

# Sago Mine Rescue Overview

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Public Hearing on the Sago Mine Disaster



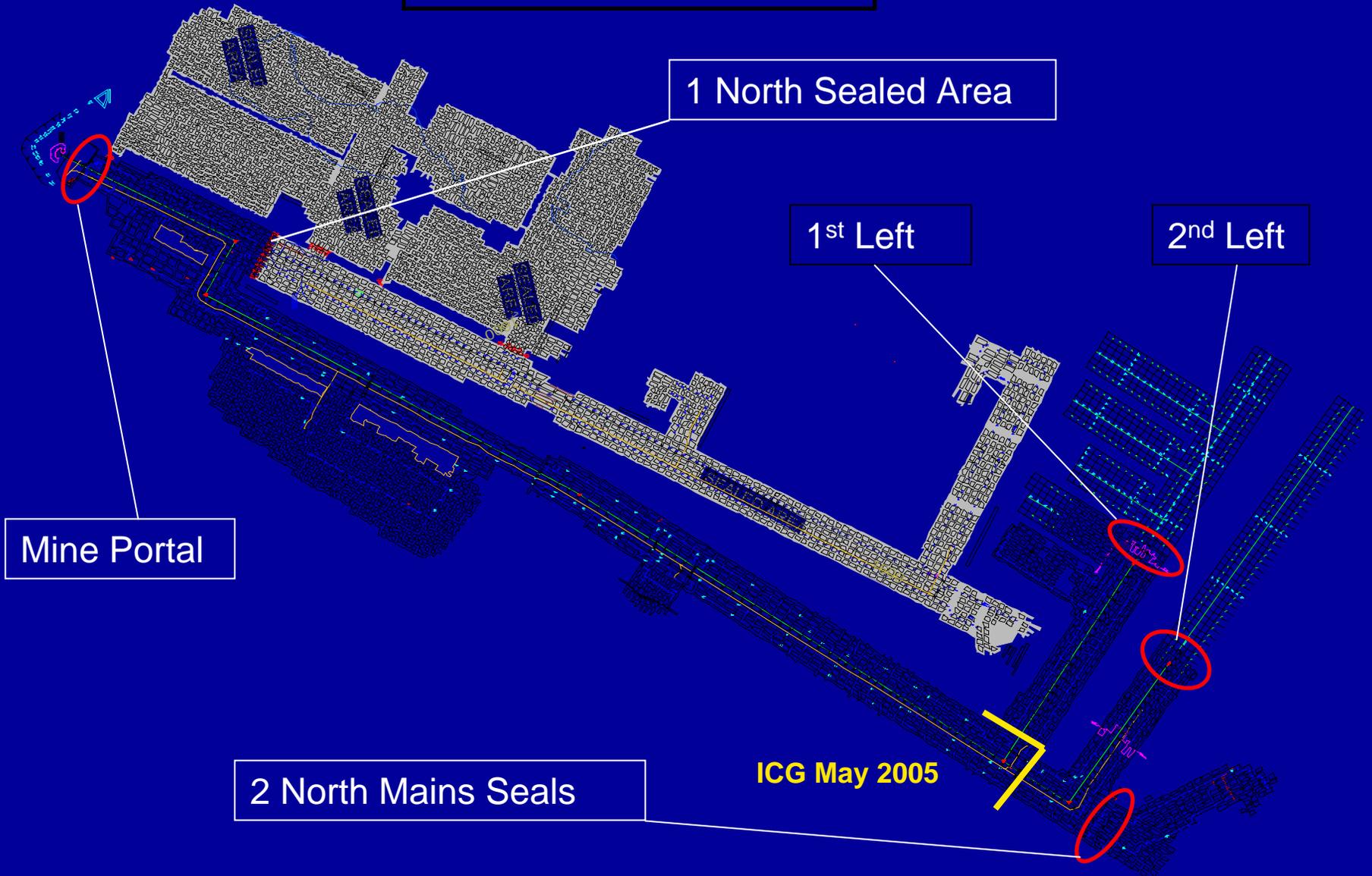
U.S. Dept. of Labor  
Mine Safety and Health Administration



# Presentation Topics

- This presentation will give an overview of the rescue operations at the mine after MSHA received the call from the mine operator at approximately 8:30 am.
- Tomorrow, the accident investigation panel will present more detail on events directly related to the accident.

# SAGO MINE



January 2, 2006

- At approximately 8:30 am, MSHA Bridgeport Field Office Supervisor, James Satterfield, was notified of the accident by Johnny Stemple, International Coal Group (ICG) Corporate Safety Department member. A 103K-order was issued.
- Various MSHA personnel were notified and response procedures were initiated. One supervisor and two coal mine inspectors from the Bridgeport Field Office arrived at the mine approximately 10:30 am.

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- Mine rescue teams began arriving at the mine at about 11:00 am and continued to arrive throughout the day.
- Approximately 11:30 am – CO readings were approximately 500 ppm, while the CH<sub>4</sub> readings had decreased to 0.6% at the return entry in the pit. These readings, in conjunction with known damage to ventilation controls, indicated there was still a hazard for another explosion.
- Approximately 12:00 pm – the CO readings dramatically increased to 2600 ppm at the return entry in the pit and elevated CO levels were detected in the office buildings located on the edge of the mine pit. An imminent danger order was issued and the office buildings were evacuated.
- There was a concern that the increase in CO was an indication of a possible second explosion or a fire that was increasing in intensity. It is abnormal for concentrations to increase this dramatically. There have also been a number of second explosions at mines in the recent past. According to mine management, they stopped their initial rescue attempt early that morning because of dense smoke and the possibility of a second explosion.

