

REVISED PROJECT REPORT
FOR
JAMUNA COLLIERY (U. G.)
(SOHAGPUR AREA)
WESTERN COALFIELDS LIMITED

VOLUME - ONE
TEXT AND APPENDICES



FEBRUARY, 1981

Regional Institute,

Central Mine Planning & Design Institute Ltd.

(A Subsidiary of Coal India Limited)

COAL ESTATE, CIVIL LINES, NAGPUR - 440 001

GOVERNMENT OF INDIA
MINISTRY OF ENERGY
DEPARTMENT OF COAL

Sl. No. 3011/16/61

New Delhi, the 23rd August, 1983

To,

The Chairman,
Coal India Ltd.,
10-Netaji Subhash Road,
Calcutta.

(with 10 spare copies)

Sub:- Revised Project Report for Jamuna Colliery (UG) Project of WCL.

Sir,

In pursuance of Article-3B of the Articles of Association of Coal India Ltd., the President is pleased to approve the Revised Jamuna Colliery Project of the Western Coalfields Ltd. (a subsidiary of Coal India Ltd.), for a target of production of 0.50 million tonnes/annum, at an estimated capital cost of Rs.1060.03 lakhs (Rupees ten crores sixty lakhs three thousand only) including the expenditure of Rs.487.87 lakhs incurred upto 31.3.1982.

2. The break-up of the total estimated capital cost of the project is given below:-

S.No.	Particulars	(Updated Oct. '82) Capital Cost (Rs. Lakhs)
1.	Land	2.34
2.	Building:	
	a) Service	75.34
	b) Residential	
3.	Plant and Equipment	752.93
4.	Furniture and Fittings	0.60
5.	Railway siding	19.69
6.	Vehicles	8.20
7.	Prospecting and Boring	
8.	Development	
	- Capital outlay in mines	
	- Roads and culverts	
	- Water supply arrangements	200.93
	- Pilot Scheme, S.R. & P.R. Preparation	
	Total investment (Initial)	1060.03

3. The likely Phased Production Programme of the Project is as under:-

Year	1982-83	83-84	84-85	85-86
Production (MTY)	0.18	0.28	0.36	0.50

4. The parameters of the Project, as given in the Project Report, are indicated below:

B.T.O.

a) Life of mine:

- | | |
|--------------------------------|----------|
| 1) @ 100% of target production | 23 years |
| 2) @ 85% " " " | 27 years |
| b) O.M.S./tonne | 1.23 |
| c) Manpower (No.) | 1547 |

5. Year of achieving the targeted Production 1985-86.

6. As regards the housing component of the project cost, instructions contained in this Ministry's letter No.F.10(18)/Tn. 76, dated 26.7.1977 and No.CPP-43011/33/76 dated 31.3.78 are to be strictly adhered to.

7. This sanction does not convey approval for the release of Foreign exchange for the import of goods and services or know-how. Such proposals should be made by the Company in the normal course and the approval of the appropriate authorities obtained separately by following the prescribed procedure.

8. Commencing from the next month this project should be included in the progress reports to be submitted by your company to this Ministry and other agencies as part of the Management information system.

9. The present approval is based on the Feasibility Report/project cost estimates submitted by your company for consideration to this Department and considered at the meeting of the Public Investment Board on 2.6.83. Within a year from the date of issue of this sanction, more detailed and firm-up cost estimates, substantiated by a Detailed Project Report or if a DPR has not been prepared by such contractual and/or other back up materials as might have become available, should be submitted to the Government. If detailed and firm-up cost estimates in respect of this scheme/project are not received within a year from the date of sanction, the release of funds from the Government budget is liable to be affected.

10. If there is an increase in the approved project cost exceeding 10% or if there is any significant change in the scope of the project as approved by the Government a fresh approval by the Government will be necessary.

