Third US-India Working Group Meeting On Coal

Extraction of steep Seams

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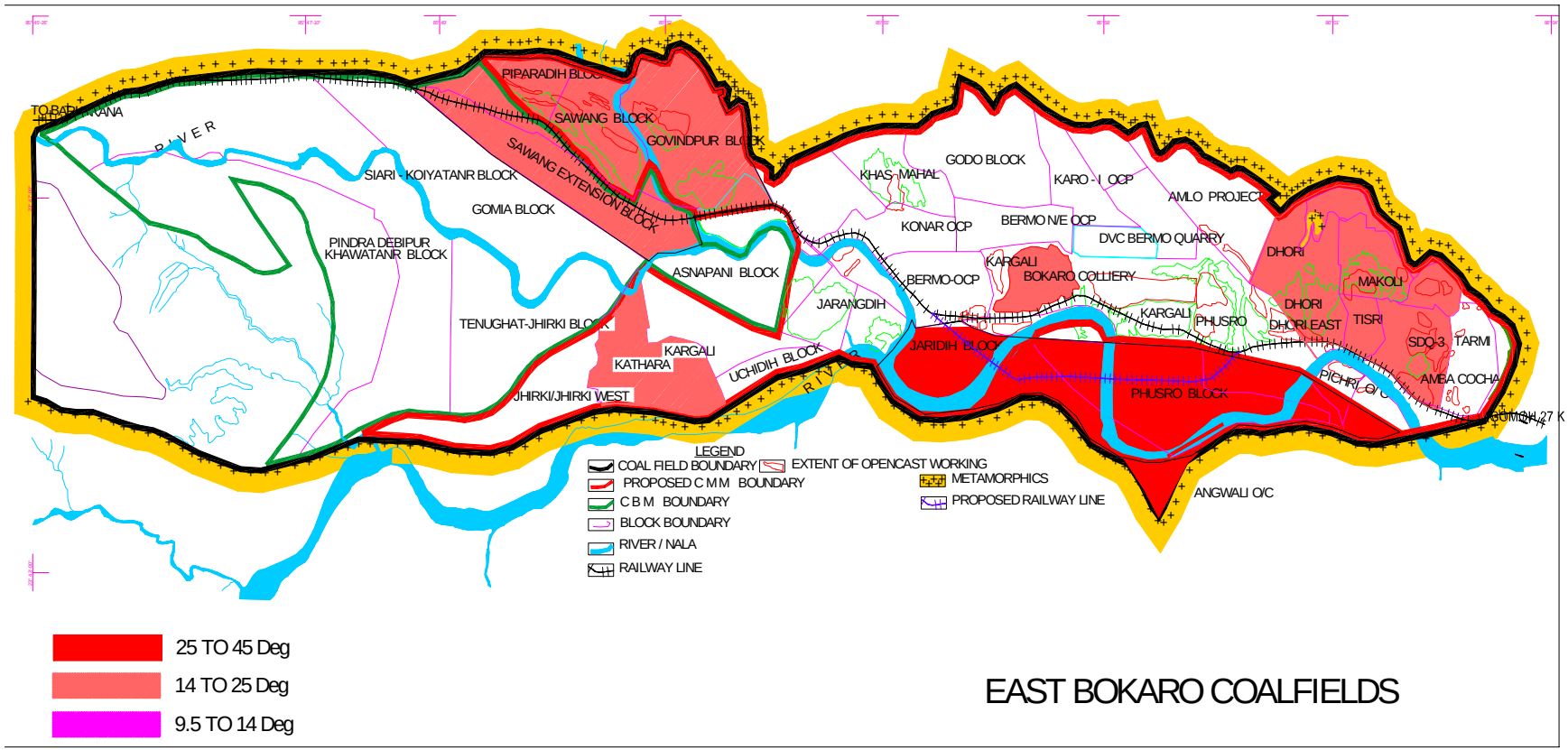
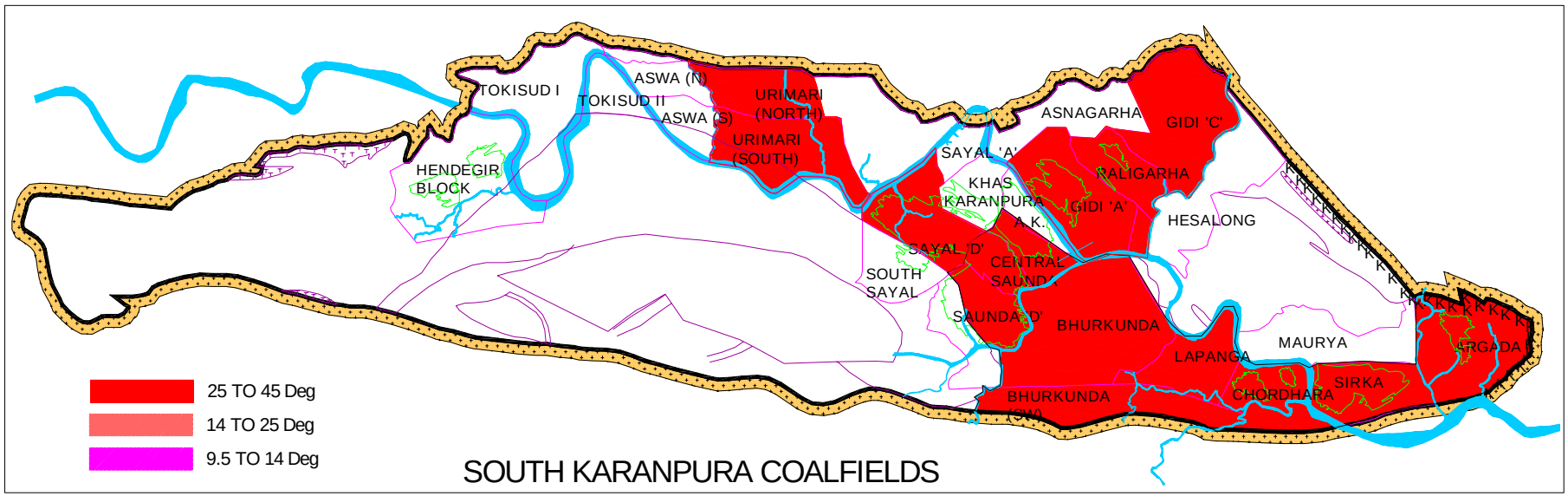
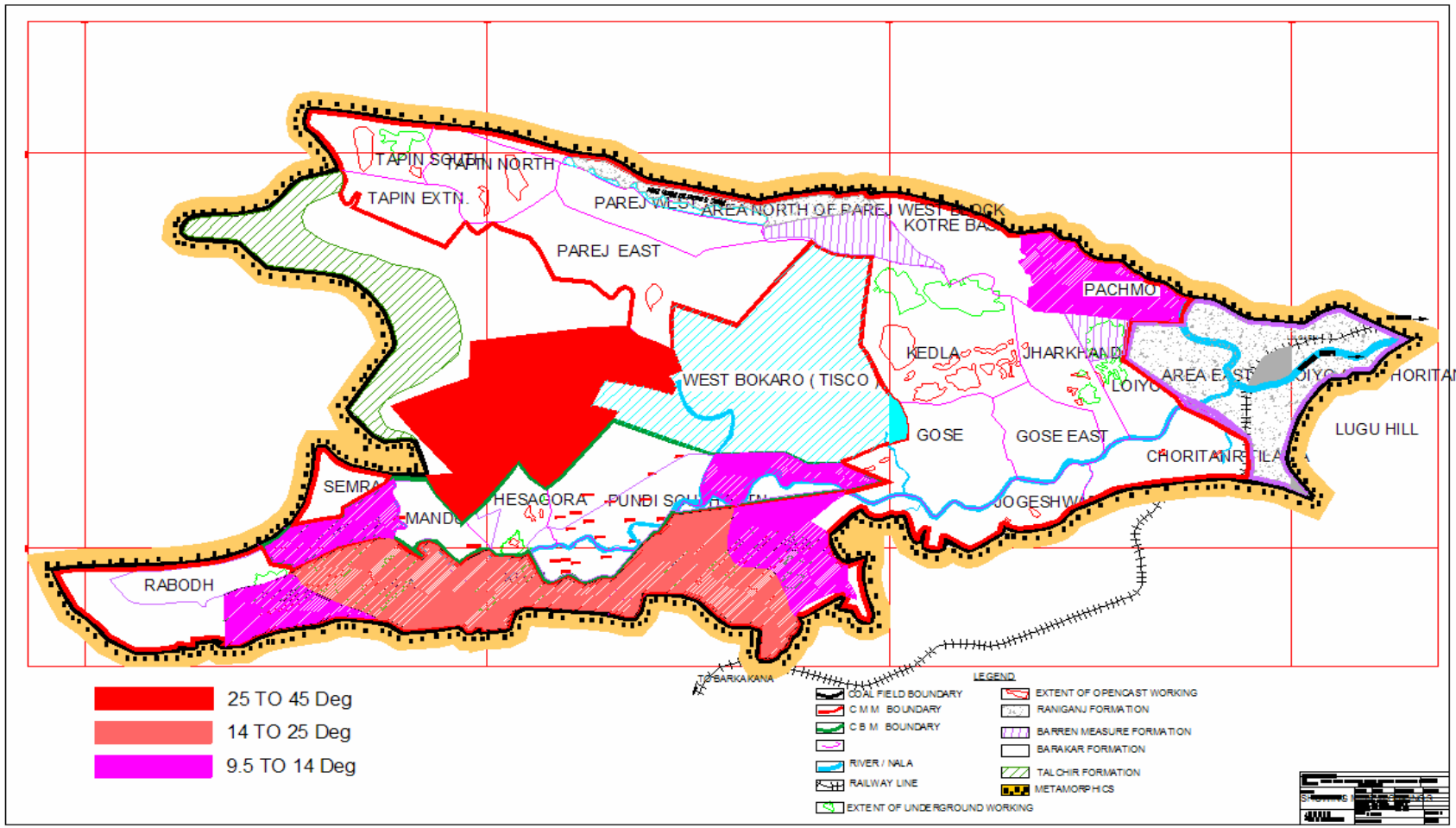
Data related to Steep Seams in CCL Command Area								
Coalfield	**Areas**	**Name of the Geological Block**	**Name of the coal seams with steep gradient**	**Thickness range (in M) of the seams**	**General steepness**	**Geological Reserves (in MT)**	**Mineable reserves in MT**	
South Karanpura	Argada	Argada,Sirka,Religarha,Gidi 'C' , Gidi 'A'	Kurse to Argada 'T'	1.5 to 28	1 In 1.5 to 1 In 3	914.8	299.3	PARTLY WORKING
South Karanpura	Barka Sayal	Lapanga, Bhurkunda, Central Saunda, CCL Saunda, Saunda 'D', Sayal 'D', Urimari	Saunda to Argada 'T'	1.5 to 28	1 In 1.5 to 1 In 3	1486.9	263.5	PARTLY WORKING
West Bokaro		Pundi	VIII	2.5 to 5.0	1in 2	20.0	8.0	VIRGIN
Ramgarh	Rajrappa	Kaitha	VII Top /Bott.	9.7 to 20.4	1 in 2 to 1 in 3	40.0	13.0	VIRGIN
East Bokaro	Dhori	Dhori Khas OC (Pitchri)	Karo	12.5	1 in 2 to 1 in 3	162.0	25.0	VIRGIN
