

2025 SE Regional Mine Rescue Contest

Judges' Instructions



Metal/Non-Metal - Day 2

Mine Information – Day 2 UPDATED

General

The TN Country Mine is an underground single-level room and pillar zinc mine located in SW Tennessee and has two active sections (3rd West and 1st North) operating at full capacity. The mine operates two 12-hour shifts per day, 7 days a week. Hours of operation are from 05:00 to 17:00 on day shift and 17:00 to 05:00 on night shift. Material is transported via rubber-tired diesel and battery haulage equipment.

Gas

The mine is a gas Category III per 30 CFR 57.22003(a)(3). The mine generally experiences low levels of methane during production and has experienced a couple of methane inundations in the past reaching explosive levels if fan malfunctions. There is also some nitrogen dioxide and carbon monoxide resulting from blasting and the operation of diesel equipment.

Maps

Mine maps have not been recently updated and mine does not intersect any nearby workings. Mine is also not in close proximity to any gas wells or boreholes to our knowledge.

Ventilation

Mine is normally ventilated via 200,000 CFM exhausting main fan located on the surface. We have made ventilation changes, and the #2 drift is now exhausting in the 1st North section. This section also has an additional airshaft near the face area of the #1 drift. Fan is currently in operation exhausting, and cannot be stopped, stalled or reversed.

Mine Access

Mine is normally accessed via the intake #2 drift and transportation provided via mobile battery-powered equipment. Mine is walking height throughout.

Explosives

All explosives are stored on the surface in an approved storage facility. All shots are performed from surface with no employees underground per the 30 CFR.

Electricity

Electrical service to the mine is provided by Pigeon Forge Electric with the main disconnects located on surface. Power centers and battery charging stations are located underground for pumps and mining equipment. All underground circuits are currently de-energized and locked/tagged.

Communication

Communication is accomplished by two-way radios carried by mine personnel. There are also Femco phones which are strategically placed in the mine.

Ground Control

Ground control is maintained with 8-foot mechanical bolts and timbers are located in the mine for secondary support. Mine has experienced some wet areas and bad areas of rib/back.

Misc.

All local, state, and federal agencies have been notified and are on site and back up mine rescue teams are available. Guards are posted at all necessary areas.

All materials to work the problem are located underground or on the surface.

Team Briefing

Update: Day 2

I cannot tell you how thankful we are for your team in the rescue of 2 of our miners. Thank you again for your assistance.

The backup teams working after your rotation yesterday have not made much progress. However, they were able to lower water levels by pumping entries 1, 2, and 3. We still have not received any communication from the 2 missing miners.

Based on our gas readings through the night, we still have evidence of fire, and its location is unknown. All necessary management, emergency personnel, and authorities are still on site.

Gas levels encountered were 4.2% CH₄, 190 ppm CO, 16.1% O₂, 0 ppm NO₂.

We need your mine rescue team to begin work at the newly established Fresh Air Base located at crosscut 8 of the 1st North active section.

Power underground has been de-energized, and the mine fan is currently on and running. A major ventilation change was completed last night, and the #2 (center) drift is now a designated return aircourse - with the #1 and #3 drifts serving as intakes. We have also switched fan rotation back to exhausting, and it cannot be stopped, stalled, or reversed.

Please help us find our remaining 2 miners and be safe.

Team Instructions

Day 2

- Rescue remaining surviving miners and transport them to FAB.
- Identify located miners to FAB by number:
James – Miner #3
Jack – Miner #4
- Locate and extinguish all fires if safe to do so.
- Explore all accessible areas of section that can be done safely.
- Team will be relieved by backup team at 75 minutes.

Judges Instructions

Day 2

Day 2 problem will consist of one ventilation. Exhausting fan is on and cannot be turned off. Mine can be blown up if proper ventilation sequences are not met.

Date & Initials required at stoppings, faces, water over knee deep, impassable falls, barricades, fires out of control, and location of any live persons or bodies.

Gas tests required at stoppings, face areas, doors, regulators, barricades, and other areas with unknown conditions, intersections or turned off drifts.

Fresh Air Base Checks

#1 Entry – Team will encounter temporary stopping outby. Captain will check opening under apparatus. Brattice cloth and water knee deep encountered. D&I and gas test at stopping. Verbalize roof/back check.

#2 Entry – Captain will check opening, water knee deep, and airtight cave. D&I and gas test at cave. Verbalize roof/back check.

#3 Entry – Captain will check opening, encounter explosive gas placard and temporary stopping. Captain must notify fresh air base of explosive mixture on placard. Team will airlock and breach stopping and encounter water over knee deep. D&I and gas test at stopping and water. Verbalize roof/back check.

