सत्यमेव जयते

वार्षिक रिपोर्ट
ANNUAL REPORT
2014

भारत सरकार
श्रम एवं रोजगार मंत्रालय
खान सुरक्षा महानिदेशालय

GOVERNMENT OF INDIA
MINISTRY OF LABOUR & EMPLOYMENT
DIRECTORATE GENERAL OF MINES SAFETY

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National Emblem

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F O R E W O R D

Minerals constitute the back bone of economic growth of any nation and India has been eminently endowed with this gift of nature. Mineral resources provide inputs and raw materials for agriculture, power generation, construction activities and other industries. As the mineral resources are limited and non-renewable, it becomes imperative to achieve the best use of available mineral resources by scientific methods of mining along with highest safety standards. There has been quantum jump in the output of coal, metal, non-metal and oil sector mines and at the same time employment of persons has also been increased in the mines of our country.

Mining activity being hazardous in nature, persons working in this industry are exposed to risk of health and safety. Every accident whether fatal, serious or leading to permanent disability causes suffering to the victims and their family members.
The Annual Report pertains to occupational safety and health matters of persons employed in mines in the country. In the year 2013 there were 77 fatal accidents resulting in 82 fatalities in coal sector where as there were 58 fatal accidents resulting in 74 fatalities in non coal sector.

A review of the accident statistics for the Indian Mines over the last century indicates that the fatality rate per thousand persons employed in coal mines has shown a consistently declining trend from 0.91 in 1951 to 0.23 in 2013, whereas in non-coal sector fatality rate declined from 0.67 in 1951 to 0.35 in 2013.

The main cause of accidents in underground coal mines has been due to ground movement while in opencast mines it is transport machinery. During the year 2013 accident due to ground movement has contributed about 23% whereas transport machinery contributed 43%. Looking at the last five years trend ground movement has contributed about 21% and transport machinery contributed 41%.

Action to reduce the number of persons getting exposed to green roof areas by adopting mechanized loading system with matching support system is being emphasized. In this volume, roof fall accident have been analyzed for the last five years and the results are presented.

DGMS has outlined the details of a comprehensive, risk assessment based approach toward prevention of accidents, which not only aim towards being better informed under emergency situations, but also provides a guideline for pursuing zero accidents from all possible sources. In order to move forward, risk-based decision making must be emphasized, employed and improved in all aspects of management. Management plans need to be developed to address all hazards and related contingencies, simple regulatory compliance alone is not sufficient to mitigate risks.

(Rahul Guha)
Director-General of Mines Safety

खान सुरक्षा महानिदेशालय

श्री राहुल गुहा

खान सुरक्षा महानिदेशक

श्री पी. रंगनाथीश्वर

खान सुरक्षा उपमहानिदेशक (मु.)

प्रकाशन से संबंधित अधिकारी और कर्मचारीगण

श्री मलय टिकादार, खान सुरक्षा निदेशक (सोमा)

श्री आई. सत्यनारायण, खान सुरक्षा उपनिदेशक (सोमा)

श्री वीरेन्द्र प्रसाद केसरी, वरीय सांख्यिकी अधिकारी

श्री सुभाष प्रसाद राम, कार्यालय अधीक्षक

श्री देवव्रत सरकार, कार्यालय अधीक्षक

श्री सदाशिव प्रसाद, डी.पी.ए. श्रेणी - 1

मो. साकिब, डी.पी.ए. श्रेणी-1

श्री राजू कुमार गुप्ता, आशुलिपिक

श्रीप्रमोद कुमार, उ.व.लि./रिप्रोग्राफर

श्री समीर कुमार सिन्हा, उ.व.लि.

श्री अशोक दास, एम.टी.एस.

C O N T E N T S

LIST OF APPENDICES

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1.0 Introduction

Under the Constitution of India "Regulation of Labour and Safety in Mines and Oilfields" is a central subject (Entry 55 of the Seventh Schedule of Article 246). The matter is regulated by the Mines Act, 1952 and the Rules and Regulations framed thereunder. It extends to whole of India including territorial water i.e. upto 12 nautical miles in the sea measured from appropriate base line. These statutes are administered by Directorate-General of Mines Safety (DGMS) under the Union Ministry of Labour & Employment.

1.1 Historical Background

Although exploitation of minerals has been going on in the country from pre-Christian era, it was only towards the end of 19th Century that attempts were made by the state for regulation of employment and working conditions therein. Following the International Labour Conference in Berlin in 1890, the then Government of UK through the Secretary of State for India asked the Government of India to consider the desirability of undertaking legislation for inspection of mines in general and coal mines in particular and for regulation of employment therein of men, women and children. Accordingly in 1894, Mr. James Grundy was appointed as first ever Inspector of Mines in India within the organization of Geological Survey of India. Mr. Grundy recommended that provisions be made for the minimum age of employment; notice of opening and of accidents, first-aid, management and supervision etc. Major disasters at Kolar Gold Field in 1897 and at Khost Coal Mines, Baluchisthan (presently in Pakistan) in 1898 expedited finalization of the first Mines Act which was enacted on 22nd March, 1901. A Bureau of Mines Inspection was started in Calcutta on 7th January 1902 to administer the provisions of the Mines Act, 1901. The organization was renamed as Department of Mines and its office was shifted to Dhanbad in 1908. In 1960, the organization was renamed as Office of the Chief Inspector of Mines. Again in 1967 the name of the organization was changed to Directorate-General of Mines Safety (DGMS). In 1988 DGMS was declared a Scientific and Technological Organization.

Apart from administering the Mines Act and legislation framed thereunder, DGMS also administers certain allied legislation. A list of legislation administered by DGMS is given at Appendix-I.

1.2 Organizational Set-up of DGMS

Directorate-General of Mines Safety is a multi-disciplinary organization with Inspecting Officers from Mining, Mechanical and Electrical engineering and Occupational Health disciplines. Officers appointed to different technical posts in DGMS are selected by U.P.S.C. They are required to have Degree in Mining or Mechanical or Electrical Engineering with several years of experience, varying from seven to ten years of working in responsible capacity in mines or allied industry.

Besides, officers of mining cadre posses First Class Mine Manager's Certificate of Competency. The Occupational Health cadre is manned by qualified and experienced medical personnel.

The organization has its headquarters at Dhanbad (Jharkhand) and is headed by the Director-General of Mines Safety. At the headquarters, the Director-General is assisted by specialist staff-officers in mining, electrical and mechanical engineering, occupational health, law, survey, statistics, administration and accounts disciplines. The headquarters has a technical library and S&T laboratory as a back-up support to the organization. Extensive computerization has been done in head office and in the field offices to upgrade the standard of work. The head office and some of the field offices have access to the internet enabling these to place themselves at par with other developed countries of the world so far as the communication with the use of computer is concerned. DGMS has a plan to establish a network for all its offices through Internet. A web page on DGMS has already been launched during the centenary year.

The field organization has a two-tier network of field offices. The area of jurisdiction of DGMS covering the entire country is divided into 8 zones, each under the charge of a Deputy Director-General. There are three to four Regional offices under each zonal office. Each Region is under the charge of a Director of Mines Safety. There are in all 29 such Regional Offices. Sub-regional offices have been set up in important areas of concentrated mining activities away from Regional office. There are 3 such sub-regional offices, each under the charge of a Deputy Director. Each Zone, besides having inspecting officers of mining cadre has officers in electrical, mechanical engineering and occupational health disciplines.

Organization chart of DGMS are at Appendix-IIA & IIB. Table - 1 shows the discipline-wise strength of inspecting officers as on 31.12.2014. A statement showing posting of Group 'A' & 'B' officers in DGMS during the year 2014 are given at Appendix-III.

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TABLE:1	**STRENGTH OF INSPECTING OFFICERS AND SANCTIONED POSTS AS ON 31.12.2014**							
DESIGNATION	DISCIPLINE							
	MINING		ELECTRICAL		MECHANICAL		O. H	
	S	P	S	P	S	P	S	P
Director General	1	1	-	-	-	-	-	-
Dy. Director General	9	6	1	1	1	1	-	-
Director	50	43	16	5	16	1	-	-
Dy. Director	99	81	34	19	33	14	5	0
Assistant Director	-	-	-	-	-	-	Gr.I-4	2
Total	**159**	**131**	**51**	**25**	**50**	**16**	**9**	**2**

S – Sanctioned P - In Position

1.3 Role and Function of DGMS

Mission of DGMS
The mission of DGMS is To identify and reduce risk of accidents and diseases in and around the mine through:- Development of suitable legislation, rules, regulations, standards and guidelines; Adequate measures to ensure compliance and Awareness initiatives to inculcate safety and health culture amongst work-persons and stakeholders.

Vision of DGMS
The vision of DGMS is "To attain risk and hazard free conditions of work and welfare of persons employed in mines."

The functions of DGMS broadly include:

1. Inspection of mines
2. Investigation into -
   (a) accidents
   (b) dangerous occurrences - emergency response
   (c) complaints & other matters

3. (a) Grant of :
      (i) statutory permission, exemptions & relaxations
      (ii) approval of mine safety equipment, material & appliances
   (b) Interactions for development of safety equipment, material and safe work practices through workshop etc.
   (c) Development of Safety Legislation & Standards
   (d) Safety Information Dissemination
4. Conduct of examinations for grant of competency certificates.
5. Safety promotional initiatives including :
   (a) Organisation of -
      - Conference on Safety in Mines
      - National Safety Awards
      - Safety Weeks & Campaigns
   (b) Promoting -
      - safety education and awareness programmes
      - workers' participation in safety management through -
         - workmen's inspector
         - safety committee
         - tripartite reviews

1.4 Gazette Notification

Following gazette notifications were issued during the year 2014:

TABLE: 2	Notification No. & date	Brief Subject
1.	1586GI/2014	Modification of notification published in the Gazette of India, Part-II, Section 3 (I,) dated28 July, 2007 (G.S.R. 154) (i) Safety Goggles-IS 5983:1980 (ii) Reusable Earplugs-IS 9167: 9179 &

		IS 6229: 1980
2.	3488 GI/2014	Notification published in the Gazette of India, Part-II, Section 3 (i) Regarding protective footwear & Helmet will be used in Coal, Metalliferous and Oil Mines.

1.5 Measures to improve safety in mines:

Since mining is beset with many inherent hazards, detailed precautions have been laid down in the Mines Act and the Rules and Regulations framed thereunder to guard against dangers in mines and it is the responsibility of the mine management to comply with the same. While the onus of providing for and ensuring safety in mines rests with the mine managements, as clearly laid down under section 18 of the Mines Act, 1952 as "***The owner and agent of every mine shall each be responsible for making financial and other provisions and for taking other such steps as may be necessary for compliance with the provisions of this Act and regulations, rules, bye-laws and orders made thereunder."***

The DGMS has the responsibility to see that the safety law is kept updated to absorb the technical advancements as well as to make the same comprehensive, practicable and legally sound and also to carry out periodic inspection of mines to oversee compliance of safety laws. The Mines Act and the subordinate legislations framed thereunder is periodically updated for the purpose. Each and every accident involving fatality is enquired into by an officer or a team of officers of DGMS. A few accidents involving serious bodily injury and most of the important dangerous occurrences are also investigated by DGMS Officers.

Action taken subsequent to inspections:

1 Pointing out contraventions
2 Withdrawal of permission
3 Issue of improvement notices
4 Prohibition of employment
5 Informal stoppages
6 Prosecution in the court of law

1.6 Inspection & Enquiries

Discipline-wise number of inspections and enquiries made by the inspecting officers are given in table:3.

TABLE:3	**NUMBER OF INSPECTIONS AND ENQUIRIES MADE DURING THE YEAR 2014**					
Discipline of Inspection Service	Coal Mines		Metal Mines		Oil Mines	
	Inspections	Enquiries	Inspections	Enquiries	Inspections	Enquiries
Mining	3950	986	5257	604	534	33
Electrical	1314	122	349	25	155	0
Mechanical	718	117	250	24	97	3
Occupational Health	65	55	33	0	0	0
TOTAL	**6047**	**1280**	**5889**	**653**	**786**	**36**

1.7 Improvement Notices & Prohibitory Orders

1.7.1 Coal Mines

138(One hundred thirty eight) improvement notices under various provisions of the statutes were issued as a result of inspections of the mines during the year 2014. These improvement notices were issued for various types of serious defects, details of which are given in table: 4 below :

TABLE:4	IMPROVEMENT NOTICES ISSUED UNDER SECTIONS 22(1) AND 22A(1) OF THE MINES ACT, 1952 IN COAL MINES DURING 2014	
SL.NO.	NATURE OF DEFECT	NO. OF CASES
1.	High benches in opencast workings	28
2.	Inadequate support	02
3.	Poor ventilation	10
4.	Inadequate coal dust suppression	04
5.	Isolation stopping	02
6.	Improper/ non-provision of travelling road	11
7.	Danger of Inundation	02
8.	Unstable workings	00
9.	Lag in stowing	02
10.	Accumulation of gases	00
11.	Defective Electrical installation	01
12.	Inadequate earth leakage protection	00
13.	Defective winding rope	01
14.	Other defects in winding installation	06
15.	Defective shot-firing practices	02
16.	Others	67
	TOTAL	**138**

57 (fifty seven) prohibitory orders under Section 22(3), 22A(2) and 22(1A) of the Mines Act, 1952 were issued during the year 2014. These orders were imposed for various dangerous conditions prevailing at the mines, details of which are given in table 5:

TABLE:5	PROHIBITORY ORDERS ISSUED UNDER SECTIONS 22(3) AND 22A(2) AND 22(1A) OF THE MINES ACT,1952 IN COAL MINES DURING 2014	
SL.NO.	NATURE OF DEFECT	NO. OF CASES
1.	High benches in opencast workings	18
2.	Inadequate support	00
3.	Poor ventilation	02
4.	Inadequate coal dust suppression	00
5.	Isolation stopping	04
6.	Improper/ non-provision of travelling road	00
7.	Danger of Inundation	08
8.	Unstable workings	00
9.	Lag in stowing	01
10.	Accumulation of gases	00
11.	Defective Electrical installation	00
12.	Inadequate earth leakage protection	00
13.	Defective winding rope	00
14.	Other defects in winding installation	02

15.	Defective shot-firing practices	00
16.	Others	22
	TOTAL	**57**

1.7.2 Metalliferous Mines

In metalliferous mines inadequate benching and unstable slope in opencast workings and non-appointment of manager and supervisory officials in the mines were the main reasons for which improvement notices and prohibitory orders were issued. Notices issued under Sections 22(1) & 22A(1) of the Mines Act, 1952 during the year 2014 were 432 (four hundred thirty two). Prohibitory orders under Sections 22(1A), 22A(2) and 22(3) issued in Metalliferous Mines during the year 2014 were 707 (seven hundred seven). Details of the improvement notices and prohibitory orders issued during 2014 are given in table: 6 & 7 respectively.

TABLE:6	**IMPROVEMENT NOTICES ISSUED UNDER SECTIONS 22(1) AND 22A(1) OF THE MINES ACT,1952 IN METALLIFEROUS MINES DURING 2014**	
SL.NO.	NATURE OF DEFECT	No. of cases
1.	Non-appointment of qualified manager and supervisory officials	14
2.	Inadequate benching and sloping in opencast workings	10
3.	Miscellaneous	408
	TOTAL	**432**

TABLE:7	**PROHIBITORY ORDERS ISSUED UNDER SECTIONS 22(3), 22A(2) & 22(1A) OF THE MINES ACT,1952 ISSUED IN METALLIFEROUS MINES DURING 2014**	
SL.NO.	NATURE OF DEFECT	No. of cases
1.	Non-appointment of qualified manager and supervisory officials	126
2.	Inadequate benching and sloping in opencast workings	23
3.	Miscellaneous	558
	TOTAL	**707**

1.7.3 Oil Mines

04 (four) notices issued under Sections 22(1) & 22A(1) of the Mines Act, 1952 during the year 2014. No prohibitory orders under Sections 22(1A), 22A(2) and 22(3) issued in Oil Mines during the year 2014. Details of the improvement notices and prohibitory orders issued during 2014 are given in table: 6A & 7A respectively.

TABLE:6A	**IMPROVEMENT NOTICES ISSUED UNDER SECTIONS 22(1) AND 22A(1) OF THE MINES ACT,1952 IN OIL MINES DURING 2014**	
SL.NO.	NATURE OF DEFECT	No. of cases
1.	Non-appointment of qualified manager and supervisory officials	00
2.	Others	04
	TOTAL	**04**

TABLE:7A	PROHIBITORY ORDERS ISSUED UNDER SECTIONS 22(3), 22A(2) & 22(1A) OF THE MINES ACT,1952 ISSUED IN OIL MINES DURING 2014	
SL.NO.	NATURE OF DEFECT	No. of cases
1.	Non-appointment of qualified manager and supervisory officials	0
2.	Others	0
	TOTAL	**0**

1.8 Permission, relaxations and exemptions

1.8.1 Coal Mines

912 (nine hundred twelve) permissions/exemptions and relaxations were granted in coal mines during the year 2014. Details of such cases are given in table:8.

TABLE:8	PERMISSIONS, RELAXATIONS & EXEMPTIONS GRANTED IN COAL MINES DURING 2014	
SL.NO.	Particulars of Permissions, Relaxations & Exemptions	No. of cases
1.	Extraction of coal by methods other than board & pillar beneath areas free from surface features	44
2.	Extraction of coal by methods other than board & pillar below surface features	39
3.	Extraction of coal by board & pillar methods beneath areas free from surface features	106
4.	Extraction of coal by board & pillar methods beneath surface features	38
5.	Development below surface features including development in contiguous seams/ sections	18
6.	Blasting coal off the solid	25
7.	Development within 60m. of waterlogged workings	18
8.	Workings within 7.5m. / Adjustment of mine boundaries	13
9.	Exemptions from different provisions of regulations	157
10.	Others	454
	TOTAL	**912**

1.8.2 Metalliferous Mines

2812 (Two thousand eight hundred twelve) permissions/relaxations/exemptions under different provisions of the statutes were granted during the year 2014. Particulars are given in table:9.

TABLE:9	PERMISSION, EXEMPTIONS & RELAXATIONS GRANTED IN METALLIFEROUS MINES DURING 2014	
SL.NO.	Particulars of Permissions, Exemptions & Relaxations	No. of cases
1.	Stopping of blocks	79
2.	Use of HEMM with deep hole blasting	591
3.	Use of ANFO and/or more than one explosive in a shot hole	103
4.	Working under railways and roads	00
5.	Appointment of managers of more than one mine/ permit manager etc.	1527
6.	Appointment of surveyor of more than one mine	10
7.	Others	502
	TOTAL	**2812**

1.8.3 Oil Mines

110 (One hundred ten) permissions/relaxations/exemptions were granted during the year 2014 under various provisions of the Oil Mines Regulations, 1984. The details of such cases are given in table:10

TABLE:10	PERMISSION, EXEMPTIONS & RELAXATIONS GRANTED IN OIL MINES DURING 2014	
SL.NO.	Particulars of Permissions, Exemptions & Relaxations	No. cases
1.	Well head installations	00
2.	Laying of oil pipe line	33
3.	Notices under Regulation 51 for GGS/EPS etc.	77
	TOTAL	**110**

1.9 Prosecutions

14 (fourteen) prosecutions were instituted in coal mines during the year 2014. In respect of non-coal mines, 20 (twenty) prosecutions were launched during 2014. Contraventions of provisions of statute for which these prosecutions were instituted are given in tables: 11 & 12.

Details of prosecution cases as on 31.12.2014.

Coal	Non-coal	Pending	Disposed
No. of prosecution launched during the year 2014.	**No. of prosecution launched during the year 2014.**	**Total cases pending for 2014.**	**Total cases disposed during 2014.**
14	20	1061	602

TABLE:11	PROSECUTIONS INSTITUTED IN RESPECT OF COAL MINES DURING 2014	
SL.NO.	CONTRAVENTION	NO. OF CASES
1.	Contraventions leading to accidents	11
2.	Non-submission or submission of incorrect plans, returns, notices etc.	-
3.	Non-appointment of qualified persons as senior supervisory officials	-
4.	Contraventions under Indian Electricity Act or Rules	03
5.	Other violation of serious nature	02
6.	Miscellaneous violations	-
	TOTAL	**14**

TABLE:12	PROSECUTIONS INSTITUTED IN RESPECT OF NON-COAL MINES DURING 2014	
SL NO.	CONTRAVENTION	NO. OF CASES
1.	Contravention leading to accidents	13

2.	Contravention of orders under sections 22(1A), 22(3), Reg. 108 etc.	04
3.	Non-appointment of qualified persons as senior supervisory officials	-
4.	Non-appointment of qualified persons as subordinate supervisory officials	-
5.	Non-provisions of protective equipment	-
6.	Other miscellaneous contraventions	03
	TOTAL	**20**

2.0 Coal Mines

2.1 General

Number of operating coal mines during 2014 was 588 as compared to 605 in 2013. Company-wise number of coal mines and production is given in table: 13.

TABLE: 13	**Number of Mines during 2014**				**Production (in million tonnes)**
COMPANY	**Underground**	**Opencast**	**Both**	**Total**	
Coal India Limited	263	167	35	465	484
Singareni Collieries Company Limited	40	20	0	60	73
Others	11	46	6	63	93
TOTAL	**314**	**233**	**41**	**588**	**650**

Table-14 shows the number of underground coalmines having gassy seams of different degrees.

TABLE : 14	**UNDERGROUND COAL MINES HAVING GASSY SEAMS OF DIFFERENT DEGREES**	
Degree of gassiness	**Number of Mines**	
	2013	**2014***
I only	244	247
II only	97	80
III only	12	12
I & II	3	2
I & III	0	0
II & III	4	1

I, II & III	0	0
TOTAL	**360**	**342**

Data for the year 2014 is provisional.

During the year total numbers of working mines have decreased from 605 in 2013 to 588 in 2014. Output of coal increased from 589 million tones in 2013 to 651 million tones in 2014. Coal mines under M/s Coal India Limited contributed 485 million tones of coal during the year 2014. Average daily employment in mines is slightly decreased from 358123 in 2013 to 355904 in 2014. The output per manshift was increased from 5.15 in 2013 to 5.72 during 2014. Trend in average daily employment and output per man shift in coalmines is given table- 15.

TABLE: 15 PLACEWISE DISTRIBUTION OF AVERAGE DAILY EMPLOYMENT AND OUTPUT AND PRODUCTIVITY IN COAL MINES

Year	Belowground		Opencast		Above Ground	Total		Output per manshift
	Employment (in '000 number	Output (in '000 tonnes)	Employment (in '000 number	Output (in '000 tonnes)	Employment (in '000 number)	Employment (in '000 number)	Output (in '000 tonnes)	
1951	178	30199	36	4784	138	352	34983	0.35
1961	230	44887	60	10822	121	411	55709	0.45
1971	228	58552	43	17090	111	382	75642	0.67
1981	302	76205	55	51120	156	513	127325	0.81
1991	316	70731	67	167206	171	554	237757	1.40
1992	312	71062	67	178879	173	552	249941	1.47
1993	308	73672	68	186935	170	546	260607	1.53
1994	293	70644	67	196878	164	524	267522	1.63
1995	287	68512	68	216074	158	513	284586	1.80
1996	281	70127	68	233970	157	506	304097	1.91
1997	279	69062	68	247619	156	503	316681	2.01
1998	270	68571	69	251324	152	491	319895	2.09
1999	258	68101	71	247088	147	476	315189	2.12
2000	249	66225	69	268092	140	458	334317	2.34
2001	239	64134	69	277379	130	438	341513	2.51
2002	225	65330	69	297982	129	423	363312	2.75
2003	216	63632	69	315556	132	417	379188	2.91
2004	211	61921	70	347347	124	405	407268	3.19
2005	205	64087	70	356758	124	399	420845	3.35
2006	196	61213	76	369120	114	386	430333	3.50
2007	188	62302	80	418821	111	379	481123	3.95
2008	187	66290	77	440004	105	369	506294	4.25

2009	186	66835	80	491982	108	374	558817	4.67
2010	182	69998	83	531880	105	370	601878	5.05
2011	178	69032	86	538240	102	366	607272	5.15
2012	172	64341	88	553628	98	358	617969	5.35
2013	168	64746	87	524767	103	358	589513	5.15
2014	165	64367	94	586229	97	356	650596	5.72

2.2 Accidents

2.2.1 Major Accidents

There was no major accident in Coal mines during the year 2014.

2.2.2 Accident scenario

During the year 2014 number of fatal accidents and fatalities has decreased as compared to the year 2013. Number of fatal accidents during the year 2014 was 59 and number of fatalities was 62 whereas in the year 2013 number of fatal accidents and fatalities were 77 and 88 respectively.

Table 16 indicates the trend of accidents and rates of fatalities.

TABLE: 16	**TREND IN FATAL ACCIDENTS AND FATALITY RATES PER 1000 PERSONS EMPLOYED IN COAL MINES (10 YEARLY AVERAGE)**			
YEAR	Av. No. of accidents	Accident rate	Av. No. of fatality	Fatality rate
1901-1910	74	0.77	92	0.94
1911-1920	138	0.94	176	1.29
1921-1930	174	0.99	219	1.24
1931-1940	172	0.98	228	1.33
1941-1950	236	0.87	273	1.01
1951-1960	222	0.61	295	0.82
1961-1970	202	0.48	260	0.62
1971-1980	187	0.46	264	0.55
1981-1990	162	0.30	186	0.35
1991-2000	140	0.27	170	0.33
2001-2010	87	0.22	108	0.27
2011-2014	70	0.19	74	0.20

Table 17 gives year-wise fatal accidents, fatalities, and death rates in coalmines.

TABLE: 17	**TREND IN FATAL ACCIDENTS AND DEATH RATES IN COAL MINES (YEAR-WISE)**				
Year	No. of fatal accidents	No. of persons fatalites	Death Rate		
			Per '000 persons employed	Per 100,000 manshifts worked	Per million tonnes output
1951	278	319	0.91	0.32	9.12

1961	222	268	0.65	0.22	4.81
1971	199	231	0.60	0.21	3.05
1981	165	184	0.36	0.12	1.45
1991	138	143	0.26	0.08	0.60
2001	105	141	0.32	0.10	0.41
2002	81	97	0.23	0.07	0.27
2003	83	113	0.27	0.09	0.30
2004	87	96	0.24	0.07	0.23
2005	96	117	0.29	0.09	0.28
2006	78	137	0.36	0.11	0.32
2007	76	78	0.21	0.06	0.16
2008	80	93	0.25	0.08	0.18
2009	83	93	0.25	0.08	0.17
2010	97	118	0.32	0.10	0.20
2011	65	67	0.18	0.06	0.11
2012	79	83	0.23	0.07	0.13
2013	77	82	0.23	0.07	0.13
2014	59	62	0.17	0.05	0.10

In the year 2014, number of serious accidents decreased compared to that of the year 2013. Number of serious accidents and number of persons injured during 2014 were 379 and 394 as compared to 456 and 468 respectively during the year 2013. As far as the serious accident rate is concerned, it has also decreased during the year 2014. The serious injury rate per thousand persons employed in 2014 was 1.11 as compared to 1.3 1in 2013. The rate per lakh manshift worked has decreased to 0.35 in 2014 from 0.41 in 2013.The rate per million tonnes output decreased to 0.61 in 2014 from 0.74 in 2013.Table 18 gives year-wise number of serious accidents, no. of persons injured and serious injury rate.

TABLE: 18 TREND IN SERIOUS ACCIDENTS AND SERIOUS INJURY RATES IN COAL MINES (YEAR-WISE)

Year	No. of serious accidents	No. of persons seriously injured	Serious injury rates		
			Per '000 persons employed	Per 100,000 manshifts worked	Per million tonnes output
2001	667	720	1.64	0.53	2.10
2002	629	665	1.57	0.50	1.83
2003	563	590	1.42	0.45	1.56
2004	962	991	2.45	0.77	2.42
2005	1106	1138	2.85	0.91	2.70
2006	861	891	2.31	0.73	2.07
2007	923	951	2.51	0.78	1.98
2008	686	709	1.92	0.59	1.40
2009	636	660	1.76	0.55	1.18
2010	480	511	1.38	0.43	0.85
2011	533	556	1.52	0.47	0.92
2012	536	548	1.53	0.47	0.89
2013	456	468	1.31	0.41	0.74
2014	379	394	1.11	0.35	0.61

Note : No. of seriously injured of fatal accidents are also considered for computation of no. of persons seriously injured & serious injury rates.

2.2.3 Analysis of accidents

All fatal accidents and major serious accidents were inquired into by officers of DGMS. An analysis of accidents enumerated in the following paragraphs is based on the findings of such enquiry and information submitted by the mine management.

2.2.3A By place

Total 59 fatal accidents involving 62 fatalities occurred during the year 2014 as compared to 77 fatal accidents and 82 fatalities during the year 2013. Overall fatality rate in 2014 has decreased from 0.17 to 0.23 in the year 2013. Overall serious injury rate during the year 2014 has decreased to 1.11 from 1.31 in 2013. 20(34%) fatal accidents occurred in belowground workings with fatality rate of 0.13, 31(52%) in opencast workings with fatality rate of 0.35 and 08(14%) in aboveground with fatality rate of 0.08 during the year 2014. Table 19 gives the trend of fatal and serious accidents with fatality rate in different working places.

TABLE: 19	TREND IN FATAL & SERIOUS ACCIDENTS AND DEATH & SERIOUS INJURY RATES; (PLACEWISE) - COAL MINES PER THOUSAND PERSONS EMPLOYED							
YEAR	Fatal accidents & death rates				Serious accidents & ser. injury rates			
	Below ground	Open cast	Above ground	Overall	Below ground	Open cast	Above ground	Overall
2001	67 (0.43)	26 (0.38)	12 (0.10)	105 (0.32)	464 (2.10)	73 (1.12)	130 (1.07)	667 (1.64)
2002	48 (0.27)	22 (0.32)	11 (0.11)	81 (0.23)	434 (2.07)	92 (1.43)	103 (0.80)	629 (1.57)
2003	46 (0.33)	23 (0.35)	14 (0.13)	83 (0.27)	380 (1.85)	82 (1.30)	101 (0.77)	563 (1.42)
2004	49 (0.27)	32 (0.47)	06 (0.05)	87 (0.24)	757 (3.69)	82 (1.24)	123 (1.02)	962 (2.45)
2005	50 (0.34)	28 (0.42)	18 (0.15)	96 (0.29)	843 (4.23)	98 (1.45)	165 (1.37)	1106 (2.85)
2006	44 (0.52)	24 (0.33)	10 (0.09)	78 (0.36)	646 (3.40)	88 (1.30)	127 (1.11)	861 (2.31)
2007	25 (0.13)	35 (0.46)	16 (0.14)	76 (0.21)	717 (3.91)	83 (1.10)	123 (1.15)	923 (2.51)
2008	32 (0.21)	29 (0.45)	19 (0.18)	80 (0.25)	516 (2.87)	74 (0.98)	96 (0.92)	686 (1.92)
2009	39 (0.25)	29 (0.40)	15 (0.14)	83 (0.25)	490 (2.72)	50 (0.67)	96 (0.93)	636 (1.76)
2010	41 (0.33)	40 (0.51)	16 (0.15)	97 (0.32)	348 (2.03)	62 (0.83)	70 (0.68)	480 (1.38)
2011	23 (0.13)	29 (0.35)	13 (0.13)	65 (0.18)	379 (2.23)	73 (0.91)	81 (0.79)	533 (1.52)
2012	25 (0.16)	37 (0.43)	17 (0.17)	79 (0.23)	374 (2.22)	61 (0.74)	101 (1.03)	536 (1.53)
2013	19 (0.14)	40 (0.46)	18 (0.17)	77 (0.23)	336 (2.04)	56 (0.67)	64 (0.66)	456 (1.31)
2014	20 (0.13)	31 (0.35)	8 (0.08)	59 (0.17)	250 (1.60)	64 (0.70)	65 (0.67)	379 (1.11)

Note : i) Figures in bracket indicate death/injury rate.
ii) No. of seriously injured of fatal accidents are also considered for computation of no. of persons seriously injured & serious injury rates.

2.2.3B By cause

Tables 20 & 21 give the trend in fatal and serious accidents in coalmines due to different causes during the year 2014 followed by graphical representation.As can be seen 19(32%) of fatal accidents were caused by transportation machinery (other than winding),15(26%) due tomachinery other than transportation machinery, 13(22%) due toground movement, 4(7%)due to falls other than fall of ground,2(3%) each due to Electricity and Explosives and 3(5%) in other causes.379 serious accidents occurred during the year 2014out of which 195(51%) were caused by falls other than falls of ground.

TABLE:20	TREND IN FATAL ACCIDENTS DUE TO DIFFERENT CAUSES IN COAL MINES				
Cause	**2010**	**2011**	**2012**	**2013**	**2014**
Ground movement	22 (26)	15 (16)	11 (12)	12 (17)	13 (15)
Winding in shafts	-	1 (1)	-	-	-
Transportation machinery (other than winding)	41 (44)	28 (29)	32 (32)	33 (33)	19(20)
Machinery other than transportation machinery	7 (7)	6 (6)	14 (14)	12 (12)	15 (15)
Explosive	2 (16)	1 (1)	3 (3)	-	2 (2)
Electricity	8 (8)	5 (5)	3 (3)	7 (7)	2 (2)
Gas, Dust etc.	1 (1)	-	3 (5)	-	1 (1)
Falls other than fall of ground	10 (10)	5 (5)	9 (9)	13 (13)	4 (4)
Other causes	6 (6)	4 (4)	4 (5)	-	3 (3)
TOTAL	**97 (118)**	**65 (67)**	**79 (83)**	**77 (82)**	**59 (62)**

Note: Figures in parentheses denote the number of persons killed.

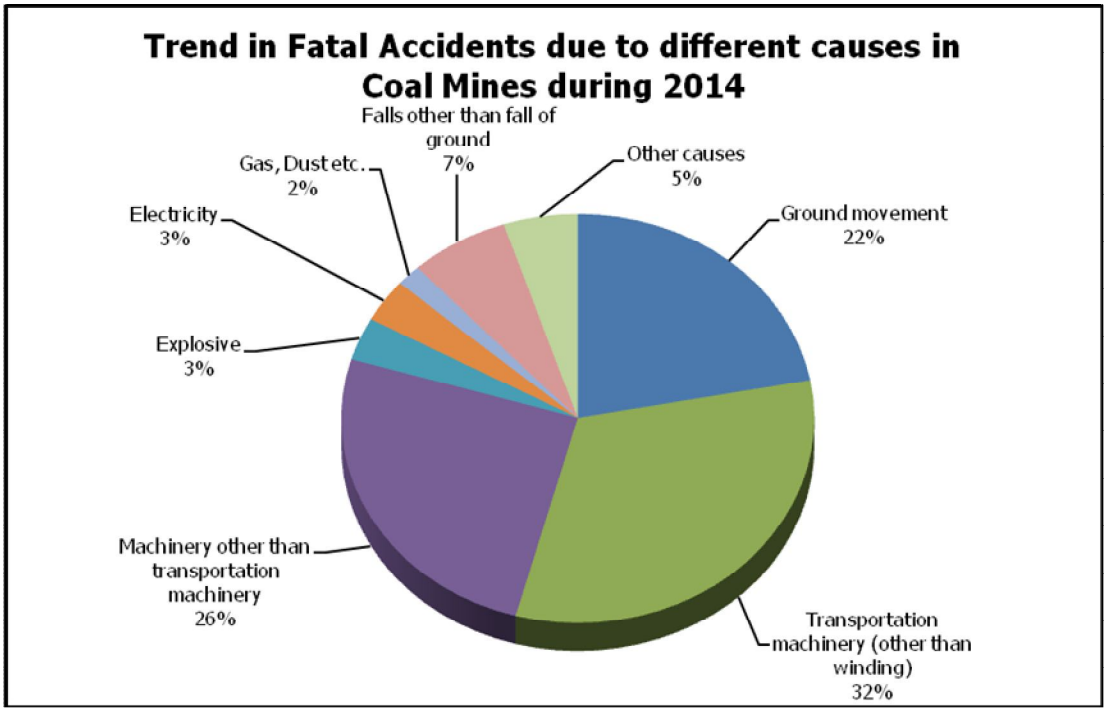


TABLE:20A	TREND IN FATAL ACCIDENTS IN DIFFERENT PLACES OF COAL MINES				
Place	**2010**	**2011**	**2012**	**2013**	**2014**
Belowground	41 (60)	23 (24)	25 (28)	19 (24)	20 (21)
Opencast	40 (42)	29 (30)	37 (38)	40 (40)	31 (33)
Aboveground	16 (16)	13 (13)	17 (17)	18 (18)	8 (8)
Total	**97 (118)**	**65 (67)**	**79 (83)**	**77 (82)**	**59 (62)**

Note: Figures in parentheses denote the number of persons killed.

TABLE: 21	TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT CAUSES IN COAL MINES				
Cause	**2010**	**2011**	**2012**	**2013**	**2014**

Ground movement	53 (62)	39 (50)	42 (47)	36 (42)	35 (38)
Winding in shafts	-	14 (19)	4 (5)	3 (3)	5 (5)
Transportation machinery (other than winding)	72 (84)	89 (93)	76 (78)	73 (75)	50 (60)
Machinery other than transportation machinery	24 (24)	33 (34)	23 (23)	27 (27)	25 (26)
Explosive	5 (11)	3 (4)	0 (1)	1 (1)	3 (3)
Electricity	3 (3)	1 (1)	3 (3)	2 (6)	3 (3)
Gas, Dust etc.	-	-	1 (3)	-	2 (2)
Falls other than fall of ground	221 (223)	247 (248)	264 (264)	229 (229)	195 (196)
Other causes	102 (104)	107 (107)	123 (124)	85 (85)	61 (61)
TOTAL	**480 (511)**	**533 (556)**	**536 (548)**	**456 (468)**	**379 (394)**

Note: Figures in parentheses denote the number of persons seriously injured and it includes seriously injureds from fatal accidents also.

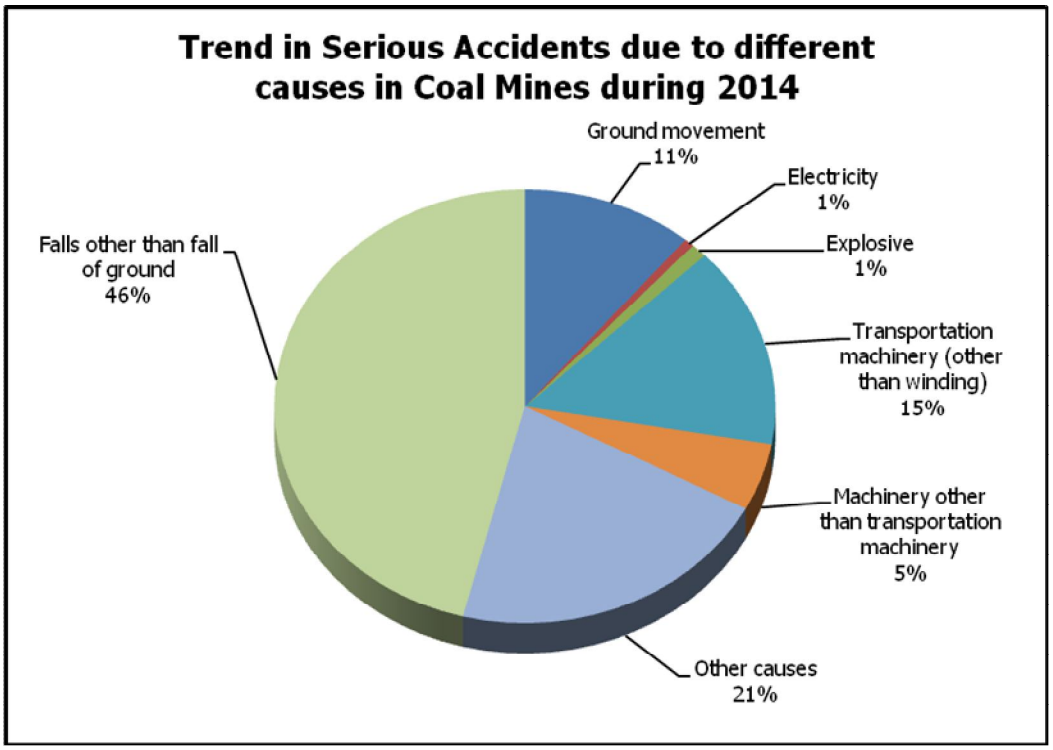


TABLE: 21A	TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT PLACES IN COAL MINES				
Place	**2010**	**2011**	**2012**	**2013**	**2014**
Belowground	348 (370)	379 (397)	374 (382)	336 (341)	250 (263)
Opencast	62 (69)	73 (78)	61 (65)	56 (59)	64 (66)
Aboveground	70 (72)	81 (81)	101 (101)	64 (68)	65 (65)
Total	**480 (511)**	**533 (556)**	**536 (548)**	**456 (468)**	**379 (394)**

Note: Figures in parentheses denote the number of persons seriously injured and it includes seriously injureds from fatal accidents also.

2.2.3B.1 Ground Movement

During the year 2014, ground movement accounted for 13 (22.03%) fatal accidents and 35 (9.23%) serious accidents. Further break-up of fatal accidents due to ground movement is given in table 22.

TABLE: 22	FATAL ACCIDENTS DUE TO GROUND MOVEMENTS IN COAL MINES DURING THE YEAR 2014		
Cause	No. of accidents	Persons killed	Persons seriously inj.
1.Fall of roof	10	11	2
2.Fall of side			
(a) belowground	2	2	-
(b) opencast	-	-	-
Sub-Total	**2**	**2**	**-**
3.Others			
(a) bump	-	-	-
(b) air blast	-	-	-
(c) land slide	1	2	-
(d) collapse of pillar	-	-	-
(e) over hang	-	-	-
Sub-Total	**1**	**2**	**1**
GRAND TOTAL	**13**	**15**	**2**

2.2.3B.2 Roof fall

Strata control is a major problem affecting safety and productivity in underground mines. Experience of the past clearly brings out that roof fall is one of the predominant causes of fatalities in belowground coal mines and that trend continues even today. There were 13 accidents due to ground movement involving 15 fatalities and 02 serious injuries during the year 2014,out of which 10 accidents were due to fall of roof and03 accidents were due to fall of side. Roof fall accidents accounted for 17% of all fatal accidents in coal mines and it contributed 50% of all fatal accidents in belowground operations. Further critical analysis of roof fall accidents for the last five years 2010 to 2014 revealed the following:

I. Physical and Working Condition factors -

1. **Method of work:** Accident mainly occurred in Depillaring districts. 40% (30% in caving district and 10% in stowing district) of the fatal accidents occurred in Depillaring district, 40% in Board & Pillar development and 20% in Other places. No. accident was recorded in Long wall Development.

2. **Height of working:**50% of the fatal accidents occurred in gallery height upto 3m, and remaining 50% were reported in height upto 3m – 5m.

3. **Width of gallery:**50% of the fatal accidents occurred in width of galleries between 4.51m -above and20% each in 3.51 – 4.00m and 4.01 – 4.50 and10% between 2.01–3.00m.

4. **Distance from face:**50% of the accidents occurred within 5m of the working face and 10% between 5.01 to 10m.Thus 60% of the accident occurred within 10m of the freshly exposed roof from the working face.

5. **Type of support:** 90% of the fatal accidents occurred in areas supported by other supports, 10% in area supported by timber support only.Steel supports, especially roof bolts, are more stable if they are fixed properly and in time.

6. **Adequacy of support:** Accident analysis revealed that in 90% of cases supports provided was inadequate, which means sufficient number of supports were not provided before engaging persons at work and majority of the accidents could have been averted had proper supports been provided before engaging the persons at work and front line supervisors been attentive for providing adequate supports. It also reveals that in 10% cases accident occurred although adequate support was provided.