11. This issues with the concurrence of I.F.Wing vide their U.O. No.2328/Fin/83 dtd.18.8.83.

Sd/-
(R.K. SACHDEV)
DIRECTOR

For and on behalf of the President of India

WESTERN COLFIELDS LIMITED, PLANNING DEPARTMENT, NAGPUR-440001

Ref.No.WCL/NGP/C-1(E)/VI/4964-58

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REVISIED PROJECT REPORT
FOR
JAMUNA COLLIERY (U.G.)



S U M M A R I S E D D A T A

<u>Sr.No.</u>	<u>Particulars</u>	
1.	<u>Reserve in million tes.</u>	A.Total 17.766 B.Extractable 11.55
2.	<u>Target output in m. tes</u>	0.5
3.	<u>Life of the Project</u>	23 years.
4.	<u>Quality of Coal</u>	Steam C Slack D
5.	<u>Capital outlay in lakhs Rs.</u>	
	a) Total	885.22
	b) Equity	481.45
	c) Loan	403.77
6.	<u>Capital outlay in Rs./te of annual output</u>	
	a) Total	177.04
	b) Equity	96.29
	c) Loan	80.75
7.	<u>Estimated per tonne cost of prodn. at 100% of target Rs./te.</u>	95.76
8.	<u>Average selling price Rs./te.</u>	100.30
9.	<u>Profit at ruling selling price at 100% of target Rs./te.</u>	4.54
10.	<u>Annual profit in Rs.lakhs</u>	22.70

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11.	<u>Desired selling price to yield 12% return on Equity at 100% of target Rs./te.</u>	107.3
12.	<u>Capital requirement on Plant and Equipment</u>	
	a) Total in lakhs of Rs.	596.90
	b) Per te. of annual output Rs./te.	119.38
13.	<u>Number of Personnel</u>	1547
14.	<u>O.M.S.</u>	1.23
15.	<u>Manshifts required for per 1000 tes.</u>	813
16.	<u>Anticipated date of opening revenue account</u>	Already in revenue.
17.	<u>Date of achieving 100% production</u>	April, 1985
18.	<u>Total requirement & Foreign Exchange</u>	NIL

ACT

REVISED PROJECT REPORT
FOR
JAMUNA COLLIERY (U.G.)

C H E C K L I S T

I. INTRODUCTION

Jamuna Colliery (Underground Mine) is already a working project. The project is located in Shahdol District of Madhya Pradesh. The Anuppur Chirimiri Branch line of S.E. Railway passes parallel to the northern Boundary of the mine. Harrad is the nearest Rly. Station located towards the north west corner of the colliery property. A metalled road linking Anuppur to Manendragarh passes north of the property and Kotma town. The colliery is approachable from Kotma town by a 5 kilometers long metalled road.

The project was started in the year 1961-62. The first report for the project was prepared in 1961 for target output of 1.0 million tonnes (0.69 m. tes. from U.G. and 0.31 m. tes from O.C.) at a capital outlay of Rs.487.39 lakhs. The report was revised in Dec. '72 envisaging the target for opencast and underground mines at 0.50 million tes. from each. The revised report estimated the capital at Rs.785.16 lakhs (Rs.279.26 lakhs for U.G., Rs.452.11 lakh for O.C. and Rs.53.79 lakhs

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as common).

For technical reasons it has now been decided to operate opencast and underground mines of the project as separate units. The report under consideration deals with the reorganisation of underground mines and revision of the approved project report for the underground part.

II. JUSTIFICATION OF THE PRESENT REVISION

1. The capital expenditure at the project has exceeded the project report provision. The expenditure till March 1980 is Rs. 371.95 lakhs as against Rs. 279.26 lakhs envisaged in the approved Project Report.
2. It is considered necessary to operate the open cast mines of Jamuna Colliery as separate units as some of the quarriable zones which were not considered in the earlier reports on economic grounds are now being considered as quarriable. The location of these zones are scattered and far away from the underground mine.
3. As a result of nationalisation of mines and because of further exploration around the existing mines for reorganising them, readjustment of mine boundaries has become essential. The boundaries of Jamuna, Kotma, Govinda and Bhadra underground

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mines have been readjusted either due to geological continuity or technical reasons.

