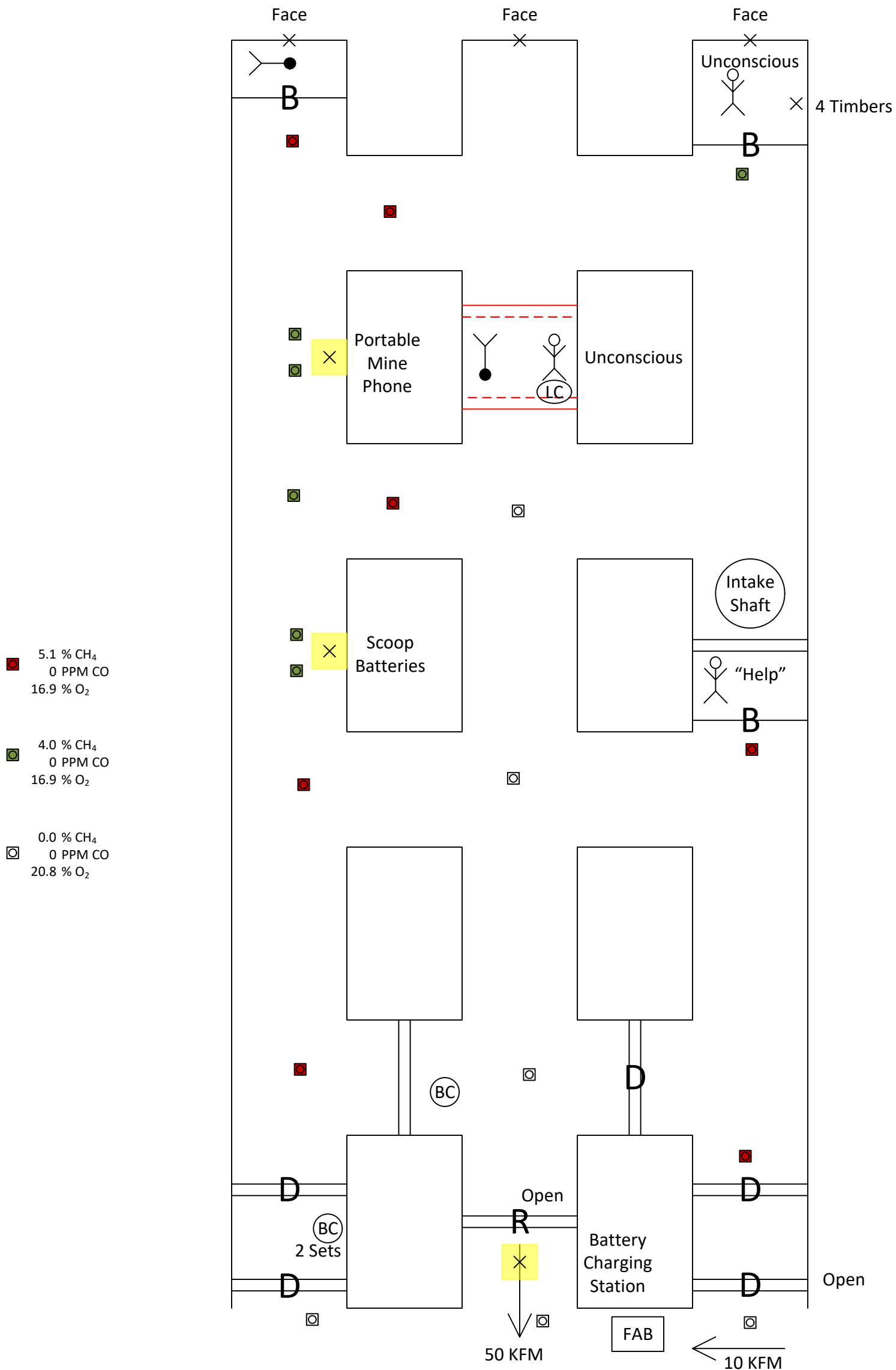


2019 Rocky Mountain Mine
Rescue Council
Colorado Mine Rescue Contest

JUDGES' PACKET
Field Competition

DAY 2

Day 2: Problem Map



Mine Information Sheet

Colorado Mining Co. – Bill's Glory Hole

General:

The Colorado Mining Co.'s Bill's Glory Hole mine is a single level Class III underground room and pillar trona mine. It is owned and operated by Colorado Mining Company. The mine operates development and retreat mining sections with continuous mining machines and shuttle car haulage. The mine operates 3 eight-hour shifts per day, 7 days per week with two production shifts and one maintenance shift.

Mine Access:

Mine access is provided through an intake drift and return drift. Pillars are 10 feet by 15 feet, and openings are 10 feet wide. The typical back height is 8 feet, undulating occasionally.

Ventilation:

The mine is ventilated by a non-reversible, 250,000 CFM Main Fan. The Main Fan is located on the exhaust drift. Mine air enters the workings through the intake drift and various intake shafts and flows to the exhaust drift and out of the mine.

Mine Classification & Other Mine Gases:

In accordance with Title 30 CFR 57.22003, the mine is classified as Category III. That is, noncombustible ore is extracted and which liberates a concentration of methane that is capable of forming explosive mixtures in air.

