Explosion at Walton Colliery, Yorkshire on 22nd April 1959.

Extract from the report by T.A. Rogers, C.B.E., H.M. Chief Inspector of Mines and Quarries.

Report on the Causes of, and Circumstances attending, the Explosion which occurred at Walton Colliery, Yorkshire, on 22nd April, 1959

llth September,1959.

The Right Honourable Lord Mills, K.B.E., Minister of Power.

MY LORD,

1. In accordance with your direction under Section 122 of the Mines and Quarries Act, 1954, I have held a Public Inquiry into the accident which occurred at Walton Colliery, Yorkshire, on 22nd April, 1959, and now have the honour to submit my Report.

2. I find that five men lost their lives in an explosion of firedamp, caused by an electrical arc from a damaged trailing cable and extended by coal dust, in the No. 5 Unit of 10 East District in the Top Haigh Moor Seam.

CONDUCT OF THE INQUIRY

3. I opened the Inquiry at the Town Hall, Wakefield, on 29th June, 1959, and sat until 3rd July, then again from 4th to 12th August. Fifty-two witnesses gave evidence. The following parties were represented: —

The Ministry of Power by Mr. H. J. Perrins, O.B.E., H.M. Divisional Inspector of Mines and Quarries ;

The National Coal Board by Mr. C. M. H. Glover, Solicitor to the North Eastern Divisional Coal Board ;

The National Union of Mineworkers by Mr. J. R. A. Machen, President, Yorkshire Area ;

The National Association of Colliery Overmen, Deputies and Shotfirers by Mr. E. Lockett, Secretary, Yorkshire Area ; and

The National Association of Colliery Managers and the British Association of Colliery Management by Mr, A, Maurice Smith, Solicitor.

GENERAL PARTICULARS OF WALTON COLLIERY

4. Walton Colliery (formerly known as Sharlston West) is a safety lamp mine situated near Wakefield in the West Riding of Yorkshire ; its general layout, so far as it is relevant to this Report, is shown on Plan No. 1. The colliery employed 1,285 men underground and 298 on the surface, a daily output of 2,200 tons being obtained from the Top Haigh Moor, the Low Haigh Moor, the Kent Thick and the Birkwood or Lidgett Seams. About half of this output was from the Top Haigh Moor.

5. The colliery is owned by the National Coal Board and is situated in the No. 7 (Wakefield) Area of the Board's North Eastern Division. It was managed by G. S. Senior and there were two under-managers, one of whom, H. H. Gregg, had responsibilities which included the working in the Top Haigh Moor seam where the explosion occurred. The Group Manager was T. Dodd and the Area General Manager H. Saul.

THE 10 EAST DISTRICT

6. Plan No. 1 shows the 10 East District, which lies in the Top Haigh Moor seam on the East side of the South West Haulage Road connecting the No. 2 shaft to the Haw Park shaft. The inset to this plan shows on a larger scale the ventilation layout of 5's Unit in which the explosion occurred. Plan No. 2 shows 5's Unit in detail, as it appeared after the explosion.

RECENT DEVELOPMENT AND WORKING OF THE DISTRICT

7. The Haigh Moor seam at Walton Colliery appears as two leaves, each about 3 feet thick, of which only the upper, or Top Haigh Moor seam, is worked in the 10 East District. The two coals are separated by a band of hard fireclay about 7 feet thick and the Top Haigh Moor seam is overlain by a thick bed of strong sandstone. The depth from the surface is about 460 yards where the accident occurred. Faults had been encountered in 10 East District in 1955 and further development there had taken the form of driving two roads 22 yards apart through the faulted area to develop a longwall face, 40 yards long and known as 10 East l's, which was advanced to the boundary then stopped on the 23rd July, 1958, leaving solid coal on each side.

8. Two faces were then worked north and south respectively from this development. The first of these faces, 10 East 2's, was stopped at faults in February, 1959, and at the time of the accident its old loader gate was being continued as a stone drift, known as 2's Drift, through those faults. This drift was intended to form part of a new main return airway for 10 East District.