Team Stops 1-3

#1 Entry – Team must airlock and breach stopping. Gas test required. Verbalize roof/back check. Smoke and gas placard encountered. Gas tests at openings.

#2 Entry – Team will travel through smoke to next intersection. Must tie off if using wireless comms. Apparatus or personnel check with count off entering smoke. Airtight cave, fire, and battery scoop encountered. D&I and gas test at cave. Fire can be extinguished. Verbalize roof/back check. Gas tests in openings.

#3 Entry – Team will travel to next intersection and encounter water over knee deep and gas placard. Verbalize roof/back check. D&I and gas test at water. Gas test at openings.

Team Stops 4-6

#3 Entry – Team will continue up #3 Entry and encounter battery hauler, gas placard, brattice cloth, and overcast wall. Verbalize roof/back check. D&I and gas test at wall. Gas test at openings.

#2 Entry – Team will travel back and up #2 Entry and encounter overcast walls. Verbalize roof/back check. D&I and gas tests at walls.

#1 Entry – Team will travel back and up #1 Entry. Explosive mixture placard, barricade, and overcast wall encountered. Captain must notify fresh air base of explosive mixture on placard. No response from barricade. Verbalize roof/back check. D&I and gas test at barricade and wall. Gas test at openings.

Team Stops 7-9

#2 Entry – Team will travel back and up to next intersection. Gas placard and unsafe roof with unconscious miner encountered. Verbalize roof/back check. D&I and gas test at face. Gas test at openings.

#1 Entry – Team will travel across to next intersection and encounter intake air shaft, and caved area. Verbalize roof/back check. D&I and gas test at cave and face. Gas test at openings.

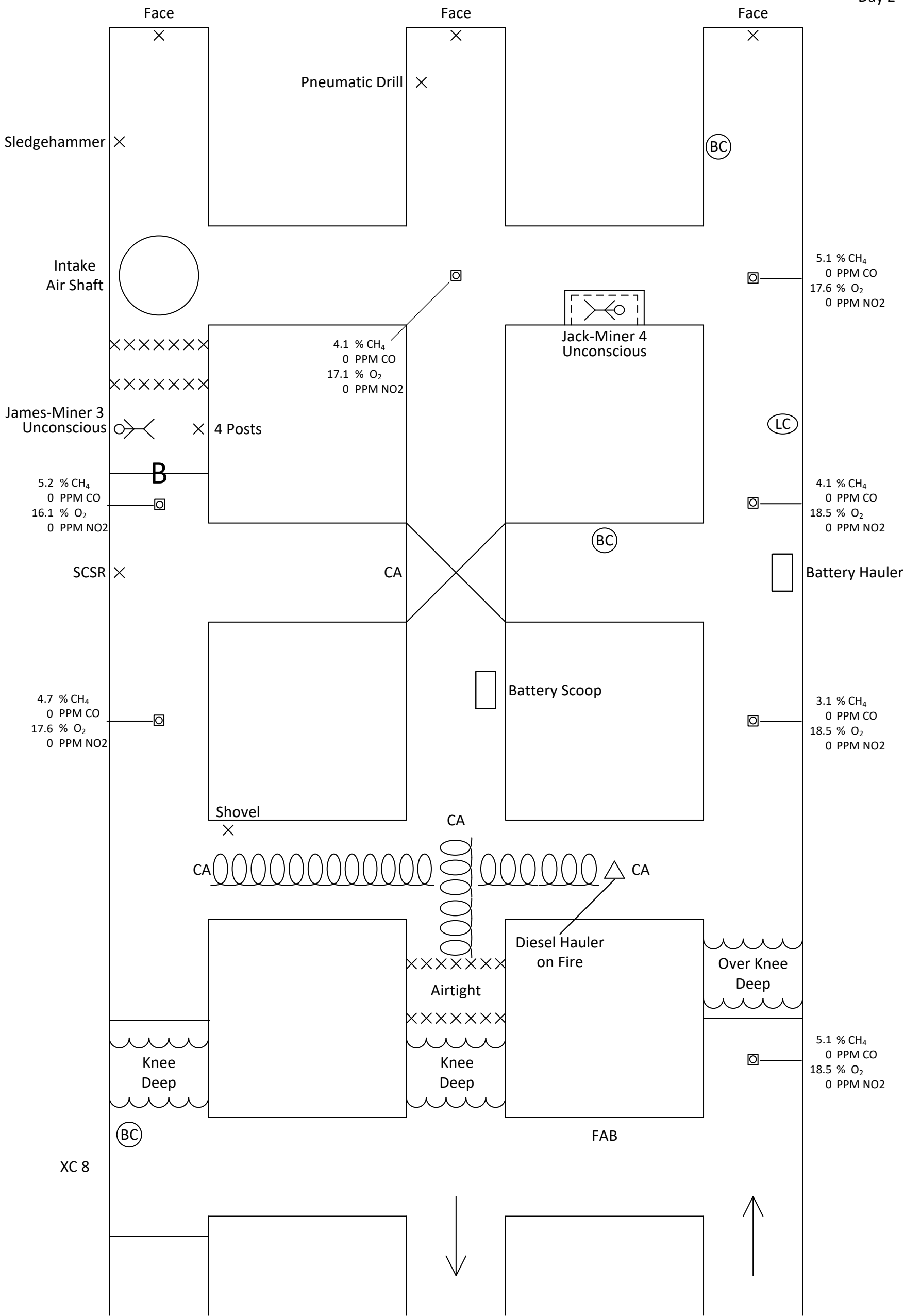
#3 Entry – Team will travel across to next intersection and encounter explosive mixture placard, brattice cloth, and face. Captain must notify fresh air base of explosive mixture on placard. Verbalize roof/back check. D&I and gas test at face. Gas test at openings.

