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**STANDING COMMITTEE  
ON ENERGY  
(1998-99)**

**TWELFTH LOK SABHA**

**FIRE AND SUBSIDENCE CONTROL IN  
COAL MINES**

**MINISTRY OF COAL**

**TENTH REPORT**



**LOK SABHA SECRETARIAT  
NEW DELHI**

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०२/२/९७ October 1998/Asvina, 1920 (Saka)

# TENTH REPORT

## STANDING COMMITTEE ON ENERGY (1998-99)

(TWELFTH LOK SABHA)

### FIRE AND SUBSIDENCE CONTROL IN COAL MINES

MINISTRY OF COAL

*Presented to Lok Sabha*

*Laid in Rajya Sabha*

on..... 14 DEC 1998

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LOK SABHA SECRETARIAT  
NEW DELHI

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COMPOSITION OF THE STANDING COMMITTEE ON ENERGY  
(1998-99)

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(1996-97 AND 1997-98)**

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9. Shri Chitta Basu
10. Shri Lakhiram Agarwal
11. Smt. Basanti Sarma
12. Shri V.P. Duraisamy
13. Shri Rajnath Singh 'Surya'



## INTRODUCTION

1. The Chairman, Standing Committee on Energy having been authorised by the Committee (1998-99) to present the Report on their behalf, present this Tenth Report (Twelfth Lok Sabha) on the subject 'Fire and Subsidence Control in Coal Mines'. The task of examining the subject "Fire and Subsidence Control in Coal Mines" and preparing a report on it was entrusted to a Sub-Committee of Standing Committee on Energy of 1996-97 and 1997-98.

2. The Sub-Committee held 9 sittings in all of which 3 sittings were devoted to recording of evidence of expert and official witnesses and 6 sittings for in-house deliberations.

3. The Sub-Committee also undertook on-the-spot study visits to Dhanbad, Raniganj and Calcutta from May 26, 1997 to May 30, 1997 and Sohagpur and Bilaspur (Madhya Pradesh) from November 12, 1997 to November 14, 1997 to acquaint itself with the problems of mine fire and subsidence. The Sub-Committee considered and approved draft report at their sitting held on 28th November, 1997.

4. The Committee of 1998-99 took up the unfinished task and decided at their first sitting held on June 11, 1998 that the draft report on the subject should be considered by the Committee after presenting draft reports on demands for grants 1998-99 of the various Ministries/Department under purview of the Committee. The draft report was considered and adopted by the full Committee at their sitting held on 25th August, 1998. The Committee also authorised the Chairman to finalise the report and present the same to Parliament.

5. The Committee wish to express their thanks to the Ministry of Coal, Coal India Limited, Ministry of Railways, Central Mining Research Institute, Ranchi, Director General Mines Safety, Dhanbad, Shri R.N. Mishra, Shri S.L. Chakaravorty, Mining Advisor (Rtd.) to the Government of West Bengal and Prof. S.P. Banerjee former Director-Incharge, Indian School of Mines, Dhanbad for placing before them the requisite material/memoranda in connection with the examination of the subject. The Committee also wish to thank in particular the representatives of the Ministry of Coal, Coal India Limited, DGMS and Central Mining Research Institute who appeared before the Sub-Committee for oral evidence and placed their considered views before them.

6. The Committee place on record their appreciation for the work done by the Sub-Committee on Coal, 1996-97 and 1997-98.

NEW DELHI;  
October 11, 1998

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Asvina 19, 1920 (Saka)

K. KARUNAKARAN,  
Chairman,  
Standing Committee on Energy.

**PART A**  
**REPORT**  
**CHAPTER I**  
**INTRODUCTORY**

1.1 The Coal Industry in India is over 200 years old and grew slowly during the first 150 years. The real growth of the industry has taken place only after independence when steps for industrialisation of the country were initiated through the Five Year Plans and specially after nationalisation of the Coal Industry in 1971 and 1973. Raniganj in West Bengal is recognised as the birth place of the coal mining in the country and mining operations started sometime way back in 1774. In the course of time, many private entrepreneurs started coal mining operations in Raniganj coalfields. During those days, there was no legislation for safety, conservation etc. It brought various problems and issues of land degradation which cannot be avoided in mining. Today's problem of subsidence at or near the habitations appear to have its role in the coal mining of earlier days conducted unscientifically in the shallow portions by the private owners for profit making since there being no restricting laws. These laws were first enacted in 1901 and got amended in 1923, and by Coal Mines Regulation Act in 1957. Though conventional board and pillar method had been adopted for mining, the pillars are reduced to stooks, making wide galleries. All those workings had been abandoned. Plans of these are not available in all cases and wherever available these are not reliable. Despite existence of declared unsafe places population growth continued unabated. Population has grown in an unplanned way and as many as 12 townships and over 100 villages are within Raniganj coalfields. This increased population has resulted in illegal mining in the abandoned mines. The illegal mining is said to be one of the reasons to cause subsidence. The Eastern Coalfields Limited (ECL) has informed in a note submitted to the Committee that with active participation and association of the concerned District and State Authorities, ECL's Security Force and CISF, it has regularly been stopping all illegal mining spots through incentive raids, surprise checks etc., within ECL's lease-hold area. Filling up/dozing has been done in the abandoned mines. Such actions have reportedly been taken in the past.

1.2 The Jharia Coalfield lie at Dhanbad in the State of Bihar about 260 km North West of Calcutta. The Jharia Coalfields are India's only domestic source of prime coking coal. Bharat Coking Coal Limited's Jharia operations currently supply approximately 40 per cent of the nation's coking coal requirement. Mining operations in other coalfields provide an

additional 37 per cent and imports remaining 23 per cent. Enormous quantities of Jharia's coking coal are actively burning, or isolated from exploitation by fires or are threatened with isolation or consumption by fire. In 1991, BCCL reported that mine fires had affected half of their collieries and had already consumed 37 million tonnes of coal worth about Rs. 1800 crore and had isolated 1.8 billion tonnes of coal from possible recovery.

1.3. As explained earlier, the Coal industry made rapid strides after nationalisation and as a result the following changes occurred:

(a) Proportion of coal obtained from the opencast mines have gradually increased from 25% in 1973-74 to 75% in 1995-96. With a high degree of mechanisation in opencast mines, the overall labour productivity in the coal industry has gone up from 0.58 in 1973-74 to 1.7 in 1995-96. Details of coal production in the country during the last three years, State-wise, are as under:

(million tonnes)

| State          | 1994-95       | 1995-96       | 1996-97<br>(Prov). |
|----------------|---------------|---------------|--------------------|
| Andhra Pradesh | 25.65         | 26.77         | 28.73              |
| Assam          | 1.19          | 0.82          | 0.75               |
| Bihar          | 72.45         | 74.53         | 77.58              |
| Madhya Pradesh | 75.12         | 79.76         | 83.28              |
| Maharashtra    | 21.00         | 22.82         | 24.86              |
| Orissa         | 27.32         | 32.70         | 37.37              |
| Uttar Pradesh  | 13.70         | 14.80         | 15.40              |
| West Bengal    | 17.34         | 17.93         | 17.69              |
| <b>TOTAL</b>   | <b>253.73</b> | <b>270.13</b> | <b>285.66</b>      |

(b) Environmental management has become an integral part of mine planning in the case of all new projects and each mining company has set up an Environment Management Division to assist the production executives in taking environmental protection measures.

1.4 The problems of mine fire and subsidence in coal mines in Coal India Limited are confined mostly to the eastern sector *i.e.* in mines under Bharat Coking Coal Limited (BCCL) and Eastern Coalfields. Limited (ECL). These two subsidiary companies were formed of fragmented small units worked by erstwhile owners. These small units were worked out in different coal seams without any scientific planning and with scant respect for conservation and safety. Such mining operations were conducive to spontaneous heating of coal leading to fire in many cases. Majority of the

fires in mines owe their origin to spontaneous combustion occurring either in underground or on the surface.

1.5 In our country occurrence of fire in coal mines, particularly Jharia coalfield in Bihar and Raniganj coalfield in West Bengal, is very common. Different grades of coal are mined out including a large amount of low rank coal. Among these, particularly the low rank coal poses a serious problem of spontaneous combustion at every stage of its mining and handling. Over 75% of the fires occur due to spontaneous combustion of coal both in underground and surface mines. Some of these fires still continue for years together. Fire in coal has not only caused loss of huge amount of valuable natural resources but also damaged the surface structures and is polluting the environment. The basic cause of initiation of mine fire is self — heating behaviour of coal and the factors leading to mine fires are both natural and technical. Natural factors include nature of deposits, intrinsic behaviour of coal, geothermic gradient as well as geological characteristic, while technical factors are related to mining operations and ventilation.

1.6 At the time of nationalisation of coking coal mines in 1971, there were 70 active fires in 42 collieries of Jharia Coalfield, covering an area of 17.32 sq kms. It has been estimated that about 1864 million tonnes of coal reserves are blocked and about 37 million tonnes of coal might have been damaged due to these fires. Efforts made so far dealing with these fires could only prevent the spreading of fires barring a few exceptions but complete extinction of this in most of the cases was not possible. A number of schemes envisaging an outlay of Rs. 114.57 crores are under various stages of implementation to deal with Jharia Coalfields fires. 10 fires have since been extinguished.

1.7 The Standing Committee on Energy have restricted their aspect of study to the fire and subsidence in coal mines of Jharia and Raniganj where the problem has been alarming and has focussed the attention of the entire nation. The Committee's visit to coal mines of South Eastern Coalfields Ltd. (SECL) and informal discussion with the trade unions/public representatives have revealed that the incidences of fires in mines of SECL are rare occurrences. Presently, there are five cases of fires/spontaneous heating in SECL which are adequately contained and there is no threat to overlying built up area, surface structure and environment. Thus, the problem of mine fire and subsidence exist in all coal companies though with different magnitudes. During discussions with the representatives of SECL, the Committee have been informed that Directorate General Mines Safety (DGMS) permit blasting with a limited magnitude of blasting intensity and the blasting operations for mining purpose are carried out by the coal companies accordingly. The test blasting operations are carried out with an intensity below what is permitted by DGMS. However, the Committee were informed that actual blasting operations carried out by SECL are not recorded although they

(SECL) adhere to the standards set by DGMS. Although, the representatives of SECL stated that the time taken to complete a single blasting cycle is 6-7 hrs, the representatives of DGMS stated that the technique to speedily record the intensity of blasting is available. The Committee have been apprised of the cracks in the houses of Nariabodh village affected due to blasting in LaxmanOC project of SECL. The Committee have been informed that two persons were killed in police firing at Nariabodh village under LaxmanOC project of SECL who were protesting against mining operations in and around the village.

1.8 The Committee have been apprised that the gravity of the fire problem is different in different coal companies and to cope up with the increasing demands of coal, evolution and adoption of better safety and technology measure are required with proper rehabilitation package. Since the two issues of fire and subsidence are major problems in Jharia coalfields in Bihar and Raniganj coalfields in West Bengal, the Committee have examined the two areas in the detail and these are dealt with in this Report in the succeeding Chapters.

## CHAPTER II

### FIRE PROBLEM IN JHARIA COALFIELDS OF BHARAT COKING COAL LTD.

2.1 Coal mining in Jharia coalfields started just a century back and picked up at a fast rate in view of the best quality coking coal reserve in upper 9 seams, nearly exposed on the surface or under shallow depth cover. Jharia, as a hub of the coal mining activities, came into prominence and township started coming around the year 1898. Concentrated growth of dwellings in this town and all around in subsequent years was the natural outcome of the industrial growth.

2.2 The Committee have been informed that the coalfields having the highest density of seams in the world and localised intensive mining activities in upper seams posed serious instability problem to the dwellings. Mining of thick seams in sections, non-coincidence of super imposition of the working in different sections, unscientific mining, including selected section depillaring under shallow cover were some of the legacies of the previous mining that had led to the present day problem. According to Central Mining Research Institute (CMRI), contact fire to the near exposure of the seams, spontaneous heating in the shallow goaves and illicit activities followed frequent fires and at one stage as many as 110 active fires were recorded in the coalfields.

2.3 The major problems of shallow fires exist in the Jharia coalfield. The first incidence of mine fire in this coalfield was recorded in the year 1916. When the coking coal was nationalised in the year 1972, there were 70 fires raging in this coalfield. The fires raged in size from 0.1 to 2.0 sq. km. and covered a total area of 17.32 sq. km.

2.4 Enquired about the steps that have been taken by the Coal companies to implement fire control measures and what success has been achieved to control fire, the Ministry of Coal informed the Committee in a post evidence reply as under:—

“It was only after nationalisation of the coal industry that concerted efforts were made to deal with these fires systematically by applying various available indigenous technologies. 22 project reports were formulated to deal with these 70 fires at a total sanctioned amount of Rs. 114.57 crore. These projects were implemented right from 1976 onwards and a sum of Rs. 73.6 crore has so far been spent. As a result of the efforts carried out over the years, 10 fires have been completely extinguished and the rate of spread of the remaining fires is by and large under control”.

2.5 Regarding various indigenous technologies used in single or in combination to extinguish fires, the Bharat Coking Coal Limited informed the Committee in a note as under:—

“The various technologies used by BCCL to extinguish fire are:—

- (i) Trench-cutting with the help of HEMM and filling with non-carbonaceous incombustible material.
- (ii) Hydro-Pneumatic stowing.
- (iii) Fly ash flushing.
- (iv) Circulating water under pressure and explosion proof stoppings.
- (v) Digging out the fire and quenching it with water, and
- (vi) Infusion of inert gases like nitrogen infusion in the selected areas of fire below ground”.

2.6. It further stated:—

“From the application of available technologies to deal with the fire in the Jharia coalfield, it was however felt that most of the fires could not be liquidated. It, therefore, became necessary to search for a new technology which can control effectively the spread of fire as well as quench them and allow the strata to cool down rapidly. In search of suitable technology, a team of 4 mining engineers were deputed to USA in 1991 to examine the technologies available there for control of fires. This team identified following technologies for dealing with these fires.

- (i) Use of hydro-monitors for quenching the fire followed by excavation of heated debris and coal.
- (ii) Drilling under high temperature conditions.
- (iii) Infusion of foam through bore-holes.
- (iv) Use of expanded cement—slurry mix for scaling off of the cracks and stabilising the area”.

2.7. According to Ministry of Coal, all these methods by and large could contain the progress of fires and were successful in liquidating 10 fires. In 1992, CIL/BCCL approached the World Bank with a request to assist for a major effort to find solution to deal with these fires and mitigate its effect on the environment and the people living in the area. As a result of discussions, the World Bank/International Development Association (IDA) agreed to assist CIL/BCCL to deal with the menace. The World Bank/IDA provided a \$ 12 million credit under the Jharia coalfields fire.

2.8. However, in a note furnished to the Committee by Mining, Geological and Metallurgical Institute of India (MGMI), Calcutta, it has been stated that the Chari Committee did not favour foreign experts being

invited to render advice in India as they would be of little use, for the type of cost-effective reclamation. It has stated that advantage should have been taken through some of our Executives studying reclamation projects abroad to draw upon the experience gained there and adapt them for application under different conditions here.