Electric Power:

Electrical service is provided to the mine from the local electric company. Power is maintained to the fresh air base (FAB) and cannot be de-energized. Power has been de-energized in by the FAB, except to electric doors.

Mine Map:

The mine map was last updated August 1, 2019.

Ground/Rib and Roof Control:

The immediate roof, or back, is supported by six-foot fully grouted resin bolts and supplemented with 12-foot cable bolts in the intersections. The mine has a history of ground falls. Timber supports are used as additional supplemental support.

Explosives:

Explosives are not used in this mine since it is gassy.

Materials:

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

Communications:

Communication is provided by battery mine phones.

Mine Information Sheet (continued) **Colorado Mining Co. – Bill's Glory Hole**

Mining Methods:

The mine is a room and pillar mine. Mining is accomplished with a continuous miner and shuttle car face haulage. Conveyor belts take ore to the surface.

Water, Pumps, and Waterlines:

The mine does not have a history of water problems in the active works.

Notification:

All federal, state, and local officials have been notified. Ambulance service is present and on standby.

Backup Teams:

Two fully-trained and fully-equipped mine rescue teams are onsite to back you up.

Team Briefing Statement

You are located underground at the Fresh Air Base that has been established in the #3 Section of the Colorado Mining Co.'s Bill's Glory Hole mine. This is a single-level Class III underground room and pillar trona mine. The mine is ventilated by a non-reversible 250,000 CFM exhaust fan located on the exhaust drift.

Last night at 9 pm, a low pressure system moved in to the area, and an inundation of methane occurred on the #3 development section. Methane overcame the ventilation system and multiple sections were affected.

Currently, we cannot make contact with the #2 development section or the #3 development section. There are 5 miners unaccounted for between the two sections.

We have called all of the government agencies for help. Guards have been posted at the shafts and at the main fan. There is a fully equipped mine rescue team located on the surface and they are ready to serve as your team's backup.

Another team will be sent into the mine to replace you after 75 minutes.

GOOD LUCK!

Team Instructions

- Explore and map all conditions found and any changes made by the team
- Account for the missing miners;
- Bring any live miners to the fresh air base.

Mine Manager/Judge 1 Instructions

Introduce yourself to the team as “Judge 1.” Inform the mine that you will serve as the Mine Manager. Then, introduce the #2 Judge. The team has been briefed on the problem and the mine information. Read the following instructions to the team:

At this time, I have no new information for your team. During the working of the problem, I will answer any question that you may have; however, by problem design, my response may be limited in scope. The fresh air base attendant and mine rescue team alternate must remain at the underground fresh air base. If the team returns to the fresh air base, only the attendant or alternate will be allowed to assist them. However, neither the attendant nor the alternate can physically go beyond the fresh air base to assist the team unless he/she becomes a team member when someone drops out.

After the team has completed its 50 foot check, they will not be allowed to physically compare the team map with the fresh air base attendant’s map or the team alternate’s map. No side by side comparison will be allowed and no changes (edits) can be made to any map while the team is at the surface fresh air base.

The fresh air base attendant or team alternate is not allowed to speak with anyone except the team members, or the judges.

At the end of the problem, both the team map and the fresh air base attendant’s map will be collected and scored. All map editing must take place prior to stopping the clock. The alternate’s map will also be collected at this time but it will not be scored.

Do you understand these instructions?

When they verify understanding the instructions, have the Team Captain start the clock and hand the team their copies of the **Team Briefing Information**, the **Mine Information Sheets**, and the three mine maps.

Remember to add: **“Good Luck!”**

Field Problem Solution (Team Stops)

DISCLAIMER:

There are many ways to successfully solve this problem. The following outlines one possible way for use during MSHA field judges' training.

FAB

After mine manager finishes instructions, captain will start the official clock. Captain then writes the month, day, year, and the team position number on the sign-in board (or sheet). **The captain's failure to perform any of these tasks will result in discounts (4 x each infraction) per Judge 1 – Surface Rule #8.**

Since the mine is a Category III, the team needs to use non-sparking tools to work the problem. If the team does not have non-sparking tools and requests them from the official in charge, the tools that they brought with them will be deemed non-sparking.

Failing to use non-sparking tools in gassy mine is Judge 1 – UG Rule #10b.

Examining Mine Openings

Captain will perform Roof and Rib (**RT**) checks at all openings before proceeding in to the mine. Gas Tests (**GT**) will be performed at each opening as well.

The team will find Stopping w/ Door (Closed) in entry 1 and a Regulator (Open) in entry 2. The captain must Date and Initial (DI) the Stopping w/ Door (Closed) and Regulator as FPA. The team will find a Stopping w/ Door (Open) in Entry 3.

RT is Judge 1 – UG Rule #8b

DI is Judge 1 – UG Rule #9

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Entering the mine

The team must enter through Drift 3 and count off when entering mine.