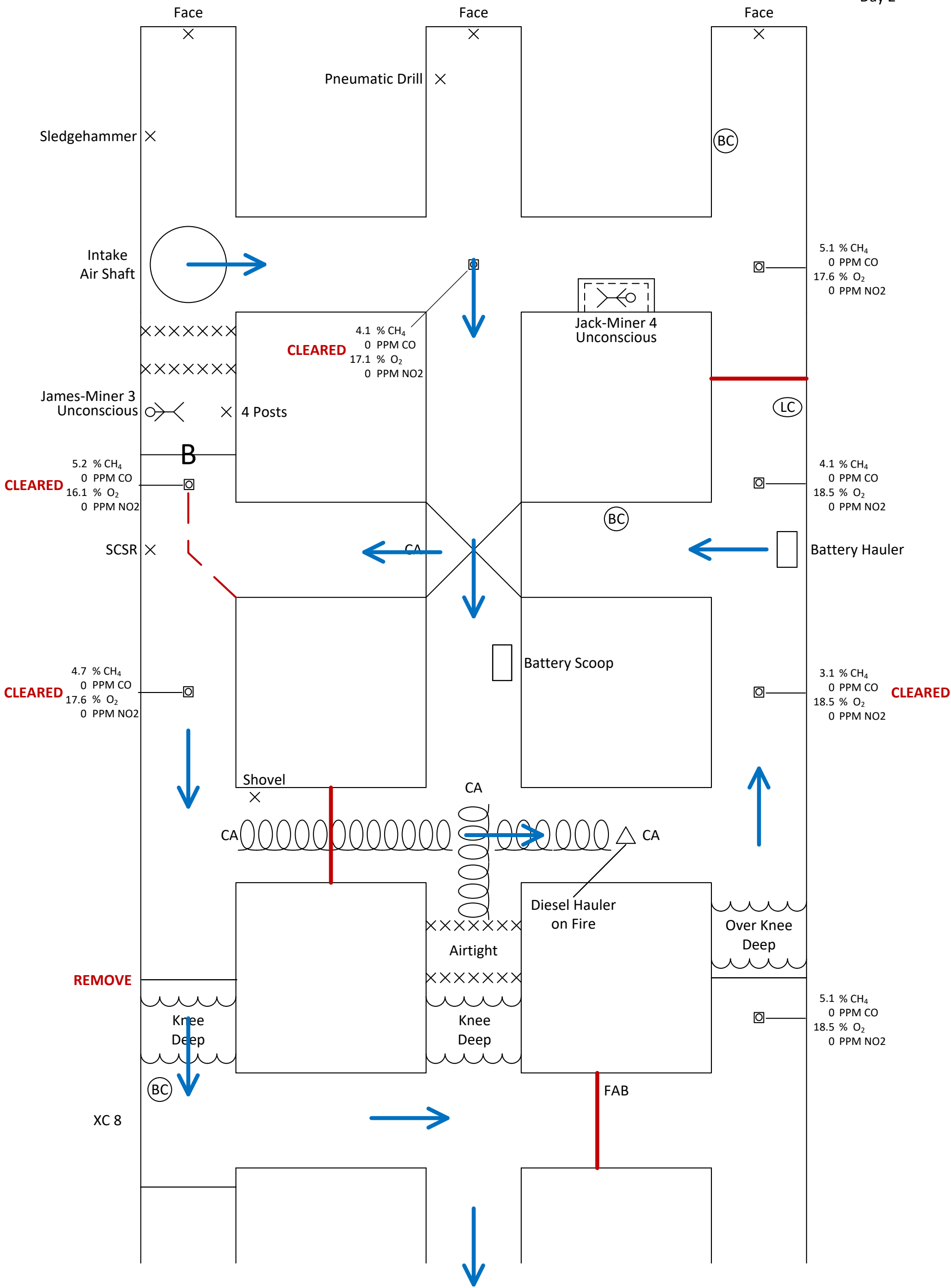
Solutions

Team will erect stoppings for ventilation (See Vent Map). Must build at FAB last. Fan is on and cannot be stopped or stalled. Team will use line curtain to clear gas then airlock into barricade. Verbalize roof/back check. D&I and gas test. 4 posts encountered. Gas test at caved area. D&I at person. Can now be loaded and transported to FAB.

