



**2024 NMRA  
POST 5  
MINE RESCUE  
CONTEST  
DAY 2**

## 2024 Post 5 Day 2 Written Exam

Contestant Name: \_\_\_\_\_ Team Name: \_\_\_\_\_ Working # \_\_\_\_\_

1. All \_\_\_\_\_ should be well hitched in the floor roof, and ribs to improve their strength.
  - a. Permanent seals
  - b. Temporary seals
  - c. Temporary stoppings
2. Progress reports should include reports on roof and rib conditions and \_\_\_\_\_.
  - a. Mine conditions
  - b. Gas conditions
  - c. Team condition.
3. Once rescued, \_\_\_\_\_ should never be left alone.
  - a. Patients
  - b. Survivors
  - c. Victims
4. Black damp is a mixture of carbon dioxide, \_\_\_\_\_ and air which is oxygen deficient.
  - a. Hydrogen
  - b. Nitrogen
  - c. Oxygen
5. Before a rescue team goes underground, it will attend a \_\_\_\_\_.
  - a. Team briefing
  - b. Briefing session
  - c. Team meeting
6. \_\_\_\_\_ air has a specific gravity of one.
  - a. Clean
  - b. Normal
  - c. Dry

7. The time spent under oxygen by a rescue team is usually limited to \_\_\_\_\_ hours or less.
- a. Two
  - b. Three
  - c. Four
8. The IDLH for Carbon \_\_\_\_\_ is 1200 ppm.
- a. Dioxide
  - b. Monoxide
  - c. Sulfide
9. \_\_\_\_\_ should be well hitched in the roof, floor, and ribs to make them as airtight as possible.
- a. Permanent seals
  - b. Temporary seals
  - c. Barricades
10. Electrical fires are best \_\_\_\_\_ by nonconducting agents such as carbon dioxide and certain dry chemicals.
- a. Fought
  - b. Extinguished
  - c. Put out



## Post 5 Day 2 Written Statement

Welcome to the Mountaineer #2 Mine, My name is \_\_\_\_\_ Superintendent of the mine. Thank you for responding to our call for help.

We are a small mine that has just begun development. We have 3 sections working to set up for longwall production. Last night on Midnight shift we were scheduled to perform routine maintenance work and set dayshift up for production. The foreman on the 6South HG crew called out and said they were having difficulty getting power set up on the miner and that his radio battery was dying. He said he was going to change out his radio battery and get back in touch with us in a little while. A short time after that a loud bang was heard and the fan showed a large spike in the water gauge. The fan is running but does have some vibration in it.

All miners have been evacuated except the 4 miners that were sent to the 6South HG Section. We have not been able to contact anyone on that section. We were able to send in one of our rescue teams and they were able to get within 5 blocks of the face but had to return to the surface due to a pack malfunction. A Fresh-Air base has been setup at that location.

Our mine is a newer development but we have run into high levels of methane during production and we have had some areas of bad top. The mine is ventilated by an exhaust fan here on the surface. The fan must remain on to continue to ventilate the rest of the coal mine.

In the 6South HG Section air normally intakes up the #3 Entry and Returns out the #1 entry. Entries are numbered left to right.

Mine maps have not been updated for a few days.

All state and federal agencies have been notified and back up teams are on site.

Please find our missing miners and bring them out. Good luck.