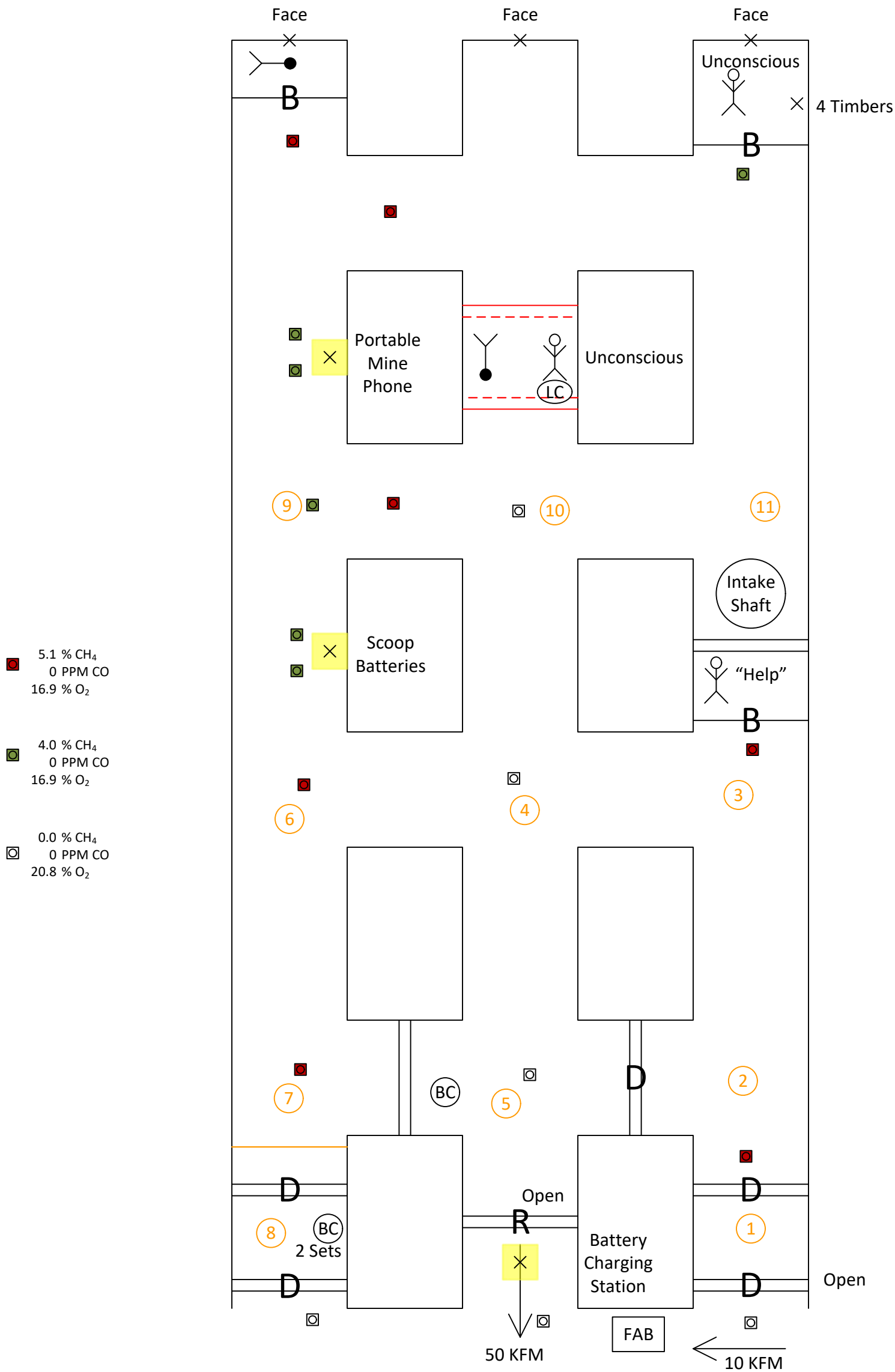
Breaching through Drift 1 without a barricade is Judge 2 – UG Rule #10.

Failure to Count off is Judge 1 – Sur Rule #10

Stop 1

Teams must enter through Drift 3. Team must count off when entering the mine. Team must perform 50' check at 1st team stop. Team must close door behind before opening door in front and the Captain must be the first to enter the door. Team must contact FAB when explosive mix is found.

Day 2: Team Stops 1-11



50' Check is Judge 1 – UG Rule #3
Failure to Count off is Judge 1 – Sur Rule #10
Entering through Entry 2 or 3 is Judge 2 - UG Rule #9
Failure to Close door before breaching other door is Judge 2 – UG Rule #11 &
Judge 1 – UG Rule #10b
RT is Judge 1 – UG Rule #8b
Captain not first is Judge 1 – UG Rule #8c
Failing to notify FAB of explosive gas is Judge 1 – UG Rule #14
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 2

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Stopping w/ Door as FPA

RT is Judge 1 – UG Rule #8b
Captain not first is Judge 1 – UG Rule #8c
DI is Judge 1 – UG Rule #9
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 3

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Barricade as FPA. When captain knocks on Barricade, say “**Help, it is airtight**”.