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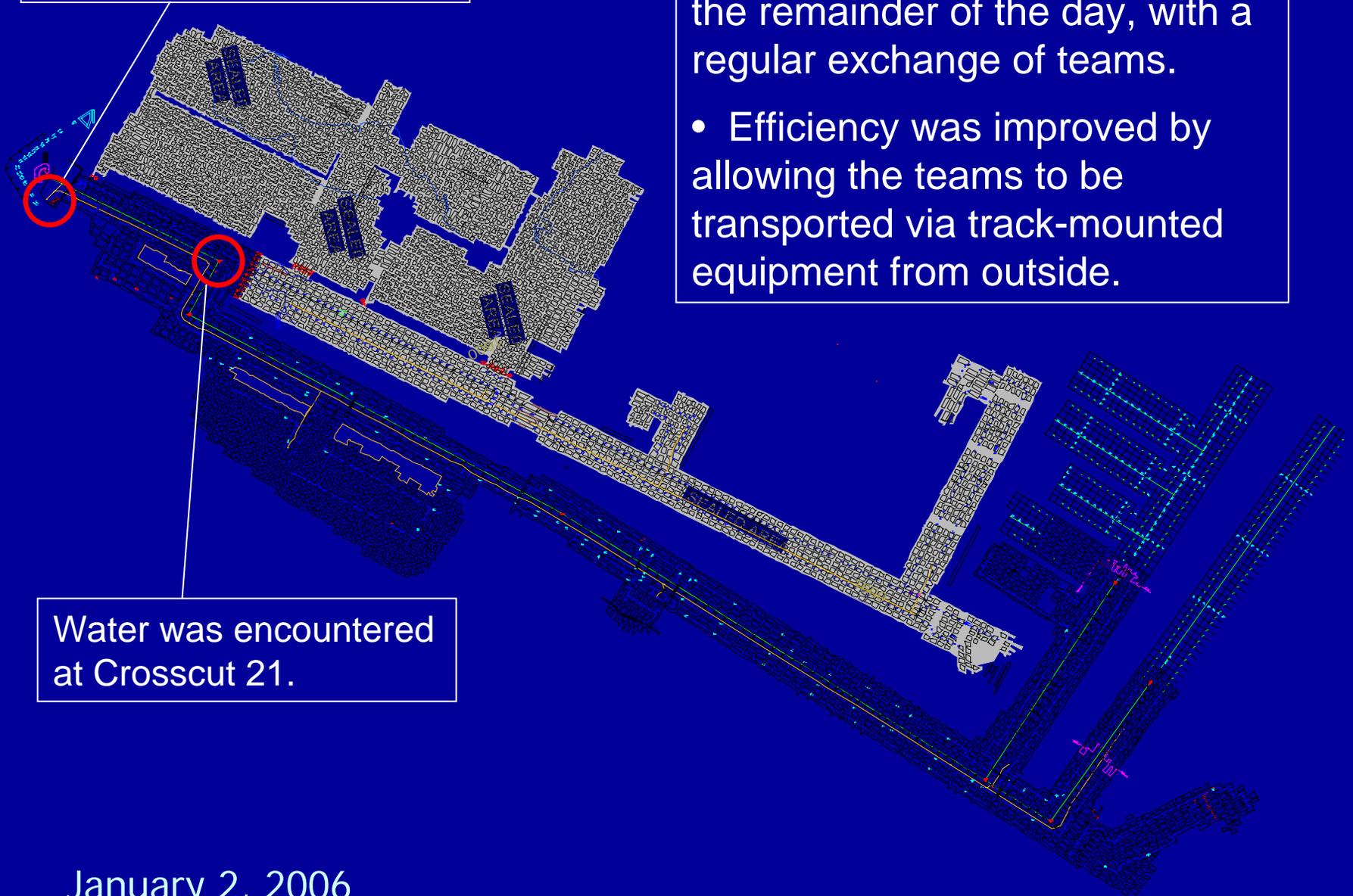
- Work had already begun to have the surface area over 2 Left surveyed. A possible borehole location at the 2 Left belt tailpiece had already been discussed.
- Approximately 3:00 pm – Consolidation Coal set up a gas chromatograph. Bottle samples were analyzed which confirmed the handheld gas readings from the pit mouth return.
- Approximately 4:15 pm - Gas concentrations begin to trend down. 15 minute air quality checks are taken at all portals.
- While the conditions were still very dangerous, a decision was made to send rescue teams into the mine. This calculated risk would not have been taken if miners were not underground.

5:25 pm – A mine rescue team entered the mine.

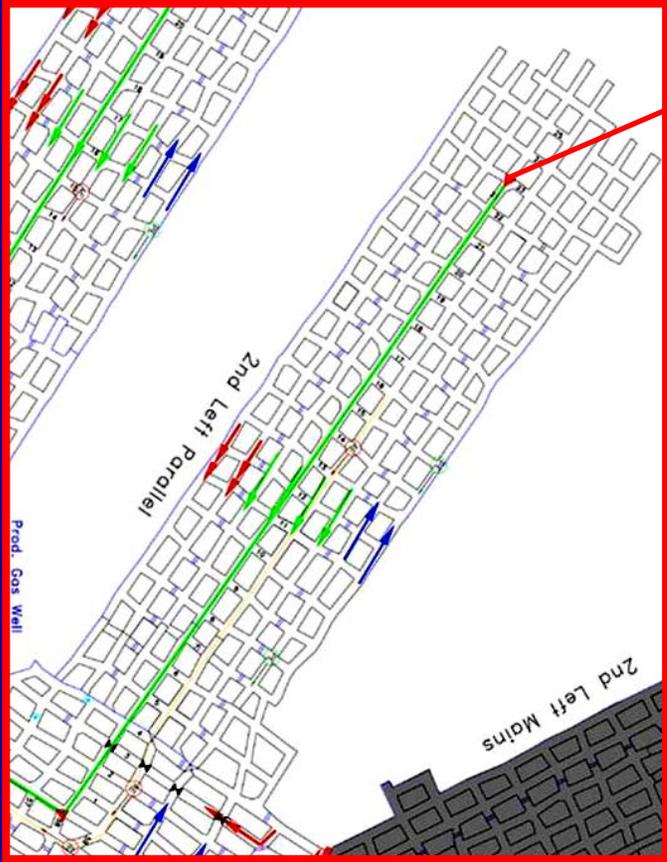
- Exploration continued through the remainder of the day, with a regular exchange of teams.
- Efficiency was improved by allowing the teams to be transported via track-mounted equipment from outside.