### Written Instructions

Account for all missing miners and bring survivors to the FAB

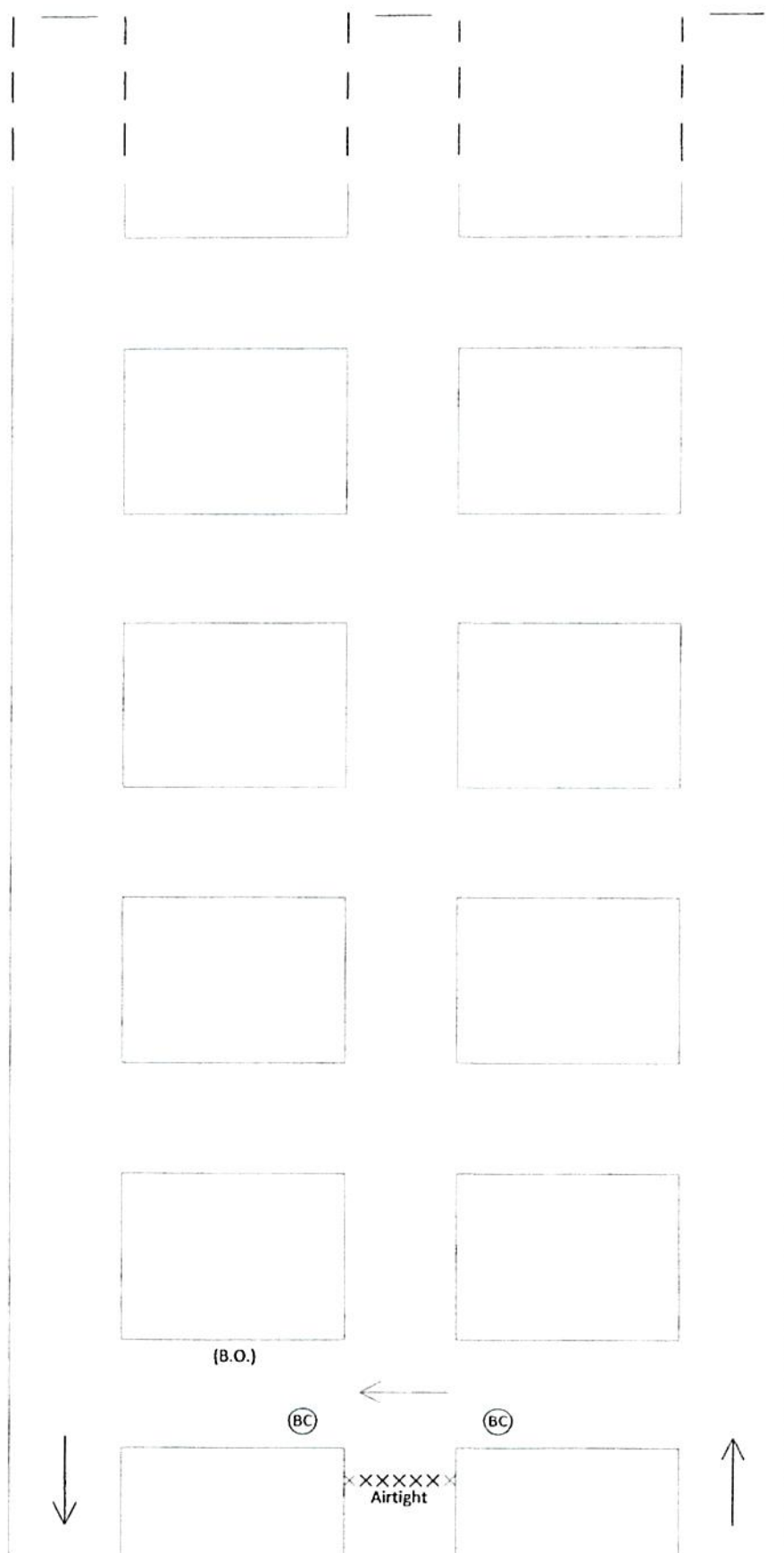
Explore all areas of the mine that can be explored safely.

The exhaust fan on the surface must remain on and cannot be stopped or stalled. The fan can be reversed with permission from the superintendent but cannot be shut off.

You have 70 minutes to complete the problem.