RT is Judge 1 – UG Rule #8b
Traveling through unsupported back is Judge 1 – Rule 10 (15 x each team member)
Captain not first is Judge 1 – UG Rule #8c
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 4

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Team cannot proceed more than 3' inby since Drift #1 has not been tied in.

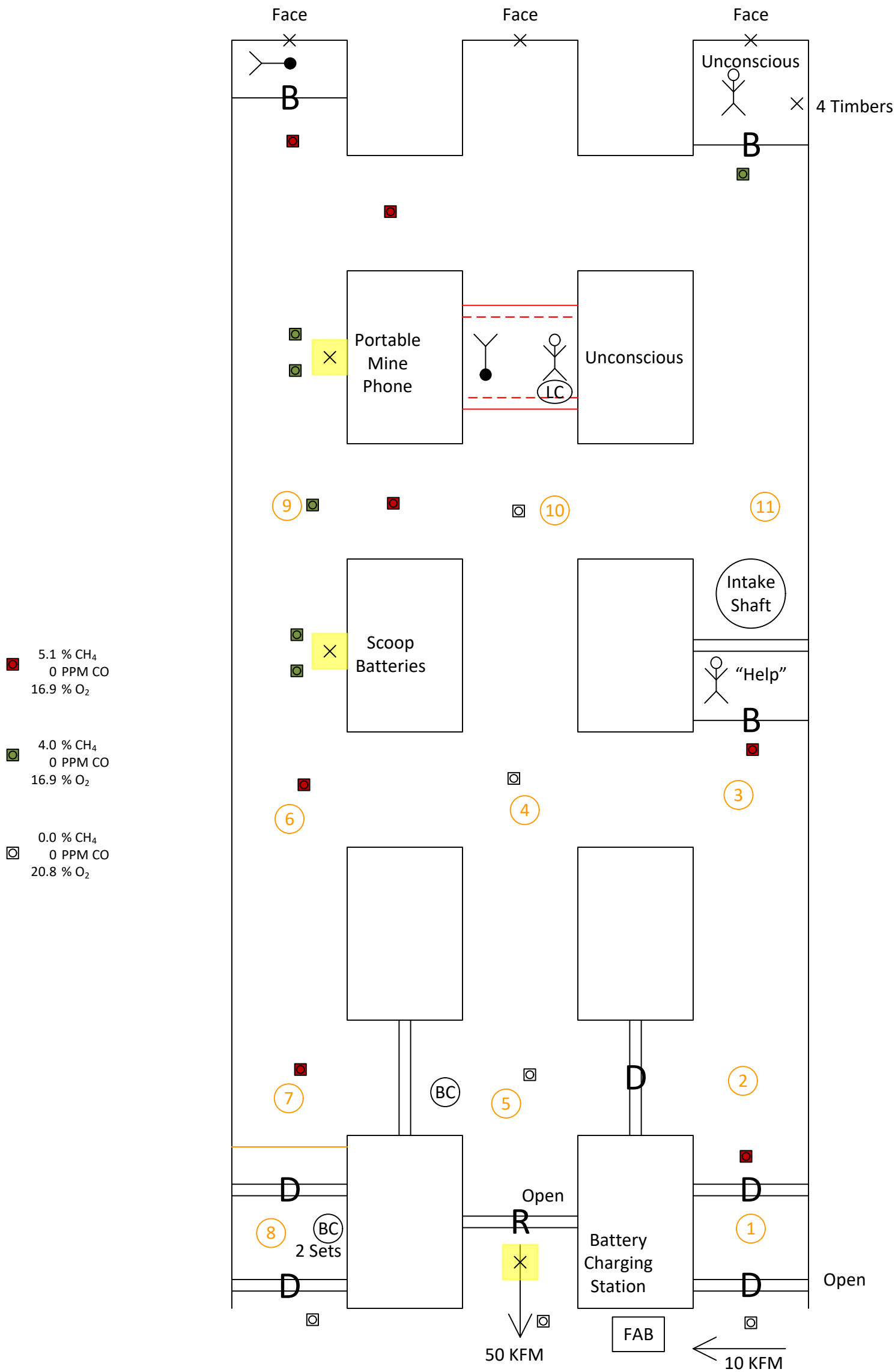
RT is Judge 1 – UG Rule #8b
Captain not first is Judge 1 – UG Rule #8c
2+3 is Judge 1 – UG Rule #11
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 5

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Regulator and Stoppings as FPA. Team finds 1 Brattice.

RT is Judge 1 – UG Rule #8b
Captain not first is Judge 1 – UG Rule #8c
DI is Judge 1 – UG Rule #9
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Day 2: Team Stops 1-11



Stop 6

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Team cannot proceed more than 3' inby since Drift #1 has not been tied in.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

2+3 is Judge 1 – UG Rule #11

Stop 7

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Stoppings as FPA.

RT is Judge 1 – UG Rule #8b

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 8

Team must erect an airlock to breach door. Captain must be first to enter and perform an RT and GT. Captain must DI Stopping w/ Door as FPA. Team finds 2 Brattice.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

Airlock is Judge 2 – UG Rule #9

Stop 9

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

Stop 10

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Team finds unsafe roof in entry. Captain must DI unsafe roof as FPA.