Water was encountered at Crosscut 21.

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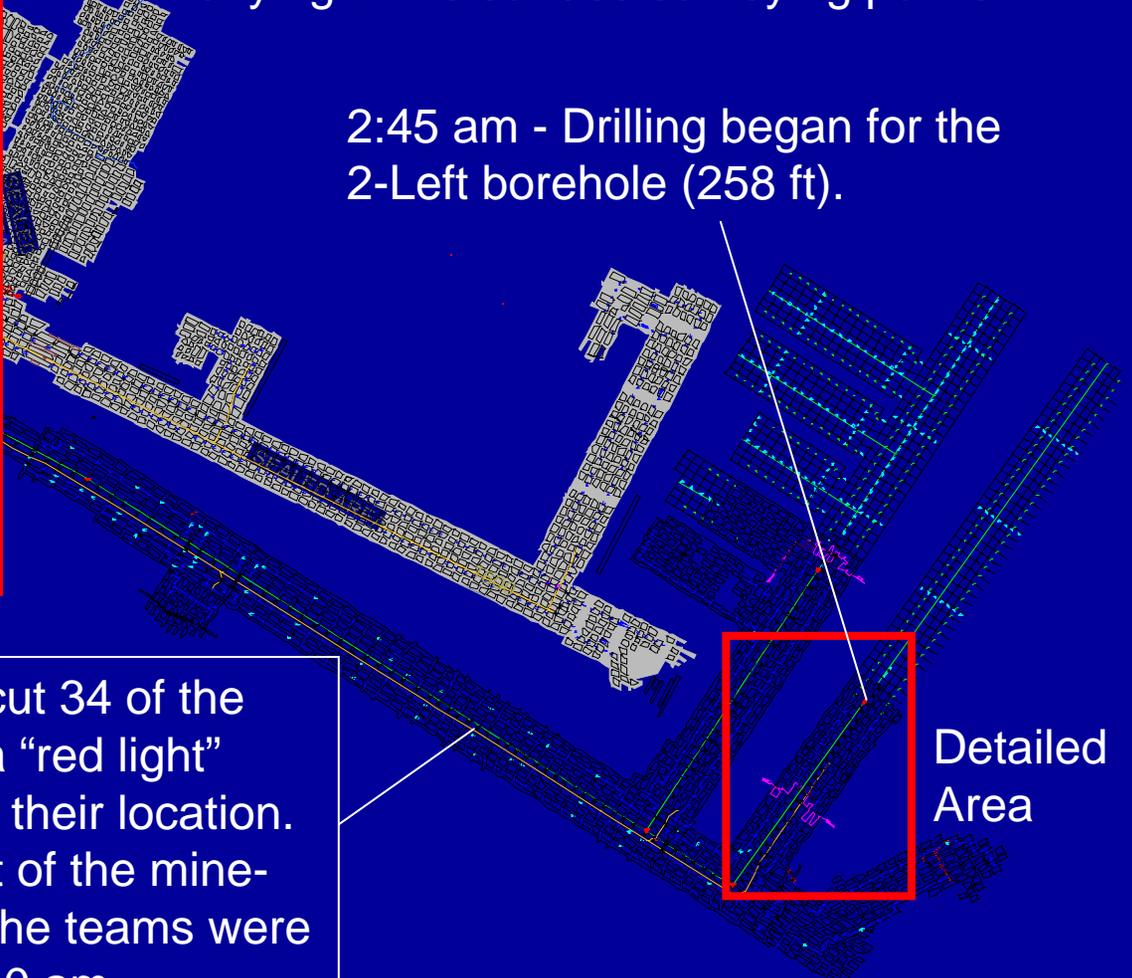


1:35 am – The drill site for the 2-Left borehole was located and equipment set up to begin drilling within the hour (Approx. 4-6 hours completion time). Because of the overcast weather conditions, the GPS system did not respond very well to tying in the surface surveying points.



2:45 am - Drilling began for the 2-Left borehole (258 ft).

The teams advanced to Crosscut 34 of the No. 4 belt flight and observed a “red light” approximately 4 crosscuts inby their location. It was determined this was part of the mine-wide CO monitoring system. The teams were withdrawn at approximately 2:40 am.

