived from the trials are given below:

Sl. No.	Nature of formation	Dia of holes (mm)	Pattern of holes			Top Stemming Column (m)
			Depth (m)	Burden (m)	Spacing (m)	
1.	Medium hard sandstone	160	5.8– 6.2	3.0-4.0	4.0-4.5	3.5-4.0

10.3 As demonstrated during the trials, proper initiation system should be followed for restricting the maximum charge/delay and control of fly rock.

10.4 Moist sand should be used as stemming material.

10.5 Free face should always be maintained and blasted materials should be cleared off before the commencement of blasting operations.

10.6 All loose debris should be removed from the blast site.

10.7 Blasting at Balkudra OCP should be conducted with muffling arrangement. Muffling of holes should be done with wire netting pieces (1.8m x 1.2m) overlain by 3 to 4 sand bags each 40 kg by weight.

10.8 The code of blasting signals shall be strictly followed as framed by the Mine Manager and means of effective communication should be utilized gainfully in the mine. A siren must be used during blasting operation for warning the people before blasting and to give all clear signals after blasting.

10.9 Where any part of the public road and/or railway lines lies within the danger zone, at least two person must be deputed in either direction of the road/railway at the two extreme points (more than 100m in either direction) at the time of blasting with an efficient system of communication (i.e. telephone, wireless etc.) to prevent any person, vehicle etc. to approach within the danger zone.

10.10 Mobile telephone must be switched off in the blasting area at the time of handling, charging and blasting of explosives.

10.11 The day to day blasting operations shall be recorded in a bound paged book showing the blast parameters, e.g. charge/hole, charge/delay, charge/round, etc, and should be countersigned by the Mine Manager.

10.12 The Mine Manager shall fix the blasting time and it should be circulated to all concerned officials and displayed on the notice board. Blasting should be done in day-light only. Blasting should be avoided under overcast sky.

10.13 The Management of Balkudra OCP should time to time ensure that recommendations of controlled blasting as outlined in this report are strictly followed.

Rohit Thakur
Asst. Manager (Mining)
Blasting Cell, CMPDIL (HQ)

Indranil Saha
Deputy Manager (Mining)
Blasting Cell, CMPDIL (HQ)

TABLE 1: SUMMARISED STATEMENT SHOWING BLAST DETAILS AT BALKUDRA OCP, BARKA SAYAL AREA, CCL

Sl. No	Date	Nature of formation	No. of holes	Hole dia (mm)	Parameters			Explosive charge (Kg)		
					Depth (m)	Burden (m)	Spacing (m)	Per hole	Maxm charge/ delay	Per round (Kg)
1.	13.02.2015	Medium hard sandstone	120	160	5.8-6.0	4.0	4.5	45.0-50.0	50.0	5835.0
2.	13.02.2015	Medium hard sandstone	60	160	5.8-6.0	4.0	4.5	45.0-50.0	50.0	2947.5
3.	13.02.2015	Medium hard sandstone	120	160	5.8-6.0	4.0	4.5	45.0-50.0	50.0	5745.0
4.	14.02.2015	Medium hard sandstone	115	160	5.8-6.2	3.0	4.0	45.0-50.0	50.0	5564.375
5.	14.02.2015	Medium hard sandstone	42	160	5.6-6.0	3.0	4.0	40.0-45.0	45.0	1785.25
6.	14.02.2015	Medium hard sandstone	62	160	5.6-6.0	3.0	4.0	40.0-50.0	50.0	2797.75
7.	14.02.2015	Medium hard sandstone	81	160	5.8-6.2	3.0	4.0	45.0-50.0	50.0	3910.125
8.	15.02.2015	Medium hard sandstone	81	160	6.0	3.0	4.0	45.0-55.0	55.0	4060.125
9.	15.02.2015	Medium hard sandstone	120	160	6.0	3.0	4.0	45.0-55.0	55.0	6165.0
10.	15.02.2015	Medium hard sandstone	99	160	5.8-6.2	3.0	4.0	45.0-55.0	55.0	4962.375
11.	15.02.2015	Medium hard sandstone	100	160	5.8-6.2	3.0	4.0	50.0	50.0	5012.5

TABLE 2: SUMMARISED STATEMENT SHOWING DISTANCE, PPV AND FREQUENCY AT BALKUDRA OCP, BARKA SAYAL AREA, CCL

Sl. No.	Date of Blast	Nature of formation	Max. charge per delay (Kg)	Distance from observation station to blast point (m)			Peak Particle Velocity (mm/sec.)			Recorded Frequency (Hz)			% age of frequency		
				Stn. A	Stn. B	Stn. C	Stn. A	Stn. B	Stn. C	Stn. A	Stn. B	Stn. C	<8 Hz	8-25 Hz	>25Hz
1.	13.02.2015	Medium hard sandstone	50.0	65	100	155	19.3	13.0	9.64	10.0	50.5	50.5			
2.	13.02.2015	Medium hard sandstone	50.0	75	90	95	16.4	16.1	16.8	15.8	45.8	45.8			
3.	13.02.2015	Medium hard sandstone	50.0	90	105	85	14.6	13.9	15.5	5.50	5.50	5.50			
4.	14.02.2015	Medium hard sandstone	50.0	300	170	185	4.43	10.1	8.65	8.50	21.8	21.8			
5.	14.02.2015	Medium hard sandstone	45.0	205	175	165	7.81	8.70	9.73	48.0	14.3	14.3			
6.	14.02.2015	Medium hard sandstone	50.0	340	305	310	3.37	4.89	4.99	7.50	16.0	16.0	18.75	65.62	15.63
7.	14.02.2015	Medium hard sandstone	50.0	185	150	140	8.62	10.5	11.7	14.5	14.3	14.5			
8.	15.02.2015	Medium hard sandstone	55.0	120	125	150	12.7	12.1	11.0	18.5	18.8	15.5			
9.	15.02.2015	Medium hard sandstone	55.0	135	130	140	12.2	12.2	12.4	15.3	11.0	17.3			
10	15.02.2015	Medium hard sandstone	55.0	160	125	-	11.1	12.8	-	14.8	14.8	-			
11	15.02.2015	Medium hard sandstone	50.0	225	245	100	7.28	6.52	14.7	6.50	6.50	19.8			

TABLE 3: REGRESSIONAL OUTPUT IN RESPECT OF PPV AT BALKUDRA OCP BARKA SAYAL AREA, CCL

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.980055955
R Square	0.960509676
Adjusted R Square	0.959099307
Standard Error	0.029673351
Observations	30

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.599656108	0.599656108	681.0344385	3.41594E-21
Residual	28	0.024654217	0.000880508		
Total	29	0.624310325			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	2.12614558	0.041984506	50.64119509	4.41329E-29	2.040144217	2.212146943	2.040144217	2.212146943
X Variable 1	-0.8410798	0.032229433	-26.09663654	3.41594E-21	-0.907098801	-0.775060799	-0.907098801	-0.775060799

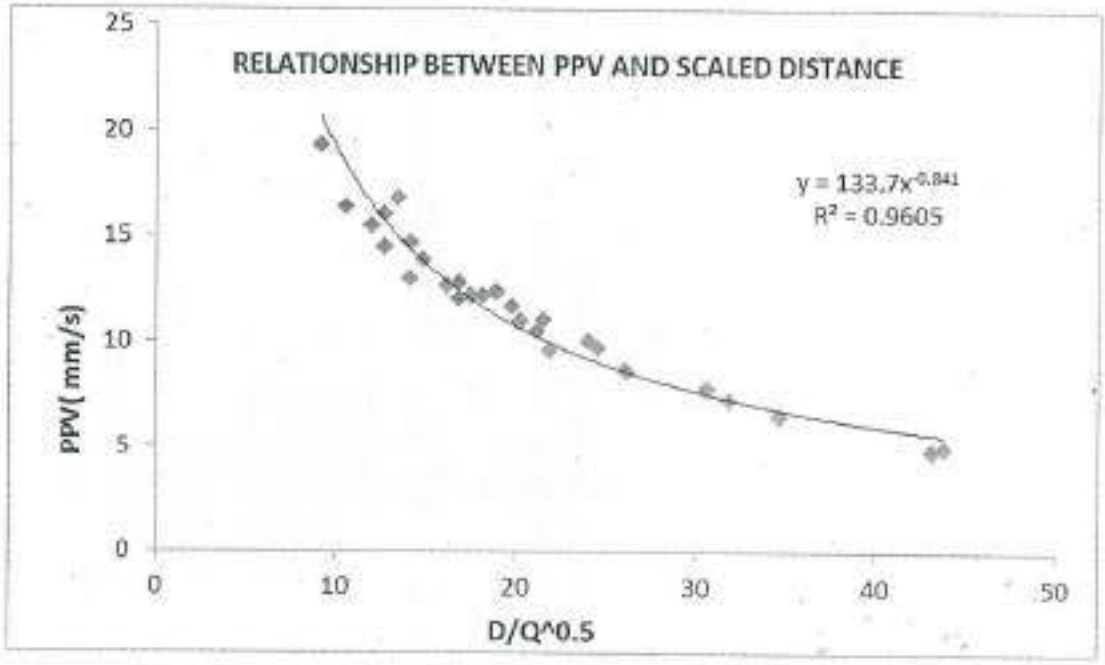
TABLE – 4: RECOMMENDED MAXIMUM CHARGE PER DELAY OVER DISTANCES

NAME OF THE COMPANY	-	**CENTRAL COALFIELDS LIMITED**
NAME OF THE AREA	-	**BARKA SAYAL AREA**
NAME OF THE OCP	-	**BALKUDRA OCP**
TEXT	-	**CONTROLLED BLASTING AND VIBRATION STUDY**

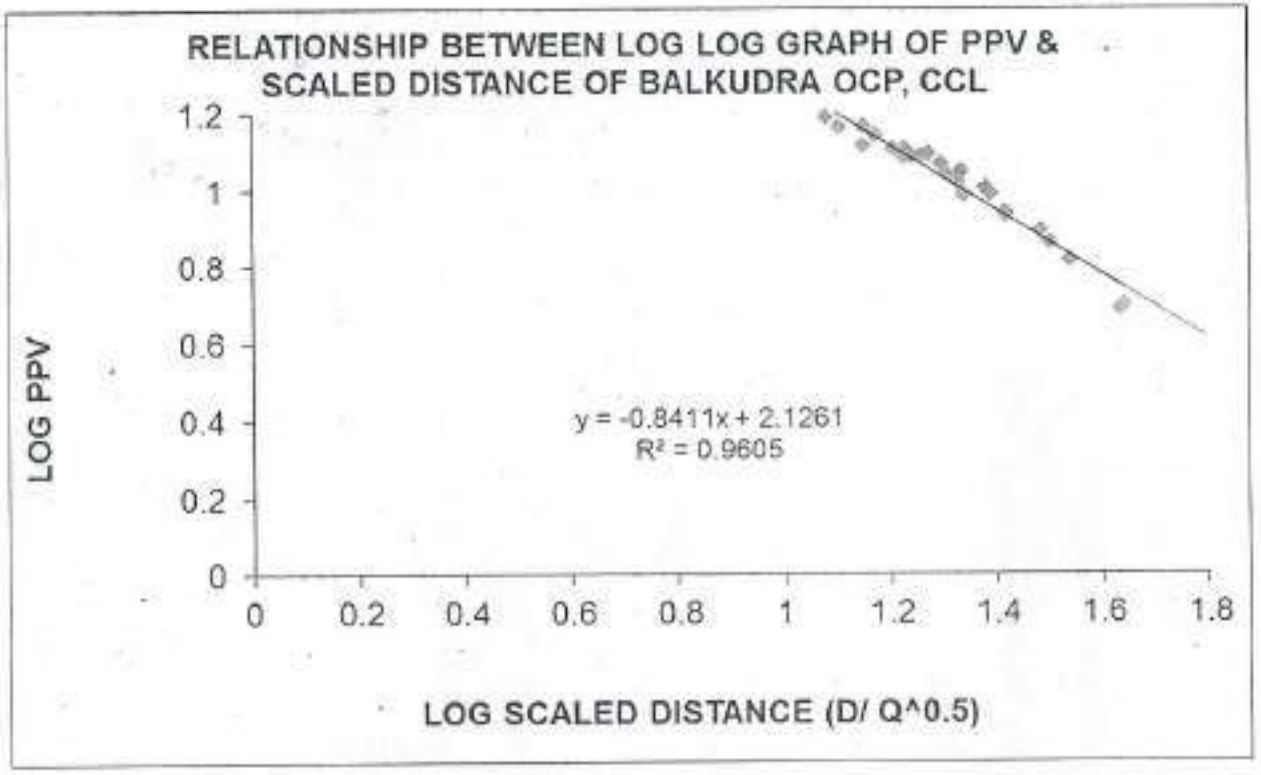
Table of recommended maximum charge per delay (Kg) for different distances at **Peak Particle Velocity of 10 mm/sec.** and **dominant frequency range 8-25 Hz.**

Sl no.	Distance (m)	Maximum charge/delay (Kg)
1	100	48.10
2	125	58.03
3	150	67.64

Maximum charge/ round: 5835.0 Kg.



Graph 1: Estimated Peak Particle Velocity using power function



Graph 2: Estimated Peak Particle Velocity using Log - Log function

ANNEXURE -1

Controlled Blasting & Vibration Study at Balkudra OCP Barka Sayal Area, CCL

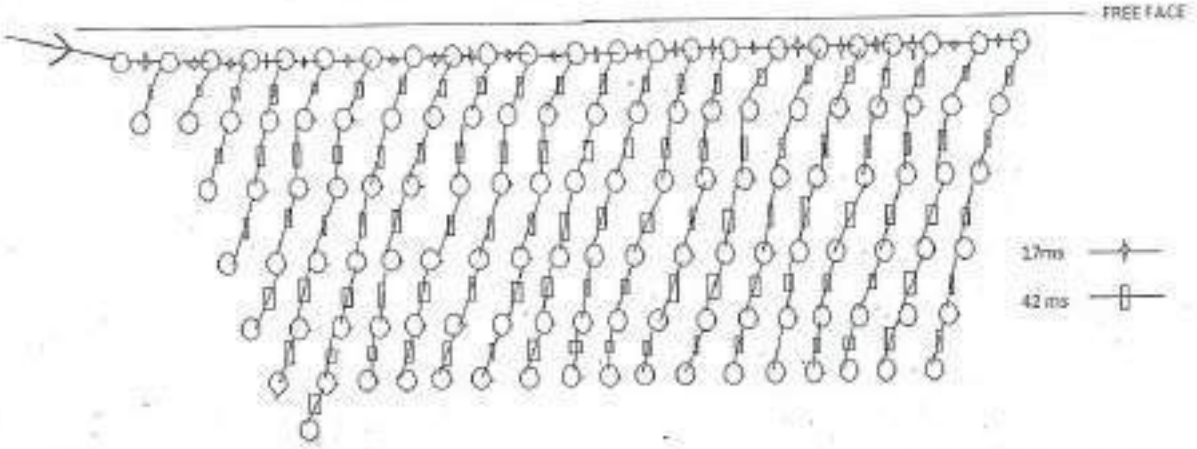
Sl No	PARTICULARS	
1.	DATE	: 13.02.2015
2.	TRIAL NO.	: 1
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 120
6.	NO. OF ROWS	: 6
7.	PATTERN OF HOLES	: Staggered
a)	DEPTH (m)	: 5.8 – 6.0
b)	SPACING (m)	: 4.5
c)	BURDEN (m)	: 4.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 45.0 – 50.0
10.	MAX. CHARGE/DELAY (Kg)	: 50.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 5835.0
a)	COLUMN	: 5820.0
b)	BOOSTER	: 15.0
12.	PERCENTAGE OF BOOSTER (%)	: 0.25
13.	TYPE OF DETONATOR USED	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A - 65 : Stn. B - 100 Stn. C - 155

Contd. Annexure –1

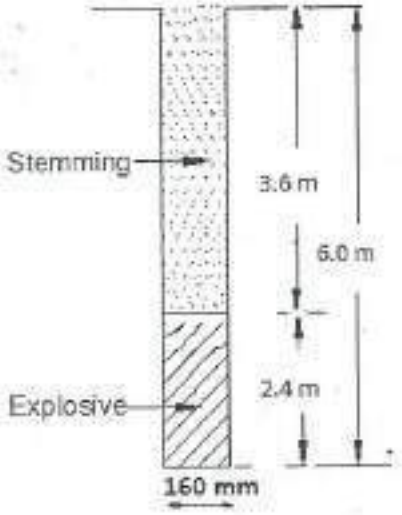
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 19.3 : Stn. B – 13.0 Stn. C - 9.64
(e) Frequency (Hz)	:Stn. A – 10.0 : Stn. B – 50.5 Stn. C - 50.5