2.9. The Ministry of Coal have informed the Committee that the world Bank assisted Jharia mine fire control technical assistance project has two components which are as under:—

- (a) "Development of a fire-fighting programme of each of the known fires in Jharia coalfield. This involves a detailed survey of the fires and preparation of a prioritised programme that would indicate the most cost effective approach for dealing with these fires taking into account economic as well as social and environmental concern. For carrying out this job, an international consultant with extensive experience in the control of mine fires M/s. GAI Metchem Joint Venture, USA/Canada was engaged.
- (b) Preparing an Environmental Management Plan with the objective of mitigating the adverse effects of mining operation on the environment and people living in the area. For carrying out this job also, an international consultant with extensive experience in preparation of environmental management plan, M/s. Norwest Mine Services Ltd., Canada was engaged."

2.10. The consultants for preparation of Fire Fighting Programme had since submitted their report in November, 1996. The consultants observed that overall fires have reduced in surface area even though a few fires individually have increased in surface area. Latest study indicates surface area of the fires as 8.90 sq. km. against earlier figure of 17.0 sq. km. The major recommendations of consultants are:—

**(i) Fire Fighting Programme**

- (a) Dhanbad Patherdih rail line (2.8 km. stretch) is endangered by fire and requires immediate grout;
- (b) Adra-Gomoh rail line requires protection by isolation trench and water curtain;
- (c) Ekra, Kari and Chatkari joses are endangered due to fires and require immediate grout stabilisation;
- (d) Jharia and Kirkend towns and other built up areas are endangered due to fires and require immediate isolation from fires;
- (e) Total extinguishment of fires immediately is not achievable but further advance of these fires can be controlled by the application of the recommended fire abatement/control measures.



2.11. According to Ministry of Coal. The consultants have examined the following two options available for dealing with the situation:

- “(i) Excavation of the entire fire area, the cost of which they have estimated at US\$ 2.4 billion (Rs. 8160 crore) at current price. This option, however, has not been recommended by the consultants on technical grounds.
- (ii) The second option is to control spread of fire and abatement by employing isolation of fires by trenching, grout barrier and stabilisation, water curtains and excavation of fire on selective basis. After study of the blockwise fire, the consultants have proposed either one or a combination of more methods to control/abate the fires.”

The consultants have worked out US\$ 293.9 million (Rs. 1037 crore) as the cost of the activities of the preferred control/abatement options in Jharia Coalfield.

#### (ii) Environment Management Plan

2.12. Findings and observations/recommendations of the Environmental consultants (Norwest Mine Services Ltd.) relating to socio-economic study, air quality, water management, water quality monitoring and mine reclamation are as under:—

- “Unauthorised encroachment on BCCL property is rampant;
- The current population of Dhanbad district is 2.9 million and is increasing @ 2% per year;
- Scheduled Castes and Tribes account for 24% of the total population, most of whom live in rural areas;
- A large number of working population of the district depends directly or indirectly on the mines operated by BCCL;
- On account of financial constraints and lack of coordinated assistance from other agencies, BCCL is not able to resettle more than 100 families per year, on an average;
- From an economical development perspective, the region is lagging in terms of providing institutional and physical infrastructure, needs for economic growth and diversification;
- Thousands of people are affected by one or the other of the two risks namely, fires and environment. (Subsidence is the third major risk but was beyond the scope of study of the consultants);
- 83 villages have been assessed and the population (non-BCCL) likely to be affected are broadly 22,300 families (required within next 25 years), of which 10,800 families are in high risk zone”.

The total cost is US \$ 225 million i.e. Rs. 796 crore (estimates).

2.13. The Ministry of Coal informed the Committee that the consultants have also mentioned the impact of not taking timely measures which are as under:—

- “(i) Lakhs of people shall face danger due to after effect of the fires in the long run by way of heat, virtually turning this coalfield into a ‘fire bowl’. This will be a national disaster;
- (ii) Colossal loss of coal resources;
- (iii) Business centres and huge infrastructure shall be devastated;
- (iv) People will become jobless;
- (v) Coal mines of BCCL shall face closure;
- (vi) Agricultural land shall be lost, soil sterlisation shall be wide spread because of fires and subsidence risk factors;
- (vii) Water famine shall result in the entire area;
- (viii) Whole of Dhanbad district will face complete disruption in Health, Education, Housing, road network and complete social disorder;
- (ix) Major Railways like Grand Chord and National Highways which are the life lines of the country, besides other traffic network shall be destroyed;
- (x) The above factors shall lead to one of the greatest economic disaster not of BCCL or Dhanbad district alone, but of the entire State and the country”.

#### **Safety of Areas in Jharia Coalfields**

2.14. The concentration of dwellings increased with time and in comparison to 9% land under habitat in the year 1925, the share increased to 33% in the year 1987. The Committee have been apprised by CMRI that, according to one estimate the coalfield had 4343 subsided pockets, and nearly 4000 hectares of land have subsided by over 0.6m to 1m subsidence before 1988. With scarcity of sand and due to economic considerations, depillaring with stowing, a common practice for surface built up area underground mining, has decreased. The pack density of stowing has deteriorated with the quality of sand and ethical failure in implementation of the stowing, resulting lag in stowing operations.

2.15. The Committee held informal discussions with various trade unions of BCCL, Jharia Bachao Samiti, Jharia Nagrik Sangh and Jharia Chamber of Commerce in connection with the problems faced by them due to fire and subsidence in the area during their visit to Dhanbad in May, 1997. The Committee have been informed that the habitants are being asked to move from the areas of Bariaheer, Samsheernagar, Dhardar etc. They all made a protest against BCCL as it had asked for evacuation of these people without providing any alternative. They also informed the Committee that

due to contined fire, water level has also gone down in these areas. They all were unanimous that employment and rehabilitation should be decided before any evacuation orders are passed and stressed that the fire should be controlled and reclamation of land should be done as in the case of Jukta fire area and desired that one by one, each area should be taken on priority basis and fire should be controlled by trench cutting, stowing and filling underground water etc.

2.16. In a memorandum submitted to the Committee by Jharia Nagrik Sangh and Jharia Chamber of Commerce during its visit to BCCL, Dhanbad, the Committee have been apprised of the views of the citizens of Jharia town. It has been stated in the memorandum that M/s. BCCL have had the underground rights for mining of coal but have at no time the right to affect the lives of surface residents who are in peaceful possession of their properties rightfully owned by them over generation through decades.

2.17. The Committee have been informed that rehabilitation of land oustees is governed primarily by the guidclines issued by Ministry of Coal vide No. 49019/4/86-CP/LSW dated 19.10.1990, the salient features of which are as follows:—

- “(i) To the extent new employment opportunities get created in the project in unskilled and semi-skilled categories, these shall be reserved entirely for the land oustee families.
  - (ii) Suitable vocational training facilities would be provided to the land losers to upgrade their skills for employment in other categories of jobs in the project, on a preferential basis.
  - (iii) Alternative house sites with suitable infrastructure will be provided to all evicted families. Each evicted family would be paid a shifting allowance of upto Rs. 2000/- and a lump-sum grant of Rs. 5000/towards housing.
  - (iv) Cash compensation for the land to be acquired will be deposited with the district administration in advance so that there is no delay in payment of compensation to the land owing displaced families.
  - (v) Families which are not beneficiaries of employment for one of their members, would be paid Subsistence allowance for 20 years at the following rates:—
- |                                       |  |
|---------------------------------------|--|
| (a) To families losing lands one acre | At the rate of upto Rs. 300/- per month plus an <i>ex-gratia</i> amount of Rs. 100/- per month per family. |
|---------------------------------------|--|

- (b) Families losing above one acre   Rs. 300/- per month per acre  
subject to a maximum of  
Rs. 1000/- per month plus  
Rs. 100/- per month per family.

2.18. In addition to the rehabilitation package adopted by Ministry of Coal in October, 1990, the coal companies have been advised to abide by the State Governments instructions wherever such rehabilitation packages are available. Recently Coal India Ltd., have formulated a comprehensive Rehabilitation and Resettlement (R&R) Policy for providing relief to the Project Affected People (PAP). Main ingredients of CIL's R&R Policy are:—

- (i) The rehabilitation process will start simultaneously with land acquisition.
- (ii) Socio-economic survey will be carried out to ensure adequate economic rehabilitation.
- (iii) Land owners, tribal cultivating land under traditional rights, persons whose homestead is acquired, share croppers, land losers, tenants and day labourers etc., will be covered in the rehabilitation package.
- (iv) Rehabilitation plans will be prepared in consultation with PAPs and State Governments.
- (v) Resettlement sites will be provided with infrastructural facilities like schools, roads, drains, community centres etc.
- (vi) Contractors will be persuaded to give jobs to eligible PAPs on preferential basis.
- (vii) Land oustees will be eligible for jobs on preferential basis whenever outside recruitment becomes necessary.
- (viii) Coal companies will assist PAPs in developing opportunities for self employment option like dairy and poultry, small business, petty contracts etc.
- (ix) Coal companies will shift the tribal community as a unit and provide facilities to meet the specific needs of maintaining their cultural identity.
- (x) A Committee comprising of nominees of State Governments project GM, PAPs etc. will be constituted to examine grievances of PAPs and proper corrective action.

2.19. The Committee have been informed that the mining activities underground gave very little scope for checking the status of pillars, stooks, sand, stowing condition and status of deterioration of the natural supports as the panels were sealed. Other than the leases acquired after

the promulgation of the special Act "Coal Bearing Areas (Acquisition and Development) Act, 1957," which came into effect since 12.6.1957, the land was invariably owned by individuals while the underground right was under the control of the mine owners. This law did not allow acquisition of surface rights alone and hence land in many of the old workings were acquired by personal negotiations. The land was necessarily to be acquired before the depillaring operation but in many cases the acquisition was on personal leases for the interim period and legally remained under the control of the dwellers. In case of development workings with coal pillars as the natural support, there was no obligation to acquire the surface right. The condition became complicated with the thinning, deterioration of the pillars, interaction of multisection unscientific working and influence of the fire and adjacent depillaring districts when the subsidence became frequent in otherwise safe areas.

2.20. The Committee have been informed that the surface area of the coalfield has been inhabited over years by legal acquisition of surface right. Some of the companies acquired the surface rights also along with the underground right for office, residential space and in some case even for mining. The damage to the land with the underground mining was marginal even in case of caving under shallow cover when the dwellings were vacated during the mining period or when the fire became active. The subsidence in due course of time stabilized when the dwellings were repaired and occupied. In due course of time (occupancy over 30 years), the dwellings became legal under the state rule. In most of the cases, the reclaimed surface was occupied by the workers of the mine who had no allotted accommodation and in subsequent years was transferred in private hands and became liability. The types of dwellings of the coalfield as such are of the following categories:—

- (i) Company quarters, colony and office complex.
- (ii) Private houses over the legally acquired land.
- (iii) Private quarters over subsided areas, legalised with the time frame.
- (iv) Private quarters etc. constructed over the protected land along the roads, rails and streams.
- (v) Encroachment over the acquired land after the stabilisation of subsidence.

2.21. According to CMRI, the dwellings in Jharia coalfields are likely to be affected by ground movement which could be due to caving, crushing of pillars or active fire. The CMRI study has revealed that the depillaring of thick seam under shallow cover has followed heavy subsidence and no structures were likely to sustain the strain, slope and differential movement. Similarly, the fire in a thick seam of high quality was likely to have 60-65% surface subsidence and under the influence of cracks and fissures due to fire, no structure was likely to sustain under the condition.

Crushing of the pillars under heavy stress fields, undersize stooks even in shallow workings or abatement loading and failure, of the pillars or stooks due to parting failure, are likely to cause extensive differential movement and surface deformation resulting in tilting of the houses. The dwellings under tension or compression zone are likely to develop cracks making the houses unfit temporarily or forever. The stowing in this field is known to be very effective with as low as 5 to 10% subsidence but delay in stowing, poor pack density, and lag in stowing has been responsible for high subsidence factor and damage to the dwellings. The loss in buoyancy effect in case of water drainage has been responsible for failure of undersize pillars or stooks and thereby surface subsidence and damage to the dwellings. Heavy blasting in the vicinity of critically unstable underground workings has been reported to trigger ground movement.

2.22. The CMRI have informed the Committee that six teams of CMRI scientists, including mining engineers, earth scientists and fire experts, were deployed with the following mission:

- (a) Get the realistic information after discussion with the management and surveyors of the areas.
- (b) Visit of the surface particularly dwelling areas for possible indicative signs of instability.
- (c) Visit of underground working wherever accessible to visualize the condition of the pillars, developed galleries and other features.

2.23. The teams made nearly 175 visits including 70 visits in mine workings for collection of these information and visited most of the dwellings within the areas. The information about the dwellings were however based on the records made available from the mine management. The data were supplemented by the aerial survey results of BCCL. The CMRI study has taken minimum of 20 dwellings cluster as a village, colony or bustee for evaluation of their stability status. The stability itself was to be categorized in the light of status of workings down below, the position of fire and nature of the dwellings. The stability scenario has been categorized as follows:

**Category I:**

- Fully stable over pillar size as per CMRI or virgin seams,
- Over stabilized goaf,
- Over fully packed goaf,
- Over partial working stook and stowed goaf.

**Category II:**

- Stability with undersize pillars,
- Contiguous workings with lack in super imposition,
- Failure of the bands of partings,
- Old stowed goaf with poor pack density and under size stook.

**Category III :**

Thinned or robbed pillars,  
 Reduced pillars in seam or seams,  
 Developed under size pillars or irregular pillars,  
 Contiguous workings with irregular or erratic development,  
 Fire encroaching closer to draw limit.

**Category IV :**

Depillared vertically below or on fire within draw zone,  
 Working in random fashion including thinning/splitting of undersize pillar,  
 Active pillar reduction/heightening in any fashion without stowing or systematic strata control,  
 Interaction of depillaring over the barrier pillars, stooks or weakened pillars.

2.24. Detail of dwellings in different mines of the area on the basis of the information collected for different mines have been prepared by Central Mining Research Institute covering the name of the dwellings, number of houses within the bustees, area of the dwellings and their category. The hot spots were identified in different areas and sectional elevation of each of the dwelling was prepared to project the position of different seams working or fire position to project the causes of instability. The Central Mining Research Institute stated that the details collected for different Mines of the areas were analysed with special emphasis to the unstable village. Some of the areas covered under the programme has towns like Jharia, Kendua, Kerkend and Barakar, a very large number of bustees and a number of active fires.

2.25 On the basis of analysis of the information generated under these heads total number of dwellings under each category and in each area have been stated to be calculated by CMRI. CMRI has observed that the detail in respect of different types of dwellings, area and number of houses reveal the liability for underground mining activities in future. The core blocks like Kustore, Lodna, Pootki Balihari have larger number of unstable dwellings under Category III and IV, while the newly acquired and operated blocks like Eastern Jharia has more number of dwellings under category I.