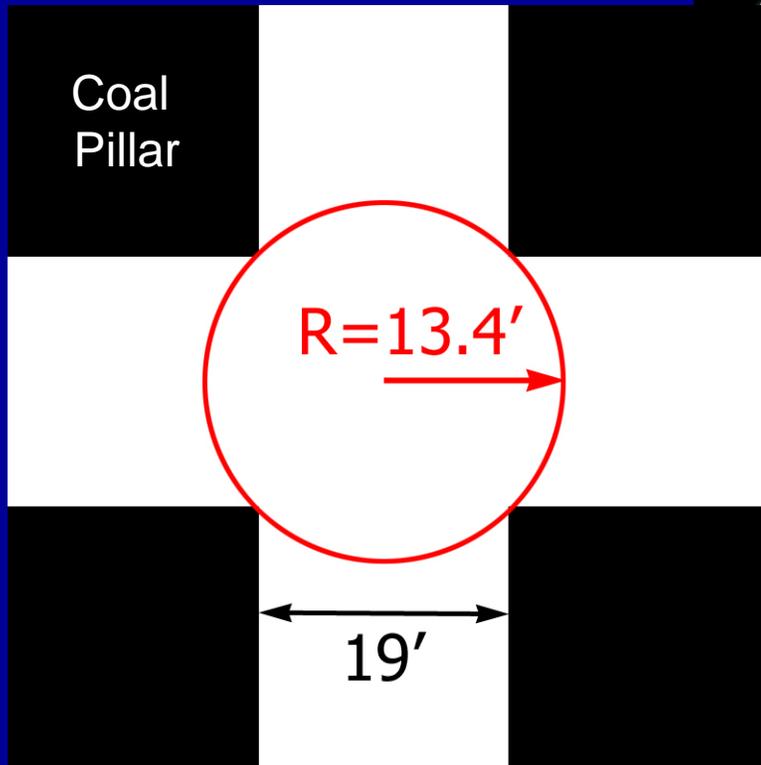


Detailed Area

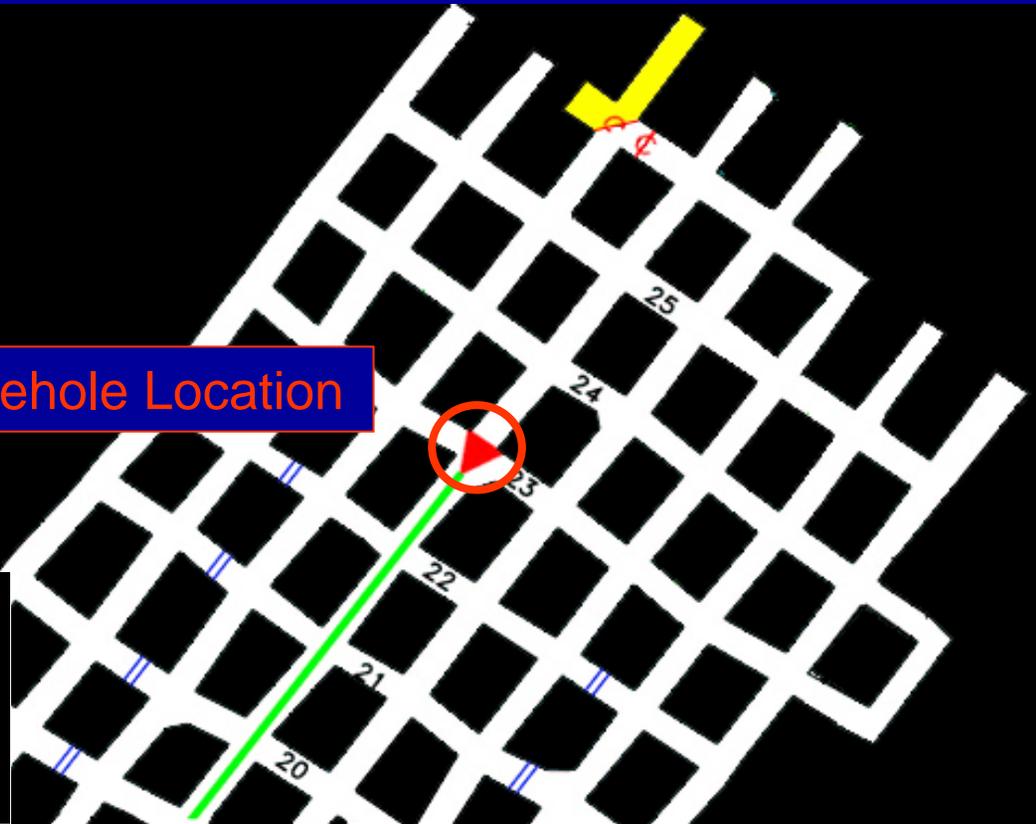
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# Drilling in 2-Left

Mine Opening



Borehole Location



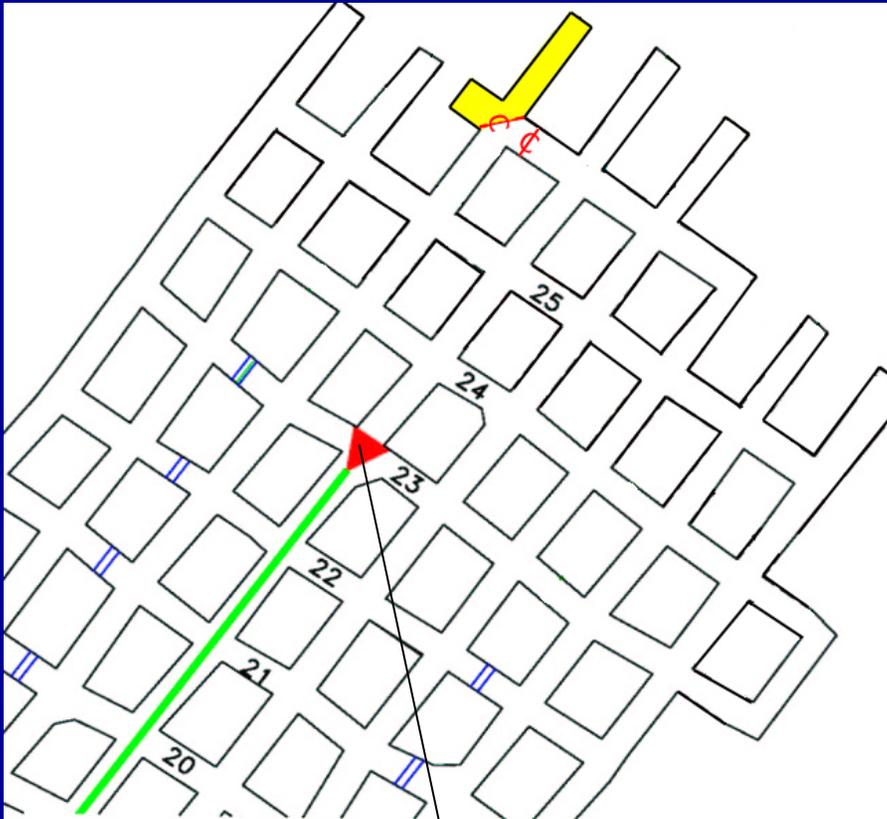
## GPS – Surveying

Accuracy of survey needed to be within approximately 13' to ensure penetration of mine openings.

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- Mine rescue teams reach the surface at 3:40 am.
- The CO monitoring system is de-energized at 3:57 am.
- Preparations were being made to transport the robot into the mine for exploration. This was to be used as another rescue tool and did not delay the mine rescue team movement.
- The 2-Left hole depth was 180 ft at 4:28 am and 220 ft by 4:54 am. Due to the rate of drill penetration, a decision was made to keep mine rescue teams out of the mine until the hole punched into the coal seam.