					Sub total	2623.72	608.78	
West Bokaro	Kuju	Pindra	XI	5 to 6.5	1in 3	77.9	10.0	WORKING
West Bokaro	Kuju	Topa	X Top	0.5 to 2.6	1in 2 to 1in 4	36.0	5.0	WORKING
West Bokaro	Kuju	Kuju	XIII	1.7 to 3.1	1in 2	281.4	16.0	WORKING
West Bokaro	Kuju	Ara	X	6.7 to 10.6	1in 3	15.0	5.0	WORKING
West Bokaro	Kuju	Sarubera	VA	2.7 to 7.8	1 in 5	32.1	9.0	WORKING
West Bokaro	Kuju	Rajrappa Block I, II, IV	VIIIA	1.8 to 4.7	1 in 4	150.0	100.0	WORKING
East Bokaro	Kathara	Kathara	Up.Kathara	3.8	1in 3	75.0	5.0	WORKING
East Bokaro	Kathara	Sawang	Up. Kathara	0.4 to 3.4	1 in 2 to 1 in 4	35.8	5.5	WORKING
East Bokaro	Kathara	Govindpur UG	Jarangdih Top	0.6 to 2.5	1 in 2.5 to 1in 5	26.0	12.0	WORKING
East Bokaro	Kathara	Govindpur OC	Kathara	1.76 to 5.53	1 in 3	8.5	6.8	WORKING
East Bokaro	Kathara	Kargali	Kargali OC	19.62 to 26	1in 3	51.0	2.0	WORKING
East Bokaro	Kathara	Bokaro OC	Bermo	11.3 to 16.3	1 in 4	18.6	18.0	WORKING
East Bokaro	Kathara	NSD UG	Karo V	1.8 to 4.8	1 in 3	3.0	1.6	WORKING
					Sub total	810.3	195.9	