2.26 The problem of different areas were highlighted by working out the total dwellings under different categories. Dwellings under category IV are identified to be unstable because of the mining, fire or interaction activities. The dwellings under the category III are under-stable status as on date but could be in danger shortly in case preventive measures are not adopted. The dwellings under the category II and I indicated the type of problem, the area is going to face in days to come because of extensive surface dwellings. This may require control over growth of habitation over

the surface or development of eco-friendly mining options. The status of dwellings in six areas *i.e.* Kustore, Lodna, Bastacolla, Eastern Jharia and Pootki Balihari under reference is given below:

| Category     | No. of Villages |
|--------------|-----------------|
| Category I   | 136 + 1 Partial |
| Category II  | 36 + 1 Partial  |
| Category III | 34 + 5 Partial  |
| Category IV  | 39 + 5 Partial  |

2.27 According to the report submitted by CMRI to the Committee, the dwellings influenced by workings down below or approaching fire from the side within the draw limit have been envisaged to be under category IV. Status in some of the old workings changed within recent years by planned or pilfered workings were also considered while deciding the stability. But the workings prior to nationalisation or older ones standing stable so far and accessible or inaccessible have been taken to be stable. The dwellings which were critically unstable-apparently visible or indicated by cracks or fissures, fires or smoke have been grouped under the dwellings which should be taken under eviction on priority basis. The villages under category III, numbering 34 and part of 5 villages are likely to be unstable in due course of time unless adequate precautions are taken for stabilization or control of fire. There is a need to plan their eviction under the second priority. There are 36 villages in category II and 139 villages in category-I mostly in Eastern Jharia and Chanch Victoria areas. These dwellings are over the workings but are stable unless the status of their working is changed by going for the workings of lower or upper seams by any sequence. The Committee have been informed that under the action plan made by CMRI, 39 full colonies and 5 partial colonies have to be evicted covering nearly 8413 houses over 1976000 sq.m. on priority basis. Details of the dwellings under the category IV are summarised in Table below:—

Dwellings under category IV in six areas.

| Area            | Dwellings    | Houses | Area (Sq.M) |
|-----------------|--------------|--------|-------------|
| Kustore         | 16+3 Partial | 3607   | 920855      |
| Lodna           | 14           | 2521   | 599003      |
| Bastacolla      | 1+2 Partial  | 955    | 210950      |
| Eastern Jharia  | 1            | 115    | 42000       |
| Pootki Balihari | 7            | 1215   | 203734      |
| Total           | 39+5 Partial | 8413   | 1976542     |



2.28 When enquired about any survey that has been carried out to identify the mines and areas affected by fire/subsidence and the steps taken for rehabilitation of workers and families residing in areas which are prone to fire/subsidence, Bharat Coking Coal Ltd. (BCCL) in a note furnished to the Committee, during its visit to Dhanbad, has stated as under:

“Yes, BCCL has recently carried out detailed study for identification of areas endangered due to fire and subsidence in Jharia coalfield. The study was based on CMRI report on unstable areas in BCCL. It was found that about 22,100 houses are critically endangered due to fire and subsidence which require immediate vacation. BCCL is still continuing further survey of the additional locations as identified by DGMS to be unstable. However, BCCL has plans to shift its own employees out of the 22,100 houses from fires/subsidence prone areas to new housing complex at Karmatand which is nearing completion, as soon as the dispute with the local villagers is settled. Additionally over 600 houses are being hired on rental basis at Sindri complex for rehabilitation. Further rehabilitation sites on non-coal bearing areas at Govindpur, Katras and Sijua areas have been identified for construction of over 300 houses. On rehabilitation issues the company is constantly interacting with the district authorities”.

2.29 The Committee have been informed that to start with, BCCL has identified a total of 4600 people (3100 non-BCCL; 1500 BCCL) to be rehabilitated in non-coal bearing areas. The project will be started during the current year and Rs. 33.88 crore have been provided to implement the project. The Secretary, Ministry of Coal, informed the Committee during evidence that the Coal Mines Nationalisation Act, 1973 does not provide for the Central Government to spend money on stabilisation and reclamation of land which was the responsibility of the erstwhile owners who had done the unscientific mining in the past. One of the difficulties in clearance of funds is stated to be the existing provisions of section 7 (1) of Coal Mines Nationalisation Act, 1973 which state that the every liability of the owner, agent, manager, or managing contractor of a coal mine, in respect of any period prior to the appointed day, shall be the liability of such owner, agent, manager or managing contractor as the case may be, and shall be enforceable against him and not against the Central Government or the Government company.

2.30 Enquired about incidence of spontaneous heating/fire during the last 4 years, the Ministry of Coal informed the Committee in this regard in a written reply as under:—

“During the last 4 years (1993-96) there have been 76 incidences of spontaneous heating and fires in the coal mines of CIL. The details are as under:

| Company | No. of incidence<br>spontaneous<br>heating/fire | Financial<br>losses<br>(figs. in lakh) | No. of<br>Casualties |
|---------|---|--|----------------------|
| ECL     | 62  | 805                                    | 55                   |
| BCCL    | 3   | —                                      | —                    |
| CCL     | 1   | —                                      | —                    |
| MCL     | 1   | 10                                     | —                    |
| WCL     | 7   | —                                      | —                    |
| SECL    | 1   | —                                      | 3                    |
| NCL     | 1   | —                                      | 1                    |

In Central Coalfields Ltd. a recent accident (Oct. 97) has caused 5 fatalities due to subsidence.

2.31 Asked about the details of the enquiries made for incidents where human lives were lost and the action taken against the officials found guilty of negligence, the Ministry of Coal in a post evidence reply furnished to the Committee have stated as under:—

“In all the cases of mine fires involving fatalities, enquiries have been conducted. The details of these 3 cases are:—

(a) *New Kenda*

The court of inquiry appointed under section 24 of Mines Act, 1952 has submitted its report recently. The report is being studied.

(b) *Churcha Fire*

ISO enquiry held the Area Safety Officer, agent, Manager, Ventilation Officer, Safety Officer, Colliery Engineer and Sr. Overman responsible for the accident but charges against them could not be substantiated in the departmental enquiry and were exonerated”.

(c) *Jhingurda Fire*

ISO enquiry held the deceased responsible for the accident as he being the Sr. EE (Excav.) did not take proper position on the face while attending to shovel breakdown.

2.32 With regard to the report of Court of Enquiry appointed under section 24 of Mines Act, 1952 for accidents at New Kenda colliery, the Secretary, Ministry of Coal has stated *inter-alia* during evidence on 1.10.1997 as under:

“.....the enquiry was conducted to find out whether it was due to an electrical fault. The conclusion of that detailed enquiry is available. They have finally said that the fire in New Kenda was due to electrical equipment and cable is ruled out. That means they have not been able to fix the responsibility”.

2.33 In this connection, the Director, Directorate General Mines Safety stated during evidence that the Court of Enquiry has not fixed the responsibility. However, they have made observations that there were certain discrepancies.

2.34 When enquired about the points put forward in the Departmental Enquiry against the persons responsible for the Churcha accident, in the ISO enquiry, the Secretary, Ministry of Coal stated during evidence as under:

“I would like to go on record before this Committee that I have reviewed this case. I am not satisfied with the decision in exonerating the people. I have directed that the case should be reopened on the basis of ISO enquiry. The people who are culpable should be punished and if necessary action should be taken against the persons who conducted the enquiry and exonerated these people.”

2.35 About the steps taken to check recurrence of such incidents, the Ministry of Coal stated as under:

“The precautions laid down in the statute against outbreak of spontaneous heating and outbreak of fires in underground mines are taken. Regular spot samplings, analysis of mine air from the return of the districts, development workings on panel system, checking the efficacy of isolation stoppings fire stoppings, etc. are few of the important steps taken to check such occurrences.”

2.36 To a query that how many times Directorate General Mines Safety (DGMS) has prosecuted the coal companies for violation of safety norms

and other conditions set by them before permitting mining, the Ministry of Coal informed the Committee in a note as under:

"As per the figures collected from the office of the DGMS, following are the details of the prosecution cases launched by DGMS in the last five years against the coal companies for violation of safety norms and other conditions set by them before permitting mining:

| Year         | Total No. of Prosecution Cases Launched | On Account of Accidents Resulting Due to Violation of Safety Norms | Other     |
|--------------|---|--|-----------|
| 1            | 2                                       | 3  | 4         |
| 1992         | 17                                      | 8  | 9         |
| 1993         | 39                                      | 20   | 19        |
| 1994         | 35                                      | 21   | 14        |
| 1995         | 17                                      | 11   | 6         |
| 1996         | 30                                      | 24   | 6         |
| <b>Total</b> | <b>138</b>                              | <b>84</b>  | <b>54</b> |

Out of the above prosecution cases launched against the coal companies by DGMS, only 7 cases have so far been disposed of by the court."

2.37 When the Committee desired to know the reasons for delay in disposal of the cases and the success rate of prosecutions launched by DGMS with the outcome of the 7 cases disposed so far out of 138 prosecutions during the last four years, the Director, DGMS informed the Committee during evidence on 1.10.1997 that out of 7 cases disposed so far, there were 6 acquittals and one conviction. For delay in disposal, he stated that it is the process of law and therefore he cannot comment over it.

2.38 The Committee enquired about the incident at Chouthaikuli in Jharia where cracks developed in a number of houses as to whether it was due to old goaf or due to current mining by Bharat Coking Coal Limited. To this, Ministry of Coal informed in a post evidence reply furnished to the Committee that BCCL has constituted a High Powered Inquiry Committee to pin point the cause of such incident.

It further stated:

"The incidence of subsidence at Chouthaikuli in Jharia was due to the movement of old goaves as established by the Expert Committee which carried out investigation into the incident. In the underground mine of East Bhuggatdih extraction with hydraulic

sand stowing was approved by DGMS stipulating certain conditions as laid down in the permission in 1971 which was subsequently modified by DGMS in 1985. As per the modified permission of 1985, the top 3 metre of the galleries in the top sections was to be left unstowed. The mining operations were carried out exactly in accordance with these conditions. There is, therefore, no dispute on this account. The first signs of cracks in a number of houses at Chouthaikuli appeared on 22.3.96. A Committee headed by Shri H.B. Ghosh, Ex-DGMS was constituted by BCCL to enquire the causes of development of the cracks. The Committee has submitted its report. The outcome of the findings of the Committee are:

- (i) The cracks affecting the houses have developed due to movement in the old goaves triggered by fire in XIV seam and collapse of hanging roof in the 1934—56 goaf of X seam.
- (ii) Similar movement in the goaves in future under similar circumstances and consequential further damage to the habitations cannot be ruled out.
- (iii) Prevention of damages to the building under the circumstances detailed is not feasible and hence the only remedy lies in expediting evacuation of the building for which management is reportedly taking necessary actions by referring the matter to civil authorities.
- (iv) The Committee strongly recommends that the management should take up the matter with the Government so that suitable legislation is enacted to prevent construction of houses in mining areas without obtaining a prior safety clearance from the mine authorities.
- (v) With the reported pattern of blasting in the workings, no vibrations of damaging magnitude were possible to cause cracks”.

2.39 When asked whether the incident of Katras-mode was due to blasting, since a heavy SDL machine was kept for loading underground at ‘Sadhankutir’ which was highly damaged, the Secretary, Ministry of Coal stated during evidence on 1.10.1997:

“As far as Katrasmode is concerned, there were two seams which have already been working from pre-nationalisation. But the complaint is that it is because of the explosion in the seam, the subsidence has occurred”.

The witness further added:

“I will not be able to answer the point about the machine. But the Ghosh Committee had said that the subsidence has not occurred due to blasting”.

2.40 The Committee have been informed by Central Mining Research Institute (CMRI) that it had done a study on Jharia coalfields and demarcated Jharia town as no danger area in its Report. In view of this, the Committee desired to know the reasons for subsidence at 'Sadhan Kutir' area in Jharia coalfields of BCCL, Director, CMRI informed the committee in this regard during evidence on 27.11.97 as under:

"I invented a method and named it as Wide Stall Method of Mining. By using this I had been able to extract 40 to 50 per cent. coal out of just 25 pillars discovered in the area adjacent to Jharia. While developing this method for extracting coal from Jharia, I sought cooperation of the BCCL officials for conducting an experiment in this regard in Jharia but there was a hurdle in it because the overall situation in Jharia town was so critical, unstable or sensitive that nobody was eager to work there. Therefore, I was offered a panel at the old Head Quarter office of BCCL adjoining Jharia town for trying this experiment. I received funds for this purpose with the assistance of Ministry of Coal and the Coal Conservation Development Council had also granted funds to me. By utilizing this funds I extracted 50 per cent coal through an experiment. I was of the opinion at that time by adopting this very method I can even extract coal from Jharia but unfortunately, after completing this experiment, the BCCL has taken up this method on experimental basis and inspite of my all efforts I was not even involved in it for the sole reason that a survey as well as a close monitoring was required for my first experiment. Philosophy of method is being strictly followed or not, they tried to adopt the method only on this ground, whether I can extract coal from Jharia or not. I studied the matter a bit and told them, how to extract coal from this area alongwith the precautions to be taken in this regard and submitted the report to BCCL. On the basis of this report BCCL presented its report to DGMS and after presenting the same, they themselves studied to follow this method. I requested them about 2-3 times, even in writing, I have no vested interest as such in this regard but since you are going to try this system at a place where situation is critical, therefore a thorough care should be taken for that. Please give me an opportunity so as to associate myself with you and to make this technique a success. For this purpose I had given him two panels G-I and G-II. Both of these panels were adopted by BCCL in 11-12 C. It seems to me that perhaps we would have been at fault somewhere in implementing them as a result of which this problem has emerged."

2.41 The witness further added that although he has given the technology yet he is not responsible for the mishap as he had not been allowed to monitor the project, nor did he give any permission and conducted any survey during mining operation.

2.42 The Committee invited the attention of Acting Director, CMRI to various press reports quoting him to guarantee the stability to Jharia town at a cost of Rs. 36 lakhs only. To this the Director CMRI, informed the Committee during evidence that there is misrepresentation of facts in it. He clarified that he had made it clear that first of all we have to made a study and secondly we have to see that in which area we have to adopt the secondary system so that subsiding can be stopped and we have also to see the areas which are self-stable. It was stated that he had put up a demand of Rs. 23 lakhs and 50 thousand for the total study against which he got a project of three lakh rupees and the study of which has been completed.

2.43 The Committee enquired about the steps taken by the Ministry of Coal with the State Government of Bihar to enact a similar law as the West Bengal Government "Restriction on Construction in Unsafe Areas Act, 1979". In this connection, the Ministry of Coal informed the Committee in a post evidence reply that a High Level Committee headed by Secretary, Coal and the representatives of Government of Bihar has requested the Government of Bihar to enact a similar law. The representatives of Government of Bihar have informed that they are contemplating to enact such a law.

#### **Coal Locked under Hot Spot Dwellings**

2.44 An effort was made to evaluate the magnitude of coal locked under the hot spot dwellings of different areas as per records available from different mines. The exercise covered the development status of different seams and also the quality of coal. The exercise was aimed to visualise, the techno-economics of the evacuation programme to be worked out. The Committee have been apprised by the CMRI that unfortunately information under this head was not available from the mines, hence is incomplete. The status of coal availability underneath category IV dwellings is summarised in Table given below:—

|                              |         |
|------------------------------|---------|
| Kustore Area                 | 315.798 |
| Total reserve (Million tons) |         |
| Lodna Area                   | 63.3465 |
| Total reserve (Million tons) |         |
| Bastacolla Area              | 45.52   |
| Total reserve (Million tons) |         |
| Eastern Jharia Area          | 3.676   |
| Total reserve (Million tons) |         |
| Pootki Balihari Area         | 4.184   |
| Total reserve (Million tons) |         |

According to this estimate, nearly 471.5 million tons of coal were lying below these dwellings as per the details made available from different mines.