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -2

Controlled Blasting & Vibration Study at Balkudra OCP, Barka Sayal Area, CCL

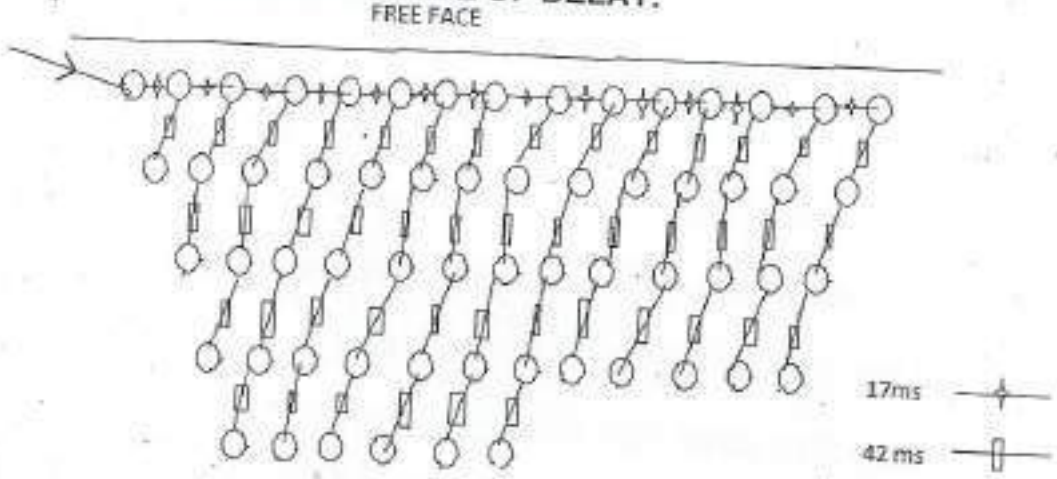
Sl No	PARTICULARS	
1.	DATE	: 13.02.2015
2.	TRIAL NO.	: 2
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 60
6.	NO. OF ROWS	: 5
7.	PATTERN OF HOLES	: Staggered
a)	DEPTH (m)	: 5.6-6.0
b)	SPACING (m)	: 4.5
c)	BURDEN (m)	: 4.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 45.0-50.0
10.	MAX. CHARGE/DELAY (Kg)	: 50.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 2947.5
a)	COLUMN	: 2940.0
b)	BOOSTER	: 7.5
12.	PERCENTAGE OF BOOSTER (%)	: 0.25
13.	TYPE OF DETONATOR USED	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A – 90 : Stn. B – 95 Stn. C - 125

Contd. Annexure –2

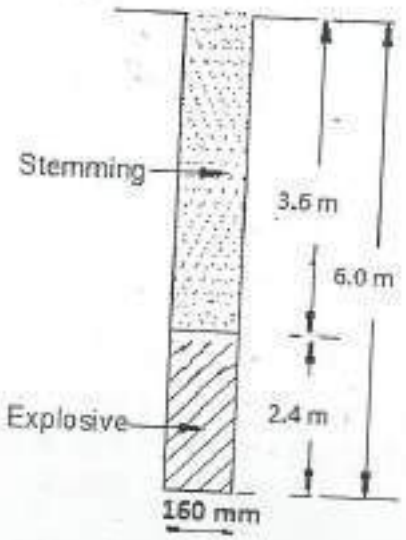
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 16.4 : Stn. B – 16.1 Stn. C – 16.8
(e) Frequency (Hz)	:Stn. A – 15.8 : Stn. B – 45.8 : Stn. C - 45.8

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -3

Controlled Blasting & Vibration Study at Balkudra OCP, Barka Sayal Area, CCL

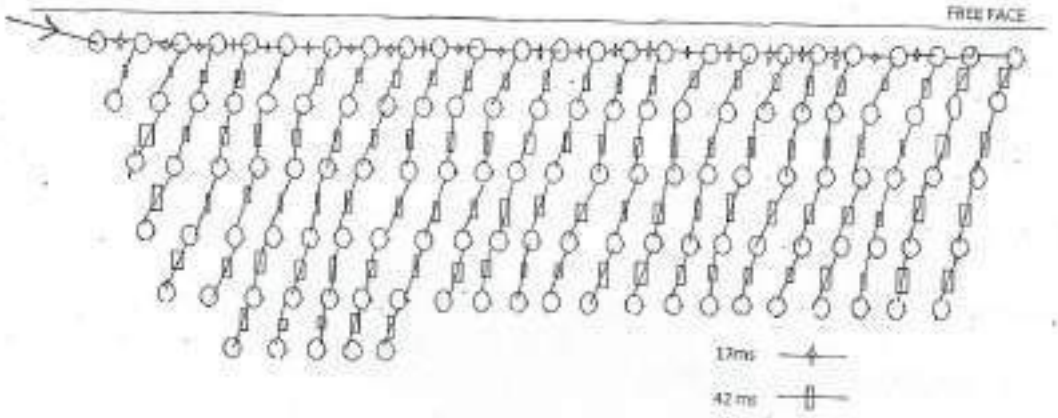
Sl No	PARTICULARS	
1.	DATE	: 13.02.2015
2.	TRIAL NO.	:3
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 120
6.	NO. OF ROWS	: 6
7.	PATTERN OF HOLES	: Staggered
a)	DEPTH (m)	: 5.8-6.0
b)	SPACING (m)	: 4.5
c)	BURDEN (m)	: 4.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 45.0-50.0
10.	MAX. CHARGE/DELAY (Kg)	: 50.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 5745.0
a)	COLUMN	: 5730.0
b)	BOOSTER	: 15.0
12.	PERCENTAGE OF BOOSTER (%)	: 0.26
13.	TYPE OF DETONATOR USED	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A – 90 : Stn. B – 105 Stn. C - 85

Contd. Annexure –3

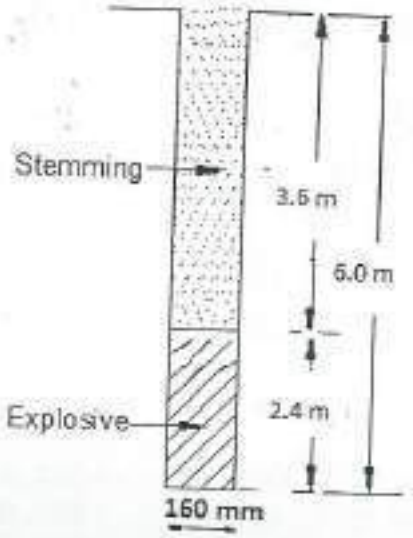
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 14.5 : Stn. B – 13.9 Stn. C – 15.5
(e) Frequency (Hz)	:Stn. A – 5.50 : Stn. B – 5.50 : Stn. C - 5.50

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -4

Controlled Blasting & Vibration Study at Balkudra OCP, Barka Sayal Area, CCL

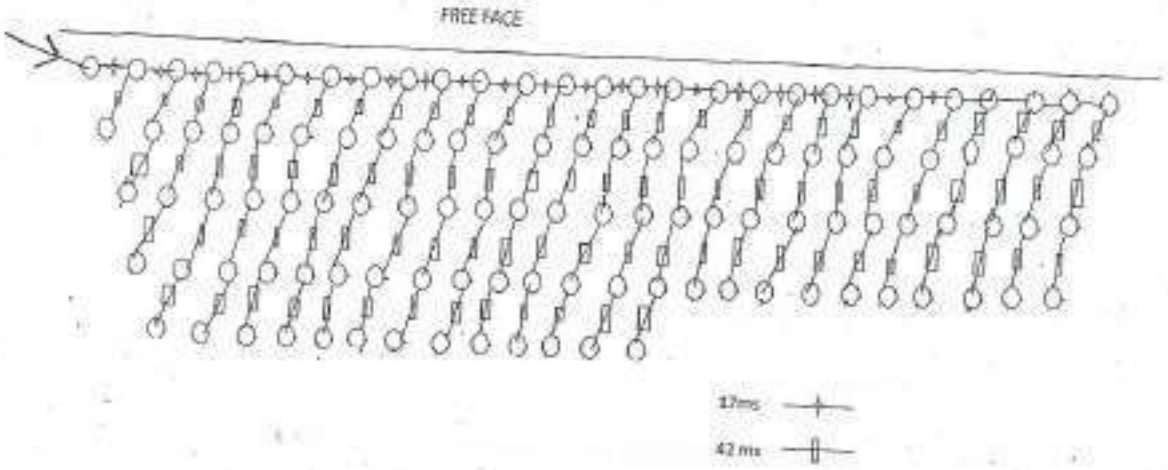
Sl No	PARTICULARS	
1.	DATE	: 14.02.2015
2.	TRIAL NO.	: 4
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 115
6.	NO. OF ROWS	: 5
7.	PATTERN OF HOLES	: Staggered
a)	DEPTH (m)	: 5.8 – 6.1
b)	SPACING (m)	: 4.0
c)	BURDEN (m)	: 3.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 45.0 – 50.0
10.	MAX. CHARGE/DELAY (Kg)	: 50.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 5564.375
a)	COLUMN	: 5550.0
b)	BOOSTER	: 14.375
12.	PERCENTAGE OF BOOSTER (%)	: 0.26
13.	TYPE OF DETONATOR USED	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A -300 : Stn. B - 170 Stn. C - 185

Contd. Annexure –4

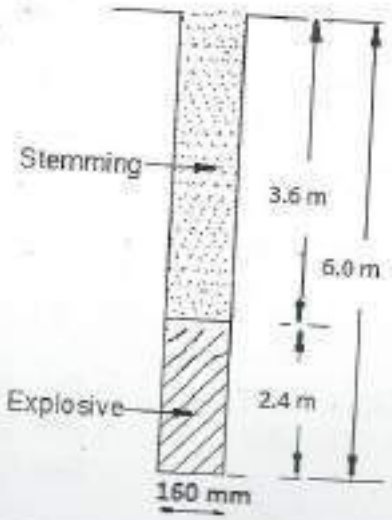
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 4.43 : Stn. B – 10.1 Stn. C - 8.65
(e) Frequency (Hz)	:Stn. A – 8.50 : Stn. B – 21.8 Stn. C - 21.8

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -5

Controlled Blasting & Vibration Study at Balkudra OCP Barka Sayal Area, CCL

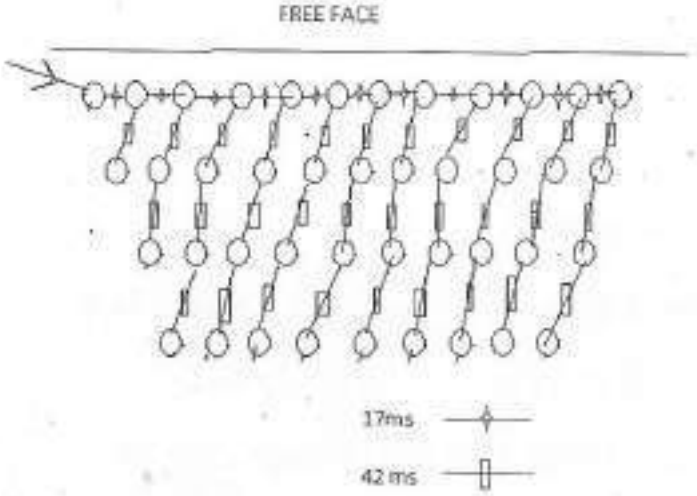
Sl No	PARTICULARS	
1.	DATE	: 14.02.2015
2.	TRIAL NO.	: 5
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 42
6.	NO. OF ROWS	: 4
7.	PATTERN OF HOLES	: Staggered
a)	DEPTH (m)	: 5.6 – 6.0
b)	SPACING (m)	: 4.0
c)	BURDEN (m)	: 3.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 40.0 – 45.0
10.	MAX. CHARGE/DELAY (Kg)	: 45.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 1785.25
a)	COLUMN	: 1780.0
b)	BOOSTER	: 5.25
12.	PERCENTAGE OF BOOSTER (%)	: 0.29
13.	TYPE OF DETONATOR USED	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A - 205 : Stn. B - 175 Stn. C - 165

Contd. Annexure –5

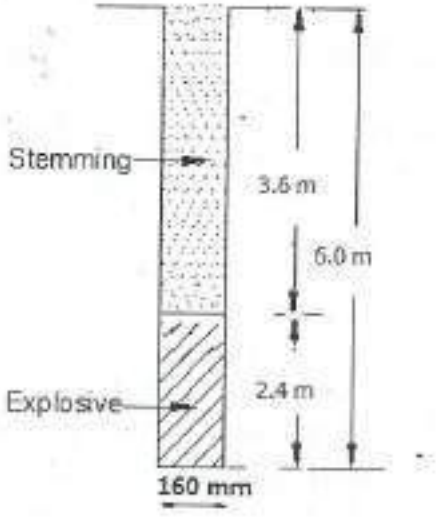
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 7.81 : Stn. B – 8.70 Stn. C – 9.73
(e) Frequency (Hz)	:Stn. A – 48.0 : Stn. B – 14.3 Stn. C - 14.3

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -6

Controlled Blasting & Vibration Study at Balkudra OCP, Barka Sayal Area, CCL

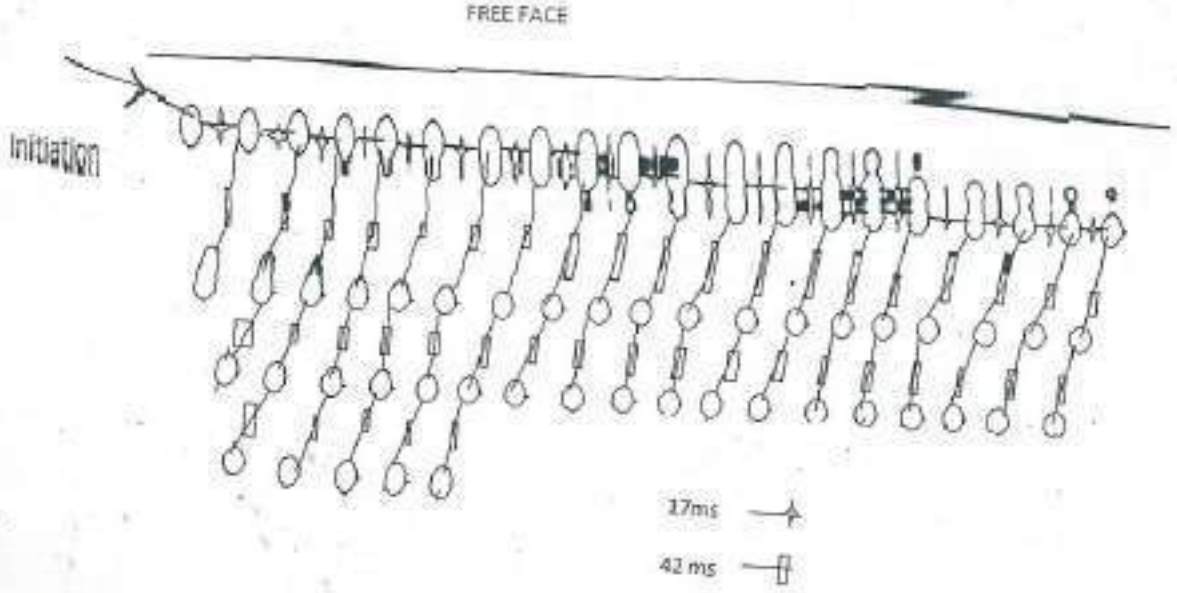
Sl No	PARTICULARS	
1.	DATE	: 14.02.2015
2.	TRIAL NO.	: 6
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 62
6.	NO. OF ROWS	: 4
7.	PATTERN OF HOLES	: Staggered
a)	DEPTH (m)	: 5.6 – 6.0
b)	SPACING (m)	: 4.0
c)	BURDEN (m)	: 3.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 40.0 – 50.0
10.	MAX. CHARGE/DELAY (Kg)	: 50.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 2797.75
a)	COLUMN	: 2790.0
b)	BOOSTER	: 7.75
12.	PERCENTAGE OF BOOSTER (%)	: 0.28
13.	TYPE OF DETONATOR USED	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A - 340 : Stn. B - 305 Stn. C - 310

Contd. Annexure –6

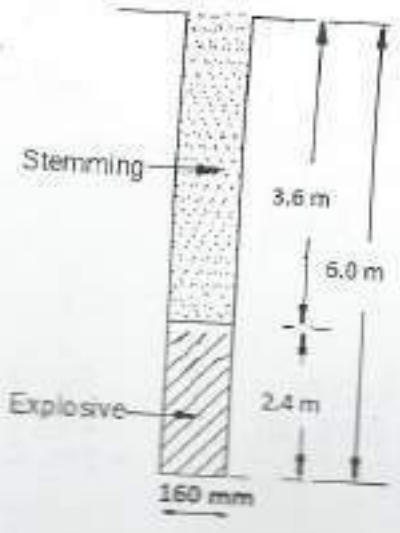
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 3.37 : Stn. B – 4.89 Stn. C – 4.99
(e) Frequency (Hz)	:Stn. A – 7.50 : Stn. B – 16.0 Stn. C – 16.0