7. **Operation at the time of accident:** 60% of the fatal accidents occurred during Dressing and 10% each during Drilling, Loading (manual),Blasting and Operating of Machine/Vehicle.Thus 80% of the accidents occurred during primary job of face preparation and manual loading. This can be avoided by adequately training the face workers for paying more attention towards identification of bad roof and testing for its weakness and by providing temporary supports before erecting permanent support. 20% of the fatal accidents occurred due to other activities.

8. **Time elapsed after blasting:**30% of the roof fall accidents occurred within 30 minutes of blasting operation which correlates with the operation at the time of accident as mentioned above. This also means that sufficient time was not allowed for the roof to settle before engaging persons. Blasting operation after 2 hours also reported 30% of roof fall accidents. 10% each of these accidents occurred during the period 30 minutes to 01 hours and 01 to 1½ hours. In 20% of cases no blasting operation was carried out.

II. Geological factors –

9. **Thickness of seam:** 50% each of the fatal accidents occurred in coal seam having thickness upto 3.0 m. and 3.1 to 6.00m.

10. **Depth of cover:**40% of the fatal accidents accounted in depth of cover 0 to 100m, 30% each between 101 to 200m and 201 to 300m.

11. **Thickness of fall:**10% of the fatal accidents occurred having thickness of fallen strata varying between 0 to 0.15m and50% beteween 0.16 to 0.3m. Thus 60% of accidents had thickness of fall between 0 to 0.3m. 30% fatal accident occurred having thickness of fallen strata between 0.31 to 1.0 m thick and 10% beyond thickness 1.00m.

    Fall of roof was mainly due to geological reasons such as presence of slicken sides, hidden slip planes, or due to weathering of strata etc. which could have been effectively controlled had adequate and timely supports been provided.

12. **Nature of fallen strata:** 60% of the fatal accidents occurred due to fall of Sandstone roof,20% each due to fall of Coal and Shale& Sandstone. It indicates that practically all types of roof are likely to fall in absence of adequate supports.

III. Personal factors –

13. **Designation:**31% each of the persons involved in roof fall accidents were Dresser, 23% each involved were Loader, Support Personnel and Others. Mainly face workers were involved in the accidents as they are first to approach the face and stay beneath the green roof areas for longer duration.
14. **Age:** In 54% of the total accidents persons involved were in the age group of 51-55 years, 23%between 46-50 years, 8%each between age group31-35, 41-45 and 46-60 years. Thus 85% of accidents persons were in the age group 41-60.

15. **Shift of working:**40% of the fatal accidents took place in 3rdshift, 30% each in 1st and 2nd shift.

16. **Hours at work:**20% of the roof fall accidents occurred during 1.01-2.00 hours, 3.00-4.00 hours and 6.01-7.00 hours. 10% each of these accidents occurred during 4.01-5.00 hoursa and 7.01-8.00 hours. Thus 70% of the roof fall accidents occurred between 1.00-5.00 hours of the shift.

IV. Management factors –

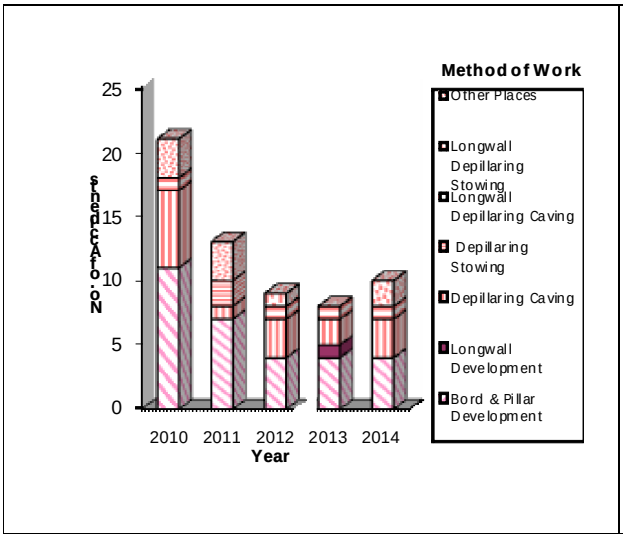
17. **Responsibility:**70% of the fatal accidents were caused due to fault of management and Subordinate Supervisory Staff; 20% of the fatal accidents due to fault of Subordinate Supervisory Staff & Others and 10%due to fault ofSubordinate Supervisory Staffalone.

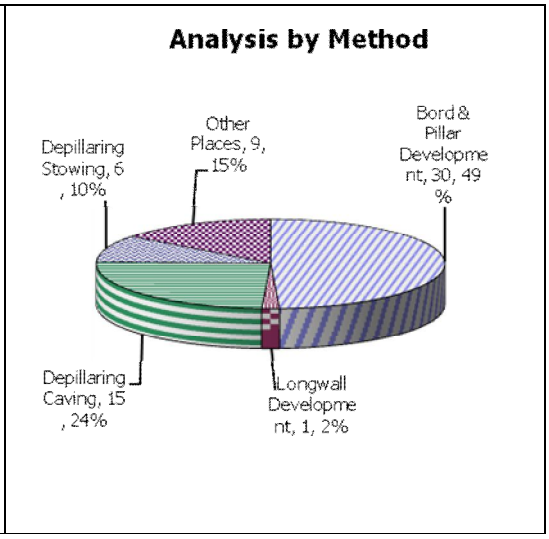
18. **Company:** Company-wise analysis indicates that 80% of roof fall accident occurred in CIL whereas 20% occurred in SCCL. CIL subsidiary-wise 50%of accidents occurred in SECL, 20% in WCL, 10% in WCL.

Detailed statistical analysis of roof fall accidents that occurred during last 5 years are given in tabular as well as graphically in the following tables:

1. Distribution of fatal roof fall accidents by method of work

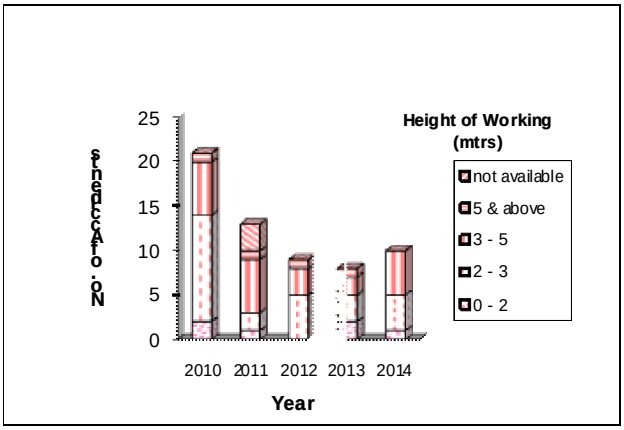
Method of work	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	total	%
Bord& Pillar Development	11	52	7	54	4	45	4	50	4	40	30	49
Longwall Development	0	0	0	0	0	0	1	13	0	0	1	2
Depillaring												
Caving	6	29	1	8	3	33	2	24	3	30	15	24
Stowing	1	5	2	15	1	11	1	13	1	10	6	10
Total Depillaring	**7**	**34**	**3**	**23**	**4**	**44**	**3**	**37**	**4**	**40**	**21**	**34**
Longwall Depillaring												
Caving	0	0	0	0	0	0	0		0		0	
Stowing	0	0	0	0	0	0	0	0	0	0	0	0
Total Longwall	0	0	0	0	0	0	0	0	0	0	0	0
Other Places	3	14	3	23	1	11	0	0	2	20	9	15
Total	**21**	**100**	**13**	**100**	**9**	**100**	**8**	**100**	**10**	**100**	**61**	**100**

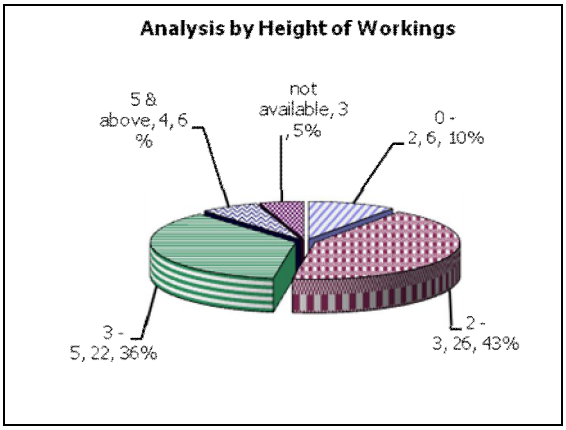




2. Distribution of fatal roof fall accidents by height of working

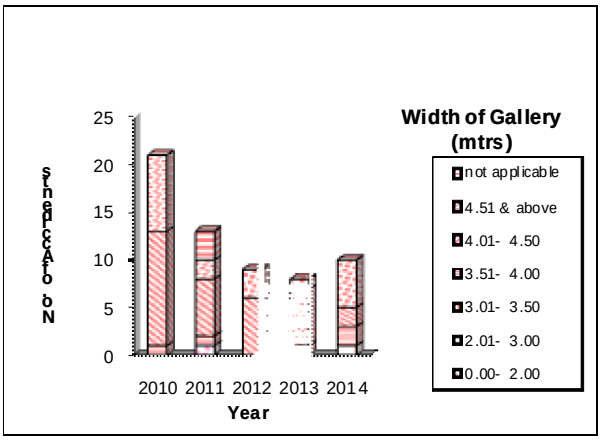
Height of working (metres)	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
0 - 2	2	9	1	8	0	0	2	25	1	10	6	10
2 - 3	12	57	2	15	5	56	3	38	4	40	26	43
3 - 5	6	29	6	46	3	33	2	25	5	50	22	36
5 & above	1	5	1	8	1	11	1	12	0	0	4	6
not available	0	0	3	23	0	0	0	0	0	0	3	5
Total	21	100	13	100	9	100	8	100	10	100	61	100

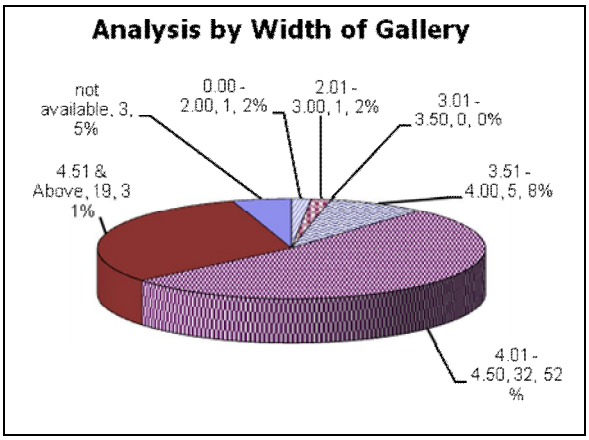




3. Distribution of fatal roof fall accidents by width of gallery

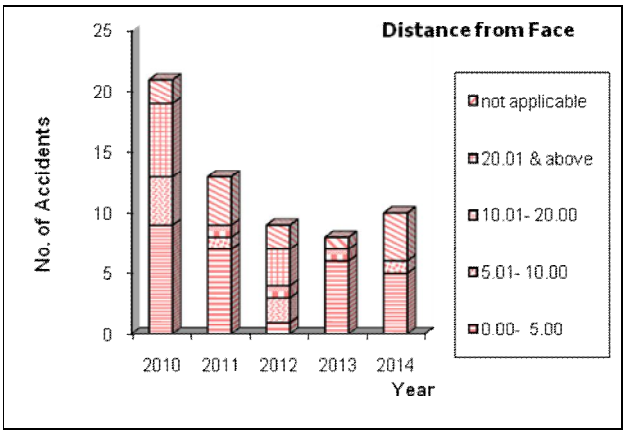
width of Gallery	Number of accidents											
(metres)	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
0.00- 2.00	0	0	1	8	0	0	0	0	0	0	1	2
2.01- 3.00	0	0	0	0	0	0	0	0	1	10	1	2
3.01- 3.50	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.00	1	5	1	8	0	0	1	13	2	20	5	8
4.01- 4.50	12	57	6	46	6	67	6	74	2	20	32	52
4.51 & above	8	38	2	15	3	33	1	13	5	50	19	31
not applicable	0	0	3	23	0	0	0	0	0	0	3	5
Total	21	100	13	100	9	100	8	100	10	100	61	100

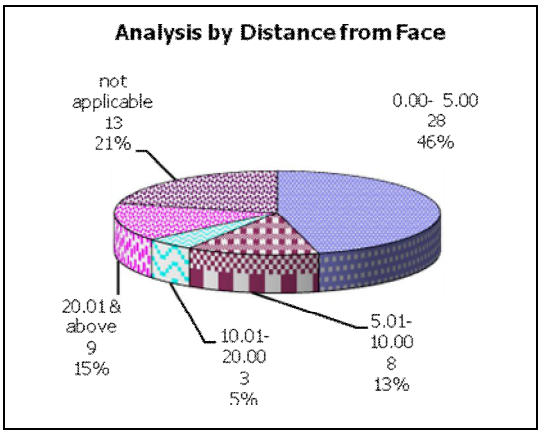




4. Distribution of fatal roof fall accidents by distance from face

Distance from face	Number of accidents											
(metres)	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
0.00- 5.00	9	43	7	53	1	11	6	74	5	50	28	46
5.01- 10.00	4	19	1	8	2	22	0	0	1	10	8	13
10.01- 20.00	0	0	1	8	1	11	1	13	0	0	3	5
20.01 & above	6	29	0	0	3	34	0	0	0	0	9	15
not applicable/ available	2	9	4	31	2	22	1	13	4	40	13	21
Total	**21**	**100**	**13**	**100**	**9**	**100**	**8**	**100**	**10**	**100**	**61**	**100**

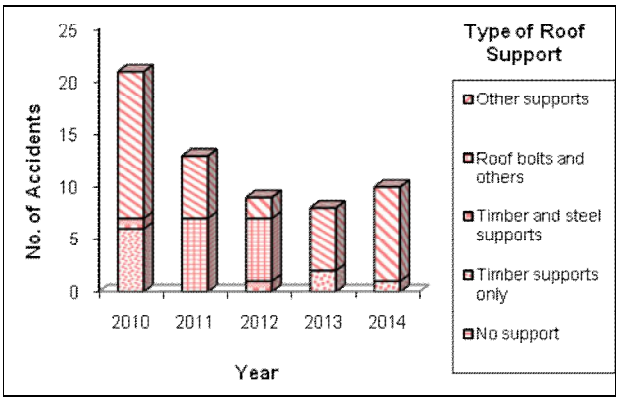


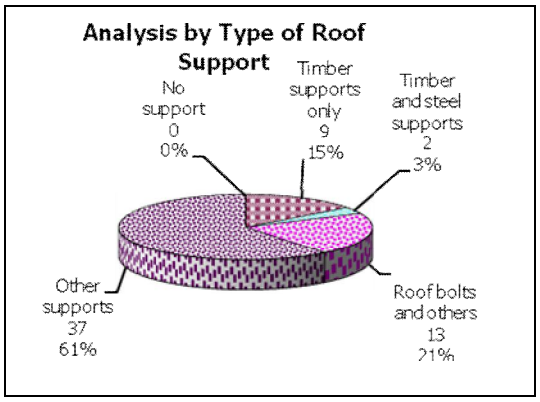


5. Distribution of fatal roof fall accidents by type of roof support

Type of support	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
No support	0	0	0	0	0	0	0	0	0	0	0	0
Timber supports only	6	29	0	0	0	0	2	25	1	10	9	15
Timber and steel supports	1	5	0	0	1	11	0	0	0	0	2	3
Roof bolts and others	0	0	7	54	6	67	0	0	0	0	13	21
Other supports	14	66	6	46	2	22	6	75	9	90	37	61

Total	21	100	13	100	9	100	8	100	10	100	61	100

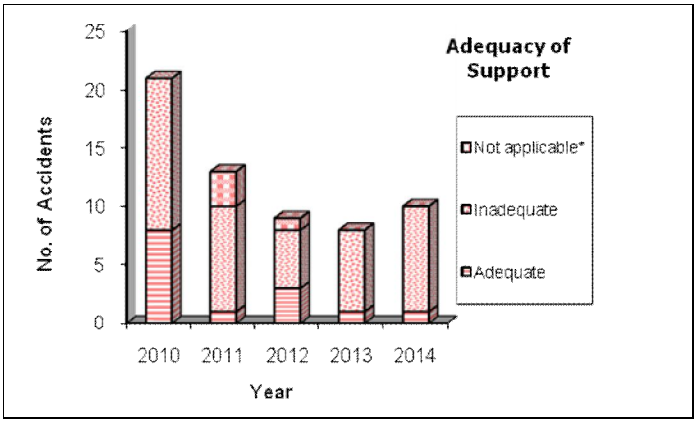


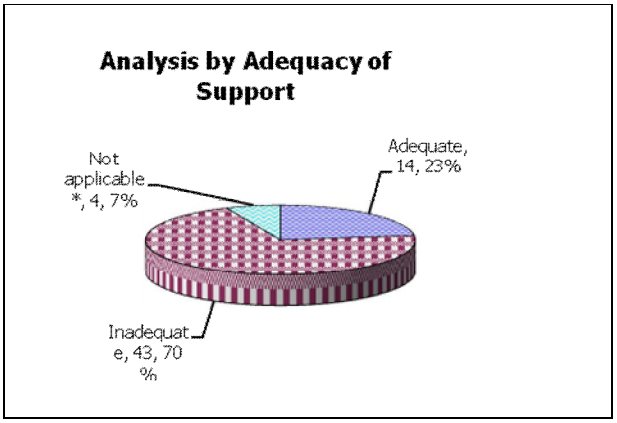


6. Distribution of fatal roof fall accidents by adequacy of support

Adequacy of support	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
Adequate	8	38	1	8	3	33	1	13	1	**10**	14	**23**
Inadequate	13	62	9	69	5	56	7	87	9	**90**	43	**70**
Not applicable*	0	0	3	23	1	11	0	0	0	**0**	4	**7**
Total	**21**	**100**	**13**	**100**	**9**	**100**	**8**	**100**	**10**	**100**	**61**	**100**

* Provisional

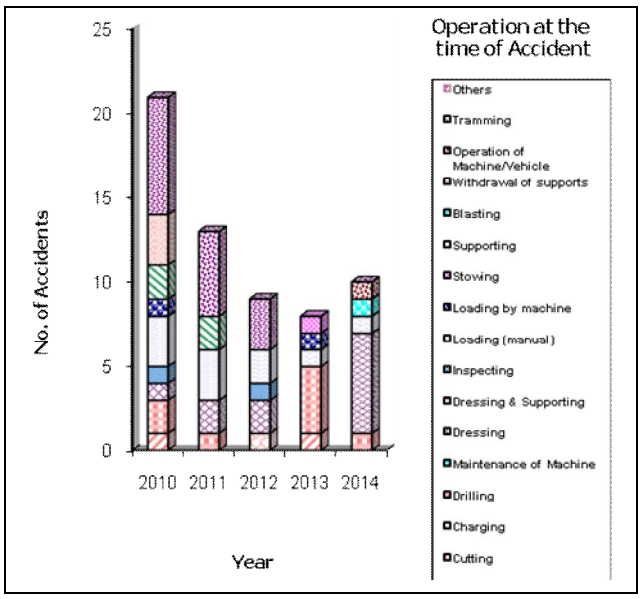


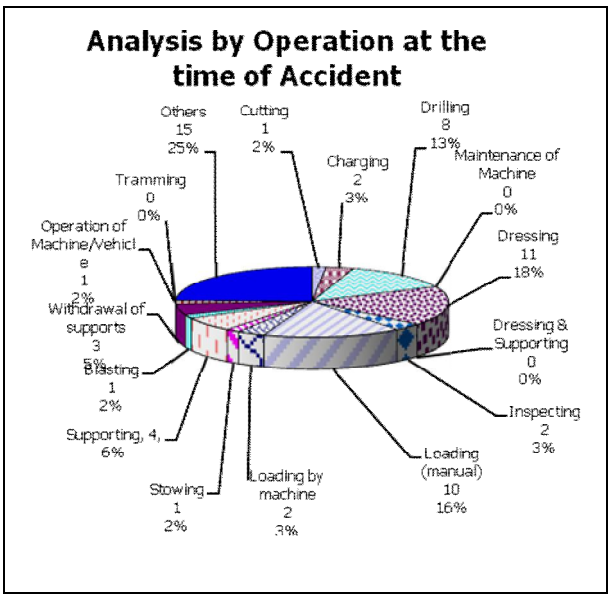


7. Distribution of fatal roof fall accidents by operation at the time of accident

operation at the time of accident	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
Cutting	0	**0**	0	**0**	1	**11**	0	**0**	**0**	**0**	**1**	**2**
Charging	1	**5**	0	**0**	0	**0**	1	**12**	**0**	**0**	**2**	**3**
Drilling	2	**10**	1	**8**	0	**0**	4	**52**	**1**	**10**	**8**	**13**
Maintenance of Machine	0	**0**	0	**0**	0	**0**	0	**0**	**0**	**0**	**0**	**0**
Dressing	1	**5**	2	**15**	2	**22**	0	**0**	**6**	**60**	**11**	**18**
Dressing & Supporting	0	**0**	0	**0**	0	**0**	0	**0**	**0**	**0**	**0**	**0**
Inspecting	1	**5**	0	**0**	1	**11**	0	**0**	**0**	**0**	**2**	**3**
Loading (manual)	3	**14**	3	**23**	2	**22**	1	**12**	**1**	**10**	**10**	**16**
Loading by machine	1	**5**	0	**0**	0	**0**	1	**12**	**0**	**0**	**2**	**3**

Stowing	0	**0**	0	**0**	0	**0**	1	**12**	**0**	**0**	**1**	**2**
Supporting	2	**10**	2	**15**	0	**0**	0	**0**	**0**	**0**	**4**	**6**
Blasting	0	**0**	0	**0**	0	**0**	0	**0**	**1**	**10**	**1**	**2**
Withdrawal of supports	3	**14**	0	**0**	0	**0**	0	**0**	**0**	**0**	**3**	**5**
Operation of Machine/Vehicle	0	**0**	0	**0**	0	**0**	0	**0**	**1**	**10**	**1**	**2**
Tramming	0	**0**	0	**0**	0	**0**	0	**0**	**0**	**0**	**0**	**0**
Others	7	**32**	5	**39**	3	**34**	0	**0**	**0**	**0**	**15**	**25**
Total	**21**	**100**	**13**	**100**	**9**	**100**	**8**	**100**	**10**	**100**	**61**	**100**

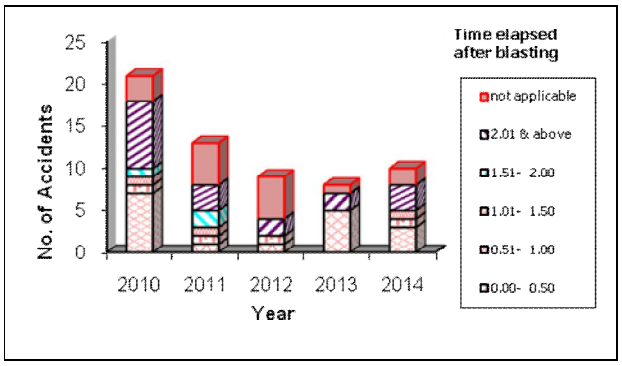


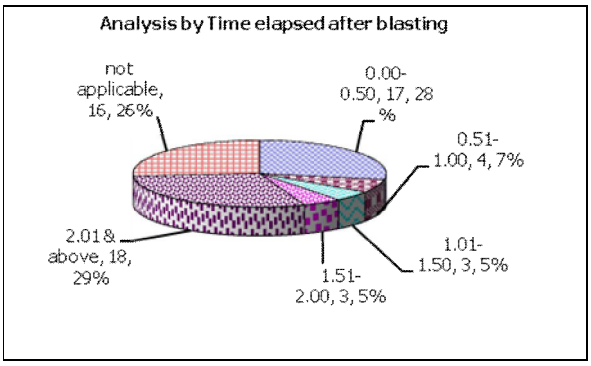


8. Distribution of fatal roof fall accidents by Time elapsed after blasting

Time elapsed after blasting (hours)	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
0.00- 0.50	7	**33**	1	**8**	1	**11**	5	**62**	3	**30**	17	**28**
0.51- 1.00	1	**5**	1	**8**	1	**11**	0	**0**	1	**10**	4	**7**
1.01- 1.50	1	**5**	1	**8**	0	**0**	0	**0**	1	**10**	3	**5**
1.51- 2.00	1	**5**	2	**15**	0	**0**	0	**0**	0	**0**	3	**5**
2.01 & above	8	**38**	3	**23**	2	**22**	2	**25**	3	**30**	18	**29**
not applicable*	3	**14**	5	**38**	5	**56**	1	**13**	2	**20**	16	**26**
Total	**21**	**100**	**13**	**100**	**9**	**100**	**8**	**100**	**10**	**100**	**61**	**100**

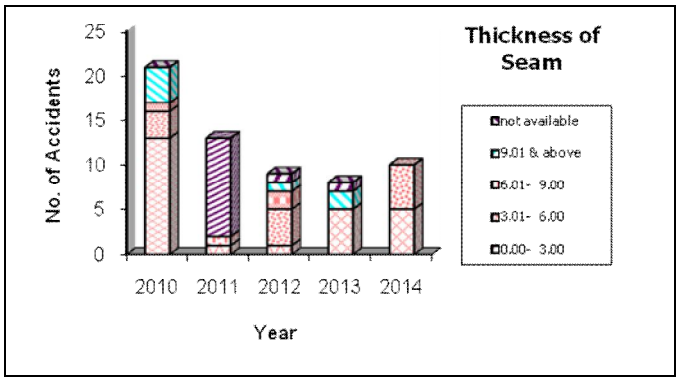
* Provisional.

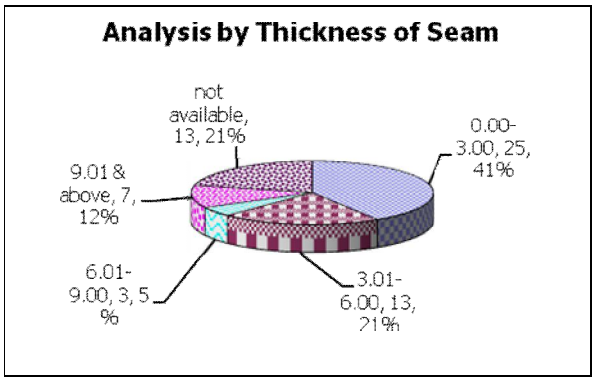




9. Distribution of fatal roof fall accidents by thickness of seam

Seam thickness (metres)	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
0.00- 3.00	13	62	1	8	1	8	5	62	5	50	25	41
3.01- 6.00	3	14	1	8	4	8	0	0	5	50	13	21
6.01- 9.00	1	5	0	0	2	0	0	0	0	0	3	5
9.01 & above	4	19	0	0	1	0	2	25	0	0	7	12
not available	0	0	11	84	1	84	1	13	0	0	13	21
Total	21	100	13	100	9	100	8	100	10	100	61	100

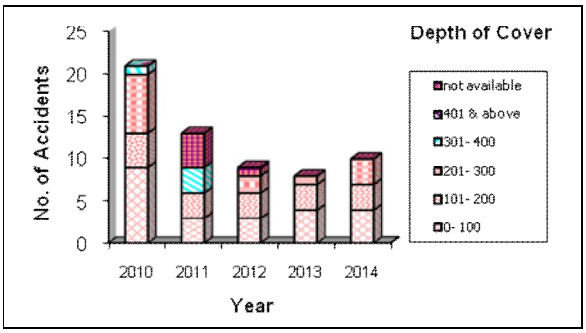


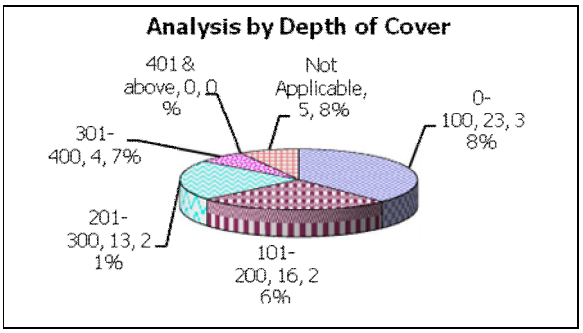


10. Distribution of fatal roof fall accidents by depth of cover

Depth of cover (metres)	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
0- 100	9	43	3	23	3	33	4	50	4	40	23	38

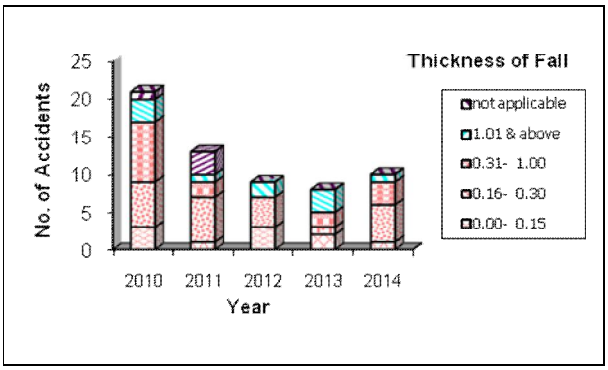
101- 200	4	**19**	3	**23**	3	**33**	3	**37**	3	**30**	16	**26**
201- 300	7	**33**	0	**0**	2	**23**	1	**13**	3	**30**	13	**21**
301- 400	1	**5**	3	**23**	0	**0**	0	**0**	0	**0**	4	**7**
401 & above	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**
not available	0	**0**	4	**31**	1	**11**	0	**0**	0	**0**	5	**8**
Total	**21**	**100**	**13**	**100**	**9**	**100**	**8**	**100**	**10**	**100**	**61**	**100**

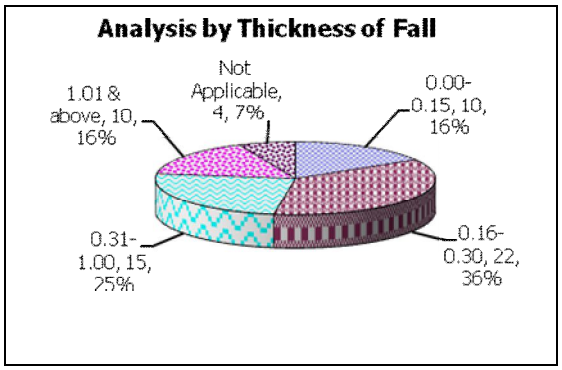




11. Distribution of fatal roof fall accidents by thickness of fall

Thickness of fall (metres)	Number of accidents											
	2010	**%**	**2011**	**%**	**2012**	**%**	**2013**	**%**	**2014**	**%**	**Total**	**%**
0.00- 0.15	3	**14**	1	**8**	3	**33**	2	**25**	1	**10**	10	**16**
0.16- 0.30	6	**29**	6	**46**	4	**45**	1	**13**	5	**50**	22	**36**
0.31- 1.00	8	**38**	2	**15**	0	**0**	2	**25**	3	**30**	15	**25**
1.01 & above	3	**14**	1	**8**	2	**22**	3	**37**	1	**10**	10	**16**
not applicable	1	**5**	3	**23**	0	**0**	0	**0**	0	**0**	4	**7**
Total	**21**	**100**	**13**	**100**	**9**	**100**	**8**	**100**	**10**	**100**	**61**	**100**

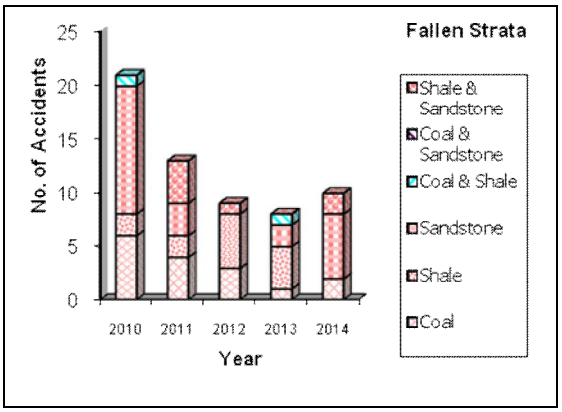


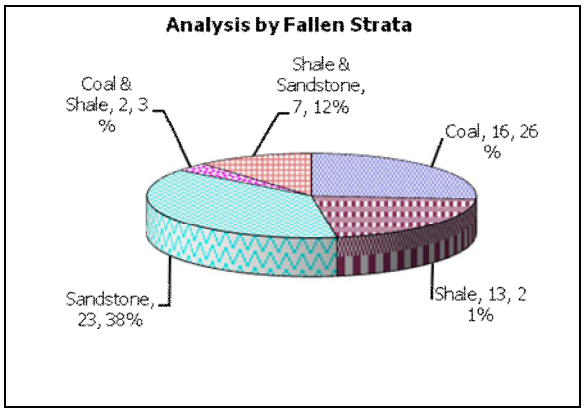


12. Distribution of fatal roof fall accidents by nature of fallen strata

Nature of fallen strata	Number of accidents											
	2010	**%**	**2011**	**%**	**2012**	**%**	**2013**	**%**	**2014**	**%**	**Total**	**%**
Coal	6	**29**	4	**31**	3	**33**	1	**13**	2	**20**	16	**26**
Shale	2	**9**	2	**15**	5	**56**	4	**49**	0	**0**	13	**21**
Sandstone	12	**57**	3	**23**	0	**0**	2	**25**	6	**60**	23	**38**
Coal & Shale	1	**5**	0	**0**	0	**0**	1	**13**	0	**0**	2	**3**

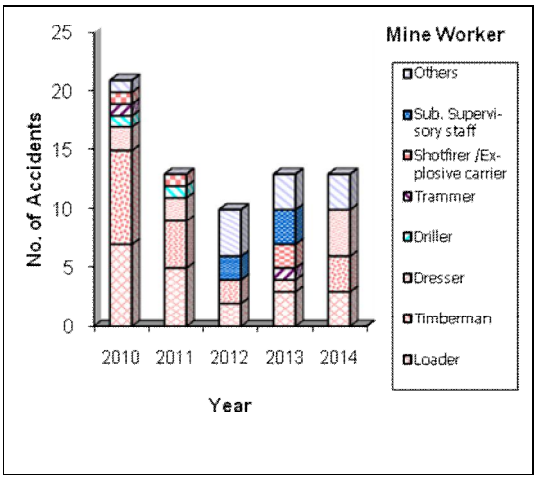
Coal & Sandstone	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**
Shale & Sandstone	0	**0**	4	**31**	1	**11**	0	**0**	2	**20**	7	**12**
Total	**21**	**100**	**13**	**100**	**9**	**100**	8	**100**	8	**100**	**61**	**100**

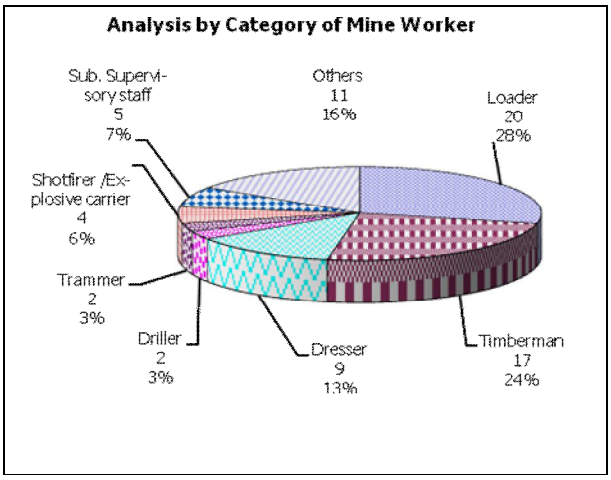




13. Distribution of persons killed in roof fall accidents by designation

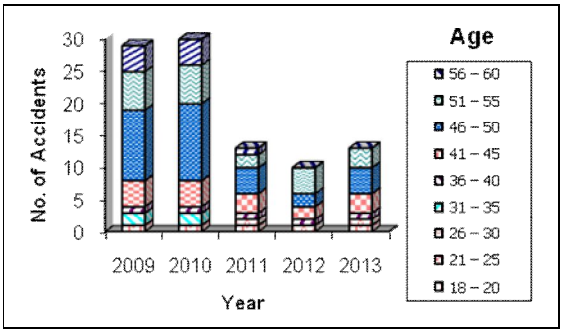
Category of mine worker	Number of persons killed											
	2010	**%**	**2011**	**%**	**2012**	**%**	**2013**	**%**	**2014**	**%**	**Total**	**%**
Loader	7	**33**	5	**38**	2	**20**	3	**23**	3	**23**	20	**28**
Suppor Personnel/ Timberman	8	**38**	4	**31**	2	**20**	0	**0**	3	**23**	17	**24**
Dresser	2	**9**	2	**15**	0	**0**	1	**8**	4	**31**	9	**13**
Driller	1	**5**	1	**8**	0	**0**	0	**0**	0	**0**	2	**3**
Trammer	1	**5**	0	**0**	0	**0**	1	**8**	0	**0**	2	**3**
Shotfirer /Ex-plosive carrier	1	**5**	1	**8**	0	**0**	2	**15**	0	**0**	4	**6**
Sub. Supervi-sory staff	0	**0**	0	**0**	2	**20**	3	**23**	0	**0**	5	**7**
Others	1	**5**	0	**0**	4	**40**	3	**23**	3	**23**	11	**16**
Total	**21**	**100**	**13**	**100**	**10**	**100**	**13**	**100**	**13**	**100**	**70**	**100**

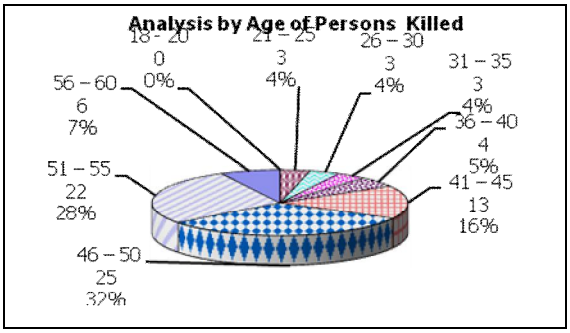




14. Distribution of persons killed in roof fall accidents by age

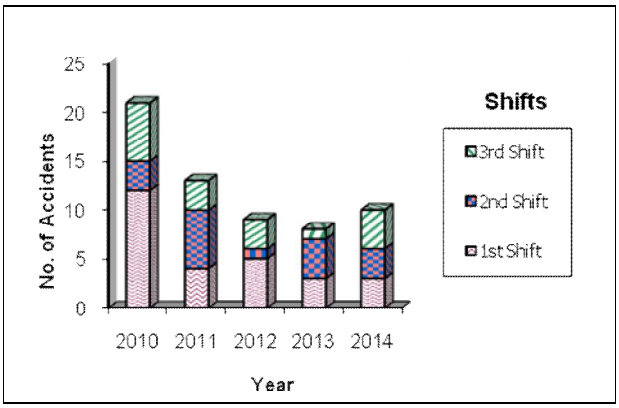
Age	Number of persons killed											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
18 – 20	0	0	0	0	0	0	0	0	0	0	0	0
21 – 25	1	3	1	8	0	8	1	8	0	0	3	4
26 – 30	0	0	1	8	1	8	1	8	0	0	3	4
31 – 35	2	7	0	0	0	0	0	0	1	8	3	4
36 – 40	1	3	1	8	1	8	1	8	0	0	4	5
41 – 45	4	14	3	22	2	22	3	22	1	8	13	16
46 – 50	12	40	4	31	2	31	4	31	3	23	25	32
51 – 55	6	20	2	15	4	15	3	23	7	54	22	28
56 – 60	4	13	1	8	0	8	0	0	1	8	6	7
Total	30	100	13	100	10	100	13	100	13	101	79	100

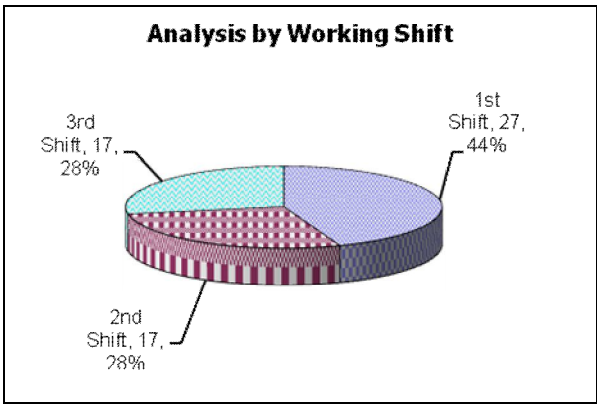




15. Distribution of fatal roof fall accidents by shift during which accident occurred

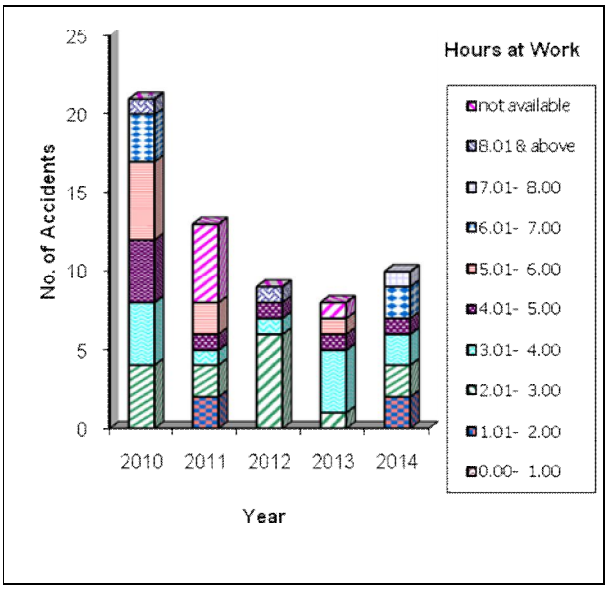
Shift	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
1st (7/8 AM to 3/4 PM)	12	57	4	31	5	56	3	37	3	30	27	44
2nd 3/4 PM to 11/12 M	3	14	6	46	1	11	4	50	3	30	17	28
3rd 11/12M to 7/8 AM	6	29	3	23	3	33	1	13	4	40	17	28
Total	21	100	13	100	9	100	8	100	10	100	61	100

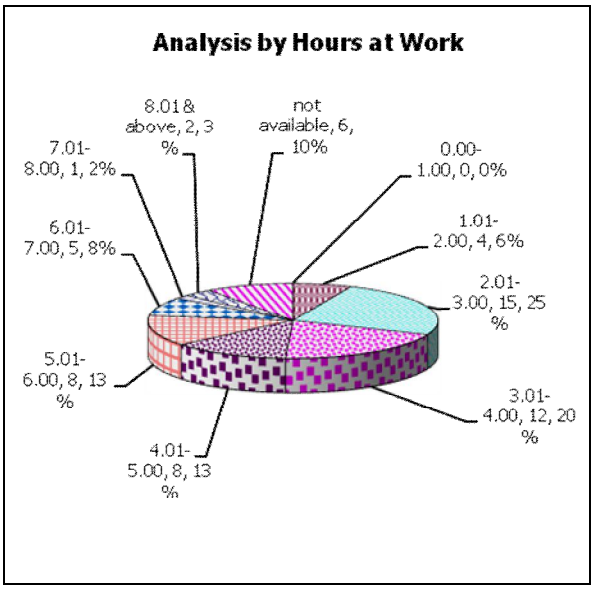




16. Distribution of fatal roof fall accidents by hours spent at work prior to the accident

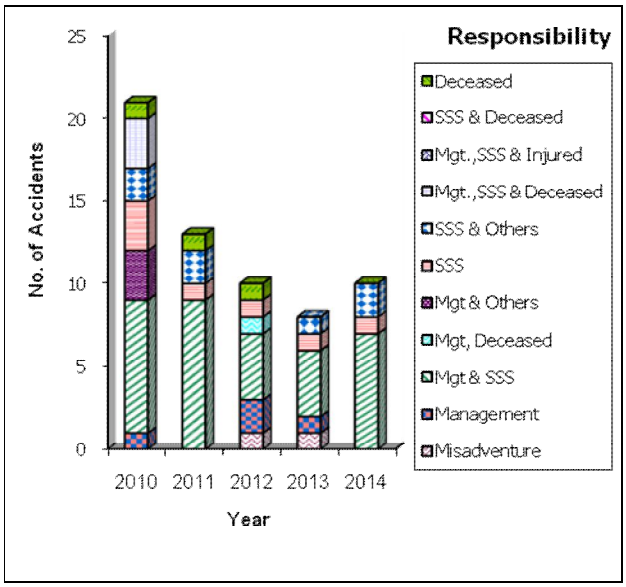
Hours at Work	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
0.00- 1.00	0	0	0	0	0	0	0	0	0	0	0	0
1.01- 2.00	0	0	2	15	0	0	0	0	2	20	4	6
2.01- 3.00	4	19	2	15	6	67	1	13	2	20	15	25
3.01- 4.00	4	19	1	8	1	11	4	48	2	20	12	20
4.01- 5.00	4	19	1	8	1	11	1	13	1	10	8	13
5.01- 6.00	5	24	2	15	0	0	1	13	0	0	8	13
6.01- 7.00	3	14	0	0	0	0	0	0	2	20	5	8
7.01- 8.00	0	0	0	0	0	0	0	0	1	10	1	2
8.01 & above	1	5	0	0	1	11	0	0	0	0	2	3
not available	0	0	5	39	0	0	1	13	0	0	6	10
Total	21	100	13	100	9	100	8	100	10	100	61	100