2.45 About the losses incurred due to fire and subsidence in coal mines, it has been stated by Ministry of Coal that Central Mine Planning and

Design Institute Ltd. (CMPDIL) estimated in 1986 that 37 million tons of coal valued at Rs. 1800 crore—(base 1997) have been lost due to fire and 1.8 billion tons of coal from possible recovery. However, the Committee have been informed during evidence by the Ministry of Coal that 1450 million tons of coal is locked due to fire and if 50% of this is accessible about 725 million tons of coal worth Rs. 35,000 crore or something like that will be locked.

#### **Danger to Railway Track**

2.46 The Committee also observed that due to fire and subsidence in coal mines, some of the major railway tracks have been affected badly. In view of the danger to railway tracks due to fire and subsidence problem, the Committee enquired about the steps taken to control fire around railway tracks. The Ministry of Railways informed the Committee *inter-alia* in a note as below:

“This has been followed up with the Bharat Coking Coal Ltd. and Ministry of Labour had directed the Agents of Lodna & Bagdigi collieries of BCCL to take action for protection of Dhanbad-Patherdih rail link following an inspection made by the Dy. Director General of Mines Safety (Central Zone) and the Director of Mines Safety (Dhanbad, Region No.2) considering the seriousness of the problem, Railway requested the Geological Survey of India, Eastern Region, Calcutta to inspect the area and suggest measures to control the fires. Following the inspection by Geological Survey of India on 22nd and 23rd July 1996, they submitted their report. In their report they mentioned that fire in mines is not a recent phenomena but such incidences of mine fires have been recorded along the Dhanbad-Patherdih branch of Eastern Railway since the 1930's”.

#### **2.47 It further states:**

“Statutory and mandatory regulations regarding underground mining have not been followed, the railway track has been undermined. Sections of the track are therefore under distress due to spontaneous ignition of the underground seams left unmined. Restoration work by BCCL have not been able to totally control the incidence of mine fires. GSI Report mentioned that the measures so far initiated appear to be inadequate and suggested that the path for oxygen will have to be blocked either by very effective partitioning through sand-stowing and other such measures or by cutting through the non-ignited portion of a seam such that the coal is totally mined out. Another alternative is to allow the fire to run itself out, which is not practicable in this case. Railways have taken action to keep a watch on the affected areas by frequent inspections by the senior officers.”



2.48 The Ministry of Railways further stated that action taken by M/s BCCL authorities may not be sufficient and it may be necessary for the affected areas to be mined out and filled with inert material to ensure that underground fires in the mines do not pose a danger to the railway track. M/s BCCL have to take action to find a lasting solution and implement it early, so as to control the raging fires, to avoid any imminent danger to the railway track.

2.49 About fires along the Adhra-Gomoh line of South Eastern Railways, the Ministry of Railways have stated that these are not that serious. However, danger of the spread of fires still persists and a lasting solution has to be found here also.

2.50 Regarding danger to railway tracks, the Ministry of Coal informed the Committee in a post evidence reply as under:

*Adhra-Gomoh Railway Line:*

- (i) As per the recommendation, from Phularitand side the fire is being contained by Surface Sealing with incombustible materials spread over the fire area along the Adhra-Gomoh track. This will be followed by dozing compaction and establishment of 'water curtain' subsequently.
- (ii) From Block-II side, opencast mining is being done presently to remove coal on fire as recommended by the consultants.

*Dhanbad-Patherdih Line:*

- (i) Exposed fire spots have been sealed-off by blanketing by incombustible material adjacent to railway line at places at Bhulan—Bararee to control the ingress of air. Fire project prevent its spread towards railway line.
- (ii) Burning hot coal has been removed at Bhulan Bararee Fire Project to prevent its spread towards railway line.
- (iii) A barrier of incombustible material has been created against railway line for stopping the encroachment of fire Bararee.
- (iv) Water pooling has been provided at many locations at Lodna to prevent ingress of air.
- (v) A number of holes have been drilled and flushed with Sand and Cement mixture below the railway line at Lodna to stabilise the strata.

*Grand Chord Line:*

The Grandchord is not endangered by fires as per study of the consultants. No action needed.

***National Highway:***

**National Highway 32 is not presently endangered. However, for reason of additional safety, as recommended by consultants, sand flushing (blind flushing) at Kendwadih which is quite far from National Highway 32, is proposed to be taken up shortly".**

**2.51 The Committee have been informed by the Ministry of Coal that as per the study undertaken by Jharia Mine and Fire Technical Assistance Project the impact of not taking timely measures will result in destruction of major railways like Grandchord and National Highways, which are lifeline of the country, besides other traffic network. However, in yet another reply submitted by the Ministry, it has been stated that the Grandchord in Jharia coalfield is not endangered by fire as per the study of the consultants and no action is needed. The Secretary, Ministry of Coal clarified in this regard during evidence that Grandchord line was not in the first list. However, the DGMS in their Report has stated that impact of not taking timely measures, major railways like Grandchord in raniganj and National Highways, which are lifeline of the country besides other traffic network, shall be destroyed and this is in a long term perspective.**

## CHAPTER III

### SUBSIDENCE PROBLEM IN RANIGANJ COALFIELDS OF EASTERN COALFIELDS LTD.

3.1 The Raniganj Coalfields of West Bengal is an important part of the State and has served the cause of the State and the nation by providing valuable raw material for industrial development. Unscientific and reckless mining conducted in earlier years have contributed to the instability in many areas of the Raniganj coal belts where subsidence may be triggered any time. The areas include towns of Raniganj, Barakar and may big and small villages.

3.2. In a note furnished to the Committee, Ministry of Coal have informed that prior to nationalisation of coal industry, stabilisation of some of the possible mine workings were carried out where there was a threat to surface stability under Railways and Major Trunk Roadways. This involved either hydraulic stowing, manual packing or some other form of intensive underground support in cases where underground workings were accessible physically.

3.3. The Committee have been informed that a number of recommendations have come up from various Committees set up since 1922 to examine the issue of fire and subsidence problems in coal mines *inter-alia* include:

- (i) The formation of an organisation for the preparation of a "Data Bank" relevant to the problem.
- (ii) Preparation of detailed case studies.
- (iii) Creating awareness amongst public.
- (iv) Co-ordination with research organisations for effective solution of the problem.
- (v) Removal by opencasting the remnant of deposits with subsequent reclamation.

3.4. The first systematic study of these unstable areas was carried by a Sub-Committee under the Chairmanship of Shri S. Bagchee, the then Director of Central Mining Research Station, Dhanbad which identified 47 areas as unstable on the basis of plans available and recommended drastic remedial measures in the form of evacuation from the areas suspected of instability.

3.5. Regarding subsidence control in mines, the Committee have been informed by Ministry of Coal that subsidence control has been categorised in 2 heads which are as follows:

(a) Planned Subsidence:

“In case of planned subsidence permission for caving (which causes subsidence) is obtained from DGMS and land for the same is acquired prior to start of caving operation. After subsidence the area is dozed, filled, levelled and plantation is done over it. At Corporate level CGM (Safety) and Internal Safety Organisation (ISO) regularly visit the underground mines to ensure compliance of the provisions of mine laws.

Officers from DGMS regularly visit underground workings to ensure compliance of safety laws. GM (Conservation, Stowing & Ropeways) also monitors the underground mines where coal extraction is done by sand stowing, to assess the status of stowing.

(b) Unplanned Subsidence:

- (i) Apex Monitoring Committee consisting to the representatives of District Administration, People's representatives like MPs, MLAs, ECL and CMPDIL, Asansol with co-opted nominees of DGMS, CMRI & CMPDIL (HQ) is examining all the unstable areas and suggests preventive measures against subsidence. It also monitors progress of stabilisation of unstable areas.
- (ii) CMRI, Dhanbad has been entrusted with the jobs of predicting subsidence, measuring stress in unknown areas through boreholes and finding out methods & parameters to stabilise inaccessible areas”.

3.6. The Ministry of Coal have informed the Committee that taking ground realities into consideration, an Apex Monitoring Committee was constituted jointly by Coal India Limited and Government of West Bengal in 1990 to monitor actions being taken or proposed to be taken in the entire Raniganj Coal belt. The Apex Monitoring Committee has studied 49 potentially unstable localities within Raniganj Coalfield covering an estimated area of 11.8 sq. km. of which 4.8 sq. km. is inhabited. The AMC has found that out of 49 localities, 11 have no apparent danger. The rest 38 localities need stabilisation. Since stabilisation/evaluation need huge amount of fund which ECL can't afford on its own and evacuation of such large number of population of 1,28,000 is practically not feasible, stress was laid on stabilisation work on priority basis. The areas identified by the AMC consists of 4 townships: (a) Barakar—Begunia, (b) Jamuria market and part of Jamuria village, (c) Bahula market, 22 villages and other residential areas (d) Raniganj Town. It has been stated that in view

of there being no proven method for stabilisation of inaccessible waterlogged workings nor for delineation of the configuration of such workings, the problem was referred to the World Bank. The World Bank team visited the sites twice and had detailed discussions with ECL, showing their willingness to extend their help. Being advised by the World Bank team, a global search had been made by ECL for identifying appropriate technology for delineation as well as for stabilisation of inaccessible waterlogged workings. The following agencies were approached:

- (a) Spokane Research Center, US Bureau of Mines;
- (b) GBSIPG —KATOWICO, Poland;
- (c) Remote Sensing Agency, Hyderabad;
- (d) British Mining Consultants, U.K.
- (e) National Geo-physical Research Centre, Hyderabad.

3.7. The following foreign Embassies have also been approached requesting for details of the competent agencies:

- (a) China (b) France (c) Russia (d) Poland (e) USA (f) Germany (g) Australia

However, ECL has not received any positive response from any of the agencies which have been addressed.

3.8. The Committee have been informed that CMPDIL in association with Mining, Geological and Metallurgical Institute of India and Lavall University, Canada has taken up a research study to obtain sub-surface information by Geo-physical Method. Coal India Limited too in collaboration with INTERFELLE, Germany is trying to established a suitable method of delineation of underground voids.

3.9. Asked about the success of delineation work in underground mine by Geo-physical method undertaken by CMPDIL in association of Mining, Geological and Metallurgical Institute of India and Lavall University, Canada, the Committee have been informed in a post evidence reply as under:

“An S&T project to delineate the limits of the old and abandoned underground workings in Raniganj coalfield was taken up jointly by Lavall University Qubec, Canada, Mining Geological and Metallurgical Institute of India and CMPDIL. The final report was submitted to the Ministry in the month of November, 1995. The report envisages adoption of geophysical techniques. But the findings of the report are not conclusive for an acceptable level of confidence in the delineation of the old and unapproachable workings”.

3.10. In this connection, Shri S.L. Chakravorty, Mining Adviser to the Govt. of West Bengal (Retd.) has stated in a memorandum furnished to the Committee as under:

“Such identification is only to the extent of broadly delineating the boundaries of voids and old stooks and pillars left, but not to the extent of accurate identification. I, however feel that this should not be an insurmountable difficulty in trying to locate the old workings for the purpose of stowing in from the surface. The only difficulty that may be faced is that a stowing-borehole may fall on a pillar and may not allow stowing materials underground. However, since such old workings are very shallow, may be 50 to 250 ft. deep, it may mean only additional non-core boring at a small cost to locate a new stowing-bore-hole position. Whether the underground working would hold stowing water can also be tested by pumping in water from the surface and trying to find out if the water accumulates or is draining out to some other workings. All this would mean some effort and moderate extra cost. But I feel it would be worthwhile, better than waiting for the perfect solution to be given by any Committee in the future.”

3.11 The Ministry of Coal have stated that for stabilising unapproachable underground workings an innovative method of hydro-pneumatic sand stowing have been perceived. The method consists of filling up the underground voids by sand supplied through large diameter bore-hole in unsafe localities. Sand and water mixture is passed through this mother bore-hole and high pressure compressed air is allowed through the peripheral bore-holes to give momentum to sand-water mixture thereby carrying the sand towards void around. A pilot study was done at Ramjibanpur colliery and on getting encouraging results this technology is being taken up in the following areas for stabilisation:

“Arun Talkies and Kumar Bazar area of Raniganj town and Barachak, Fatepur, Haripur villages of Raniganj Coalfields.”

3.12. The progress of stabilisation work taken up (upto Nov. '96) in above mentioned areas is given below:

| Location             | Sand stowed through Hydro-pneumatic sand stowing |
|----------------------|--|
| 1. Arun Talkies area | 21,714 Cu.M                                      |
| 2. Kumar Bazar area  | 233 Cu.M   |
| 3. Haripur Village   | 637 Cu.M   |
| 4. Barachak Village  | 5,523 Cu.M                                       |
| 5. Fatepur Village   | 1,828 Cu.M                                       |

3.13 Enquired about the actual requirements of sand stowing and the present status of sand being stowed, the Ministry of Coal in a post evidence reply furnished to the Committee have stated as under:

“Problem of sand stowing is confined mainly in the subsidiaries of ECL, BCCL and WCL and the requirement of sand stowing *via-a-vis* present capacity in these companies is as under:

| Subsidiary Co. | Requirement in lakh Cu.M | Present capacity in lakh Cu.M |
|----------------|--------------------------|-------------------------------|
| ECL            | 40.00                    | 36.00                         |
| BCCL           | 27.75                    | 22.00                         |
| WCL            | 28.00                    | 25.00”                        |

3.14 The Committee held discussions with various trade-unions of ECL during their visit to Raniganj coalfields in May, 1997. They have been informed that various Committees have been formed since 1922 but no action has been initiated by the Central or the State Governments and desired that a white paper should be issued on the present status of fire and subsidence problem in Jharia and Raniganj coalfields. It was also suggested to the Committee that the funds collected by the State Government in the form of cess should be utilised for development of these areas. A question was raised about the success of hydropneumatic stowing. The Committee was apprised that an Act has been promulgated by the State Government to restrict growth of habitation over areas declared unsafe. However, it was also brought to the notice of the Committee that in contravention of the Act, it has been decided to set up Mangalpur, a satellite town, an area which is also stated to be declared subsidence prone area in 1988. Both State Government and DGMS appear to involve ECL in preventing of such growth though it has no power or authority to do so. The result is proliferation of habitation in such areas magnifying the problem. It was also stated that the people of the areas have a right to demand from the Central and State Government at least a peaceful abode and existence, assurance of protection from certain disaster which may render them homeless and devoid of means of sustainance. It was also stated that means of funding for the rehabilitation have to be formulated preferably without further burden on the coal companies. The representatives of State Government informed that there was an urgent need to protect environment/fire and subsidence control in this coal belt as at present there are 70 areas which have been identified and also suggested that there is a need to constitute a separate agency to handle this problem.

3.15 The Committee have been informed by Shri Sarkar, author of a publication on 'Coal Mines in West Bengal'. That Accoustic Emission Monitoring Technique (AEMT) may be employed to assess whether there have been any improvement in the situation subsequent to hydro-pneumatic stowing. He has stated that although assessment by Accoustic Emission Technique would be a difficult task but considering the fact that human lives are involved and considerable expenditure is also being made on stowing operations, no efforts should be spared to utilise whatever scientific methods are there to establish the efficacy of the method.