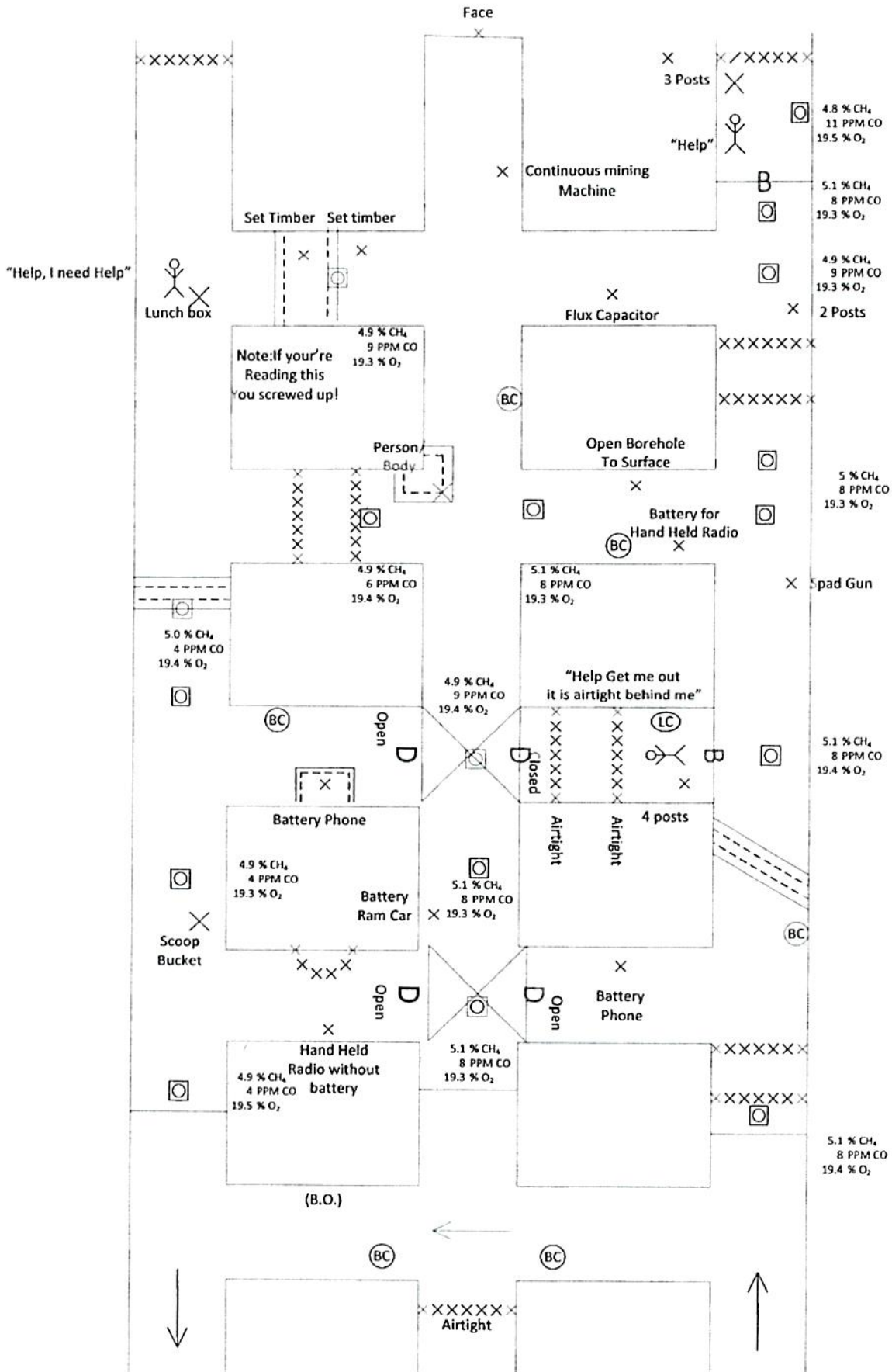
BRIEFING OFFICER \_\_\_\_\_

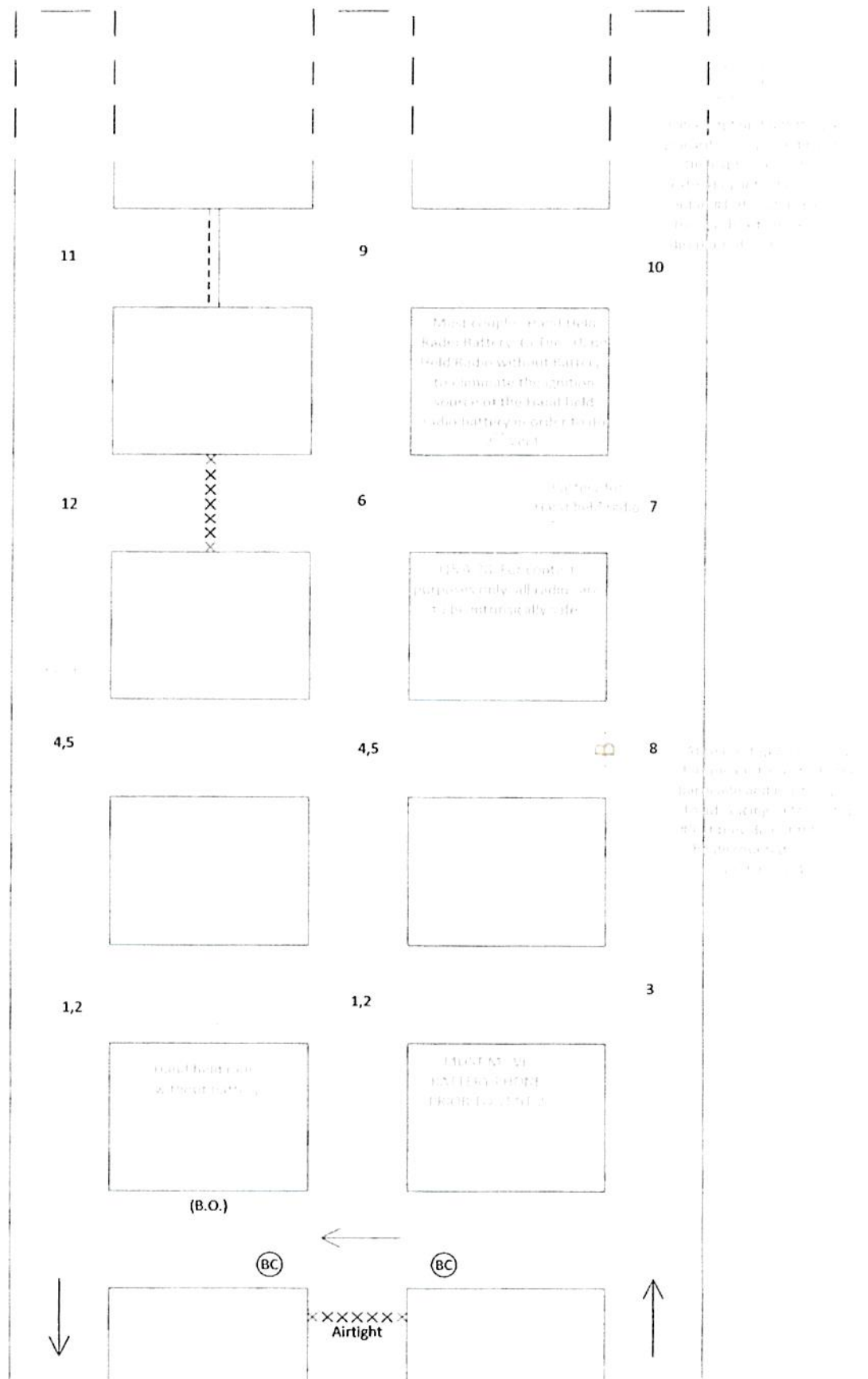
TEAM MAP \_\_\_\_\_



BRIEFING OFFICER \_\_\_\_\_

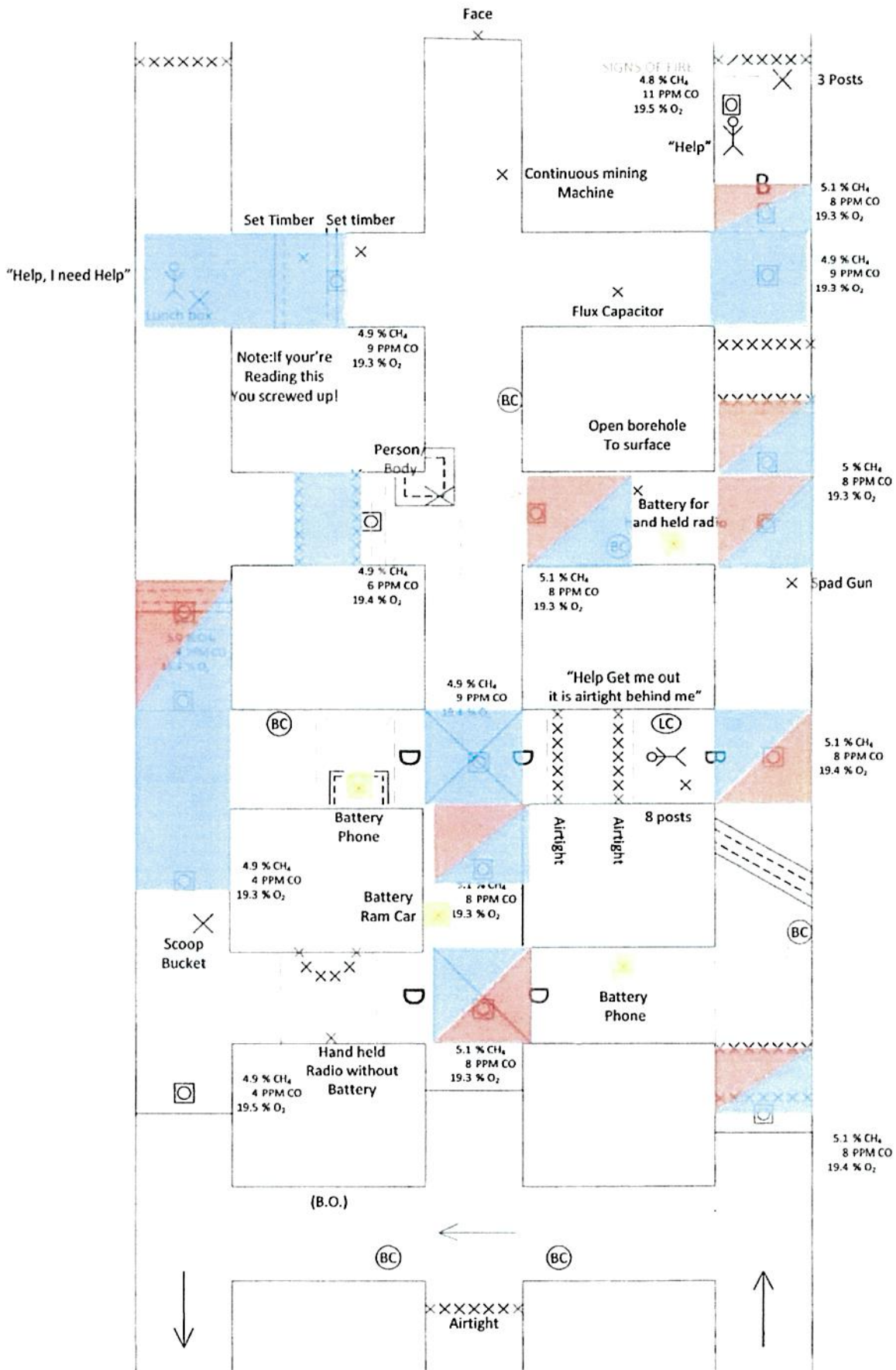
TEAM MAP \_\_\_\_\_







TEAM MAP \_\_\_\_\_



## 2024 Post 5 Day 2 Team Stops Explanation

Team begins in Fresh-Air Base with exhaust fan running. Team will find mine air locked with temporary stoppings intact up the straights of 1,2 and 3 entries. Team will have to use Brattice Cloth in fresh air base to airlock in and examine openings due to an open ended map. They will have contaminants in #1 and 3 entries. #3 will be blocked by caved area across the entry.

### Team Stops 1,2,3

The team will have the choice of traveling up 1 or 2 entry for the first team stop. Team must airlock in. If team travels up number 1 entry they will find an irrespirable gas up the straight of number 1 a semi circle of caved in 1-2, **a Radio without a battery (An actual radio will be there)** and a wingwall with door open. Team will make next team stop in #2. In number 2 teams will find an explosive mixture in #2 intersection. They will find a battery ram car up the straight followed by an explosive mixture up the straight. 2-3 cross cut they will find a wingwall with door open and a battery phone in the cross cut 2-3. Team will make next stop in #3. **They will find the backside of caved in the intersection that will require the captain to zig zag roof test the intersection.** Up the straight they will find diagonal unsafe roof.