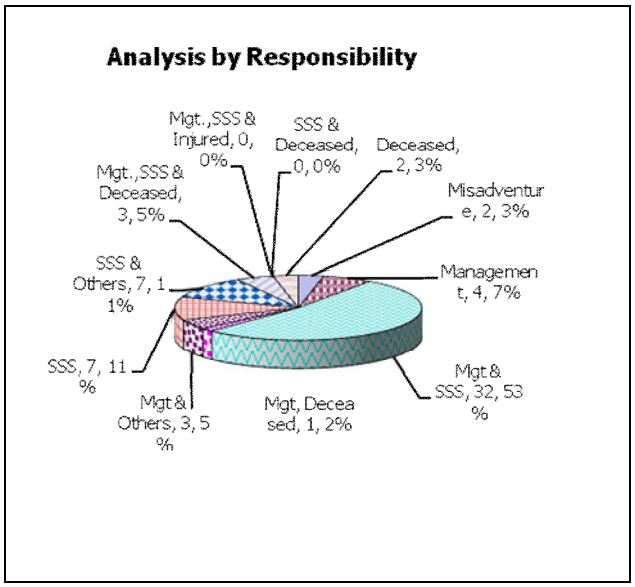




17. Distribution of fatal roof fall accidents by responsibility

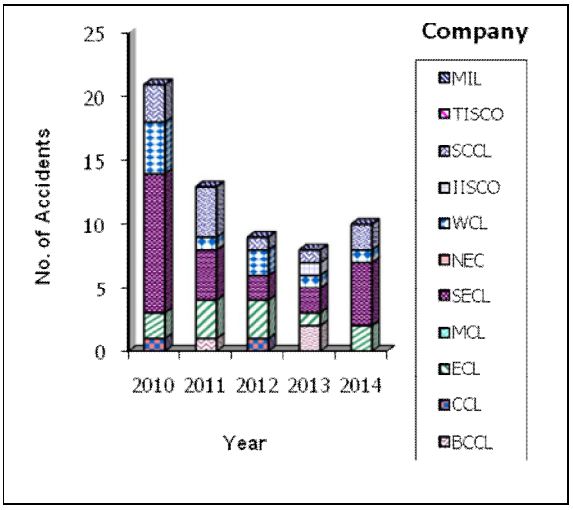
Responsibility	Number of persons											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
Misadventure	0	0	0	0	1	10	1	13	0	0	2	3
Management	1	5	0	0	2	20	1	13	0	0	4	7
Management & Sub-ordinate Supervisory Staff(SSS)	8	38	9	69	4	40	4	48	7	70	32	53
Management & Deceased	0	0	0	0	1	10	0	0	0	0	1	2
Management & Others	3	14	0	0	0	0	0	0	0	0	3	5
Sub-ordinate Supervisory Staff(SSS)	3	14	1	8	1	10	1	13	1	10	7	11
SSS & Others	2	10	2	15	0	0	1	13	2	20	7	11
Management, SSS & Deceased	3	14	0	0	0	0	0	0	0	0	3	5
Management,SSS& Injured	0	0	0	0	0	0	0	0	0	0	0	0
SSS & Deceased	0	0	0	0	0	0	0	0	0	0	0	0
Deceased	1	5	1	8	1	10	0	0	0	0	2	3
Total	**21**	**100**	**13**	**100**	**10**	**100**	**8**	**100**	**10**	**100**	**61**	**100**

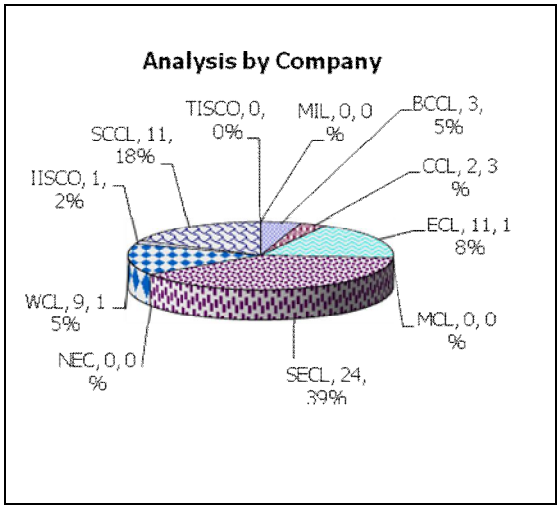




18. Distribution of fatal roof fall accidents by company

Company	Number of accidents											
	2010	%	2011	%	2012	%	2013	%	2014	%	Total	%
BCCL	0	**0**	1	**8**	0	**0**	2	**24**	0	**0**	3	**5**
CCL	1	**5**	0	**0**	1	**11**	0	**0**	0	**0**	2	**3**
ECL	2	**10**	3	**22**	3	**33**	1	**13**	2	**20**	11	**18**
MCL	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**
SECL	11	**52**	4	**31**	2	**22**	2	**24**	5	**50**	24	**39**
NEC	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**
WCL	4	**19**	1	**8**	2	**22**	1	**13**	1	**10**	9	**15**
CIL: total	**18**	**86**	**09**	**69**	**8**	**89**	**6**	**74**	8	**80**	49	**80**
IISCO	0	**0**	0	**0**	0	**0**	1	**13**	0	**0**	1	**2**
SCCL	3	**14**	4	**31**	1	**11**	1	**13**	2	**20**	11	**18**
TISCO	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**
MIL	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**
All-India	**21**	**100**	**13**	**100**	**9**	**100**	**8**	**100**	**10**	**100**	**61**	**100**





2.2.3B3 Side fall and over hangs

There were two fatal accidents reported due to fall of sides (other than overhang) and one accident due to overhang during the year 2014.

2.2.3 B4 Air blast

There were no fatal accidents reported due to this cause during the year 2014.

2.2.3C Transportation machinery (Winding)

There was no accident reported due to transportation machinery (Winding) during the year 2014.

2.2.3D Transportation machinery (Other than winding)

There were 18 fatal accident occurred due to transportation machinery other than winding engine involving 19 fatality reported during the year 2014. A detail break up of fatalities under this category is given in the table below.

TABLE – 23	FATAL ACCIDENTS DUE TO TRANSPORTATION MACHINERY OTHER THAN WINDING IN SHAFTS IN COAL MINES DURING 2014	
Cause	**No. of fatal accidents**	**No.of person killed**
1. Rope Haulage	1	1
2. Mechanical Conveyors	-	-
3. Dumpers	16	17
4. Wheeled Trackless (Truck,Tanker etc.)	1	1
5. Wagon Movement	**-**	**-**
6. Others	**-**	**-**
Total	18	19

From the above it is seen that dumpers/tippers is the main contributory factor to fatal accidents in opencast coal mines.

2.2.3D.1 Rope Haulages

There were 1 accidents (5.55% of all accidents) caused due to rope haulages during the year, 2014. Analysis of causes revealed that the accident occurred due to jerk caused by sudden release of the tub.

2.2.3D.2 Mechanical Conveyors:

No accident caused by belt conveyor during the year 2014.

2.2.3D.3 Dumpers and tippers:

There were 16 accidents due to machineries occurred resulting 17 fatalities (89.47% of all fatalities) due to dumpers and tippers during the year 2014. The analysis of above accident revealed that-

1. One accidents occurred due to collision of dumpers.
2. One accidents occurred due to speeded dumper run-over the persons.
3. Five accidents occurred while dumpers /tippers lost control.
4. Two accidents occurred during repairing/maintenance of dumper.
5. Two accident occurred due to toppling of dumper.
6. One accidents occurred due to Slid.
7. Three accidents occurred due to reversing the dumper.
8. One accident due to hitting by dumper coming from opposite direction.

2.2.3D4 Truck & Tankers:

6 accidents occurred causing 6 fatality due to truck & tankers contributing (18.18%) of total accident occurred due to unsafe method adopted during repairing of truck.

2.2.3E Machinery other than transportation machinery:

There were 15 accidents reported during the year, 2014, which were caused due to machinery other than transportation machinery. The analysis of the caused revealed that

Table – 24	FATAL ACCIDENTS IN COAL MINES DUE TO MACHINERY OTHER THAN TRANSPORTATION MACHINERY DURING 2014	
Sl.No.	**No. of fatal accidents**	**No.of person killed**
1. Drilling Machines	-	-
2. Cutting Machines	-	-
3. Loading Machines (SDL etc.)	4	4
4. Winding Engine	-	-
5. Shovels/Draglines etc.	3	3
6. Crushing & Screening Plant	**-**	**-**
7. Other HEMM	**7**	**7**
8. Other Non-Transportation Machinery	**1**	**1**
Total :	**15**	**15**

2.2.3F Explosives;

There were two (3.39% of the total) fatal accident occurred due to explosives during the year 2014 involving two fatilities.

2.2.3G Electricity;

There were 2 (3.39% of the total) fatal accidents involving 2 fatalities due to electricity during the year 2014.

2.2.3H Accidents due to Dust, Gas & Fire;

There was one (1.70% of the total) o fatal accident occurred due to dust, gas & fire involving 1 fatality during the year 2014.

2.2.3I Falls other than falls of ground;

Falls other than fall of ground caused 4 (6.78% of the total) fatal accidents involving same number of lives during the year 2014.

2.2.3J Other causes;

There was three (5.08% of the total) fatal accident occurred involving 3 fatalities due to other causes during the year 2014.

2.2.4 Responsibility

Analysis of accidents as per the persons held responsible for the various causes of accidents during the year 2014 has been indicated in table:25.

TABLE:25	RESPONSIBILITY FOR FATAL ACCIDENTS IN COAL MINES DURING THE YEAR 2014	
SL. NO.	**Responsibility**	**No. of accidents**
1.	Misadventure	1
2.	Management	6
3.	Management & Subordinate Supervisory Staff (SSS)	13
4.	Management, SSS & Co-worker	3
5.	Management, SSS,Co-worker & Deceased	3
6.	Management, SSS, Co-worker,Deceased & injured	-
7.	Management,SSS & Deceased	3
8.	Management,SSS & Shotfirer	-
9.	Management & Shotfirer	1
10.	Management & Co-worker	7
11.	Management,Coworker & Deceased	-
12.	Management & Deceased	1
13.	Subordinate Supervisory Staff(SSS)	7
14.	SSS & Shotfirer	-
15.	SSS & Co-worker	1
16.	SSS,Co-worker & Deceased	1
17.	SSS & Deceased	2
18.	Co-worker	5
19.	Co-worker & Deceased	-
20.	Others	1
	TOTAL	**59**

It can be seen that in 6 (10.17%) cases management alone, 13 (22.03%) cases management along with other subordinate staff and 7(11.86%) cases Management alongwith Co-worker were responsible. In 7 (11.86%) of the cases subordinate supervisory staff alone were found responsible, In 2 (3.39%) cases sss and deceased and in 5 (8.47%) cases the co-workers alone were responsible. These revelations draw the attention towards better planning and implementation of safety status. Spontaneous heating and fire in opencast working was due to the fire.

2.3 53 (fifty three) dangerous occurrences were reported under the Coal Mines Regulation, 1957 during the year 2014. Details of dangerous occurrences are given below in Table 26.

TABLE:26	DANGEROUS OCCURRENCES IN COAL MINES DURING 2014	
Sl.No.	**Cause**	**No. of cases**
1.	Over winding of cages, skip or bucket	1
2.	Spontaneous heating of coal in belowground	4
3.	Spontaneous heating of coal on surface	0
4.	Spontaneous heating of coal in opencast working	1
5.	Outbreak of fire underground from spontaneous heating	1
6.	Outbreak of fire underground from causes other than spontaneous heating	7
7.	Outbreak of fire in quarry from causes other than spontaneous heating	1
8.	Outbreak of fire on surface from causes other than spontaneous heating	1
9.	Premature collapse of workings or failure of pillars/ benches/major roof fall	1
10	Influx of noxious gases	4
11.	Breakage of winding rope	2
12.	Breakdown of winding engine, crank shaft, bearing etc.	2
13.	Ignition or occurrence of inflammable gas	-
14.	Breakage, fracture or failure of essential parts of machinery or apparatus whereby safety of persons was endangered	1
15.	Irruption of water	6
16.	Subsidence/potholing	8
17.	Explosives	2
18.	Others	11
	TOTAL	**53**

Contributory factors for spontaneous heating:

The primary contributory factors which lead to spontaneous heating and thereby fires:

- Non-sectionlization / improper sectionlization of old workings.
- Not cleaning the old galleries and return airways off fallen coal and not treating thoroughly with stone dust.
- Sluggish ventilation in old workings and depillaring areas.
- Working the depillaring panel beyond the incubation period.

- Not filling up the surface cracks formed due to subsidence and causing leakage of air into the sealed off areas and old workings.
- Not making and maintaining the isolation stoppings as prescribed.
- Stowing Lag in depillaring panel.
- Unavailability of CO detecting instruments & negligence in taking CO samples on routine basis.
- Negligence in monitoring the status of gas samples behind the isolation stoppings.

Corrective measures:

- Rate of extraction has to be made faster by deploying well maintained loading machines and loss of coal in the goaf has to be minimized.
- Isolation and sectionlization stoppings have to be regularly inspected as per statute to detect early stage of spontaneous heating.
- Strengthening of old stoppings.
- Fallen loose coal has to be cleaned off regularly.
- Surface area above the goaved out panels shall be filled up to avoid breathing of air.
- All the galleries exposed on the side of entries to the belowground workings in the seam shall be covered effectively to avoid breathing of air through those galleries.
- Rib of coal left as barrier between opencast working and belowground working need to be covered to prevent formation of return circuit through the cracks/fissures developed at the surface.
- There should not be stowing lag in the goaf of depillaring panel.
- Boreholes and subsidence areas, if any should be kept plugged and cracked should be filled up completely.
- Provision of Pressure balancing in the concerned areas.
- Tele monitoring devices should be installed for round the clock monitoring of any emission of noxious/inflammable gases.

B. Fires:

There was only one case of outbreak of fire due to spontaneous heating in working panels which were sealed off by isolation stoppings. There were also seven cases of outbreak of fire underground due to reasons other than spontaneous heating. There was

a case of outbreak of fire in the quarry and another case on surface other than spontaneous heating.

Corrective measures:

- Suitable firefighting plan should be prepared and implemented in the mine.
- Proper care should be taken during refueling diesel. A code of practice shall be drawn up for dealing with fires at different location in opencast mines, 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.
- Timely action has to be initiated if active fire is known to be existed behind the stoppings.
- Reinforcement of stoppings and cleaning of return airway to prevent choking shall be done.
- Adequate precautions shall be taken as per statute while using flame or electric welding or repairing apparatus belowground.
- Availability of Fire Tender in the mine must be ensured.

C. Premature collapse of workings or failure of pillars/ benches/major roof fall:

There was one case of premature collapse of workings or failure of pillars/ benches/major roof fall. The dump toe area should be properly fenced to check the entry of any person near the dump toe. The danger zone would minimum be equal to dump height from the dump toe.

D. Influx of Noxious Gases:

There were four cases of occurrences of Noxious Gases.

E. Ignition or occurrence of inflammable gas:

There was no case of occurrence of inflammable gas.

F. Breakage, fracture etc. of essential parts of machinery or apparatus whereby safety of persons was endangered

There was no case of hard landing.

G. Irruption of water / Landslide:

There were six cases of inrush of water due to continuous heavy rainfall since last one month. Old bore hole connecting to underground working collapsed causing depression on surface.

H. Subsidence / Potholing:

There were eight cases of subsidence.

I. Explosives:

There were two cases of exploding.

J. Other:

There were 11 cases.

2.4 Technical Developments

- During the year 2014, 9.90% of the total production came from underground workings and 90.10% of the total production came from opencast mines. As far as average daily employment was concerned 46.24% were employed belowground, 26.44% were employed in opencast workings and the remaining 27.32% were employed for other surface operations.
- During the 2014, 1320 Excavators, 5299 dumpers, 745 drills, 28 draglines were used in opencast mines.

TABLE:27	TREND IN USE OF HEAVY EARTH MOVING MACHINERY IN OPENCAST COAL MINES					
Year	Shovels	Draglines	Drills	Dumpers	Others	HP of the machinery
1990	787	41	703	3663	1885	27,11,279
1991	864	41	703	3846	1746	29,72,990
1992	892	47	829	4223	2112	32,27,528
1993	910	44	802	4385	1952	34,09,140
1994	946	43	822	4437	1946	34,48,234
1995	956	42	871	4291	2116	36,39,816
1996	961	59	864	4038	1856	34,36,437
1997	1017	42	913	4399	2177	37,03,276
1998	1106	41	918	4520	2279	38,26,094
1999	1216	49	962	4776	2372	40,58,489

2000	1143	43	969	4602	2333	39,38,986
2001	1172	42	977	4666	2304	39,65,541
2002	1159	41	972	4721	2136	38,64,244
2003	1136	39	1003	4576	2163	40,95,742
2004	1135	45	978	4516	2367	39,95,550
2005	1073	34	922	4553	2085	40,35,171
2006	1088	28	861	4391	2006	37,98,259
2007	1188	33	1023	4634	2569	42,49,869
2008	1247	48	1018	4994	2779	44,79,969
2009	1320	40	920	5324	2750	45,88,696
2010	1499	42	980	5455	2876	44,37,860
2011	1576	46	914	6286	3095	50,09,564
2012	1610	43	952	5850	2937	50,52,398
2013	1644	41	950	6339	3357	55,38,964
2014	1320	28	745	5299	2506	43,55,205

(a) Number of machines used in underground coal mines of different coal companies are as follows:

Table-28	**Number of machines used in underground coal mines during 2014**					
Name of Company	**Road header/ Dint header**	**SDL**	**LHD**	**Continuous Miners**	**Coal haulers**	**Other**
BCCL	4	132	0	0	0	0
ECL	1	216	25	3	0	29
CCL	0	0	0	0	0	0
MCL	0	19	28	0	0	0
SECL	0	190	176	4	0	1
WCL	0	76	114	0	0	44
NECL	0	0	0	0	0	4
TATA	1	31	12	0	0	0
SCCL	9	156	33	2	5	3
NCL	0	0	0	0	0	0
GIPCL	0	0	0	0	0	0
NLC	0	0	0	0	0	0
GMDC	0	0	0	0	0	0
SAIL	0	0	0	0	0	0
RSMM	0	0	0	0	0	0
Total	**15**	**820**	**388**	**9**	**5**	**81**

(b) Number of machines used in opencast coal mines of different coal companies are as follows:

TABLE-29	**Number of machines used in opencast mines during 2014**						
Name	**Bull dozers**	**Dumpers**	**Shovels**	**Others**	**Dumpers**	**Excavators**	**Drills**

of co.					170 T	120 T	85 T	50 T	35 T	>20 cu m	19-10 cu m	9-5 cu m	< 5 cum	> 250 mm	249-150 mm	< 150 mm
BCCL	0	1	0	0	0	0	58	221	290	0	11	65	78	9	74	20
ECL	0	1	0	0	11	9	5	17	133	5	10	8	41	13	25	5
CCL	0	0	5	1	0	25	67	182	240	1	9	47	46	27	70	13
MCL	0	4	15	232	0	0	28	139	11	0	3	44	38	34	55	5
SECL	0	9	6	0	0	48	8	31	96	5	22	28	21	66	41	7
WCL	0	2	0	0	0	0	0	208	17	0	0	78	40	21	84	0
NECL	0	0	0	0	0	0	0	0	8	0	0	0	34	0	0	15
TATA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SCCL	0	1	1	0	0	0	13	58	222	0	60	13	10	20	37	0
NCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIPCL	0	0	0	1	0	0	0	3	175	0	0	0	52	0	0	0
NLC	34	0	0	414	0	0	0	0	82	0	0	0	56	9	20	1
GMDC	0	0	0	0	0	0	0	14	216	0	0	3	93	0	0	0
SAIL	0	0	0	0	0	21	0	22	6	0	3	8	31	0	0	0
RSMM	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0
Total	34	18	27	648	11	103	179	895	1496	11	118	294	553	199	406	66

2.5 Occupational Health

Medical Examination by Appellate Medical Board

Initial and periodical medical examination under Rule 29B of the Mines Rules, 1955 are conducted by management and medical re-examination by Appellate Medical Board constituted by Central Government under Rule 29K.

(a) Progress of Medical Examination in Coal Mines:

TABLE: 30	PROGRESS OF INITIAL & PERIODICAL MEDICAL EXAMINATION DURING 2014 IN COAL MINES			
Name of Company	Initial Medical Examination		Periodical Medical Exam.	
	Required	Provided	Required	Provided
BCCL	All New Entrants	1847	19965	19747
ECL	334	334	14006	14969
CCL	2815	2815	8645	8645
MCL	857	857	4776	4688
SECL	732	732	20199	19613
WCL	4425	4425	15419	14075
NECL	0	0	398	448
TATA	864	864	813	813
SCCL	6492	6492	15937	13694
NCL	2101	2101	3111	3111
GIPCL	210	210	49	49
NLC	1179	1179	3397	3203
GMDC	971	884	304	279
SAIL	998	931	1094	862
RSMM	24	24	0	0
Total	22002	21848	88148	84449

(b) Cases of Notified Diseases in Coal Mines:

TABLE: 31	CASES OF NOTIFIED DISEASES IN COAL MINES DURING THE YEAR 2014	
Mining Companies	**Name of Disease**	**Number of cases**

MCL	Pneumoconiosis	1
SCCL	Carcinoma Lung	1

2.6 Vocational Training

Recognizing the need for safety education to enable the mine workers to prepare them to face the challenges of mining, the Mines Vocational Training Rules were framed in 1966. These rules provide the provision for construction of mine vocational training centers, initial, refresher and special training to mine workers, appointment of training officers, instructors, proper training aids and equipments. It also provides for payment to trainees during the training period. Progress of vocational training in coal mines during the year 2014 was reported to be as follows.

TABLE: 32	PROGRESS OF VOCATIONAL TRAINING IN COAL MINES DURING THE YEAR 2014					
Name of the Company.	No. of VT Centers	Basic Training		Refresher Training		Special Training Provided
		Required	Provided	Required	Provided	
BCCL	11	0	407	7770	8307	1067
ECL	20	1048	1048	12136	10261	5458
CCL	13	660	1820	5455	5455	447
MCL	5	2557	2557	3265	3349	1369
SECL	29	2934	2934	10456	10917	4193
WCL	12	4425	4425	7695	7695	2211
NECL	2	0	203	143	168	144
TATA	0	263	263	1486	1486	1098
SCCL	8	6417	6417	7986	7896	3246
NCL	10	4857	4857	2457	2457	0
GIPCL	1	344	329	4	4	0
NLC	3	1720	1720	2737	3102	3805
GMDC	2	1134	1052	154	145	91
SAIL	8	522	1035	1004	763	503
RSMM	2	24	24	0	0	0
Total	126	26905	29091	62748	62005	23632

2.7 Workmen's Inspector, Safety Committee & Welfare Officers

Much greater strides in safety can be achieved by participation of workmen in safety programme, the twin institutions of 'Safety Committee & 'Workmen's Inspector' have been conceived and given the statutory backing. DGMS is also associated with training of Workmen's Inspectors to make them effective in discharge of their duties. In coal mines almost all the eligible mines had Workmen's Inspector and Safety Committee. The table below shows the status of appointment of Welfare Officer, Workmen's Inspector and formation of Safety Committees during the year 2014.

TABLE: 33	NUMBER OF WORKMEN'S INSPECTOR IN POSITION, SAFETY COMMITTEE, WELFARE OFFICERS IN COAL MINES DURING 2014					
Name of Company	Welfare Officers		Workmen Inspectors		Safety Committee	
	Required	Provided	Required	Provided	Required	Provided
BCCL	51	51	165	165	55	55

ECL	85	83	246	259	95	97
CCL	60	60	180	180	60	60
MCL	22	22	66	66	22	22
SECL	86	86	258	277	86	86
WCL	68	68	216	216	68	68
NECL	4	4	12	12	4	4
TATA	5	5	15	30	5	5
SCCL	44	44	164	164	60	60
NCL	11	11	35	35	10	10
GIPCL	1	1	4	7	3	3
NLC	6	8	26	27	25	59
GMDC	4	4	18	18	6	6
SAIL	9	9	27	31	9	9
RSMM	0	0	3	2	1	1
Total	**456**	**456**	**1435**	**1489**	**509**	**545**

2.8 Owner-wise consolidated fatal accident statistics for last 8 (Eight) years in coal mines

Owner	Year	Fatal Accidents								Death Rate per 1000 persons employed			
		Belogroun d		Opencast		Abovegroun d		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	Total
BCCL	2007	4	4	3	3	2	2	9	9	0.15	0.35	0.13	0.18
	2008	8	8	2	2	1	1	11	11	0.32	0.25	0.07	0.23
	2009	6	8	4	6	4	4	14	18	0.30	0.68	0.29	0.36
	2010	1	1	6	6	0	0	7	7	0.04	0.69	0.00	0.15
	2011	3	4	3	3	0	0	6	7	0.17	0.37	0.00	0.15
	2012	3	3	6	6	3	3	12	12	0.14	0.69	0.25	0.28
	2013	3	6	3	3	4	4	10	13	0.28	0.31	0.37	0.31
	2014	1	1	5	5	2	2	8	8	0.04	0.50	0.19	0.19
CCL	2007	0	0	4	5	3	3	7	8	0.00	0.39	0.21	0.21
	2008	0	0	2	2	2	2	4	4	0.00	0.17	0.14	0.11
	2009	1	1	3	3	2	2	6	6	0.11	0.26	0.16	0.18
	2010	1	2	5	6	2	2	8	10	0.24	0.55	0.17	0.33
	2011	1	1	3	3	2	2	6	6	0.13	0.26	0.16	0.19
	2012	1	2	3	3	1	1	5	6	0.27	0.25	0.09	0.20
	2013	0	0	6	6	3	3	9	9	0.00	0.52	0.27	0.30
	2014	1	1	2	2	1	1	4	4	0.15	0.16	0.09	0.13
ECL	2007	5	5	2	3	0	0	7	8	0.12	0.47	0.00	0.11
	2008	5	5	2	2	4	4	11	11	0.12	0.35	0.18	0.16
	2009	6	7	2	2	0	0	8	9	0.17	0.45	0.00	0.13
	2010	5	5	4	4	4	4	13	13	0.13	0.93	0.19	0.20

Owner	Year	Fatal Accidents								Death Rate per 1000 persons employed			
		Belogroun d		Opencast		Abovegroun d		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	Total
	2011	4	4	4	4	0	0	8	8	0.11	1.03	0.00	0.13
	2012	7	7	4	4	0	0	11	11	0.19	0.99	0.00	0.19
	2013	4	4	3	3	1	1	8	8	0.11	0.73	0.06	0.14
	2014	4	4	1	1	0	0	5	5	0.11	0.28	0.00	0.09
MCL	2007	0	0	3	3	1	1	4	4	0.00	0.48	0.17	0.24
	2008	1	1	2	2	1	1	4	4	0.25	0.30	0.18	0.25
	2009	0	0	1	1	2	2	3	3	0.00	0.13	0.33	0.17
	2010	0	0	2	2	0	0	2	2	0.00	0.24	0.00	0.11
	2011	0	0	1	1	3	3	4	4	0.00	0.11	0.52	0.21
	2012	0	0	1	1	1	1	2	2	0.00	0.11	0.15	0.10
	2013	0	0	1	1	0	0	1	1	0.00	0.10	0.00	0.05
	2014	0	0	0	0	1	1	1	1	0.00	0.00	0.14	0.05
NCL	2007	0	0	4	4	2	2	6	6	0.00	0.40	0.33	0.37
	2008	0	0	5	9	0	0	5	9	0.00	0.84	0.00	0.54
	2009	0	0	4	4	0	0	4	4	0.00	0.44	0.00	0.23
	2010	0	0	9	9	3	3	12	12	0.00	0.86	0.45	0.70
	2011	0	0	3	3	2	2	5	5	0.00	0.24	0.34	0.27
	2012	0	0	4	4	3	3	7	7	0.00	0.29	0.43	0.34
	2013	0	0	4	4	2	2	6	6	0.00	0.39	0.19	0.29
	2014	0	0	5	5	2	2	7	7	0.00	0.36	0.23	0.31
NEC	2008	1	5	1	2	0	0	2	7	4.63	2.80	0.00	2.89
	2010	0	0	1	1	0	0	1	1	0.00	1.16	0.00	0.47
	2011	0	0	2	2	0	0	2	2	0.00	2.44	0.00	0.96
	2012	0	0	0	0	1	1	1	1	0.00	0.00	1.76	0.51
	2014	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
SECL	2007	5	5	4	4	5	5	14	14	0.15	0.56	0.36	0.26
	2008	6	7	3	3	2	2	11	12	0.22	0.42	0.15	0.23
	2009	4	4	5	5	0	0	9	9	0.13	0.77	0.00	0.18
	2010	15	29	1	1	3	3	19	33	0.96	0.17	0.22	0.67
	2011	6	6	3	3	2	2	11	11	0.19	0.61	0.14	0.21
	2012	5	6	3	3	2	2	10	11	0.18	0.53	0.14	0.20
	2013	7	7	6	6	0	0	13	13	0.23	1.12	0.00	0.26
	2014	7	7	4	5	0	0	11	12	0.21	0.61	0.00	0.22
WCL	2007	5	5	6	6	1	1	12	12	0.25	0.83	0.07	0.29
	2008	6	8	2	2	3	3	11	13	0.39	0.30	0.22	0.32
	2009	8	9	1	2	2	2	11	13	0.46	0.30	0.14	0.32
	2010	5	8	6	6	2	2	13	16	0.42	0.94	0.16	0.42
	2011	3	3	2	3	3	3	8	9	0.16	0.44	0.23	0.23
	2012	4	4	5	6	0	0	9	10	0.22	0.91	0.00	0.27
	2013	1	2	4	4	3	3	8	9	0.11	0.60	0.22	0.23
	2014	1	1	7	8	1	1	9	10	0.06	1.31	0.08	0.28
CIL	2007	19	19	26	28	14	14	59	61	0.14	0.47	0.15	0.21
	2008	27	34	19	24	13	13	59	71	0.25	0.42	0.14	0.25
	2009	25	29	20	23	10	10	55	62	0.22	0.41	0.11	0.22
	2010	27	45	34	35	14	14	75	94	0.36	0.63	0.16	0.35
	2011	17	18	21	22	12	12	50	52	0.14	0.38	0.14	0.19
	2012	20	22	26	27	11	11	57	60	0.18	0.45	0.14	0.23
	2013	15	19	27	27	13	13	55	59	0.16	0.47	0.15	0.23
	2014	14	14	24	26	7	7	45	47	0.12	0.40	0.09	0.18
GMDC	2008	0	0	1	1	1	1	2	2	0.00	1.27	1.47	1.37
	2009	0	0	1	1	0	0	1	1	0.00	1.01	0.00	0.59
	2013	0	0	2	2	0	0	2	2	0.00	1.01	0.00	0.74

Owner	Year	Fatal Accidents								Death Rate per 1000 persons employed			
		Belogroun d		Opencast		Abovegroun d		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	Total
IISCO	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	2	2	1	1	0	0	3	3	1.50	1.75	0.00	1.16
	2011	0	0	1	1	0	0	1	1	0.00	1.67	0.00	0.50
	2013	1	1	1	1	0	0	2	2	1.17	1.95	0.00	1.06
J&K	2013	1	1	0	0	0	0	1	1	2.27	0.00	0.00	1.74
NLC	2007	0	0	2	2	0	0	2	2	0.00	0.25	0.00	0.19
	2008	0	0	2	2	0	0	2	2	0.00	0.31	0.00	0.19
	2009	0	0	2	2	1	1	3	3	0.00	0.30	0.24	0.28
	2010	0	0	2	2	1	1	3	3	0.00	0.31	0.21	0.26
	2011	0	0	2	2	0	0	2	2	0.00	0.30	0.00	0.21
	2012	0	0	2	2	1	1	3	3	0.00	0.30	0.39	0.32
	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2014	0	0	2	2	0	0	2	2	0.00	0.34	0.00	0.23
SCCL	2007	4	4	5	5	2	2	11	11	0.10	0.72	0.28	0.20
	2008	4	4	5	6	4	4	13	14	0.09	0.74	0.55	0.24
	2009	11	14	6	6	0	0	17	20	0.33	0.51	0.00	0.32
	2010	8	9	2	3	1	1	11	13	0.19	0.24	0.10	0.19
	2011	5	5	2	2	1	1	8	8	0.11	0.16	0.11	0.12
	2012	4	5	6	6	3	3	13	14	0.12	0.52	0.33	0.23
	2013	1	2	5	5	4	4	10	11	0.05	0.46	0.48	0.19
	2014	6	7	1	1	1	1	8	9	0.19	0.08	0.12	0.16
TISCO	2007	1	1	0	0	0	0	1	1	0.20	0.00	0.00	0.10
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	3	3	0	0	0	0	3	3	0.51	0.00	0.00	0.37
	2010	4	4	0	0	0	0	4	4	0.71	0.00	0.00	0.51
	2011	1	1	2	2	0	0	3	3	0.18	1.40	0.00	0.39
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2013	1	1	1	1	0	0	2	2	0.20	0.72	0.00	0.27
	2014	0	0	1	1	0	0	1	1	0.00	0.86	0.00	0.14
PIL	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2014	0	0	1	1	0	0	1	1	0.00	4.63	0.00	3.83
GIPCL	2007	0	0	1	1	0	0	1	1	0.00	3.95	0.00	2.99
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2013	0	0	1	1	0	0	1	1	0.00	2.54	0.00	2.09
	2008	0	0	1	1	0	0	1	1	0.00	27.03	0.00	25.00
APMDTC	2009	0	0	0	0	1	1	1	1	0.00	0.00	2.92	2.78
ICML	2010	0	0	1	1	0	0	1	1	0.00	1.13	0.00	0.82
MIL	2007	1	1	0	0	0	0	1	1	1.02	0.00	0.00	0.97
	2008	1	1	0	0	0	0	1	1	0.70	0.00	0.00	0.61
	2009	0	0	0	0	1	1	1	1	0.00	0.00	4.52	0.61
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2014	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
JNL	2008	0	0	0	0	1	1	1	1	0.00	0.00	43.48	5.81
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2013	0	0	1	1	0	0	1	1	0.00	8.62	0.00	1.34
KECML	2008	0	0	1	1	0	0	1	1	0.00	3.42	0.00	3.18
JPL	2009	0	0	0	0	1	1	1	1	0.00	0.00	2.48	0.54
	2011	0	0	1	1	0	0	1	1	0.00	0.00	0.00	3.97

Owner	Year	Fatal Accidents								Death Rate per 1000 persons employed			
		Belogroun d		Opencast		Abovegroun d		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	Total
	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2014	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
SEML	2012	0	0	1	1	0	0	1	1	0.00	4.18	0.00	3.11
ELCALTD	2012	1	1	1	1	1	1	3	3	5.00	10.20	10.75	7.67
	2013	0	0	0	0	1	1	1	1	0.00	0.00	8.85	1.56
JSPL	2009	0	0	0	0	1	1	1	1	0.00	0.00	38.46	26.32
	2013	0	0	1	1	0	0	1	1	0.00	12.66	0.00	2.49
WBMDTC	2012	0	0	1	1	0	0	1	1	0.00	6.13	0.00	4.52
BLMCL	2012	0	0	0	0	1	1	1	1	0.00	0.00	2.42	1.18
	2014	0	0	2	2	0	0	2	2	0.00	7.33	0.00	3.34
SOVA	2013	0	0	1	1	0	0	1	1	0.00	12.05	0.00	10.10
ALL INDIA	**2007**	**25**	**25**	**35**	**37**	**16**	**16**	**76**	**78**	**0.13**	**0.46**	**0.14**	**0.21**
	2008	**32**	**39**	**29**	**35**	**19**	**19**	**80**	**93**	**0.21**	**0.45**	**0.18**	**0.25**
	2009	**39**	**46**	**29**	**32**	**15**	**15**	**83**	**93**	**0.25**	**0.40**	**0.14**	**0.25**
	2010	**41**	**60**	**40**	**42**	**16**	**16**	**97**	**118**	**0.33**	**0.51**	**0.15**	**0.32**
	2011	**23**	**24**	**29**	**30**	**13**	**13**	**65**	**67**	**0.13**	**0.35**	**0.13**	**0.18**
	2012	**25**	**28**	**37**	**38**	**17**	**17**	**79**	**83**	**0.16**	**0.43**	**0.17**	**0.23**
	2013	**19**	**24**	**40**	**40**	**18**	**18**	**77**	**82**	**0.14**	**0.46**	**0.17**	**0.23**
	2014	**20**	**21**	**31**	**33**	**8**	**8**	**59**	**62**	**0.13**	**0.35**	**0.08**	**0.17**

BG- Belowground OC-Opencast AG-Aboveground

2.9 Owner-wise consolidated serious accident statistics for last 8 (eight) years in coal mines

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowgroun d		Opencast		Abovegroun d		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
BCCL	2007	36	37	14	14	9	9	59	60	1.38	1.64	0.57	1.17
	2008	28	28	7	7	13	13	48	48	1.11	0.88	0.93	1.02
	2009	20	21	12	14	9	9	41	44	0.79	1.60	0.65	0.89
	2010	21	21	1	4	3	4	25	29	0.89	0.46	0.28	0.62

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Abovegroun d		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
	2011	24	30	3	3	9	9	36	42	1.28	0.37	0.65	0.92
	2012	18	19	6	7	7	7	31	33	0.87	0.80	0.59	0.78
	2013	10	12	1	1	2	2	13	15	0.55	0.10	0.18	0.36
	2014	6	7	8	8	7	7	21	22	0.31	0.81	0.65	0.51
CCL	2007	10	10	7	7	4	5	21	22	0.85	0.55	0.35	0.57
	2008	8	8	5	5	5	6	18	19	0.83	0.43	0.43	0.54
	2009	1	1	1	1	4	6	6	8	0.11	0.09	0.48	0.24
	2010	1	1	3	4	4	4	8	9	0.12	0.37	0.34	0.29
	2011	7	7	8	8	1	1	16	16	0.91	0.70	0.08	0.50
	2012	4	4	2	2	3	3	9	9	0.54	0.17	0.28	0.30
	2013	2	2	3	3	1	1	6	6	0.28	0.26	0.09	0.20
	2014	1	1	0	0	3	3	4	4	0.15	0.00	0.27	0.13
ECL	2007	95	107	8	8	17	17	120	132	2.59	1.24	0.70	1.83
	2008	85	86	8	8	19	19	112	113	2.04	1.40	0.85	1.61
	2009	82	84	9	9	19	19	110	112	2.01	2.00	0.85	1.64
	2010	44	44	4	4	9	9	57	57	1.12	0.93	0.43	0.89
	2011	60	63	7	8	17	17	84	88	1.68	2.05	0.88	1.45
	2012	60	63	7	8	20	20	87	91	1.73	1.98	1.13	1.56
	2013	32	33	1	1	3	3	36	37	0.93	0.24	0.17	0.65
	2014	32	32	4	4	6	6	42	42	0.91	1.10	0.41	0.79
MCL	2007	4	4	4	4	0	0	8	8	0.94	0.64	0.00	0.49
	2008	1	1	2	2	2	2	5	5	0.25	0.30	0.37	0.31
	2009	4	4	2	2	0	0	6	6	0.98	0.25	0.00	0.33
	2010	2	2	3	3	1	1	6	6	0.44	0.36	0.17	0.32
	2011	6	6	4	4	0	0	10	10	1.36	0.45	0.00	0.53
	2012	5	5	2	2	2	2	9	9	1.10	0.23	0.31	0.45
	2013	3	3	4	5	2	2	9	10	0.66	0.51	0.30	0.47
	2014	1	1	7	7	3	3	11	11	0.25	0.6	0.42	0.51

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Abovegroun d		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
											6		
NCL	2007	0	0	10	10	2	3	12	13	0.00	1.00	0.50	0.81
	2008	0	0	7	7	1	1	8	8	0.00	0.66	0.16	0.48
	2009	0	0	2	2	0	0	2	2	0.00	0.22	0.00	0.12
	2010	0	0	9	9	1	1	10	10	0.00	0.86	0.15	0.58
	2011	0	0	5	6	0	0	5	6	0.00	0.48	0.00	0.33
	2012	0	0	7	7	0	0	7	7	0.00	0.51	0.00	0.34
	2013	0	0	3	3	0	0	3	3	0.00	0.29	0.00	0.15
	2014	0	0	4	4	0	0	4	4	0.00	0.29	0.00	0.18
NEC	2008	0	14	0	0	0	0	0	14	12.96	0.00	0.00	5.78
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2014	0	0	0	0	1	1	1	1	0.00	0.00	1.72	0.58
SECL	2007	48	49	8	11	15	15	71	75	1.49	1.55	1.07	1.39
	2008	43	43	6	7	5	5	54	55	1.35	0.98	0.36	1.04
	2009	38	42	1	2	7	7	46	51	1.36	0.31	0.56	1.02
	2010	35	43	6	8	2	2	43	53	1.43	1.39	0.15	1.07
	2011	25	26	11	11	5	5	41	42	0.81	2.24	0.34	0.81
	2012	19	20	6	6	8	8	33	34	0.59	1.07	0.56	0.63
	2013	23	24	5	5	2	2	30	31	0.78	0.93	0.14	0.62
	2014	20	20	4	5	10	10	34	35	0.61	0.61	0.72	0.64
WCL	2007	37	37	10	11	6	6	53	54	1.84	1.53	0.43	1.31
	2008	17	17	8	8	4	4	29	29	0.84	1.20	0.29	0.71
	2009	29	30	3	3	6	6	38	39	1.52	0.45	0.43	0.97
	2010	22	25	12	13	6	6	40	44	1.32	2.04	0.47	1.16
	2011	20	24	11	13	11	11	42	48	1.29	1.90	0.85	1.25
	2012	15	15	7	9	9	9	31	33	0.83	1.36	0.71	0.89

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Abovegroun d		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
	2013	21	22	10	10	7	7	38	39	1.20	1.51	0.52	1.02
	2014	14	15	11	12	6	6	31	33	0.88	1.97	0.48	0.92
CIL	2007	230	244	61	65	53	55	344	364	1.77	1.10	0.58	1.25
	2008	182	197	43	44	49	50	274	291	1.47	0.77	0.56	1.03
	2009	174	182	30	33	45	47	249	262	1.38	0.59	0.52	0.94
	2010	125	136	38	45	26	27	189	208	1.09	0.81	0.31	0.78
	2011	142	156	49	53	43	43	234	252	1.25	0.92	0.50	0.94
	2012	121	126	37	41	49	49	207	216	1.03	0.68	0.60	0.82
	2013	91	96	27	28	17	17	135	141	0.81	0.48	0.20	0.54
	2014	74	76	38	40	36	36	148	152	0.64	0.61	0.45	0.58
GMDC	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
IISCO	2007	7	7	1	1	1	1	9	9	4.33	1.78	1.09	2.91
	2008	4	4	0	0	0	0	4	4	2.78	0.00	0.00	1.41
	2010	4	4	0	0	0	0	4	4	3.00	0.00	0.00	1.54
	2011	2	2	0	1	0	0	2	3	2.33	1.67	0.00	1.51
	2013	0	0	1	1	0	0	1	1	0.00	1.95	0.00	0.53
J&K	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
NLC	2007	0	0	1	1	0	0	1	1	0.00	0.13	0.00	0.09
	2008	0	0	2	3	0	0	2	3	0.00	0.46	0.00	0.28
	2009	0	0	5	5	3	4	8	9	0.00	0.74	0.97	0.83
	2010	0	0	3	3	2	3	5	6	0.00	0.46	0.62	0.53
	2011	0	0	2	2	2	2	4	4	0.00	0.30	0.77	0.43
	2012	0	0	3	3	2	2	5	5	0.00	0.44	0.77	0.53
	2013	0	0	3	3	0	0	3	3	0.00	0.46	0.00	0.32
	2014	0	0	2	2	0	0	2	2	0.00	0.34	0.00	0.23
SCCL	2007	478	482	20	21	68	71	566	574	11.56	3.0	9.79	10.27

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
											2		
	2008	328	332	26	26	47	47	401	405	7.81	3.20	6.42	6.99
	2009	313	321	15	16	47	47	375	384	7.50	1.37	5.60	6.11
	2010	219	230	20	20	42	42	281	292	4.86	1.58	4.31	4.19
	2011	235	239	22	22	36	36	293	297	5.38	1.80	4.09	4.54
	2012	248	250	20	20	50	50	318	320	6.18	1.72	5.53	5.24
	2013	242	242	25	27	46	50	313	319	6.08	2.46	6.02	5.40
	2014	171	182	23	23	28	28	222	233	5.06	1.82	3.41	4.10
TISCO	2007	2	2	0	0	1	1	3	3	0.40	0.00	0.34	0.31
	2008	2	3	2	2	0	0	4	5	0.58	1.49	0.00	0.70
	2009	1	1	0	0	1	1	2	2	0.17	0.00	1.17	0.25
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	2	2	0	0	0	0	2	2	0.38	0.00	0.00	0.27
	2013	2	2	0	0	1	1	3	3	0.39	0.00	1.33	0.41
	2014	3	3	0	0	1	1	4	4	0.59	0.00	1.19	0.56
PIL	2010	0	0	1	1	0	0	1	1	0.00	5.41	0.00	4.29
	2014	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GIPCL	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	1	1	0	0	1	1	0.00	6.54	0.00	4.78
	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GHCL	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
APMDTC	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
ICML	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
MIL	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	1	1	0	0	0	0	1	1	0.70	0.00	0.00	0.61
	2012	1	1	0	0	0	0	1	1	0.70	0.00	0.00	0.60

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
	2014	2	2	0	0	0	0	2	2	1.27	0.00	0.00	1.07
JNL	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	1	1	0	0	0	0	1	1	2.32	0.00	0.00	1.54
	2012	1	1	0	0	0	0	1	1	1.92	0.00	0.00	1.33
	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
KECML	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
JPL	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2013	1	1	0	0	0	0	1	1	2.93	0.00	0.00	2.63
	2014	0	0	1	1	0	0	1	1	0.00	1.72	0.00	0.96
SEML	2012	0	0	1	1	0	0	1	1	0.00	4.18	0.00	3.11
ELCALTD	2012	1	2	0	0	0	0	1	2	10.00	0.00	0.00	5.12
	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
JSPL	2009	0	0	0	0	0	1	0	1	0.00	0.00	38.46	26.32
	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
WBMDTC	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
BLMCL	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2014	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
SOVA	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
ALL	2007	717	735	83	88	123	128	923	951	3.91	1.10	1.15	2.51
INDIA	2008	516	536	74	76	96	97	686	709	2.87	0.98	0.92	1.92
	2009	490	506	50	54	96	100	636	660	2.72	0.67	0.93	1.76
	2010	348	370	62	69	70	72	480	511	2.03	0.83	0.68	1.38
	2011	379	397	73	78	81	81	533	556	2.23	0.91	0.79	1.52
	2012	374	382	61	65	101	101	536	548	2.22	0.74	1.03	1.53
	2013	336	341	56	59	64	68	456	468	2.03	0.68	0.66	1.31
	2014	250	263	64	66	65	65	379	394	1.60	0.70	0.67	1.11

BG- Belowground OC-Opencast AG-Aboveground

Note : Serious injury includes seriously injured from fatal accidents also.