3.16 It has been brought to the notice of the Committee that a number of subsidence cases have occurred where according to coal company, mining operation are done after due approval of DGMS. The details of such incidents in last 3-4 years are as under:

**ECL**—Under such conditions two incidence of subsidence took place in ECL—these are Girimint and Madhusudanpur. In Madhusudanpur, subsidence occurred in the year 1992 due to inadequate stowing while in the year 1993 subsidence took place at Upper Dhowrah Colony of Girimint colliery reason of which could not be determined even after detailed investigation. At Girimint compensation for 52 affected families have been paid. In case of Madhusudanpur, 38 affected families have been rehabilitated. Total expenditure incurred in both these two cases by the company is around Rs. 58 lakhs.

**BCCL**—Details of incidences where mines/sections/districts where DGMS had given permission for depillaring but were subsequently stopped either on the advice of DGMS or by the management on its own during the last 3 years are as under:

Under DGMS advice:

| Area         | Colliery    |
|--------------|-------------|
| 1. Katras    | Angarbathra |
| 2. Govindpur | Mahespur    |

On Management's own initiatives:

| Area       | Colliery     |
|------------|--------------|
| 1. Lodna   | N. Tisra     |
| 2. Kusunda | Godhur       |
| 3. Kusunda | E. Busseriya |
| 4. Sijua   | Loyabad"     |



## CHAPTER IV

### CONSTITUTION OF VARIOUS EXPERT COMMITTEES

4.1 In a memorandum submitted to the Committee, Prof. S.P. Banerjee, former Director-in-charge, Indian School of Mines, Dhanbad has stated that the environmental damage due to mining is more with open cast mining than with underground mining. According to him, the main environmental problems created by mining are:—

- (a) Deforestation
- (b) Land damage due to (excavation and overburden dump in open cast mining) coal and infrastructure facilities created for the mine, and subsidence and mine fires in case of underground mines.
- (c) Change in hydrologic regime.
- (d) Water and air pollution.
- (e) Noise pollution and ground vibration.
- (f) Disturbance of wild life.
- (g) Socio-economic problems from displacement of original inhabitants and influx of outsiders.
- (h) Visual intrusion or aesthetics of the area.

4.2 He has further stated:

“In the past, mining has been carried out without much concern for the environment. The older coalfields of Raniganj, Jharia, Bokaro and South Karanpura all contain numerous examples of environmental degradation caused by past unscientific and wasteful mining. If broken coal is left in a worked out mine, in many cases depending upon the circumstances, the coal catches fire by self-heating and many coalfield fires of today owe their origin to the leaving of coal and unscientific mining carried out in the past.”

4.3 The Committee have been informed by Prof. Banerjee that numerous Government/Expert Committees have reportedly dealt with the subject at various times and given recommendations. A short list of these Committees and their main recommendations are as under:—

| Year | Committee                        | Headed by                                    | Main findings or Recommendations  |
|------|----------------------------------|--|---|
| 1    | 2                                | 3  | 4   |
| 1919 | Rees Committee                   | Treharne Rees (of M/s Foster, Brown and Lee) | Coal properties leased by landlords are of small dimensions and not of proper shape.  |
| 1920 | Coalfields Committee             | —  | Scientific Mining methods are needed for conservation and economic extraction of coal.  |
| 1925 | Indian Coal Committee            | E. Noyes                                     | Dwelt with quality and price of coal.   |
| 1936 | Coal Mining Committee            | L.B. Burrows                                 | Suggested strong measures for conservation of coal. It dealt with the history of collapses, fires, floods and explosions in the collieries. It suggested stowing of the voids, state ownership was recommended by some members. |
| 1945 | Indian Coalfields Committee      | K.C. Mahindra                                | Recommended State acquisition of mineral rights.  |
| 1954 | Estimates Committee of Lok Sabha | —  | Recommended Nationalisation of the coal industry in the interest of industrial development.   |

| 1    | 2   | 3 | 4   |
|------|---|---|---|
| 1955 | Committee on Balwant Rai Amalgamation Mehta of Collieries         |   | The Committee brought out that many coal properties were fragmented which was not conducive to efficient mining.  |
| 1970 | Fuel Policy Committee   | — | Suggested that the energy policy of the country be based on coal as the primary source of energy.   |
| 1982 | First National Seminar on Minerals and Ecology, ISM Dhanbad, 1982 | — | <p>Adopted the "Dhanbad Declaration on Environmental Management in Mining Industry" which is "It is imperative that in order to ensure the continued and sustained progress of the mining industry in India, the environmental dimensions should be integrated into the planning, design, development, operation and working practices of mining on scientific and rational lines, by the governments and the industry in a mutually reinforcing manner".</p> <p>The seminar also made a number of recommendations which form the basis of current environmental management practices in the coal industry.</p> |

4.4 In 1986, CMPDIL made a broad estimate involving in the environmental restoration of abandoned coal mines. It identified the abandoned quarries, subsided areas and areas occupied by spoil-dumps in

Raniganj, Jharia, East Bokaro and Karanpura coalfields. The Ministry of Coal in a note furnished to the Committee stated about mines/subsidence areas identified by the CMPDIL as under:—

“CMPDIL identified 1119 disused mines/subsidence areas. A summarised position of the CMPDIL proposal (Dec. '86) is given below:—

| Sl. No. |  | To be Reclaimed                   | Not to be Reclaimed |
|---------|--|-----------------------------------|---------------------|
| 1.      | No. of abandoned mines/subsidence considered in Raniganj, Jharia, East-Bokaro and Karanpura coalfield. | 565                               | 54                  |
| 2.      | Area occupied by pits and dumps (ha)   | 7549                              | 537                 |
| 3.      | Volume of voids in the above (mcum)  | 160                               | 53                  |
| 4.      | Volume of filling material available in external dump (mcum)   | 295                               |                     |
| 5.      | Manpower required for reclamation (Nos.)   | 2562                              |                     |
| 6.      | Funds required for reclamation (Rs.)   | 1240.74<br>Crores<br>(Dec. 1986)” |                     |

4.5 Out of 1119 disused mines/subsidence area identified by CMPDIL the reclamation scheme prepared by covers only 565 areas, some 67 abandoned quarries will continue to be used for storage of water. The primary reason for leaving out as many as 487 areas from the reclamation scheme would require handling 160 million Cu.m. of overburden that would need deploying conventional heavy earth moving equipment, bringing in overburden from nearby external dumps and transporting top soil from as far as 30 kms. CMPDIL had proposed filling in cavity of worked out opencast mines and also depression in the subsidence areas with material available in the overburden dump, levelling of the surface, bringing in top soil from the outside and providing fertilise to encourage environment.

4.6 The CMPDIL study brought out that Rs. 1240.74 crore (Dec. 1986) were needed for reclamation of the abandoned mines, subsided areas and areas occupied by spil-dumps in Raniganj, Jharia, East Bokaro and Karanpur coalfields. This report was sent to Ministry of Environment and Forest (MOEF) for arranging the funds. In view of the huge amount, MOEF in Nov. 1988 constituted an Expert Committee with Shri K.S.R. Chari as Chairman on Restoration of abandoned coal mines to examine the status of the abandoned coal mines in the country, to prioritise the selection of the abandoned mines for restoration work and to suggest the

methodology to be followed for such restoration. The main recommendations of the Chari Committee regarding restoration of Abandoned Coal Mines, submitted in 1989 were:—

- (i) Abandoned mined land can't be restored to agricultural land in a cost effective way and hence this should not be the goal.
- (ii) Biological reclamation should be the preferred s.e.p.
- (iii) Convert some of the depressions caused by opencast mining into water reservoirs: stabilise the banks by contouring and vegetation.
- (iv) For township prone to susidence, trees without horizontal spreading root system should be planed.
- (v) Inexpensive landscaping and greening should be carried out in abandoned mines as well as worked out areas of large operating mines.
- (vi) Coal companies be legally empowered to enter upon and undertake reclamation operations (in abandoned mine lands) and in suitable cases allowed to own and sell the land.
- (vii) Reclamation cost of mined areas should be subsidised through a reclamation cess.
- (viii) Advised against the creation of a separate organisation, outside CIL to implement and oversee the restoration operations.
- (ix) Does not recommend bringing in foreign experts or foreign technology for biological reclamation indigenous R&D work instead.

4.7 The Committee have been informed that since the requirement of funds was still heavy, it was decided to provide the same in phases by the Planning Commission. The first such instalments of Rs. 75 crore was provided during the 8th Five Year Plan. During the year 1992-93 and 1993-94, a seed money of Rs. 5 crore for each financial year was made available to CIL for dealing with the problems arising out of old abandoned mine workings. Since the institutional arrangements with the State Govt. of West Bengal could not be finalised, this money could not be utilized by CIL. Taking a view on the unutilised amount realised to CIL during these the two years, no amount was released to CIL for the financial year 1994-95. During the year 1995-96, a few schemes were formulated by CIL and a budget provision of Rs. 5.52 crore was earmarked which was revised to Rs. 2 crore. A budget provision of Rs. 26.10 crore for 1996-97 was revised to Rs. 5 crore in RE 1996-97. Four scheme with estimated capital cost of Rs. 22 crore were approved towards end of 1996-97. A provision of Rs. 79 crores has been made during the Ninth Five Year Plan.

4.8 The Secretary, Ministry of Coal informed the Committee during evidence on 16.7.1997 that the Government has not formally accepted the recommendations of the Chari Committee Report.

4.9 Regarding requirement of funds and arrangements to be made for the purpose of stabilisation and resettlement, the Secretary, Ministry of Coal stated during evidence on 16.7.97 as under:—

“The estimates are rather substantial. Raniganj is about Rs. 4,000 crore at 1992 prices. Lately there was another study done at the behest and funding by the World Bank of Jharia mines which had fixed the figure to Rs. 7,500 crore. If need be that kind of money will have to be located. But it has to be done in phases. Perhaps there may be some items on which there is duplication. It could be that some of the items can be scaled down. It could be that a small part fire-fighting measures could constitute a part of the budget of the coal company. To that extent this figure will go down. Essentially, there is no money for rehabilitation really. The Committee has recommended that the cess levied under the Coal Conservation and Development Act (CCDA), be raised by Rs. 10 or so. We have prepared a proposal and we are going to the Cabinet to seek their approval to amend the CCDA rule to enable us to levy cess and for having a cess of Rs. 25 per metric tonnes of coal. There is a feeling that the representatives of the State Government and the Committee held their meetings in the last week. Any incremental cess that will be collected on account of this amendment should appropriately go for rehabilitation and fire-fighting in Jharia and Raniganj.”

4.10 Asked whether this cess would be collected all over India or in the affected areas and how the package of rehabilitation is going to be implemented, the Secretary, Ministry of Coal, *inter-alia* informed the Committee as under:—

“This will be for all the areas. On any tonne of coal anywhere or any coal raised anywhere, this cess will be leviable. This kind of fire and subsidence is a national issue and therefore it should be there. That is the general feeling of all concerned. The Government of West Bengal has mentioned that there should be statutory provision to enable setting up of such a Committee and the Committee should have adequate teeth to enforce and implement the scheme. We have suggested perhaps this can be done by local authority of the State Government where we would be fully involved. I am not committing any string on our side or on behalf of the “State Government” but both the State Government—Bihar and West Bengal have decided to have one more meeting where they will come back to us after examining with their people the details of the proposed outfit of the body which is going to implement the scheme in particular rehabilitation and also fire-fighting measures. The State Government is also very much concerned about their own land and locality and environmental impact. They should know what steps we are taking technically and technologically in order to prevent such meeting this should be finalised. We have sought an additional time of three

months from the Government—July, August and September—and hopefully by August, we should be giving the report. In this report, we wish to ensure that the report should be comprehensive in all details we should particularly make out the framework which is going to implement the rehabilitation package.”

4.11 The Committee have been informed that the High Power Committee constituted to undertake the study for tackling the problem of Fire and Subsidence both in Jharia coalfields of BCCL and Raniganj coalfields of ECL has submitted its report to the Government in December 1997. It has suggested that the mitigation measures against subsidence and fire hazards are very costly options and fruitful implementation of these measures can only be possible through separate executing agency with separate funding. Formation and representatives of such agencies responsible for formulating schemes, their implementation and management of funds should be finalised at the earliest. A broad outline of executing agencies has been evolved in consultation with the concerned State Govts. and Govt. companies. For arranging fund for the purpose of stabilisation of subsidence prone areas and resettlement of affected people, the High Power Committee has suggested that the money could be made available either through planned expenditure as may be approved by Planning Commission or unplanned expenditure from Coal conservation and Development Act fund after making suitable enhancement.

4.12 The Secretary, Ministry of Coal also stated during evidence:—

“If we set Rs. 24 per Metric tonnes we will do well. But this is the ceiling. The present ceiling is Rs. 10. We are charging Rs. 4.25 only for Coking Coal and Rs. 3.50 for non-coking Coal. As far as the workable schemes for rehabilitation and fire control are concerned, we can crease the ceiling by notification. We can range up to Rs. 25 by notification. The ceiling is Rs. 750 crore. When we have the project then only we will draw the money . Let me make it a little more clear. We are now sitting with the State Governments. We will jointly decide that this is the size of rehabilitation package. For example, say in Raniganj Rs. 100 crore is required. Then we will make a provision of Rs. 100 crore. Accordingly, we will put the cess. After the report is given by the Committee within next two to three months, then we will be knowing what will be the phasing out of their money that will be required.”

4.13 When pointed out that the tentative assessment for the whole project may go up taking escalation factors into consideration and when the requirement was to the tune of Rs. 7,500 crore, what was the plan to

mobilise these resources and in how many years they were going to complete the whole project, the Secretary, Ministry of Coal *inter-alia* stated during evidence:—

“That some of the items may be common and may not be required to be funded. The price of such items may go up. We have also requested that the State Governments to give us some wastelands. These estimates are made by those Committees. I am neither supporting nor opposing. The amount of money that would be required for rehabilitation will only emerge after we make a detailed exercise along with the State Governments. The additional cess that will accrue, if we increase the present level of cess by Rs. 15, will be of the order of Rs. 450 crore per year”.



## PART-B

### CONCLUSIONS AND RECOMMENDATIONS OF THE COMMITTEE

#### *Fire and Subsidence Problem in Coalmines*

1. The problem of Fire and Subsidence in Coal Mines has resulted from unscientific mining worked out by erstwhile owners in the fragmented small units. The Committee's examination of the problem reveals that before nationalisation of coal industry, in the absence of any restricting laws, most of the mines owned by entrepreneurs operating small units were worked out in an unorganised manner. The Committee find that although Mines Act was enacted in 1901 and thereafter amended from time to time and the Coal Mines Regulation Act was enacted in 1957 yet the reorganisation and restructuring of mines as well as developing new mines resulted only after nationalisation of Coal mines in 1971 and 1973 and subsequently with the coming into existence of Coal India Limited in the year 1975. The Committee are constrained to observe that despite existence of mine safety rules and regulations and presence of DGMS, 76 incidences of spontaneous heating and fire have been reported during 1993—96 alone. Taking note of the mine fire and subsidence problems in Jharia and Raniganj even after 25 years of nationalisation, the Committee are of the view that the coal companies cannot absolve themselves of the subsequent unscientific mining carried out by them resulting in present day complex problem. The Committee find that the unscientific or slaughter mining being carried out in coal mines and left unchecked by the officials of coal companies is one of the reasons resulting in fire and subsidence. The Committee desire that the Central Mine Planning and Design Institute Limited (CMPDIL) should be entrusted to carry out a detailed study on unscientific and slaughter mining, fix the responsibility and submit a Report for information of the Committee within 3 months.