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Location where 2-Left  
borehole punched through.

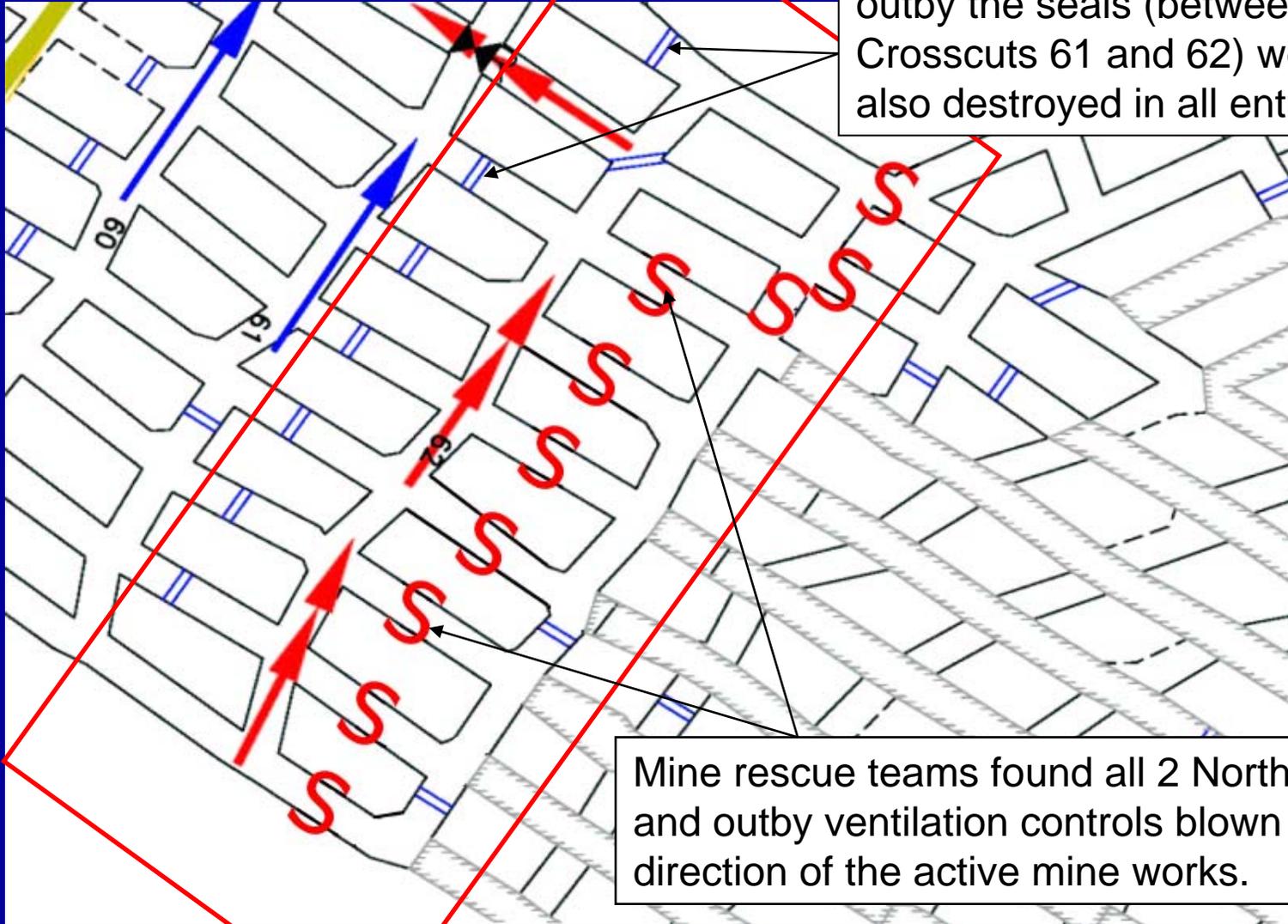
- 5:10 am - All persons are withdrawn from the pit area as the hole was ready to punch through into the mine.
- 5:35 am – The 2-Left borehole punches into the mine and approximately 1200 ppm CO is detected with hand held instruments.
- 5:50 am – All drilling equipment was shut down and there was no response from underground when the drill steel was struck.
- 6:22 am - Mine rescue teams were sent back into the mine.

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- 6:35 am – a camera is lowered into the 2-Left borehole. The camera is located over the feeder. No indications of explosive forces are observed. A shuttle car is on the feeder and no evidence of soot is observed.
- The robot is unfortunately disabled due to mechanical difficulties at 8:50 am. The rescue teams continue to advance further into the mine.
- A decision was made to bypass 1 Left. This again was a calculated risk fully knowing that a fire could exist there. However, it was thought no personnel would be in 1 Left.
- Approximately 2:00 pm - The teams arrived near the 1-Left section return entry. At 2:14 pm, the teams found the 1-Left mantrip at Crosscut 50 of No. 4 belt flight. The headlights were on.

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- 4:21 pm – Decision to establish fresh air base at Crosscut 57 of the No. 4 belt flight. Mine rescue team completes outby curtain work at 5:05 pm and fresh air base is established around 5:45 pm.
- 5:18 pm – Mine rescue team finds Terry Helms in the track entry between Crosscuts 57 and 58 of the No. 4 belt flight.
- The team advances to the 2-North Mains No. 10 seal. The remaining seal locations were examined between 6:05 and 6:47 pm. All seals were blown in an outby direction. Air quality ranged from 300-700 ppm CO and 0.5-1.4% methane.
- Teams were requested to bypass the previously sealed area and advance in 2 Left. This again was a calculated risk, since the CO and methane concentrations at the seals could indicate the explosion originated in the previously sealed area with a potential for explosive mixtures to exist there.



The ventilation controls just outby the seals (between Crosscuts 61 and 62) were also destroyed in all entries.