3.0 Non-Coal Mines

3.1 General

Information presented in the following paragraphs relates to non-coal mines coming under the purview of the Mines Act, 1952.

Estimated numbers of notified working non-coal mines are over about 10,000 out of which 2346 non-coal mines including 92 oil mines submitted returns for the year 2014.

Average daily employment in non-coal mines during the year 2014 was 207856 as compared to 211325 in 2013. Average daily employment in workings belowground, opencast and aboveground during the year 2014 was 11181, 106849 & 89826 as compared to 10372, 109327 & 91626 respectively during the year 2013. The average daily employment in various minerals is depicted in the table below:

TABLE: 34	Average daily employment and output in non-coal mines during 2014*					
Mineral	No. of Mine Submitted return	Average daily employment				Output ('000 tonnes)
		U / G	O/C	Surface	Total	
Bauxite	108	--	5,554	1,083	6637	18,485
Copper	6	2,411	218	1,061	3,690	3,348
Gold	6	1,725	78	1,884	3,687	731,364
Granites	266	--	10,077	2,722	12,799	4,470
Lime Stone	567	1	25,647	7,824	33,472	4,78,926
Iron-ore	367	--	26,638	23,874	50,512	224,930
Manganese	139	2,280	8,414	7,608	18,842	6,591
Marble	22	--	1547	413	1960	5086
Stone	191	--	5,278	2,214	7,492	44,209
Galena & sphalarite	13	2,614	890	2,214	5,745	12,750
Others	569	2,150	22,508	14,114	38,205	--

Oil & Natural Gas	92	--	--	24,815	24,815	**22,886(0IL) 13,888(GS)**
Total Non-Coal	2,346	11,181	106,849	89,826	207,856	--

*Data is provisional

Note: (i) Output is in '000 tonnes except for Gold ore and Gas for which the units are respectively tonnes and million cubic meters.

3.2 Accidents

There was no major accident in Non-coal mines during the year 2014.

There had been decrease in fatal accidents in the year 2014 wherein 39 fatal accidents involving 45 fatalities and 44 serious accidents as compared to 58 fatal accidents involving 74 fatalities and 52 serious accidents during 2013. Table 35 & 36 given below shows trend in fatal accidents, death rates, serious accidents and injury rate in non-coal mines.

TABLE: 35	**TREND IN FATAL ACCIDENTS & DEATH RATES IN NON-COAL MINES**						
Year	Number of accidents			Death rate per 1000 persons employed			
	Fatal	Persons killed	Persons Ser. Injured	Below ground	Open-cast	Above ground	Overall
2001	71	81	8	0.52	0.72	0.38	0.55
2002	52	64	3	0.49	0.54	0.21	0.40
2003	52	62	16	0.39	0.46	0.31	0.40
2004	57	64	9	0.62	0.47	0.27	0.41
2005	48	52	4	0.38	0.43	0.17	0.32
2006	58	71	9	0.38	0.62	0.21	0.45
2007	56	64	13	0.35	0.48	0.22	0.37
2008	54	73	35	0.44	0.43	0.37	0.41
2009	36	44	3	0.60	0.32	0.09	0.24
2010	54	91	5	0.44	0.71	0.18	0.47
2011	44	50	9	0.20	0.34	0.14	0.25
2012	36	38	5	0.52	0.26	0.06	0.19
2013	58	74	15	0.39	0.55	0.11	0.35
2014	39	45	10	0.36	0.29	0.15	0.24

Table: 36 indicate trend in serious accidents and serious injury rates in non-coal mines.

TABLE:36	**TREND IN SERIOUS ACCIDENTS AND SERIOUS INJURY RATES IN NON-COAL MINES**					
YEAR	Number of		Serious injury rate per 1000 persons employed			
	Serious accidents	Persons seriously injured#	Below ground	Open cast	Above ground	Overall
2001	199	200	6.28	0.61	1.57	1.42
2002	205	206	5.06	0.53	1.72	1.31
2003	168	169	7.36	0.43	1.43	1.18
2004	188	194	6.70	0.52	1.59	1.25
2005	108	109	3.41	0.30	0.93	0.71
2006	78	79	3.20	0.25	0.67	0.56
2007	79	92	3.51	0.29	0.70	0.61

2008	83	85	1.65	0.24	1.12	0.67
2009	94	101	4.34	0.19	0.64	0.56
2010	61	63	1.44	0.21	0.41	0.35
2011	82	93	2.15	0.32	0.44	0.46
2012	45	50	1.67	0.17	0.18	0.25
2013	52	68	1.45	0.21	0.33	0.32
2014	44	60	1.16	0.28	0.25	0.32

Includes seriously injureds from serious accidents only

Note : Seriously injureds from fatal accidents are also considered for computation of serious injury rate.

Table: 37 depicts trend in accidents due to different cause group for the years 2010-2014.

TABLE:37	TREND IN FATAL ACCIDENTS DUE TO DIFFERENT CAUSES IN NON-COAL MINES				
Cause	**2010**	**2011**	**2012**	**2013**	**2014**
Ground movement	14 (48)	7 (9)	13 (13)	15 (26)	8 (12)
Winding in shafts	-	1 (1)	-	1 (2)	2 (3)
Transportation machinery (other than winding)	12 (13)	11 (12)	5 (5)	11 (11)	7(7)
Machinery other than transportation machinery	5 (5)	10 (10)	5 (5)	4 (4)	5 (5)
Explosive	3 (3)	4 (7)	4 (4)	2 (3)	2 (3)
Electricity	1 (1)	-	-	2 (2)	3 (3)
Gas, Dust etc.	-	-	-	3 (4)	-
Falls other than fall of ground	15 (17)	10 (10)	8 (8)	17 (19)	11 (11)
Other causes	3 (3)	-	-	3 (3)	1 (1)
TOTAL	**54 (91)**	**44 (50)**	**36 (38)**	**58 (74)**	**39 (45)**

Note: Figures in parentheses denote the number of persons killed.

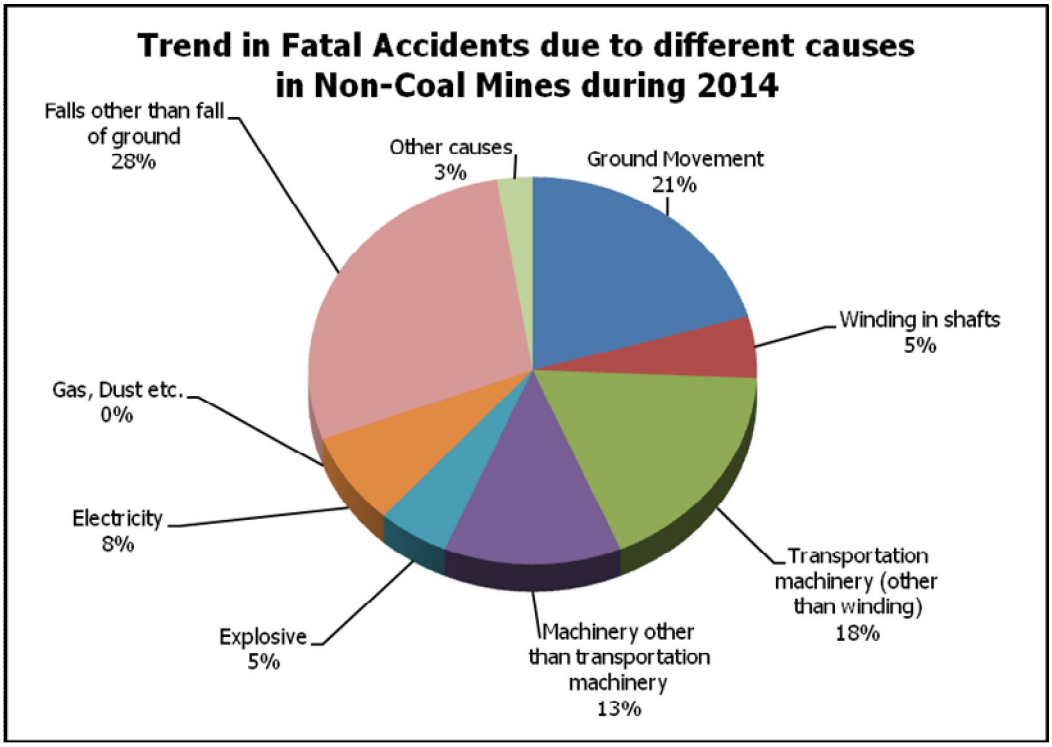


TABLE:37A	TREND IN FATAL ACCIDENTS IN DIFFERENT PLACES OF NON-COAL MINES				
Place	**2010**	**2011**	**2012**	**2013**	**2014**
Belowground	4 (4)	2 (2)	5 (5)	4 (4)	4 (4)
Opencast	35 (72)	32 (36)	26 (28)	45 (60)	25 (31)
Aboveground	15 (15)	10 (12)	5 (5)	9 (10)	10 (10)
Total	**54 (91)**	**44 (50)**	**36 (38)**	**58 (74)**	**39 (45)**

Note: Figures in parentheses denote the number of persons killed.

TABLE: 38	TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT CAUSES IN NON-COAL MINES				
Cause	**2010**	**2011**	**2012**	**2013**	**2014**
Ground movement	1 (4)	5 (6)	8 (10)	2 (8)	0 (2)
Winding in shafts	2 (2)	2 (3)	3 (3)	0 (1)	2 (4)
Transportation machinery (other than winding)	5 (5)	10 (14)	3 (3)	6 (8)	6 (11)
Machinery other than transportation machinery	10 (10)	15 (15)	8 (8)	12 (12)	11 (13)
Explosive	1 (3)	0 (4)	1 (4)	0 (1)	0 (3)
Electricity	2 (2)	3 (4)	-	-	1 (1)
Gas, Dust etc.	2 (2)	-	-	0 (2)	2 (4)
Falls other than fall of ground	31 (33)	41 (41)	20 (20)	28 (32)	19 (19)
Other causes	7 (7)	6 (6)	2 (2)	4 (4)	3 (3)
TOTAL	**61 (68)**	**82 (93)**	**45 (50)**	**52 (68)**	**44 (60)**

Note: Figures in parentheses denote the number of persons seriously injured. This also includes serious injury out of fatal accidents.

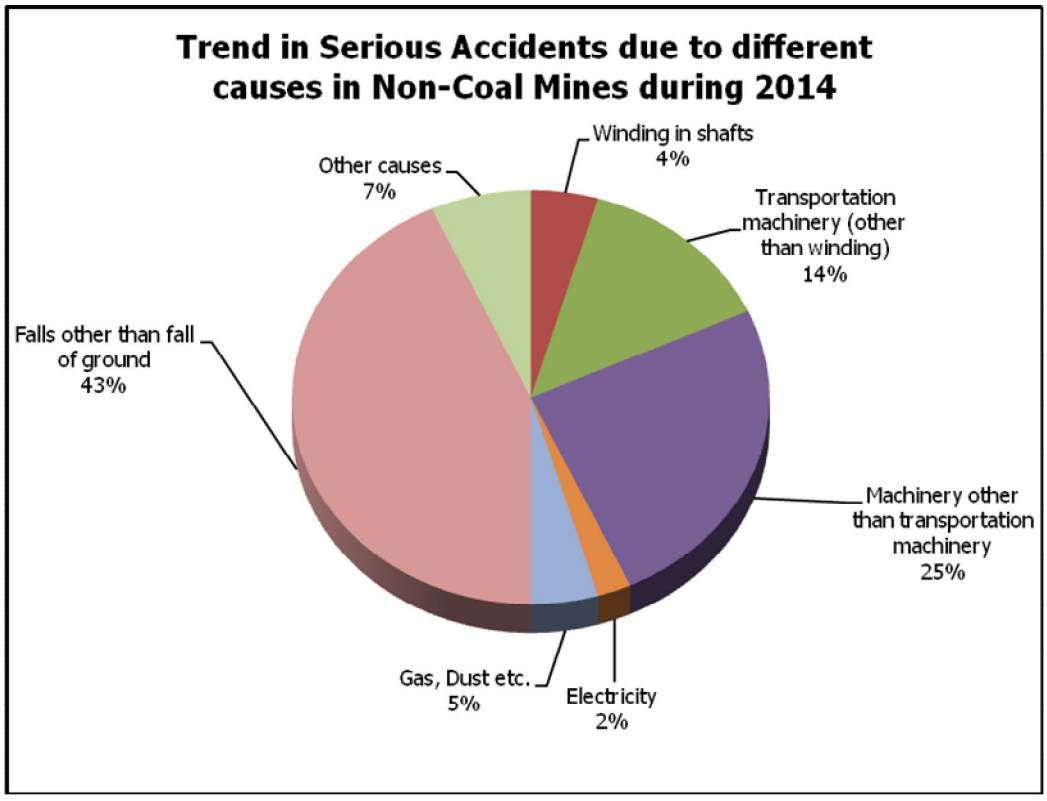


TABLE: 38A	TREND IN SERIOUS ACCIDENTS IN DIFFERENT PLACES OF NON-COAL MINES				
Place	**2010**	**2011**	**2012**	**2013**	**2014**
Belowground	12 (13)	20 (21)	16 (16)	15 (15)	12 (13)
Opencast	16 (21)	30 (34)	15 (20)	11 (23)	18 (30)
Aboveground	33 (34)	32 (38)	14 (14)	26 (30)	14 (17)
Total	**61 (68)**	**82 (93)**	**45 (50)**	**52 (68)**	**44 (60)**

Note: Figures in parentheses denote the number of persons seriously injured.

Table: 39 shows fatal and serious accidents mineral-wise for the year 2010-2014

TABLE: 39	FATAL AND SERIOUS ACCIDENTS MINERAL-WISE IN NON-COAL MINES DURING 2010-2014									
Mineral	**Fatal accidents**					**Serious accidents**				
	2010	**2011**	**2012**	**2013**	**2014**	**2010**	**2011**	**2012**	**2013**	**2014**
Copper	-	1	1	-	1	3	9	2	7	1
Galena & sphalerite	1	3	-	3	2	7	15	6	10	12
Gold	-	-	-	1	-	11	-	-	2	2
Granite	8	9	4	9	2	4	2	1	-	-
Iron-ore	9	4	3	4	3	9	19	6	6	9
Lime stone	4	4	4	3	4	3	5	4	3	3
Manganese ore	2	3	4	2	1	-	2	5	-	1
Marble	10	8	3	10	3	-	-	-	-	-
Oil	4	3	2	4	5	16	17	10	15	10
Stone	3	6	9	12	7	-	-	-	-	-
Others	13	3	6	10	11	8	14	11	9	6
TOTAL	**54**	**44**	**36**	**58**	**39**	**61**	**82**	**45**	**52**	**44**

TABLE-40	FATAL ACCIDENTS DUE TO TRANSPORTATION MACHINERY IN NON COAL MINES IN YEAR 2014		
Sl. No.	Causes	Fatal	Persons Killed
1.	Rope Haulages	-	-
2.	Conveyors	-	-
3	Dumpers	5	5
4	Wheeled Trackless(Truck,Tanker etc.)	2	2
5.	Others	-	-
	Total	**7**	**7**

TABLE-41		BREAK UP OF FATAL ACCIDENTS DUE TO MACHINERY OTHER THAN TRANSPORTATION MACHINERY IN NON COAL MINES DURING 2014	
Sl. No.	**Causes**	**No. of fatal accidents**	**Persons killed**
1.	Drilling Machine	1	1
2.	Cutting Machines	-	-
3.	Loading Machine	-	-
4.	Shovels etc.	-	-
5.	Crushing & Screening Plant	1	1
6.	Other HEMM	3	3
7.	Others Non-Transportation Machinery	-	-
Total		**5**	**5**

TABLE : 42	BREAK-UP OF SERIOUS ACCIDENTS DUE TO MACHINERY OTHER THAN TRANSPORTATION MACHINERY IN NON-COAL MINES DURING 2014			
Cause	Number of serious accidents			
	Belowground	Opencast	Aboveground	Total
Drilling Machine	-	-	-	-
Cutting Machines	-	-	-	-
Loading Machine	-	-	-	-
Shovels, draglines, excavators etc.	-	1	-	1
Crushing & screening plants	-	-	-	-
Other HEMM	-	2	-	2
Others	3	4	1	8
TOTAL	**3**	**7**	**1**	**11**

TABLE:43	RESPONSIBILITY FOR FATAL ACCIDENTS IN NON-COAL MINES DURING THE YEAR 2014	
SL. NO.	Responsibility	No. of accidents
1.	Misadventure	1
2.	Management	13
3.	Management, Subordinate Supervisory Staff (SSS)	6
4.	Management, SSS & Co-worker	1
5.	Management &Shotfirer	-
6.	Management & Co-worker	5
7.	Management, Co-worker,Deceased& Injured	1
8.	Management & Deceased	-
9.	Subordinate Supervisory Staff (SSS)	3
10.	Subordinate Supervisory Staff (SSS),Co-worker & Deceased	1
11.	Subordinate Supervisory Staff (SSS) & Deceased	1
12.	Sub.Sup. Staff, Deceased and Outsider	1
13.	Co-Worker	2
14.	Deceased	3
15.	Others	1
	TOTAL	**39**

TABLE:44	DANGEROUS OCCURRENCES IN NON-COAL & OIL MINES DURING 2014	
Sl.No.	**Cause**	**No. of cases**
1.	Overwinding of cages, skip of bucket etc.	-
2.	Outbreak of fire belowground	-
3.	Outbreak of fire on surface	-
4.	Premature collapse of workings or failure of pillars	-
5.	Breakage of winding rope	-
6.	Breakdown of winding engine, crank shaft, bearing etc.	-
7.	Ignition or occurrence of inflammable gas	-
8.	Breakage, fracture etc of essential parts of machinery or apparatus whereby safety of persons was endangered	-
9.	Rock burst	-
10.	Irruption of water	-
11.	Bursting of equipment under high pressure	-
12.	Oil well blowout without fire	-
13.	Fire in pipeline/well heads	-
14.	Others	2
	TOTAL	**2**

3.5 Technical Developments

In 2014, total numbers of mines working by deploying HEMM was 906. Total number of machines and capacity of shovels and dumpers used in mines have been decreased during 2014. The following table shows the different types of machines deployed in mines since 2001.

TABLE: 45	TREND IN USE OF HEMM IN NON-COAL OPENCAST MINES							
Year	No. of mines	Shovels			Dumper	Others	Machinery	
		Elec.	Diesel	Total			Total No.	Total HP
2001	542	86	1026	1112	3696	1763	6571	1337737
2002	577	95	1107	1202	3928	1741	6871	1351329
2003	560	90	1020	1010	3945	1630	6485	1310221
2004	561	91	1025	1116	3960	1670	6746	1313450
2005	653	52	1452	1504	5509	1819	8832	1784635
2006	591	58	1577	1635	5543	2248	9426	1789531
2007	614	92	1626	1718	4926	2057	8701	1834838
2008	705	67	1885	1952	6514	2460	10926	2109638
2009	773	93	2164	2257	7549	2580	12166	2554576
2010	812	88	2258	2346	8370	2452	13146	2693511
2011	883	71	2369	2440	9104	3124	14668	2999234
2012	943	22	2617	2639	9246	2883	14888	3062896
2013	956	58	2774	2832	8763	2930	14662	3064706
2014*	906	43	2559	2602	7789	2937	13328	3064706

*Data is provisional

Following table shows the various types and quality of explosives used in non-coal mines since 2001.

Following table shows the various types and quality of explosives used in non-coal and quality in mines since 2001.

TABLE:46	TREND IN USE OF EXPLOSIVES IN NON-COAL MINES							
YEAR	Consumption of explosives in tones							
	NG Based	ANFO	LOX	Slurry large dia	Slurry small dia	Booster	Gun powder	Total
2001	1021	21476	140	24303	7877	81	92	55809
2002	1092	21111	368	26186	6640	128	88	55613
2003	1005	20471	238	36473	5279	176	88	63729
2004	1323	24547	168	36883	7300	253	111	70584

2005	1382	28085	168	40538	9892	501	130	80700
2006	608	33757	-	53240	6766	622	116	95146
2007	566	31179	457	57122	9940	437	73	97769
2008	655	38438	457	63282	7096	691	111	120866
2009	471	36843	282	56607	7103	338	92	101736
2010	438	34249	268	54621	7220	369	106	97272
2011	917	32657	63	57942	6200	370	64	98213
2012	603	37527	504	56939	6505	563	61	102249
2013	498	36700	81	53477	8890	532	61	100239
2014*	399	39048	82	63776	9309	609	61	113200

*Data is provisional

3.6 Occupational Health & Environments

(a) Progress of Medical Examination in Non-Coal Mines:

TABLE: 47	**PROGRESS OF INITIAL & PERIODICAL MEDICAL EXAMINATION DURING 2014 IN NON-COAL MINES**			
Name of Company	Initial Medical Examination		Periodical Medical Exam.	
	Required	Provided	Required	Provided
OIL	1338	989	1665	1574
ONGC	603	611	3140	3681
MOIL	1248	1753	1529	1660
TATA	3641	3641	471	476
SAIL	998	931	1094	862
IREL	618	618	438	646
UCIL	1232	1215	1241	1312
HGMCL	525	525	861	713
NMDC	1195	1195	1051	1048
BALCO	0	0	310	309
HCL	405	405	607	485
ACC	126	126	324	685
MML	457	271	375	265
OMC	1812	50	406	13
GMDC	971	884	304	279
HZL	1648	1648	1669	1669
RSMM	178	178	131	92
Total	**16995**	**15040**	**15616**	**15769**

b) Cases of Notified Diseases in non-coal mines:

TABLE: 48	**NUMBER OF NOTIFIED DISEASES DURING 2014 IN NON-COAL MINES**	
Mining Companies	Name of disease	Number of cases

	- NIL-	- NIL-

3.7 Vocational Training

Progress of vocational training imparted during the year in major non-coal mining companies has been reported in table below:

TABLE: 49	PROGRESS OF VOCATIONAL TRAINING IN NON-COAL MINES DURING THE YEAR 2014					
Cos.	No. of VT Centers	Basic Training		Refresher Training		Special Training Provided
		Required	Provided	Required	Provided	
OIL	1	1843	1315	1524	815	106
ONGC	1	1470	1778	976	1059	2031
MOIL	6	1122	1202	1053	1239	1364
TATA	1	3563	3563	314	332	2266
SAIL	8	522	1035	994	763	503
IREL	2	570	570	314	248	279
UCIL	3	1642	1577	1022	947	271
HGMCL	1	236	232	354	264	203
NMDC	4	1356	1356	640	640	2448
BALCO	1	30	30	325	325	0
HCL	4	517	531	658	758	166
ACC	9	99	97	186	296	533
MML	6	402	214	275	157	2`
OMC	7	1886	464	352	168	3
GMDC	2	1134	1052	154	147	91
HZL	5	306	1441	281	827	581
RSMM	1	47	47	189	65	16
Total	**62**	**16745**	**16504**	**9611**	**9050**	**10861**

3.8 Workmen's Inspector, Welfare Officer & Safety Committee

TABLE: 50	NUMBER OF WORKMEN'S INSPECTOR IN POSITION, SAFETY COMMITTEE, WELFARE OFFICERS IN NON-COAL MINES DURING 2014					
Name of Company	Welfare Officers		Workmen Inspectors		Safety Committee	
	Required	Provided	Required	Provided	Required	Provided
OIL	5	5	16	17	8	15
ONGC	6	25	91	170	61	86
MOIL	9	9	9	9	9	9
TATA	3	4	14	17	4	4
SAIL	9	9	27	31	9	9
IREL	3	3	12	10	4	4
UCIL	5	6	22	26	8	8
HGMCL	3	3	9	10	3	3
NMDC	4	4	16	18	4	4
BALCO	1	1	1	1	1	1
HCL	4	4	12	13	4	4
ACC	1	1	13	13	8	12
MML	0	0	2	2	6	6
OMC	11	12	20	18	7	7
GMDC	4	4	18	18	6	6
HZL	6	6	23	23	14	14
RSMM	1	1	3	3	2	2
Total	**75**	**97**	**308**	**399**	**158**	**194**

3.9 Mineral wise consolidated fatal accident statistics for the last 8 (eight) years in non-coal mines

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Abovegroud		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	TOTAL
Oil	2007	0	0	0	0	3	3	3	3	0.00	0.00	0.16	0.16
	2008	0	0	0	0	5	6	5	6	0.00	0.00	0.25	0.25
	2009	0	0	0	0	3	3	3	3	0.00	0.00	0.12	0.12
	2010	0	0	0	0	4	4	4	4	0.00	0.00	0.14	0.14
	2011	0	0	0	0	3	3	3	3	0.00	0.00	0.11	0.11
	2012	0	0	0	0	2	2	2	2	0.00	0.00	0.09	0.09
	2013	0	0	0	0	4	5	4	5	0.00	0.00	0.19	0.19
	2014	0	0	0	0	5	5	5	5	0.00	0.00	1.46	1.46
Apatite & Rock	2009	0	0	1	1	0	0	1	1	0.00	1.02	0.00	0.52
Phosphate	2010	0	0	0	0	1	1	1	1	0.00	0.00	1.36	0.50
	2011	0	0	1	1	0	0	1	1	0.00	0.80	0.00	0.48
	2013	0	0	1	1	0	0	1	1	0.00	0.97	0.00	0.54
Asbestos	2012	0	0	1	1	0	0	1	1	0.00	13.16	0.00	7.46
	2013	0	0	1	2	0	0	1	2	0.00	33.33	0.00	14.39
	2014	0	0	2	2	0	0	2	2	0.00	N.A	0.00	N.A
Barytes	2011	0	0	1	1	0	0	1	1	0.00	2.81	0.00	1.68
Bauxite	2011	0	0	1	1	0	0	1	1	0.00	0.17	0.00	0.15
China Clay,Clay,	2007	0	0	1	1	0	0	1	1	0.00	0.57	0.00	0.32
White-clay	2010	0	0	1	1	0	0	1	1	0.00	0.68	0.00	0.36
	2013	0	0	1	1	0	0	1	1	0.00	0.63	0.00	0.35
	2014	0	0	1	1	0	0	1	1	0.00	0.65	0.00	0.36
Chromite	2007	1	1	2	2	1	1	4	4	1.41	0.57	0.31	0.54
	2008	0	0	1	1	0	0	1	1	0.00	0.29	0.00	0.12
	2010	0	0	1	1	1	1	2	2	0.00	0.27	0.28	0.23
Copper	2008	0	0	0	0	1	1	1	1	0.00	0.00	1.36	0.38

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Abovegroun d		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	TOTAL
	2009	1	1	0	0	0	0	1	1	0.53	0.00	0.00	0.33
	2011	0	0	0	0	1	1	1	1	0.00	0.00	0.83	0.31
	2012	1	1	0	0	0	0	1	1	0.48	0.00	0.00	0.26
	2014	1	1	0	0	0	0	1	1	0.41	0.00	0.00	0.27
Dolomite	2010	0	0	1	1	0	0	1	1	0.00	0.51	0.00	0.34
	2013	0	0	1	1	0	0	1	1	0.00	0.54	0.00	0.33
	2014	0	0	1	1	0	0	1	1	0.00	0.54	0.00	0.36
Felspar	2010	0	0	1	4	0	0	1	4	0.00	24.10	0.00	21.39
Galena &Sphal.	2007	1	1	0	0	0	0	1	1	0.87	0.00	0.00	0.30
	2008	1	1	0	0	1	3	2	4	0.83	0.00	1.86	1.22
	2010	0	0	0	0	1	1	1	1	0.00	0.00	0.59	0.29
	2011	0	0	1	1	2	3	3	4	0.00	1.41	1.52	1.00
	2013	2	2	0	0	1	1	3	3	1.52	0.00	0.51	0.75
	2014	2	2	0	0	0	0	2	2	0.77	0.00	0.00	0.35
Garnet	2010	0	0	1	5	0	0	1	5	0.00	4.39	0.00	4.17
Gold	2007	1	1	0	0	0	0	1	1	0.66	0.00	0.00	0.33
	2009	0	0	0	0	1	1	1	1	0.00	0.00	0.65	0.49
	2013	1	1	0	0	0	0	1	1	0.59	0.00	0.00	0.29
Granite	2007	0	0	4	4	0	0	4	4	0.00	0.64	0.00	0.49
	2008	0	0	6	8	0	0	6	8	0.00	1.29	0.00	0.98
	2009	0	0	3	3	0	0	3	3	0.00	0.46	0.00	0.35
	2010	0	0	7	20	1	1	8	21	0.00	2.75	0.50	2.26
	2011	0	0	8	9	1	1	9	10	0.00	1.12	0.43	0.96
	2012	0	0	4	4	0	0	4	4	0.00	0.45	0.00	0.35
	2013	0	0	8	10	1	1	9	11	0.00	1.03	0.37	0.89
	2014	0	0	2	2	0	0	2	2	0.00	0.20	0.00	0.16
Graphite	2006	0	0	1	1	0	0	1	1	0.00	2.92	0.00	2.70

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Aboveground		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	TOTAL
Gypsum	2013	0	0	1	2	0	0	1	2	0.00	9.43	0.00	7.38
	2014	0	0	1	1	0	0	1	1	0.00	4.37	0.00	3.01
Iron	2007	0	0	7	7	7	7	14	14	0.00	0.29	0.39	0.34
	2008	0	0	7	7	4	4	11	11	0.00	0.27	0.21	0.25
	2009	0	0	6	6	2	2	8	8	0.00	0.22	0.10	0.17
	2010	0	0	7	9	2	2	9	11	0.00	0.34	0.10	0.23
	2011	0	0	3	3	1	1	4	4	0.00	0.17	0.04	0.11
	2012	0	0	1	1	2	2	3	3	0.00	0.03	0.08	0.05
	2013	0	0	2	3	2	2	4	5	0.00	0.11	0.08	0.09
	2014	0	0	0	0	3	3	3	3	0.00	0.00	0.13	0.06
Laterite	2013	0	0	0	0	1	1	1	1	0.00	0.00	21.74	2.70
Limestone	2007	0	0	7	11	2	2	9	13	0.00	0.51	0.32	0.47
	2008	0	0	7	7	2	2	9	9	0.00	0.32	0.31	0.32
	2009	0	0	2	2	0	0	2	2	0.00	0.09	0.00	0.07
	2010	0	0	4	5	0	0	4	5	0.00	0.23	0.00	0.18
	2011	0	0	3	3	1	1	4	4	0.00	0.13	0.16	0.14
	2012	0	0	4	4	0	0	4	4	0.00	0.17	0.00	0.13
	2013	0	0	3	3	0	0	3	3	0.00	0.12	0.00	0.09
	2014	0	0	4	4	0	0	4	4	0.00	0.16	0.00	0.12
Magnesite	2012	0	0	1	1	0	0	1	1	0.00	0.45	0.00	0.42
	2013	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Manganese	2007	0	0	0	0	1	1	1	1	0.00	0.00	0.25	0.07
	2008	1	2	1	1	1	1	3	4	0.77	0.14	0.26	0.30
	2010	2	2	0	0	0	0	2	2	0.92	0.00	0.00	0.14
	2011	2	2	1	1	0	0	3	3	0.70	0.13	0.00	0.19
	2012	2	2	1	1	1	1	4	4	0.69	0.12	0.19	0.24
	2013	1	1	1	1	0	0	2	2	0.38	0.12	0.11	0.13

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Abovegroun d		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	TOTAL
	2014	1	1	0	0	0	0	1	1	0.35	0.00	0.00	0.05
Marble	2007	0	0	11	14	0	0	11	14	0.00	9.05	0.00	7.16
	2008	0	0	5	7	0	0	5	7	0.00	4.12	0.00	3.25
	2009	0	0	4	5	0	0	4	5	0.00	3.47	0.00	2.67
	2010	0	0	9	16	1	1	10	17	0.00	10.55	2.77	9.05
	2011	0	0	8	8	0	0	8	8	0.00	5.24	0.00	4.14
	2012	0	0	3	5	0	0	3	5	0.00	3.14	0.00	2.51
	2013	0	0	10	12	0	0	10	12	0.00	6.99	0.00	5.45
	2014	0	0	3	4	0	0	3	4	0.00	2.59	0.00	2.04
Mica	2012	2	2	0	0	0	0	2	2	8.58	0.00	0.00	3.50
	2013	0	0	1	2	0	0	1	2	0.00	13.25	0.00	3.46
	2014	0	0	1	2	0	0	1	2	0.00	13.61	0.00	3.45
Quartz	2009	0	0	2	2	0	0	2	2	0.00	2.34	0.00	1.94
Sandstone	2008	0	0	1	1	0	0	1	1	0.00	3.66	0.00	3.13
	2009	0	0	0	0	1	1	1	1	0.00	0.00	1.17	0.89
	2010	0	0	0	0	2	2	2	2	0.00	0.00	5.17	2.74
Silica	2013	0	0	1	1	0	0	1	1	0.00	0.49	0.00	0.34
Sillimanite	2008	0	0	0	0	1	1	1	1	0.00	0.00	0.55	0.27
	2010	0	0	0	0	1	1	1	1	0.00	0.00	0.57	0.28
Steatite	2008	1	1	3	4	0	0	4	5	4.20	1.08	0.00	1.03
	2009	1	2	1	1	0	0	2	3	4.30	0.28	0.00	0.61
	2010	0	0	1	8	0	0	1	8	0.00	2.09	0.00	1.57
	2012	0	0	1	1	0	0	1	1	0.00	0.25	0.00	0.20
	2013	0	0	1	1	0	0	1	1	0.00	0.26	0.00	0.21
	2014	0	0	3	3	0	0	3	3	0.00	0.81	0.00	0.64
Stone	2007	0	0	6	7	1	1	7	8	0.00	1.05	0.46	0.91
	2008	0	0	4	6	1	9	5	15	0.00	1.20	4.48	2.14

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Aboveground		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	TOTAL
	2009	0	0	5	11	0	0	5	11	0.00	2.20	0.00	1.52
	2010	0	0	2	2	1	1	3	3	0.00	0.40	0.46	0.42
	2011	0	0	5	8	1	2	6	10	0.00	1.62	0.94	1.42
	2012	0	0	9	9	0	0	9	9	0.00	1.80	0.00	1.25
	2013	0	0	12	19	0	0	12	19	0.00	3.60	0.00	2.54
	2014	0	0	7	11	0	0	7	11	0.00	2.08	0.00	1.47
Vermiculite	2009	0	0	1	1	0	0	1	1	0.00	30.30	0.00	24.39
Wollastonite	2012	0	0	1	1	0	0	1	1	0.00	1.56	0.00	1.16
Non-Coal	2007	3	3	38	46	15	15	56	64	0.35	0.48	0.22	0.37
	2008	3	4	35	42	16	27	54	73	0.44	0.43	0.37	0.41
	2009	4	5	25	32	7	7	36	44	0.60	0.32	0.09	0.24
	2010	4	4	35	72	15	15	54	91	0.44	0.71	0.18	0.47
	2011	2	2	32	36	10	12	44	50	0.20	0.34	0.14	0.25
	2012	5	5	26	28	5	5	36	38	0.52	0.26	0.06	0.19
	2013	4	4	45	60	9	10	58	74	0.39	0.55	0.11	0.35
	2014	4	4	25	31	10	10	39	45	0.36	0.29	0.15	0.24

BG – Belowground OC- Opencast AG- Aboveground

Note : N.A. = Employment Figures not Available.