### Team stops 4,5

Team will have choice of traveling up #1 or #2 entries. In Number 1 the team will find an explosive mixture up the straight at the imaginary line followed by a second explosive mixture touching unsafe roof across the entry. In the cross cut 1-2 they will find an elongated unsafe roof on the outby rib with a battery phone in it. They will also find a brattice cloth and a wingwall with door open. Teams next stop will be in number 2. They will find an irrespirable gas in the intersection and a wingwall with door closed toward #3. Teams can airlock into here by closing other door and building temporary stoppings inby and outby. Once airlocked they can open door where they will find caved airtight across the entry 2-3.

### Team stops 6,7,8

Teams will travel up the straight of number 2 to the next team stop. At this stop they will find a wrap around of unsafe roof on the left inby corner of intersection with a person in it. **This will require captain to perform zigzag roof test of intersection.** Toward number 1 they will find an irrespirable gas touching and area of caved across the entry. Up the straight they will find a brattice cloth. Toward 3 they will find an explosive mixture followed by an

Outby in #2 to #3 in. At this stop they will find a barricade in the intersection at the imaginary line 3-2 with a response of "Help get me out it is airtight behind me". **Outby they will tie in the backside of the diagonal unsafe roof (Which is now tied in and safe to ventilate through) "AT THIS TIME THEY HAVE THE MEANS TO VENTILATE THE BARRICADE". It will require 2 vents to recover patient from barricade.**

The team will have to clear the explosive mixture in number 2 intersection 1<sup>st</sup> break in by the FAB with the first vent. They will have to get permission from the superintendent to reverse to the fan to blowing. After clearing this explosive mixture the team will have to move the battery phone sitting 2-3 to a safe location. After doing this the team will have to take the "Hand Held radio without battery" to the "Hand Held radio battery". The team will have to couple the battery to the radio to eliminate the ignition source of the "Hand held radio battery" by itself **RULE 31D**. Once coupled together the ignition source is eliminated.

**For reference : 2024 Q&A's Question #28: Since the rules committee is still requiring contest radios to be MSHA approved, how shall the contests ensure all radios, batteries and components are MSHA approved?**

**Answer:** For Contests purposes only, all radios are to be intrinsically safe. The channels and frequencies listed in the 2024 Coal Mine Rescue Rules still apply to the radios used.

They must also build a diagonal in the number 2 intersection to protect the person in the unsafe roof. They can now complete the second ventilation and recover the patient behind the barricade.

After completing the second vent the team can breach the barricade where they will find a live conscious person, a Line Curtain, 4 posts and the backside of the caved airtight.

After taking the live conscious patient to the FAB the team must now return to the person in unsafe roof in the #2 intersection and set posts to recover them. **They will have to airlock into the diagonal so the FAB will have to be short circuited or they will stall the fan.** When they set the posts they will be set from the intersection off the corner 2 in the good and 2 in the bad. They will then touch confirm person find that it's a body and DI the location of the body. Team can now move to team stop 9.