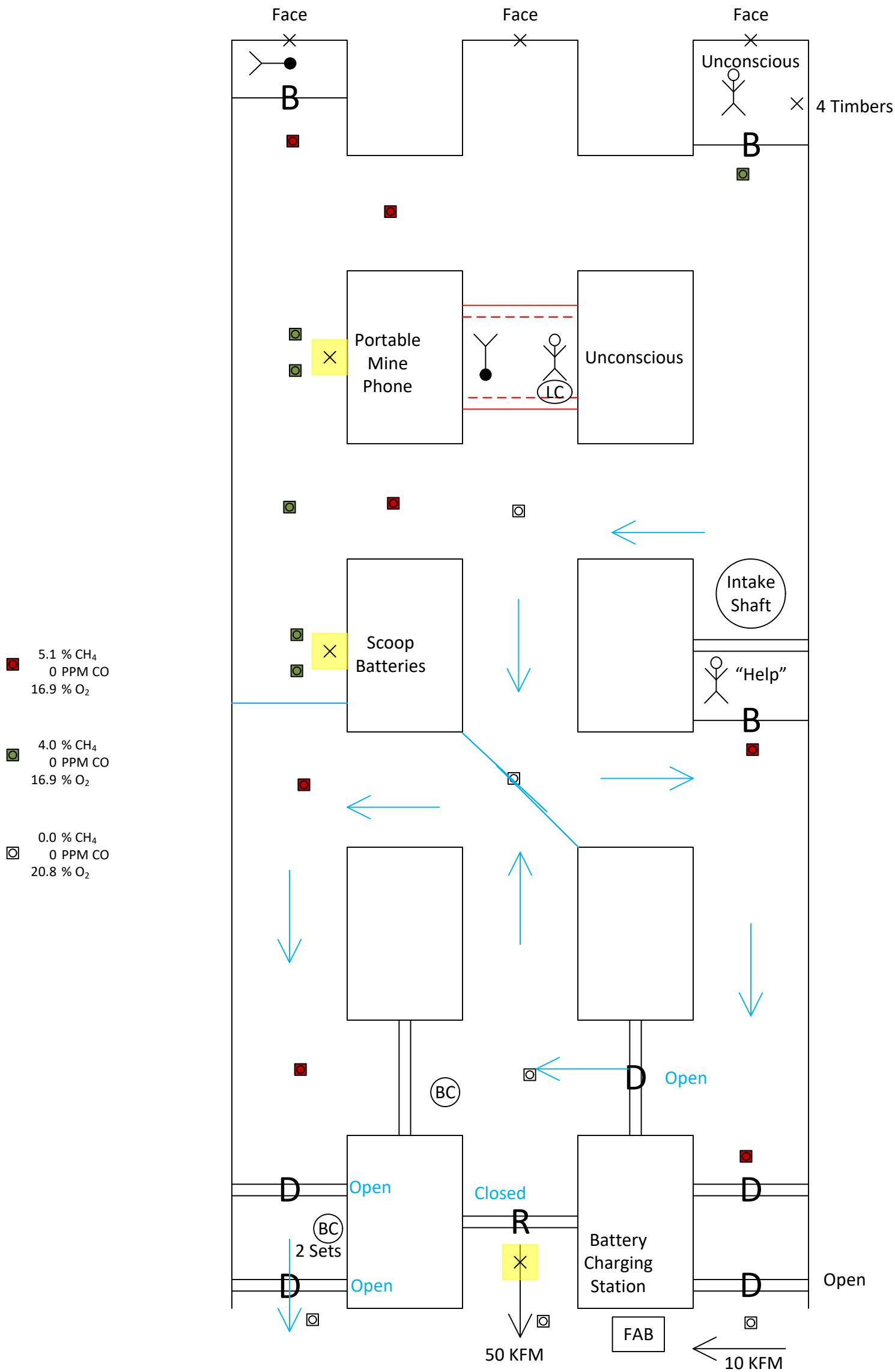
RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

Day 2: Vent 1



Stop 11

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. No persons can travel under the intake shaft. Captain must DI Stopping as FPA.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

Travel under shaft is Judge 1 – UG #10a

Vent Change 1

The team can now has the means to ventilate the barricade in Drift #3. Since the team has made contact with a patient, they must rescue without undue delay. The sequence of the ventilation change is important to prevent moving explosive mix across an ignition source. The following actions must be done:

- Close regulator in Drift #2
- Open Door in XC 1 between Drifts 2-3
- Build Diagonal Stopping in XC 2 between Drifts 1-2 (Requires 2 BC)
- Build Stopping #1 Drift, XC 2-3
- Open Doors in Drift 1

Captain must perform a RT at each build location.