3.10 Mineral wise consolidated serious accident statistics for the last 8 (eight) years in non-coal mines

Mineral	Year	Serious Accidents								S/ Injury Rate per 1000 persons employed			
		Belowground		Opencast		Abovegroun d		Total					
		Acc	S/ Inj	Acc	S/ Inj	Acc	S/ Inj	Acc	S/ Inj	BG	OC	AG	Tota l
Oil	2007	0	0	0	0	16	16	16	16	0.00	0.00	0.83	0.83
	2008	0	0	0	0	20	22	20	22	0.00	0.00	0.93	0.93
	2009	0	0	0	0	18	18	18	18	0.00	0.00	0.72	0.72
	2010	0	0	0	0	16	17	16	17	0.00	0.00	0.58	0.58
	2011	0	0	0	0	17	17	17	17	0.00	0.00	0.62	0.62
	2012	0	0	0	0	10	10	10	10	0.00	0.00	0.44	0.44
	2013	0	0	0	0	15	18	15	18	0.00	0.00	0.69	0.69
	2014	0	0	2	2	8	8	10	10	0.00	N.A	2.33	2.92
Apatite & Rock	2007	0	0	1	2	0	0	1	2	0.00	1.90	0.00	1.00
Phosphate	2010	0	0	1	1	0	0	1	1	0.00	0.84	0.00	0.50
	2011	0	0	3	3	1	1	4	4	0.00	2.40	1.38	1.94
	2012	0	0	1	1	0	0	1	1	0.00	0.95	0.00	0.54
Bauxite	2007	1	1	0	0	0	0	1	1	0.00	0.00	0.00	0.18
	2009	0	0	1	1	0	0	1	1	0.00	0.17	0.00	0.15
Chromite	2007	0	0	1	2	1	1	2	3	0.00	0.57	0.31	0.40
	2008	0	0	0	1	0	0	0	1	0.00	0.29	0.00	0.12
	2011	1	1	1	1	0	0	2	2	0.74	0.28	0.00	0.22
	2013	1	1	1	1	1	1	3	3	0.74	0.28	0.24	0.33
	2014	1	1	1	1	1	1	3	3	1.15	0.27	0.17	0.28
Copper	2007	1	1	0	0	0	0	1	1	0.62	0.00	0.00	0.41
	2008	1	1	0	0	2	4	3	5	0.61	0.00	5.42	1.91
	2009	4	4	1	4	0	0	5	8	2.11	15.69	0.00	2.61
	2010	3	3	0	0	0	0	3	3	1.77	0.00	0.00	1.03
	2011	7	7	0	0	1	1	8	8	3.84	0.00	0.83	2.44

Mineral	Year	Serious Accidents								S/ Injury Rate per 1000 persons employed			
		Belowground		Opencast		Abovegroun d		Total					
		Acc	S/ Inj	Acc	S/ Inj	Acc	S/ Inj	Acc	S/ Inj	BG	OC	AG	Tota l
	2012	1	1	0	0	1	1	2	2	0.48	0.00	0.6 9	0.53
	2013	3	5	0	0	1	3	7	8	2.4	2.09	0.0 0	2.14
	2014	0	0	1	1	0	0	1	1	0.00	4.59	0.0 0	0.27
Diamond	2010	0	0	1	1	0	0	1	1	0.00	28.57	0.0 0	8.26
Dolomite	2007	0	0	0	0	1	1	1	1	0.00	0.00	1.3 6	0.37
	2009	0	0	0	0	1	1	1	1	0.00	0.00	0.9 4	0.33
	2010	0	0	1	1	0	0	1	1	0.00	0.51	0.0 0	0.34
	2012	0	0	1	1	1	1	2	2	0.00	0.51	0.8 3	0.63
	2013	0	0	0	0	2	2	2	2	0.00	0.00	2.2	0.66
	2014	0	0	2	3	0	0	2	3	0.00	1.63	0.0 0	1.09
Galena &Sphal.	2007	7	7	0	0	7	7	14	14	6.10	0.00	3.9 5	4.24
	2008	7	8	0	0	14	15	21	23	6.66	0.00	9.3 2	7.03
	2009	15	18	1	1	8	9	24	28	14.14	2.07	5.6 0	8.33
	2010	2	2	2	2	3	3	7	7	1.54	4.13	1.7 6	2.01
	2014	8	9	3	3	1	1	12	13	3.44	3.37	0.4 5	2.26
Gold	2007	4	15	0	0	2	2	6	17	9.91	0.00	1.2 9	5.55
	2008	5	5	0	0	4	4	9	9	3.43	0.00	2.4 9	2.94
	2009	11	11	0	0	4	4	15	15	22.04	0.00	2.6 2	7.40
	2010	6	6	0	0	5	5	11	11	3.91	0.00	3.3 3	3.62
	2013	1	1	1	1	0	0	2	2	0.63	0.00	0.0 0	0.64
	2014	2	2	0	0	0	0	2	2	1.16	0.00	0.0 0	0.54
Granite	2007	0	0	0	1	0	0	0	1	0.00	0.16	0.0 0	0.12
	2008	0	0	1	5	0	0	1	5	0.00	0.80	0.0 0	0.61
	2010	0	0	4	5	0	0	4	5	0.00	0.69	0.0 0	0.54
	2011	0	0	2	2	0	0	2	2	0.00	0.25	0.0 0	0.19
	2012	0	0	1	1	0	0	1	1	0.00	0.11	0.0 0	0.09
	2013	0	0	1	2	0	0	1	2	0.00	0.21	0.0 0	0.16

Mineral	Year	Serious Accidents								S/ Injury Rate per 1000 persons employed			
		Belowground		Opencast		Abovegroun d		Total					
		Acc	S/ Inj	Acc	S/ Inj	Acc	S/ Inj	Acc	S/ Inj	BG	OC	AG	Tota l
Graphite	2006	0	0	0	1	0	0	0	1	0.00	2.92	0.0 0	2.70
	2011	0	0	1	1	0	0	1	1	0.00	3.21	0.0 0	3.07
Iron	2007	1	1	9	13	12	13	22	27	0.00	0.54	0.7 3	0.65
	2008	0	0	9	10	10	11	19	21	0.00	0.39	0.5 8	0.47
	2009	0	0	7	7	13	13	20	20	0.00	0.25	0.6 7	0.42
	2010	0	0	4	4	5	5	9	9	0.00	0.15	0.2 4	0.19
	2011	0	0	14	14	5	5	19	19	0.00	0.48	0.2 1	0.36
	2012	0	0	5	5	1	1	6	6	0.00	0.17	0.0 4	0.11
	2013	0	0	5	5	1	1	6	6	0.00	0.18	0.0 4	0.11
	2014	0	0	6	9	3	6	9	15	0.00	0.34	0.2 5	0.30
Limestone	2007	0	0	3	5	4	4	7	9	0.00	0.23	0.6 5	0.32
	2008	0	0	2	2	1	1	3	3	0.00	0.09	0.1 6	0.11
	2009	0	0	3	3	1	1	4	4	0.00	0.14	0.1 5	0.14
	2010	0	0	2	3	1	1	3	4	0.00	0.14	0.1 6	0.14
	2011	0	0	4	4	1	1	5	5	0.00	0.18	0.1 6	0.17
	2012	0	0	3	3	1	1	4	4	0.00	0.13	0.1 6	0.13
	2013	0	0	2	2	1	1	3	3	0.00	0.08	0.1 3	0.09
	2014	0	0	3	5	0	0	3	5	0.00	0.19	0.0 0	0.15
Magnesite	2009	0	0	0	0	1	1	1	1	0.00	0.00	6.3 3	0.42
	2011	0	0	1	1	0	0	1	1	0.00	0.45	0.0 0	0.43
	2012	0	0	1	1	0	0	1	1	0.00	0.45	0.0 0	0.42
	2013	0	0	1	1	0	0	1	1	0.00	0.45	0.0 0	0.42
Manganese	2007	4	4	0	0	1	1	5	5	1.51	0.00	0.2 5	0.37
	2008	0	0	0	0	2	2	2	2	0.00	0.00	0.5 2	0.15
	2009	1	1	0	0	1	1	2	2	0.44	0.00	0.2 7	0.15
	2011	2	3	0	0	0	0	2	3	1.05	0.00	0.0 0	0.19
	2012	5	5	0	0	0	0	5	5	1.74	0.00	0.0 0	0.30

Mineral	Year	Serious Accidents								S/ Injury Rate per 1000 persons employed			
		Belowground		Opencast		Abovegroun d		Total					
		Acc	S/ Inj	Acc	S/ Inj	Acc	S/ Inj	Acc	S/ Inj	BG	OC	AG	Tota l
	2014	1	1	0	0	0	0	1	1	0.35	0.00	0.0 0	0.05
Marble	2007	0	0	0	4	0	0	0	4	0.00	2.59	0.0 0	2.05
	2008	0	0	0	1	0	0	0	1	0.00	0.59	0.0 0	0.46
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.0 0	0.00
	2010	0	0	0	1	0	0	0	1	0.00	0.66	0.0 0	0.53
	2013	0	0	0	3	0	0	0	3	0.00	1.75	0.0 0	1.36
	2014	0	0	0	2	0	0	0	2	0.00	1.29	0.0 0	1.02
Quartz	2013	0	0	0	2	0	0	0	2	0.00	2.08	0.0 0	1.85
Sandstone	2011	0	0	1	1	0	0	1	1	0.00	2.82	0.0 0	1.35
Silica	2008	0	0	0	0	1	1	1	1	0.00	0.00	1.3 0	0.34
Sillimanite	2007	0	0	0	0	2	2	2	2	0.00	0.00	1.1 2	0.55
	2008	0	0	1	1	1	1	2	2	0.00	0.54	0.5 5	0.55
	2010	0	0	0	0	2	2	2	2	0.00	0.00	1.1 4	0.55
	2012	0	0	1	1	0	0	1	1	0.00	0.54	0.0 0	0.25
	2013	0	0	1	1	0	0	1	1	0.00	0.52	0.0 0	0.25
	2014	0	0	0	0	1	1	1	1	0.00	0.00	0.5 2	0.34
Steatite	2008	0	0	0	3	0	0	0	3	0.00	0.81	0.0 0	0.62
	2011	0	0	1	2	0	0	1	2	0.00	0.54	0.0 0	0.41
	2012	0	0	0	1	0	0	0	1	0.00	0.25	0.0 0	0.20
	2013	0	0	0	2	0	0	0	2	0.00	0.52	0.0 0	0.41
Ston`e	2007	0	0	0	1	0	0	0	1	0.00	0.15	0.0 0	0.11
	2008	0	0	0	0	0	20	0	20	0.00	0.00	9.9 6	2.85
	2009	0	0	0	3	0	0	0	3	0.00	0.60	0.0 0	0.41
	2010	0	0	0	2	0	0	0	2	0.00	0.40	0.0 0	0.28
	2011	0	0	0	3	0	1	0	4	0.00	0.61	0.4 7	0.57
	2012	0	0	0	4	0	0	0	4	0.00	0.80	0.0 0	0.56
	2013	0	0	0	4	0	0	0	4	0.00	0.76	0.0 0	0.53

Mineral	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
	2014	0	0	0	4	0	0	0	4	0.00	0.76	0.00	0.53
Atomic Mineral	2007	1	1	0	0	0	0	1	1	N.A.	N.A.	N.A.	N.A.
	2008	1	1	0	0	1	1	2	2	N.A.	N.A.	N.A.	N.A.
	2009	2	2	0	0	1	1	3	3	N.A.	N.A.	N.A.	N.A.
	2010	1	2	1	1	1	1	3	4	N.A.	N.A.	N.A.	N.A.
	2011	3	3	1	1	0	0	4	4	N.A.	N.A.	N.A.	N.A.
	2012	6	6	0	0	0	0	6	6	N.A.	N.A.	N.A.	N.A.
	2013	1	1	0	0	0	0	1	1	N.A.	N.A.	N.A.	N.A.
Non-Coal	2007	19	30	14	28	46	47	79	105	3.51	0.29	0.70	0.61
	2008	14	15	13	23	56	82	83	120	1.65	0.24	1.12	0.67
	2009	33	36	13	19	48	49	94	104	4.34	0.19	0.64	0.56
	2010	12	13	16	21	33	34	61	68	1.44	0.21	0.41	0.35
	2011	20	21	30	34	32	38	82	93	2.15	0.32	0.44	0.46
	2012	16	16	14	19	15	15	45	50	1.67	0.17	0.18	0.25
	2013	15	15	11	23	26	30	52	68	1.45	0.21	0.33	0.32
	2014	12	13	18	30	14	17	44	60	1.16	0.28	0.25	0.32

BG- Belowground OC- Opencast AG- Aboveground

N.A. = Employment Figures not Available.

Note :Seriously injureds from fatal accidents are also considered for computation of no. of serious injury as well as for serious injury rate.

4.0 Approval of Equipment, Appliances, Material and Machinery

Several equipments, appliances, materials and machineries meant for use in mines are required to be approved by DGMS; a list of such equipments is given at Appendix-V. Table below shows particulars of items approved during the year 2014.

Equipment, appliances materials and machinery approved during the year 2014		
Sl. No.	**Equipment/appliances/materials/machinery**	**Number of approvals granted/renewed during the year**
1	Methanometer	01
2	Hemet	01
3	Cap Lamp	02
4	Footwear	12
5	Gas Detector/Monitor	07
6	Cap Lamp Bulb	00
7	Fire-Resistant Brattice Cloth	00
8	Ventilation Ducting	01
9	Personal Dust Samples	00

10	CO Detector Tubes/Aspirator	00
11	Environmental Monitoring System	00
12	Safety Goggles	00
13	Ear Plug	00
14	Visibility harness	00
15	Auto Warning Device (Tell0Tale)	01
16	Dust Respirator (Mask)	01
17	Flame Safety Lamp	01
18	Noise Dosi Meter	00
19	Load Cell	00
20	Waterbag	01
21	Personal Dust Samples	00
22	Reflective Harness	00
23	Explosives	19
24	Detonator	34
25	Exploder	01
26	Breathing Apparatus	04
27	Resusitator/Reviving Apparatus	00
28	Self-Rescuers	03
	Total	**89**

5.0. Coal & Metalliferous Mining Examination during 2014

(i) Board of Mining Examination under the CMR, 1957

Shri Rahul Guha	Director General of Mines Safety
Shri A.K. Debnath	Chairman-Cum-Managing Director, M/s. Central Mines Planning and Design Institute Limited, Ranchi
Prof.DurgaCharanPanigrahi	Prof. & Head of Department, Department of Mining Engineering, Indian School of Mines.
Shri Nagendra Kumar	Director (Technical), M/s. Coal India Limited
Shri Ompraksh	Chairman-Cum-Managing Director, M/s. South Eastern Coalfields Limited
Shri Ashok Sarkar	Director (Technical) (P&P), M/s. Bharat Coking Coal Limited.

(ii) Board of Mining Examination under the MMR, 1961

Shri Rahul Guha	Director General of Mines Safety
Dr. Bal Krishna Shrivastva,	Professor & Coordinator, Centre of Advanced Studies, Department of Mining Engineering, Institute of Technology, Banaras Hindu University.
Shri Diwakar Acharya,	Chairman & Managing Director M/s. Uranium Corporation of India Ltd.

Dr. Upenddra Kumar Singh	Professor, Department of Mining engineering, Indian School of Mines University.
Shri Narendra Kumar Nanda	Director (Technical) NMDC Limited.
Shri Avijit Ghosh	Direcctor (Mining) Hindustan Copper Limited, TamraBhavan.

Examiners for Certificated of Competency

Coal Mining Examinations

(a) Following were the Examiners for Managers' Certificates of Competency Examination held in Dec 2014.

Subject	First Class Manager's Certificate	Second Class Manager's Certificates.
Mine Management, Legislation & General Safety	No Exam was held in 2014.	
Winning & Working		
Mine Ventilation		
Mining Machinery & Electricity		
Mine Surveying		

Following were the Examiners for Surveyor's Certificate of Competency Examination held in Dec 2014

Surveying Paper-I	Shri D.K. Saxena
Surveying Paper-II	Dr. Ashok Jaiswal

(c) Following were the Examiners for Overman's Certificates of Competency Examination held in 2012.

Paper-I	Shri S. Krishnamurthy

Metal Mining Examinations

(a) Following were the Examiners for Manager's Certificates of Competency Examinations held Dec 2014

Subject	Ist Class Manager's Certificate (Un-Restricted)	IInd Class Manager's Certificate (Un-Restricted)
Mine Management	Shri P. K. Sarkar	Shri A Biswas

Legislation & General Safety		
Winning & Working	Shri S. C. Bhowmick	Shri P K jain
Mine Ventilation, Explosion, Fires & Inundation	Shri A K Lal	Shri M Kundu
Mining Machinery	Shri R R Kumar	Shri I S Shekhawat
Mine Surveying	Shri P N Sarkar	Shri M Paliwal

(b) Following were the Examiners for Surveyor's Certificates of Competency Examinations held Dec 2014

Subject	Un-Restricted	Restricted
Paper-I	Shri C R Kumar	Shri A K Sahay
Paper-II	Shri P K Padhi	

(c) Following were the Examiners for Foremen's Certificates of Competency Examinations held Dec 2014

Subject	Un-Restricted	Restricted
Paper-I	Shri A K Meghraj	Shri R Kulshestra

Following were the Examiners for Foremen's Certificates of Competency Examinations held Dec 2014

Examination	Examiner
First Class Metal (Coal to Metal)	Shri S I Hussain, DDG SCZ
First Class Coal (Metal to Coal)	Shri R. Ranganatheeswar,DMS

Other particular regarding various examinations held are given in **Appendix-IV.**

6.0 National Safety Awards (Mines)

6.1 Introduction

Ministry of Labour & Employment, Government of India instituted National Safety Awards (Mines) in 1983 (for the contest year 1982) with a view to promote a competitive spirit amongst mine operators for the betterment of safety standards in mines and to give due recognition to outstanding safety performance at national level. This award is generally given away by the Hon'ble President of India every year and has generated considerable enthusiasm amongst the Mining community. National Safety Awards (Mines) for the years 2008, 2009 & 2010 were given away on 21st November, 2012 at New Delhi by the Hon'ble President of India. Details of prize winning mines are given in Annexure-V. The Ministry has reconstituted the National Safety Awards (Mines) Committee vide their letter No.D-14011/01/2013-ISH.I dated 06.03.2013 for a period of three years.

6.2 Scope

The scheme is applicable to all mines, which come under the purview of the Mines Act, 1952. Such mines have been classified into 7 groups as given below:

i. Coal mines - Below ground with difficult mining conditions
ii. Coal mines - Belowground (others)
iii. Coal mines - Opencast
iv. Metal mines - Mechanized opencast
v. Metal mines - Manual opencast
vi. Metal mines - Belowground
vii. Oil mines

6.3 Schemes

Among different indices available, the following two have been accepted as indicator of safety performance:

1. Longest accident free period (LAFP) in terms of manshifts worked during three consecutive years ending with the contest year.
2. Lowest injury frequency rate (LIFR) during three consecutive years ending with the contest year.

It is expected that every mine shall endeavor to improve its safety performance. A bad mine has a high injury frequency rate. After obtaining a breakthrough, its next attempt should be to achieve longest accident-free period in terms of manshifts worked.

6.4 Awards Committee

The awards committee is constituted by the Ministry of Labour & Employment with Director-General of Mines Safety as its Chairman, eight representatives of mine managements, eight representatives of trade unions as member and an officer of DGMS as its Member-Secretary.

6.5 Mode of operation

An advertisement is released through DAVP in English, Hindi and other regional languages inviting applications in prescribed proforma for National Safety Awards (Mines). An entry fee of Rs.100/- per application is charged through a crossed IPO drawn in favour of the Administrative Officer/DDO, DGMS and payable at Dhanbad Post Office. The prescribed application form is jointly signed by the mine management and a workers' representative.

6.6 Presentation of awards

National Safety Awards (Mines) for the contest year 2008, 2009 & 2010 was given away on 21st November 2012 at New Delhi by the Hon'ble President of India.

7.0 Conference on Safety in Mines

The Conference on Safety in Mines is a tripartite forum at the national level in which the employers' representatives, the trade unions' representatives, the Government represented by Ministry of Labour & Employment, DGMS, various administrative ministries/ departments and State Governments and associated institutions, professional bodies, service associations, etc. take part. They review the status of safety in mines and the adequacy of existing measures in a spirit of mutual cooperation. The conference also suggests measures for further improvement in safety, welfare and health of mine workers. The first Conference was held in the year 1958 and the eleventh conference was held on 4th & 5th July, 2013 at New Delhi. A number of recommendations of these conferences have been given statutory backing and most of the others have been absorbed in management practices and policies.

8.0 Plan Schemes

In order to provide in-house technical support to field offices, DGMS is implementing following Plan Schemes namely:

Ongoing schemes:

(1) "Mine Accident Analysis and Modernization of Information Database (MAMID)"

(2) "Strengthening of Core Functions of DGMS (SOCFOD)"

8.1 "Mine Accident Analysis and Modernization of Information Database (MAMID)"

This is the restructured plan scheme after merging of the two Plan Schemes of Tenth Plan (2002 -07) namely (i) Study of Mines Accidents and Development of Mines Safety Information System (SOMA) and (ii) Modernization of Information Database in DGMS (MID) as per the Report of Working Group on Occupational Safety & Health for 11th Five Year Plan 2007-12 of Ministry of Labour and Employment, Government of India. Keeping the objective of integration in view, these schemes were merged into one scheme "Mine Accident Analysis and Modernization of Information Database (MAMID)". This Plan Scheme is continued for the 12th Five Year Plan 2012-17. Later, a part of Plan Scheme "e-Governance in Directorate General of Mines Safety (e-DGMS), is merged with the ongoing Plan Scheme MAMID.

Objective/scope of the scheme

"Mine Accident Analysis and Modernization of Information Database (MAMID)"

- To mitigate risk of disasters and accidents in mines through detailed analysis of accidents and dangerous occurrences using risk assessment and management techniques and activate promotional channels;

- Identification of mines having highest risk of accidents/disasters through detailed investigation into the operating systems and environment in the mine and prepare a Risk Management Plan for such mines for implementation;

- Dissemination of mine information system through various reports, technical instructions/guidelines, circulars on electronic as well as other conventional media.

- Re-engineer work processes to change governance pattern for simplicity, transparency, productivity and efficiency.

- Transform from Process bound System to Computerized Automated System.

- Develop and Establish Risk Observatory and National Archives on Occupational Safety, Health and Work Environment in mines including Oil & Gas Mines.

The major achievements and activities taken up during the year 2014 include

- Annual Report, 2013 published and publication Annual Report for the year 2014 is under process.
- Standard Note on DGMS as on 1.1.2017 published
- Compilation of
    - Statistics of Mines in India, Vol. I (Coal), 2014
    - Statistics of Mines in India, Vol. II (Non-Coal), 2014
- Publication of Monthly Review of Accidents and
- Report on Monthly Inspection Analysis

- DGMS has conceived the development of 8 nos. of software modules. An empanelled vendor of NICSI has taken up the job for "Digital DGMS".

- Award winning Mines for the National safety Awards (Mines) for the contest years 2012 has been finalized & approved by the National Safety Awards (Mines) committee.

- Online generation of inspection scheduling and reporting is carried out through the Unified Web Portal (UWP), namely Shram Suvidha Portal http:// efilelabourreturn.gov.in.

- During the financial year 2014-15, upto the month of December, 2014, four Workshops were organized. One workshop on "Accident Investigation" has been organized on 16-17 January at Nagpur, with 26 officers as participants. Three workshops on the subject "Risk Assessment Study & Preparation of Safety Management Plan" for inspecting officers of DGMS have been conducted in which 25 Officers participated during the month of August, 2014 at HQ, Dhanbad, 35 Officers participated during the month of November, 2014 at SEZ, Ranchi & 28 Officers participated during the month of December, 2014 at SZ, Bengaluru.

- One batch consisting of 8 officers have attended training course on "Mine safety Training" programme at Colorado School of Mines, Denver, USA.

- Risk assessment study & preparation of Safety Management Plan for 15 different identified cases in Coal & Non Coal Mines have been carried out.

- 4 Technical Circulars have been published.

8.2 "Strengthening of Core Functions of DGMS" (SOCFOD)

This is a continuing plan scheme. The scheme has been formulated by merging three on-going plan schemes of DGMS, namely (1) "Augmentation of S&T Capabilities, Mine Rescue Services and Human Resource Development (S&T) (1975)", (2) "Strengthening of

Machinery for Conduct of Statutory Examinations (SSEX)(2000-01)" and (3) "Improving Efficiency by Providing Infra Structure Facilities in DGMS (PIF)(2000-01)" along with components like Occupational Safety and Health Surveillance, promotional initiatives and Emergency Response system. Later, rest part of Plan Scheme "e-Governance in Directorate General of Mines Safety (e-DGMS), is merged with the ongoing Plan Scheme "Strengthening of Core Functions of DGMS (SOCFOD)".

Objectives of the Scheme for the 12th Plan

The objectives of the scheme are:

- To render scientific and technological support to the enforcement wing of DGMS. To develop, improve and update need based rescue and emergency response services to the mining industry.
- To establish Mine Safety & Health Academy with institutes at different offices of DGMS for imparting structured training to DGMS officers and key personnel of the mining industry.
- To provide infrastructure facilities i.e. office buildings and residential complexes, communication facilities and office equipment and furnishing of offices.
- To conduct Occupational Safety, Health and Welfare Survey in mines of unorganized sectors.
- Provide dedicated network facilities for Data, Audio-Video and Mail messaging with Online interactive Communication and Data Processing System (DC & DRC & all offices)
- Provide and maintain infrastructure facilities including hardware for National Mines Safety & Health Resource Centre and National Mine Disaster Control & Management Network.

Activities :

The activities of SOCFOD Plan Scheme can be classified under three major components as given below.

(A) Science & Technology (S & T) Component:

The Science and Technology component as above caters to providing scientific and technological support to the enforcement wing of DGMS in 'fulfillment and discharge of its statutory responsibilities and advisory role', 'developing, improving & updating need based rescue and emergency response services to the mining industry' and 'providing support to the activity "Human Resource Development for Improving Health and Safety Standards in Mines (HRD)" in meeting the demands of scientific support, consultancy and guidance to other institutions concerned with Occupational Safety and Health matters'.

(a) Under the heading of 'providing scientific and technological support to the enforcement wing of DGMS in fulfillment and discharge of its statutory responsibilities and advisory role', the following are the major areas of studies/activities.

- Approval of new methods of mining after duly reviewing and assessing the hazards which may accompany with the introduction of new method, in coal, metalliferous & Oil/Gas mines.

- Standardization of prototype tests and accreditation of testing laboratories /test houses.

- Guidelines for accreditation of testing laboratories/test houses.

- Protocol for design, manufacture, testing and use of powered roof support and its components.
- Guideline for testing steel chocks.

- Standardization of ultrasonic testing technique and formulation of acceptance & rejection norms.

- Standardization of rejection criteria for winding rope and development of assessment procedure.

- Collaboration with other research institutions.

- Interaction and information dissemination through technical seminars, symposiums meets and workshops.

- Issuing of technical direction and guidelines on various mining subjects both for internal and external circulation.

- Special investigations and studies in the areas of mine environment, ventilation, strata/ ground control, other rock mechanic behaviors,

- Formulation and standardization of fire ladders for Indian coal seams i.e., classification of coal seam/mine prone to spontaneous combustion and fire on scientific basis.

- Explosives and Blasting with respect to optimization of explosive energy in rock breaking.

(b) The component on 'developing, improving & updating need based rescue and emergency response services to the mining industry' is based on the concept of

"Integrated Emergency Response System (IERS)", essentially devised to deal emergencies of diverse kind in different industries and vital installations, strategic in nature, including the mining profession which is by far, one of the most hazardous operations of peacetime. The concept underlined in IERS when applied to belowground mines, revealed that adoption of self-escape philosophy offers the best chance of survival to the underground personnel, when ably supported by an aided rescue strategy, which provides for external assistance to those persons unable to reach a place of safety, unaided. It is appropriate to consider adoption of a pro-active approach in tune with this doctrine of self regulation and duty of care for formulation of an Emergency Management Plan, to effect a significant improvement in the emergency preparedness and response systems of Indian coal mines. Based on inferences drawn from the review of existing practices and conducted simulated emergency exercises, the following are the major areas of studies/activities under this component.

- Formulation of detailed control measures consequent upon risk assessment exercise, detailing responsibility of concerned mine officials with a protocol of implementation, to obviate the possibilities of dangerous occurrence in a coal mine.

- Scenario planning & Hypothesis testing sessions to search for possible solutions/controls of hazards and risks which may have not been previously identified.

- Ventilation network in mines to be incorporated suitably with ventilation plans detailing all aspects of ventilation.

- Drawing up of schedule of training and re-training for all persons on the correct donning and wearing procedures for self rescuers.

- Introduction of 'gas chromatography' for mine gas analysis purposes.

- Reviewing of current standing orders to incorporate concepts like developing trigger action response plans to establish specific trigger points.

- Devising suitable mode of emergency initiation protocol in the workings of belowground mines by way of introducing 'stink gas' to serve as warning to all work persons in the mine, particularly those without easy access to telecommunication system.

- Establishment of procedures detailing standard methods for deciding plans/options with work persons prior to evacuation, including routes of travel, modes of travel, order of travel, use of link lines, communications, signaling, etc.

- Primary and secondary escape routes be established and maintained. The escape ways may be fitted with guide ropes, clearly sign posted and facilities like fluorescent droppers , embossed printing be used to make them identifiable in poor visibility.

- Development of duty cards that individually detail the expected roles, responsibilities and authorities of all persons in charge of coordinating and/or controlling an emergency response, which may be kept at a number of designated places around the mine site.

- Construction of 'refuge chamber' equipped with telephones, etc., where workmen can gather in the event of an emergency, to mitigate the hazards associated with extensive workings and steep gradient in coal mines.

(c) The component on "Human Resource Development" as an effective tool in addressing the "Occupational Safety & Health" issues of persons employed in the mines is very vital and especially pertinent to present day dynamics in mining sector. Persons employed in mines are exposed to a number of occupational hazards at work due to dust, noise, toxic metals, heat, humidity vibration etc., which adversely affect their health and cause occupational diseases like pneumoconiosis, silicosis, manganese poisoning, hearing impairment, etc. Almost all such occupational diseases are known to cause permanent disability and there is no effective treatment. For addressing these problems, numbers of recommendations have been made by the National Conferences on Safety in Mines in the past. For meeting the desired objective, these recommendations shall be strictly implemented after being integrated with suitable compensation and mitigation programmes formulated with the help of all stake holders. For long-term sustenance of such initiatives, suitable awareness programmes need to be devised and implemented - coupled with commensurate training and re-training schedules of all stake holders. Against this backdrop, the following are the major areas of studies/activities under this component.

- Conduct occupational safety and health surveillance in cluster mining pockets in unorganized mining sector for identifying affected persons/groups, and for designing suitable redressal mechanism for compensation and mitigation/rehabilitation of such affected persons.

- Conduct different types of surveys in mines on safety perception, understanding workload and risks associated with face operations, etc. with a view to designing suitable imitative measures through risk management processes.

- Investigate the ergonomically impact of mining on person operating machinery etc., and conduct ergonomic analysis involving objective measurements and evaluation of external stress (task-organization-environment) internal stress (physiological measurements-posture analysis-behavior) and a subjective assessment by the workers involved.

- Establish Mine Safety & Health Academy (MSHA) in various zones/regions of DGMS to impart structured training to DGMS officers and key personnel of the mining industry.

- Develop basic training aids and safety manuals/monographs with animated real-time occurrences in mines, for use in MSHA.

- Establishing fully equipped 'virtual reality facility' at the Mine Safety & Health Academy (MSHA) centers as an effective tool for training of all stake holders on various mining subjects.

(B) SSEX Component of the Scheme: (Strengthening of Statutory Examination)

This component caters to the needs of modernizing the statutory examination system of DGMS to be in tune with the e-Governance policies of the Government of India. The various important issues connected therewith are as follows.

- Developing a quick and transparent system of examination with the aid of computer and associated information technology.

- Review of the existing examination system in order to eliminate redundancy and standardize procedures.

- Developing computerized application processing system, issue of certificate and maintenance of records connected therewith.

- Connecting examination centres with the Board of Mining Examinations at Headquarters, Dhanbad by computer Network and State of the Art information technology.

(C) PIF Component: (Providing Infrastructure Facility)

This component caters to providing various infrastructure and related logistics connected to all the identified activities.

- Construction of Offices & Residential complexes and major renovation of old buildings.

- Furnishing of new offices for running the Scheme and renovation of existing ones.

- Provision for hiring vehicles for movement for running the Scheme.

- Establishing modern communication network system across different offices of DGMS, Mining companies and concerned Ministries.

Details of achievement during January to December, 2014:

SN	Activity	Achievement
A. S&T Division		
1.	Mine Environment Studies	
	i) Coal Mines	16
	ii) Non Coal Mines	-
	iii) Oil and Gas Mines	--
2.	Mine Ventilation Studies	
	i) Coal Mines	05
	ii) Non Coal Mines	--
	iii) Oil and Gas Mines	--
3.	Strata Control Studies	
	i) Coal Mines	04
	ii) Non Coal Mines	--
4.	Development of Standards	
	i) Coal Mines	03
	ii) Non Coal Mines	01
	iii) Oil and Gas Mines	--
5.	R&D Studies(Projects)	
	i) Coal Mines	--
	ii) Non Coal Mines	--
	iii) Oil and Gas Mines	
6.	Development of Disasters	
	i) Coal Mines	-
	ii) Non Coal Mines	--
	iii) Oil and Gas Mines	--
7.	National and International Workshop and Seminars	-
8.	Training of Personnel from Industry at MSHA	289
9.	National and International Visits and Training	
	i) Offshore and On-Land	--
	ii) Coal Mining, CBM, CTL, UGC and other new Technology	19
	iii) Non-Coal Sector	
	iv) Silicosis and Pneumoconiosis	08
	v) Disaster Control and Management	--
	vi) Training program on "Accident investigation, Risk assessment, Emergency response and Mine Rescue" for inspecting officers of DGMS in Colorado School of Mines Denver (Colorado), USA.	-- 07
	vii) Training of newly appointed officers of DGMS.	18
	viii) DGMS officers training in Oil Mines at IPSHEM, Goa	18

APPENDIX-I

SAFETY, HEALTH & WELFARE LEGISLATION FOR MINES

ADMINISTERED BY DGMS

- **The Mines Act, 1952**
  - → **The Coal Mines Regulations, 1957**
  - → **The Metalliferous Mines Regulations, 1961**
  - → **The Oil Mines Regulations, 1984**
  - → **The Mines Rules, 1955**
  - → **The Mines Vocational Training Rules, 1966**
  - → **The Mines Rescue Rules, 1985**
  - → **The Mines Crèche Rules, 1966**

- **Electricity Act, 2003**
  - → **Central Electricity Authority (Measure relating to Safety and electric Supply) Regulation, 2010**

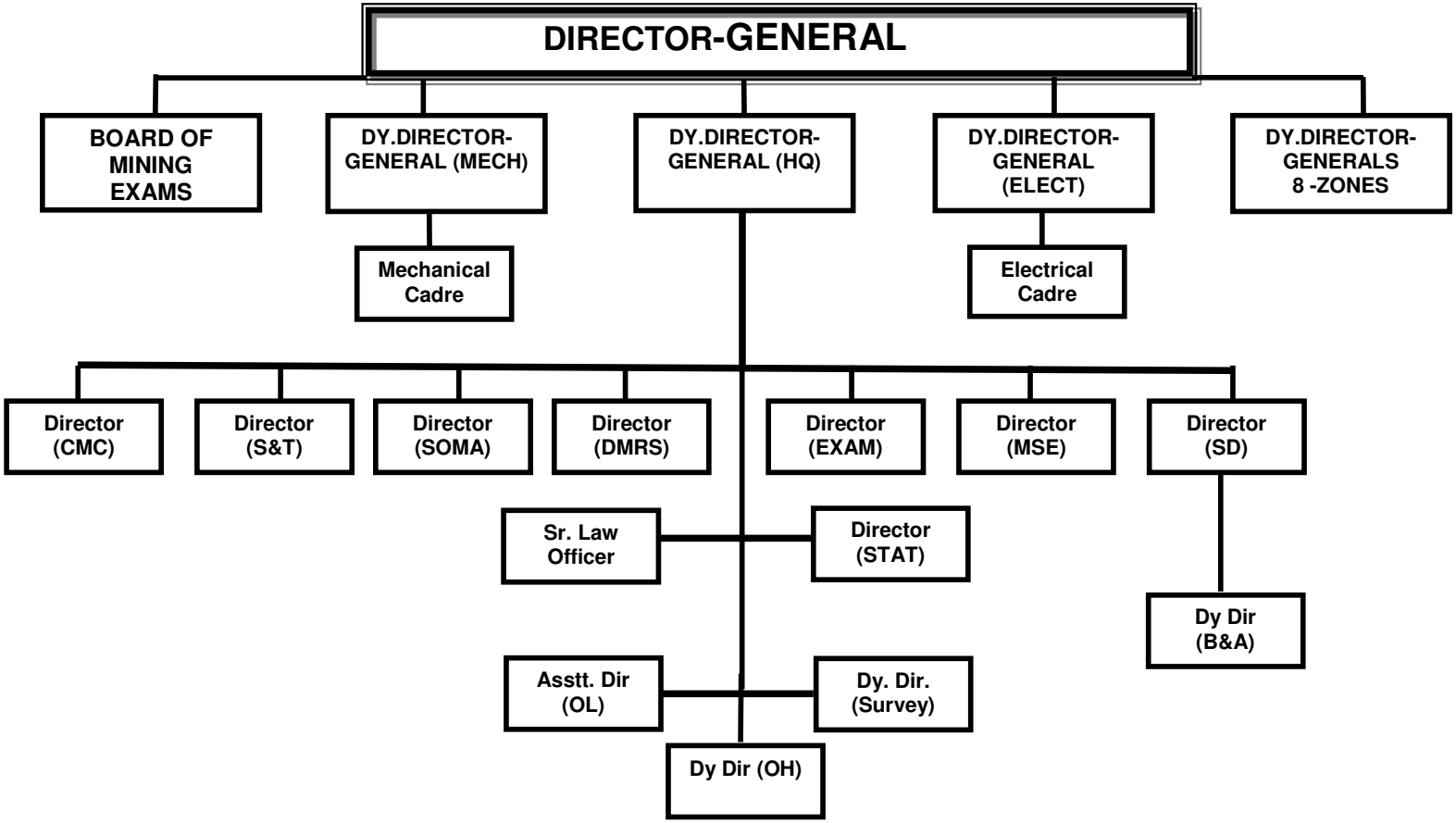
- **Allied Legislation**
  - → **Explosive Rules, 2008**
  - → **Factories Act, 1948 – Chapter III & IV**
  - → **Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989 - under Environmental (Protection) Act, 1986**
  - → **Land Acquisition (Mines) Act, 1885**
  - → **Coal Mines Conservation & Development Act, 1974**

ANNEXURE-IIA

ORGANISATION STRUCTURE

DIRECTORATE-GENERAL OF MINES SAFETY

HEAD QUARTERS, DHANBAD (AS ON 31.12.20124



APPENDIX-IIB

Field Organization of
Directorate General of Mines Safety

SN	Zone	Region	Sub-Region
1.	Eastern Zone Sitarampur West Bengal	1. Sitarampur Region No.I 2. Sitarampur Region No.II 3. Sitarampur Region No.III 4. Guwahati	
2.	Central Zone Dhanbad Jharkhand	1. Dhanbad Region No.I 2. Dhanbad Region No.II 3. Dhanbad Region No.III 4. Koderma	
3.	South Eastern Zone Ranchi Jharkhand	1. Ranchi 2. Bhubaneshwar 3. Chaibasa 4. Raigarh	Ramgarh
4.	North Western Zone Udaipur Rajasthan	1. Ahmedabad 2. Udaipur 3. Surat	
5.	Northern Zone Ghaziabad Uttar Pradesh	1. Ghaziabad 2. Ajmer 3. Gwalior 4. Varanasi	
6.	Southern Central Zone Hyderabad Andhra Pradesh	1. Hyderabad Region No.I 2. Hyderabad Region No.II 3. Goa	Nellore
7.	Southern Zone Bengaluru Karnataka	1. Bengaluru 2. Bellary 3. Chennai	
8.	Western Zone Nagpur Maharashtra	1. Nagpur Region No.I 2. Nagpur Region No.II 3. Jabalpur 4. Bilaspur	Parasia

STATEMENT SHOWING THE NAMES OF OFFICERS GROUP (A&B) OF DIFFERENT DISCIPLINES AS ON 31.12.2014

Sl. No.	Designation	Name of officers (S/Shri)	Place of Posting	Date of Posting
1.	Director General of Mines Safety	RAHUL GUHA	Dhanbad	23.05.2013
2.	Dy. Director General of Mines Safety (Mining)	Sayed Imtiaz Hussain	SCZ, Hyderabad	15.01.2010
		P. K. Sarkar	SZ, Ghaziabad	23.01.2014
		UtpalSaha	EZ, Sitarampur	23.02.2010
		B. P. Ahuja	NWZ, Udaipur	14.01.2013
		Anup Biswas	WZ, Nagpur	03.03.2014
		P. Ranganatheeswar	HQs, Dhanbad	27.05.2013
3.	Director of Mines Safety (Mining)	B. P. Singh	CMC, HQs,Dhanbad	28.09.2011
		A. K. Jain	S.O., NWZ, Udaipur	28.10.2013
		P. C. Rajak	S.O, SZ, Bengaluru	25.10. 2012
		S. K. Dutta	R-II, SCZ, Hyderabad	03.07.2015
		R. Kulsrestha	SOMA, NZ, Ghaziabad	19.09.2013
		A. K. Meghraj	Chennai Region,	07.11. 2012
		A. K. Sinha	S&T, HQs, Dhanbad	19.09.2013
		S. Krishna Murthy	R-II, SCZ, Hyderabad	27.02. 2O09
		MunnaTandi	Goa Region,	07.11. 2012
		D. K. Saxena	Ajmer Region	17.08. 2009
		V. L. Narayana	Bellary Region	27.11. 2009
		K. Nageswara Rao	SCZ, Hyderabad	06.07.2015
		Suraj Mal Suthar	Udaipur Region	29.10. 2012
		Narayan Rajak	R- II, Sitarampur	17.09.2013
		D. K. Mallick	Varanasi Region	09.09.2013
		Vidyapathi	SO,WZ, Nagpur	15.11. 2012
		D. D. Saha	Surat Region	23.09.2013
		R. Subramanian	Bhubaneswar Region	06.09. 2013
		Sheo Shankar Mishra	R-I, EZ, Sitarampur	18.10.2012
		M.Satya Murthy	Ghaziabad region	19.10. 2012
		Niranjan Sharma	Ahmedabad Region	19.10. 2012
		Diensh Kumar Sahu	Guwahati Region	18.10. 2012
		Sanjibon Roy	R-II,CZ, Dhanbad	29.10. 2012
		TapanKantiMondal	Exam, HQ, Dhanbad	18.10. 2012
		Muni Ram Mandve	Bilaspur Region	22.10. 2012
		MeasalaNarasaiah	SZ, Bengaluru	25.10. 2012
		C.R.Kumar	R-III, CZ, Dhanbad	29.11.2012
		Elpula Jaya Kumar	Koderma,Region	29.10. 2012
		P.K.Palit	Jabalpur Region	19.10. 2012
		Satish Kumar	Chaibasa Region	05.11.2012
		SubhroBagchi	S.O. Udaipur Zone	07.11.2012
		S.Haldar	S.O., Nagpur zone	22.10. 2012
		Prabhat Kumar	R-I, WZ, Nagpur	16.11. 2012
		S.K.Mandal	S.O, CZ, Dhanbad	08.11. 2012
		Vijay Kumar Gubba	S.O., SCZ,Hyderabad	25.10. 2012
		S.K.Gangopadhyay	Soma, Hyderabad	08.11. 2012
		B.Papa Rao	DMS(SD),Dhanbad	16.11. 2012
		S.K.Das	Exam,WZ, Nagpur	01.11. 2012
		U.P.Singh	S.O., NZ, Ghaziabad	19.10. 2012
		Kamlesh Sharma	Ranchi Region	01.11. 2012
		Malay Tikadar	HQ, SOMA, Dhanbad	09.09.2913
		UjjwalTah	Raigarh Region	18.10. 2012

		Manish EknathMurkute	SO, Ranchi zone	06.11. 2012
4.	Dy. Director of Mines Safety (Mining)	N.Murawat	Varanasi Region	21.06. 2010
		Uttam Kumar Saha	Surat Region	28.01. 2010
		Subhashish Roy	Survey, HQs, Dhanbad	05.12.2011
		P.K.Maheshwari	Udaipur Region	07.08.2009
		Satish D. Chiddarwar	Bilaspur Region	09.06.2008
		Mohammed RafiqSayyed	Parasia sub-region	08.04.2013
		Arvind Kumar	Bhubaneswar Region	10.09.2013
		Ram Abhilash	Guwahati Region	16.09.2013
		Bhagwan Lal Meena	Goa Region	18.09.2013
		MihirChoudhary	Ranchi Region	27.05.2008
		Ashok Kumar Porwal	Ghaziabad Region	29.07.2008
		Probhat Kumar Kundu	Ghaziabad Region	18.09.2013
		RavindraTulshidasMandekar	Jabalpur Region	18.09.2013
		Harish Chandra Yadav	Chennai Region	19.09.2013
		Bhushan Prasad Singh	NZ, Ghaziabad	16.09.2013
		Deo Kumar	Ramgarh sub-region,	28.01.2013
		ShyamSundar Prasad	S&T, HQ, Dhanbad	16.09.2013
		Rajib Pal	Ajmer Region	11.09.2013
		Bipul Bihari Satiar	Chaibasa Region	03.09.2013
		RamawatarMeena	R-I, CZ, Dhanbad	18.09.2013
		ManoranjanDoley	Ajmer Region	11.09.2013
		VirPratap	R-I, CZ, Dhanbad	17.11.2009
		T. R. Kannan	R-II, WZ, Nagpur	29.08.2013
		VinodanandKalundia	R-III, CZ, Dhanbad	02.09.2013
		MuralidharBidari	HQs, I/C of Budget &Accounts, Dhanbad	26.08.2013
		Saifullah Ansari	R-III, CZ, Dhanbad	31.08.2009
		M. C. Jaisawal	R-I, SCZ, Hyderabad	27.02.2009
		MurliDhar Mishra	R-III, EZ, Sitarampur	30.12.2009
		Niraj Kumar	Nellore sub-region	08.04.2013
		S. Chakraborty	R-I, WZ, Nagpur	14.11.2012
		Aftab Ahmed	HQs, S&T, Dhanbad	28.08.2013
		Shyam Sunder Soni	Koderma Region	02.09.2013
		Sagesh Kumar M.R.	Exam,HQs, Dhanbad	13.04.2012
		Awanish Kumar Mishra	SOMA, HQs, Dhanbad	15.12.2012
		Nava ProkashDeori	HQs, Dhanbad	09.03.2012
		Mohammed Niyazi	R.III, EZ, Sitarampur	30.10.2012
		Irfan Ahmed Ansari	Udaipur Region	03.09.2013
		Mukesh Kumar Sinha	R.I, SCZ, Hyderabad	01.11.2012
		UmeshMadhukarraoSawarkar	S&T,HQs, Dhanbad	04.05.2012
		B.Dayasagar	R.I, WZ, Nagpur	05.11.2012
		Altaf Hussain Ansari	R.II, CZ, Dhanbad	01.11.2012
		Manoj Kumar Sahoo	R.II, EZ, Sitarampur	30.10.2012
		RavinderKandakatla	SZ, Bengaluru Region	21.06.2012
		Yohan Yejerla	Exam HQs, Dhanbad	20.04.2012
		Manoj Kumar Gupta	CMC, Dhanbad	26.10. 2012
		Surjit Katewa	R.II, SCZ, Hyderabad	09.11. 2012