PIPARADIH BLOCK
SAWANG BLOCK
GOVINDPUR BLOCK
SAWANG EXTENSION BLOCK
SIARI - KOIYATANR BLOCK
GOMIA BLOCK
PINDRA DEBIPUR
KHAWATANR BLOCK
ASNAPANI BLOCK
TENUGHAT-JHIRKI BLOCK
KARGALI
KATHARA
JHIRKI/JHIRKI WEST
UCHIDIH BLOCK
JARANGDIH
JARIDIH BLOCK
BERMO-OCP
KHAS MAHAL
GODO BLOCK
KARO - I OCP
AMLO PROJECT
KONAR OCP
BERMO N/E OCP
DVC BERMO QUARRY
KARGALI
BOKARO COLLIERY
DHORI
MAKOLI
DHORI
KARGALI
PHUSRO
DHORI EAST
TISRI
SDQ-3
TARMI
AMBA COCHA
PHUSRO BLOCK
ANGWALI O/C
LEGEND
COAL FIELD BOUNDARY
EXTENT OF OPENCAST WORKING
PROPOSED C M M BOUNDARY
METAMORPHICS
C B M BOUNDARY
PROPOSED RAILWAY LINE
BLOCK BOUNDARY
RIVER / NALA
RAILWAY LINE
25 TO 45 Deg
14 TO 25 Deg
9.5 TO 14 Deg
EAST BOKARO COALFIELDS