Mine rescue teams found all 2 North seals and outby ventilation controls blown in the direction of the active mine works.

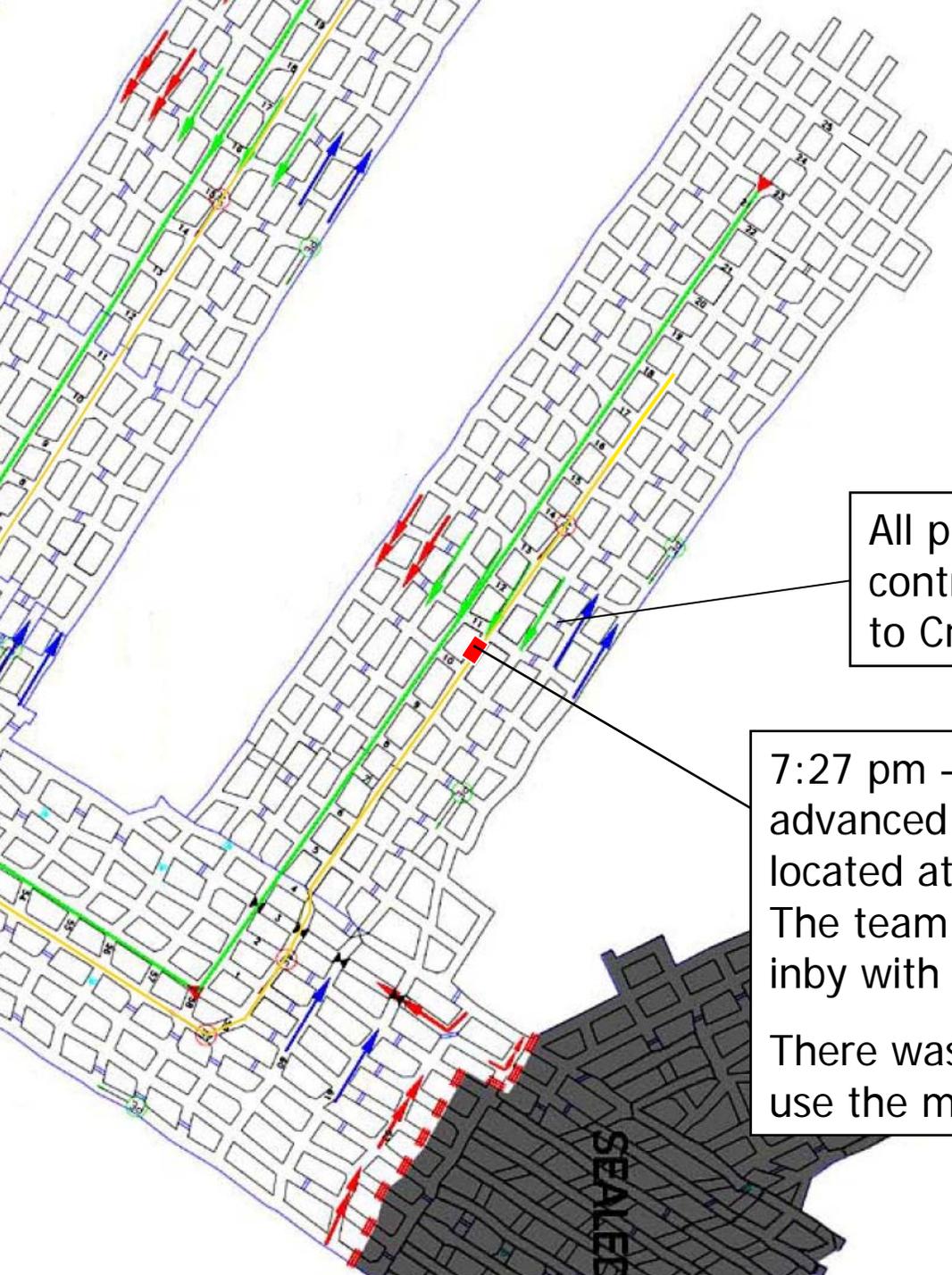
January 3, 2006

7:12 pm – Teams advance to the mouth of 2-Left and begin exploring the section.

All primary escapeway ventilation controls from the mouth of the section to Crosscut 12 were damaged.