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -7

Controlled Blasting & Vibration Study at Balkudra OCP, Barka Sayal Area, CCL

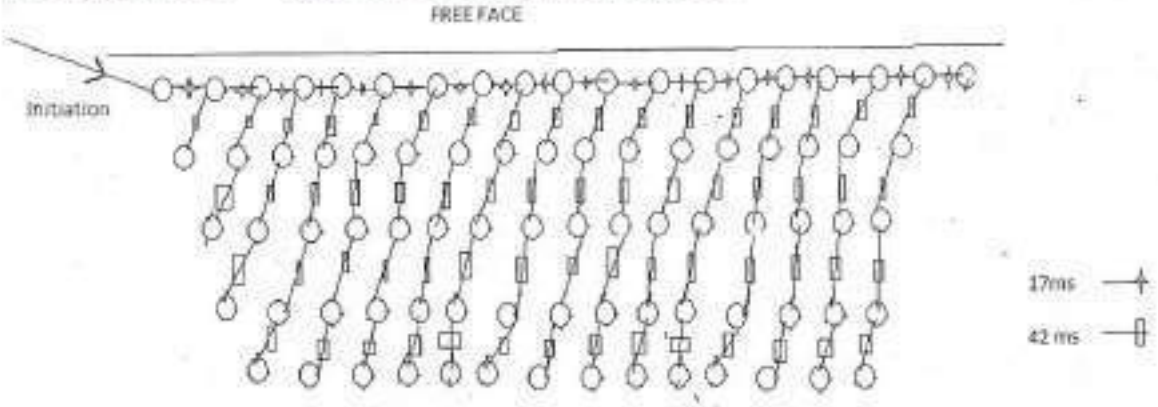
Sl No	PARTICULARS	
1.	DATE	: 14.02.2015
2.	TRIAL NO.	: 7
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 81
6.	NO. OF ROWS	: 5
7.	PATTERN OF HOLES	: Staggered
a)	DEPTH (m)	: 5.8 – 6.2
b)	SPACING (m)	: 4.0
c)	BURDEN (m)	: 3.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 45.0 – 50.0
10.	MAX. CHARGE/DELAY (Kg)	: 50.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 3910.125
a)	COLUMN	: 3900.0
b)	BOOSTER	: 10.125
12.	PERCENTAGE OF BOOSTER (%)	: 0.26
13.	TYPE OF DETONATOR USED AND no.	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A - 185 : Stn. B - 150 Stn. C - 140

Contd. Annexure –7

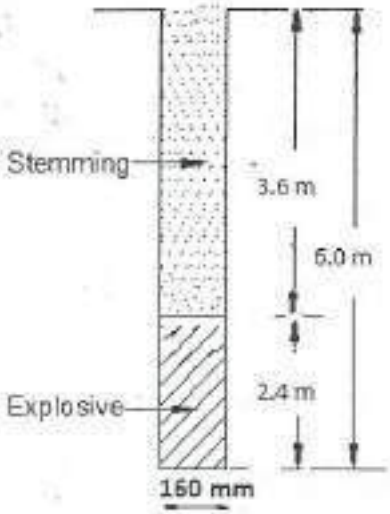
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 8.62 : Stn. B – 10.5 Stn. C – 11.7
(e) Frequency (Hz).	:Stn. A – 14.5 : Stn. B – 14.3 Stn. C - 14.5

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -8

Controlled Blasting & Vibration Study at Balkudra OCP, Barka Sayal Area, CCL

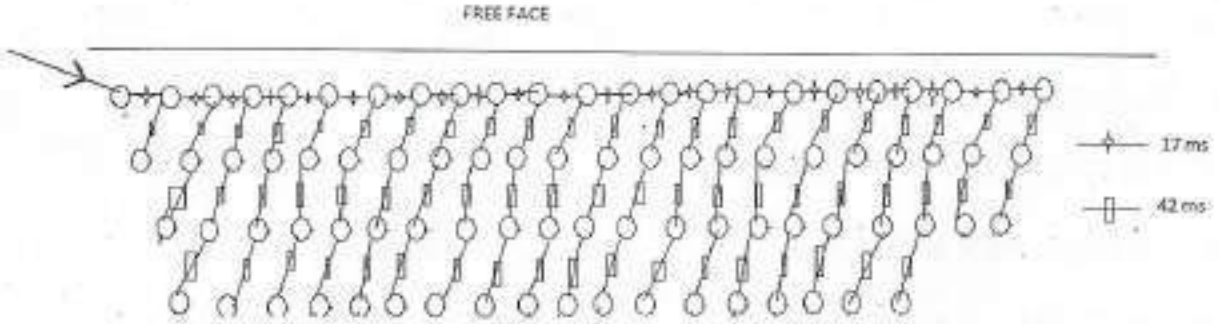
Sl No	PARTICULARS	
1.	DATE	: 15.02.2015
2.	TRIAL NO.	: 8
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 81
6.	NO. OF ROWS	: 4
7.	PATTERN OF HOLES	: Staggered
	a) DEPTH (m)	: 6.0
	b) SPACING (m)	: 4.0
	c) BURDEN (m)	: 3.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 45.0 – 55.0
10.	MAX. CHARGE/DELAY (Kg)	: 55.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 4060.125
	a) COLUMN	: 4050.0
	b) BOOSTER	: 10.125
12.	PERCENTAGE OF BOOSTER (%)	: 0.25
13.	TYPE OF DETONATOR USED	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A - 120 : Stn. B - 125 Stn. C - 150

Contd. Annexure –8

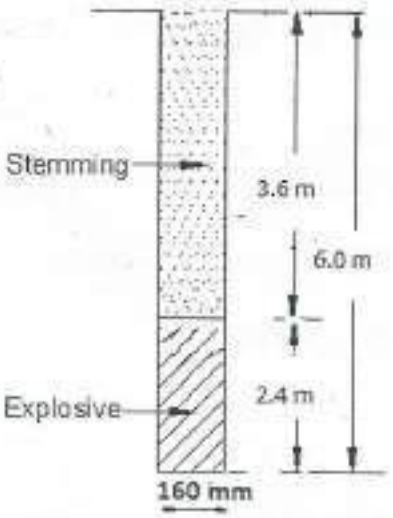
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 12.7 : Stn. B – 12.1 Stn. C – 11.0
(e) Frequency (Hz)	:Stn. A – 18.5 : Stn. B – 18.8 Stn. C – 15.5

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -9

Controlled Blasting & Vibration Study at Balkudra OCP, Barka Sayal Area, CCL

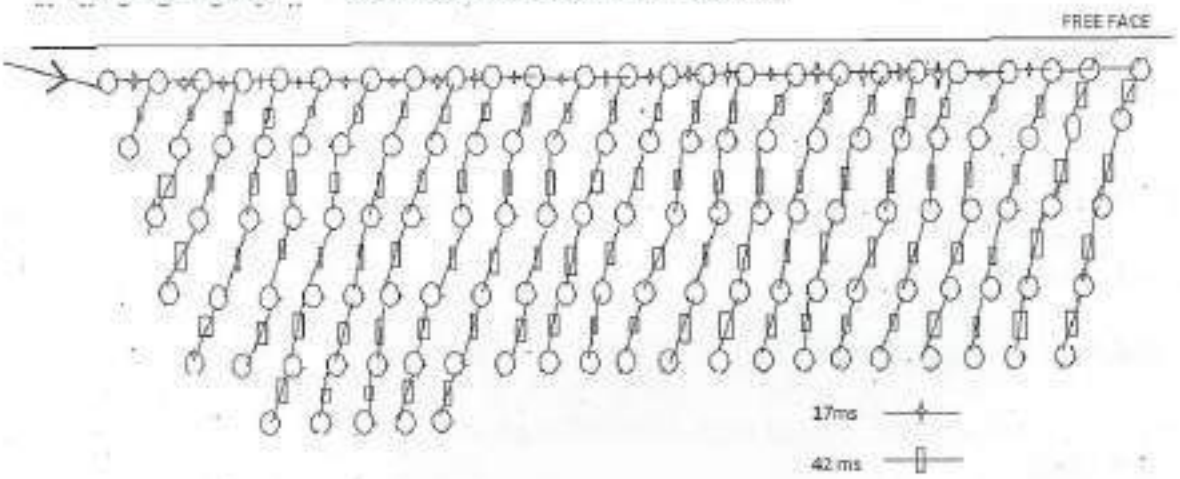
Sl No	PARTICULARS	
1.	DATE	: 15.02.2015
2.	TRIAL NO.	: 9
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 120
6.	NO. OF ROWS	: 6
7.	PATTERN OF HOLES	: Staggered
a)	DEPTH (m)	: 6.0
b)	SPACING (m)	: 4.0
c)	BURDEN (m)	: 3.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 45.0 – 55.0
10.	MAX. CHARGE/DELAY (Kg)	: 55.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 6165.0
a)	COLUMN	: 6150.0
b)	BOOSTER	: 15.0
12.	PERCENTAGE OF BOOSTER (%)	: 0.24
13.	TYPE OF DETONATOR USED	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A - 135 : Stn. B - 130 Stn. C - 140

Contd. Annexure –9

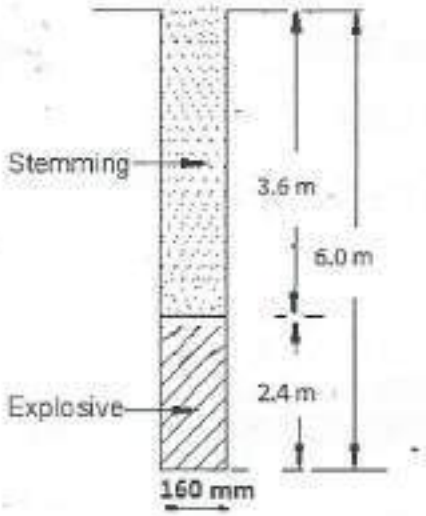
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 12.2 : Stn. B – 12.2 Stn. C – 12.4
(e) Frequency (Hz)	:Stn. A – 15.3 : Stn. B – 11.0 Stn. C – 17.3

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -10

Controlled Blasting & Vibration Study at Balkudra OCP, Barka Sayal Area, CCL

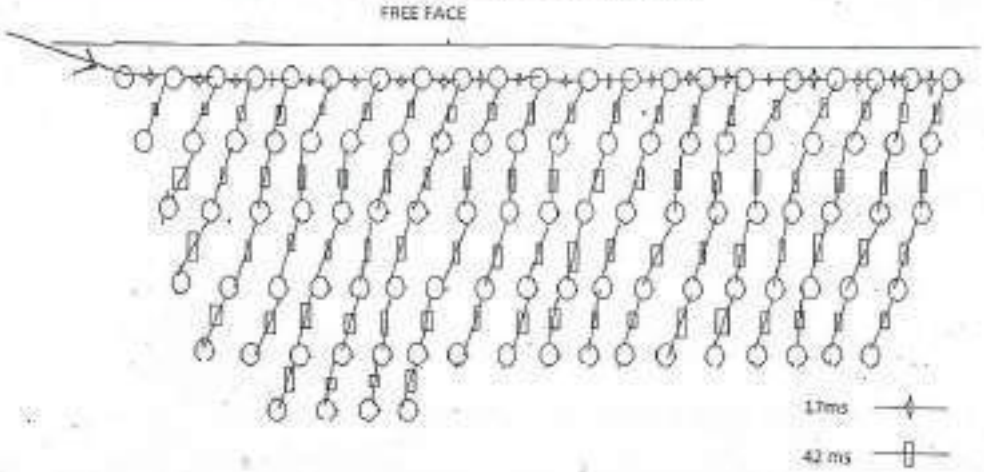
Sl No	PARTICULARS	
1.	DATE	: 15.02.2015
2.	TRIAL NO.	: 10
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 99
6.	NO. OF ROWS	: 6
7.	PATTERN OF HOLES	: Staggered
a)	DEPTH (m)	: 5.8 – 6.2
b)	SPACING (m)	: 4.0
c)	BURDEN (m)	: 3.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 45.0 – 55.0
10.	MAX. CHARGE/DELAY (Kg)	: 55.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 4962.375
a)	COLUMN	: 4950.0
b)	BOOSTER	: 12.375
12.	PERCENTAGE OF BOOSTER (%)	: 0.25
13.	TYPE OF DETONATOR	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A - 160 : Stn. B - 125

Contd. Annexure –10

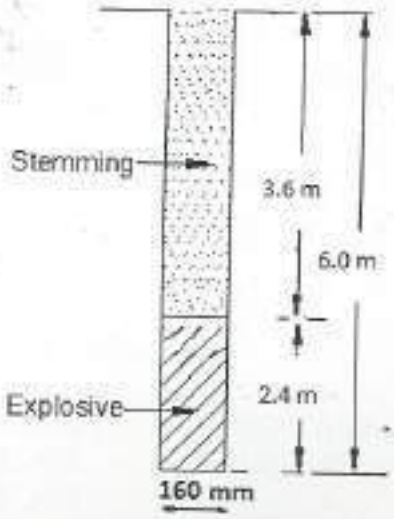
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 11.1 : Stn. B – 12.8
(e) Frequency (Hz)	:Stn. A – 14.8 : Stn. B – 14.8

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



ANNEXURE -11

Controlled Blasting & Vibration Study at Balkudra OCP, Barka Sayal Area, CCL

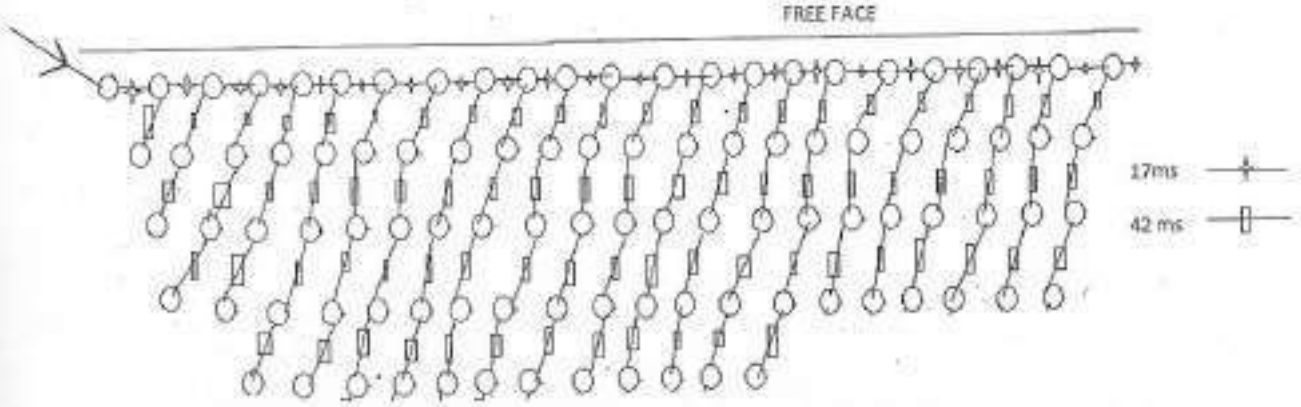
Sl No	PARTICULARS	
1.	DATE	: 15.02.2015
2.	TRIAL NO.	: 11
3.	NATURE OF FORMATION	: Medium Hard Sandstone
4.	DIA. OF DRILL HOLES (mm)	: 160
5.	TOTAL NO. OF HOLES BLASTED	: 100
6.	NO. OF ROWS	: 5
7.	PATTERN OF HOLES	: Staggered
	a) DEPTH (m)	: 5.8 – 6.2
	b) SPACING (m)	: 4.0
	c) BURDEN (m)	: 3.0
8.	TYPE OF EXPLOSIVE USED	: SME
9.	CHARGE PER HOLE (Kg)	: 50.0
10.	MAX. CHARGE/DELAY (Kg)	: 50.0
11.	TOTAL EXPLOSIVE USED PER ROUND(kg)	: 5012.5
	a) COLUMN	: 5000.0
	b) BOOSTER	: 12.5
12.	PERCENTAGE OF BOOSTER (%)	: 0.25
13.	TYPE OF DETONATOR USED	: CDD
14.	STEMMING MATERIAL USED	: Drill Cuttings
15.	TYPE OF MUFFLING USED	: -
16.	NO. OF SAND BAGS USED OVER EACH HOLE	: -
17.	NO. OF ROUND	: 1
18.	DISTANCE FROM OBSERVATION STATION TO BLASTING SITE (M)	: Stn. A - 225 : Stn. B - 245 Stn. C - 100

Contd. Annexure –11

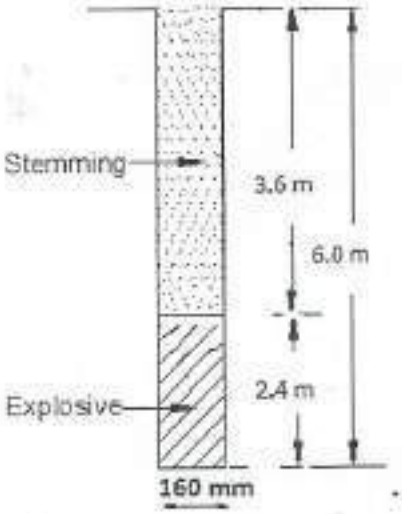
19. OBSERVATION

(a) FLY ROCK	: Within 10.0 m
(b) FRAGMENTATION	: Satisfactory
(c) THROW	: Within 5.0 m
(d) VIBRATION (IN TERMS OF PEAK PARTICLE VELOCITY IN MM/SEC.)	: Stn. A – 7.28 : Stn. B – 6.52 Stn. C – 14.7
(e) Frequency (Hz)	:Stn. A – 6.50 : Stn. B – 6.50 Stn. C – 19.8