4. At present production from Bhadra U.G. mine is being despatched from Jamuna CHP and this will continue in future also. The CHP of Jamuna Colliery needs certain modification in view of the above and also for despatching the full production of Jamuna itself from different inclines.
5. The production of the mine has been low for non-availability of working areas for final extraction. Due to fear of water bodies above Middle Kotma Seam caving has not been permitted by DGMS. To overcome the above, scheme has already been prepared, this will be considered under the present report. The production will further come down as a result of readjustment of boundaries. To compensate this and to achieve the full target additional inputs are required.

III. PRODUCTION AND INFRASTRUCTURE

1. Reserves (Million Tonnes)

a) SEAM	GROSS RESERVES (in m.tes.)	i) Less for clay zone/ for less hard cover zone	Net Reser- ves in m. tes. after 10% deduc- tion
		ii) Developed pillar.	
Middle Kotma	10.535	2.441 (i)	7.287
Lower Kotma II	13.792	2.130 (ii)	10.479
	<u>24.308</u>	<u>4.571</u>	<u>17.756</u>

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b)	Net extractable (in mill. tes.)	
	Middle Kotma	- 4.73
	Lower Kotma II	- 6.82
	Total :	<u>11.55</u>
2.	Target Output (million tes./annum)	0.50
3.	Grade	
	Steam	C
	Slack	D
4.	Infrastru-cture	
	A. Power	

The project already receives power from Madhya Pradesh Electricity Board's power station. Power is received at the project's main substation near Jamuna 1 & 2 inclines.

B. Water supply

The existing water supply arrangement is considered adequate. The source is mine water.

C. Transport

- a) The area is well served by both road and railway communication.
- b) The underground coal transport system is combination of chain conveyors, haulages belt conveyors.

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- c) The project has its own railway siding for the surface despatch of coal. There will be two openings for production. One will be directly feeding the CHP while from the other truck transportation will be done up to the CHP.

5. Manpower

a)	Officers	24
b)	Monthly Paid	216
c)	Daily Rated	
	i) Unskilled	132
	ii) Semi-skilled	750
	iii) Skilled	346
d)	Piece Rated	79
e)	Others (Badli, Casual etc.)	NIL
TOTAL		1547

6. O.M.S. (Overall) — 1.23

At various capacities as under :

	80%	85%	90%	100%
Protn	0.4	0.425	0.45	0.50
Oms	0.98	1.05	1.11	1.23

7. Schedule of Production

Year	-	1981-82	82-83	83-84	84-85	85-86
In m. tes.		0.12	0.18	0.25	0.36	0.50

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IV

TECHNOLOGY

1. Average stripping ratio - Not applicable
2. Stowing - Not Envisaged.
3. Life of the Mine - 23 years.

4. Geology

4.1

Jamuna Colliery area forms a part of the mature South Rewa Plateau constituting a part of main Sohagpur Plain. The geological sequence encountered is represented by Alluvium, Barakars, Talchirs and Archeans. Only Barakar formation consists of workable coal seams. Out of the four coal bearing horizon proved only two are found workable in Jamuna Colliery property.

4.2

The general strike of the coal seams, north of fault F4-F4 is E-W whereas in the south it is north south and the deposit is anticlinal. The gradient varies from 1 in 15 to 1 in 40.

The working of mine will be effected by only three number of faults. The throw of these faults vary from 5 to 25 meters.

5.

Seams to be worked - Two - Middle Kotma Seam
Lower Kotma II Seam.

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6. Thickness of Seams: Middle Kotma - 1.2 to 4.1
in general 1.2 to 2.5
Lower Kotma II Seam - 1.2 to 3.05
in general 1.2 to 2.5
(Thickness of 1.2 and above has
been considered).
7. Dip of the seams: 1 in 15 to 1 in 40
8. Type Non-Coking.
9. Average Ash Middle Kotma - 27.5
Lower Kotma II - 20.5
(Picking has been envisaged).