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9. Coal to the south of the 10 East Trunk Conveyor Road was intended to be worked by a double unit longwall face about 280 yards long, advancing to the south. In the general plan of operations a face, the second to be worked from l's Development, was taken some 20 yards wide for a distance of about 40 yards to the south. The western side of the new development was then to be worked as a face 40 yards wide and advanced for about 100 yards to the west to connect with a heading known as 5's New Loader Gate, which was being simultaneously driven to the south from a point further outbye on 10 East Trunk Conveyor Road. The face was then to be continued westward so that eventually a double unit face about 280 yards long would be advanced to the south, after 2's Drift had afforded a new return airway for the district.

10. At the time of the explosion the 40 yards face, known as 5's Unit,had advanced about 97 yards. A small further advance, which would havebeen made in a few days but for the explosion, would have brought it tothe position where it could have been stopped to await the connectionwith the New Loader Gate. At the right (or north) end of the workingface the roof was ripped to form a road supported by steel arch girders12 feet wide by 8 feet high. This road, known as 5's Intake Gate, wasintended to become the return airway for the right (or western) unit of the 280 yard face when it was finally developed. It was connected to 10 EastTrunk Conveyor Road by means of 5's Intake Slit, which was a passagesome 37 feet long that had originally been made about 6 feet wide andabout the height of the seam.

11. At the left (or south) end of the 40 yard face, a passageway of seam height and some 12 feet wide, as shown in the sectional view inset on Plan No. 2, was being left so that it could eventually become the left side of the main longwall face to the south. This passageway, known as 5's Ribside, was formed by the coal and by a pack about 12 feet wide ; at the outbye end of this pack a gap some 9 yards long had been left affording access to the waste, which had not closed but in which thin slabs of stone had fallen from time to time. A bottom loading belt conveyor in this passageway carried coal from 5's Face to a similar conveyor on 5's Belt (or Return) Gate ; the latter conveyor discharged on to the 10 East Trunk Conveyor at the same transfer point as the stone loading conveyor from 2's Drift.

VENTILATION

12. In the planned system of ventilation air entered 10 East District from the South West Haulage Road, partly along 10 East Main Haulage Road and partly from a second source some 400 yards nearer to the Haw Park Shaft. These two air currents joined inbye the Loading Point and then took the course to and from 5's Unit shown on Plan No. 1. This course was on conventional lines, but because of heavy leakage losses beyond the Loading Point only a small proportion of the 12-16,000 cubic feet of air per minute available there reached the face of 5's Unit. A few days before the accident, a direct connection had been made by means of a scour driven through the waste between 5's Intake and 5's Return but sheets had been erected in it to prevent short circuit of the ventilation there.

EVENTS ON THE DAY OF THE EXPLOSION

EVENTS BEFORE THE EXPLOSION

13. The coal on 5's Unit was undercut by an electrically driven coal cutting machine, blasted and hand-loaded on to the face conveyor. Coal was filled on the morning and afternoon shifts ; the Intake gate ripping was advanced on the afternoon and on the night shifts ; the stone pack on the Ribside was advanced on the night shift with stone from Intake ripping. There had been difficulty in achieving the management's objective of obtaining two cuts in each 24 hours and accordingly, in order to maintain work in the break of 12.30 to 1.30 p.m. between the day and afternoon shifts, two coal cutting machine men and an overman worked a supplementary shift from 8 a.m. to 3.30 p.m.

14. On the afternoon shift of 21st April, 1959, the day before the explosion, coal which had been prepared was filled and 5's Intake Gate ripping was advanced. On the night shift some colliers were employed in squaring out the right hand corner of the face and the rippers for the Intake Gate, having no work to do there, spent their shift at the new connection where a number of shots, said to be about 12, were fired in the stone, thus enlarging the holing.

15. On the day of the explosion, the morning shift filled loose coal left by the afternoon shift and from shots fired in each corner of the face. Three men spent the whole of their shift transporting stone in a small tub from the new connection to the intake roadhead where it was put into the roadside pack. At about 10.0 a.m. the coal cutting machine operators of the supplementary shift (W. Hudson and W. Wardle) arrived and began to turn the machine round at the left corner of the face. During this operation the machine struck and displaced the tension end of the Ribside conveyor, so that it had to be stopped. The driving head of the face conveyor was advanced into its new track and the tension end of the Ribside conveyor moved, but the coal cutting machine could still not be worked because its jib had then become fast in the undercut. A shot fired over the jib (between 11.0 and 11.30 a.m.) released it and the machine was turned, jibbed in and made to cut for about 10 feet to a stump of coal which required to be filled off. The tension end of the Ribside conveyor was placed in its proper position, both conveyors were re-started and the coal cutting machine trailing cable was disconnected and re-threaded into the new cutter track. No electrical trouble was experienced with the face equipment during the day shift.

