APPENDIX U-11

EXECUTIVE SUMMARY OF INVESTIGATION OF HIGH-ENERGY NON-PERMISSIBLE ELECTRICAL ITEMS

U.S. Department of Labor

Mine Safety and Health Administration
Approval and Certification Center
765 Technology Drive
Triadelphia, West Virginia 26059

November 18, 2011

MEMORANDUM FOR NORMAN G. PAGE
Accident Investigation Team Leader

FROM: JOHN P. FAINI
Chief, Approval and Certification Center

SUBJECT: Executive Summary of Investigation of High-Energy Non-Permissible Electrical Items 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 associated with respect to high-energy non-permissible electrical items recovered from a fatal mine explosion at the Upper Big Branch Mine-South on April 5, 2010.

Item No.	Exhibit No.	Description	Preliminary Inspection Date	Detailed Inspection Date
1	PE-0189	Battery Charger	10-13-2010	11-3-2010
2	PE-0202	Switch	10-13-2010	11-3-2010
3	PE-0203	Ten Unit Charging Station	10-13-2010	11-3-2010
4	PE-0271-A	28 In Lighting Cable	10-14-2010	11-2-2010
5	PE-0271-B	10 Ft Lighting Cable	10-14-2010	11-2-2010
6	PE-0275-A	Lighting Current Transformer (CT)	10-14-2010	11-2-2010
7	PE-0275-B	Lighting Relay	10-14-2010	11-2-2010
8	PE-0275-C	Lighting Ground Fault Relay (GFR)	10-14-2010	11-2-2010
9	PE-0308	Lighting Ground Wire Monitor (GWM)	10-14-2010	11-2-2010 & 11-22-2010
10	PE-0325	GWM Terminating Diode	11-2-2010	11-2-2010
11	PE-0175	Hand Tool Rechargeable Battery	11-3-2010	11-3-2010

Item No.	Exhibit No.	Description	Preliminary Inspection Date	Detailed Inspection Date
12	PE-0155	Hand Tool Rechargeable Battery	11-3-2010	11-3-2010
13	PE-0190	Hand Tool Rechargeable Battery	11-3-2010	11-3-2010
14	PE-0191	Hand Tool Rechargeable Battery	11-3-2010	11-3-2010
15	PE-0154	Hand Tool Rechargeable Battery	11-3-2010	11-3-2010
16	PE-0277	Electrical Contactor	11-3-2010	11-3-2010
17	PE-0278	Blasting Wire	11-3-2010	11-3-2010
18	PE-0181	Battery Charger	11-3-2010	11-3-2010
19	PE-0328	Blasting Machine Cover	11-3-2010	11-3-2010
20	PE-0201	Switch	11-4-2010	11-4-2010
21	PE-0185	Grease Gun	11-4-2010	11-4-2010
22	PE-0153	Impact Wrench	11-4-2010	11-4-2010
23	PE-0345	Lighting Circuit Breaker (CB)	11-16-2010	11-22-2010
24	PE-0158	120 Vac Hammer Drill	11-23-2010	11-23-2010
25	PE-0455	Cable Extension Cord	03-02-2011	03-02-2011

Note: Exhibit Nos. PE-0271(Reference slide 20 of Appendix B) and PE-0275 (Reference slide 45 of Appendix B), as received at the A&CC, included several components. The designation "-A" and "-B", and "-C" were assigned to the individual components in order to identify the individual components. The locations of the evidence were obtained from the evidence ID tags.

The investigation began with a preliminary inspection of the evidence. The preliminary inspection included documenting visual observations, and photographing as-received conditions of the components.

The next phase of the investigation included a detailed inspection of the evidence. The detailed inspection involved determining whether the evidence could be energized and disassembling the evidence to address any signs of arcing, sparking, and electrical heating internal to the evidence. The power cord of Exhibit No. PE-0189 (Reference slides 1-8 of Appendix B), a battery charger, showed heat damage. Exhibit No. PE-0328 (Reference slides 9 & 10 of Appendix B), the blasting machine cover, showed evidence of heating. The plastic tray that held the batteries was melted. The cover appeared to have been blown off or forcibly removed. Five of the six cover screws

were broken. Exhibit No. PE-0203 (Reference slides 11-16 of Appendix B), a ten unit charging station, showed evidence of heating. The eight charging cords were melted together. Exhibit No. PE-0190 (Reference slides 17-19 of Appendix B), a hand tool rechargeable battery, showed evidence of heating. The battery had some melting of the case. For some components, a combined preliminary/detailed inspection was conducted.

Since all items are non-approved and non-permissible items, no comparison to drawings was conducted.

APPENDIX U-12

EXECUTIVE SUMMARY OF INVESTIGATION OF A NELSON-KELLERMAN ANEMOMETER