TOKISUD I
TOKISUD II
ASWA (N)
ASWA (S)
URIMARI (NORTH)
URIMARI (SOUTH)
HENDEGIR BLOCK
ASNAGARHA
GIDI 'C'
SAYAL 'A'
RALIGARHA
KHAS KARANPURA
GIDI 'A'
A K.
HESALONG
SAYAL 'D'
CENTRAL SAUNDA
SOUTH SAYAL
SAUNDA 'D'
BHURKUNDA
MAURYA
LAPANGA
SIRKA
CHORDHARA
BHURKUNDA (SW)
ARGADA
25 TO 45 Deg
14 TO 25 Deg
9.5 TO 14 Deg
SOUTH KARANPURA COALFIELDS


TAPIN SOUTH
TAPIN NORTH
TAPIN EXTN.
PAREJ WEST
AREA NORTH OF PAREJ WEST BLOCK
KOTRE BAS
PAREJ EAST
PACHMO
KEDLA
JHARKHAND
AREA EAST
LOIYO
HORITANR TILAIYA
WEST BOKARO (TISCO)
GOSE
GOSE EAST
LUGU HILL
CHORITANR TILA
SEMRA
MANDO
HESAGORA
PUNDI SOUTH
JOGESHWA
RABODH
TO BARKAKANA
25 TO 45 Deg
14 TO 25 Deg
9.5 TO 14 Deg
LEGEND
COAL FIELD BOUNDARY
C M M BOUNDARY
C B M BOUNDARY
RIVER / NALA
RAILWAY LINE
EXTENT OF UNDERGROUND WORKING
EXTENT OF OPENCAST WORKING
RANIGANJ FORMATION
BARREN MEASURE FORMATION
BARAKAR FORMATION
TALCHIR FORMATION
METAMORPHICS