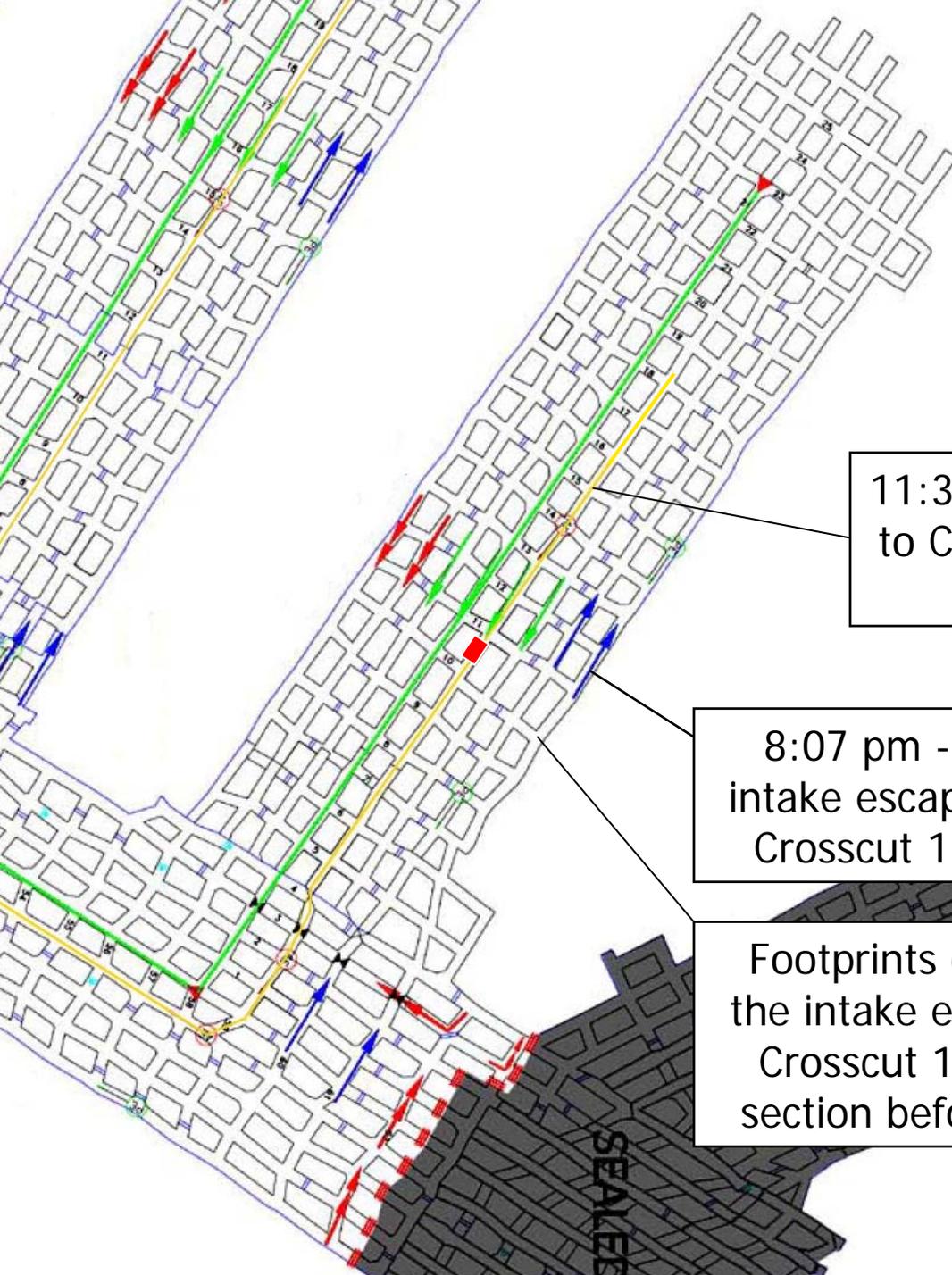
7:27 pm – 2-Left mantrip observed and team advanced toward it. The mantrip was located at Crosscut 10 with no persons in it. The team traveled the track entry 2 crosscuts inby with no miners observed.

There was evidence that the crew tried to use the mantrip to escape in the track entry.



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Between 9:00 and 11:14 pm, the teams explored from the mouth of the section to near the end of the track.



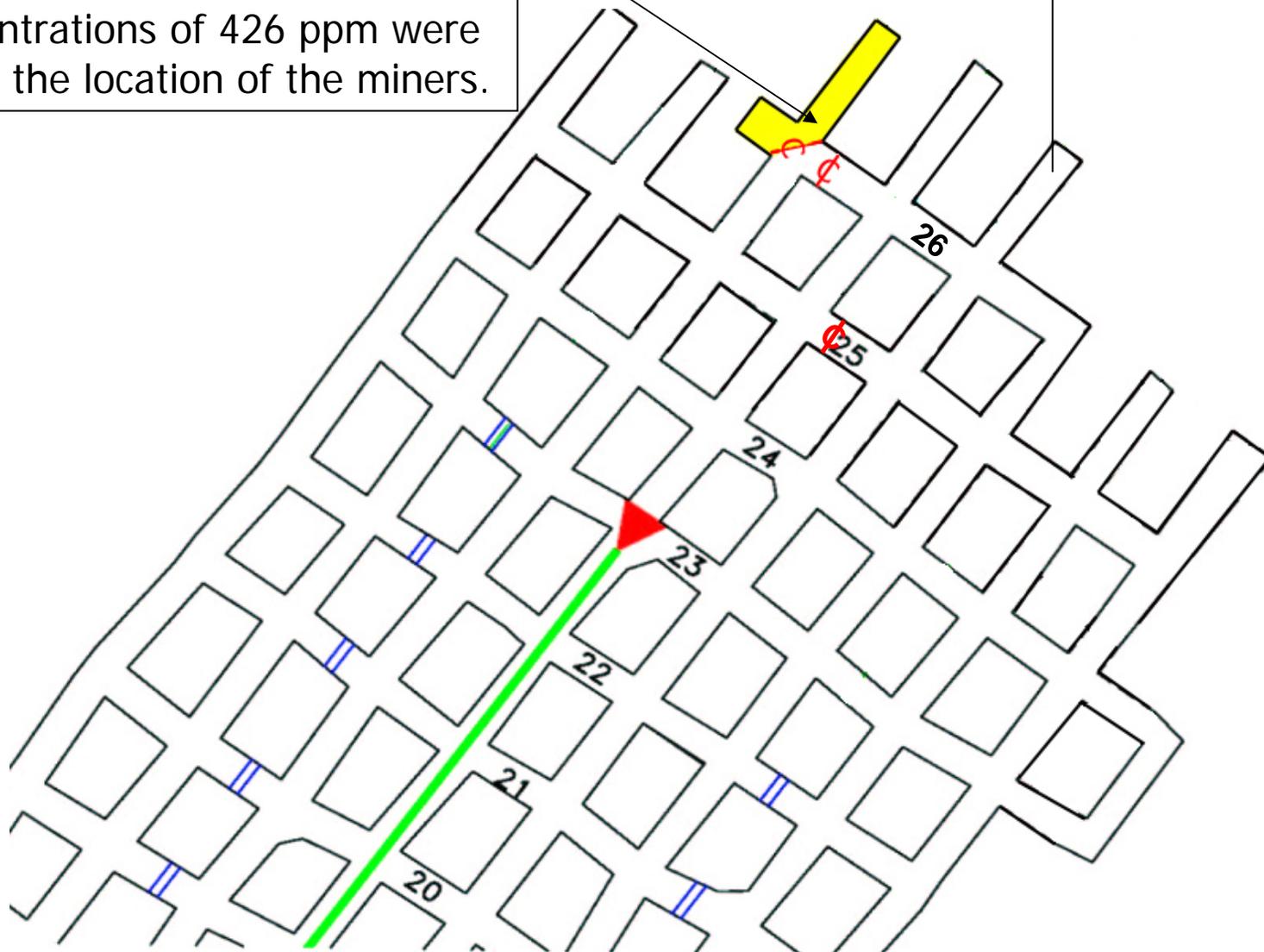
11:32 pm – Mine rescue team advanced to Crosscut 15 in 2-Left track entry and will advance toward the face.