20. SKETCH SHOWING THE PATTERN OF HOLES, PLACEMENT OF DETONATOR AND SEQUENCE OF DELAY.



21. SECTION OF HOLES SHOWING THE CHARGE DISTRIBUTION AND THE LENGTH OF STEMMING COLUMN.



REGISTERED OFFICE
Gondwana Place, Kanke Road
Ranchi -834 031
(Jharkhand)

REGIONAL INSTITUTES

क्षेत्रीय संस्थान-I
वेस्ट एंड, जी.टी.रोड
आसनसोल-713 301
(पश्चिम बंगाल)

क्षेत्रीय संस्थान-II
कोयला भवन, कोयला नगर
धनबाद- 826 005
(झारखंड)

क्षेत्रीय संस्थान-III
गोंडवाना प्लेस,कांके रोड
राँची- 834 031
(झारखंड)

क्षेत्रीय संस्थान-IV
जरीपटका, कस्तूरबा नगर
नागपुर-440 014
(महाराष्ट्र)

क्षेत्रीय संस्थान-V
सीपत रोड
बिलासपुर-495 001
(छत्तीसगढ़)

क्षेत्रीय संस्थान-VI
पोस्ट :जयंत कॉलरी,
जिला : सिंगरौली
पिन नं- 486 890
(मध्य प्रदेश)

क्षेत्रीय संस्थान-VII
गृह निर्माण भवन
सचिवालय मार्ग
भुवनेश्वर-751001
(उड़ीसा)

Regional Institute - I
West End, G.T Road
Asansol - 713 301
(West Bengal)

Regional Institute - II
Koyla Bhawan, Koyla Nagar
Dhanbad - 826 005
(Jharkhand)

Regional Institute - III
Gondwana Place, Kanke Road
Ranchi - 834 031
(Jharkhand)

Regional Institute - IV
Jaripathka, Kasturba Nagar
Nagpur - 440 014
(Maharashtra)

Regional Institute - V
Seepat Road
Bilaspur - 495 001
(Chattisgarh)

Regional Institute - VI
P.O Jayant Colliery
Dist. - Singrauli
PIN - 486 890
Madhya Pradesh

Regional Institute - VII
Grih Nirman Bhawan
Sachivalaya Marg
Bhubneswar - 751 001
(Orissa)

सेन्ट्रल माईन प्लानिंग एंड डिजाइन इन्स्टीच्यूट लिमिटेड

(कोल इंडिया की अनुषंगी कम्पनी)
एक मिनी रत्न कम्पनी

Central Mine Planning & Design Institute Limited

(A Subsidiary of Coal India Limited)
A Mini Ratna Company

गोंडवाना प्लेस, कांके रोड, राँची - 834 031, भारत
दूरभाष : (91-0651) 2230002, 2230483
फैक्स : (91-0651) 2231447
वेबसाईट : www.cmpdi.co.in

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Phone : (91 - 0651) 2230002, 2230483
Fax : (91 - 0651) 2231447
website : www.cmpdi.co.in

ANNEXURE VI

भारत सरकार
Govt. of India
श्रम एवं रोजगार मंत्रालय
Ministry of Labour & Employment
खान सुरक्षा महानिदेशालय
Directorate-General of Mines Safety
राँची क्षेत्र / **Ranchi Region**

संख्या : आर. आर./ S-45 / राँची, दिनांक 03/03 / 2015.

From,
Director of Mines Safety, Ranchi Region
DGMS, IIIrd floor, Old building,
CMPDIL, Gondwana Place,
Kanke Road, Ranchi, Jharkhand -834008.

To,
The Agent,
Bhurkunda 'A' Colliery,
M/s Central Coalfields Ltd.,
P.O. – Bhurkunda,Distt. – Ramgarh, Jharkhand

Sub:- Permission under Regulation 170(1A) & 170(1B) of Coal Mines Regulations, 1957 to conduct controlled deep hole blasting within 300 m but beyond a distance of 100 m from the public property at Balkudra quarry of Bhurkunda 'A' Colliery, of M/s. Central Coalfields Ltd.

Sir,

Please refer to your letter no. Project Officer/ BHK/ Permission/ Balkudra O.C/2015/123 dated 16/02/2015 on the above subject. The matter has since been examined on the basis of information furnished by you.

By virtue of the powers conferred on the Chief Inspector of Mines(also designated as Director-General of Mines Safety) under Regulations 170(1A) & 170(1B) of the Coal Mines Regulations,1957 and by virtue of the authorization granted to me by the Chief Inspector of Mines(also designated as Director-General of Mines Safety) under Section 6(1) of the Mines Act,1952, I hereby grant you relaxation from the provision of Regulation 170(1A) & 1(B) of the Coal Mines Regulations, 1957 to conduct deep hole blasting within 300m but beyond a distance of 100m from the structures not belonging to M/s.CCL, at Balkudra quarry of Bhurkunda 'A' Colliery, as shown in Plan no. MANAGER/BHKA/SRV/SPLAN/4 of 5/04, dated 08-03-14 submitted along with the application for trail controlled deep hole blasting, subject to the following conditions being strictly complied with.:-

1.0 The restricted zone of 100m from the nearest building/house shall be clearly demarcated on the ground.

No blasting shall be done within 100 m of any village or bustee or any other public road or railway or structure not belonging to the Owner.

2.0 The blasting shall be carried out in close collaboration with a Scientific Agency/an Expert on the subject and further monitoring shall be done on the effects of blasting in quarry and on surface at least up to a distance of 300m all around from the place of blasting.

3.0 The Manager of the mine shall specify the size, depth, spacing, burden of hole, explosive charges and sequence of delays etc. on the basis of the recommendations of the report of blasting studies done by M/s. CMPDI, Ranchi, so as to minimize ground vibration and occurrence of any flying fragments to a dangerous extent beyond a distance of 10 m.

4.0 The drilling, charging stemming and blasting operation shall be carried out under the direct personal supervision of an Assistant. Manager in accordance with the guide lines and directions of the Manager.

5.0 Only Overman fully trained in controlled blasting technique shall be deputed for shot firing operation.

6.0 For blasting within 300m but up to a distance of 100m from public Property/ surface structures, the aggregate charge of explosives in a series of shot holes connected to a particular delay number shall not exceed 48.10 Kg for a distance of 100m, 58.03 Kg for a distance of 125 m, 67.64 Kg for a distance of 150 m at Peak Particle Velocity of 10 mm/sec. and dominant frequency range 8-25 HZ.

7.0 A proper record of every blast showing the observations regarding fly rocks and ground vibrations on surface along with the size, depth, pattern of holes, amount of charge, sequence of blasting etc., shall be maintained in a bound paged book. All entries in this book shall be duly signed by the Assistant Manager In-Charge of the blasting operations and shall be countersigned by the Manager.

8.0 Delay interval between holes in a row shall be 17 millisecond whereas between the rows it shall be 42 millisecond.

9.0 The blast holes shall be stemmed with only moist sand and the length of stemming column shall not be less than that specified by M/s CMPDIL.

10.0 Effective muffling of shots with proper muffling screens loaded with sufficient number of sand bags shall be done during blasting over the proposed blasting area and also on the face to ensure that the flying fragments do not project beyond a distance of 10 m from the place of blasting.

25.0 The blasting shall be done only in an area where fire does not exist.

26.0 Blasting shall be done after withdrawing persons who are in the danger zone of 300m.

27.0 The Management shall indemnify the Owners/occupants of the bustees and other houses/dwellings/railways/roads/administration and persons present therein/there at against any injury to them or damage to their property arising out of blasting operations.

28.0 If in any blast the blast vibration exceeds the limit stipulated below, the blasting at the mine shall be stopped forthwith and this office shall be informed immediately. The peak particle velocity (PPV) at the foundation level of any structure in mm/second shall not exceed the following limits:-

Type of Structure	Dominant Excitation Frequency, HZ		
	< 8 HZ	8-25 HZ	>25 HZ
(A) Buildings/structures not belonging to Owner			
(i) Domestic houses/structures (Kuchha, Brick and cement)	5	10	15
(ii) Industrial buildings (RCC & framed structures)	10	20	25
(iii) Object of historical importance and sensitive structures	2	5	10
(B) Building belonging to Owner with limited span of life			
(iv) Domestic houses/ structures (Kuchha, Brick and cement)	10	15	25
(v) Object of historical importance and sensitive structures	15	25	50

29.0 No detonator or explosive shall be brought or kept within 15 m of electrical conductors of overhead lines to prevent dangers due to induction.

30.0 Please not that the above permission is subject to the following additional conditions:-

30.1 In the event of any change in the circumstances connected with this permission which are likely to endanger the life in or around the mine, the operation for which the permission has been granted shall be stopped forthwith and intimation thereof sent to this Directorate.

11.0 No blasting shall be done in crushed, broken , sliced or fractured ground. Blast holes shall not be located close to any abandoned drill hole. No blasting shall be done in chocked face conditions. Drill holes shall be located beyond weak zones.

12.0 No blasting shall be done under overcast sky and after sun set.

13.0 Air overpressures during blasting shall not exceed 176 dB-(L) as prescribed for structural damage.

14.0 The surface over the area to be blasted and up to 10 m around shall be cleaned of any loose material or stones etc.

15.0 A free face shall always be maintained and blasted material cleared off before commencement of next round of blasting operation.

16.0 Initiation of charge shall be done in a manner that detonation waves progress away from structure not belonging to the Owner.

17.0 Only non electric type shock tube detonators for bottom hole initiation shall be used in the holes and surface trunk lines.

18.0 The timing of the blasting shall be fixed by the Manager and as far as possible blasting shall be done only at the specified time in day light hours. The Manager shall fix up the blasting time which suits to the locality and it should be circulated to all concerned and displayed on the notice board. It shall also be communicated to the inhabitants of the villages falling in the danger zone.

19.0 A siren shall be provided for warning the people before blasting and to give all clear signal after blasting. The code of blasting signal shall be strictly followed as framed by the Manager.

20.0 All the HEMM such as shovel, drill machine, Dumpers including Cables switches etc. shall be shifted to safe places before commencement of charging and blasting operation. Blast holes shall not be allowed to sleep after charging.

21.0 All mobile telephones and VHF/VHF transmitters shall be switched off in the blasting area at the time of handling, charging and blasting of explosives.

22.0 Provisions of clause (b) & (c) of Regulation 170(1A) of the Coal Mines Regulations, 1957 shall be complied within 100 m of the place of blasting.

23.0 Blasting with small diameter shot holes or secondary blasting shall not be done.

24.0 All other recommendations made in the report on Blasting Studies done by M/s. CMPDIL shall be strictly complied with.

30.2 If at any time, any one of the conditions subject to which the permission has been granted is violated or not complied with, this permission shall be deemed to have been revoked with immediate effect.

30.3 This permission is granted only under the specific regulations mentioned above and without prejudice to any other provision of law that may be or may become applicable at any time.

30.4 This permission may be amended or withdrawn at any time if considered necessary in the interest of safety.

30.5 This permission shall remain valid for a period of five years from the date of issue of this letter.

भवदीय,

Permission Quarry No 3

भारत सरकार / Govt. of India
श्रंम एवं रोजगार मंत्रालय/
Ministry of Labour & Employment
खान सुरक्षा महानिदेशालय /
Directorate-General of Mines Safety
राँची क्षेत्र / Ranchi Region

संख्या : आर. आर./..... ...../2014.

From,
Director of Mines Safety, Ranchi Region
DGMS, IIIrd floor, Old building,
CMPDIL, Gondwana Place,
Kanke Road, Ranchi,
Jharkhand -834008.

To,
The Agent,
Bhurkunda 'A' Colliery,
M/s Central Coalfields Ltd.,
P.O. – Bhurkunda,
Distt. – Ramgarh,
Jharkhand

Sub: Exemption from the provisions of the Regulation 98(1) & (3) of the Coal Mines Regulations, 1957, for working by mechanized opencast method with deep hole blasting and deployment of HEMM at quarry no. 3 (North) for extracting Argada and Argada 'A' seams at Bhurkunda 'A' Colliery of M/s. Central Coalfields Limited.

Sir,

Please refer to your letter No. Project Officer/BHK/Application Permission/2013-14/75 dt. 04-07-2013 and Project Officer/BHK/DGMS/Compliance/2014/5124 dt. 03-02-2014 along with plan no. MANAGER/BHK-A/SRV/S.PLAN/2of 5/02 dated 30.01.2014 enclosed with the application on the subject mentioned above. The matter has since been considered in the light of what has been stated in the application under reference and shown on the plans & sections enclosed with the application.

In exercise of the powers conferred on the Chief Inspector of Mines (also designated as Director-General of Mines Safety) under Regulation 98(1) & (3) of the Coal Mines Regulations, 1957, and by virtue of the authorisation granted to me by the Chief Inspector of Mines (also designated as Director-General of Mines Safety) under Section 6(1) of the Mines Act, 1952, I hereby grant you exemption for extraction of coal and overburden by

opencast method with deployment of HEMMs in conjunction with deep-hole drilling & blasting at Bhurkunda 'A' Colliery of M/s. Central Coalfields Limited., as shown in the area in Plan No. MANAGER/BHK-A/SRV/S.PLAN/2of 5/02 dated 30.01.2014, subject to the following conditions in addition to the conditions given in **Annexure - I** being strictly complied with:-

1. Workings in the opencast shall not be extended to a point which is less than 3m above HFL of Damodar river and nullah(s)/tributaries to the same or otherwise.

2. The surface garland drains shall be made all round the quarry workings to arrest entry of surface rain water into the proposed area of working.

3. No working shall be done in case abnormal seepage of water is noticed in the proposed quarry.

4. Slope stability study for the embankment and pit shall be carried out by a scientific agency to determine the safe angle of slope and the report in this respect shall be submitted to this Directorate. Continuous monitoring of the slope of the embankment and side of the quarry shall be done during the mining operation.

5. Atleast 60mts barrier shall be left insitu between the old waterlogged quarry and the proposed working in the quarry, unless the old quarry is dewatered completely.

6. No deep hole blasting shall be conducted in an area which falls within 300m distance from the villages/hutments/built up area unless a separate written permission under Regulation 170(1A) & 170(1B) of the CMR,1957 to conduct controlled deep hole blasting is obtained from this Directorate.

7. Drilling, Charging and Blasting shall be placed under a separate Officer holding at least a second class manager's certificate of competency under Coal Mines Regulations, 1957. Precautions as laid in DG'S (Tech) circular no 2 of 1985 and 2 of 1990 shall be strictly complied with in case of blasting in hot strata.

8. Blasting parameters with a rough sketch showing the drilling pattern and the holes charged shall be maintained in a register kept for the purpose for each blast.

9. No blasting shall be done within 150m of any underground workings measured in any plane where persons are employed unless all persons from such underground workings are withdrawn before blasting and same persons may be allowed to work in underground after careful examination of the underground working and ensuring that the workings are safe in all respect.

10. No workings shall be extended to any point within 45 m of any village, dwellings, public road, HT Transmission line or any other public structure not belonging to the management, unless permission in this regard, as is required under Regulation 105 of the Coal Mines Regulations, 1957, is obtained from this Directorate.

11. Land destroyed due to extraction of coal by opencast method shall be reclaimed simultaneously by in-pit dumping as the workings progress from one end to another.

12. It shall be ensured that there shall be no subsidence on the surface due to extraction of coal/ OB in the quarry of the mine.

13. A suitable 'Code of Traffic Rules' for regulating the movement of Heavy Earth Moving Machinery (commensurate with the capacity/size type of machines used in the mechanised opencast mine) shall be framed and enforced immediately.

14. The operator's cabins of heavy earth moving machinery shall be well designed and substantially built so as to ensure adequate protection to the operator against heat, dust, noise etc. and at the same time provide adequate safety to the operator in the event of overturning of heavy earth moving machinery. A seat belt for the safety of the operator shall also be provided.

15. A code of practice shall be drawn up for dealing with fires at different locations in the opencast mine, including HEMM. Arrangements for fighting fire should be provided on all heavy earth moving machineries. Such arrangements should, if possible, operate automatically on appearance of fire.

16. Separate coal stock yards shall be maintained for dumping and despatch of coal and it shall be ensured that despatch of coal is not carried out from the dump yard where dumping is under progress. Further, buyers' trucks shall be parked away from the mine premises and only such trucks shall be allowed to enter the mines which are due for loading during the shift. Also, it shall be ensured that only permitted quantity of coal is loaded in the trucks so as to obviate the risk of accidents due to overloaded trucks in the mine premises.