#### *Proper coordination and rehabilitation package for displaced persons*

2. The Committee observe that although the first incidence of mine fire in Jharia coalfield was recorded in the year 1916 and at the time of nationalisation, 70 fires were stated to be raging in this coalfield, the Government have yet to frame any policy for the people who face danger due to these fires. To deal with 70 fires, a total amount of Rs. 114.57 crore was sanctioned in 1976 and a sum of Rs. 73.6 crore is stated to have been spent till now as a result of which 10 fires have completely been extinguished. In a memorandum furnished to the Committee by various organisations, the Committee have been informed that the inhabitants of Jharia are reluctant to BCCL's idea of shifting elsewhere. The Committee feel that lakhs of people earn their livelihood through trade at Jharia and it

may not be acceptable to them to shift to a distant location due to fear of losing job/trade. Although legal provisions can be applied for possible evacuation of the people, the Committee feel that keeping in view socio-economic problem of a large dimension, inhabitants at the more danger areas be evicted only and these people be rehabilitated in the nearby non-coal bearing areas with adequate compensation as per guidelines issued by Ministry of Coal *Vide* O.M. No. 49019/4/86-CP/LSW dated 19.10.91. The Committee feel that the rate of Rs. 300 per month to the families losing lands upto one acre decided in 1990 is not sufficient as subsistence allowance and recommend that it may be suitably enhanced and given at the prevailing market rate. The Committee are of the opinion that the coal companies should ensure that one person from the family of the project affected people may be provided job as enumerated in the rehabilitation and reclamation package in the guidelines issued by Ministry of Coal *vide* No. 49019/4/86-CP/LSW dated 19.10.1991. The Committee also recommend that the mines affected due to fire should not be closed down/abandoned and coal may be extracted to an economic limit and once an area is declared free of coal that can be extracted, the land can be reclaimed by filling with overburden so that within few years the land can be suitable for settlement.

*Legal Rights of Inhabitants to be protected*

3. The Committee find that other than the leases acquired after the promulgation of the Coal Bearing Areas (Acquisition and Development) Act, 1957, which came into effect since 12.6.1957, the surface land was invariably owned by individuals while the underground rights were under the control of mine owners. The surface area of the coalfields has been inhabited over years by legal acquisition of surface rights. The dwellings became legal under the State law in due course of time with occupancy over 30 years. The Committee note that the conditions became complicated with the thinning, deterioration of the pillar-intersection of multi-section unscientific mining and influence of fire. The Committee expect that the legal rights of the inhabitants over the surface areas of Jharia and Raniganj coalfields will be protected and due compensation shall be given to those whose dwellings are endangered due to fire/subsidence and are required to be removed.

*Critically endangered dwellings*

4. Based on the categorisation done by CMRI on the dwellings, influenced by working down below, in four categories, the Committee find that the dwellings identified under category IV are unstable because of the mine fire or interaction activities. The dwellings under category III are less stable as on date but could be in danger shortly in case preventive measures are not adopted. 30 full colonies and 5 partial colonies are stated to be required to be evicted covering nearly 8413 houses in the areas of Kustore, Lodna, Bastacol, Eastern Jharia and Putkibalihari. However, BCCL has stated that

it had carried out a survey based on the CMRI Report and identified 22,100 houses to be critically endangered due to fire and subsidence which require immediate vacation. The Committee desire that it should be apprised of the reasons of such vast difference in the figure of CMRI study and the study of BCCL which is based thereon.

*Uniform Policy to protect coal bearing areas*

5. The Committee note that the two options available to avoid recurrence of existing problem due to mine fire and subsidence are — (a) to avoid all coal extraction from places where there are habitations on the surface and (b) to prevent development of new habitations on coal bearing lands. The first one would involve wastage of huge national assets and the second one would be a sensitive issue. The Committee feel that efforts should be made to extract coal to the maximum extent possible after the inhabitants are resettled on non-coal bearing areas and paid due compensation. The Committee have been informed that there is a West Bengal Government Act regarding Restriction on Construction in Unsafe Area enacted in 1979. However, there is no such legal provision enacted by the State Government of Bihar. It is only now that the State Government of Bihar is stated to be contemplating to enact a similar law. The Committee are constrained to note that the Government have failed to persuade all mine/mineral producing States to have a uniform/similar law protecting mine/mineral bearing areas from habitation. The Committee hope that the Government will at least now act to ensure a uniform law in this regard.

*Suitable mechanism for stowing works*

6. The Committee's attention has been drawn by Central Mining Research Institute (CMRI) that the dwellings in Jharia coalfields are likely to be affected by ground movement which could be due to caving, crushing of pillars or active fire. Crushing of pillars under heavy stress, undersized stooks in shallow workings for abatement loading and failure of pillars or stooks due to parting failure are likely to cause extensive differential movement and surface deformation resulting in tilting of the houses. The Committee are concerned to note that although the stowing in this coalfield is known to be very effective with 5 to 10 per cent subsidence but delay in stowing, poor-pack density etc. are responsible for high subsidence factor and damage to the dwellings. The Committee would like that a suitable mechanism be worked out by the Government to ensure proper pack density in all the operations at the time of stowing itself and the responsibility for deficiencies should be fixed on the officer supervising stowing operations.

7. The Committee have been informed that according to one estimate, Jharia coalfield has 4343 subsided pockets and nearly 4000 hectares of land had subsided by over 0.6 metre to 10 metre before 1988. The Committee wonder that with scarcity of sand and economic considerations, depillaring with stowing, for eco-friendly underground mining, are stated to be the

reasons for decrease in stowing work. The Committee urge that immediate steps should be taken to remove the shortcomings in fire extinguishing programme. The Committee also do not accept the Government's view that there is lack of availability of sand. The Committee recommend that all the past and present irregularities in stowing operation be investigated by Chief Vigilance Commissioner and responsibility be fixed against the officials found guilty in this regard. The Committee would like to be apprised of the action taken in this regard within the period of three months.

*Mine Fire and Safety aspects*

8. The Committee are dismayed to note that there have been 59 casualties during the last 4 years (1993—97) due to incidents of spontaneous heating, subsidence and fire in coal mines of Coal India Limited. One more such incident has happened in Central Coalfield Ltd. in October, 1997 where 5 persons have been killed. The Standing Committee on Energy (Tenth Lok Sabha) in their 10th Report had taken a strong note of the incident at New Kenda colliery on 25th January, 1994 and desired to know the causes of the accident. The Committee have been apprised that the Court of Enquiry has pointed out certain discrepancies and has not fixed the responsibility in this regard. The Committee feel that the Court of Enquiry has rightly pointed out certain discrepancies and ruled out the fire due to short-circuit. The Government's inaction indicate the emphasis that has been laid on safety measures. The Committee are further distressed to note that in case of Churcha fire, although, the Internal Safety Organisation (ISO) has held Area Officer, Agent, Manager, Ventilation Officer, Safety Officer, Colliery Engineer and Senior Overman responsible for the accident but in the departmental enquiry all have been exonerated. The Secretary, Ministry of Coal was candid enough to inform the Committee that he himself was not satisfied with the decision and would reopen the case on the basis of ISO Enquiry. The Committee desire that immediate action be taken on Enquiry Reports as regard to New Kenda colliery and reopen the Churcha fire case on the basis of ISO Enquiry. The Committee would like to be apprised of the action taken in the matter at the earliest.

9. The Committee note with dismay that subsidence has occurred at such places where Directorate General Mines Safety had granted permission for mining. The Directorate General Mines Safety has informed the Committee that it does not have enough work force to have complete inspection of mines and it carries out only periodic inspections. The Committee cannot accept these excuses from an organisation which is responsible for safety of human life and national assets. The Committee desire to know the reasons for inadequate staffing of DGMS and strongly urge the Government that the DGMS be suitably strengthened so as to enable it to make regular inspections of mines. The Committee are of the view that the Government will do well if some norms are fixed for regular inspection of mines by Directorate General Mines Safety (DGMS).

*Deficiencies in DGMS Prosecution*

10. The Committee also find that during the last 5 years, Directorate General Mines Safety (DGMS) has launched 138 prosecutions. Out of these, 84 prosecutions are on account of accidents resulting due to violation of safety norms. The Committee take a serious note of violation of safety norms by the Coal companies and desire to know the action taken by the Government against these violations apart from prosecutions launched by DGMS. The Committee are distressed to note that out of these 138 cases, only 7 cases have been disposed of so far. Moreover, there were 6 acquittals and one conviction in these 7 cases. In view of the outcome of cases, the Committee cannot but deplore the way the Directorate General Mines Safety has handled the cases and recommend that the Government should take necessary steps to identify the deficiencies in prosecutions and take necessary steps to rectify the same in other pending cases.

11. The Committee are informed that in some areas houses have been affected due to the blasting operations undertaken by Coal Companies as per specifications given by DGMS. But, the Committee note that the blasting operations carried out by the Coal companies are not recorded to avoid detection that these are not as per DGMS specification. The Committee would like the Ministry of Coal to ensure that blasting operations be recorded with the technique available and the coal companies should not be allowed to compromise the safety of people and dwellings in coal mining areas. The Committee are constrained to learn that the Directorate General Mines Safety (DGMS) has not issued strict instructions to coal companies to ensure that different blasting operations be recorded, if the technique for the same is available. The Committee will await the action taken by DGMS to ensure the same in future.

*Clearance of Project Report by CMRI*

12. The Committee observe that Coal Mining and Research Institute (CMRI) carried out a successful experiment to extract coal adjoining old headquarters of Bharat Coking Coal Limited with the assistance of Ministry of Coal & Coal Commission Development Council. A study was also conducted for Jharia town by CMRI. On the basis of study of CMRI, Bharat Coking Coal Limited submitted a Report to Director General Mine Safety and got permission for mining. Directorate General Mines Safety gave permission to Bharat Coking Coal Limited to carry out mining below Jharia town and subsidence took place in the thickly inhabited area of 'Sadhan Kutir'. The Committee find a serious coordination lapse on the part of the agencies carrying out the study work and the implementing agencies. The Committee are not satisfied with the reply of Director (Actg.), Coal Mining and Research Institute that since he was not associated with the project at the implementation stage, he should not be held responsible. The Committee feel that the project report should invariably include clauses regarding safety measures to be adopted and regular

inspection by the agency who has carried out the study before handing it over to the coal companies for implementation. Giving away a technology without proper guidelines in itself is a serious lacuna in the project report and proper care in this regard should be taken in future. The Committee also recommend that the coal companies should also involve the agencies who have carried out the detailed experiments at the time of implementation of projects. Regarding misrepresentation of facts where it appeared in the media that Coal Mining and Research Institute can make Jharia town stable at the cost of Rs. 36 lakh only, the Committee feel that immediate steps should have been taken to rectify the statements reported in the Press to avoid occurrence of restlessness among inhabitants in the Coal bearing areas. The Committee would like to know the steps/guidelines initiated by the Government in this regard.

#### *Danger to rail tracks*

13. The Committee are concerned about the danger to railway tracks due to fire and subsidence problems. The Committee find that mining activities have been undertaken around railway tracks on Adhra-Gomoh, Dhanbad-Patherdih an Grandchord line of easter region. The statutory and mandatory regulations regarding underground mining have not been followed. Many Sections of tracks are under distress due to spontaneous ignition of the underground seams left unmined. According to Ministry of Railways, the restoration work by BCCL has not been able to control the incidence of mine fire around the railway tracks. The Committee find contradictory reports about the danger to Grandchord line. The Committee feel that immediate steps should be taken in the affected areas of Grandchord line to ensure that underground fires in the mines which may result into subsidence should not pose any danger to it. The Committee desire that for better coordination, regular meetings should be held between representatives of railways and coal companies to monitor and review the position of fire and subsidence affected rail tracks.

#### *Technology for delineation of underground voids*

14. Regarding establishing a suitable method of delineation of underground voids, the Committee have been informed that a Science and Technology project had been taken up jointly by Lavall University Qubec, Canada, Mining Geological and Metallurgical Institute (MGMI) and Central Mine, Planning and Design Institute Ltd. (CMPDIL). The findings of the project report are stated to be not conclusive for an accepted level of confidence in delineating old and inapproachable workings. Although, the Committee feel satisfaction towards enough R&D work initiated with interaction and involvement of expert bodies from the country and abroad and expenditure incurred to impart training to engineers and experts abroad to study mine fire and subsidence control methods yet, the Committee are constrained to note that no concrete methods have been developed/employed to control mine fire and subsidence. The Committee

have been informed that in trying to locate the old workings for the purpose of stowing-in from the surface, there would not be insurmountable difficulty. The difficulty which may be faced is to stow a bore-hole that may fall on pillar and may not allow stowing materials underground. Such old workings are very shallow, may be 50—250 feet deep and it may result only in additional boring at a little cost to locate a new stowing bore-hole position. In this connection, the Committee would like the Ministry of Coal to obtain an expert opinion to broadly delineate the border of voids and old stooks to the extent of accurate identification. The Committee suggest that feasibility of this technique may be examined forthwith and if successful may be tried on a large scale instead of waiting for a perfect solution.

*Assessment of success of hydro-pneumatic stowing*

15. As regards stabilising old abandoned mines, the Committee observe that the plan of stabilisation by hydro-pneumatic stowing of suspected unstable areas in Raniganj coalfield has been done on a pilot scale and the efficiency of the method has not yet been established. There is nothing to suggest that the stability of the areas subsequent to hydro-pneumatic stowing has improved. The Committee have been informed that assessment of such stowing can be done by Acoustic Emission Monitoring Technique (AEMT) which would otherwise be a difficult task. The Committee have also been apprised that this technique should be adopted considering the fact that human lives are involved and considerable expenditure is also being made on stowing operations. The Committee feel the responsibility for this rests with scientists of CMRI, DGMS and that of Coal companies. The Committee, therefore, desire the Ministry of Coal to take up the matter with the Ministry of Science and Technology to explore/adopt the suitable technology to assess the efficacy of stowing operation. The Committee feel that the Government should pay attention to this and introduce new technologies for getting pre-warning of dangers, impending collapse of strata or subsidence, ascertaining strength of coal barriers against water logged workings etc.

*Timely release of funds for fire & subsidence control measures*

16. It has been brought to the notice of the Committee that although the Government has been providing funds for fire and subsidence control measures, Section 7(1) of the Coal Mines (Nationalisation) Act, 1973 provide that every liability of the owner, agent, manager or managing contractor of a coal mine in respect of any period prior to the appointed day, shall be the liability of such owner, agent, manager or managing contractor as the case may be and shall be enforceable against him and not against the Central Government or the Government company. The Committee have been informed that due to such provision, there is delay in clearing funds by Ministry of Finance. The Committee feel that the Government/Coal India Limited can not absolve itself from the responsibility of stabilisation/reclamation of land under the leasehold area of its coal companies even the

existing provisions do not cover these two eventualities. The Committee are strongly of the opinion that the Govt. Should ensure timely release of funds for the purpose and if need be, necessary amendment may be carried out in the Coal Mines (Nationalisation) Act, 1973 in this regard.