10. Mining Technology:a) Mode of Entry

There are two workable coal seams. The lower Kotma II Seam has already been approached by a pair of inclines. The top seam i.e. Middle Kotma seam will be approached by a pair of new inclines. An air shaft is also proposed for ventilation of Middle Kotma Seam. No interconnection is proposed between the two inclines. Production will come from two separate inclines.

b) Method of Mining

- i) It is envisaged to work both the seams simultaneously to produce the desired quantity of coal

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ii) It is proposed to develop the virgin property in both the coal seams by Bord and Pillar system using side discharge loaders. Coal winning will be by blasting after giving cut by crawler mounted coal cutting machine except in places where the seam thickness is less than 1.8 meters. The blasted coal will be loaded from the face on to the light duty chain conveyor by side loaders. Depillaring operation would be mechanised using side discharge loader for loading blasted coal in face on to light duty chain conveyor.

In already developed areas of lower Kotma II seam the thickness of seam is by and large less than 1.8 meters. Depillaring in such areas therefore will be without using side loaders loading will be done by shovelling of coal on to chain conveyor.

Similarly in virgin property also, where the seam thickness will go down less than 1.8 meters loading will be done by shovelling on to chain conveyors both during development & depillaring

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c) Ventilation

Separate ventilation arrangement have been provided for the workings of the two coal seams. Two fans of 5000 m³ and 3500 m³ per minute capacity with 90 mm and 75 mm water gauge have been provided.

d) Winding - Not Applicable.e) Pumping and Drainage

As a special case, considering the possible water bodies above the coal seams, pumping capacity of 10750 GPM (810 L/S) has been provided in the Lower Kotma II seam and pumping capacity of 4000 GPM (320 L/S) has been provided in the Middle Kotma Seam. However, the final picture will emerge after the caving of 1st depillaring panel.

CAPITAL INVESTMENT AND ECONOMICS

V.	Capital investment (Rs.Lakhs)	Net - Total	- 885.22
1.		Addl.	- 514.17
	(Break up as detailed in Annexure 'A')		
2.	Foreign Exchange Component	- Nil	
3.	Capital requirement for P&M (Rs.in lakhs)	Total:	596.90
		Additional:	455.04

x/-

VI 1. Reference for fund in - Provided in WCL
Budget Budget.

2. Profitability -

S.No.	Levels of Production	80%	85%	90%	100%
1.	Production (m.tes.)	0.40	0.425	0.45	0.50
2.	Variable Cost/te (Rs)	9.84	9.84	9.84	9.84
3.	Fixed Cost/te (Rs)	107.40	101.08	95.47	85.92
4.	Total Cost/te (Rs)	117.24	110.92	105.31	95.76
5.	Capital investment per tonne of annual output (Rs)	221.30	208.28	196.71	177.04
6.	Equity Capital per tonne (Rs.)	120.36	113.28	106.99	96.29
7.	Return on Equity @ 12% (Rs.)	14.44	13.59	12.84	11.55
8.	Minimum selling price to yield the above return (Rs.)	131.68	124.51	118.15	107.31
9.	Present selling price per tonne (Rs.)	100.30	100.30	100.30	100.30
10.	Profit/Loss per te. (Rs) (-)	16.94	-10.62	-5.01	4.54
11.	R.O.E. (%) (-)	14.07	-9.38	-4.68	4.71
12.	R.O.I. (Gross i.e. before charging interest on loan capital at cost) % (-)	2.64	-0.08	-2.47	7.58
13.	B.E.P. (%)				94.98

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1. Linkage - No fixed linkage
2. Demand - The projected coal production of WCL is less than the projected coal demand.
3. Current Market:

Price/te (Rs.)	Steam Grade 'C' - 107.50
	Slack Grade 'D' - 91.50

1. Social consideration and overhead

The project provides an employment potential for 476 additional persons. Provision already exists to provide all the social benefits to be provided to the industrial workers.

The project is technically as well as economically viable. The present investment and cost of production as well as the demand of coal from CIC field justifies the revision of the Project Report.

Chandra