17. All persons to be employed to drive/operate HEMM shall be trained and their competency shall be evaluated by a Board constituted by the management. The members of such board shall be persons who are not connected with imparting of training. However, the training officers may be co-opted in the Board as observer.

18. Only such fitters/mechanics who possess driver's/ operator's license should be allowed to carry out test-run of HEMM.

19. The portion of surface haul road in mine premises where there is heavy traffic of men and machines, should be provided with a separate lane properly fenced off from the haul road for pedestrians and two wheelers.

20. Trucks and other heavy vehicles, not belonging to management should not be allowed in the mine premises without a valid pass issued by the manager or other competent person. Before the pass is issued, the engineer shall check the road-worthiness of such vehicles.

21. In order to check the entry of unauthorised vehicles in mine premises, a properly manned check gate(s) at the entrance(s) shall be set up where record of entry and exit of each such vehicle shall be maintained.

22. At the check gate the license of the drivers shall also be checked for eliminating the possibility of unlicensed persons driving the vehicles.

23. Persons engaged in surface operations and, in particular, the contractors' workers, who incidentally are often inexperienced and least informed about job-safety matters, need closer and more competent supervision. To minimise accidents due to surface operations it shall be ensured that all persons engaged at any work within the mine premises through the contractors have received relevant training and other job-related briefings and that the drivers of vehicles belonging to contractors entering the mine premises have additionally been explained the salient provisions of "traffic-rules".

24. Each and every operation, including the operation carried out through contractors' workers or by outside agency, shall be placed under the charge of a competent supervisor, duly appointed and authorised by the manager, his jurisdiction being clearly demarcated.

25. Sufficient number of competent persons shall be appointed under Regulation 113(1) of CMR 1957 to discharge duties and responsibilities of Mining Sirdars or other competent persons under Regulation 44 read with Regulation 113 of CMR 1957.

26. No surface miner shall be deployed in the mine unless approval of a suitable 'Code of Practices', as required under Clause No.20.2 of these relaxations has been obtained.

27. A code specifying the duties and responsibilities of all officers of mining cadre, Colliery Engineer, Supervisors, Technicians, Mechanics, Fitters, Machine Operators, helpers, loading supervisors etc. shall be drawn up and distributed to all.

It shall be the responsibility of the Manager, Engineer and other supervisors to see that all persons working in the mine in all machines/equipments etc. work as per the code and all machines and equipments etc. are installed, operated and maintained in safe working conditions.

28. This Directorate shall be informed as soon as the mining operations are commenced in accordance with the provisions of the above exemption. Intimation about completion of the mining operation shall also be sent promptly and in any case not later than one month thereafter.

29. This permission shall remain valid for the period of Five years (05) from the date of issue of this letter.

30. Please note that this permission is being issued subject to the following additional conditions :

30.1 In the event of any change in the circumstances connected with this exemption which is likely to endanger the mine, the mining operations for which this exemption has been granted shall be stopped forthwith and intimation thereof sent to this Directorate. The said operation shall not be resumed without an express and fresh exemption in writing.

30.2 The exemption is being issued without prejudice to any other provisions of law, which may be or may become applicable at any time.

30.3 If at any time any one of the conditions subject to which this exemption has been granted is violated or not complied with, this permission shall be deemed to have been revoked with immediate effect.

30.4 The above exemption may be amended or withdrawn at any time, if considered necessary in the interest of safety.

भ व दी य,

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(के.शर्मा),
खान सुरक्षा निदेशक,
राँची क्षेत्र, राँची ।

ज्ञापन संख्या : आर. आर./ 980 / राँची, दिनांक 17/02 / 2014.

प्रतिलिपि सुचनार्थ एवं आवश्यक कार्यवाही हेतू अग्रसित :–

1. प्रबंधक, भूरकुन्डा ए श कोलयरी, मेर्सस – सी. सी. एल, पो – भूरकुन्डा, जिला – रामगढ, झारखंड ।
2. महाप्रबंधक, राय बचरा कोलयरी, बरका सयाल क्षेत्र, मेर्सस – सी. सी. एल, पो – सयाल, जिला –रामगढ, झारखंड ।
3. निदेशक ;तकनीकीद्धए मेर्सस– सी. सी. एल, दरभंगा हाउस राँची, झारखंड ।

17.2.14

(के.शर्मा),
खान सुरक्षा निदेशक,
राँची क्षेत्र, राँची ।

ENCLOSURE TO LETTER NO. /17 0980 DATED 17/02/14

ANNEXURE-I

I-GENERAL

1.0 Except where otherwise provided for in this conditional permission/ exemption, all provisions of the Coal Mines Regulations, 1957, relating to open cast workings, use of explosives and machineries, etc., shall be strictly complied with.

2.0 The Recommendations of 10th National Conference on Safety in Mines held on 26th & 27th December 2007 at New Delhi which were issued vide DGMS (Tech)(SOMA) Circular No.1, Dhanbad, dated 04.01.2008 regarding "Contractor work vis-à-vis Safety" shall be strictly adhered to. They are reproduced at Annexure –II for strict compliance.

3.0 The recommendations described in DGMS Tech. Circular No. 01 of 2009 dated 16.01.2009 regarding use of Surveyed off equipment in opencast workings shall be strictly complied with.

II - SURFACE STRUCTURES

2.0 PRECAUTIONS AGAINST SURFACE STRUCTURES :

2.1 Before starting any quarrying operations, all dwellings, buildings, roads, public structures whether belonging to the owner or not, shall be vacated/diverted and demolished within 300 metres.

2.2 You shall indemnify the occupants/owners of the houses/ dwellings/ buildings or other public properties concerned, if any, against the dangers to those properties or injury to them or other persons arising out of operations conducted under this permission.

III - OPENCAST WORKINGS

3.1 Opencast working operations shall be conducted from top downwards.

3.2 The height of the benches in Coal and Overburden or other rock formation shall not be more than the digging height of the loading machine used for digging, excavation or removal.

3.3 Unless and otherwise permitted by this Directorate by an order in writing, the width of a bench shall not be less than:

(i) the width of the largest machine working on the bench plus two meters.

(ii) where dumpers ply on the bench, the width of a bench shall not be less than three times the width of the dumper.

(iii) height of the bench, whichever is more.

3.4 Special care shall be taken when any slip plane or other places of weakness or other geological disturbances exist, so as to prevent danger to the persons deployed.

3.5 No person shall be engaged on work or allowed to travel close to high sides/benches, from which he is likely to fall for more than 1.8 meters vertically down, unless he is provided with and uses a safety belt or a rope or life line.

3.6 The sides in overburden and coal benches shall be kept sloped to prevent danger from fall of sides. Overall slope of the quarry face excluding alluvial and soft strata shall at no time be more than 60° from horizontal or such angle as determined by scientific studies.

3.7 No person other than required for operating the machinery shall be allowed to remain near the foot of the benches exceeding 3.0 metres in height. When persons are employed within 5.0 metres of the bench sides, adequate precautions shall be taken to ensure their safety by dressing or/and supporting the sides of the benches.

3.8 Sufficient number of safety belts shall be available at the site and shall be ensured the use of the same.

4.0 FENCING AROUND OPENCAST WORKINGS :

4.1 The top edge of the opencast workings whether moving, abandoned or others shall be kept fenced with wire rope strands or barbed wire, supported by (movable) posts of timber, iron or concrete. The gap between the adjacent rope strands or wires shall not be more than 0.30 metres and the bottom most member shall not be more than 0.25 metres and the top most member shall not be less than 1.0 metres from ground level.

4.2 At the finishing stage, opencast workings shall be fenced with masonry wall using cement concrete not less than 0.40 meters thick and not less than 1.5 meters high, with a parapet top.

5.0 SPOIL BANKS AND STOCK YARDS/PILES :

5.1 The slope of a spoil bank face shall be determined by the natural angle of repose of the material being deposited, but shall in no case exceed 37° from the horizontal. The spoil bank face shall not be retained by artificial means at an angle in excess of its natural angle of repose or 37°.

5.2 Any spoil bank exceeding 30 meters in height shall be benched so that no bench exceeds 30 meters in height and the general slope does not exceed 1 vertical to 1.5 horizontal. In no case, the height of any spoil bank shall be allowed to exceed 60 metres unless a scientific study of it's stability is done and a separate permission is obtained from this Directorate.

5.3 The spoil bank face shall not be retained by any artificial means at an angle in excess of its natural angle of repose.

5.4 Garland drains shall be provided around the periphery of the dumps, both at top and bottom, to collect run-off water. A clay capping shall be made over the exposed dump surface to prevent water entry.

5.5 The toe of a spoil bank face shall not be permitted to approach a railway or other public works, public road or building or other permanent structure not belonging to the owner of the mine, closer than a distance equal to the vertical height of its face.

5.6 No person shall remain or be permitted to approach the toe of an active spoil bank or stock yard/pile where he may be endangered from the material rolling down the face.

5.7 A suitable fence shall be erected between any railway or public works or road or building or structure and the toe of an active spoil bank so as to prevent unauthorized persons from approaching the spoil bank.

5.8 Wherever space permits, every mine shall establish a system whereby loading and unloading operations in the stock yard are not done simultaneously for elimination of risk element in the operations. In case adequate space is not available, mine management shall organise suitable traffic regulations for eliminating risk element in the operations.

5.9 Extraction of mineral by reclamation from dump or stock pile/yard shall be treated as working of opencast benches with loose overburden and all the precautions in respect of working of opencast benches with loose overburden shall be taken.

6.0 ROADS FOR TRUCKS AND DUMPERS ETC. :

6.1 The portion of surface haul road in mine premises where there is heavy traffic of persons and the machines/vehicles, there shall be provided a separate lane, properly fenced off from haul road, for pedestrians and two wheelers.

6.2 All roads for trucks, dumpers or other mobile machinery shall be maintained in good condition.

6.3 Where practicable, all roads from the opencast workings shall be arranged to provide one way traffic. Where this is not practicable, no road shall be of a width less than three times the width of the largest vehicle plying on that road unless, definite turn-outs and waiting points are designated.

6.4 All corners and bends on haul roads shall be so designed, made and kept maintained that the operators and drivers of vehicles plying on the haul road have clear view for a distance not less than 3 times the braking distance of the largest HEMM working at 40 kms/hour. Where it is not possible to ensure the visibility as stated above the road shall be provided with two separate lanes for up and down traffic, each of width not less than 2 times the width of the largest vehicles plying thereon plus 3 m, with a strong divider at centre with adequate lighting and reflector along the divider.

6.5 Except with the express permission of Chief Inspector of Mines in writing and subject to such other conditions as he may specify therein no road shall have a gradient steeper than 1 in 16 at any place. Provided that in case of ramps over small stretches a gradient upto 1 in 10 may be permitted.

6.6 Where any part of the road exists above the level of the surrounding area, a strong parapet wall or berm or embankment of the following dimensions:

(i) width at top not less than 1 m,
(ii) width at bottom not less than 2.5 m,
(iii) the height not less than the diameter of the tyre of largest vehicle plying on the road.

It may be noted that mere dumping of mud or overburden shall not be treated as strong parapet wall.

7.0 PRECAUTIONS AGAINST DUST : Adequate arrangements to suppress dry dust by wetting shall be made if during any operation of drilling, loading, unloading, crushing, dressing etc., dust is likely to be produced in such quantity (not more than $3mg/m^3$)as may be injurious to the health of persons, as also on roads and benches where trucks and dumpers operate. Dust surveys shall be done as laid down in Regulation 123.

7.1 Adequate arrangements to allay dry dust, by wetting, shall be made on haul roads and benches where mobile HEMM, trucks and dumpers operate.

7.2 All drills shall be provided with wet drilling arrangement and it shall be maintained in efficient working order. No dry drilling operation shall be carried on.

8.0 GENERAL LIGHTING : Where natural lighting is insufficient, adequate general lighting as per the standards laid down in Notification No. G.S.R. 804 dated 18.06.1975, published in the Gazette of India, dated 28.6.75 Part-III Section 3 (1) (reproduced in D.G.M.S. (Legislation) Circular No. 1 of 1976) issued under

Regulation 154(2) shall be provided during working hours. In the opencast workings along roads, etc., for proper examination of the high sides and benches of the opencast workings at night, suitable search lights shall be provided. Individual workers should also be provided with electric cap lamps to be of use when they have to go in poorly illuminated places. Illumination surveys at interval not exceeding 30 days shall be conducted at all work-places to ascertain that stipulations of Govt. Notification No.GSR-804 dated 18.6.75 are being met with.

9.0 PRECAUTIONS AGAINST FIRE:

9.1 A code of practice shall be drawn up for dealing with fires at different locations in the opencast mine, and for dealing of fires in heavy earth moving machinery.

9.2 Automatic fire protection system shall be provided and kept maintained in working order on every HEMM such as dumpers, dozers, front end loaders, pay loaders, blast hole drills, hydraulic and electric shovels etc. Recommended procedure for testing of such fire protection system, at a given interval as prescribed by the manufacturer shall also be adopted.

9.3.1 No coal or carbonaceous matter or debris or overburden shall be stacked within 100 m around the active faces and periphery of the opencast workings.

9.3.2 Blasting operations shall be so regulated that broken coal/carbonaceous matter is removed and transported out of the opencast workings/quarry expeditiously and risk of broken coal or carbonaceous matter catching fire is minimised.

9.3.3 Pipe range containing water under pressure with connections at regular intervals shall be laid in and around the opencast workings to deal with fire. Adequate length of hoses shall be kept stored at suitable places in the quarry.

9.3.4 All parts of the quarry including work places within the opencast workings shall be inspected daily for early detection of heating or fire. As soon as heating or a fire is detected, suitable measures to quench it and/or to dig it out shall be adopted. All heated debris/coal shall be removed by machines and deposited outside the premises of the opencast workings.

9.3.5 No person shall be employed either directly below or within 30 m of any active fire except for the purpose of removing the hot material or quenching it. The employment of persons so engaged for dealing with the fire shall be governed by provisions of Regulation 119(1)(a) and 2(a) of the Coal Mines Regulations, 1957.

10.0 SUPERVISION :

10.1 During every shift, the opencast workings shall be placed under the charge of such number of Assistant Managers, assisted by sufficient numbers of overmen and mining sirdars, as to have overall control and guidance of operations connected with the mine and who shall be responsible to see that all the regulations and orders made thereunder are strictly complied with.

At least one Overman in each working shift shall be deputed for supervision for a maximum of two shovels in the overburden as well as coal bench. Separate overman shall be deputed in overburden dump area, VTC, General shift, blasting and coal dump. The size of a Sirdar's district shall be decided in such a manner that he can inspect all areas under his control at least once in four hours. The size of an Overman's district shall comprise of not more than two mining Sirdar's districts.

10.2 Each and every operation, including operations carried out through contractors' workers or by outside agency, shall be placed under the charge of a competent supervisor, duly appointed and authorised by the manager, with his jurisdiction being clearly demarcated.

10.3 A code specifying duties and responsibilities of all mine-officials, i.e., Assistant Managers, Under Managers, Colliery Engineer(s) and subordinate level Engineers, Supervisors, Technicians, Mechanics, Fitters, Machine Operators, helpers, loading supervisors etc. shall be drawn up and distributed to all concerned.

10.4 The Manager shall issue to every Driver/Operator, Supervisor and Mine Official connected with the use of Heavy Earth Moving Machinery, a copy of rules/regulations, orders made thereunder and guidelines listed in this permission governing his duties, in a language understood by the person concerned. The Manager and the Colliery Engineer shall be responsible to ensure that all the precautions and guidelines listed in this permission are strictly followed by all concerned.

10.5 It shall be the responsibility of the Manager, Colliery Engineer and other supervisors to ensure that all persons working in the mine, and those working on machines/equipments etc. work as per the code and all machines and equipments etc. are installed, operated and maintained in safe working conditions.

10.6 The Incharge Supervisor shall in particular:

a) make frequent examination for evidence of slides or of material that may slide or roll from the high-walls (including the face and sides) or spoil bank.

b) not allow any person to work under overhanging ledges or where there is evidence of slides, until such danger has been removed.

c) ensure that every person engaged in dressing operations on high-wall is provided with and uses a safety belt of a type approved by the Chief Inspector.

d) ensure that all loose materials is removed from high-wall before drillers are engaged, and

e) ensure that parapet walls along haul roads are properly maintained.

11.0 ADDITIONAL DUTIES OF ENGINEERS PLACED IN CHARGE OF MACHINES AND EQUIPMENTS IN OPENCAST WORKINGS :

11.1 During each shift, the machines and equipments deployed in the mine shall be placed under the charge of such number of qualified and experienced engineers as is adequate to effect adequate inspection, examination, safe operation and maintenance of the machines, equipments and accessories.

11.2 During his shift the engineer/engineers shall -

(i) inspect & examine machines, equipments and accessories, and satisfy himself that they are in sound and safe working order.

(ii) not allow any machine, equipment to be used, if it is found defective.

(iii) ensure that every machine, equipment, accessory is used in a safe and efficient manner.

(iv) ensure that each operation/activity concerning repair, maintenance and operation of machinery/equipment is carried on in a safe and efficient manner.