After vent change is completed, **flip affected gas placards**. Team will have to retest gas at each location that placards were flipped if they pass through these areas.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Passing explosive mix over ignition source is Judge 1 – UG Rule #10b and Judge 1 – UG Rule #18

Continuing Exploration is Judge 1 – UG Rule #18f

Stop 12

Team can now breach the barricade. Captain must be first to enter and perform a GT. When team encounters Patient, he will be conscious. They will perform a primary assessment. Person touching patient must have BSI. Captain must DI location of patient.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

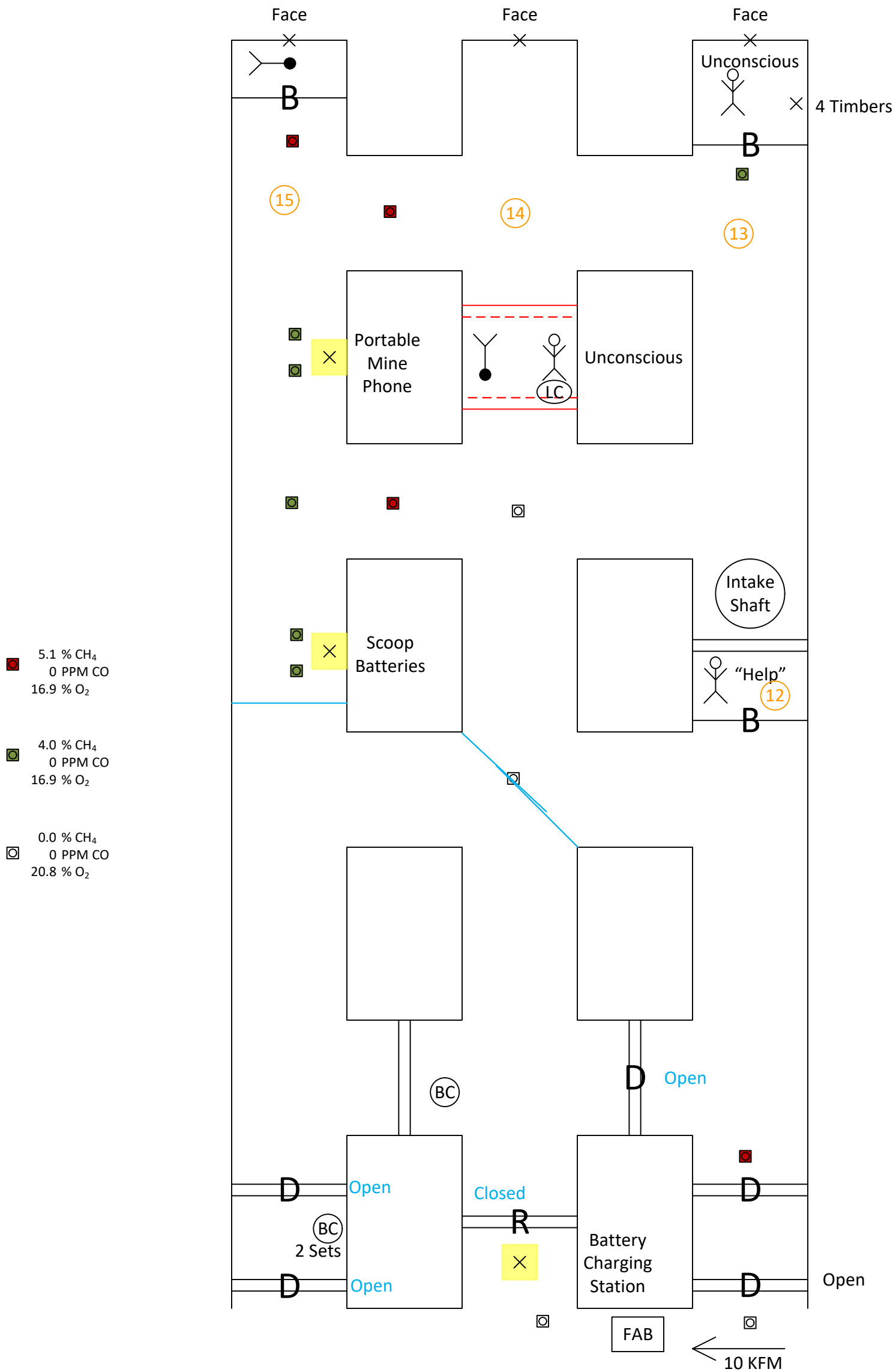
DI is Judge 1 – UG Rule #9

Failing to take BSI is Judge 1 – UG Rule #10a

Stop 13

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. When captain knocks on barricade, **“Help, it is airtight”**.

Day 2: Team Stops 12-15



Captain must DI Barricade as FPA.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

Stop 14

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Stoppings Face as FPA.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

Stop 15

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. When team knocks on Barricade, say “**No Answer**”. Captain must DI Barricade as FPA.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

Vent Change 2

The team has the means to now ventilate the barricade in Drift #3. Careful attention to the sequence must be observed to ensure that ignition sources are not taken into an explosive atmosphere and that explosive mixtures are not passed over ignition sources. It is important that irrespirable atmospheres do not pass over the Unsafe Roof where a survivor is located. The following actions must be done:

- Move the Portable Mine Phone (Ensure it does not move into either XC)
- Close Door in XC 1 in Drift 2-3
- Build stopping Drift 2 XC 3-4
- Build Stopping XC 3 Drift 2-3

After vent change is completed, **flip affected gas placards**. Team will have to retest gas at each location that placards were flipped if they pass through these areas.

