

APPENDIX U-4

EXECUTIVE SUMMARY OF INVESTIGATION OF LONGWALL COMMUNICATION SYSTEM COMPONENTS



November 23, 2011

MEMORANDUM FOR NORMAN G. PAGE
Accident Investigation Team Leader

FROM:

JOHN P. FAINI

Handwritten signature of John P. Faini in blue ink.

Chief, Approval and Certification Center

SUBJECT:

Executive Summary of Investigation of Longwall Communication
System Components Recovered from Performance Coal
Company's Upper Big Branch – South Mine

The Approval and Certification Center (A&CC), as requested by Upper Big Branch Mine Accident Investigation Team Leader, Norman Page, conducted a laboratory investigation of Longwall Communication System Components recovered from a fatal mine explosion at the Upper Big Branch Mine-South on April 5, 2010.

The components received were:

1. Exhibit No. PE-0140, Battery.
2. Exhibit No. PE-0142, Battery.
3. Exhibit No. PE-0148, Battery.
4. Exhibit No. PE-0192, Battery.
5. Exhibit No. PE-0227, Control Phone Printed Circuit Board.
6. Exhibit No. PE-0249*, Pelican Case.
7. Exhibit No. PE-0249A*, Control Power Supply.
8. Exhibit No. PE-0249B*, Control Start-Up Alarm Control Unit.
9. Exhibit No. PE-0276*, Pelican Case.
10. Exhibit No. PE-0276A*, Control Phone.
11. Exhibit No. PE-0276B*, Control Phone.
12. Exhibit No. PE-0280, Control Phone Side Panel.
13. Exhibit No. PE-0281, Control Phone Side Panel.
14. Exhibit No. PE-0285, Control Phone Enclosure.
15. Exhibit No. PE-0336, Control Phone.

16. Exhibit No. PE-0337, Control Phone.
17. Exhibit No. PE-0338, Control Phone.
18. Exhibit No. PE-0344, Communication Cable.
19. Exhibit No. PE-0479, Control Phone Printed Circuit Board.
20. Exhibit No. PE-0480, Control Phone Speaker.
21. Exhibit No. PE-0481-A, Control Phone Terminal Strip.
22. Exhibit No. PE-0484*, Evidence Bag.
23. Exhibit No. PE-0484-A*, Control Phone Internal Mounting Bracket.
24. Exhibit No. PE-0484-B*, Control Phone Speaker.
25. Exhibit No. PE-0487, Control Phone.
26. Exhibit No. PE-0489*, Evidence Bag.
27. Exhibit No. PE-0489-A*, Control Phone Speaker.
28. Exhibit No. PE-0489-B*, Control Phone Printed Circuit Board.
29. Exhibit No. PE-0489-C*, Pyott-Boone Page Phone Printed Circuit Board.

*Note: Multiple pieces of evidence that arrived at the A&CC under one exhibit number (e.g. Exhibit No. PE-0249 consisted of a Control Power Supply and a Control Start-up Alarm Control Unit in a Pelican Case) was expanded into new unique exhibit numbers containing a suffix letter (e.g. Exhibit No. PE-0249A and Exhibit No. PE-0249B).

The West Virginia Office of Miners' Health Safety and Training recovered several pieces of evidence from the longwall communication system. This evidence was inspected and tested as part of this investigation and is listed below. The West Virginia Office of Miners' Health Safety and Training retained custody of these exhibits:

1. Exhibit No. CMTL 02.22.11-S110: Identified as a Control Line Termination Unit.
2. Exhibit No. CMTL 02.22.11-HG-1: Identified as a Control Line Termination Unit with a mounting bracket.
3. Exhibit No. CMTL 02.22.11-S24: Identified as a mounting bracket for a Control Line Termination Unit.
4. Exhibit No. CMTL 02.22.11-S105: Identified as a mounting bracket for a Control Line Termination Unit.
5. Exhibit No. CMTL 02-22-11-S171: Identified as the back, top, bottom and left side of a Control phone enclosure.
6. Exhibit No. CMTL 02.22.11-S104: Identified as the back, top and bottom of a Control phone enclosure.

7. Exhibit No. CMTL 02.22.11-S106A: Identified as the left side of a Control phone enclosure.
8. Exhibit No. CMTL 02.22.11 S85: Identified as the right side of a Control phone enclosure.
9. Exhibit No. CMTL 02.22.11-S61: Identified as a right side of a Control phone enclosure.
10. Exhibit No. CMTL 02-23-11 Spad 22567: Identified as a terminal strip mounting bracket with terminal strip label of a Control phone enclosure.
11. Exhibit No. CMTL 02.22.11-S77: Identified as a front cover of a Control phone enclosure.
12. Exhibit No. CMTL 02.22.11-S109: Identified as a back, top, bottom, and left and right sides of a Control phone enclosure.
13. Exhibit No. CMTL 02.22.11-S106: Identified as a front cover of a Control phone enclosure.
14. Exhibit No. CMTL 02.22.11-S114: Identified as a back, top, bottom and left side of a Control phone enclosure.

The first phase of the investigation began with a preliminary inspection of all the exhibits. The preliminary inspection included documenting observations and photographing as-received conditions of the exhibits. The second phase of the investigation included performing spark ignition and operational tests of the applicable exhibits. The third phase of the investigation included detailed inspection of all exhibits and additional spark ignition tests.

The inspections and tests found:

- There were no signs of internal heating, arcing, or sparking on any of the exhibits.
- Several minor discrepancies were noted when the exhibits were compared to approval documentation. These discrepancies did not affect operation, safety features, or the intrinsic safety of the exhibits.
- Some of the exhibits collected by the West Virginia Office of Miners' Health Safety and Training were physically matched to and therefore were part of the exhibits collected by MSHA.
- The spark ignition testing of the applicable exhibits did not result in any failures; therefore, these exhibits are not considered an ignition source for a methane-air atmosphere.

- The operational tests indicated that the applicable components operated as designed except for Exhibit No. PE-0276B. This component had a relatively low audio level when transmitting a page.

