

# 1 EXECUTIVE SUMMARY

This report by the West Virginia Office of Miner's Health, Safety and Training presents a summary of findings into the Sago Mine explosion approximately 11 months after the date of its occurrence the morning of January 2, 2006. In that explosion, 12 men lost their lives. Fourteen (14) men walked to safety and another was rescued and carried to safety.

Beginning with an account of the events of that day, much of it through the eyes and words of the men who lived through it, this report will document the chain of events of the mine emergency and the mine rescue. This is followed by information and references pertaining to the mine recovery and the events leading up to the point at which the investigation underground could get underway.

The cause of the explosion has been determined to be a methane explosion that occurred at 6:26 AM and 35 seconds behind the seals of the Old 2<sup>nd</sup> Left Section (sometimes referred to as Old 2<sup>nd</sup> Left Mains or even 3<sup>rd</sup> Left). Ten (10) mine seals built of Omega blocks to seal off this part of the mine from the active mine were completed exactly one year prior to the date of this report (December 11). It was 22 days after December 11, 2005 that an explosion involving up to 400,000 cubic feet of methane gas destroyed these seals. The effects of this blast—the dust, the smoke, the debris across the entries—resulted in entrapment of the men of Two Left Section, who perished there, with the exception of Randal McCloy. Also partly at fault were self-contained self rescuers that did not perform in the manner expected.

A discussion of the SCSR's, is presented in Section 5.6.

That the seals sustained high explosive forces from the mine explosion is undeniable. Why the pressures were so high is becoming clear, but is not yet proven. At this writing the evidence supports a conclusion that the force of the explosion was far in excess of the 20 psi static pressure that was the criteria for their design, approval, and construction. These facts are corroborated by the preliminary results of a series of six (6) seal explosion tests performed at the Lake Lynn Experimental Mine between April 15, 2006 and October 19, 2006.

The cause of the explosion is clearly related to lighting. This conclusion is presented by strong corroborated circumstantial evidence presented in Section 5.5-2.

How the electricity from lightning entered the sealed area is still under investigation, and in that regard this report is not complete. Testing designed to determine if electricity can travel through the belt structure or track, transmitted by induction through the solid earth were recently performed by Sandia National Laboratories under the direction of the Mine Safety, and Health Administration (MSHA). The results of these tests are not yet released.

This agency proposes to continue its examination of lightning transients during the winter of 2006 – 2007 at Sago through the monitoring of transient voltages and currents of electricity with simple electricity-sensing devices that can be stationed at strategic locations in the mine to monitor for any lightning effects.

The phenomena of upward lightning or triggered lighting as a potential mechanism for the introduction of lightning electricity into the sealed area is currently being examined by this agency, and is discussed in Section 5.5-3. It is a phenomena tied to strikes of positive polarity which are much more common during electrical storms in the winter and involves lightning striking the ground at one location and returning to the sky as an upward stroke at an elevated structure as much as several miles away.