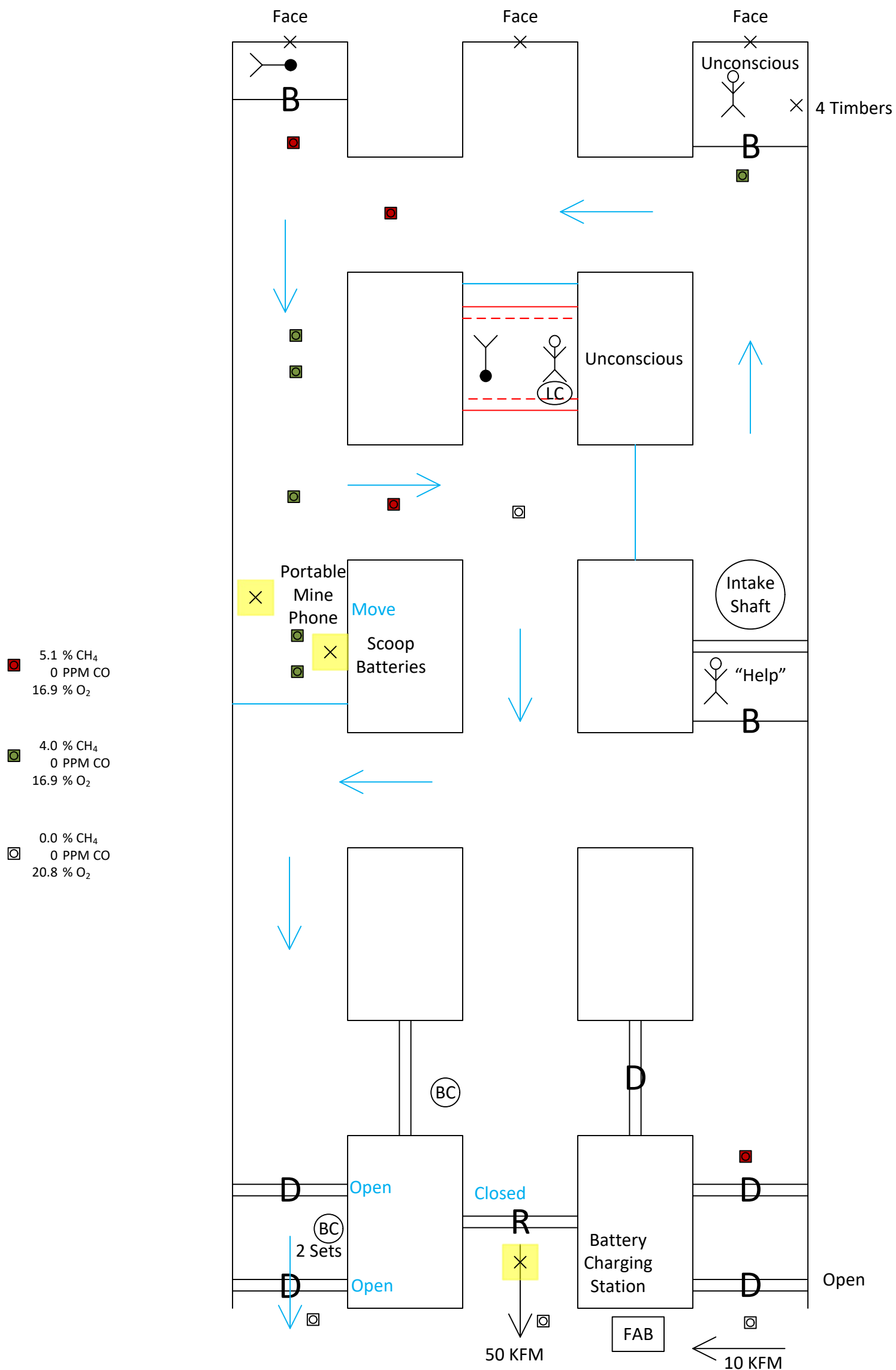
RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