Team stops 9 and 10

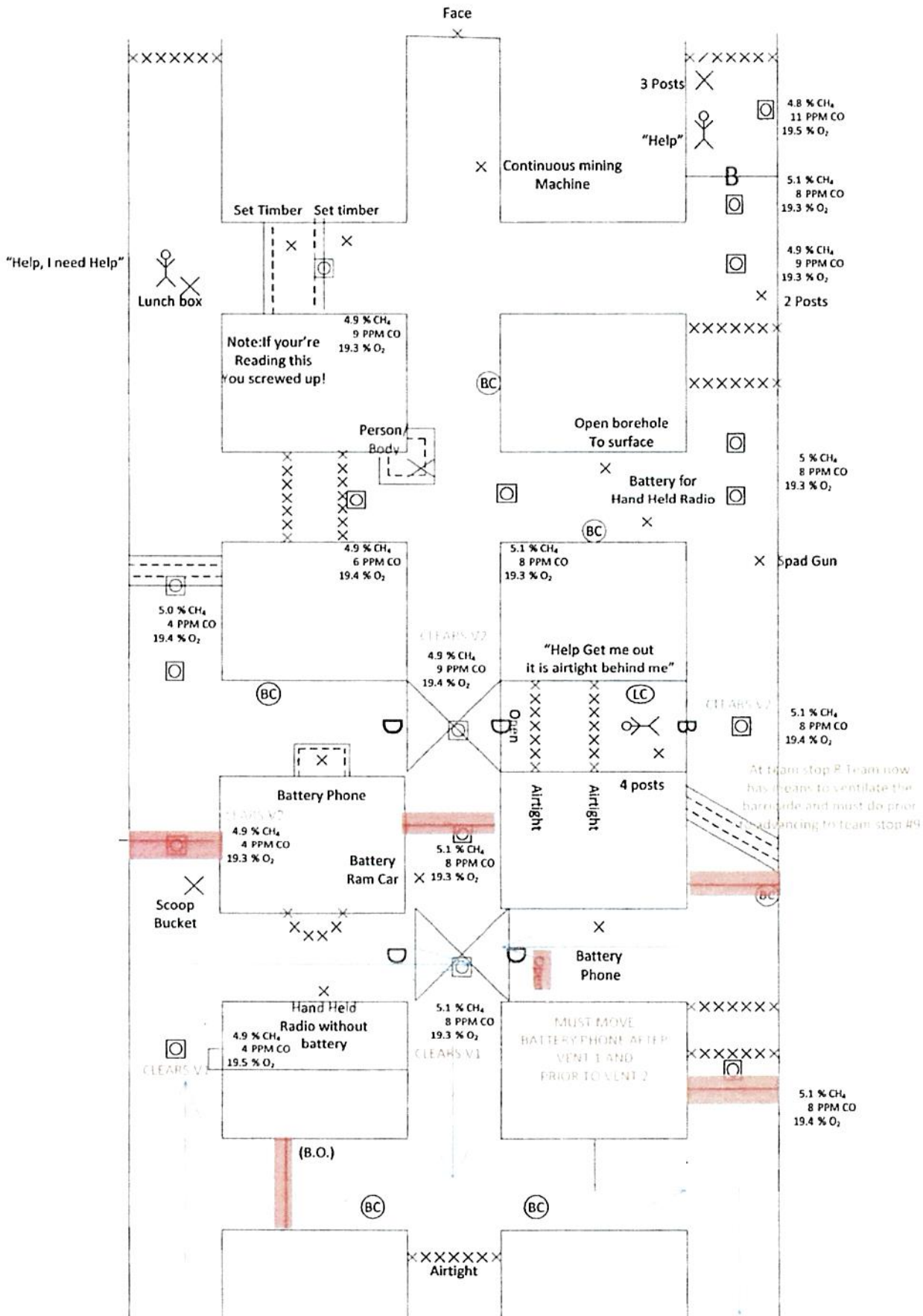


Team stop 9 will be up the straight of number 2. At this stop teams will find an irrespirable gas touching unsafe roof across the entry 2-1 cross cut ½ way with a response from behind the unsafe of "Help, I need Help". They will find a face up the straight of number 2 and nothing 2-3. They will then go to number 3 entry for team stop 10. At this stop they will find an irrespirable gas in the intersection along with caved at the outby imaginary line making the captain zig zag the intersection. They will also find 2 posts. Up the straight they will find an explosive and irrespirable gas followed by a barricade with the response of "Help".

At this time the team has the means to ventilate to recover this patient. It will take 2 vents to recover the patient but first they will have to post to the battery phone in the elongated unsafe and move to a safe location. After moving phone the team will set up the 3<sup>rd</sup> vent. They will have to have fan on blowing. The team will not wing the barricade with this vent. This will clear the irrespirable gas in the intersection and the explosive mixture on the outby side of the caved in #3. The team will then get permission to reverse the fan again and have it in exhausting when they wing the barricade to clear the explosive, irrespirable gas in front of the barricade. After Clearing this the team will have to airlock into the barricade. The teams tail captain must not advance into airlock with the rest of the team. The tail captain must remain in the intersection or they will be unsystematic. **In the barricade the team will find a live conscious patient followed by a gas with 11ppm CO which is signs of a fire. At this point it is a pull out due to the explosive mixture in number 1 touching the caved. The team should FPA The location and end the problem.** There are 3 posts and caved behind the gas placard. If captain passes the gas placard they will be docked for endangering the team.

The teams should never get to the last missing person in #1 due to the pullout.

TEAM MAP \_\_\_\_\_





TEAM MAP \_\_\_\_\_