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16. By 12.30 p.m. the day shift had left the face, except for two conveyor attendants, J. Rothery and C. E. Ray, who remained to assist the men on the supplementary shift. On his way out, the day shift deputy, F. Canham, saw J. Williams, a drifter employed in 2's Drift, eating this snap at 2's Transfer Point. He asked Williams to keep an eye on the two conveyors until the afternoon shift arrived.

17. Thus, at about 12.30 p.m. five men were actually in 5's Unit, namely, L. E. Coe (the overman), W. Hudson, W. Wardle, J. Rothery and C. E. Ray ; J. Williams was just outside it. There were no eye witnesses to say what happened during the next half hour. Of the six men, the first five were killed in the explosion. The sixth man, Williams, escaped with minor injuries, but he remembered little.

THE EXPLOSION

18. At about 1.0 p.m. ftihe lights went out at 10 East Loading Point, the conveyor stopped and the three men working there felt a rush of air and dust from inbye. One of them, T. Furlong, telephoned to the top of 10 East Main Haulage Road asking for the deputies to be sent back ; he also telephoned to the overman, H. Cunningham, saying that he thought there had been an explosion. Furlong then opened the switch controlling the supply of power inbye of the Loading Point and, with his two workmates, went inbye but returned after making an unsuccessful attempt to enter 5's Unit.

19. Canham and another day shift deputy, H. Towler, who had reached the top of 10 East Main Haulage Road when Furlong telephoned, went back into the district. On their way they met Williams making his way out; he could only tell them that he had been bowled over and thought there had been an explosion. Towler isolated the gate-end switches near 2's Transfer Point and then, with Canham, tried to enter 5's Unit by the Intake Slit. They found themselves unable to go beyond the end of that Slit because of fouled air. Two afternoon shift deputies, J. Wilsher and J. Bedford, also attempted to go up the Intake Gate, but Wilsher's lamp went out after he had travelled about 15 yards.

20. The under-manager, H. H. Gregg, had been with Cunningham when Furlong telephoned and these two went inbye, Gregg having first informed the surface electricians (at approximately 1.10 p.m.) that there had been a power failure in 10 East district. On reaching the top of 10 East Main Haulage Road, Gregg learned that Williams had been injured and concluded that there had been an explosion in 2's Drift, where Williams normally worked. He accordingly telephoned to the manager (at about 1.25 p.m.) and asked for ambulances and stretcher parties to be made available. When 'he reached 5's Intake Slit, Gregg saw that the belt had been blown off the Trunk Conveyor for a distance of some 50 yards and that there was every sign of an explosion having occurred in 5's Unit. He then arranged for a message to this effect to be sent to the surface, and at this stage Wakefield Central Rescue Station was called on for assistance. The Rescue Station received the call at about 2.0 p.m. and a team left at once for the colliery.

RESCUE AND RECOVERY WORK

21. Gregg with others then entered 5's Return Gate and travelled along it to the ripping lip without difficulty. When, however, he attempted to go under the lip his flame safety lamp went out and he had to withdraw. Gregg put in hand the restoration of the brattice sheets in 10 East Trunk Conveyor Road and in the new connection and then with others made a further attempt to enter 5's Unit via the Intake gate. This attempt failed because of fouled air.

22. By 2.50 p.m. a fresh air base had been established at the entrance to 5's Intake Slit and from here rescue men, using self-contained breathing apparatus, explored the Unit via 5's Intake and quickly found the bodies of four men. On attempting to travel down the Ribside, however, they encountered a fall and accordingly returned to the fresh air base. They then inspected 5's Return Gate and located the fifth body. All the bodies were recovered: the places at which they had been found are shown on Plan No. 2.