12.0 INSPECTION, EXAMINATION, REPAIR AND MAINTENANCE OF HEMM AND OTHER MACHINES:

12.1 A scheme for proper maintenance, repair, overhaul and erection in respect of heavy earth moving machinery (commensurate with the capacity/size type of machines used in the mine), covering places such as repair sheds and workshops, shall be drawn and implemented. This shall also include framing and implementation of Code of Practice for erection, inspection, examination, repair, maintenance, etc. of such equipment before putting the same into use in the mine.

12.2 Every drilling and earth moving machinery or equipment or accessory (herein after called machine) shall be thoroughly examined at least once in every shift and maintained in good and safe working condition. In case of wheeled trackless HEMM like dumpers, trucks, tippers and other such machinery, special attention shall be paid to safe working order of brakes, steering system, horn, audio-visual reversing alarm, side indicator lamps, rear view mirrors and head lights & tail lights.

12.3 A record of examination and maintenance carried out in accordance with the above shall be maintained in a bound paged register which shall be signed by the engineer-in-charge of the shift or the other competent person making the inspection and countersigned by the Colliery Engineer.

12.4 If the engineer, mechanical foreman or other competent person making an inspection notices any defect in any machinery, the said machinery shall not be used until the defect has been remedied.

12.5 Any defect in any machinery, reported by its operator, shall be promptly attended.

12.6 Any machinery found to be in an unsafe operating condition shall be tagged at the operator's position; **"Out of Service, Do not Use"** and its use shall be prohibited until the unsafe condition has been corrected.

12.7 All repairs to a machine shall be done at a location which provides a safe place for the persons engaged on repairs.

12.8 Except for testing, trial or adjustment, which must necessarily be done while the machine is in motion, every machine shall be shut down, and positive means taken to prevent its operation, before any repair, maintenance or lubrication is undertaken on it.

12.9 Power shall be disconnected when repairs are to be carried on any electrically powered machine/apparatus.

12.10 Any machinery, equipment or part thereof which is suspended or held apart by use of slings, hoists, or jacks shall be substantially blocked or cribbed, before men are permitted to work underneath or between the same.

12.11 While inflating tyres, suitable protective cages shall be used. Tyres shall in no case be inflated by sitting either in the front of it or on top of the same.

12.12 Operation and maintenance of heavy machineries such as shovels, excavators, pay-loaders, dumpers, tippers, trucks etc. shall be done strictly in accordance with the OEM's operation and maintenance instructions which shall be obtained from the manufacturers.

12.13 The stability of HEMM shall be carried out at least once in every year and after every major overhaul by an independent agency.

12.14 The crane and overhead crane shall be subjected to proof load test and NDT test once in a year from a competent authority.

12.15 The pressure vessel receiver shall be subjected to hydraulic and NDT test and shall be carried by a competent authority.

12.16 In case of any defect in equipment such as brake, steering and safety device, the equipment shall immediately be taken out from use keeping a record thereof.

13.0 DRILLING AND BLASTING OF DEEP HOLES:

13.1 GENERAL:

13.1.1 Operations connected with Drilling, Charging, Stemming and Blasting of deep holes shall be placed under overall charge of an Assistant Manager, holding at least a second class manager's certificate of competency granted under the Coal Mines Regulations, 1957, who shall supervise the said operations in accordance with the guidelines and directives issued by the Manager.

13.1.2 Not withstanding anything contained in the Coal Mines Regulations, 1957, preparation of charges, charging and stemming of holes shall be carried out under the personal supervision of an overman, who shall fire the shots in deep holes himself.

13.1.3 A proper record for every blast, showing blasting parameters like hole size, spacing, burden, depth of holes, number of holes fired in the round, charge/hole, charge/delay and total charge of explosives fired in the round, with a rough sketch showing the drilling and firing pattern shall be kept maintained in a bound paged register kept for the purpose.

13.1.4 Lives of persons and property not belonging to the management against injury and damages resulting out of blasting or operations being carried on in the mine shall be adequately indemnified. Should there be any controversy in this regard, decision of the D.G.M.S. shall be final and binding.

13.2 DRILLING OF DEEP HOLES:

13.2.1 The area where drilling is to be done shall be thoroughly cleaned of loose rocks and debris and position of every deep hole to be drilled shall be distinctly marked by the blasting overman, so as to be readily seen by the drillers.

13.2.2 No drilling shall be commenced in an area where shots have been fired, until the shotfirer/ blasting overman has made a thorough examination of all places, including remaining butts of old deep holes, for unexploded charges that the drill rod may strike.

13.2.3 No drill or bore rod or pick shall be inserted in butts of old deep holes even if an examination under clause 13.2.2 has failed to reveal presence of explosives.

13.2.4 Drilling and charging of deep holes shall not be carried out in the same area at the same time.

13.2.5 Drilling operations shall not be carried on simultaneously on two benches, at places directly one above the other.

13.3 DUTIES OF DRILL OPERATORS:

13.3.1 At the beginning of his shift, the drill operator shall examine the drilling equipment and satisfy himself that -

(i) crown blocks are mounted securely;
(ii) where compressed air drills are used, all hose connections are in order;
(iii) the drilling equipment is in safe working condition, and,
(iv) wet drilling system is in order.

13.3.2 The drill operator shall ensure that -

(i) work persons keep clear of auger and drill stem while the drill is in motion;
(ii) work persons do not work under suspended tools, when tools are removed from the holes,
(iv) all finished drill holes are properly plugged so as avoid possible injury to any one accidentally stepping onto the hole.

13.4 CHARGING OF HOLES:

13.4.1 General precautions and rules regarding handling of explosives shall be observed by the blasting crew. Only such minimum number of person shall be allowed to remain at the charging site as are required during charging operations and firing of shot holes.

13.4.2 The entire area where charging of explosives is to be done shall be demarcated by suitable flags and effectively guarded to prevent unauthorised entry of persons or plying of other vehicles, and shall be kept free from dry vegetation and other combustible material.

13.4.3 Smoking, naked light or open flames shall not be allowed within 300m of the area where charging of explosives is being carried on.

13.4.4 For transportation of explosives in bulk, stipulations of Regulation 164(A) shall be strictly complied with.

13.4.5 The holes shall be charged (and fired) as soon as possible after the explosive is transported to the site of blasting. All normal precautions for charging (and firing) as laid down in the Coal Mines Regulations, 1957 shall be strictly observed.

13.4.6 Explosive cartridges shall not be slit or deformed. Adequate amount of cap sensitive explosive shall be used with non cap sensitive explosive charge to ensure complete detonation of the explosive charge.

13.4.7 Explosives shall be delivered/charged first into the hole farthest from the 'Priming Station'.

13.4.8 Not more than one hole shall be in process of being charged on any face at any point of time.

13.4.9 All operations connected with charging, stemming and making connections shall be done while standing on the solid ground.

13.4.10 The cartridges of explosives shall be lowered carefully into the shot holes, so as to avoid sticking of cartridges in the shot holes, thereby causing air space(s) in the explosive column. After charging such hole with explosives, the length of the uncharged/remaining portion of the hole shall be measured to confirm that the cartridges are in close contact with each other and there is no air gap between the explosive column. In case, the length of uncharged portion of the hole is not as per calculation, thereby indicating the presence of air space, attempt may be made to push down the charge in case of slurry explosives only. The remaining hole shall then be stemmed with moist sand before blasting the shot holes.

13.4.11 Explosive charge shall not be allowed to sleep over in holes unless express permission in writing to the effect is obtained.

13.5 PRECAUTIONS DURING FIRING:

13.5.1 Shots shall not be fired except during the hours of day light. All holes charged on any one day shall be fired on the same day.

13.5.2 Shots shall not be fired in crushed, broken or fractured ground.

13.5.3 As far as practicable, deep holes shall be fired either between the shifts, or during the rest interval, or at the end of work for the day.

13.5.4 The danger zone shall be distinctly demarcated (by means of red flags or other suitable means) at least 30 minutes before firing of holes.

13.5.5 Proper and distinct warning by a siren installed for the purpose shall be given within the danger zone, at least 10 minutes before the holes are fired.

13.5.6 Before the holes are charged, stemmed and fired, the shotfirer/blasting overman, with assistance of his assistants, appointed in sufficient number in writing by the manager, shall ensure that all persons have either left the danger zone, or have taken adequate shelter.

13.5.7 In case part of a public road lies within the danger zone, guards shall be posted on either end of the road falling within danger zone, and traffic shall be stopped before shots are fired. In the event of any railway line lying within the danger zone, no shot shall be fired when there is traffic on the railway track.

13.5.8 During approach of an electric storm, following precautions shall be taken –

(i) No explosives, particularly detonators shall be handled.

(ii) If charging operations have begun, work shall be discontinued till the storm has passed.

(iii) If shots are being fired electrically, all exposed wires shall be coiled up and kept covered by something other than a metal plate.

(iv) All wires shall be removed from contact with metallic plates/steel rails so as to prevent the charge from exploding prematurely by a local strike of the lightning.

13.5.9 After shots have been fired, no person shall enter or be allowed to enter the place, until 30 minutes after firing of the shots. Before allowing any person to enter the area, the Asstt/Under Manager in-charge of the blasting operations shall make sure that the area is free from dust, smoke or fumes.

13.5.10 In case of misfires, precautions as laid down in Regulation 177 of Coal Mines Regulations, 1957 shall be taken.

13.5.11 Precautions as laid in DG'S (Tech) circular no 2 of 1985 and 2 of 1990 shall be complied with in case of blasting in hot strata.

14.0 DESIGN, OPERATION AND MAINTENANCE OF SHOVELS, PAYLOADERS, SURFACE MINERS AND OTHER MACINERIES:

14.1 Every shovel, pay loader and surface miner shall be so designed as to afford the operator clear and uninterrupted vision all around.

14.2.1 Every shovel, pay loader, surface miner, dozer and drill shall be maintained in good and safe working condition and shall be provided with -

(i) efficient warning devices;

(ii) front and rear lights of adequate intensity and a portable lamp for use in emergency, unless the loading equipment is not intended to be beyond day-light hours; and

(iii) an approved type of portable fire extinguisher or other approved type fire suppression system in efficient working condition so placed as to be within easy reach of the operator.

(iv) fire resistant hydraulic hoses in place of ordinary hoses to decrease the chance of fire and fire resistant sleeves and conduits where cable/wire is used;

(v) a retractable ladder for mounting onto the machine;

(vi) proper seat belt for operator;

(vi) turbo charge guard

14.2.2 The following safety features shall also be provided with every shovel and

excavator -

(i) all functions cut-off switch;
(ii) swing motor brake;
(iii) vent valve on top of hydraulic tank of such a type which is removable without any tool;
(v) a baffle plate between cold zone and hot zone;
(vi) provision for limiting of hydraulic cylinders – stopper.

14.2.3 All dozers shall also be provided with roll over protection.

14.2.4 All drills shall also be provided with the following safety features -

(i) approved type of dust prevention or suppression system;
(ii) each moving parts shall be guarded/fenced in effective manner;
(iii) emergency push button switch in operator's cabin, main frame, propeller pendent and
rear end;
(iv) tripping device to trip the field switch;
(iv) thermostat motor protection relay in winding armature and other related parts;
(vi) explosive vent in transformer;
(vii) proper interlock (an electric interlock between drilling and propeller operation);
(viii) high air discharge temperature switch;
(ix) low lub oil pressure switch;
(x) oil stop valve (electric solenoid valve in compressor lubrication line);
(xi) no bump circuit
(xii) tower lock and lock check valve
(xiii) proper joystick - spring loaded type to return to neutral (dead man safety)
(xiv) disk brake and brake valve and its testing parameters;
(xv) lock check valve for preventing creeping in drill;

14.3 The operator's cabins of every shovel, pay loader, surface miner and other HEMM shall be well designed and substantially built and air-conditioned so as to render adequate protection to the operator against heat, dust, noise etc. A seat belt for the safety of the operator shall also be provided in the equipment/HEMM.

14.4 Every shovel, pay-loader and surface miner shall be under the charge of a competent person, authorised in writing by the manager, herein called the 'Operator'.

14.5.1 All persons employed or to be employed to operate shovel, pay loader, surface miner and other HEMM shall be trained and their competency shall be evaluated by a Board constituted by the management. The members of such board shall be persons who are not connected with imparting of training. However, the training officer(s) may be co-opted in the Board as observer.

14.5.2 Only such fitters/mechanics possessing driver's/operator's license, shall be allowed to carry out test-run of HEMM.

14.6 No person other than the operator or the manager or any person so authorised in writing by the manager shall ride on a shovel, pay-loader or surface miner.

14.7 No person shall be permitted to ride in the bucket of a shovel or payloader.

14.8 Shovel tippers and pay loader bucket shall be lowered to the ground during greasing operations.

14.9 No shovel or pay loader shall be operated in a position, where any part of the machine or suspended loads therefrom are bought closer than 3m to exposed high voltage transmission lines, unless the current has been cut off from such exposed transmission lines, and positive means have been taken to prevent the lines from being energised. A notice of this requirement shall be posted at the operator's position.

14.10 Electrical cables, if any, shall be laid in such a manner that they are not endangered either by falling rocks or by any mobile equipment.

14.11 The shovel bucket shall be pulled out of the bank as soon as it is full.

14.12 When being operated in soft or unstable ground and every shovel shall be supported on mats, heavy planks or poles so as to distribute the load of the machinery over larger area and prevent its toppling.

14.13 When not in use, the shovel, pay-loader and surface miner shall be moved to and stood on stable ground.

14.14 If more than one stripping machine is in use in any area, either on the same bench or on different benches, the machines shall be so spaced that there is adequate space for safe operation of each equipment, and there is no danger from flying or falling pieces of stones etc. from one machine to the other. In case of surface miners, the distance between two surface miners or between the surface miner and any other system of mining operating in close proximity shall not be less than 100 m.

14.15.1 In surface miners, padding and other cabin-shields shall be effectively used for reducing the sound and to protect the operator and the general public from noise in excess of 90 dB. If the noise level in the operator's cabin is more than 90 dB, the machine shall not be operated unless the noise level is brought down below the threshold limit.

14.15.2 In surface miners, in addition to suitable vibration damping devices fitted in the path of contact between machinery and operator, adequate number of cutting picks shall be so placed on the milling drum that machine vibration during milling action is reduced to a minimum and operator is not exposed to vibration beyond the recommended level.

14.16 The safety features recommended in equipments shall be made a part of the notice inviting tender for new procurement and the design and drawing shall be obtained from OEM for fitting the same in old equipment.

15.0 DUTIES OF SHOVEL, PAYLOADER & SURFACE MINER OPERATORS:

15.1 Before any machine is put into operation, the operator shall look for any placards/tags on the machine like "*OUT OF ORDER*", "*UNDER REPAIRS*", etc. and in case such tags are seen anywhere in the entire system, the machine shall not be started.

15.2 At the commencement of his shift, the operator shall personally inspect and test the machine, paying special attention to the following details –

(i) that every warning device is in working order,
(ii) that it is mechanically sound and in efficient working order, and
(iii) that the lighting fixtures are in proper working order, if the machine is required to work beyond day-light hours.

15.3 He shall not take out the machine for work nor shall he work the machine, unless he is satisfied of its safe working order.

15.4 The operator shall maintain a record of every inspection made under clause 15.2 in a bound paged book kept for the purpose, and shall sign every entry made therein.

15.5 The operator shall keep the cab window clean so as to ensure clear vision at all times.

15.6 The walkways in or about the cab of any shovel, pay-loader and surface miner shall be kept free of loose tools, grease containers or other materials that might fall or give rise to tripping hazard.

15.7 The operator shall not operate the machine when persons are in such proximity as to be endangered.

15.8 The operator shall not swing the bucket over-passing the trucks/dumpers when they are being loaded. He shall swing the bucket over the body of the truck/dumpers whilst loading and not over the cab, unless the cab is protected by a substantially strong cover.

Registered

भारत सरकार/ Govt. of India
श्रम एवं रोजगार मंत्रालय
Ministry of Labour & Employment
खान सुरक्षा महानिदेशालय
Directorate General of Mines Safety
राँची क्षेत्र,राँची/Ranchi Region, Ranchi

संख्या S-29020/ 06(36)/207-RR - 1401 राँची, दिनांक 31/07/2017

प्रेषक :

खान सुरक्षा निदेशक (राँची क्षेत्र),
खान सुरक्षा महानिदेशालय,
आर. आई– III, तीसरा तल्ला,
सी. एम. पी. डी. आई. परिसर,
काँके रोड़, राँची–834 008.

सेवा में,

अभिकर्ता,
भुरकुण्डा 'बी' कोलियरी,
मे0 सी.सी.एल.,
पोस्ट–भुरकुण्डा, जिला– रामगढ़, (झारखण्ड)।

विषय :– Permission under Regulation 100(1) of Coal Mines Regulations, 1957 for depillaring by caving method using SDL in Panel No. VIII of Hathidari Seam at Bhurkunda-B Colliery of M/s. C.C.Ltd.