*Report of various Committees and action taken thereon*

17. The various Committees appointed from time to time to identify the causes of fire and subsidence problem in coalfields have collected data regarding abandoned quarries, fire and subsided areas. The Central Mine, Planning and Design Institute Limited (CMPDIL) identified 1119 disused mines/subsidence area in 1986 and suggested a provision of Rs. 1240.74 crore for reclamation of abandoned mines. The Government constituted an expert Committee under Shri K.S.R. Chari as Chairman in 1988 to examine the document prepared by CMPDIL and in 1989, the expert Committee submitted a comprehensive report to the Government which was not formally accepted by the Government. The Committee are not satisfied the way the Government is handling the problem by setting up Committee after Committee and the recommendations made by these Committees have not been implemented wholeheartedly. The Committee note with dismay that though enough material and data have been collected and critically analysed, no conclusive action has been taken to effectively control these fires. It is high time that the Government should act more seriously and speedily.

18. The Committee are distressed to note that the Government has spent more money in the last 25 years (since nationalisation of coal industry) on making studies, including one of \$ 12 million on Jharia fire fighting project with the World Bank assistance, rather than pending on the actual problems of fire and subsidence in coal mines. The Committee take a strong note of the fact that although CMPDIL study in 1986 and subsequent Chari Committee Report in 1989, have suggested that no foreign expert or foreign technology for biological reclamation of abandoned coal mines be engaged and had recommended indigenous R&D work, the World Bank loan have been taken for Jharia fire fighting project and for Raniganj also. The Committee would like to know the reasons for not adhering to the recommendations of experts by the Government in this regard. The Committee also feel that utilisation of funds during the 8th five year plan and the provision of Rs. 79 crore during the 9th five year plan are not adequate taking into account the gravity of the problem. The Committee recommend that both long term and short term plans be drawn-up. The areas facing imminent danger as identified by DGMS should be taken up on priority basis and eviction/rehabilitation measures be geared-up.

19. The Committee are constrained to note the laxity on the part of High Power Committee on mine fire and subsidence as constituted by the Government with Secretary, Ministry of Coal as Chairman which was to submit its report by 30th June, 1997 but submitted in report only in



December, 1997. The Committee feel that a Master Plan for stabilisation of Jharia and Raniganj coalfields be prepared immediately and desire the Government to act immediately to provide necessary funds for the areas which require immediate evacuation as per DGMS recommendations. The Committee would also like to know the steps taken by the Government to implement the recommendations of the High Power Committee.

*Loss of Coal due to Laxity on the part of management*

20. The Committee note with dismay that the problem of mine fire has lent the nation a colossal loss of Rs. 1800 crore due to fire and 1.8 billion tonnes of coal worth about Rs. 40,000 crore from possible recovery due to lack of technology and due to inefficiency in timely implementation of recommendations of various expert Committees. The money that is estimated by the Government to be required today, to control fire and subsidence, is Rs. 7500 crore. With the proposed increase in cess by Rs. 15 per 100 metric tonne, the funds raised per year will be of the order of Rs. 450 crore. The Committee feel that the damage caused to environment, landscape and human habitat as a result of coal mining operation should not be viewed as a regional problem and feel that there is an imperative need for resolving out the issue regarding financial constraint. The Committee recommend that the Government should identify the sources from where funds can be collected including imposition additional charges in the form of cess as proposed by the Government. The Committee suggest that section 6&7 of Coal Mines (Conservation and Development) Act, 1974 be suitably amended for making provision for the additional cess which can be utilised under section 9 of the Act for coal conservation related activities. The Committee hope that the Government will at least now provide separate funds to executing agencies as recommended in the subsequent para 21 to avoid any possible national disaster.

*Need for separate authority*

21. To implement the rehabilitation and reclamation measures, it has been argued before the Committee that the Coal Companies should not be burdened with this responsibility. The Committee also feel that a separate Statutory authority/body need to be constituted. The Committee recommend that the executing body with clearly defined roles, objectives and source of funds for time bound planning and implementing environmental protection and fire and subsidence control measures, reclamation and stabilisation of degraded lands, afforestation and rehabilitation of the affected people, be formed immediately. The executing body shall consist of representatives of the Central Government, CMRI, respective State Governments, Coal India Limited, environmental experts, Directorate General Mines Safety, Central Mine, Planning and Design Institute Ltd., Geological Survey of India, Land use experts and people's representatives. The Committee would like to be apprised of the action taken in this regard.

*Effective safety mechanism to be developed by all coal companies*

22. In view of the above mentioned observations, the Committee feel that from the very beginning of mining operations, the mine safety with effective results should be the concern of all Coal Companies. It needs a constant updating because the mine operations are unique, particularly the underground mines where one has to fight against nature. The Committee observe that although the problem of mine fire and subsidence is enormous in Jharia coalfields of BCCL and Raniganj coalfields of ECL, a closer safety mechanism and coordination with local authorities is required to be developed by all coal companies in the country to avoid recurrence of problems of Jharia and Raniganj in any other coalfield. The Committee feel that the incident of Nariabodh village of Laxmanpur project of SECL where 2 persons were killed in police firing accrued due to lack of coordination between the management of SECL and the local peoples, for which the responsibility rests with the management. The Committee strongly urge that the Government should set-up executing/coordinating committees as recommended in para 21 above in all the coal producing States to deal with the problem of mine fire and subsidence and a perspective plan should be prepared to tackle these problems. The Committee would like to know the action taken in this regard within three months.

NEW DELHI;

October 11, 1998

Asvina 19, 1920 (Saka)

K. KARUNA KARAN,

*Chairman,*

*Standing Committee on Eenergy.*

## APPENDIX II

### MINUTES OF THE FOURTH SITTING OF SUB-COMMITTEE ON COAL OF STANDING COMMITTEE ON ENERGY (1996-97) HELD ON 16TH JULY, 1997.

The Sub-Committee met from 15.00 to 16.30 hours.

#### PRESENT

1. Prof. (Smt.) Rita Verma — *Convenor*
2. Shri Anil Basu — *Alternate Convenor*
3. Shri Karia Munda
4. Prof. Om Pal Singh 'Nidar'
5. Shri Muni Lal
6. Shri Haradhan Roy
7. Shri Lakhiram Agarwal
8. Shri Rajnath Singh 'Surya'

#### SECRETARIAT

1. Shri P.K. Bhandari — *Deputy Secretary*
2. Shri R.S. Kambo — *Under Secretary*
3. Shri R.K. Bajaj — *Assistant Director*

#### WITNESSES

##### *Ministry of Coal*

1. Shri N.P. Bagchee — *Secretary*
2. Shri G.B. Mukherji — *Joint Secretary*
3. Shri J. Harinarayan — *Joint Secretary*

##### *Coal India Limited*

1. Shri A.K. Sahay *Director (Technical), CIL and CMD, Bharat Coking Coal Limited.*
2. Shri B.C. Misra *CMD, CMPDIL*

At the outset, the Convenor welcomed the officials of the Ministry of Coal to the sitting of the Sub-Committee.

2. The Sub-Committee then discussed the following important points with the representatives of Ministry of Coal/Coal India Limited in connection with examination of the subject, "Environmental Measures and Subsidence Control in Mines":—

- (i) financing of fire extinguishment/subsidence control and rehabilitation measures;
- (ii) implementation of package of rehabilitation;

- (iii) training abroad to coal companies officials and their deployment on return;
- (iv) utilisation of funds for environmental and subsidence control measures during 8th Five Year Plan;
- (v) the progress in control of active fires in Jharia Coalfields;
- (vi) implementation of study made by CMPDIL in 1986 on mines fire and subsidence;
- (vii) different views of coal companies and DGMS as regard to number of locations identified as subsidence prone areas;
- (viii) subsidence problem in new and planned mines, particularly in Munnidih; and
- (ix) study on unscientific mining after nationalisation etc.,

3. The Sub-Committee, thereafter, decided to meet again after receiving written replies to the points forwarded to Ministry of Coal on the subject referred to above, in order to have further discussion.

4. The Verbatim record of the proceedings has been kept.

*The Sub-Committee then adjourned.*

### APPENDIX III

#### MINUTES OF THE FIRST SITTING OF SUB-COMMITTEE ON COAL OF STANDING COMMITTEE ON ENERGY 1997-98 HELD ON 20TH AUGUST, 1997.

The Sub-Committee sat from 15.00 to 15.45 hours.

#### PRESENT

1. Prof. (Smt.) Rita Verma — *Convenor*
2. Prof. Om Pal Singh 'Nidar'
3. Shri Haradhan Roy
4. Shri Rajnath Singh 'Surya'

#### SECRETARIAT

1. Shri P.K. Bhandari — *Deputy Secretary*
2. Shri R.K. Bajaj — *Under Secretary*

At the outset, the Convenor informed the Sub-Committee about the recent death of a ten year old girl in a coal mine accident due to subsidence in Dhanbad, Bihar. The members expressed concern over the ever increasing number of such accidents and failure on the part of the Government/Coal Companies to stop such accidents. The members then stood in silence for a minute to pay respect to the departed soul.

2. The Sub-Committee then considered the written replies received from the Ministry of Coal in connection with the examination of the Subject "Environmental Measures and Subsidence Control in Mines". The Sub-Committee was dissatisfied with of the incomplete replies received from the Ministry and decided to take further evidence of the Ministry on the subject. It was decided that Secretary, Ministry of Coal, Chairman, Coal India Limited, Director (Technical), Coal India Limited, CMD, Eastern Coalfield Limited, CMD, Bharat Coking Coal Limited, Secretary, Ministry of Labour and Director General Mines Safety should be called to tender evidence before the Sub-Committee.

3. The Sub-Committee also decided to call for following documents:

- (i) Safety Audit Report of all Coal Companies for the period 1994—96.
- (ii) Copy of the interim report of the Expert Committee constituted to examine the issues relating to fire and subsidence control measures.

(iii) Report from DGMS — on subsidence problem near Railway tracks.

(iv) Copies of Maps of abandoned coal mines before and after nationalisation.

4. Thereafter the Sub-Committee decided to meet again on 26th September, 1997 at 11.00 hrs. to take further evidence of the concerned representatives in connection with the examination of the subject mentioned above.

*The Sub-Committee then adjourned.*

## APPENDIX-IV

### MINUTES OF THE SECOND SITTING OF SUB-COMMITTEE ON COAL OF STANDING COMMITTEE ON ENERGY (1997-98) HELD ON 1ST OCTOBER, 1997

The Sub-Committee sat from 11.00 hrs. to 13.30 hrs

#### PRESENT

1. Prof. (Smt.) Rita Verma — *Convenor*
2. Shri Karia Munda
3. Prof. Om Pal Singh 'Nidar'
4. Shri Haradhan Roy
5. Shri Chitta Basu
6. Shri V.P. Duraisamy

#### SECRETARIAT

1. Shri P.K. Bhandari — *Deputy Secretary*
2. Shri R.K. Bajaj — *Under Secretary*

#### WITNESSES

##### *Ministry of Coal*

1. Shri S. Narayan — *Secretary*
2. Shri P.K. Banerji — *Additional Secretary*
3. Shri J. Harinarayan — *Joint Secretary*
4. Shri N.N. Gautam — *Director (Tech.)*

##### *Coal India Limited*

1. Shri B. Dev *CMD, Eastern Coalfields Ltd.*
2. Shri A.K. Sahay *CMD, Bharat Coking Coal Limited.*
3. Shri S.K. Verma *CMD-Incharge Central Mine Planning & Design Institute Ltd.*

##### *Ministry of Labour*

1. Shri V. Mahajan *Director, Directorate General of Mines Safety.*
2. Shri Pandey Ajay Bhusan *Deputy Secretary*

At the outset, the Convenor apprised the Sub-Committee that during the course of examination of the subject "Environmental Measures and Subsidence Control in Mines", the Sub-Committee on Coal (1996-97) and (1997-98) has restricted itself only to aspects relating to fire and subsidence control in coal mines and have not gone into details regarding environmental aspects. After considering the matter at some length, the

Sub-Committee decided that the nomenclature of the subject under examination may be suitably changed to "Fire and Subsidence Control in Coal Mines". It was also decided that a note may be put for information of the Chairman, Standing Committee on Energy and revised nomenclature of the subject may be notified in Parliamentary Bulletin.

2. The Sub-Committee, then discussed the following important points with the representatives of Ministry of Coal, Coal India Ltd., Ministry of Labour and Directorate General Mines Safety:

- (i) Present Status of report of high Power Committee set up to examine subsidence and fire problem;
- (ii) Delayed disposal of the cases launched by Directorate General Mines Safety (DGMS);
- (iii) Periodic inspection of Mines by DGMS;
- (iv) Accidents occurred at New Kenda coalfield, Churcha fire, Kathras Mode and the enquiries carried thereon;
- (v) Threat to major railway tracks and national highways due to fire/subsidence in coal mines;
- (vi) The reasons for not taking action on CMPDIL recommendations on the subject way back in 1986;
- (vii) Status of Mangalpur satellite township—whether the area is a subsidence—prone area or not;
- (viii) Steps taken to control illegal mining.

3. The Sub-Committee, thereafter, decided to meet again on November, 10, 1997 at 11.00 hrs. to have discussion on the subject with representatives of Department of Science and Technology and Director, Central Mining Research Institute. It was also decided that the Sub-Committee may consider draft report on the subject during the sitting also.

*The Sub-Committee then adjourned.*



## APPENDIX V

### MINUTES OF THE THIRD SITTING OF SUB-COMMITTEE ON COAL OF STANDING COMMITTEE ON ENERGY (1997-98) HELD ON 27TH NOVEMBER, 1997

The Sub-Committee sat from 15.00 hrs. to 17.00 hrs.

#### PRESENT

1. Prof. (Smt.) Rita Verma—*Convenor*
2. Shri Anil Basu—*Alternate Convenor*
3. Prof. Om Pal Singh 'Nidar'
4. Shri Muni Lall
5. Shri Ram Kirpal Yadav

#### SECRETARIAT

1. Shri P.K. Bhandari—*Deputy Secretary*
2. Shri R.K. Bajaj—*Under Secretary*

#### WITNESSES

#### CSIR & CMRI

1. Shri T.N. Singh—*Acting Director, CMRI*
2. Dr. O.P. Rao—*Scientist, CSIR*

At the outset, the Convenor welcomed the representatives of Central Mining Research Institute (CMRI) and Council of Scientific and Industrial Research to the sitting of the Sub-Committee. The Director, CMRI then made a brief presentation to the Sub-Committee on their role on 'Fire and Subsidence Control in Coal Mines'.

2. The Sub-Committee, thereafter, discussed the following important points with the representatives of Council of Scientific and Industrial Research and Central Mining Research Institute:

- (i) technologies/methods suggested by CMRI to control fire and subsidence in coal mines;
- (ii) Any specific study carried out by CMRI to control/extinguish fire in the Jharia Coalfields taking into account the mines geometry, nature of workings, thickness of seams etc. of Jharia Coalfields and the cost thereof;

- (iii) the reasons for subsidence at 'Sadhan Kutir' in Jharia town where coal company carried out mining activity on the basis of Report submitted by CMRI;
- (iv) the mechanism with CMRI to implement feasible reports prepared by it regarding mining with the help of coal companies; and
- (v) the desired steps to ensure safe implementation of project reports prepared by CMRI.