23. The clothing on each body was searched for prohibited articles by a police officer, first on arrival at the surface and later at Wakefield City Mortuary. No contraband was found.

24. At about 7.50 p.m. a series of " bumps " was heard which suggested that further explosions might be occurring in 5*s Unit. This news was telephoned to the surface and after a conference there it was decided to withdraw the fresh air base to near 10 East Loading Point. This was a correct decision, since no-one remained in 5's Unit and there would have been no justification whatever for risking further loss of life. At about 10.50 p.m. a decision was taken to seal off 5's Unit to limit the spread of any further explosion. The construction of stoppings was begun and while this work was going on the air returning from the district was sampled and measured at hourly intervals. Since these samples contained steadily decreasing quantities of explosion products, the seals were not completed.

25. On the afternoon of 24th April there seemed to be no risk of any further explosion and a preliminary inspection was made by two of H.M, Inspectors , W. M. Cumpsty and T. W. English, who, accompanied by the manager and A. Wright, the Divisional Mining Operations Engineer of the National Coal Board, entered the affected area via the intake stopping. Their inspection showed that there was no risk of a further explosion,
The stoppings were removed, the ventilation restored and the Unit left over the week-end for any remaining explosion products to clear.

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26. During these operations a partly smoked cigarette was found in the cage of a canary which was being carried by a rescue team. I have no doubt that this cigarette had been accidentally introduced on the surface where the birds were kept in a room to which many people had access ; it is understandable that the surface searchers did not see it.

27. H.M. Inspectors, assisted by officers of the Safety in Mines Research Establishment, began a thorough investigation of the affected area on 27th April; the work was done in the presence of representatives of the National Coal Board and other interested parties. The results of these investigations, and the conclusions which I draw from them, are described below.

SUMMARY OF CONCLUSIONS

91. I summarise my conclusions as follows: —

1. The accident was an explosion of firedamp, initiated at the left hand corner of 5's Face by an electric arc from the damaged trailing cable of a coal cutting machine. The explosion was propagated to some extent by coal dust. (Paragraphs 38 and 46.)

2. The firedamp involved emanated from the Low Haigh Moor Seam some 7 feet below and was emitted fairly rapidly, though not suddenly, from floor breaks mainly at a fault. (Paragraph 53.)

3. The ventilation of 5's Unit did not, by standards of good practice, allow a sufficient margin of safety. As the result of defects in short term planning and in execution, there were air leakages so great that the velocity of the air at the left hand corner of the face was not sufficient to deal with any substantial increase in the usual make of firedamp. (Paragraph 63.)

4. In respect of both choice and maintenance of equipment, insufficient attention was given to precautions against coal dust in 5's Unit. (Paragraphs 72-77.)

SUMMARY OF RECOMMENDATIONS

92. In summary, my recommendations are as follows:

Ventilation

1. The appropriate development plan for a colliery should show particulars of ventilation, including the means to be adopted for ventilating new workings at each stage of their development. (Paragraph 64.)

2. At all levels in the industry there should be energetic efforts to overcome the difficulties which are resulting in workmen being reluctant to carry and use firedamp detectors. (Paragraph 67.)

3. Regulation 7 (5) of the Coal and Other Mines (Ventilation) Regulations, 1956, is technically defective and should be amended. (Paragraph 66.)

Precautions against Coal Dust

4. It should be made obligatory to provide stone dust barriers on coal conveyor roads underground. (Paragraph 75.)

5. Coal cut by machine should be cut " wet". (Paragraph 77.)

Electricity

6. A further attempt should be made to devise an electrical protective system that will be capable of eliminating, or at least substantially reducing, the dangers of incendive arcing from a damaged trailing cable. (Paragraph 82.)

7. Local arrangements should be made between individual managements and H.M. Inspectors to ensure that notice of intention to introduce electricity is given at appropriate stages in the development of an electrical installation. (Paragraph 79.)

Statutory Reports

8. Under-managers should be given legal responsibilities similar to those imposed on the manager by section 10 of the Mines and Quarries Act, 1954. (Paragraph 89.)

I have the honour to be, My Lord,

Your Lordship's obedient Servant,

T. A. ROGERS,