		Shyam Mishra	SEZ, Ranchi Region	30.10.2012
		Ashok Kumar	R.II,WZ, Nagpur	05.12.2012
		BalaSubramanyamNasina	R.II, EZ, Sitarampur	30.10.2012
		Rajesh Kumar Singh	SD,HQs,Dhanbad	17.07.2012
		KrishnenduMondal	R.I, EZ,Sitarampur	30.10.2012
		NamavrapuN.Rao	Bellary Region	09.08.2012
		Vinod Rajak	HQ., Store & Purchase, Additional charge of CPWD work,Dhanbad	28.08.2013
		Raj Kishore Singh	Raigard Region	05.08.2013
		PrafllRanjan Thakur	Varanasi Region	08.08.2013
		Karm Deo Ram	R-II, Hyderabad	18.11.2013
		RaghupathiPeddireddy	S&T, HQ, Dhanbad	09.07.2014
		SatyanarayanaInumula	SOMA, HQ, Dhanbad	09.07.2014
		Tom Mathew	Budget/Accounts, HQ, Dhanbad	07.07.2014
		Rakesh Rameshwar Mishra	CZ, Dhanbad	05.05.2014
		Ajit Kumar	Guwahati Region	14.08.2014
		Nayan Sinha	R-II, CZ, Dhanbad	10.12.2013
		Sanjeev Kumar Nomula	Udaipur Zone	07.04.2014
		Anil Kumar Das	Udaipur Zone	20.03.2014
		KunapareddiMadhavarao	Guwahati Region	14.07.2014
		Sanjay Kumar Gimmedi	Exam, HQ, Dhanbad	07.07.2014
		SaketBharati	Chaibasa Region	16.12.2013
		Kumar Rajiva Krishna Kumar	Hyderabad Zone	27.01.2014
		Dhananjay Kumar	CZ, Dhanbad	29.04.2014
		Niranjan Kumar	R-I, EZ Sitarampur	18.11.2013
		Arun Kumar	SEZ, Ranchi	07.04.2014
		DurgaShanker Salvi	Ahnmedabad Region	23.12.2013
		Ramesh Walikar	Bilaspur Region	30.12.2013
		TikeshwarMahto	Bilaspur Region	30.12.2013
		VenkannaBanothu	Jabalpur Region	23.04.2014
		GyaneswarKondabattini	CMC/MSE, HQ, Dhanbad	07.07.2014
		DayanandCherku	Chennai Region	12.03.2014
		ThirupathiKamera	Bellery Region	25.06.2014
		Nagendra Kumar Sriram	Bhubneswar Region	11.04.2014
		AderiaRambabu	SCZ, Hyderabad	23.06.2014
5.	Dy.Director General of Mines Safety (Elect.)	U.N.Pandey	HQs, Dhanbad	01.03.2013
6.	Director of Mines Safety (Elect.)	G. L. Kanta Rao	SCZ, Hyderabad	12.04.2013
		B. S. Nim	NWZ, Udaipur	28.01.2010
		K. S. Yadav	SZ, Bengaluru	24.01.2013

		M. K. Malviya	SEZ,Ranchi	04.04.2011
		Madhukar Sahay	WZ, Nagpur	28.03.2011
7.	Dy. Director of Mines Safety (Elect.)	Ajay Singh	EZ, Sitarampur	28.06.2009
		T. Srinivas	HQs, Dhanbad	08.02.2011
		Anand Agrawal	SCZ, Hyderabad	26.03.2012
		S.Puttaraju	CZ,Dhanbad	27.01.2012
		Prakash Kumar	SEZ, Ranchi	26.03.2012
		Rajkumar	WZ, Nagpur	23.04.2012
		Palanimalai C.	EZ, Sitarampur	21.02.2012
		B.Behera	Dlect, HQ, Dhanbad	17.07.2012
		P. Damodar	SEZ, Ranchi	12.05.2014
		Naraisimha Rao Guppapalli	SCZ, Hyderabad	15.05.2014
		ArkaSomayajuluDhlipala	SD, HQ, Dhanbad	07.07.2014
		VenkataSubbaraoAnkalagalla	WZ, Nagpur	16.05.2014
		S. Andavel	NZ, Ghaziabad	24.04.2014
		T. Arun	NWZ, Udaipur	06.06.2014
		Maheswara Reddy Kanala	CZ, Dhanbad	15.05.2014
		Raghu Mergu	SZ, Bengaluru	26.03.2014
		Rajeev Om Prakash Verma	CZ, Dhanbad	03.04.2014
		Anil Toppo	EZ, Sitarampur	07.04.2014
		VikashGovind Rao Meshram	EZ, Sitrampur	03.11.2014
8.	Dy.Director General of Mines Safety (Mech.)	B. N. Dhore	HQs. Dhanbad	20.10.2014
9.	Director of Mines Safety (Mech)	Raj Narayan Singh	CZ, Dhanbad	07.01.2010
10.	Dy. Director of Mines Safety (Mech.)	Parmanand Kumar Singh	SEZ, Ranchi	31.03.2009
		M. Arumugam	WZ, Nagpur	19.06.2012
		SudhirGanpatraoBhaisare	EZ, Sitarampur	12.06.2012
		Sandeep Shrivastava	SCZ, Hyderabad	05.09.2012
		Vijaya Kumar K.	HQ, Dhanbad	06.08.2012
		Pankan Kumar Jain	NZ, Ghaziabad	28.01.2014
		BalakrishnaPadarthi	SCZ, Hyderabad	30.05.2014
		Rupesh Kumar Srivastava	EZ, Sitarampur	02.05.2014
		RatnakerSunki	Mech, HQ, Dhanbad	15.04.2014
		Sankar Sana Behera	NWZ, Udaipur	23.06.2014
		Suresh Kumar Pdeada	EZ, Sitarampur	15.04.2014
		Ajay Kumar Ramnaresh Yadav	SEZ, Ranchi	07.04.2014
		Jagidash Prasad Verma	WZ, Nagpur	23.06.2014
		Naresh GovindPhule	CZ, Dhanbad	24.03.2014
11.	Dy. Director of Mines Safety (OH)	--		
12.	Assistant Director of	Dr. George John	HQ, Dhanbad	30.05.2008

	Mines Safety (OH)	Dr. Kaushik Sarkar	SCZ, Hyderabad	04.02.2013
13.	Director/Jt.Director (Stat)	A.K.Tripathy	Dhanbad	10.01.2011
		S.Chakraborty	Dhanbad	01.09.2014
14.	Dy. Director (Stat)	--		
15.	Asstt. Director (Stat)	B.K.Srivastava	Dhanbad	14.06.2012
		Manish Anand	Dhanbad	12.06.2013
16.	Sr. Law Officer	Tapan Kumar Barman	Dhanbad	23.03.2007
17.	Law Officer Gr.I	AnandSwarup Singh	CZ,Dhanbad	07.08.2007
18.	Law Officer Gr.II	Jai Prakash Jha	Dhanbad	28.01.2002
		Ritu Srivastava	Dhanbad	08.01.2008
		A.K.Sinha	Dhanbad	12.03.2009
19.	Assistant Director(OL)	Monika Tudu	HQ, Dhanbad	19.03.2012
20.	Administrative Officer	Smt. Usha Roy	HQ, Dhanbad	23.03.2010
		M.K.Mathur	Ghaziabad	12.04.2010
		Pitar Paul Tiru	Ranchi	15.03.2010
		S.K.Choudhary	HQ, Dhanbad	03.09.2012
		B.P.Mondal	CZ, Dhanbad	30.09.2014
21.	Sr.Private Secretary	Krishna Das Hansda	HQ, Dhanbad	05.07.2011
22.	Private Secretary	Xavier Beck	MHQ,Dhanbad	29.11.2010
		S.L.Sharma	Nagpur	15.09.2010
		B.K.Mondal	Benguluru	02.11.2010
		Abinash Kumar	Ranchi	19.07.2012
		A.K.Gupta	HQ,Dhanbad	11.03.2013
		N. K. Chakraborty	Sitarampur	23.04.2013
		S.S.Prasad	CZ, Dhanbad	04.03.2014
		Dinesh Pd. Choubey	Ghziabad	10.02.2014
		Murli Krishna Swamy	Hyderabad	19.05.2014
		GautomKumas Das	EHQ, Dhanbad	28.07.2014
		SangramHansda	Udaipur	01.08.2014
22.	Jr. Scientific Officer	P.K.Sinha	Dhanbad (S&T)	04.01.2012
23.	Sr. Accounts Officer	Ram LalitKannaujia	HQ, Dhanbad	25.11.1997
24.	Sr. Statistical Officer	A.Bodra	Dhanbad	01.02.2010
		V.P.Keshri	Dhanbad	28.12.2011
		M.S.Dutta	Dhanbad	28.12.2011
		Saheb Ram Manjhi	Dhanbad	30.08.2010
		T.K.Sinha	Dhanbad	06.03.2013 (As adhoc)

APPENDIX-IIIA

LIST OF GROUP A & B OFFICERS OF DGMS ON DEPUATION DURING 2014

Sl No.	Designation	Name of Officers	Place of Posting	Date of Posting
1.	Sr. Scientific Asstt.	Arshad Raja	Coal Mines Provident Fund, Dhanbad.	14.03.2011

APPENDIX-IIIB

Officers of DGMS on Training/visit Abroad in 2014

Sl. No.	Name	Country Visited	Scheme under which the visit took place	Dated
1.	Shri Rakesh Kulsrestha, Dir.	Colorado, USA	'Accident Investigation, Risk Assessment, Emergency Response & Mine Rescue'	15.09.2014 To 29.09.2014
2.	Shri MainindraSatyamurty, Dir			
3.	Shri TapanKantiMondal, Dir			
4.	Shri Prabat Kumar, Dir			
5.	Shri Burgula Papa Rao, Dir,			
6.	Shri Samiran Kumar Das, Dir			
7.	Shri UjjawalTah, Dir			
8.	Shri Bhagwan Lal meena, DD			
9.	Shri Probhat Kumar Kund, DD			
10.	Shri RavindraTulshidasMandekar, DD			
11.	Shri Deo Kumar, DD			
12.	Shri Rajib Pal, DD			
13.	Shri RamawatarMeena, DD			
14.	Shri Mahesh Kumar Malviya, Dir,			
15.	Shri ShriThammisetty Srinivas, DD			

APPENDIX-IIIC

OFFICERS OF DGMS ON SEMINAR, CONFERENCE, SYMPOSIUM AND TRAINING DURING 2014

Sl. No.	Name	Name of course	Venue	Dates
1. 2. 3.	Shri D.K. Sexena, Dir. Shri M. Doley, Dy. Dir. Shri P.K. Maheswari, Dy. Dir	02nd International conference of Advanced Technology in Exploration and Exploration of Minerals.	Jodhpur	10-11 Jan, 2014
1. 2. 3. 4.	Shri T.K. Mondal, Dir. Shri C.R. Kumar, Dir. Shri Kamlesh Sharma, Dir Shri U.K. Sharma, Dir	International Conference on Innovative Surface and Underground Mining Technology for performance Enhancement.	Kolkata	16-18 Jan. 2014
1 2. 3. 4 5 6 7 8 9.	Shri Rahul Guha, D.G. Dr.A.K.Sinha, Dir Shri C.B.Prasad, Dir. Shri Malay Tikedar, Dir Shri Safifulla Ansari, DD Shri VirPratap, DD Shri Vinod Rajak,DD Shri R.K.Singh, DD Shri S.S.Prasad, DD	6th Indian Mineral Congress & Exhibition "Innovations : fusion of Management and Technology" (IMC 2014)	ISM, Dhanbad	01.02.2014
1 2. 3. 4 5 6 7 8 9.	Shri P.Ranganateswar, DDG. Dr.A.K.Sinha, Dir Shri Sanjeevan Ray, Dir. Shri T. Srinivas, DD Shri K. Vijay Kumar, DD Shri V.Behera, DD Shri B. Papa Rao, Dir Shri N.P. Deori, DD Shri Aftab Ahmed, DD	5th Asian Mining Congress	Kolkata	13.02.2014 to 15.02.2014

1. 2.	Shri Manoj Gupta, DD Shri U.M.Sarwarkar, DD	Brain Stroming Workshop on Geostatistics for Natural Resources Modeling (BSWG G 2014)	ISM Dhanbad.	28.02.2014
1. 2.	Shri S.S. Prasad, Dir Shri Nayan Sinha, DD	Self AdvancingGoaf Edge Support (SAGES)	ISM Dhanbad.	25.04.2014
1. 2.	Shri P. Rangenatheeswar, DDG. Shri Arvind Kumar, DD	New equipment New Technology Management and safety in Mines/ Minerals Based Industries	Bhubaneswar	11.05.2014 & 12.05.2014
1.	Shri A. K. Meghraj, Dir	'Safety India 2014'	Chennai	26.05.2014 & 27.05.2014
1.	Shri MunnaTandi, Dir	Guest of Honour in the Opening session of the Sustainable Mining Summit	Goa	17.07.2014
1.	Shri M.K. Sinha, Dy. Dir.	Training Programme on right to Information Act, 2005	Kochi	17.09.2014 &19.09.2014
1. 2. 3.	Shri Chandan Sharma, JSO Shri Sourabh Kr. Lohani, JSO Shri Ajay Kumar, JSO	Training Programme (ITP Module B) for SSS Officials (JSOs)	Kolkata	03.11.2014 &28.11.2014
1.	Shri B. Papa Rao, Dir	7th One day National Convention on Reservation for the person with disabilities (PWDs) for Liaision officers for PWDs, heads of Personnel, HR & CAOs)	New Delhi	22.11.2014

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25	Shri Rahul Guha, DG Shri P. Ranganatheswar, DDG Shri U. N. Pandey, DDG (Elect) Shri D. B. Naik, DDG (Mech) Shri B. P. Singh, Dir Shri A. K. Sinha, Dir Shri M. Tikadar, Dir Shri M. K. Malvia, Dir (Elect) Shri M. E. Murkute, Dir Shri MihirChoudhary, DD Shri MurdlidharBidari, DD Shri RaghupathiPeddireddy, DD Shri Sagesh Kumar, DD Shari A. K. Mishara, DD Shri A. K. Mishra, DD Shri R. N. Singh, Dir (Mech) Shri S. Puttaraju, DD DD(Elect) Shri S. Bagchi, Dir Shri E. Jayakumar, Dir Shri UtpalSaha, DDG Shri Ajay Singh, DD (Elect) Shri S. G. Bhaisare, DD Shri N. Rajak, Dir Shri Md. Niyazi, DD Shri I. Satyanarayana, DD	12th International Mining & Machinery Exhibition (IIME).	Kolkata	03.12.2014 & 06.12.2014
1. 2.	Shri S. I. Hussain, DDG Shri Aftab Ahmed, DD	Roundtable Meeting of the Asia-Europe Meeting (ASME)/East Asia Summit (EAS) countries.	New Delhi	04.12.2014 & 05.12.2014

1. 2.	Shri Sandeep Srivastave, DD (Mech) Shri I. Satyanarayana, DD	Two day National Seminar on "Recent Trends in Mechanized Mining"	Kodhagudem	27.12.2014 & 28.12.2014

Annexure-IV

A-COAL MINES REGULATION, 1957
STATEMENT NO.IA
Result of Examination, 2014

1. Issue of Certificate:

S. No.	Type of Examination	2014		Remarks
		Appeared	Passed	
1.	Exchange Certificate			
(a)	First Class Manager's Exchange Certificate in Lieu of British Certificates	--	--	
(b)	First Class Manager's Certificate Metal to Coal	--	--	
(c)	First Class Manager's Certificate Coal to Metal	2	2	
(d)	Second Class Manager's Certificate Metal to Coal	--	--	
(e)	Second Class Manager's Certificate Coal to Metal	--	--	
(f)	Surveyor's Certificate Metal to Coal	--	--	
(g)	Foreman to Overman	--	--	
(h)	Mate's (UR) to Sirdar	--	--	
II	**Regular Examination**			Exam was held in Dec 2013 and Result declared on
(a)	First Class manager's Certificate	0	219	22.07.2014
(b)	Second Class Manager's Certificate	0	234	22.07.2014
(c)	Surveyor's Certificate	333	41	22.07.2014
(d)	Overman's Certificate	1164	196	22.07.2014
(e)	Sirdar's Certificate for HQ, only	218	79	8.3.14,9.3.14,30.8.14
(f)	Shotfirer's Certificate	--	--	
(g)	Gas-Testing Certificate	874	403	23.1.14,24.1.14, 26.4.14,27.4.14 31.8.14,6.9.14 7.9.14,5.5.14 6.5.14
(i)	Winding Engine Driver's Certificate (a) I Class	Nil	Nil	

	(b) II Class			

STATEMENT NO.II

Suspension of Certificates under the Coal Mines Regulations, 1957 for the Year, 2014.

S. No.	Type of Certificate	No. of Certificates Suspended/Cancelled	Duration of Suspension
Nil			

B-METALLIFEROUS MINE REGULATIONS, 1961
STATEMENT NO.1A
Result of Examination, 2014

1. Issue of Certificate:

S.No.	Type of Examination	2014		Remarks
		Appeared	Passed	
1.	**Exchange Certificate**			
(a)	First Class Manager's Certificate Metal to Coal	12	12	
(b)	Second Class Manager's Certificate Coal to Metal	--	--	
(c)	Surveyor's Certificate Coal to Metal	--	--	
(d)	Overman to Foreman	--	--	
(e)	Sirdar to Mate	--	--	
A.	Regular Examination (Un-Restricted)			Result declared on
(a)	First Class Manager's Certificate	193	13	10.03.2014
(b)	Second Class Manager's Certificate	161	12	13.03.2014
(c)	Surveyor's Certificate	14	01	10.03.2014
(d)	Foremen's Certificate	77	06	
(e)	Mining Mate	Nil	Nil	
(f)	Blaster	Nil	Nil	
(g)	Gas Testing	Nil	Nil	
B.	**Regular Examination (Restricted)**			Result Declared on
(a)	First Class Manager's Certificate	1023	153	10.03.2014
(b)	Second Class Manager's Certificate	743	115	10.03.2014
(c)	Surveyor's Certificate	66	13	10.03.2014
(d)	Foremen's Certificate	687	146	10.03.2014
(e)	Mining Mate	Nil	Nil	
(f)	Blaster	03	03	30.11.2013
C.	**Regular Certificate Other than above**			
(a)	Winding Engine Driver's Certificate	Nil	Nil	

	(a) I Class (b) II Class			

STATEMENTNO.II

SUSPENSION OF CERTIFICATES UNDER THE MATALLIFEROUS MINE REGULATION, 1961 FOR THE YEAR, 2014

S. No.	Type of Certificate	No. of Certificates Suspended	Duration of Suspension
NIL			

STATEMENT NO.IV A
CERTIFICATE WITHOUT EXAMINATION (EXEMPTED CATEGORIES) under MMR 1961

S.No.	Type of Certificate	2014				Remarks
		Un-Restricted		Restricted		
		Applied	Issued	Applied	Issued	
(a)	I Class Manager's Certificate	--	--	--	--	
(b)	II Class Manager's Certificate	--	54		105	
(c)	Surveyor's Certificate		12		11	
(d)	Foreman's Certificate		47		98	

STATEMENT NO.IV A
CERTIFICATE WITHOUT EXAMINATION (EXEMPTED CATEGORIES) under CMR 1957

S.No.	Type of Certificate	2014				Remarks
		Applied	Issued			
(a)	I Class Manager's Certificate	--	258	--	--	
(b)	II Class Manager's Certificate	--				
(c)	Surveyor's Certificate		92			

STATEMENT NO.IVB

S.No.	Type of Examination	2014		Remarks
		Appeared	Passed	
A.	**Five Yearly Medical Examination Under Regulation 30(1):**			
I	Foreman's Certificate	09	09	
II	Mining Mate's Certificate	16	16	
III	Blaster's Certificate	0	0	
IV	Winding Engine Driver's			

	Certificate (c) First Class (d) Second Class	01 00	01 00	
B.	**Yearly Medical Examination Under Regulation 31:**			
I	First Class Manger's Certificate	19	19	
II	Second Class Manger's Certificate	12	12	
III	Surveyor's Certificate	02	02	
C	**Yearly Medical Examination Under Regulation 31:**			
I	Foreman's Certificate	61	58	
II	Mining Mate's Certificate	29	28	
III	Blaster's Certificate	08	07	
IV	Winding Engine Driver's Certificate (a) First Class (b) Second Class	01 00	01 00	

STATEMENT NO.III

Debarment form appearing in Examination under the Coal Mines Regulation 1957 for the Year 2014

S.No.	Name	Type of Certificate	Period of debarment
1.	Masa Rajaiah	First Class Manager's Certificate	Three years of debarment & cancellation of result of FMC
2.	Vipin Mishrs	2nd Class Manager's Certificate	Five Years of debarment
3.	Saliendra Kumar	Duplicate Overman	Three Years of debarment
4.	Sanichar Kumar	Overman (Exemption)	Life time debarment
5.	Gopal Pd. Sinha	Overman (Exam)	Life time debarment & cancellation of result
6.	Chaitu Kumar Mandal	Sirdar	Five Years of debarment
7.	Bahadur Mandal	Sirdar	Five Years of debarment
8.	Girjesh Kumar Singh	Sirdar	Five Years of debarment
9.	Abhimanu Kumar saw	Gas Testing	Five Years of debarment & cancellation of result
10.	Tanmay Nandi	Gas Testing	Five Years of debarment & cancellation of result
11.	Arvind Kumar Chauhan	Gas Testing	Five Years of debarment
12.	Sanjay Kumar Mandal	Gas Testing	Five Years of debarment
13.	Rajendra Mandal	Gas Testing	Five Years of debarment
14.	MandeepNonia	Gas Testing	Five Years of debarment
15.	Nikhil Kumar Singh	Gas Testing	Five Years of debarment
16.	Vikash Kumar Mandal	Gas Testing	Five Years of debarment
17.	Triloki Kumar Mandal	Gas Testing	Five Years of debarment

18.	Mahesh Kumar	Gas Testing	Five Years of debarment
19.	GummadiVenkateswarlu	First Class Manager's Certificate	Three Years of debarment & cancellation of result of FMC
20.	Chandra Shekhar Singh	2nd Class Manager's Certificate	Five Years of debarment
21.	Arun Kumar Gupta	Sirdar	Five Years of debarment
22.	ArvindamGanguly	Surveyor Certificate	Three Years of debarment

STATEMENT NO.IV

Duplicate Certificate issued under Coal Mines Regulations, 1957 during the Year 2014.

S.No.	Name (S/Shri)	Type of Certificate	No. of Certificate	Date of Issue
1.	Rajesh Kr. Sharma	Overman & GT	10575 & 72975	28.01.14
2.	S.C. Banerjee	Sirdar	53373	17.02.14
3.	Surendra Pd. Sinha	Overman	7757	18.02.14
4.	BiswanathSahni	GT	70901	17.02.14
5.	Sanjeev Kumar	Overman	8978	24.03.14
6.	SiteshwarMahto	Overman	8982	28.03.14
7.	Rajendra Kr. Das	GT	53398	09.04.14
8.	Rajender Singh	Sirdar	33228	09.04.14
9.	Rupendra Kr. Padhy	GT	53398	09.04.14
10.	Diwakar Bausi	Overman& GT	113998 & 74815	09.04.14
11.	Amit Kumar	GT	75108	05.05.14
12.	Suresh Mistry	Sirdar	50924	19.05.14
13.	Parmod Kumar Singh	FMC (Exchange)	727	09.07.14
14.	RaurPratap	Overman	11293	18.07.14
15.	Kshrod Chandra Brahma	FMC	3187	14.08.14
16.	BishwambharJha	SMC	4494	26.08.14
17.	Nikhil RabindarIyer	SMC	11758	23.06.14
18.	Shambhu Ram	GT	0042	03.07.14
19.	Shambhu Ram	Overman-E	11209	14.08.14
20.	Raj Kumar Singh	Sirdar	50606	31.07.14
21.	Raj Kumar Singh	GT	59227	31.07.14
22.	Pilli Ramaiah	GT	3885	14.08.14
23.	Dinesh Kr. Devagan	Overman-E	8042	14.08.14
24.	Shailesh Kumar	FMC	6303	14.08.14
25.	Puspendra Kumar Meena	SMC-E	14081	03.12.14
26.	Pankan Kumar Pati	GT	58618	14.11.14
27.	Arvind Kumar Choudhary	Overman	4645	24.11.14
28.	Pradyuman Ram	Overman	5560	27.10.14
29.	Pradyuman Ram	GT	30018	27.10.14

STATEMENT NO.V

DUPLICATE CERTIFICATES ISSUED UNDR METALLIFEROUS MINES REGULATION, 1961 DURING THE YEAR, 2014

S. No.	Name (S/Shri)	Type of Certificate	No. of Certificate	Date of issue
1.	Chuga Lal Jat	Mate	3760	18.02.14
2.	K.O.Mathai	Mate	4458	11.03.14
3.	Raj Kumar Mahato	Mate	12506	28.03.14
4.	Amit Singh	Mate	10260	09.04.14
5.	KamdeoSahoo	Foremen	4055	09.04.14
6.	Santosh Kr. Barik	Mate	5048	05.05.14
7.	ShrikantPandurangLadke	SMR-E	4511	14.08.14
8.	Purna Singh Bhati	Mate	4511	14.08.14
9.	Yuvraj Singh	FMR	1347	23.06.14
10.	SurendraNath Shaw	Blaster	2635	03.07.14
11.	A.N.S. Srinivas Rao	Foremen	2960	14.08.14
12.	Anand Kumar H.J.	FU-E	1265	31.07.14
13.	Pilli Ramaiah	Mate	4511	14.08.14
14.	Sajoy C. Parikar	FMR	1369	03.12.14
15.	Binod Bihari Meena	Mate	4511	24.11.14
16.	Moses	Mate	4895	24.11.14
17.	Moses	Blaster	3851	24.11.14
18.	Manohar Lal Patwa	Mate	10936	24.11.14
19.	A.N.Reddy	Foremen	1013	24.11.14
20.	Rajendra Singh	Mate	10987	27.10.14
21.	Rajendra Singh	Foremen	3649	27.10.14
22.	Bijay Kumar Singh	FMR	843	27.10.14
23.	BalachandraAmbudas Rao Tong	FMR	1847	21.10.14
24.	Jagrup Shah	Mate	4755	21.10.14

APPENDIX-V

1. **List of Mines Safety Equipment and Material required to be approved by DGMS under Coal & Metalliferous Mines Regulations.**

Equipment/Material	Provision of Regulation	
	CMR, 1957	MMR,1961
1. Flame Safety Lamp	2(2)	2(2)
2. Cap Lamps	2(2)	2(2)
3. Permitted Explosives	2(23)	2(23)
4. Tub Couplings	89(1)(c)	97(1)(c)
5. CO Detector	113(3)(c) 118A(3)(a)(i) 119(1)(b),121 125(3)(b) 142(5)	116(3)(c) 120(1)(b) 120(2)(c) 122, 126(3)(b) 141(5)
6. CO_2 Detector	119(2)(d)(ii)	-
7. Dust Extractor	123(3)(b)	124(2)(b)
8. Stone Dust Barrier	123(c)(2)	-
9. Methanometers	145(1)(a)	-
10.Glass of Flame Safety Lamp	157(4)	151(4)
11.Cap Lamp Bulbs	157(4)	151(4)
12.Oil for Flame Safety Lamp	157(5)	151(5)
13.Mechanically propelled vehicle for transport of explosive	164(A)(2)(a)	-
14.Exploders	174	165(3)
15.Protective Footwear	191	182
16.Helmet	191-A	182-A
17.Self-Rescuers	191D	-
18.Fire-resistant brattices including plastic sheeting and ventilation ducting	181(3)	-
19.Safety belt	181(3)	-
20.Friction Props & Props setting devices	181(3)	-
21.Hydraulic roof supports	181(3)	-
22.Link Bars	181(3)	-
23.Powered Supports	181(3)	-
24.Fire resistant hydraulic fluid	181(3)	-
25.Man-riding haulage system	181(3)	-
26.Detaching hook	181(3)	-
27.Cage suspension gear including bridle chains	181(3)	-
28.Winding Rope	181(3)	-
29.Balance Rope	181(3)	-

30.Haulage rope for man-riding	181(3)	-

Equipment/Material	Provision of Regulation	
	CMR, 1957	MMR,1961
31.Conveyor belting	181(3)	-
32.Locomotive	181(3)	-
33.Internal combustion engine	181(3)	-
34.Flame proof & intrinsically safe electrical equipment	181(3)	-
35.Cables	181(3)	-
36.Automatic Contrivance	181(3)	-
37.Power Brake	181(3)	-
38.Automatic speed chart recorder	181(3)	-
39.Water ampoules/gel ampoules for stemming explosive charges	181(3)	-

2. List of equipment required to be approved by DGMS under Mines Rescue Rules, 1985

Equipment	Provision of Mines Rescue Rules, 1985
1. Breathing apparatus	Rules 11(5)
2. Smoke helmets & apparatus	Rules 11(5)
3. Reviving apparatus	Rules 11(5)
4. Electric Safety Lamps & Flame Safety Lamps	Rules 11(5)
5. Gas Detectors	Rules 11(5)
6. Self-Rescuers	Rules 11(5)

3. List of equipment and material required to be approved under Oil Mines regulations, 1984.

Equipment/Material	Provision of Regulation
1. Safety belt and life line	27
2. Petroleum storage tanks (specification approval)	55
3. Pipe lines and fittings (specification approval is not as per ISS)	62
4. Electrical lighting apparatus	84
5. Protective footwear	87
6. Protective helmet	88
7. Electrical equipment for use in hazardous area (Zone 1 and 2)	73

APPENDIX-VI

MINISTRY OF LABOUR AND EMPLOYMENT
(DIRECTORATE-GENERAL OF MINES SAFETY)

Notifications – 2014

Dhanbad, the 02nd April, 2014

G.S.R.275(E).- In exercise of the powers conferred on me under Sub-regulation 3 of Regulation 181 of the Coal Mines Regulations, 1957 I, Rahul Guha, Chief Inspector of Mines, also designated as Director General of Mines Safety declare 01.05.2014 as the date from which the following safety items, namely Safety Geoggles, Reusable Earplugs and Visibility (Reflective) Harness will be considered approved by me for use in below ground Coal Mines by this general order in writing if they conform to the respective standards (with amendments, if any) given below:

(i) Safety Goggles-IS5953:1980
(ii) Reusable Earplugs-IS9167:1979 & IS 6229: 1980
(iii) Visibility Harness-BSEN 471: 2003

This is being issued in modification of the notification published in the Gazette of India, Part-II, Section 3 (i) dated 28th July, 2007 (G.S.R.154)

[F.No.S-29022/01/2014-Gen/943]
RAHUL GUHA, Director General of Mine Safety

MINISTRY OF LABOUR AND EMPLOYMENT
(DIRECTORATE-GENERAL OF MINES SAFETY)

Notifications
Dhanbad, the 22nd August, 2014

G.S.R. 636(E)-In exercise of the power conferred on me under Regulations 191 of the Coal Mines Regulations, 1957, 182 of the Metalliferous Mines Regulations, 1961, and 87 of the Oil Mines Regulations, 1984 with respect to use supply and maintenance of Protective footwear and under Regulation 191 A of the Coal Mines Regulations, 1957, 182A of Metalliferous Mines Regulation, 1961, and 88 of the Oil Mines Regulations, 1984 with respect of use and supply of helmet respectively, I Rahul Guha, Chif Inspector of Mines, also designated as Director General of Mines Safety declare 01.09.2014 (First September two thousand and fourteen) as the date from which the Protective footwear Helmet will be considered approved by me for use in Coal, Metalliferous and Oil Mines by this general order in writing, if they conform to the respective relevant standards of BIS (with up-to-date amendments) as contained in the Circulars issued by this Directorate (DGMS) vide reference No. DGMS/MSE/Circular (approval) No.04, dated 14th August, 2014 and DGMS/MSE/Circular (approval) No.03, dated 14th August, 2014 respectively and further, a provided that these footwear and helmets intended for use in mines bear a declaration marked on them by the manufacturer that these are "suitable for use in Mins" besides markings of BIS license with relevant IS number (s).

No specific approval will be required from this Directorate (DGMS) in this regard from 01.09.2014

[F.No.S-29022/03/2014-Genl./2507]
RAHUL GUHA, Director General of Mine Safety

No. DGMS(Tech) Circular (Mamid)/ No.01 Dhanbad, dated-10.03.2014
To,
The Owner, Agent and Manager of all Mines

Subject: Campaign on "Risk Calculator."

Analysis of accidents on both coal & non-coal mines during last three decades shows more or less a static trend. With this in view, "Risk Management" as a tool for development of an appropriate health and safety management system had been discussed in detail during 9th Conference on Safety in Mines and it was recommended to prepare "Safety Management Plan(s)" on the basic of risk assessment. In the 10th Conference on Safety in Mines as well, considerable emphasis was given on development of "Safety management System."

The approach helps in the switch over from "prescriptive Legislation" to "Self-Regulation "in which the risk creator himself decides the best way to control the risk and thereby avoid the occurrence of any untoward incidents.

The risk based approach lays emphasis on prevention rather than post-incidence corrections. In view of this, risk evaluation is an important step for all activities in mines.

In order to understand the "Risk", a handy card has been created which can be used by Managers, Supervisors & work-persons for perception of the "Risk" in any mining operation that they have to undertake. Sample copies of the "Card" are enclosed for wide circulation in mines. The "Card" is also available in DGMS website www.dgmsindia.in or www.dgms.gov.in.

I hope this Card will prove as a milestone/guideline while assessing risk of any operation in a mine.

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

No. DGMS(Tech) Circular (MAMID)/ No.02 Dhanbad, dated-19.03.2014
To,
The Owner, Agent and Manager of all Mines

Subject: Take 5 (personal Risk Assessment)

Take 5 (Personal Risk Assessment) is a simple process to ensure that all work activities are given a final check to identify and control any potential hazards that may have not already been addressed prior to commencement of activities. This process is being used successfully by different industries including mining industry in many countries. Take 5 is to complement the "Risk Assessment" process but does not replace it.

The Take 5 process consists of the following five steps:

1. Stop, step back, observe location for hazards.	Observe the work area and surrounding
2. Think though the task out the	Consider the sequence of steps involved in carrying task from start to finish.
3. Identify any hazards including any area, and	Identify the hazards associated with the task present in the immediate and surrounding work hazards generated by the task.
4. Control the hazards safe-do review the	If the hazard is not controlled and the work area not not start work, report to your superior official to risk assessment.
5. Complete the task implemented-	Once all control measures have been safety commence the task.

A simple, user friendly "Task 5 Card" is attached which can be gainfully utilized from the very beginning to the end of any task, just by making tick (/) mark in "yes" or "NO" column from top. Use of this card by frontline supervisors/work persons before the commencement of any mining activity shall go a long way in accident prevention and control activity in mines.

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

No. DGMS(Tech) Circular (MAMID)/ No.03 Dhanbad, dated-22.04.2014
To,
The Owner, Agent and Manager of all Mines

Subject: Accident due to Dump Failure

In an opencast coal mine, several villagers were fatally injured while picking/collecting remnant coal from the toe of an external overburden dump.

The enquiry into the accident revealed the following:

1. Fencing of substantial construction was not erected around the dump to prevent inadvertent entry into the dump area;
2. The dumping was made in two lifts. Overall height of the dump was about 664m and the width between the lifts was not sufficient;

3. The ground water pressure in the dump increased due to ineffective drainage system both inside and outside the overburden dump;

4. Top soil, dumped at the bottom of the overburden dump, had created an unstable base;

5. The carbonaceous shale and coal, dumped with overburden rock, had caught fire with passage of time. The creation of void due to burning of carbonaceous shale and coal had further disturbed the dump and accentuated the slide.

In order to prevent the recurrence of such type of accident(s) in future, you are requested to inter alia take the following steps:

1. A scientific study is to be made, in case the planned height of the dump is beyond 30m.
The width of any bench in waste dumps shall not be less than its height.

2. In case of existence of any road nearby, dumping shall be done in such a way that the distance between the toe of dump and the road is not less than twice the overall dump height.

3. The top soil and sludge shall not be dumped at the floor to create the base of the dump.

4. For reducing the ground water pressure in the dump rock above phreatic surface, effective drainage system shall be provided both inside and outside the overburden dump. In this regard, the guidelines provided in DGMS Circular (Tech) No. 2 of 2001 in designing pit slope shall be followed.

5. The dump area shall be substantially fenced, in accordance with Regulation 112 of the Coal Mines Regulation, 1957, to prevent inadvertent entry of any persons to the dump.

6. Precautions shall be taken to prevent spontaneous heating and fire in the carbonaceous shale and coal dumped along with overburden rock.

I am sure, that the precautions laid down above shall go a long way in preventing such accidents(s) in future.

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

No. DGMS(Tech) Circular (MAMID)/ No.04 Dhanbad, dated-09.05.2014
To,
The Owner, Agent and Manager of all Mines

Subject: Provision of two independent intake airways for every ventilating district.

In an opencast coal mine, several villagers were fatally injured while picking/collecting remnant coal from the toe of an external overburden dump.

Sub-regulation 3 of Regulation 135 of the Coal Mines Regulation, 1957 stipulates that "In every fiery seam or gassy seam of the second or third degree, for every ventilating district there shall be provided two main intake airways, one of which shall be used as a travelling roadway."

However, during the inspections of underground coal mines by officers of this directorate, it is revealed that two main intake airways in a ventilating district were provided but rarely the airways are maintained independent from each other. The provisions of two independent intake airways shall not only circulate more air in the district but also provides at least one egress in case of any eventuality like fire, major roof-fall etc. in the other. The spirit of law of providing two main intake airways, independent from each other, is also to prevent short circulating and in turn disruption of the ventilation of the district. It shall prevent the accumulation of inflammable/noxious gases to explosive/permissible limits.

The situation of disruption in ventilation system in a district happens due to disturbance in ventilation appliances viz ventilation stopping (s)/other ventilation appliance(s) broken for haulage purpose/passage of machinery etc. or damage of ventilation stopping(s) due to blasting or any other reason whatsoever.

For the reason(s) mentioned above, it is advised that the ventilation stopping(s) or other ventilation appliance (s) shall be made and maintained leak proof. No stopping shall be broken without prior approval of the manager in writing. If any stopping or other ventilation appliance is broken for any purpose, it shall be repaired immediately after the work. Any such afore-mentioned changes, made in the ventilation system, shall be recorded in a bound paged book kept for the purpose and signed by ventilation officer and countersigned by manager of the mine. In this connection guidelines prescribed for "Specifications for Ventilation Stopping" also shall be adhered with.

Further, it is advised that two independent intake airways be provided in all ventilating districts.

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

No. DGMS(Tech) Circular (MAMID)/ No.05 Dhanbad, dated-03.06.2014
To,
The Owner, Agent and Manager
All Underground Coal Mines.

Subject: Fatal accident to four persons due to all of roof.

Sir,

Recently in an underground coal mine, four persons including an assistant manager died due to fall of roof in a goaved out area of a depillaring district.

The enquiry revealed the following:-

1. Diagonal line of extraction was not followed as prescribed in the permission letter issued by the Directorate for depillaring.

2. The prescribed manner of extraction was violated i.e. instead of extracting pillars by level spilt and dip slices, the pillars were extracted by formation of four stooks and then extracting the stooks.

3. Due to the variations, above-mentioned, from the manner of extraction, the work persons including assistant manager were employed in an area which had formed a part of goaf.

4. Goaf edge supports as prescribed in the approved Systematic Support Rules (SSR) under Regulation 108 of the Coal Mines Regulation, 1957 were not provided.

5. No convergence recorders were provided in the depillaring district at suitable points(s) to indicate the impending fall of roof well in advance.

From this incident, it appears that there is misunderstanding of the methodology of depillaring or overconfidence of official(s) employed in the depillaring district. In order to prevent recurrence of the same in future, the following steps need to be taken:-

1. After obtaining permission for depillaring and before commencement of depillaring operation, al supervisory officials and other key personals to be employed in the district shall be appraised with al conditions, stipulated in the permission letter and implication of the conditions.

2. During depillaring operation, an official from Internal Safety Organization (ISO) of the company shall inspect the district at frequent intervals to ensure the compliance of the conditions stipulated in the permission.

3. Special attention is required to be given to ensure

   (i) installation of convergence recorder(s) at suitable place(s) to get indication of impending fall well in advance.

   (ii) erection of skin to skin goaf edge cogs and props to prevent inadvertent entry of person(s)

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

No. DGMS/S&T(Tech) Circular No.06 Dhanbad, dated-10.07.2014
To,
The Owner, Agent and Manager
All Coal Mines.

Subject: Determination of the rate of emission of inflammable gas and its presence in general body of air.

1. A coal seam once classified as Degree I, Degree II or III may be reclassified into higher or lower degree of gassiness depending upon percentage of inflammable gas in the general body of air and /or the rate of emission of such gas in cubic meters epr tone of coal raised. For this purpose, sub-regulation (5) of Reg. 116 of the CMR 1957 requires mine management to examine, once at least in every 30 days , the rate of emission of inflammable gas in cubic metre per tonne of coal raised as also the percentage of inflammable gas in the general body of air.

2. Standard procedure for determination of rate of inflammable gas per tone of coal for the purpose of classification of gassy seams and Gas Survey in first degree gassy seams is given in DGMS (Tech.) Circular No.6 of 1976.

3. A recent Gas Survey conducted by S&T division of DGMS in a degree II coal mine, revealed that that percentage of Methane gas in the general body of air was up to 4.55% and the rate of Methane gas emission was 20.43 m3/ tones of coal produced. The rate of inflammable gas in cubic metre per tone of coal raised was not being examined as laid down in Reg. 1116(5) of CMR 1957. Particular of every such examinations were also not recorded. Further determination of inflammable gas in the general body of air also was not being done by the management at laid down in Reg. 145 of CMR 1957. Particulars of every such determination were also not recorded. Ventilation of the working district was sluggish and inadequate.

4. In view of the above, in the interest of safety of mines and workers engaged therein, it is advised that the rate of emission of inflammable gas in cubic meters per tone of coal raised shall be examined at least once in every 30 days in accordance with the standard procedure given in Appendix I of DGMS (Tech.) Circular NO. 6 of 11976 and determination of percentage of inflammable gas present in the general body of air shall be done as laid down in Reg. 145 of CMR 1957, so that the re-classification if so warranted, of the seam into appropriate degree of gassiness could be done in time and all the precautions required to be taken in respect of a gassy seam of that degree are observed to prevent danger. The result of every such examination shall be recorded in bound-paged book kept for the purpose.

5. It is further advised that borehole gas survey shall also be carried out in first degree gassy seams in accordance with the standard procedure given in Appendix II of DGMS (Tech). Circular No. 6 of the 1976. The results of every such survey shall be recorded in a bound-paged book kept for the purpose.

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

NO. DGMS/MSE/Circular (Approval) No. 01 Dated-02nd April, 2014.

To,
All Owner/Agents/managers of Coal and Metalliferous Mines.

Sub-Approval for use of Reflective harness (visibility harness), reusable Earplugs and Safety Goggles.

Sir,

1.0 Vide notification under reference G.S.R. 154 dated 28.07.2007 published in the Gazette of India, part-II, Sec-03 Visibility harness/Reflective harness, reusable Earplugs and Safety goggles were included in the list of items requiring approval by a general or special order in writing from the Chief Inspector of Mines (CIM), now designated as Director General of Mines Safety, under Regulations 181 (3) of the CMR 1957.