Team must now travel back into mine to set 4 posts to recover person in unsafe roof and place on stretcher. D&I at person. Verbalize roof/back check.

End of problem Day 2.

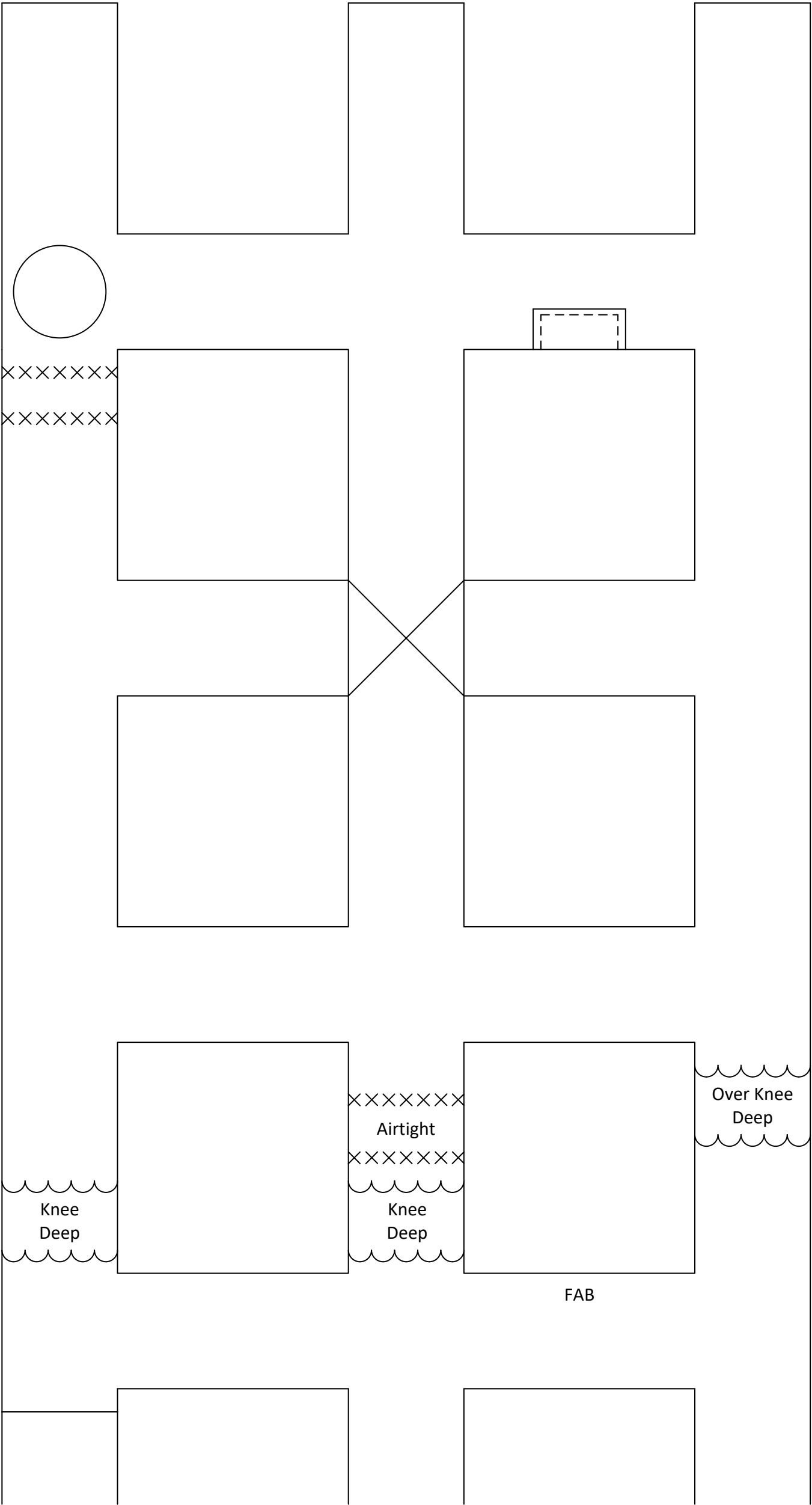




Ventilation



Intake
Air Shaft



XC 8

Final Vent