3. The Sub-Committee also decided to meet again on November 28, 1997 at 11.00 hrs. to consider and adopt Draft Report on the subject 'Fire and Subsidence Control in Coal Mines'.

*The Sub-Committee then adjourned.*

## APPENDIX VI

### MINUTES OF FOURTH SITTING OF SUB-COMMITTEE ON COAL OF STANDING COMMITTEE ON ENERGY (1997-98) HELD ON 28TH NOVEMBER, 1997

The Sub-Committee sat from 11.00 hours to 12.45 hours.

#### PRESENT

Prof. (Smt.) Rita Verma—*Convener*

#### MEMBER

2. Prof. Om Pal Singh 'Nidar'
3. Shri Muni Lall
4. Shri Haradhan Roy

#### SECRETARIAT

1. Shri P.K. Bhandari—*Deputy Secretary*
2. Shri R.K. Bajaj—*Under Secretary*

The Sub-Committee on Coal considered the draft report on the subject, 'Fire and Subsidence Control in Coal Mines' relating to Ministry of Coal and adopted the same with the modifications/amendments as shown in annexure.

2. The Sub-Committee authorised the Convener to finalise the report after incorporating amendments and necessary paras relating to evidence tendered by CMRI officials on 27.11.97 before submitting it to the Chairman for consideration by the Standing Committee on Energy.

*The Sub-Committee then adjourned.*

**ANNEXURE**

(vide para 1 of the Minutes dated 28.11.97)

**Amendments/modifications made by Sub-committee on Coal of Standing Committee on Energy (1997-98) in the Draft Report on 'Fire and Subsidence Control in Coal Mines'.**

| Sl. No. | Para No. Recommendation No. | Line | Amendment / modification   |
|---------|-----------------------------|------|--|
| 1       | 2                           | 3    | 4  |
| 1.      | 3.16 to 3.21                | —    | Deleted  |
| 2.      | New paras inserted/ as      | —    | <p>2.17 The Committee have been informed that rehabilitation of land oustees is governed primarily by the guidelines issued by Ministry of Coal vide No. 49019/486-CPLSW dated 19.10.1990, the salient features of which are as follows:</p> <p>(i) To the extent new employment opportunities get create in the project in unskilled and semi-skilled categories, these shall be reserved entirely for the land oustee families.</p> <p>(ii) Suitable vocational training facilities would be provided to the land losers to upgrade their skills for employment in other categories of jobs in the project, on a preferential basis.</p> <p>(iii) Alternative house sites with suitable infrastructure will be provided to all evicted families. Each evicted family would be paid a shifting allowance of upto Rs. 2000/- and a lump-sum grant of Rs. 5000/- towards housing.</p> |

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|   |   |   | <p>(iv) Cash compensation for the land to be acquired will be deposited with the district administration in advance so that there is no delay in payment of compensation to the land owing displaced families.</p> <p>(v) Families which are not beneficiaries of employment for one of their members, would be paid Subsistence allowance for 20 years at the following rates:</p> <p>(a) To families losing lands at the rate of one acre upto Rs. 300/- per month plus an ex-gratia amount of Rs. 100/- per month per family.</p> <p>(b) Families losing above one Rs. 300/- per acre per month subject to a maximum of Rs. 1000/- per month plus Rs. 100/- per month per family.</p> <p>2.18 In addition to the rehabilitation package adopted by Ministry of Coal in October, 1990, the coal companies have been advised to abide by the State Governments instructions wherever such rehabilitation packages are available. Recently Coal India Ltd., have formulated a comprehensive Rehabilitation and Resettlement (R&amp;R) Policy for providing relief to the Project Affected People (PAP). Main ingredients of CIL's R&amp;R Policy are:—</p> <p>(i) The rehabilitation process will start simultaneously with land acquisition.</p> <p>(ii) Socio-economic survey will be carried out to ensure adequate economic rehabilitation.</p> |

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- (iii) Land owners, tribal cultivating land under traditional rights, persons whose homestead is acquired, share croppers, land losers, tenants and day labourers etc., will be covered in the rehabilitation package.
  - (iv) Rehabilitation plans will be prepared in consultation with PAPs and State Governments.
  - (v) Resettlement sites will be provided with infrastructural facilities like schools, roads, drains, community centres etc.
  - (vi) Contractors will be persuaded to give jobs to eligible PAPs on preferential basis.
  - (vii) Land oustees will be eligible for jobs on preferential basis whenever outside recruitment becomes necessary.
  - (viii) Coal companies will assist PAPs in developing opportunities for self employment option like dairy and poultry, small business, petty contracts etc.
  - (ix) Coal companies will shift the tribal community as a unit and provide facilities to meet the specific needs of maintaining their cultural identity.
  - (x) A Committee comprising of nominees of State Governments project GM, PAPs etc. will be constituted to examine grievances of PAPs and proper corrective action.
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2.40 The Committee have been informed by Central Mining Research Institute (CMRI) that it had done a study on Jharia coalfields and demarcated Jharia town as no danger area in its Report. In view of this, the Committee desired to know the reasons for subsidence at 'Sadhan Kutir' area in Jharia coalfields of BCCL, Director, CMRI informed the Committee in this regard during evidence on 27.11.97 as under:

"I invented a method and named it as Wide Stall Method of Mining. By using this I had been able to extract 40 to 50 per cent coal out of just 25 pillars discovered in the area adjacent to Jharia. While developing this method for extracting coal from Jharia, I sought cooperation of the BCCL officials for conducting an experiment in this regard in Jharia but there was a hurdle in it because the overall situation in Jharia town was so critical, unstable or sensitive that nobody was eager to work there. Therefore, I was offered a panel at the old Head Quarter office of BCCL adjoining Jharia town for trying this experiment. I received funds for this purpose with the assistance of Ministry of Coal and the Coal Conservation Development Council had also granted funds to me. By utilizing this fund I extracted 50 per cent, coal through an experiment. I was of the opinion at that time by adopting this very method I can even extract coal from Jharia but unfortunately, after completing this experiment, the BCCL has taken up this method on experimental basis and inspite of my all efforts I was not even involved in it for the sole reason that a survey as well as a close monitoring was

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required of my first experiment. Philosophy of method is being strictly followed or not, they tried to adopt the method only on this ground, whether I can extract coal from Jharia or not. I studied the matter a bit and told them, how to extract coal from this area alongwith the precautions to be taken in this regard and submitted the report to BCCL. On the basis of this report BCCL presented its report to DGMS and after presenting the same, they themselves studied to follow this method. I requested them about 2-3 times, even in writing, I have no vested interest as such in this regard but since you are going to try this system at a place where situation is critical, therefore a thorough care should be taken for that. Please give me an opportunity so as to associate myself with you and to make this technique a success. For this purpose I had given him two panels G-I and G-II. Both of these panels were adopted by BCCL in 11-12 C. It seems to me that perhaps we would have been at fault somewhere in implementing them as a result of which this problem has emerged."

2.41 The witness further added that although he has given the technology yet he is not responsible for the mishap as he had not been allowed to monitor the project, nor did he give any permission and conducted any survey during mining operation.

2.42 The Committee invited the attention of Acting Director, CMRI to various press reports quoting him to guarantee the stability to Jharia town at a cost of Rs.36 lakhs only. To this the Director CMRI, informed the



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|    |   |    | <p>Committee during evidence that there is misrepresentation of facts in it. He clarified that he had made it clear that first of all we have to made a study and secondly we have to see that in which area we have to adopt the secondary system so that subsidising can be stopped and we have also to see the areas which are self-stable. It was stated that he had put up a demand of Rs. 23 lakhs and 50 thousands for the total study against which he got a project of three lakh rupees and the study of which has been completed.</p>  |
| 3. | 1 | 14 | <p><i>After '1975' add 'Taking note of mine fire and subsidence problems'.</i></p>  |
| 4. | 3 | 19 | <p><i>After 'at more danger areas to be evicted only', 'Insert' and these people be rehabilitated in the nearby non-coal bearing areas with adequate compensation as per guidelines issued by Ministry of Coal vide O.M. No. 49019/4/86CP/LSW dated 19.10.91. The Committee feel that the rate of Rs. 300 per month to the families losing lands upto one acre decided in 1990 is not sufficient as subsistence allowance and recommend that it may be suitably enhanced and given at the prevailing market rate. The Committee are of the opinion that the coal companies should ensure that one person from the family of the project affected people may be provided job as enumerated in the rehabilitation and reclamation package dated 19.10.1991 and thereafter other agencies like contractors may be persuaded to give jobs to eligible project affected people on preferential basis'.</i></p> |
| 5. | 9 | 8  | <p><i>After 'national assets' Insert The Committee desire to know the reasons</i></p>   |

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|    |                             |    | for inadequate staffing of DGMS and strongly urge the Government that the DGMS be suitably strengthened so as to enable it to make regular inspection of mines. The Committee are of the view that'.   |
| 6. | 11                          | 10 | <i>After 'dwellings in coal mining areas' Insert 'The Committee are informed that in some areas houses have been effected due to the blasting operations undertaken by Coal Companies as per specifications given by DGMS. But, the Committee note that the blasting operations undertaken by Coal Companies as per specifications given by DGMS. But, the Committee note that the blasting operations carried out by the Coal companies are not recorded to avoid detection that these are not as per DGMS specification. The Committee would like the Ministry of Coal to ensure that blasting operations be recorded with the technique available.'</i> |
| 7. | New recommendation added as | 12 | The Committee observe that Coal Mining and Research Institute (CMRI) carried out a successful experiment to extract coal adjoining old headquarters of Bharat Coking Coal Limited with the assistance of Ministry of Coal & Coal Commission Development Council. A study was also conducted for Jharia town by CMRI. On the basis of study of CMRI, Bharat Coking Coal Limited submitted a Report to Director General Mine Safety and got permission for mining. Directorate General Mines Safety gave permission to Bharat Coking Coal Limited to carry out mining below Jharia town and subsidence took place in the thickly                             |

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inhabited area of 'Sadhan Kutir'. The Committee find a great coordination lapse on the part of the agencies carrying out the study work and the implementing agencies. The Committee are not satisfied with the reply of Director (Actg.), Coal Mining and Research Institute that since he was not associated with the project at the implementation stage, he should not be held responsible. The Committee feel that the project report should invariably include clauses regarding safety measures to be adopted and regular inspection by the agency who has carried out the study before handing it over to the coal companies for implementation. Giving away a technology without proper guidelines in itself is a serious lacuna in the project report and proper care in this regard should be taken in future. The Committee also recommend that the coal companies should also involve the agencies who have carried out the detailed experiments at the time of implementation of projects. Regarding misrepresentation of facts where it appeared in the media that Coal Mining and Research Institute can make Jharia town stable at the cost of Rs. 36 lakh only. The Committee feel that immediate steps should have been taken to rectify the statements reported in the Press to avoid occurrence of restlessness among inhabitants in the coal bearing areas. The Committee would like to know the steps/guidelines initiated by the Government in this regard.

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| 9. | 19 | 5 | <i>After '30th June, 1997' add 'The Committee feel that a master plan for stabilisation of Jharia &amp; Raniganj coalfields be prepared immediately and desire the Government to act immediately to provide necessary funds for the areas which require immediate evacuation as per DGMS recommendations'.</i> |

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## APPENDIX VII

### MINUTES OF THE ELEVENTH SITTING OF THE STANDING COMMITTEE ON ENERGY HELD ON 25TH AUGUST, 1998 IN COMMITTEE ROOM 'B' PARLIAMENT HOUSE ANNEXE, NEW DELHI

The Committee sat from 15.30 to 16.30 hours.

#### PRESENT

Shri Vilas Muttemwar—*In the Chair*

#### MEMBERS

2. Shri Tariq Anwar
3. Smt. Rani Chitralekha Bhosle
4. Shri Bikash Chowdhury
5. Shri K. C. Kondaiah
6. Shri Rajbanshi Mahto
7. Shri Sanat Kumar Mandal
8. Shri Som Marandi
9. Smt. Sukhda Mishra
10. Shri Salkhan Murmu
11. Shri Naresh Kumar Chunnalal Puglia
12. Shri Braj Mohan Ram
13. Shri Anantha Venkatrami Reddy
14. Shri Larang Sai
15. Shri Francisco Sardinha
16. Shri Shailendra Kumar
17. Shri N. T. Shanmugam
18. Shri Th. Chaoba Singh
19. Shri Chandramani Tripathi
20. Prof. (Smt.) Rita Verma
21. Shri Ghulam Nabi Azad
22. Shri E. Balanandan
23. Shri Bangaru Laxman
24. Shri Parmeshwar Kumar Agarwalla
25. Shri Lakkhiram Agarwal

#### SECRETARIAT

1. Shri P. K. Bhandari—*Deputy Secretary*
2. Shri R. K. Bajaj —*Under Secretary*

In the absence of the Chairman, the Committee chose Shri Vilas Muttemwar to act as Chairman for the sitting under Rule 258(3) of Rules of Procedure and Conduct of Business in Lok Sabha.

2. The Committee then considered the draft Report on the subject 'Fire and Subsidence Control in Coal Mines' relating to Ministry of Coal and adopted the same with modifications/amendments as shown in Annexure.

3. The Committee authorised the Chairman to finalise the above-mentioned Report after making consequential changes arising out of factual verification by the concerned Ministry and to present the same to Parliament.

*The Committee then adjourned.*

**ANNEXURE**

(Vide Para 2 of the Minutes dated 25.8.98)

*Amendments/modifications made by Standing Committee on Energy in the Draft Report (Part-B) on the subject, 'Fire and Subsidence Control in Coal Mines' relating to Ministry of Coal.*

| Sl. No. | Para/Page | Line | Amendment/Modification  |
|---------|-----------|------|---|
| I.      | 1/62      | 14   | <i>After 'year 1975', insert "The Committee are constrained to observe that despite existence of mine safety rules and regulations and presence of DGMS, 76 incidences of spontaneous heating and fire have been reported during 1993—96 alone".</i>  |
| II.     | 1/62      | 25   | <i>Substitute the word 'it' by 'unscientific and slaughter mining, fix the responsibility'.</i>   |
| III.    | 2/64      | 8    | <i>Delete 'and thereafter other agencies like contractors may be persuaded to give jobs to eligible project affected people on preferential basis'.</i>   |
| IV.     | 7/68      | 3    | <i>After the word 'investigated' add 'by Chief Vigilance Commissioner'.</i>   |
| V.      | 20/79     | 5    | <i>Add a new sentence 'The Committee suggest that sections 6 &amp; 7 of Coal Mines (Conservation and Development) Act, 1974 be suitably amended for making provision for the additional cess which can be utilised under section 9 of the Act for coal conservation related activities' before the last sentence of the para.</i> |
| VI.     | 20/79     | 7    | <i>After the word, 'funds', add "to executing agencies as recommended in the subsequent para 21".</i>   |
| VII.    | 22/80     | 22   | <i>After the words, 'mine fire and subsidence', add "and a perspective plan should be prepared to tackle these problem".</i>  |