महोदय,

कृपया उल्लिखित विषय पर आपके दिनांक 15.06.2017 के पत्रांक PO/BHK/Dep-Perm/ PanelVIII/2017/580 एवं दिनांक 24.07.2017 के पत्रांक PO/BHK/DGMS/2017/619, तथा संलग्न दिनांक 15/05/2017 के प्लान संख्या CM/ BHK-B/WORK/ HD/33-2002 एवं दिनांक 24/07/2017 के प्लान संख्या SR.M (M)/BHK-B/Offset /P-VIII/HD/2017/22 को संदर्भित करें।

1.0 The matter has since been examined on the basis of the information's furnished and shown on the plans and sections submitted by you.

2.0 By virtue of the powers conferred on the Chief Inspector of Mines(also designated as Director-General of Mines Safety) under Regulation 100(1) of the Coal Mines Regulations, 1957 and by virtue of the authorization granted to me by the Chief Inspector of Mines(also designated as Director-General of Mines Safety) under Section 6(1) of the Mines Act, 1952, I hereby permit you to extract pillars by Conventional Depillaring with Caving Method in Panel No. VIII of Hathidari Seam at Bhurkunda 'B' Colliery of M/s. Central Coalfields Ltd. as shown on the plan No. CM/ BHK-B/WORK/ HD/33-2002 & SR.M(M)/BHK-B/Offset /P-VIII/HD/2017/22 dated 24/07/2017 submitted by you subject to the conditions as given below.

3.0 By virtue of the powers conferred on me, I,

(a) Under Regulation 108 require the Manager of the mine to frame SSR with due regard to the physico-mechanical properties of strata, local geological conditions, system of work and past experience and enforce the same with a copy to this Directorate.

(b) under the provision to Regulation 118A(4), further require you to comply with the provision of Regulation 118A(1)(a),(c) and (d) of the Coal Mines Regulations, 1957.

4.0 In this connection, your special attention is invited to:-

(a) Regulation 100(5) read with this Directorate's Technical Circular No.2 of 1988 regarding precautions to be taken to minimize dangers arising from any chance of air blast due to any dangerous over hangings of the roof in goaf.

(b) Regulation 112(1)(c) read with this Directorate's Circular No.11 of 1959 regarding fencing of the surface area likely to subside.

(c) Regulation 118A(1)

- clause (a)-regarding formation of panels/sub panels keeping in mind the incubation period of the seam which is nine to twelve months.
- Clause (c)-read this Directorate's Technical Circular No.3 of 1988 regarding standard of construction etc. of Isolation/Preparatory stoppings to be provided around the panels/sub panels.
- Clause (d) regarding isolation of every panels/sub panels immediately after it has been goaved out. Notwithstanding this where the extraction of pillars is discontinued which would preclude the completion of the extraction in the panels/sub panels within the incubation period of the Seam, the goaved out part of the panels/sub panels shall be sealed off.

(d) Regulation 118A(3)(c) in respect of inspection of depillaring district and isolation stoppings around goaved out areas and maintenance of the records thereof. The inspection should also include the isolation stoppings built around the goaved out areas in the panels/sub-panel(s) still under extraction. The records of the inspection of isolation stoppings shall be maintained stopping wise.

(e) This Directorate's Technical Circular No.4 of 1988 regarding maintenance of subsidence records, plan(s)/Section(s); information regarding local falls etc. and submission of copies thereof to this Directorate.

5.0 Before commencement of extraction of pillars:

5.1 An accurate steps including provision of "garland drains" shall be made to prevent accumulation or flow of water on surface above the panel.

5.2 It shall be ensured that overlying goaves of all the seams lying vertically above and within 60 m of the proposed panel are made and kept free from water during the entire depillaring operation.

5.3 Water body of the overlying seam present at the dip side and the rise side of the panel-VIII in Hathidari seam shall be dewatered by making adequate nos. of bore holes of dia not less than 4 inch (100mm).

5.4 The cracks and fissures developed on surface overlying panel-VIII in Hathidari seam shall be filled up and dozed off by incombustible material regularly.

5.5 CO and methane monitoring shall be done regularly in the panel. If at any time CO or methane is detected in the district, the depillaring operation of the above panel shall be stopped forthwith and intimation shall be sent to this Directorate. A record of such tests shall be maintained in a bound paged book kept in the office.

6.0 The proposed manner of extraction shall be as follows:-

6.1 Each pillar shall be divided into two equal parts by driving a central level split not more than 4 m width.

6.2 Each half of the pillar shall then be extracted by driving slices not exceeding 4 m in width leaving a rib of coal not less than 2 m thick against the adjacent goaf so however that the area of roof exposure at any working place at any time shall not exceed 90 sq. m. The rib of coal thus left against the adjacent goaf may however be reduced judiciously on retreat, in consistence with safety.

6.3 Not more than one slice shall be driven in a pillar at a time and the extraction of half of a pillar shall not be commenced until extraction of the adjoining inbye half of the pillar has been completed. Pillars of size less than 16m corner to corner shall be extracted without splitting as shown in the offset plan no. SR.M(M)/BHK-B/Offset /P-VIII/HD/2017/22 dated 24/07/2017.

6.4 Extraction of pillar shall commence from the dip/ inbye end and proceed systematically to rise/outbye side maintaining a diagonal line of faces and extraction and avoiding formation of "V" in the line of extraction.

6.5 The heightening operation in the panel shall commence in the splits and original galleries immediately out bye of the slice avoiding formation of the ledges at the junctions. The full height of extraction shall be taken in one operation and not allowed to exceed 3.75 m.

6.6 Splitting of the pillars shall be restricted up to a distance of two pillars from the pillars under extraction.

6.7 Extraction of pillars in the panel shall be placed under the charge of one Overman experienced in depillaring with caving method in each shift. Shifts shall be put under the direct supervision and control of Under Managers.

8.0 The surface area over the panel proposed for depillaring and within 45 m of all sides shall be fenced off. The management shall indemnify the owner of the surface land in case of any damage of the said land.

9.0 Two set outlets shall always be provided from the panel(s) under extraction. The approached roadways to any pillar under extraction shall be cleared off all faults, the roof and the sides there at be adequately supported.

10.1 In the event of any change in the circumstances connected with this permission which is likely to endanger the life of workmen employed in the mine or endanger the mine, the mining operations for which this permission has been granted shall be stopped forthwith and intimation thereof sent to this Directorate. The said mining operations shall not be resumed without an express and fresh permission in writing.

10.2 This permission is being issued specifically under the regulations mentioned above, and without prejudice to any other provisions of law which may be or may become applicable at any time.

10.3 The above permission may be amended or withdrawn at any time, if considered necessary in the interest of safety.

10.4 If at any time any of the conditions subject to which the above permission is granted, is violated or not complied with, the permission shall be deemed to be revoked with immediate effect.

भवदीय,

(मिहिर चौधरी)
खान सुरक्षा निदेशक
राँची क्षेत्र, राँची

भारत सरकार/ Govt. of India
श्रम एवं रोजगार मंत्रालय
Ministry of Labour & Employment
खान सुरक्षा महानिदेशालय
Directorate General of Mines Safety
राँची क्षेत्र,राँची/Ranchi Region, Ranchi

संख्या S-29020/06(22)/2018-RR/3486 राँची, दिनांक 05/10/2018

प्रेषक :

खान सुरक्षा निदेशक (राँची क्षेत्र),
खान सुरक्षा महानिदेशालय,
आर. आई–।।।, तीसरा तल्ला,
सी. एम. पी. डी. आई. परिसर,
काँके रोड़, राँची–834 008.

सेवा में,

अभिकर्ता,
भुरकुण्डा 'बी' कोलियरी,
मे0 सी.सी.एल.,
पोस्ट–भुरकुण्डा, जिला– रामगढ़, (झारखण्ड)।

विषय :– Permission under Regulation 112(1) of Coal Mines Regulations, 2017 for depillaring by caving method using SDL in Panel No. IIIB of Bansgarha Seam at Bhurkunda-B Colliery of M/s. C.C.Ltd.

महोदय,

कृपया उल्लिखित विषय पर आपके दिनांक 14.08.2018 के पत्रांक PO/BHK/Dep.Perm/ Panel IIIB/2018-19/118 तथा संलग्न दिनांक 06/06/2018 के प्लान संख्या Sr. Manager(M)/BHK-B/Work/B.G./2018/01 एवं Sr. Manager(M)/BHK-B/Off-set/P.III'B'/2018/02 को संदर्भित करें।

1.0 The matter has since been examined on the basis of the information's furnished and shown on the plans and sections submitted by you.

2.0 By virtue of the powers conferred on the Chief Inspector of Mines(also designated as Director-General of Mines Safety) under Regulation 112(1) of the Coal Mines Regulations, 2017 and by virtue of the authorization granted to me by the Chief Inspector of Mines(also designated as Director-General of Mines Safety) under Section 6(1) of the Mines Act, 1952, I hereby permit you to extract pillars by Conventional Depillaring with Caving Method in Panel No. IIIB of Bansgarah Seam at Bhurkunda `B' Colliery of M/s. Central Coalfields Ltd. as shown on the plan Nos. Sr. Manager(M)/BHK-B/Work/B.G./2018/01 & Sr. Manager(M)/BHK-B/Off-set/P.III'B'/2018/02 dated 06/08/2018 submitted by you subject to the conditions as given below.

3.0 By virtue of the powers conferred on me, I,

(a) Under Regulation 123 require the Manager of the mine to frame SSR with due regard to the physico-mechanical properties of strata, local geological conditions, system of work and past experience and enforce the same with a copy to this Directorate.

(b) under the provision to Regulation 137(16), further require you to comply with the provision of Regulation 137 (1),(4),(6) and (9) of the Coal Mines Regulations, 2017.

4.0 In this connection, your special attention is invited to:-

(a) Regulation 112(8) read with this Directorate's Technical Circular No. 2 of 1988 regarding precautions to be taken to minimize dangers arising from any chance of air blast due to any dangerous over hangings of the roof in goaf.

(b) Regulation 128(5) read with this Directorate's Circular No.11 of 1959 regarding fencing of the surface area likely to subside.

(c) Regulation 137

- clause (1)-regarding formation of panels/sub panels keeping in mind the incubation period of the seam which is nine to twelve months.
- Clause (6)-read this Directorate's Technical Circular No.3 of 1988 regarding standard of construction etc. of Isolation/Preparatory stoppings to be provided around the panels/sub panels.
- Clause (9) regarding isolation of every panels/sub panels immediately after it has been goaved out. Notwithstanding this where the extraction of pillars is discontinued which would preclude the completion of the extraction in the panels/sub panels within the incubation period of the Seam, the goaved out part of the panels/sub panels shall be sealed off.

(d) Regulation 137(14) and (15) in respect of inspection of depillaring district and isolation stoppings around goaved out areas and maintenance of the records thereof. The inspection should also include the isolation stoppings built around the goaved out areas in the panels/sub-panel(s) still under extraction. The records of the inspection of isolation stoppings shall be maintained stopping wise.

(e) This Directorate's Technical Circular No.4 of 1988 regarding maintenance of subsidence records, plan(s)/Section(s); information regarding local falls etc. and submission of copies thereof to this Directorate.

5.0 **Before commencement of extraction of pillars:**

5.1 An adequate steps including provision of "garland drains" shall be made to prevent accumulation or flow of water on surface above the panel.

5.2 It shall be ensured that overlying goaves of all the seams lying vertically above and within 60 m of the proposed panel are made and kept free from water during the entire depillaring operation.

5.3 The cracks and fissures developed on surface overlying panel -IIIB of Bansgarah Seam shall be filled up and dozed off by incombustible material regularly.

5.4 CO and methane monitoring shall be done regularly in the panel. If at any time CO or methane is detected in the district, the depillaring operation of the above panel shall be stopped forthwith and intimation shall be sent to this Directorate. A record of such tests shall be maintained in a bound paged book kept in the office.

6.0 **The proposed manner of extraction shall be as follows:-**

6.1 Each pillar shall be divided into two equal parts by driving a central level split not more than 4m width.

6.2 Each half of the pillar shall then be extracted by driving slices not exceeding 4m in width leaving a rib of coal not less than 2 m thick against the adjacent goaf so however that the area of roof exposure at any working place at any time shall not exceed 90 sq. m. The rib of coal thus left against the adjacent goaf may however be reduced judiciously on retreat, in consistence with safety.

6.3 Not more than one slice shall be driven in a pillar at a time and the extraction of half of a pillar shall not be commenced until extraction of the adjoining inbye half of the pillar has been completed.

6.4 Extraction of pillar shall commence from the dip/ inbye end and proceed systematically to rise/outbye side maintaining a diagonal line of faces and extraction and avoiding formation of "V" in the line of extraction.

6.5 The heightening operation in the panel shall commence in the splits and original galleries immediately out bye of the slice avoiding formation of the ledges at the junctions. The full height of extraction shall be taken in one operation and not allowed to exceed 4.27m.

6.6 Splitting of the pillars shall be restricted up to a distance of two pillars from the pillars under extraction.

6.7 Extraction of pillars in the panel shall be placed under the charge of one Overman experienced in depillaring with caving method in each shift. Shifts shall be put under the direct supervision and control of Under Managers.

7.0 The surface area over the panel proposed for depillaring and within 45 m of all sides shall be fenced off. The management shall indemnify the owner of the surface land in case of any damage of the said land.

8.0 Two set outlets shall always be provided from the panel(s) under extraction. The approached roadways to any pillar under extraction shall be cleared off all faults, the roof and the sides there at be adequately supported.

9.0 No Overburden dump shall be dumped over the proposed panel IIIB while depillaring operation is under progress.

10.0 Please note that this permission is subject to the following additional conditions:

10.1 In the event of any change in the circumstances connected with this permission which is likely to endanger the life of workmen employed in the mine or endanger the mine, the mining operations for which this permission has been granted shall be stopped forthwith and intimation thereof sent to this Directorate. The said mining operations shall not be resumed without an express and fresh permission in writing.

10.2 This permission is being issued specifically under the regulations mentioned above, and without prejudice to any other provisions of law which may be or may become applicable at any time.

10.3 The above permission may be amended or withdrawn at any time, if considered necessary in the interest of safety.

10.4 If at any time any of the conditions subject to which the above permission is granted, is violated or not complied with, the permission shall be deemed to be revoked with immediate effect.

10.5 This permission shall remain valid for one Year from the date of issue of the this letter.

भवदीय,

(उज्जवल ता)

खान सुरक्षा निदेशक,
राँची क्षेत्र, राँची

Enclosure to letter

संख्या S-29020/06(22)/2018-RR/ राँची, दिनांक ___/___/2018

ANNEXURE -"A"

PRECAUTIONS AGAINST DANGER FROM AIR BLAST

1.0 **ISOLATION/PREPARATORY STOPPINGS:**

1.1 Initially, 1.5 m x 1.5 m opening shall be left in sufficient number of isolation stoppings. The opening, shall, unless required to be kept open be covered with fire-resistant plastic sheeting of a type approved by DGMS, to serve as "Safety Valve" in the event of an air-blast. The openings shall be subsequently closed with brick in lime/cement mortar in vicinity of the area where fall of overhanging roof in goaf has taken place and danger due to air-blast no longer exists.

1.2 Doors meant for closing the preparatory stoppings in emergency shall be taken off their hinges and kept laid flat on the ground in the vicinity.

2.0 **SHELTERS:** At suitable sites, shelters shall be provided where workmen may take refuge whenever an air blast is apprehended.

2.1 Every such shelter shall be located away from, the probable path of air blast.

2.2. The shelters and the approaches thereto shall be kept free of any obstruction. Only cross-bars or roof-bolts shall be used for support of roof at the shelters; vertical props and cogs shall be avoided.

3.0 **WARNING SYSTEM:**

3.1 Use of Whistles: The district Overman and Mining Sirdar shall be provided with whistles and whenever any danger from air blast is apprehended they shall repeatedly blow the whistles to warn persons in the district and the vicinity.

3.2 Use of convergence recorders: In appropriate cases, such as areas prone to air-blast, adequate number (at least 15) of convergence recorders may be installed. Convergence may be measured once in every shift and the daily rates of convergence computed and compared to obtain indication of impending roof-fall.

4.0 **WITHDRAWAL OF PERSONS:**

4.1 Obligation of work persons :

4.1.1 On hearing the sound of the whistle, all persons in the district and its vicinity shall take refuge in the shelters provided for the purpose.

4.1.2 If a person is caught in the air-blast, he shall immediately lie flat on the ground, preferably in a gallery not in the direct path of the blast.

4.2 Duty of Overman and Mining Sirdar: The district overman and Mining Sirdar shall in addition to giving warnings see that all persons employed in the district and those present in the probable path of air blast take refuge in the shelters.

5.0 **ADDITIONAL MEASURES:** Such additional measures as may be considered necessary by the Manager shall also be taken.

6.0 **MOCK DRILL ETC.**

6.1 Manager shall ensure that:

(a) Only supervisory officials experienced in extraction by the caving method are deployed in the district and

(b) All concerned persons including the supervisory officials have been made fully conversant with these precautionary measures.