DIFFICULTIES EXPERIENCED IN MINING STEEP SEAMS IN OPENCAST MINES

1. COAL DILUTION DUE TO WEDGE EFFECT IN HORIZON MINING.

2. MANAGEMENT OF WATER IN OPENCAST MINES WITH STEEP SEAMS.

3. DEPLOYMENT OF HEAVY EARTH MOVING MACHINERY IN LESS PRODUCTIVE CONDITIONS.

4. WORKERS MORE PRODUCTIVE IN WORKING IN INCLINED SEAM SLICING CONDITION.

DIFFICULTIES EXPERIENCED IN MINING STEEP SEAMS IN UNDERGROUND MINES

1. MANAGEMENT OF COAL TRANSPORTATION.

2. MANAGEMENT OF WATER IN UNDERGROUND MINES WITH STEEP SEAMS.

3. MANAGEMENT OF SUPPORT SYSTEM.

4. MANAGEMENT OF CAVING OPERATIONS AND RELATED SAFETY ISSUES.

FOLLOWING COLLABORATIVE OPPORTUNITIES HAVE BEEN IDENTIFIED:

1. OPENCAST MINING TECHNOLOGY FOR WORKING DEEP AND STEEP SEAMS (MORE THAN 300m DEPTH) DEPOSITS OF LOW GRADE COAL.

2. IMPROVEMENT OF AVAILABILITY & UTILISATION OF HEMM BY MINE MANAGEMENT SYSTEM.

3. STEEP SEAM MINING TECHNOLGY –RIPPER DOZER COMBINATION FOR HARD COAL MINING.

4. METHODS FOR REDUCTION OF DILUTION IN COAL QUALITY DUE TO TOP AND BOTTOM WEDGE IN HORIZON MINING.

5. LASER SCANNER TECHNOLOGY FOR RAPID ASSESSMENT OF COAL AND OB VOLUME IN OPENCAST MINES PROPOSED FOR OUTSOURCING.

6. ADVANCED MINE SAFETY SYSTEMS FOR DANGER PREDICTION (Roof fall prediction, Water body identification) MONITORING AND PREVENTION SYSTEM.

COLLABORATIVE OPPORTUNITIES FOR OPENCAST CONTINUED

1. EXPLOSIVE SIDECASTING TECHNIQUES OF HANDING OB IN MINES LIKE RAJRAPPA OF CCL

2. APPLICATION OF HIGHWALL MINER, WHICH ARE EFFICIENT, WITH DEEP PENETRATION CAPABILITIES AND ASSOCIATED WITH EFFECTIVE MINE CLOSURE WITH STOWING.

3. COAL TRANSPORTATION BY HIGH CAPACITY SKIPS IN DEEP PIT SITUATIONS.

4. APLICATION OF HIGH ANGLE CONVEYOR AND PIPE CONVEYORS FOR LARGE VOLUME OF COAL TRANSPORATION FROM STEEP SEAM DEEP PITS.

5. DUMP STABILITY MANAGEMENT IN STEEP SEAM SITUATIONS.

COLLABORATIVE OPPORTUNITIES IN UNDERGROUND MINING

1. MECHANIZATION IN STEEP SEAM MINES - POWERED SUPPORT TECHNOLOGY WITH SHEARER OR CONTINUOUS MINING TECHNOLOGY.

2. THICK AND STEEP SEAM MINING BY MECHANISED METHOD FOR DEVELOPED AS WELL AS VIRGIN SEAMS.

3. TECHNOLOGY FOR EXTRACTION OF PILLARS ALREADY DEVELOPED BY BORD AND PILLAR SYSTEM.

4. UNDERGROUND COAL GASSIFICATION TECHNOLOGY FOR SITUATIONS WHERE NORMAL MINING IS NOT FEASIBLE.

5. COAL BED METHANE.

6. ONLINE MONITORING OF MINE PARAMETERS WITH RESPECT TO SAFETY , HEALTH AND PRODUCTION.

7. DETECTION AND RANGING OF UNKNOWN UNDERGROUND WATER BODIES, WHICH LIES IN PROXIMITY OF WORKINGS BY SCIENTIFIC METHODS.

8. PREDICTION OF SEAM CAVABILITY, MAINFALL CONDITIONS BY ONLINE EXTERNAL MONITORING FROM SURFACE.

9. ADVANCED MINE RESCUE SYSTEM.

THANKS