8:07 pm - The team advanced outby in the intake escapeway, they discovered evidence at Crosscut 11, where 12 SCSR's were opened.

Footprints of miners were observed in the intake escapeway (No 8 entry) from Crosscut 10 toward the mouth of the section before the footprints were lost.

- The team advanced to the No. 3 entry, where they heard sounds and found the 2-Left miners.
- One miner was found alive.
- CO concentrations of 426 ppm were detected at the location of the miners.

The face of the track entry was reached at 11:40 pm.



11:46 pm - It was reported that twelve miners were found alive. The exact location was not known by the command center at this time.

Ambulances and medical teams were summoned and preparations were made for necessary assistance to travel underground.

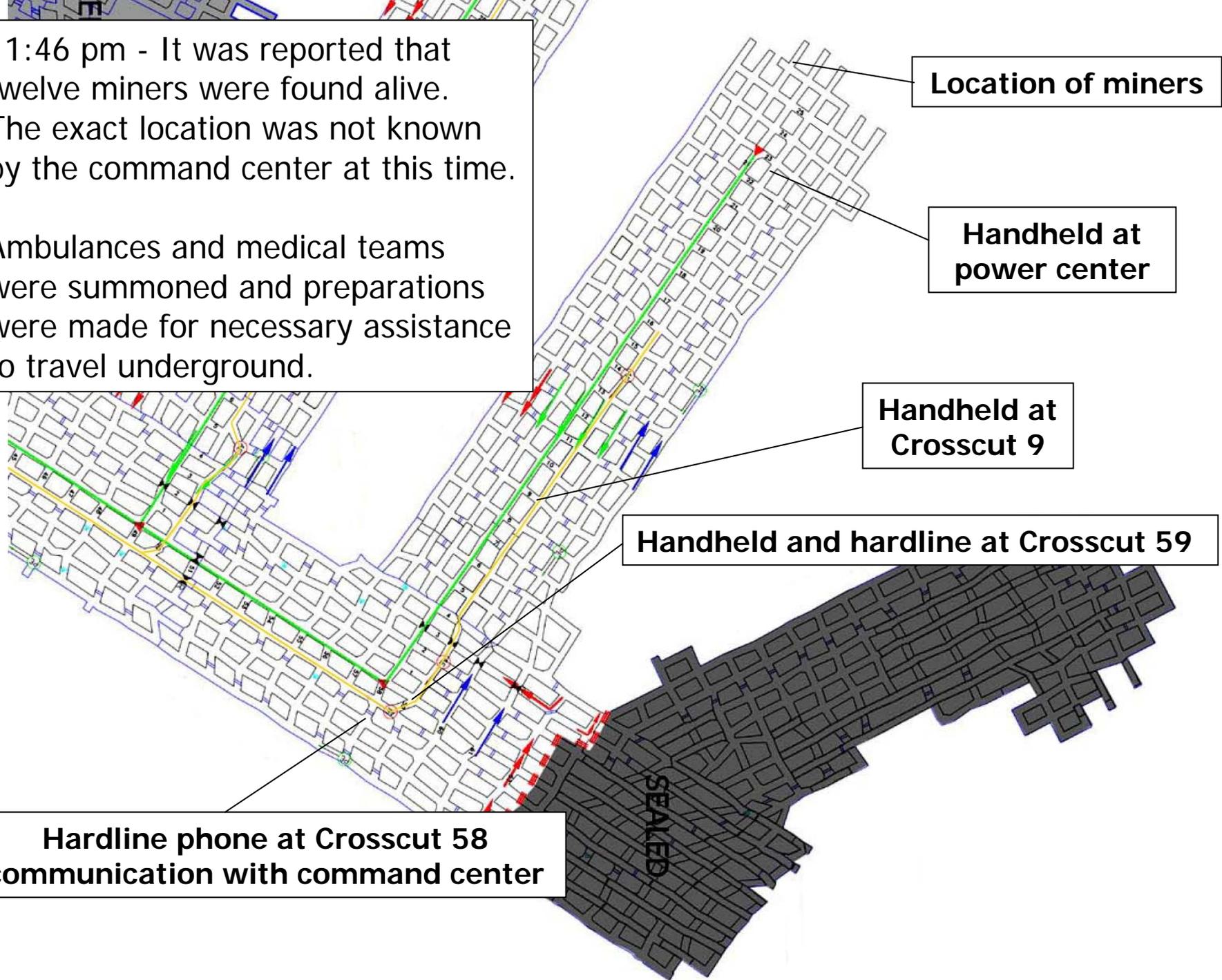
**Location of miners**

**Handheld at power center**

**Handheld at Crosscut 9**

**Handheld and hardline at Crosscut 59**

**Hardline phone at Crosscut 58 communication with command center**



January 4, 2006

- 12:18 am – Reports that the teams and 12 persons would be leaving the mine. Arrangements were made to send in back boards, curtains, blankets, water, first aid supplies and medical personnel.
- 12:30 am – All mine rescue teams are at Crosscut 57. Information is provided that 11 miners are deceased and only 1 survivor.
- 1:00 am – The survivor was brought out of the mine and transported by ambulance to the hospital.

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- Contrary to standard mine rescue protocol, a decision was made to remove the remaining victims with the teams under apparatus.
- The 12 victims were brought to the surface at 9:55 am. The victim's identities were verified and they were transferred to the state medical examiner.
- 10:50 am – Mine rescue teams were debriefed.