2.0 These items have prescribed standards (amended on date) as per details given below-

I. Reflective Harness-BSE EN 471/2003
II. Safety Goggles-IS 5983 : 1980
III. Reusable Earplugs-IS9167: 1979 & IS 6229:1980

3.0 Approval from this directorate were being granted on case to case basic since then and the mine, managements have been using them for protection of their persons exposed to various hazards. Now it has been felt that the mines have become familiar with their necessity and have gathered sufficient experience is using such protective items.

4.0 Considering the fact that these items will be used more and more in future and the required quality can be ensured and maintained by both the manufacturer(s) and users in mines, if the laid, down standards as referred above are followed strictly the

them. In view of this, it is now decided to issue a general order specifying the standards to be complied with.

5.0 As provided under Regulation 181(3) of the Coal Mines Regulations, 1957 and the earlier published notification published in the Gazette of India, referred at Para 1.0. above the standards for using them in coal mines, as stipulated at Para 2.0 above for respective items shall be considered as approved by the Chief Inspector of Mines by this general order in writing *with effect from 01st May 2014.* It may be noted no specific approval will be required from this Directorate in this regard from that date.

6.0 All Owner/Agents/Managers of Coal Mines using or intending to use these items are m therefore, requested to ensure at the time of procurements of these items that those conform, to the relevant standards referred above, updated or amended at that point of time. A mechanism in this regard shall be developed and established by the mining companies to ensure that such items are of desired quality.

(Rahul Guha)
Director General of Mines Safety.

DGMS(Approval) Circular No.02 of 2014 Dated-06th May, 2014

To,
All Owners/Agent/Managers of Coal Mines

Sub:-General approval for use of Reflective harness (visibility harness), reusable
Earplugs and Safety Googles.

Sir,

Notification No.S-29022/01/2014-Gen/943 dated-02.04.2014, published in the Gazette of India, (extra ordinary) Part-II, Section 3 (i) on 09.04.2014 vide G.S.R. 275 (E) regarding approval of Safety Googles, Reusable Earplugs and Visibility (reflective) harness is reproduced below for taking necessary steps to comply with the requirement of the standard (s) for the these items.

"In exercise of the powers conferred on me under Sub-regulation 3 of Regulation 181 of the Coal Mines Regulation, 1957 I , Rahul Guha Chief Inspector of Mines, also designated as Director General of Mines Safety declare 01.05.21014 as the date from which the following safety items, namely Safety Googles, Reusable Earplugs and Visibility (Reflective) Harness will be considered approval by me for use in below ground Coal Mines by this general order in writing if they conform to the respective standards (with amendments, if any) given below.

(i) Safety Goggles-IS 5983: 1980
(ii) Reusable Earplug-IS 9167: 1979&IS6229:1980
(iii) Visibility Harness-BSEBN 471:2003

This be being issued in modification of notification published in the Gazette of India, Part-II Section 3 (i), dated 28th July, 2007 (G.S.R. 154)"

This circular is issued in continuation to this Directorate's Circular (Approval) No.01 dated 02.04.2014 on the subject for ensuring compliance please.

(Rahul Guha)
Director General of Mines Safety.

NO. DGMS Circular (Approval) No. 03 Dated-14th August, 2014.

To,
All Owner/Agents/managers of Coal and Metalliferous and Oil Mines.

Sub-Helmets requiring DGMS Approval for use in Coal, Metalliferous and Oil Mines-Discontinuance of approval by a special order in writing.

Sir,

1.0 Regulation 191 A of the Coal Mines Regulations, 1957, Regulation 182 A of the Metalliferous Mines Regulation 1961 and Regulation 88 of the Oil Mines Regulations 1984, require that

"No Person shall go into, or work or be allowed to go into, or work in, a mine other than the precincts of a mine occupied by an office, building, canteen, crèche, rest shelter, first aid room or any other building of similar type, unless he wears a helmet of such type as may be approved by the Chief Inspector by a general or special order in writing"

1.1 DGMS has been according approvals under these regulations to manufactures of helmets by special orders on case to case basic for the benefit of the miners. These helmets conform to the standards as specified in IS 2925: 1984 (with amendments done in the years 1988, 1999,2000 & 2002) of the Bureau of Indian Standard. It is required that such helmets approved by DGMS has DGMS making along with BIS marking on them.

2.0 The mine management have been using helmets for protections against head injuries to persons deployed in mine. Now, the mines have become familiar with its necessity and have gathered sufficient experience in using them.

2.1 Considering the fact that helmets will be used in compliance to the statutory requirements in future too and required quality can be ensured and maintained by the manufacturer and users by getting the helmets tested at any Govt. or Govt. approved laboratory whenever standard of testing have changed.

2.2 Further, it has been felt that the process of DGMS approval need to be simplified, transparent and friendly to the mining industry and related manufacturing industries but by ensuring proper quality of the safety item as well. In view of this, it is now decided to issue a general order specifying the standards to be complied with.

3.0 As provided under Regulations, 191 A of the CMR '57' Regulation 182 A of the MMR '61' and Regulation 88 of the CMR '84' Industrial Safety Helmets conforming to the standards as specified in IS 2925: 1984 (with amendments done in the years 1988, 1999,2000 & 2002) of the Bureau of Indian Standard shall be considered as approved by the Chief Inspector of Mines (now designed as Director General of Mines Safety) by this order in writing with effect from 01st September, 2014. It may be

noted that no specific approval will be required from this Directorate in this regard from that date.

4.0 The manufacturer shall ensure that-

4.1 Each helmet is permanently marked with the manufacturer's name/model, year & month of manufacture.

4.2 The helmet is tested at any Govt. or Govt. approved laboratory whenever standard of testing get amended or changed. The helmet shall also bear marking of BIS license with relevant IS number along with a declaration stating that it is "suitable for use in mines"

5.0 However, the helmets, if having valid approval given to any manufacturer in the past by a special order by this Directorate, may continue to be procured for use in mines upto its respective last date of validity, but not so-as-to debar any other manufacturer (s) complying to the above mentioned standard approved by this general order.

6.0 All Owner/Agents/managers of Coal, Metalliferous and Oil Mines providing, using or intending to provide or use such helmets in their mines are therefore, requested to ensure at the time of procurement of the helmets that it conforms to the prescribed standards of BIS, updated or amended at that point of time, to maintain the desired qualities. A mechanism in this regard shall be developed and established by the mining companies/mine operators/user in close liaison with the manufacturer of the helmets and approved test houses for safety of the persons deployed in the mines.

(Rahul Guha)
Director-General of Mines Safety.

NO. DGMS Circular (Approval) No. 04 Dated-14th August, 2014.

To,
All Owner/Agents/managers of Coal and Metalliferous and Oil Mines.

Sub-Footwear requiring DGMS Approval for use in Coal, Metalliferous and Oil Mines-Discontinuance of approval by a special order in writing.

Sir,

1.0. Regulation 191 A of the Coal Mines Regulations, 1957, Regulation 182 A of the Metalliferous Mines Regulation 1961 and Regulation 87 of the Oil Mines Regulations 1984, require that

"No Person shall go into, or work or be allowed to go into, or work in, a mine unless he wears a protective footwear of such type as may be approved by the Chief Inspector by a general or special order in writing"

1.1 There are different varieties of protective footwears suited for different working sites in the mines. DGMS has been according approval under these Regulations to the manufactures of these shoes by special orders since long for eh benefit of the miners. There are various standards framed by BIS to suit Indian mining conditions. It is required that such protective DGMS approved footwear has DGMS marking along with BIS marking on it.

2.0 TERMINOLOGY-(As per IS: 2050)

2.1. Safety footwear for professional use-footwear incorporating protective features to protect the wearer from injuries which could arise through accidents in the working sectors for which the footwear was designed to give protection against impact when tested at an energy level of 200 J and compression at a load of at least 15 KN.

2.2. Protective footwear for professional use-footwear incorporating protective features to protect the wearer from injuries which could arise through accidents in the working sectors for which the footwear was designed to give protection against impact when tested at an energy level of 100 j & Compression at a load of at least 10KN.

2.3. Safety Toe cap- Footwear component bui8lt into the footwear designed to protect the toes of the wearer from impacts up to an energy level of at least 200 J and compression at a load of least 15 KN.

2.4. Protective toe cap-Footwear component built into the footwear designed to protect the toes of the wearer from impacts up to an energy level of at lest 100 J & compression at a load of at least 10 KN.

2.4.1. IS: 5852 of 1992 prescribes specification for protective steel toe cap for footwear. Caps made of tempered steel to the required shape of the last and used at the toe of the safety footwear. It may be placed either between the upper and the lining or may be attached externally over the upper of footwear by means of inward flanges. It forms an in-built integral part of the safety footwear and is intended to protect the toe of the user.

2.4.2. Alternatively, in place of steel toe cap, non metal fibre reinforce light weight protective toe cap may also be used in future manufacturing with the concurrence with the authorities operating the mines but in case the prescribed impact energy level and compression level described above shall have to be complied with. Such type of non metallic toe cap will reduce fatigue to the miners by walking or work due to its less weight and it will in turn improve productivity.

2.5. SCOPE of Application- (Types of Boots)-

2.5.1. Type-1 Boots are preferred for use where minimal water accumulation or in slurry condition of mining.

(NOTE: Boots are preferred for use where minimal water accumulation or in slurry condition of mining.)

Type-2 Boots are preferred for use in dry condition of mining.

2.5.2. Special (Varieties of Shoes)-

i) Fire Resistivity
ii) Electrical Resistivity
iii) Anti Skid (Slip)
iv) Oil Resistant for oil mines of work places where oil & grease come in contact

3.0 The protective shoes used in mines are required to conform to IS: 15298 (Part-1): 2002 (revised 2011)/ISO 8752: 1998. This is the mother standards under which all safety footwears are required to the manufactured and tested. It contains various parameters for testing. For the purpose of use in the mines chief parameters are given at Annexure-I which must be selected besides others required under the relevant standards of BIS during testing in Govt. or Govt. approved test houses.

4.0 In mines the following varieties/types of shoes have been in use-

4.1 **Canvas footwear** (Textile top)- This type of shoes is being widely used in coal mines both in underground and opencast for both men and women. Such types of shoes are required to conform to IS: 3976 of 2003. There is no specific standard for women miners.

4.2 **Leather footwear**-Such type of shoes are used in dry condition only. It has two varieties-Leather sole and Rubber sole. These two varieties are required to conform to IS: 1989 9Part-I) of 1978. At present these type of shoes are not normally is used in the mines.

This type of footwear has another variety for women workers in mines. Such leather safety footwear is required to conform to IS : 11225 of 1985.

Leather Safety Shoes are also convered under IS: 11226 of 19993 for use in general industrial area. There is no mention in this standard that it is applicable to mines or not. Therefore such type may also be selected for use in mines. Under this category, following types of shoes are manufactured-

Type 1 : Ankle Boots
Type 2 : Jodhpuri Shoes
Type 3 : Derby Shoes

For above type of shoes approval have been accorded by the Directorate for use in certain type of mines as per the need of the mine operators and as required by the manufacturer.

4.3 **Polymer footwear** (PVC/Rubber)-For such type of shoes there are following three standards-

i. IS: 5557 of 2004-Rubber knee boots for Type 1 & 2 are required to conform to this standard. These types 1 & 2 are designed with respect to height of the shoes (but not to be categorised for use in wet and dry conditions). This covers oil resistant variety properties for sue in oily areas.

ii IS: 12254 of 1993_PVC knee boot/Gum boots are required to conform to this standard.

iii IS: 9885 of 1982- Rubber ankle or knee boots required for use in oil mines shall conform to this standard.

5.0 **Maintenance of Footwear**-IS: 6519 of 1971 prescribes code of practice for selection, care and repair of safety/protective footwear. Normally the working life of the shoes is designed to be not less than 9 months but the shelf life of safety boots depends upon the arrangement of inside environmental conditions.

of the store of the mine (s). The internal environment of the store house must not be humid and beyond normal room temperature (≤26◦ C). Leather Safety Boot having Polyurethane sole is having shelf life of lesser period and suffers subsequent hydrolysis, and subsequent degradation. The manufacturer of such footwear should declare the same to the users about it so that these could be used before its period of expiry of shelf life.

Canvas Safety Boots are also having polyurethane sole and in such cases the above guide lines should be followed.

Footwear other than Polyurethane sole has normal shelf life provi9ded the same is not exposed to direct sunlight, rain etc. Rubber Components are subjected to ageing and as such the shelf life in no case is exceeding a year in NTP and in cool dry place.

5.0 The manufacturers shall see that-

6.1. Each boot is permanently marked with manufacturer's name /model, year & month of manufacture, safety or protective boot, any other statutory marking to be made inside of tongue or at top outer face of the boot so that lease damage during mining operation occurs.

6.2. The footwear has been tested at any Govt. or Govt approved laboratory whenever standard of testing have change. **The footwear shall bear marking of BIS license with relevant IS number along with declaration stating that it is "suitable for use in mines".**

6.3. Each pair of boot is supplied with information in English and Hindi as follows:

(i) This footwear is not a GREEN footwear and is not BIO-DEGRADABLE.

(ii) This footwear is recommended/not recommended for use in fire prone or in hot surface area

(delete whichever is not applicable).

(iii) Name and full address of manufacturer

(iv) Detail of customer care service provider

(v) Instruction for storage and maintenance

(vi) Drying procedure of wet Boots and cleaning of boots for proper service.

(vii) Obsolescence dead line or period of obsolescence.

7.0 Approval from this directorate are being granted on case to case basis being specific to the manufacturers and the type (s) of footwear they manufacture. The mine managements have been using them for protection of their persons in mines. Now it has been felt that the mine have become familiar with its necessity and have gathered sufficient experience in using such personal protective items.

7.1. Considering the fact, it will be used complying to the statutory requirements in future and the required quality can be ensured and maintained by both the manufacturer (s) and mine users, if the laid down standards as referred above are adhered to strictly by them by getting the footwear tested in Govt. or Govt. approved laboratories.

7.2. Further, it has been felt that the process of approval need to the more simplified, transparent and friendly to the mine industry but by ensuring proper quality as well. In view of this, it is now decided to issue a general order specifying the standards to bee complied with.

8.0 As provided under Regulation 191 of the Coal Mines Regulations, 1957, Regulation 182 of the Metalliferous Mines Regulation 1961 and Regulation 87 of the Oil Mines Regulation, 1984 protective footwear shall be considered as approved by the chief Inspector of Mines (now designated as Director General of Mines Safety) by this general order in writing *with effect from 01st September 2014. It may be noted that no specific approval will be required from this Directorate in this regard from that date.*

8.1. However, the footwear, if having valid approval given to any manufacturer in the past by a special order by this Directorate, may continue to be procured for use in mines up to its respective last date of validity, but not so-as-to debar any other manufacturer (s) complying to the above mentioned standards approved by this general order.

9.0. All Owners/Agents/Managers of Coal, Metalliferous or Oil Mines providing or using or intending to provide, or use such protective/safety footwear in their mines are, therefore, requested to ensure at the time of its procurement that the footwear conform to the relevant standards referred above, updated or amended at that point of time, to maintain the desired qualities. A mechanism in this regard shall be developed and established by the mining companies/mine operators to procure, provide, maintain storage of footwear, etc. in order to ensure safety of persons deployed in mines in compliance to the statutory requirements.

(Rahul Guha)
Director General of Mines Safety.

(Annexure to DGMS Circular (Approval) No.04 Dhanbad, Dated 14th August, 2014)

Chief Parameters for Performance Test of footwear for use in mines
(Complying to IS: 15298 (Part-I): 2011/ISO 20344 of 2004)

SL No.	Minimum parameters for Performance Testing in Govt. or Govt. approved labs.	For use in Dry condition	For use in Wet Condition	Remarks
1.	Impact Resistance			
2.	Compression Resistance			
3.	Minimum Inner Length of Toe cap			
4.	Electrical Resistance			
5.	Flexing Resistant of Sole			
6.	Flex Resistant of upper body of shoe			
7.	Corrosion Resistant of metal toe caps or metal penetrating resistant inserts			Only leather footwear
8.	Upper/outsole and sole interlayer bond strength			
9.	Leak Proff footwear			
10.	Tear strength of upper material			
11.	Tear strength of sole material			
12.	Abrasion of outsole			
13.	Abrasion of insole			
14.	Resistant to hot contact			
15.	Electrical Resistant			For use during electrical jobs
16.	Resistance to fuel oil			For use in

				oil/grease working conditions
	-Test is required -Test not required			

NO. DGMS Circular (Approval) No.05 Dhanbad, Dated-28th August, 2014

To,
- All Owner/Agents/Managers of Coal Mines.
- All Manufactures of Permitted Explosive and Detonators
- All Scientific and other Institutions related to Testing of Permitted /Explosive and Detonators

Sub-RECOMMENDATIONS ON THE TESTING STANDARDS AND PASSING CRITERIA OF PERMITTED EXPLOSIVES AND DETONATIORS FOR USE IN UNDERGROUND COAL MINES

1.0. Approvals of permitted Explosive and Detonators, both Instantaneous and Delay types, are being accorded by the Directorate (DGMS) under Regulation 2 m(23) of the Coal Mines Regulation, 1957 based on test reports conducted under relevant standards of the BIS by a scientific institution and subsequent satisfactory performance reports from the mines to have used them.

2.0. Various Testing parameters and arrangements of such testing in a laboratory have been prescribed in IS 6609 (Part 2/Sec2): 1974, IS 6609 (Part III): 1973 and IS 7632: 1975. At many occasions BIS is silent on the passing criteria of such explosives and detonators. These standards have been reviewed from time to time by the BIS and also by DGMS after due consultations with the technical experts and stake holders in this field. Some guidelines on passing criteria were circulated by DGMS in the year 1994 and 2003 for implementation.

3.0. With the developments in the manufacturing process and ingredients of the explosives, detonators and advanced testing methodologies adopted, world wide it was felt necessary to review the complete parameters of the testing and passing criteria. With this view, an workshop was organized b the Directorate on 15.01.2014 at Nagpur in which many stakeholders, scientific and academic institutions had participated.

4.0. After detailed deliberations on the issue recommendations on the testing standards and passing criteria of permitted explosive and detonators for use in underground coal mines were framed which is given at Annexure-I

5.0. Henceforth, all the manufactures of the permitted explosive and detonators and test houses related with it shall ensure that the recommendations placed at Annexure-I of this Circular is strictly complied with. All the users of the permitted explosives and detonators shall also see and ensure through an established mechanism that such products have complied with the relevant standards together with these recommendations before putting them into use in underground coal mines.

Sd/.
(Rahul Guha)
Director General of Mines Safety

Encl.-Annexure-I

NO. DGMS Circular (Approval) No.05 Dhanbad, Dated-28th August, 2014
HO/MSE/Gen-2014/2627-28 Dated 01.09.2014

Copy for kind information and necessary action to-

1. Chief Controller of Explosive, PESO, A-block, 5th Floor, CGO Complex Seminary Hills, Nagpur-440 006

2. Dy. Director General of BIS, bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi-11002

(Rahul Guha)
Director General of Mines Safety

Encl.-Annexure-I

Annexure to DGMS Circular (Approval) No. Dhanbad, Dated August, 2014)

SUBJECT- TEST STANDARDS AND PASSING CRITERIA OF PERMITTED EXPLOSIVES AND DETONATORS FOR USE IN UNDERGROUND COAL MINES BASED ON RECOMMENDATIONS OF WORKSHOP HELD ON 15.01.2014 AT NAGPUR, ORGANISED BY DGMS.

A. EXPLOSIVE.

i) Incendivity Test: This test being done as per IS 6609 (part-2)/Sec 2 : 1974. But from now, all new compositions of explosives shall be tested under the specified conditions mentioned in the IS for incendivity with 32 mm diameter cartridges instead of 37 mm diameter cartridges.

Existing explosives shall also be subjected to incendivity test with 32 mm diameter cartridge before renewal in the next three years time. Passing criteria for 32mm dia cartridges shall be same as that of earlier for 37mm dia cartridges.

Inflammable gas containing 9 ± 0.25% in pure Methane-air mixture or 8 ± 0.25% of methane in Natural Gas as specified in IS 6609 9Part-II/Sec 2)-1974 shall be used in conducting Incendivity test. However, in case of non availability of Natural Gas having average % composition of Duliajan (Assam), as specified in the said IS, commercial CNG having such equivalent compositions may also be used for this purpose.

Use of strong wooden platform for series-3 of Incendivity test in coal dust atmosphere for P1 explosive should be discontinued. Coal dust cloud for series-3 of Incendivity test in coal dust atmosphere for testing P1 explosives should also be formed as specified for P3 and P5 explosive in IS 6609 (part-II/Sec2)

ii) **Cap Sensitivity:** There is no Indian standard for this test. Tests are being performed by picking up 10 nos. of explosive cartridges in random and firing them individually in open with No.6 strength detonator. No cartridge should fire. The existing practice shall be continued.

Moreover, an explosive shall be considered as non-cap sensitive if the cartridge primed with No.6 strength detonator fails to detonate in tests for AGS, VOD, COD, incendivity, etc.

CIMFR will provide details of test criteria so that an BIS scheme could be formulated.

iii) **Air Gap Sensitivity:** Though there is specified standard IS 6609 (part-II) Sec 1: 1973 full cartridge (32mm dia) test, with 2 cm Air Gap Sensitivity consecutive five trials shall be continued.

However, Failure data regarding this parameter should be generated from the field jointly by the users and manufacturers and made available to CIMFR for further study.

iv) **Continuity of Detonation:** The existing method of testing and passing standard as per IS 6609 9Part-2)/ Sec: 1974 shall be continued. South African (SABS 1484) and UK TM-2 also specifies the same. Firing on plane ground will also be accepted if firing on steel rail or bar is not done due to some practical difficulties.

v) **Post Detonation fumes:** There is no Indian Standard for this test. The existing methods of testing and passing criteria shall be continued which is given below-

(A) Test Methods-

(i) 50 gm of explosives in 32mm dia cartridge (including its wrapper) will be fired inversely using a No.6 copper electric detonator in the canon, without stemming.

(ii) Canon will be placed horizontally on the floor of the existing fume chamber of 6 cu.m. capacity.

(iii) Canon dimensions will be as under:

Length	-	750mm
Diameter	-	300mm
Bore length	-	450mm
Bore diameter	-	40mm

(iv) Average results for two tests will be taken. The test will be conducted under existing humidity condition. Relative humidity and temperature inside in gallery will be recorded.

(v) Sampling will be done after five minutes of circulation of air after firing.

(B) Field Methods-

(i) Representatives of CMPDIL & CIMFR will be associated during field trials of permitted explosives with a view to obtain more data for establishing the correlation between the laboratory studies and field performance.

(c) **Acceptance Criteria:** The average values of oxides of Nitrogeon should not exceed 20 I/Kg at STP; Carbon Monxide should not exceed 40 I/Kg at STP both together should not exceed 50 I/Kg at STP

(STP means 25º C and 760 mm of pressure)

(vi) **Deflagration:** There is no Indian Standards for this test, Earlier Audibert Delmas method was followed. Now modified Long Cannon method with 10gm Gun Power and 3mm aperture without mixing coal dust shall be done for 30 trails with no deflagration allowed.

(vii) **Velocity of Detonation:** IS 6609 (Part-2)/Sec 1 of 1973 specifies Dautriche Method and Micro Timer methods. As this method was considered crude and obsolete, VOD tests by Continuous VOD meters shall also be acceptable. However, a tolerance limit of ± 400 m/sec from the average value specified by the manufacturer may be allowed in the passing criteria.

(viii) **Shelf Life:** The existing practice of accepting a minimum Shelf life of 6 months shall be continued. A punching mark on each cartridge with lable "Use before _____ (data) "shall be fixed.

(ix) Handling Safety:

(a) Impact Sensitivity Test and Friction Impact Sensitivity Test: With discontinuance of NG based explosive in India, Fall Hammer Test has per IS 6609 9Part 2): 1973 does not appear necessary with Slurry and Emulsion Explosives.

(x) **Water Proofness Test:** The method prescribed in IS 6609 (Part-2) Sec.1:1973 is silent about soaking time. Thus, for Sluury and emulsion Explosives such test shall be adopted with Soaking Time of 6 hrs for the test by pricking the cartridge in helical fashion.

(xi) **Strength/Power Test:** The method has been prescribed in the IS 6609 (Part-2)/Sec 1: 1973 by either Ballistic Mortar method or Trauzl lead Block Method. Lead Block method is not practiced as Lead Block which is a costlier metal, gets destroyed in every set of

tests. Therefore, the required strength/power of the explosive should be decided by the user 9s) in the consolation with manufacturer(s).

(xii) **Density:** There is no IS prescribed. The density of explosive submitted for testing shall lie with ± 0.05 gm/cc as specified by the manufacturers.

(xiii) **Composition/Ingredients:** As the explosive ingredients are not declared by the manufacturers, neither these are declared to the PESO, the permissible tolerance limit as decided in the workshop in DGMS on 7th /8th Feb, 1994 shall continue. This given below for ready reference-

% of ingredients in Explosive Composition	Tolerance Limit		% of ingredients in Explosive Composition	Tolerance Limit
> 55-100	±3.0		> 20-30	±2.0
> 50-55	±2.8		> 10-20	±1.7
> 40-50	±2.5		> 5-10	±1.0
> 30-40	±2.3		Up to 5	±0.5

(xiv) **Packing Material** (Lay flats type/Blow Moulded Plastic): There is no Indian Standard for such materials. In line with SABS 1484/2002, the explosive many be packed in rigid or semi-rigid cartridges consisting of paper, rigid card board or plastic. Cartridges shall be such that no leakage of the explosive ingredients occur under normal conditions of transportation, handling and storage. User should discard any lot of explosives if any leakage is observed.

Mr. K. K. Paul, Director, BIS agreed to share specifications of cartridge paper as per IS. This may be collected for incorporation in the criteria of acceptance.

(xv) **Clipping Material** (Cu wire/steel wire/al wire): As Aluminium material is not permitted in gassy atmosphere, Aluminium clipping material, even if the cartridges with Al clipping meets all criteria of passing, it should not be permitted. The cartridges with such clippings already permitted from the directorate may be continued upto its present period of validity in degree I gassy mines only, beyond which Al-clipping material should not be used.

In line with South Afircan Standards SABS 1484/ May 2002,the clipping material should not have mass of more than 1.2 gm/clip.

(xvi) **Periodicity of Testing:** A repeat test of explosive for at least chief properties (Incendivity, Cap sensitivity, AGS, COD, VOD post detonation fumes, Deflagration, water Proofness, Density test) shall be conducted after every 5 years. Besides this, all other criteria deciding re-checking of approved permitted explosive samples shall be done as suggested in circulation of BIS-CHD 26/27.07.2011, which is given below-

- As and when required by DGMS
- Change in ingredients/Tolerance/Source of procurement from indigenous to foreign or vice versa.
- Change of company or ownership/factory location.
- Change in manufacturing machines/set-up.
- Change in wrapping/clipping materials/specifications.
- Explosive which are not brought into use within two years from the date of approval or which has ceased to be supplied for use in coal mines for last two years.

B. Instantaneous Detonators.

i) **Incendivity Test in Gassy Atmosphere:** IS 6609 9Part-3): 1973 and IS 7632: 1975 are available for guidelines for this test. The existing criteria i.e. not more than 14 ignitions out of 200 trials as per CI. 5.9.9 of IS 7632: 1975 shall be continued. This criteria, though applicable for delay detonators shall be adopted for Instantaneous detonators also.

ii) **Incendivity Test in Coal Dust Atmosphere:** As there is no IS prescribed for this test in coal dust atmosphere, the existing criteria adopted in CIMFR's test procedure, i.e. no ignition out of 50 trials in coal dust atmosphere in laboratory set up simulated to mining condition shall be continued. This method has been suggested to BIS in the past for inclusion in IS 6609 Part III.

iii) **Drop Test: Though there are IS 6609 (part-3) :** 1973 and IS 7632 : 1975 for this tests it was decided to adopt the European Standard (EN 13763-11) with respect to free fall height in next three years time. Free fall drip test and guided drop test, both drops from a height of 5 m (in place of present drop height of 2m). None of the test pieces should detonate during test. Till then drop test as specified in IS 6609 9Part-III) shall continued.

iv) **Snatch Test** (Mechanical strength of Lead wire): The existing criteria as per IS 6609 (Part-3) : 1973 shall be continued in which 25 detonators are required to be randomly checked and there should be no detonation.

v) Vibration Test: There is IS 6609 (Part-III): 1973 prescribed for this test. 40 detonators are randomly checked and no detonation should be there. That under this standard shall continue.

After vibration test, detonators shall be checked for series firing characteristics instead of firing them on lead plate.

For record, it may be noted that the European Standard, (EN 13763-8) prescribing methods of vibration test is applicable to Plain Detonators only.

vi) **Electrical Resistance Test**: The existing criteria (as per IS 6609 Part-3.1973 and IS 7632: 1975) shall be continued which require testing of 25 detonators. ± 10% of nominal value stated by the manufacturer of ± 0.5 ohm, whichever is less, will, be considered for passing. Ohm meter in IS 6609 (Part 3) may b replaced by "ohm meter or suitable instrument" like SAFETY OHM METER/Multimeter for measurement of resistance with greater safety. BIS also accepts use of Multimeter. The words, "with an accuracy of 0.1 ohm was accepted to be modified as "with a minimum accuracy of 0.1 ohm".

vii) **No Fire Current Test:** The existing criteria 9IS 6609/Part-3 1973 and IS 7632: 1975) shall be continued. As per existing practice, no detonator should detonate in this test when 180m A current is supplied for 300 seconds.

However within the next 3 years European Standards, EN 13763-1 shall be adopted in its place for such test. As per this standards, the detonator should conform to as per class claimed by manufacturer. It shall be carried out by PBBS method (a Probit Statistical analysis Method). Apparatus should provide square pulse current with the following characteristics:

(a) Stabilized current with tolerance of output of ± 1% of the specified value.
(b) A square pulse with a tolerance of ±1% of specified duration.
(c) A current overshoot of < 10% and duration < 1 ms.
(d) A rise time temperature < 1 ms.

viii) **Minimum Series Firing Current:** It was agreed to adopt the criteria of testing with 10 trails with 20 detonators in each. Method will remain same as per is 6609/Part-3: 1973 and IS7632-1975. As per existing practice, all 20 detonators connected in series should detonate unfailingly when a current of 1.2A is passed for 4ms in each of ten trials.

ix) Strength Test:

(a) By Sand Bomb Method: As Ennore Sand contains traces of Rare Earth Elements, therefore due to government restrictions it is not possible to get it even for testing purpose. CIMFIR was requested to get sufficient date for the Test with Barakar Sand and comparative study will be done to arrive at acceptable criteria of Passing. M/s. Tamil Naddu Explosives will extend help in this study.

(b) By Lead Plate Method: Due to pollution from the use of the Lead, Aluminium plate should be used in place of Lead. The representatives of IEL will provide inputs regarding European Standards with Aluminium plate. The strength will be upgraded from minimum C-3 to B-3 class.

x) Water Resistance Test: The existing criteria with minimum strength of B-3 class adopting IS 6609/part-3: 1973 and IS 7632-1975 shall be continued.

C. Dealy Detonators

i) **Incendivity Test for gassy atmosphere**: The existing criteria shall be continued.

ii) Other testing and passing criteria will remain same as discussed for instantaneous detonators, above.

iii) Delay Timing Test: IS 6609 (Part-3): 1973 and IS 7632: 1975 are available for such test. The criteria of allowing over lapping of not more than 5 % may be adopted for the time being. It was as per British Standard. But in next three years time, the requirements, prescribed in EN 13763-16 for delay time testing should adopted.

iv) Periodicity of Testing: A repeat test of permitted detonators (instantaneous and delay) for at least chief properties 9Incendivity test in gassy and coal dust atmosphere, drop test snatch test, vibration test, electrical resistance test, no fire current test, minimum series firing current test, strength test, water resistance test) shall be conducted after every five years. Moreover, permitted delay detonators shall be checked also for their delay timing test as per IS 6609 (part-3):1973 and IS 7632: 1975.

Besides this, testing for re-checking of approved permitted instantaneous and delay detonators shall be done as below.

- As and when required by DGMS
- Change in shell material/shell length/shell coating/source of supply of shells etc.
- Change in weights/ingredients/tolerance etc. of chemicals used in making fuse head, base charge, primer charge, plug etc.

-Change in design/drawing of the detonators.

- Change of company or ownership/factory location

- Change in manufacturing machines/set-up.

- Detonators which are not bought into use within two years from the date of approval or which has ceased to be supplied for use in coal mines for last two years.

D. OTHER MATTERS

i) Development of Electronic Detonators should be taken up by the Explosives manufacturers in order to meet the requirement of safety blasting in Blasting Gallery method. It is expected that M/s. gulf Oil and other manufacturers will taken a lead role.

ii) Underground storage of Explosive-CIMFIR has submitted their view which is given below-

a) Location & Minimum Travel Distance-

It should be sited at least one level and one rise away in property in ventilated place from the panel entry or raveling roadways It should also meet the safety distance requirement specified by PESO.

b) Degree of Gassiness of Mine: Initially it may be considered only for degree- I gassy mines.

c) Maximum permissible quantity: Initially, the it may be permitted for one shift requirement which may be increased to two shifts requirements in future.

d) Responsibility: - Assistant Manager or Under Manager in-charge of the panel of above rank as authorized by Agent/manager of the mine.

This requirement of Underground storage of explosive has become prominent with approval of a method for higher pull and introduction of mechanized drilling in underground B&P panels.

The above recommendation will be considered for further action by DGMS

iii) Minimum Test Facilities to be kept and maintained at Manufacturer's Testing Lab-

All manufactures will submit their views along with their existing testing facilities in next two months time which will be then be examined by a committee formed by DGMS.

iv) Relevance of P-2 & P-4 type of explosive-renumbering for three types instead of existing 5 types (P 1 to P 5)- This matter was discussed. It was observed that P-2 and P-4 are not manufactured and used in Indian Mines. All stake holders will submit their views to DGMS in next two months time.

v) Classification of Explosives-CIMFIR has observed that IS 6609 Part-II/Sec 2 classifies permitted explosives as Type P (o), P (eqs), P®, and P(s).

DGMS accords approval mentioning P1, P3 and P5 respectively which is in line with UK TM-2. CIMFIR has suggested to accept the classification of IS and its equivalent is given as below-

As per IS-Permitted Type Explosive	Equivalent Permitted Class
P(o)	**P1**
P(eqs)	**P3**
P(r)	**P4**
P(s)	**P5**

The Classification was accepted.

(Rahul Guha)
Director General of Mines Safety.

NO. DGMS Circular (Approval) No.06 Dhanbad, Dated-17th November, 2014

To,
- All Owner/Agents/Managers of Coal Mines.
- All Manufactures of Permitted Explosive and Detonators
- All Scientific and other Institutions related to Testing of Permitted /Explosive and Detonators

Sub-Test standard and passing criteria of permitted explosives and detonators for use in underground mines.

1.0 Approvals of permitted Explosive and Detonators, both Instantaneous and Delay types, are being accorded by the Directorate (DGMS) under Regulation 2 (23) of the Coal Mines Regulation, 1957 based on test reports conducted under relevant standards of the BIS by a scientific institution and subsequent satisfactory performance reports from the mines on their use.

2.0 Various Testing parameters and arrangements of such testing in a laboratory have been prescribed in IS 6609 (Part 2/Sec2): 1974, IS 6609 (Part III): 1973 and IS 7632: 1975. These standards have been reviewed from time to time by the BIS and also by DGMS in due consultations with the technical experts and stake holders. Some additional guidelines on passing criteria were circulated by DGMS in the year 1994 and 2003 for implementation.

3.0 With the developments in the manufacturing process and ingredients of the explosives, detonators and advanced testing methodologies adopted, globally, it was felt necessary to review the parameters of the testing and passing criteria.

Keeping in view the above, a workshop was organized by DGMS on 15th January 2014 at Nagpur in which various stakeholders and experts from scientific and academic institutions had participated.

4.0 After detailed discussions and deliberations on the various aspects of test standards and passing criteria of permitted explosives and detonators for use in underground coal mines, a set of guidelines were framed which is given at Annexure-I.

5.0 All manufactures of the permitted explosives and detonators and concerned test houses are advised to comply with the guidelines contained in Annexure-I.

All user (s) of the permitted explosives and detonators may ensure through a mechanism established for the purpose that such products have complied with the relevant standards and guidelines before putting them into use in underground coal mines.

This supersedes DGMS circular (Approval) No.5 dated 28th August, 2014

(Rahul Guha)
Director General of Mines Safety

Encl.-Annexure-I

Annexure to DGMS Circular (Approval) No. 06 Dhanbad, Dated 17th November, 2014)

SUBJECT- TEST STANDARDS AND PASSING CRITERIA OF PERMITTED EXPLOSIVES AND DETONATORS FOR USE IN UNDERGROUND COAL MINES BASED ON RECOMMENDATIONS OF WORKSHOP HELD ON 15th JANURY 2014 AT NAGPUR, ORGANISED BY DGMS.

Abbreviations-DGMS Directorate General of Mines Safety; BIS: Bureau of Indian Standards, S&T Science & technology; CIMFR; Central Institute of Mining and Fuel Research; AGS: Air Gap Sensitivity; VOD: Velocity of Detonation; COD: Continuity of Detonation; Standard Temperature and Pressure.

A. EXPLOSIVE.

i) Incendivity Test: The test shall be conducted as per BIS: 6609 (Part-II/Sec 2)-1974.

(a) 32 mm cartridges are generally used in underground mines. An S&T project of CIFIR inferred that the behavior 32m and 37 mm diameter cartridges were similar. Hence, all new compositions of explosives shall be tested under the specified conditions mentioned in the aforesaid IS for incendivity with 32 mm diameter cartridges instead of 37 mm diameter cartridges. All renewal cases shall also be subjected to incendivity test with 32 mm diameter cartridges.

(b) Inflammable gas containing 9± 0.25% 0.25% of methane in pure methane air mixture or 8 ± 0.25% of methane in natural gas-air mixture has been specified in the IS: 6609 9Part-II/Sec-2)-1974 for conducting incendivity test. In case of non availability of natural gas having average composition of Duliajan, (Assam), as specified, commercial CNG having such equivalent compositions may also be used for this purpose.

(c) Use of strong wooden platform for Series-3 of incendivity test in coal dust atmosphere for P1 explosives, which gets destroyed in every test, may be discontinued. The test may be conducted as per procedure specified for P3 and P5 explosive in IS: 6609 (part-II/Sec-2)-1974

ii) **Cap Sensitivity:** Bureau of Indian Standards has not specified any standards for assessing cap sensitivity.

Cap Sensitivity shall be tested by picking up 10 nos. of explosives cartridges in random and firing them individually in open with No.6 strength detonators. No cartridge should misfire.

Also, an explosive shall be considered as non-cap sensitive if the cartridge primed with No.6 strength detonators fails to detonate in tests for AGS, VOD, COD, incendivity, etc.

iii) **Air Gap Sensitivity:** IS: 6609 (Part-II/Sec 1)-1973 prescribes tests on cartridges cut into two parts.

iv) **Continuity of Detonation:** The test shall be conducted per IS: 6609 (Part-II/Sec Sec2)-1974

Firing on plane ground will also be accepted along with firing on steel rail or bar.

v) **Post Detonation Fumes:** Bureau of Indian Standards has not specified any criteria for assessment in this regard.

The testing and passing criteria shall as follows.

Test Method

(a) 50 gm of explosive in 32 mm dia cartridge (including its wrapper) will be fired inversely using a No. 6 copper electric detonator in the canon, without stemming.

(b) Canon will be placed horizontally on the floor of the fume chamber of 6 cu.m. capacity.

(c) Canon dimensions will be as under:

Length	-	750mm
Diameter	-	300mm
Bore length	-	450mm
Bore diameter	-	40mm

(d) Average results for two tests will be taken. The tests will be conducted under prevailing humidity condition. Relative humidity and temperature inside in gallery will be recorded.

(e) Sampling will be done after ten minutes of circulation of air after firing.

Acceptance Criteria

The average values of:

(a) Oxides of nitrogen should not exceed 20 1/Kg at STP;

(b) Carbon monoxide should not exceed 40 /1Kg at STP;

(c) Both together should not exceed 50 1/Kg at STP.

(STP means 25º and 760 mm of pressure)

vi) **Deflagration:** Bureau of Indian Standards has not specified any criteria for assessing deflagration characteristics.

It shall be tested by modified Long Canon Method with 10 gm gun power and 3 mm aperture without mixing coal dust with explosive for 30 trials with no deflagration allowed.

vii) **Velocity of Detonation:** the test conducted as per IS:6609 (Part-II/Sec 1)-1973.

IS: 6609 (Part-II/Sec 1)-1973 specified Dautriche Method and Micro Timer Method. VOD tests by Continuous VOD meters shall also be acceptable. However, a tolerance limit of ± 400 m/sec from the average value specified by the manufacturer may be allowed in the passing criteria.

viii) **Shelf Life:** A minimum shelf life of 6 months shall be accepted. A punching mark on each cartridge with label "Use before_____ (date)" shall be fixed.

ix) **Handling Safety:** Impact Sensitivity Test and Friction Impact Sensitivity Test: As specified in IS: 6609 (part-II)-1973, may not be necessary with slurry and emulsion explosives.

x) **Water Proofness Test:** The criteria for assessing soaking time has not been prescribed in IS: 6609 (Part-II/Sec-1)-1973

For Slurry and Emulsion Explosive, soaking time of six hours for the test shall be adopted by pricking the cartridge in helical fashion.

xi) **Strength/Power Test:** The method has been prescribed in the IS: 6609 (Part-II/Sec 10)-1973 by either Ballistic Mortar Method or Trauzi Lead Block Method.

The required strength/power of the explosive shall be decided by the user (s) in consolation with the manufacturer(s)

xii) **Density:** The density of explosive submitted for testing shall lie within ± 0.05 gm/cc as specified by the manufacturers.

xiii) **Composition/Ingredients**: The permissible tolerance limit is given below:

Percentage of ingredients in Explosive Composition	**Tolerance Limit**	**Percentage of ingredients in Explosive Composition**	**Tolerance Limit**
> 55-100	**±3.0**	**> 20-30**	**±2.0**
> 50-55	**±2.8**	**> 10-20**	**±1.7**
> 40-50	**±2.5**	**> 5-10**	**±1.0**
> 30-40	**±2.3**	**Up to 5**	**Not more than 10% of actual composition.**

xiv) **Packing Material** (Lay Flats type/Below Moulded Plastic): Bureau of Indian Standards has not specified any standard in this regard.

The explosive may be packed in rigid or semi-rigid cartridges consisting of paper, rigid card board or plastic. Packing of explosives shall be such that no leakage of the explosive ingredients occur under normal conditions of transportation handling and storage. The explosive lot may be discarded, if any leakage is observed.

xv) Clipping Material (Cu wire/steel wire/al wire): The cartridges with aluminum clipping may be continued up to its present period of validity in degree I gassy mines only, beyond which use of aluminum as clipping material may not be permitted.

In line with South African Standards SABS 1484/ May 2002, the clipping material shall not have mass of more than 1.2 gm/clip.

xvi) Periodicity of Testing: A repeat test of explosives for properties like Incendivity, Cap sensitivity, AGS, COD, VOD, Post detonation fumes, Deflagration, Water Proofness, Density test etc, may be conducted after every five years.

Testing for rechecking of approved permitted explosives shall be done as below:

- Change in ingredients/Tolerance/Source of procurement from indigenous to
- foreign or vice versa.
- Change of company or ownership/factory location.
- Change in manufacturing machines/set-up.
- Change in wrapping/clipping materials/specifications.
- Explosive which are not brought into use within two years from the date of approval or which has ceased to be supplied for use in coal mines for last two years.

