

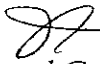
U.S. Department of Labor

Mine Safety and Health Administration
Industrial Park Road
RR1, Box 251
Triadelphia, West Virginia 26059



April 23, 2007

MEMORANDUM FOR: RICHARD A. GATES
District Manager, Coal Mine Safety and Health, District 11

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

SUBJECT: Executive Summary of Submersible Pump Parts Recovered
from the Sago Mine

The Approval and Certification Center (A&CC), as requested by Coal Mine Safety and Health and the West Virginia Office of Miner's Health, Safety, and Training, conducted a laboratory investigation of submersible pump parts recovered from the abandoned (sealed) area of the Sago Mine. This equipment included: 6 trailing cable pieces (3 pairs of cables); a pump control box with associated trailing cable and pump cable; and a coupler (cathead) with associated trailing cable. The purpose of this investigation was to inspect and test the parts from the submersible pump assembly to determine: the electrical continuity of the pump trailing cables; if the cable ends match together and the mechanism for breakage of the three pairs of cables; and, if there is any evidence of sparking, heating, melting, etc. of the cables, cathead, and control box. The laboratory examination and testing included visual examination of the cables with a magnifying glass and a low powered microscope. A digital multimeter was used to make continuity measurements of the cable conductors.

The laboratory examination and testing could not determine if a continuous cable ran from the cathead to the pump at the time of the explosion. A discrepancy in the markings present on the trailing cables associated with the cathead, six (6) cable pieces and the trailing cable on the pump control box suggests that two different trailing cables were used to provide power for the submersible pump. A splice or cable coupler joining these two different trailing cables was not recovered from the mine for this examination.

The mechanism for breakage of the cable pairs could not be specifically determined to be from moving equipment or from explosion-related tears. The laboratory investigation showed that the damage to all three pairs of cable was caused from being pulled apart rather than severed by mechanical means. All of the respective cable pairs appeared to match.

There was no evidence of arcing or sparking on any of the cable ends or the pump control box. Some heat damage appeared to be on the tape portions of one cable pair.

There was some evidence of water contamination inside of the pump control box. The pump control box did not house any energy storage devices such as capacitors or batteries.

cc: D. Chirdon
K. Porter
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MSHA:A&CC:RCBoring:klb:04-23-07

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