6.2 Regular mock-drills shall also be held so that every person in the district and its vicinity remains alert to perform his duty during an impending air-blast.

7.0 **GENERAL:** The Manager shall hand over copies of this Schedule to all the Supervisory Officials concerned and shall also post copies thereof at conspicuous places in the mine.

25/10/18

(Ujjwal Tah)
Director of Mines Safety
Ranchi Region, Ranchi

Enclosure to letter

संख्या S-29020/06(22)/2018-RR/ 3491 राँची, दिनांक 05/10/2018

SYSTEMATIC SUPPORT RULES UNDER REGULATION 123 OF COAL MINES REGULATIONS, 2017 for Panel-IIIB of Bansgarha Seam at Burkunda 'B' Colliery.

1.0 These rules shall apply to all depillaring areas in panel -IIIB of Bansgarha Seam of Bhurkunda "B" Colliery of M/s. C.C.L.

2.0 **SUPPORT OF GOAF EDGES**:

(a) Cogs shall be erected skin to skin all along goaf edges.
(b) One row of props as breaker props shall be set immediately behind the cogs at an interval not exceeding 30cm. Breaker line supports shall also be erected in advance in each and every goaf edges by providing two rows of roof bolts placed at a grid pattern of 0.6m.
(c) Indicator props shall also be provided at suitable places.

3.0 SUPPORT OF WORKING FACES

(a) During driving course of the slice and other area under actual extraction shall be supported with rows of full column resin grouted roof bolts in in such a way as to ensure that the interval between the bolts in the same row and between the rows shall not exceed 1.5 m so however that the front row of support shall not be kept more than 0.6 m away from the face before blasting. A row of cogs shall be set at intervals not exceeding 2.4 m along side the rib of the slice. Pit props shall also be set in between the cogs in the same row at an intervals not exceeding 1.2 m from the cogs.

(b) Cogs shall be set at all entrances to the areas under extraction and also at intervals of not more than 2.4 m in the area under actual extraction.

Or

All entrances to the areas under extraction shall be kept supported by full column resin grouted roof bolts with W-straps at an intervals of not exceeding 1.2 m and distance between the bolts in the same row as well as between the rows shall not exceed 1.2 m .

4.0 SUPPORT OF GALLERIES AND THE SPLITS:

(a) **GALLERIES AND SPLITS**: All galleries and splits within a distance of 30 m or a distance of two pillars from the pillar under extraction/splitting, whichever is greater, shall be kept supported by three rows of full column resin grouted roof bolts set at an intervals not exceeding 1.5 m between the same row and also between the two rows of bolts.

(b) **SUPPORT AT JUNCTIONS:** Cogs shall be set at all junctions of galleries and splits within a distance of two pillars from the pillar under extraction or a distance of 30 m, whichever is greater.

Or

All junctions of galleries and splits within a distance of 30 m or a distance of two pillars from the pillar under extraction/splitting, whichever is greater, shall be kept supported by full column resin grouted roof bolts with W-straps at an intervals of not exceeding 1.2 m. The density of roof bolts grouted at junctions shall be increased by 25%.

(c) All junctions either about to be formed while starting a gallery or a split gallery or when gallery or a split gallery is about to join a original gallery or a split gallery shall be supported either with a type of cogs which will not get easily dislodged due to the effects of blasting or by conventional timber chocks set on either side of such a junction with cross bars across them and same shall be tightened against the roof with laggings at an interval not exceeding 0.6 m apart over the cross bar or shall be kept supported by full column resin grouted roof bolts with W-straps at an intervals of not exceeding 1.2 m.

5.0 OTHER PROVISIONS:

SYSTEM OF SUPPORT FOR HAULAGE AND TRAVELLING ROADWAYS:

(a) The roof of all roadways used for haulage, belt or tramming purpose and situated within a distance or two pillars from the pillar under extraction shall be kept supported by full column resin grouted roof bolts of length not less than 1.5 m set at intervals not exceeding 1.5 m in the same row and also between the rows.

(b) The junctions of galleries which cannot be supported by cogs due to the presence of tracks shall be kept supported with one cog on either side of the track with two or more cross bars at intervals not exceeding 1.2 metres or shall be kept supported by full column resin grouted roof bolts of length not less than 1.5 m set at an interval not exceeding 1.2 m between the bolts in the same row and also between the two rows.

(c) SUPPORT OF WIDE GALLERIES: Galleries exceeding 4.8 m in width shall be supported with cogs at intervals not exceeding 2.4 m between the cogs and between rows of cogs in addition to the support specified under rules 4(a) & (b).

(d) **Support of sides, faults, slips, cleats, etc.:**

(i) All ledges in the roof shall be kept supported by at least two cross bars set over cogs.

Or

Ledges formed during the extraction shall be supported by rope stitching at an interval of 1.0 m distance across the ledges. The stitched rope shall be kept tight against roof/ledge by placing wooden laggings therein.

(ii) Wherever the sides of the pillar have tendency to spall, those shall be kept supported by vertical props set at intervals not exceeding 1.2 m with suitable laggings put tight against the sides of the pillars. These props may be set in recesses cut in floor and roof close to the sides or shall be supported with 'W' straps placed horizontally at 1.0 m interval in vertical plane along the sides of pillars and grouted with roof bolts.

(iii) Wherever height of the galleries exceeding 3.0 m the sides shall be supported with side bolting at an interval of 1.0 m within the row and in between the row.

Or

Wherever height of the galleries exceeding 3.0 m, the sides of the galleries shall be supported by rope stitching at an interval of 1.0 m in between the row. The stitched rope shall be kept tight against sides by placing wooden laggings therein.

(e) Where the seam is traversed by prominent cleats or cleavage planes etc., the sides of the roadways shall be stitched effectively with steel wire ropes with lagging not more than 0.6 m apart put tightly against the pillars. All overhangs which cannot be dressed and made safe shall be kept supported by inclined stay props at intervals not exceeding one metre. Such stay props shall be provided to support each overhang at two suitable horizons. The lid on top of each such inclined prop shall be not less than one metre in length.

(f) All the faults, visible slips, breaks or other geoligical disturbances in the roof shall be supported by cogs set at intervals not exceeding 2.4 m on either side of such disturbances and with cross bars set across them at intervals not exceeding 0.6 m which shall be set tight against the roof.

6.0 OTHER PROVISIONS:

(a) In addition to the supports referred at rule 2, props shall be set in between cogs and in between cogs and coal sides.

(b) All cogs shall always be set with four corner props. In case of steel chocks, arrangements shall be made to provide stability of the chocks against oblique loading.

(c) Before engaging work persons at a working place or face after every round of blasting thereat, all supports set in the vicinity of the same or upto the danger zone specified by the manager shall be tightened again and re-rected, if the same is dislodged or loosened due to any reason whatsoever. Temporary supports shall always be provided at the face during drilling holes for roof bolts, roof bolting or any other operation being carried out at the face.

(d) No timber less than 15 cm in diameter shall be used for supports. No damaged props or chocks shall be used.

(e) The lids and wedges used with the props shall have a width not less than the diameter of the props, a thickness not less than 8cm. and a length not less than 0.5 m.

(f) Where floor coal is taken, props shall not be left on coal stumps and the shorter props shall immediately be replaced with longer props. Where roof coal is taken, the shorter props shall immediately be replaced with longer props and the lip of coal shall be supported with a cog.

(g) The timber used in the construction of cog shall be not less than 1.2 m in length and shall have at least two opposite sides joggled flat to provide suitable bearing surface.

(h) Props shall be set on solid floor and not on loose pack or material. They shall be kept tight against the roof. Where props are to be set on sand, a flat base piece not less than 5 cm thick 25 cm wide and 0.75 m long shall be used.

(i) Cross bars shall be supported on props or in 0.5m deep holes and made in the sides of pillars. Every cross bars shall be made tight against the roof and if lagging is necessary for the purpose, the number of lagging used on a cross bar shall be not less than one for every one metre length of the bar, and the lagging shall be kept tight.

(j) Cogs shall be set on solid floor and not on loose packing or materials. They shall be kept tight against the roof to ensure maximum contact between the timber and the roof.

(k) If Intergrated Steel framed cogs are used, the same shall be topped by wooden sleepers not less than 30% of total height of the cog. The load bearing capacity of such integrated steel framed square steel cog stool/Chocks and that of steel pit props/Rigid props shall not be less than 500 kn and 200 Kn respectively.

(l) Support material used for roof bolting shall conform to the specifications as approved by Chief Inspector of Mines.

7.0 MONITORING OF THE ROOF BOLTS:

(a) Anchorage testing of not less than 10% of the roof bolts shall be carried out upto a minimum load of 8 tonnes. The results of such tests shall be recorded in a bound paged book kept for the purpose.

(b) The roof bolts on which anchorage testing have been carried out shall be distanctly marked and recorded.

(c) Anchorage testing shall be carried out under the personal supervision of an Overman authorised by the manager in writing. Only authorised person shall record the data of anchorage testing and sign therein which shall be countersigned by the manager.

(d) All the precautions and recommendations, as applicable, regarding roof boolting shall be complied with.

8.0 All the provisions of Regulations 123, 124 & 125 of the Coal Mines Regulations, 2017 regarding setting and withdrawal of supports as and when applicable herein shall be complied with.

(a) A support plan in a scale of 1:500 shall be maintained showing the location and interval of support at faces and other places of workings of the panel and same shall be kept updated in each shift.

9.0 **SUPPORTING MATERIALS:**

(a) Adequate stock of support materials shall be kept in the stores in order to ensure availability thereof at the mine.

(b) The assessment of the support requirement shall be done by the manager of the mine and proper requisition in advance shall be made to ensure that at least adequate quantity of supports required are always kept in the mine.

(c) Owner and Agent including chief General manager/General manager of the Area, shall each be responsible for adequate supply of required quantity of support materials and trained manpower at the mine. A system of monitoring of the supply of supports and their performance shall be evolved in order to ensure that no workings are kept without or inadequately supported.

(d) Owner and Agent, including Chief General Manager/General Manager of the area, shall each be responsible for adequate supply of required quantity of support materials and trained manpower at the mine. A system of monitoring of the supply of supports and their performance shall be evolved in order to ensure that no workings are kept without or inadequately supported.

(e) All types of steel supports, cable & roof bolts, cement & resin grouts to be used for the purpose of securing roofs and sides of workings in the mine shall be of such types, standards and makes as approved by the Chief Inspector of Mines.

12.0 **MISCELLANEOUS:**

a) Additional supports shall always be provided to secure roof and sides of the working places during bolting, stitching or any other operations incidental therein.

b) Additional supports shall be erected as and when required.

Director of Mines Safety
Ranchi Region, Ranchi

Manager
Bhurkunda 'B' Colliery

ANNEXURE VII

ANNEXURE VIII


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ANNEXURE IX

ANNEXURE X

ANNEXURE XI


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सालधान
खनन क्षेत्र प्रारंभ

ANNEXURE XII

AUGMENTATION OF GROUNDWATER RECHARGE

To minimize the impact of mining on ground water system, the project/mine authority has been adopting all possible measure to increase the ground water recharge potential.

Rain Water harvesting is a deliberate collection and storage of rain water that runs off on natural and man-made catchment area. The amount of water so harvested depends on the frequency and intensity of the rain fall and characteristics of the catchment to allow the precipitate to infiltrate through the sub-soil and percolate down to recharge aquifers.

By nature, mine is a big rainwater harvesting and artificial recharge structure. Rain is a seasonal occurrence, whereas, mine water discharge is a continuous process. Hence, priority is given for mine water harvesting. The mine water discharge into the local ponds converts them into as recharge pits and augments the source availability. The surplus mine water, during monsoon period, is discharged into the nearby paddy fields and abandoned pits not only improves irrigation potential but also increase the ground water recharge (spreading method) in the area. Hundreds of acres of land are irrigated by mine water discharge and about 25% of the discharge enters the groundwater system as return flow. Also there is a large water reservoir known as Patratu dam is present which also contribute in the recharge of groundwater.

Coal mining is the major industrial activity in the area. Ground water pumping is an integral part of coal mining. Besides this, groundwater utilization is mainly for domestic and irrigation use in the study area. The stage of ground water development in the buffer zone (10 km from the periphery of the core zone) of Bhurkunda Colliery comes to about 30.40% (which falls in the **Safe** category). As per the data collected from the Central Ground Water Board, Mid-Eastern Region, Patna, the stage of ground water development in the Patratu Block is 26.82%, in which Bhurkunda Colliery and its buffer zone located and the region falls within the "**Safe**" category. So, artificial recharge is not urgently required in the buffer zone of the Bhurkunda Colliery. However, artificial recharge may be done for more use of ground water for irrigation augmentation in the study area when the source of water is easily available for recharging.

Groundwater inflow (1965 m^3/day) and mine influence area (maximum 500 m from the mine edge) have been estimated and the groundwater monitoring would be undertaken further to study the impact, if any. Bhurkunda Colliery is utilising the mine water for fulfilling the demand of domestic and industrial purpose of the project. Besides this, domestic waste water is also being recharged to the Ground water system. Utilization of mine water for irrigation use is also enhancing the ground water recharge potential through artificial recharge (Spread method) in the area.

The artificial recharge by water conservation structures in the outside mine influence areas will check water level lowering. But within the mine influence area it may not be a viable solution because of the reason that recharged water would drain into the mine at a faster rate due to the steep hydraulic gradient of mining activity affecting safety of mine and machinery. However, the impact on ground water level is being minimized by artificial recharge by spreading of pumped out water, creation and filling of ponds with excess mine water, old abandoned quarry filled with excess mine water, construction of check dams (already constructed on Naikari nadi) (Fig No: 7) and rainwater and construction of rainwater harvesting structure outside mine influence area.

Details of Balkudra Old Abandoned Quarry and its utilisation (falls under Bhurkunda Colliery):

An abandoned quarry near Balkudra project used for accumulation of excess mine water and rainwater. The length, width and average depth of the Balkudra old abandoned quarry (Fig No: 4) is 160 m, 80 m and 37 m (depth ranges from 28 m to 46 m) respectively. Volume of water can be stored during monsoon in the quarry is 0.47 MCum (103.40 M Gallon). Withdrawal of water for Integrated Domestic Water Supply from Balkudra Old abandoned quarry for nearby Project colony and peripheral villages like Bhurkunda Bazar, Jawahar nagar, Lapanga MECL colony, Hurumgarha village, Patel nagar village, Sunder nagar and Kurse village by State Government and CCL. Apart from this water supply, groundwater has also been recharged from this water filled abandoned quarry, improving the water level of the area.

Fig No.4: Balkudra Old abandoned quarry and old abandoned quarry (quarry no-2) present near Bhurkunda Colliery, Barka-Sayal Area, SKCF (rainwater is accumulated and utilized by local population as seen in the picture), Balkudra project, Barka-Sayal Area, SKCF

Fig No.6: Another old abandoned quarry (quarry no-4) present near Bhurkunda Colliery and a check dam is present constructed on the Naikari Nadi near the Bhurkunda Colliery, Barka Sayal Area, SKCF, which helps in groundwater recharging and improving the water level of the area., Barka-Sayal Area, SKCF

Fig No.8 (a), (b) & (c): Ecological Restoration of degraded mining area and Waste dump at Bhurkunda Colliery, Barka Sayal Area, SKCF.

Rain Water Harvesting is a deliberate collection and storage of rain water that runs off on natural and man-made catchments area. The amount of water harvested depends on the frequency and intensity of the rain fall and characteristics of the catchments to allow the precipitate to infiltrate through the sub-soil and percolate down to recharge aquifers. Rain water collected into the sump will be collected into old abandoned quarry after passing through the settling tank. Roof-top

rainwater harvesting is already being done in the Bhurkunda Colliery Project Office premise (where Bhurkunda Colliery exists) (Fig No: 9a to 9d). Stored water is supplied to nearby peripheral villages through pumping for domestic and irrigation uses. Rainwater harvesting and artificial recharge will also take place through these old abandoned quarry and final voids left after mine closure resulting increase of ground water potential and controlling water level lowering.

Fig: 9a- Roof Top Rainwater Harvesting in Bhurkunda Colliery PO's Office

Fig: 9c- Roof Top Rainwater Harvesting in Bhurkunda Colliery PO

The void so formed will be left till the mine is extended up to the block boundary otherwise may be backfilled by rehandling of top layer of internal dump after end of the mine operation.The void is proposed to be filled to the maximum extent possible by physical reclamation of last stage dump. The void thus left shall be used as water reservoir. This will help in maintaining the water table in the surrounding areas and may become a source of water supply to the community. The abandoned old quarry also behaves as huge ground water reservoirs and contains groundwater runoff (i.e. planned recharge). The ponds, tanks, stop dams etc constructed in the rehabilitated and affected villages also augment the groundwater recharge. Creation of awareness among workers and local peoples about rain water Harvesting and artificial recharge will be given priority. This aspect is usually covered during the Environmental Week celebrated every year (5^{th} to 12^{th} June).