A. Instantaneous Detonators.

i) **Incendivity Test in Gassy Atmosphere:** the test shall be carried out in pursuance of IS: 6609 9Part-III)-1973 AND is: 7632-1975. The existing criteria i.e. not more than 14 ignitions out of 200 trials as per clause 5.4.9 of IS: 7632-1975 shall be continued. These criteria, through applicable for delay detonators, shall be adopted for instantaneous detonators also.

ii) **Incendivity Test in Coal Dust Atmosphere:** Bureau of Indian Standards has not specified any standard for conducting incendivity test in cal dust atmosphere.

A criteria of no ignition out 50 trials in coal dust atmosphere in laboratory set up simulated to represent mining condition shall be adopted.

iii) **Drop Test:** The test shall be conducted as specified in IS: 6609 (Part-III)-1973

iv)Snatch Test (Mechanical strength of lead wire): The test shall be conducted as specified in IS: 6609 (Part-III)-1973

(25 detonators are required to be randomly checked and there should be no detonation.)

v) Vibration Test: The test shall be conducted as specified in IS: 6609 (part-III)-1973

(40 detonators are randomly checked and no detonation should be there.)

After vibration test, detonators shall be checked for series firing characteristics instead of firing them on lead plate.

vi)Electrical Resistance Test: The test shall be conducted as per IS: 6609 (Part-III)-1973 and IS: 7632-1975

(a) Testing of 25 detonators ±10% of nominal value stated by the manufacturer or ±0.5 ohm, whichever is less, will be considered for passing.
(b) Ohm meter may be defined as "Ohm meter suitable instrument, like safety ohm meter/Multimeter" for measurement of resistance with greater safety.
(c) The word, "With an accuracy of 0.1 ohm is accepted" may be read as "with a minimum accuracy of 0.1 ohm".)

vii) **No Fire Current Test:** The test shall be conducted as epr IS: 66609 (part-III)-1973 and IS: 7632-1975

(No detonator should detonate in this test when 180 mA current is supplied for 300 seconds.)

viii) **Minimum Series Firing Current:** The test shall be conducted as epr IS: 6609 (Part-III)-1973 and IS: 7632-1975

In addition, the criteria of testing with 10 trials with 20 detonators in each may be adopted. All 20 detonators connected in series should detonate unfailingly when a current of 1.2.A is passed for 4ms in each of ten trials.

ix)**Strength Test:** The Test shall be conducted as per IS: 6609 (Part-III)-1973 and IS: 7632-1975

(a) **By Sand Bomb Method:** Ennore Sand contains traces of Rare Earth Elements, so there are restrictions for its use. Hence, Barakar sand may also be used for the test.

(b) By Lead Plate Method: The strength will be upgraded from minimum C-3 to B-3 class.

x) **Water Resistance Test:** The criteria with minimum strength of B-3 Class adopting IS: 6609 (Part-III)-1973 and IS: 7632-1975 may be accepted.

C. Delay Detonators

i) Incendivity Test for gassy atmosphere: The test shall be carried out in pursuance of IS: 6609 9part-III)-1973 and IS: 7632-1975.

(Not more than 14 ignitions out of 200 trials as per clause 5.4.9 of IS: 7632-1975 may be accepted.)

ii) Tests and passing criteria mentioned at Par B (ii, iii, iv, v, vi, vii, viii, ix & x) above shall be applicable for delay detonators.

iii) Delay Timing Test: The test shall be conducted as per IS: 6609 (Part-III)-1973 and IS: 7632-1975.

(The criteria of allowing over lapping of not more than 5% may be adopted).

iv) Periodicity of Testing: A repeat test of permitted detonators (instantaneous and delay) for properties like Incendivity test in gassy and coal dust atmosphere, drop test, snatch test, vibration test, electrical resistance test, no fire current test, minimum series firing current test, strength test, water resistance test, etc. shall be conducted after every five years.

Testing for rechecking of approved permitted instantaneous and delay detonators shall be done as below:

- Change in shell material/shell length/shell coating/source of supply of shells etc.
- Change in weights/ingredients/tolerance etc. of chemicals used in making fuse head, base charge, primer charge, plug etc.

- Change in design/drawing of the detonators.
- Change of company or ownership/factory location
- Change in manufacturing machines/set-up.
- Detonators which are not bought into use within two years from the date of approval or which has ceased to be supplied for use in coal mines for last two years.

D. OTHER MATTRS

(i) Classification of Explosive IS: 6609 (Part-II/Sec-2) classifies permitted explosive as

Type P (o), P(eqs), P(r), and P(s)

DGMS accords approval mentioning P1, P3 and P5 respectively which is in line with

United Kingdom Testing Memorandum ™ No.2 The following classification of IS and its equivalent may be accepted.

As per IS-Permitted Type Explosive	Equivalent Permitted Class
P(o)	P1
P(eqs)	P3
P(r)	P4
P(s)	P5

(ii) Test reports shall contain, among others, an executive summary detailing (a) different tests conducted, (b) passing criteria for each test, and (c) a remarks Column indicating each test result as 'passed' or 'failed'.

(Rahul Guha)
Director General of Mines Safety.

No. DGMS/S&T/Tech. Cir. (Approval) No.07 Dhanbad, dated-19.12.2014

To:
The Owner, Agent, Manager of All Mines & the Manufacturers

Subject: Standard Components and Properties of Fluid expandable rock bolt to be used in Mines.

Fluid expandable rock blots are being used as steel supports in the mines. These supports are relatively new to the Indian Mines and there are no guidelines so far for its properties and use. So, an expert committee was constituted with scientists from Central Institute of Mining & fuel Research (CIMFR), National Institute of Rock Mechanics (NIRM) and representatives from Indian School of Mines (ISM), CMPDIL, Ranchi to formulate a set of guide lines for sue of Fluid expandable rock bolts in Indian Mines. A meeting of the committee was held on 24/09.2014 at DGMS, Dhanbad for detailed discussion and deliberation on the subject. Based on the recommendations made by the committee following guidelines have been formulated for standard components and properties of fluid expandable rock bolts to be used in the mines.

1.0 Before using the Fluid expandable rock bolts in a mine, its suitability of application in a particular geo-mining domain may be assessed in consolation with a scientific and research organization having experience and expertise in strata control. Fluid expandable rock bolts may be used only in such specific cases where it has been recommended by the scientific and research organization after due assessment, and subject to compliance of its recommendations.

2.0 The materials, metal(s), chemical(s), component(s), part(s) and accessories from which the Fluid expandable rock bolts with Washers have been manufactured, assembled, fabricated or prepared shall be as follows.

2.1 Physico-mechanical Properties:

a) The fluid expandable rock bolts shall be manufactured from hot rolled medium and high tensile structural steel Grade Fe E-550 or above. The Yield Stress, Tensile Strength and % elongation steel Grade shall be maintained as per the IS 2062:2011 or equivalent standard.

b) However the minimum load bearing capacity of the fluid expandable rock bolts shall be 10 tonnes.

2.2 Chemical Composition:

Chemical composition of the steel for manufacturing of the fluid expandable rock bolts varies according to be requirement of strength characteristics and specific applications given by the manufacturer and the end user of the fluid expandable rock bolts. However certain chemical constituents of the steel which influence the required properties of steel shall conform to the IS 2062:2011 or equivalent standard.

2.3 Bearing Plate

a) The Bearing Plate of the Fluid expandable rock bolts shall be Dome Washer Plate of dim-
ension 150x150x8 (minimum) mm with compatible central hole required size.

b) The minimum load at which the Domed Washer Plate will become flat should be at least
12 Tonnes.

2.4 Other Properties & Parameters

a) Weatherability:

The Fluid expandable rock bolts and its components or parts shall be subjected to Accelerated Weathering Test in mine water condition for 20 days. No deterioration should occur on the Assembly.

b) Accelerated Weathering Test (AWT) shall also be conducted in acidic water condition for 20 days during which no deterioration should occur on the Assembly.
(Note: The AWT under mine water condition generally is at pH>4 and that under acidic water condition is considered at pH-2 (5 % HCL aqueous solution) during testing.)

c) Corrosion Resistance Test:

The Fluid expandable rock bolts Assembly shall be subjected to Field Exposure and Corrosion Resistivity Test as per IS-5555: 1970 to test the resistance to corrosion of the steel of the Fluid expandable rock bolts and its parts. The Fluid expandable rock bolts should pass the required test.

3.0 Sampling & Testing

3.1 In order to check the composition and required parameters during manufacture, it shall be required that the random sampling be done @ if 5 Fluid expandable rock bolts per 1000 pieces of Fluid expandable rock bolts and its accessories manufactured in a batch which shall be subjected to the

required set of tests as prescribed in the previous paragraphs above and the data shall be kept recorded in a bound paged book kept for the purpose which shall be signed by the persons carrying out the test and shall be countersigned by the quality control officer posted at the manufacturing unit(s).

3.2 Before using in the mines, The user shall carry out necessary Physical examination and conduct Tensile Test of the Assembly for every batch of Fluid expandable rock bolts & its Accessories received at their end to ensure that the same conform to the above requirements and shall also keep the records thereof in a bound paged book kept for the purpose.

In case the Fluid expandable rock bolts or any of its accessories fail to pas the required tests at the user's end, that batch or lot of the manufacture shall not be used in the mine and intimation thereof shall be sent to the manufacturer. A record in this regard shall be maintained at the mine/company.

3.3 The Chief Inspector of Miens or an Inspector of Miens may inspect, check and examine the manufacturing facilities at any time and get samples tested during the course of inspection or send such samples for testing at any national test houses/laboratories at the cost of the manufacturer.

3.4 The Chief Inspector of Mines or an Inspector of Mines may inspect, check and examine the Fluid expandable rock bolts at any time in the mine or the area of the mines and get samples tested during the course of inspection or send such samples for testing at any national test houses/laboratories at the cost of manufacturer or user.

4.0 (a) The manufacturer shall obtain a test certificate as to the conformity to the requirements stipulated in the Para 2.0 above, from a prescribed agency of the material9s), metal (s), chemical(s), component9s), part(s) and accessories used for manufacturing Fluid expandable rock bolts, and a certified copy of the same shall be attached with each consignment supplied to the user/test laboratory.

(b) The manufacturer shall furnish all relevant information in respect of chemical composition, properties, mechanical parameters and specifications or any other information or reports pertinent to their product(s) to the user(s).

5.0 Before making any supply to the mines, the manufacturer shall:

a) Suitably indemnify the user against any loss/damage of any kind, whatsoever, during handling and use of above product in mines. However, such loss/damage shall be immediately investigated along with the representatives of the user;

b) Formula and supply, Safe Operating Procedure (SOP) for strong, handling and installation of Fluid expandable rock bolts to the user mining company; and

c) Shall associate manufacturer's representative(s) at sui8table level(s) with the user mining company for attending to technical matters pertaining to the storing, handling and installation of Fluid expandable rock bolts any other matters connected thereof.

6.0 Anchorage testing:

6.1 (a) At least 10% of the Fluid expandable rock bolts actually installed in the belowground workings of the mines shall be regularly subjected to tests for anchorage strength on random basis.

(b) Details of the measured anchorage strength as above shall be entered in a bound paged register maintained for the purpose and signed by the Assistant Manager- In-charge and countersigned by the Manager of the Mine.

6.2 (a) The use of Fluid expandable rock bolts shall be discontinued whenever the anchorage strength measured is less than 12 tonnes.

(b) An inquest shall be jointly carried out by the representatives(s) of the manufacturer and user to ascertain the reasons for less than satisfactory performance, and suggest remedial measures to improve the performance. The use

Of Fluid expandable rock bolts shall only be resumed after necessary rectifications are carried out, and the details are recorded in a bound paged register kept for the purpose and jointly signed by the authorized representative of the manufacturer and Manager of the mine.

7.0 General Requirement

All the Owner, Agent and Manager including the manufacturers and suppliers shall strictly copy with this standard and in the event of finding any deviation or defects in the product supplied, use of the same shall be immediately stopped and it also be brought to the notice of this Directorate.

Manufacturers and the Users including the Test Houses, who are engaged for testing of such material, are therefore requested to ensure the above mentioned Standard and Parameters before supplying and using at the mine.

The Fluid expandable rock bolts with the Standard, Parameters and Testing as per the circular shall be considered as approved by the Chief Inspector of Miens by a general order as provided under regulation 181(3) of the Coal Mines Regulation, 1957.

Yours Faithfully,

Director General of Mines Safety

No. DGMS/S&T/Tech. Cir. (Approval) No.08 Dhanbad, dated-19.12.2014

To:
The Owner, Agent, Manager of All Mines & the Manufacturers

Subject: Standard Components and Properties of Friction stabilizers (Splitsets) to be used in Mines.

Friction stabilizers (Split sets) are relatively new to the Indian Mines and there are no guidelines so far for this properties and use. So, and expert committee was constituted with scientists from Central Institute of Mining & Fuel Research (CIMFR), National Institute of Rock Mechanics (NIRM) and representatives from Indian School of Mines (ISM), CMPDIL, Ranchi to formulate a set of guide lines for use of Friction Stabilizers (Split sets) in Indian Mines. A meeting of the committee was held on 24/09.2014 at DGMS, Dhanbad for detailed discussion and deliberation on the subject. Based on the recommendations made by the committee following guidelines have been formulated for standard components and properties of Friction Stabilizers (Split sets) to be used in the mines.

1.0 Before using the Friction Stabilizers (Spelt Sets) in a mine, its suitability of application in a particular geo-mining domain may be assessed in consolation with a scientific and research organization having experience and expertise in strata control. Friction Stabilizers (Spelt Sets) may be used only in such specific cases where it has been recommended by the scientific and research organization after due assessment, and subject to compliance of its recommendations.

2.0 The materials, metal(s), chemical(s), component(s), part(s) and accessories from which the Friction Stabilizers (Spelt Sets) with Washers have been manufactured, assembled, fabricated or prepared shall be as follows.

2.1 Physico-mechanical Properties:

a) The Friction Stabilizers (Spelt Sets) shall be manufactured from hot rolled medium and high Steel grade EN10149-2 S550-700MC .The Yield Stress, Tensile Strength and % elongation steel Grade shall be maintained as per the EN10149-2 or equivalent standard.

b) However the minimum load bearing capacity of the Friction Stabilizers (Spelt Sets) shall be 6 tonnes.

2.5 Chemical Composition:

Chemical composition of the steel for manufacturing of the Friction Stabilizers (Spelt Sets) varies according to be requirement of strength characteristics and specific applications given by the manufacturer and the end user of the Friction Stabilizers (Spelt Sets). However certain chemical constituents of the steel which influence the required properties of steel shall conform to the EN10149-2 or equivalent standard.

2.6 Bearing Plate

a) The Bearing Plate of the Friction Stabilizers (Spelt Sets) shall be Dome Washer Plate of dimension 150x150x8 (minimum) mm with compatible central hole required size.

c) The minimum load at which the Domed Washer Plate will become flat should be at least
6 Tonnes.

2.7 Other Properties & Parameters

b) Weatherability:

The Friction Stabilizers (Spelt Sets) and its components or parts shall be subjected to Accelerated Weathering Test in mine water condition for 20 days. No deterioration should occur on the Assembly.

b) Accelerated Weathering Test (AWT) shall also be conducted in acidic water condition for 20 days during which no deterioration should occur on the Assembly.
(Note: The AWT undermine water condition generally is at pH>4 and that under acidic water condition is considered at pH-2 (5 % HCL aqueous solution) during testing.)

c) Corrosion Resistance Test:

The Friction Stabilizers (Spelt Sets) shall be subjected to Field Exposure and Corrosion Resistivity Test as per IS-5555: 1970 to test the resistance to corrosion of the steel of the Friction Stabilizers (Spelt Sets) and its parts. The Friction Stabilizers (Spelt Sets) should pass the required test.

3.0 Sampling & Testing

2.1 In order to check the composition and required parameters during manufacture, it shall be required that the random sampling be done @ if 5 Friction Stabilizers (Spelt Sets) per 1000 pieces of Friction Stabilizers (Spelt Sets) and its accessories manufactured in a batch which shall be subjected to the required set of tests as prescribed in the previous paragraphs above and the data shall be kept recorded in a bound paged book kept for the purpose which shall be signed by the persons carrying out the test and shall be countersigned by the quality control officer posted at the manufacturing unit(s).

2.2 Before using in the mines, The user shall carry out necessary Physical examination and conduct Tensile Test of the Assembly for every batch of Friction Stabilizers (Spelt Sets) & its Accessories received at their end to ensure that the same conform to the above requirements and shall also keep the records thereof in a bound paged book kept for the purpose.

In case the Friction Stabilizers (Spelt Sets) or any of its accessories fail to pas the required tests at the user's end, that batch or lot of the manufacture shall not be used in the mine and intimation thereof shall be sent to the manufacturer. A record in this regard shall be maintained at the mine/company.

3.3 The Chief Inspector of Miens or an Inspector of Miens may inspect, check and examine the manufacturing facilities at any time and get samples tested during the course of inspection or send such samples for testing at any national test houses/laboratories at the cost of the manufacturer.

3.4 The Chief Inspector of Mines or an Inspector of Mines may inspect, check and examine the Friction Stabilizers (Spelt Sets) at any time in the mine or the area of the mines and get samples tested during the course of inspection or send such samples for testing at any national test houses/laboratories at the cost of manufacturer or user.

4.0 (a) The manufacturer shall obtain a test certificate as to the conformity to the requirements stipulated in the Para 2.0 above, from a prescribed agency of the material(s), metal (s), chemical(s), component(s), part(s) and accessories used for manufacturing Friction Stabilizers (Spelt Sets), and a certified copy of the same shall be attached with each consignment supplied to the user/test laboratory.

(b) The manufacturer shall furnish all relevant information in respect of chemical composition, properties, mechanical parameters and specifications or any other information or reports pertinent to their product(s) to the user(s).

5.0 Before making any supply to the mines, the manufacturer shall:

d) Suitably indemnify the user against any loss/damage of any kind, whatsoever, during handling and use of above product in mines. However, such loss/damage shall be immediately investigated along with the representatives of the user;

e) Formula and supply, Safe Operating Procedure (SOP) for strong, handling and installation of Fluid expandable rock bolts to the user mining company; and

f) Shall associate manufacturer's representative(s) at suitable level(s) with the user mining company for attending to technical matters pertaining to the storing, handling and installation of Friction Stabilizers (Spelt Sets) any other matters connected thereof.

6.0 Anchorage testing:

6.1 (a) At least 10% of the Friction Stabilizers (Spelt Sets) actually installed in the belowground workings of the mines shall be regularly subjected to tests for anchorage strength on random basis.

(b) Details of the measured anchorage strength as above shall be entered in a bound paged register maintained for the purpose and signed by the Assistant Manager- In-charge and countersigned by the Manager of the Mine.

6.2 (a) The use of Friction Stabilizers (Spelt Sets) shall be discontinued whenever the anchorage strength measured is less than 6 tonnes.

(b) An inquest shall be jointly carried out by the representatives(s) of the manufacturer and user to ascertain the reasons for less than satisfactory performance, and suggest remedial measures to improve the performance. The use

Of Friction Stabilizers (Spelt Sets) shall only be resumed after necessary rectifications are carried out, and the details are recorded in a bound paged register kept for the purpose and jointly signed by the authorized representative of the manufacturer and Manager of the mine.

7.0 Immediately before installing Friction Stabilizers (Spelt Sets) in a hole, it shall be tested for presence of inflammable gas inside and outside of the hole with a suitable detector. Installation of the Friction Stabilizers (Spelt Sets) in the hole shall not be one if the presence of the inflammable gas is detected inside or outside of it.

8.0 General Requirement

All the Owner, Agent and Manager including the manufacturers and suppliers shall strictly copy with this standard and in the event of finding any deviation or defects in the product supplied, use of the same shall be immediately stopped and it also be brought to the notice of this Directorate.

Manufacturers and the Users including the Test Houses, who are engaged for testing of such material, are therefore requested to ensure the above mentioned Standard and Parameters before supplying and using at the mine.

The Friction Stabilizers (Spelt Sets) with the Standard, Parameters and Testing as per the circular shall be considered as approved by the Chief Inspector of Miens by a general order as provided under regulation 181(3) of the Coal Mines Regulation, 1957.

Yours Faithfully,

Director General of Mines Safety

No. DGMS(Approval). Circular (S&T) No.09 Dhanbad, dated-31.12.2014

To,
The Owner, Agent and Manager of all Mines

Subject: Approval of dust suppression/prevention device in drilling and boring equipment used in coal mines.

Notification No DGMS/S&T(HQ)/14/185, dated-20th January, 2014, has been published in the Gazette of India part II Section 3(i) on 8th February 2014 vide GSR 24, which is reproduced below for strict compliance.

"In exercise of powers conferred on me under regulation 123(6) of the Coal Mines Regulations' 1957, I, Rahul Guha, Chief Inspector of Mines, also designated as Director General of Mines Safety, hereby declare 28th February, 2014 as the date from which item/item considered as other equally efficient device equivalent to a jet of water directed on the cutting edge to wet the cuttings cited in regulation 123(6)(b)(ii) shall not be used in coal mines for drilling or boring in stone, unless the same has been approved by me by a general or special order in writing.

This supersedes Notification No. 16(38) 79 Genl./6095, dated 25th November, 2008, published in the Gazette of India Part II Section 3(i) on 13th December, 2008 vide GSR 215."

This circular Supersedes the earlier issued DGMS (Approval) Circular No. 1 of 2009.

(Rahul Guha)
DirectorGeneralofMinesSafety.

No. DGMS(Approval). Circular (S&T) No.10 Dhanbad, dated-31.12.2014

To,
The Owner, Agent and Manager of all Mines

Subject: Approval of dust suppression/prevention device in drilling and boring equipment used in Metalliferous mines.

Notification No DGMS/S&T(HQ)/14/186, dated-20th January, 2014, has been published in the Gazette of India part II Section 3(i) on 8th February 2014 vide GSR 25, which is reproduced below for strict compliance.

"In exercise of powers conferred on me under regulation 124(6) of the Metalliferous Mines Regulations' 1961, I, Rahul Guha, Chief Inspector of Mines, also designated as Director General of Mines Safety, hereby declare 28th February, 2014 as the date from which item/item considered as other equally efficient device equivalent to a jet of water directed on the cutting edge to wet the cuttings cited in regulation 124(6)(b)(ii) shall not be used in Metalliferous mines for drilling or boring in stone, unless the same has been approved by me by a general or special order in writing.

This supersedes Notification No. 16(38) 79 Genl./6095, dated 25th November, 2008, published in the Gazette of India Part II Section 3(i) on 13th December, 2008 vide GSR 215."

This circular supersedes the earlier issued DGMS (Approval) Circular No. 1 of 2009.

(Rahul Guha)
Director General of Mines Safety.

DGMS(Genl) Circular (MAMID)/01 Dhanbad, Dated-10.10.2014
To,
The Owners/Agent/Managers
All Coal/Metaliferous/Oil Mines

Sub:-Inauguration of the Unified Web Portal of the Ministry of Labour and Employment

Sirs,

The Ministry of Labour & Employment has initiated to develop Unified Labour Portal Shram Service, with an aim to achieve the objective of simplifying business regulations, with system driven triggers equipped with relevant norms and criteria for ensuring more accountability, transparency in the inspection system.

The Hon'ble Prime Minister of India would be inaugurating Pt. Deendayal Upadhyay shramev Jayate Karyakarm on **16.10.2014 at 10.00AM** at Vigyan Bhavan, New Delhi. The programme would include **launch of the Unified Labour Portal Shram Service** and random inspection scheme, which are major initiatives of the Ministry of Labour and Employment to ensuring the ease of compliance of labour laws.

The programme would be telecast live on Doordarsan DD National and DD News from 10.00 AM onwards. This will provide detail insight to the viewers about the initiatives being taken by the Ministry for catalyzing growth, employment.

You are requested to view the programme live on the aforesaid TV channels on the day and the time mentioned above. You are also requested to encourage all persons under your control to view the said programme.

Yours faithfully.

Sd/-
(Rahul Guha)
Director General of Mines Safety.

Memo No.DGMS(Genl) Circular (MAMID)/2986-93 Dhanbad, Dated-10.10.2014
Copy forwarded to all DDG of zones with requested to inform all Owners, Agents and Managers under their jurisdiction and encourage them & their subordinates to review the programme.

For Director General of Mines Safety.

NO. DGMS (Genl.) 2014 Circular No. 02 Dated-31/10/2014.

To,
All Owner/Agents/Managers of Coal and Metal/Oil Mines.
All Manufactures of Equipment, Appliances and Machinery.

Sub-DGMS Approval Policy 2014-Reg.

Sir,

A revised document on the policy of DGMS for approval of equipment, material and appliances has been framed and notified at the website of DGMS. The new policy document includes more simplified and transparent procedures for grant of necessary approvals by DGMS. The policies have been drafted after detailed consolation with representatives of manufactures, users and testing laboratories.

The policy documents are available and can be viewed at www.dgms.gov.in. The said policies will be effective from 01st November, 2014 till further orders on the subject.

The revised policies wholly embrace the visions of the Government of India vis-à-vis ushering an era of utmost transparency and effi9ciency in business.

All stakeholders are also requested to share their feedback on the subject so that the issues remain dynamic and in-tune with time.

This circular is issued in supersession of all previous circulars on the subject.

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

No. DGMS (Legis) Circular (MAMID) No.01 Dhanbad, dated-07.05.2014

To,
The Owner, Agent and Manager of all Mines.

Subject: Criteria to determine accidents-Mining-Statistical, Mining-non Statistical, Non-Mining.

DGMS receives queries often on classification of accidents from the industry. Though the definition of different classes of accident had been mad every clear in the past, it is felt necessary to once again bring it to the notice of all stake holders the following classification on the subject:

(A) Mining Statistical Accident.

An accident shall be termed as Mining Statistical if

1. that occurred within the boundary of the mine and person(s) involved in the accident is employed in the mine and the accident occurred due to any mining operation, or by any equipment/machinery/apparatus deployed therein, or due to negligent or will full actions by a person, employed in the mine, that have endangered his life or the life of other person employed in the mine or negligently or willfully omit to do anything, necessary for safety of the persons employed herein.

and/or

2. that occurred within the boundary of the mine and person(s) employed in the mine has/have gone in any part of the mine other than that part in which he/they work and involved in an accident due to any mining operation, or by any equipment/machinery/apparatus deployed therein, or due to negligent or willful actions by a person, employed in the mine, that have endangered his life or the life of other person employed in the mine or negligently or willfully omit to do anything, necessary for safety of the persons employed herein.

(B) Mining-non statistical Accident.

An accident shall be called as Mining-non Statistical if

1. persons(s) not employed in the mine, is /are involved in an accident , occurred within the mine boundary, due to any mining operation, or by any equipment/machinery/apparatus deployed therein, or due to negligent of willful doing anything by a person, employed in the mine, that have endangered the life of person(s)

and/or

2. any accident occurred due to any operation which is incidental to mining operation, in an area outside the boundary of the mine whether person9s) involved in the accident is/are employed in the mine or not.

(C) Non Mining Accident.

1. An accident shall be termed as Non-Mining if it occurs outside the boundary of the mine, whether person(s) involved in the accident is/are employed in the mine or not, due to any operation which is not incidental to mining operation. The consumer truck, transporting mineral, involved in an accident outside the boundary of the mine shall not be treated as an operation which is incidental to mining operation.

2. Any death due to natural cause shall also be termed as Non-Mining accident.

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

No. DGMS (Legis) Circular No.02 Dhanbad, dated-09.10.2014
To,
The Owner, Agent and Manager of oil Mines.

Subject: Exemption of the crude oil pipelines running between Naharkatia Oil Field to the petroleum Refineries at Guwahati, Barauni and other Refineries from the operation of any of the provisions of the regulation, rules or bye-laws framed under the Mines Act.

Vide notification No. F.No.Z-13025/01/2013-ISH-II of the Government of India in the Ministry of Labour and Employment (S.O).2493 (E) dated 23rd September, 2014, the crude oil pipelines running from Naharkatia Oil Field to Petroleum Refineries at Guwahati, Barauni and other Refineries falling in this route are exempted under Section 83 of the Mines Act, 1952 from the operation of any of eh provision of the regulations, rules or bye-laws framed under the said Act.

A copy of the Gazette notification is enclosed with this circular for information and circulation in your organization.

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

MINISTRY OF LABOUR AND EMPLOYMENT

NOTIFICATION

New Delhi, the 23rd September, 2014

S.O.2493 (E).- In exercise of the powers conferred by section 83 of the Mines Act, 1952 (35 of 1952) and in supersession of notification of the Government of India in the Ministry of Labour, Employnment and Rehabilitation (Department of Labour andf Employment) No. S.O.2927, dated the 18th August, 1967, except as respects and things done or omitted to be done before such supersession, the Central Government has deceded to exempt the crude oil pipe lines running from Naharkatia Oil Field to the Petroleum Refineries at Guwahati and Barauni (Bihar) and other Refineries falling in this route (including the Pumping Stations and Power Stations thereon, except Group Gathering Stations or Gas Collecting Stations or similar stations and associated pipelines from oil wells to such stations but before immediate out bye pipe line leading to the first Pumping Station in oil fields) owned by M/s Oil India Limited sonstituting a mine within the meaning of the said Act.

[F. No. Z-13025/01/2013-ISH-II]

A.C.PANDEY, Jt. Secy.

No. DGMS (Exam) Circular No.01 Dhanbad, dated-03.04.2014

To,
The Owner, Agent and Manager of all Mines.

Subject: Practical Experience Certificate of non-producing/non-operative Metaliferous Mines.

Of late, it has been noticed that to fulfill the requirements of practical experience for the Competency Certificates, candidates are often submitting practical experience certificates on non-producing/non-operative mines, though adequate number of persons were indicated to have been employed in the mine. Practical experience of a closed or a mine having no active working cannot be considered as practical training in workings in a mine.

In order to maintain the standard of practical training, the Board for Mining Examination has decided that henceforth the practical training certificates of producing/operative mines shall only be considered for grant of Competency Certificate(s) by the Board.

Manager's are requested to ensure compliance to the above while engaging candidates for undertaking practical training in the mine and issue experience certificates.

Yours faithfully,

(Rahul Guha)
Director General of Mines Safety.

Dhanbad, dated, 8th January, 2014.

OFFICE ORDER NO. 01 OF 2014.

Subject: Modification of Rescue Rules, 1985: Formation of committee.

It is proposed to review and modify the Rescue Rules, 1985. A committee constituted for the purpose will prepare and submit a draft of Rescue Rules in consolations with stakeholders, management, Institutions, Trade Union leaders and other persons who are directly or indirectly connected with the subject. The opinion of Zonal & Regional officers may also be taken. The committee comprised the following:-

1) Sri C.B.Prasad, Director of Mines Safety (MSE), HQ.
2) Sri Aftab Ahmed, Dy. Director of Mines Safety (S&T), HQ.
3) Sri N.P. Deori, Dy. Director of Mines Safety (MSE), HQ.

The committee after deliberation shall submit a draft report within a period of three months.

This issues with the approval of competent authority.

Dy. Director General of Mines Safety (HQ).

Dhanbad, dated, 8th January, 2014.

OFFICE ORDER NO. 02 OF 2014.

Subject: Modification of Mines Rules, 1985: Formation of committee.

It is proposed to review and modify the Mines Rules, 1955. A committee constituted for the purpose will prepare and submit a draft of Mines Rules in consolations with stakeholders, management, Institutions, Trade Union leaders and other persons who are directly or indirectly connected with the subject. The opinion of Zonal & Regional officers may also be taken. The committee comprised the following:-

1) Sri M.Tikadar, Director of Mines Safety (SOMA)/ HQ.
2) Sri S.S.Mishra, Director of Mines Safety, Region No.01, Eastern Zone.

The committee after deliberation shall submit a draft report within a period of three months.

This issues with the approval of competent authority.

Dy. Director General of Mines Safety (HQ).

Dhanbad, dated, 8th January, 2014.

OFFICE ORDER NO. 03 OF 2014.

Subject: Modification of Vocational Training Rules, 1966: Formation of committee.

It is proposed to review and modify the Vocational Training Rules, 1966. A committee constituted for the purpose will prepare and submit a draft of Mines Rules in consolations with stakeholders, management, Institutions, Trade Union leaders and other persons who are directly or indirectly connected with the subject. The opinion of Zonal & Regional officers may also be taken. The committee comprised the following:-

1) Sri C.Ramesh Kumar, Director of Mines Safety, Region No.03, Central Zone.
2) Sri U.K. Sharma, Director of Mines Safety, Region No.03, Eastern Zone.
3) Sri Satish Kumar, Director of Mines Safety, Chaibasa Region, S.E.Zone.

The committee after deliberation shall submit a draft report within a period of three months.

This issues with the approval of competent authority.

Dy. Director General of Mines Safety (HQ).

NO. DGMS/MSE/(HQ)/2014/04 Dhanbad, dated-27/03/2014.

Sub: Constitution of Approval committee to review Approval Policy in DGMS.

OFFICE ORDER

The following officers are hereby appointed as the member of the "Approval Committee"-

(i) Dy. Director General of Mines Safety (HQ), Chairman

(ii) Dy. Director General of Mines Safety (Elect.), Member

(iii) Director of Mines Safety (S&T), Member

(iv) Director of Mines Safety (MSE), Member

(v) Director of Mines Safety (Mech.)/Dy. DMS (Mech.), member

(vi) Dy. Director of Mines Safety (MSE), Member Secretary

The scope of committee will be to deliberate upon any matter relating to approval of equipments, apparatus, etc. and recommend/suggest Director General of Mines Safety (CIM) for needful action.

This supersedes all the orders appointing members of the Approval Committee constituted in the past

Before conducting any meeting of the Approval Committee, it shall be ensured that a minimum quorum of at least any three of the above mentioned members including chairman of the committee are present.

This order comes into force with immediate effect.

(Rahul Guha)
Director General of Mines Safety.

Dhanbad, dated, 14th August, 2014.

OFFICE ORDER NO. GEN/31 OF 2014.

The Web Portal of the Ministry of Labour & Employment is under development and is to be launched on 25th September, 2014. The Inspection Scheme of DGMS is also to be launched on 01st September, 2014 and proposed works have to be completed strictly on the time line. The data of establishment of this Organization has to be mapped with the master list of generation of LIN and this activity has to be completed 100% between 25th August to 15th September, 2014 as directed by the Ministry.

The following officers are nominated to co-ordinate with NIC and complete the task in time bound progressive manner:-

Sri M. Tikadar, Director of Mines Safety (SOMA) is authorized as nodal officer for undertaking this activity.

The following team of officers are also nominated to assist and co-ordinate with the nodal officer to complete the task:-

1) Sri U.P.Singh, Director of Mines Safety, Gaziabad Region, NZ.
2) Sri S.K.Das, Director of Mines Safety, WZ, Nagpur.
3) Sri G. Vijay Kumar, Director of Mines Safety, SCZ, HYD.
4) Sri P.K.Maheswari, Dy. Director of Mines Safety, NWZ, Udaipur.
5) Sri A.K.Porwal, Dy. Director of Mines Safety, Gaziabad Region, NZ.
6) Sri K. Ravindra, Dy. Director of Mines Safety, SZ, Bangalur.
7) Sri Vir Pratap, Dy. Director of Mines Safety, Region No.01/CZ
8) Sri M.D.Mishra, Dy. Director of Mines Safety, Region No-III/EZ.

Director General of Mines Safety.

Dhanbad, dated, 03rd September, 2014.

OFFICE ORDER NO. GEN/32 OF 2014.

The Web Portal of the Ministry of Labour & Employment is under development and is to be launched on 25th September, 2014. The Inspection Scheme of DGMS is also to be launched. The proposed works has to be completed strictly on the time line. The data of establishment of this Organization has to be mapped with the master list of generation of LIN and this activity has to be completed 100% between 25th September, 2014 as directed by the Ministry.

Shri Manish Murkute, Director of Mines Safety, South Eastern Zone is nominated to co-ordinate with NIC and complete the task in time bound progressive manner:-

Sri M. Tikadar, Director of Mines Safety (SOMA) is authorized as Nodal officer for undertaking this activity.

This is the partial modification/addition of the earlier Office Order No. GEN/31 of 2014 issued for the purpose.

For Director General of Mines Safety

NO. MSE/Genl.2014 Dhanbad, dated- 2014.

Office Order No.33 of 2014

Sub: Constitution of working group for drafting of Oil Mines Regulations.

A working group has been constituted for drafting an amended Oil Mines Regulations for consideration of the Government. The names and contact details are as given below;

1. Shri D.K.Sahu - Convenor
   Director of Mines Safety, Guwahati Region, Guwahati,
   Tel. No.-09435674412, email id: dir.gur@dgms.gov.in

2. Shri Amit Kumar - Member
   Chief Engineer (Electrical), Corporate HSE, ONGC Ltd.
   Delhi, Tel. No. 09868282105, email id: 78511@ongc.co.in

3. Shri V. G. Thalnerkar, - Member
   Chief Engineer (Drilling), Mehsana Asset, ONGC Ltd.
   Gujarat, Tel. No. 09428008154, email id: 56797@ongc.co.in

4. Shri J. Lahiri, - Member
   Chief Manager (Engg & HSE), Corporate Office, Oil India Ltd.
   Noida, Tel No. 08800770778, email id: J_lahri@oilindia.in

5. Shri Anshuman Sharma, - Member
   General Counsel, Cairn India Ltd., Gurgaon,
   Tel. No. 09910207302, email id: Anshuman.Sharma@cairnindia.com

6. Shri N. P. Deori, - Member
Secretary
   Dy. Director of Mines Safety (MSE), DGMS, Dhanbad
   Tel No. 09431141420, email id: dd.mse@dgms.gov.in

The following group will discuss and submit a modified draft of a proposed OMR for effecting necessary amendments.

The working group shall submit the proposed draft within 45 days from the date of issue of this order.

This is for your information please.

(Rahul Guha)
For Director General of Mines Safety.

NO. DGMS(Tech) Instruction No.01 of 2014 Dhanbad, Dated-08.01.2014

To,
All Inspecting Officers
Of DGMS.

Sub:-Inspection of Mines and Compliance of Tracking System.

We all are aware that the basic objective of inspection of mine is to see that the mines are being operated in accordance with the provisions of the Mines Act, 1952, Rules and Regulation made thereunder.

Officers of this Directorate conduct inspection of mines and register the violations observed during the course of inspection, on the spot violation register kept maintained at the mines. Further of the inspection, violation letters, improvement notice, prohibitory orders and all other actions are take subsequently.

However, the status of compliance and compliance tracking are by and large not being addressed adequately resulting in slippage, many a times.

In the background of the above and computerization of system under e-Government in view, an inspection data format has been developed which is enclosed at Annexure-I

All the inspecting officers are requested to use the enclosed data sheet during the course of inspection of mines, which shall be complied region and zone-wise for onward transmission to HQ (Director (Stat) at the end of every month (electronically).

This will enable us to compile the violations and compliance status mine-wise for future uses and records.

(Rahul Guha)
Director General of Mines Safety.

Enclo: As above.

NO. DGMS(Tech) Instruction No.02 of 2014 Dhanbad, Dated-05.02.2014
To,
All Officers

Sub:-Delegation of powers in respect of various section, regulation and rules of the
Mines act, 1952, CMR, 1957, MMR, 1961 and MRR, 1985

Powers of CIM delegated to subordinate officers in eh form of DGMS (Tech,). Instruction No.1 of 2001 dated 08.01.2001, DGMS (Tech). Instruction No.1 of 2002 dated 07.06.2002 and DGMS (Tech.) Instruction No.2 of 2003 dated 13.06.2003 are hereby modified as below.

Provisions in Mines Act, 1952, CMR, 1957 and MMR, 1961 and Mines Rescue Rules, 1985	Condition, if any
Reg 107 (1) (2) (3) of CMR, 1957 Reg 111 (1) (2) (3) of MMR, 1961	Where proposed extension/adjustment is made in virgin area and where no underground working exists in any mine area, Directors concerned shall grant permission after approval of DDG on file. Where verticality in all the seams is maintained and adequate barriers as per regulations exist, Director of the Region shall issue permission letter after obtaining approval of the concerned DDG on file. Horizontal transfer of any seam to any other mine shall not be permitted. However for any clarification, the matter may be referred to HQ by RO/ZO.
Reg 100 A of CMR, 1957	(i) If a new method of work is to be adopted for the first time in the country, it shall be referred to DG with comments/recommendations from RO/ZO for his orders. (ii) If the method of work of be adopted such as High Wall Mining, Continuous Miner Technology etc. are not for the first time in the country, permission shall be issued by the concerned Director after obtaining approval from the DDG on file. While issuing permissions standard conditions developed at HO may be used with necessary site specific modifications.
Reg 105 (1) of CMR, 1957 Reg 109 (1) of MMR, 1961	All cases pertaining to development and extraction of pillars beneath and within 45 m of railway lines and railway acquired land (other than main passenger lines), National Highways and public work, permissions shall be

	issued by Director of the Region after obtaining approval from concerned DDG of file. Cases pertaining to development and extraction of pillars beneath and with 45 m of main passenger railway lines shall be forwarded to DG with comments/recommendations from ZO/RO. In respect of development and extraction of pillars under building and surfaces excluding Railways and National Highways where thickness of the hard superincumbent strata exceeds 30 m, the final letter shall be issued by the concerned Directors straightway. In other cases, final letters shall be issued by Director of the Region after obtaining approval from concerned DDG on file.
Reg 105 (4) of CMR, 1957 Reg 109 (4) of MMR, 1961	Orders for stabilization shall be issued by the Director concerned (as given in DGMS (Tech) Instruction No.2 of 2003 dated 13.06.2003).
Reg 104 (2) (a) (d) of CMR, 1957	Where proposed workings are in more than one section leaving parting of less than 3 m between the sections, Director shall issue final letter after obtaining DDG's order on the file (as given in DGMS (Tech) Instruction No.1 of 2002 dated-07.06.2002)
Reg 161 (1) and 168(5) of CMR, 1957 Reg 155 (1) and 162 (5) of MMR, 1961	Permission regarding relaxation for use of SMS/emulsion explosive with booster charge to be used in opencast coal and metalliferous mines and regarding use of ANFO in metalliferous mines shall be issued by the Director of Region with the approval of DDG (as given in DGMS (Tech) Instruction No.2 of 2003 dated 13.06.2003).
Sec 22(2) & 22 (3) of Mines act, 1952	Orders under Section 22(2) & 22 (3) of the Mines Act, 1952 shall be issued by Director (Mining) concerned with the approval of DDG (as given in DGMS (Tech) Instruction No.2 of 2003 dated 13.06.2003).
Sec 22/22A of Mines Act, 1952	Information or report as required under Section 22(5) or 22A(4) of the Mines Act, 1952 shall directly be sent to the Central Govt. by the Director of the Region after approval from DDG and a copy of the same shall be sent to HO for record (as given in DGMS (Genl) Instruction No.1 of 2005 dated 03.10.2005). Further information regarding extension of period of notice, if any of recording of the compliance of the conditions of notices, vacations of orders etc. shall also be communicated to the Central Govt. forthwith by the Director of the Region after approval from DDG and a copy of the same shall be marked to HO as given in the above instruction.
Mines Rescue Rules, 1985	In cases of permission/exemptions/relaxations, required under the provisions of the Mines Rescue Rules, 1985 to

	which the powers of the Chief Inspector of Mines exist, final letter of such permissions/exemptions/relaxations shall be issued by the concerned Director of the Region after obtaining approval of the concerned DDG on file.
Reg 107 (3) of MMR, 1961	Regarding splitting or reduction of pillars of blocks of minerals, final letter shall be issued by the concerned Director straightway (as given in DGMS (Tech.) Inst. No.3 of 2013 dated 25.07.2013).

These delegated powers shall be exercised subject to guidelines given in Appendix-B and Appendix-C of the DGMS (Tech.) Instruction No.1 of 2001.

All concerned are requested to note the above changes.

(Rahul Guha)
Director General of Mines Safety.