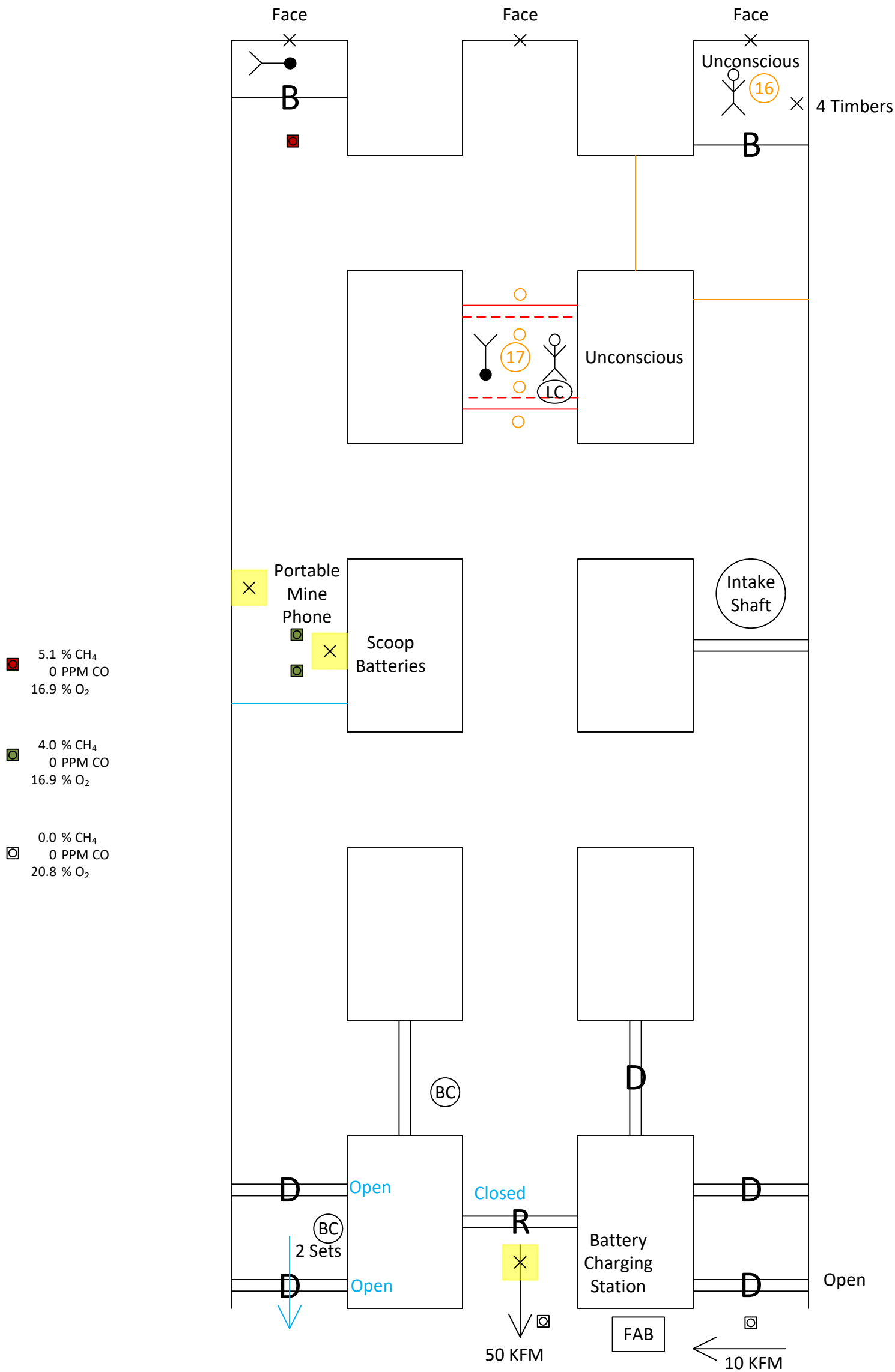
Passing explosive mix over ignition source or moving ignition source into explosive mix is Judge 1 – UG Rule #10b and Judge 1 – UG Rule #18

Passing irrespirable gas over Unsafe Roof is Judge 1 – UG Rule #18

Day 2: Vent 2



Day 2: Team Stops 16-17



Stop 16

After ventilating, team can breach barricade. Captain must be first to breach and do RT GT inside. Once inside, team will find a patient. Person touching patient must have BSI. BSI must be clean. There are no injuries. Captain will DI Face as FPA and the location of the patient. Team finds 4 timbers.

RT is Judge 1 – UG Rule #8b

DI is Judge 1 – UG Rule #9

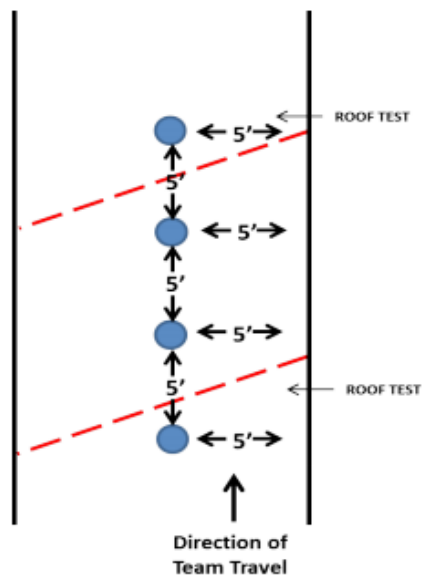
Failing to take BSI is Judge 1 – UG Rule #10a

Touching Patient without clean BSI is Judge 1 – UG Rule #18

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 17

The team can now timber through the unsafe roof in Drift 2. As the team travels through the unsafe roof, they will encounter a patient and a body. Person touching patient and body must have BSI. BSI must be clean. There are no injuries. The Patient will become conscious when the team does the physical assessment. Captain will DI the location of the patient and body. The team will find a Line Curtain in the unsafe roof.



Any member traveling under unsafe roof is Judge 1 – UG Rule #10a

RT is Judge 1 – UG Rule #8b

Failing to take BSI is Judge 1 – UG Rule #10a

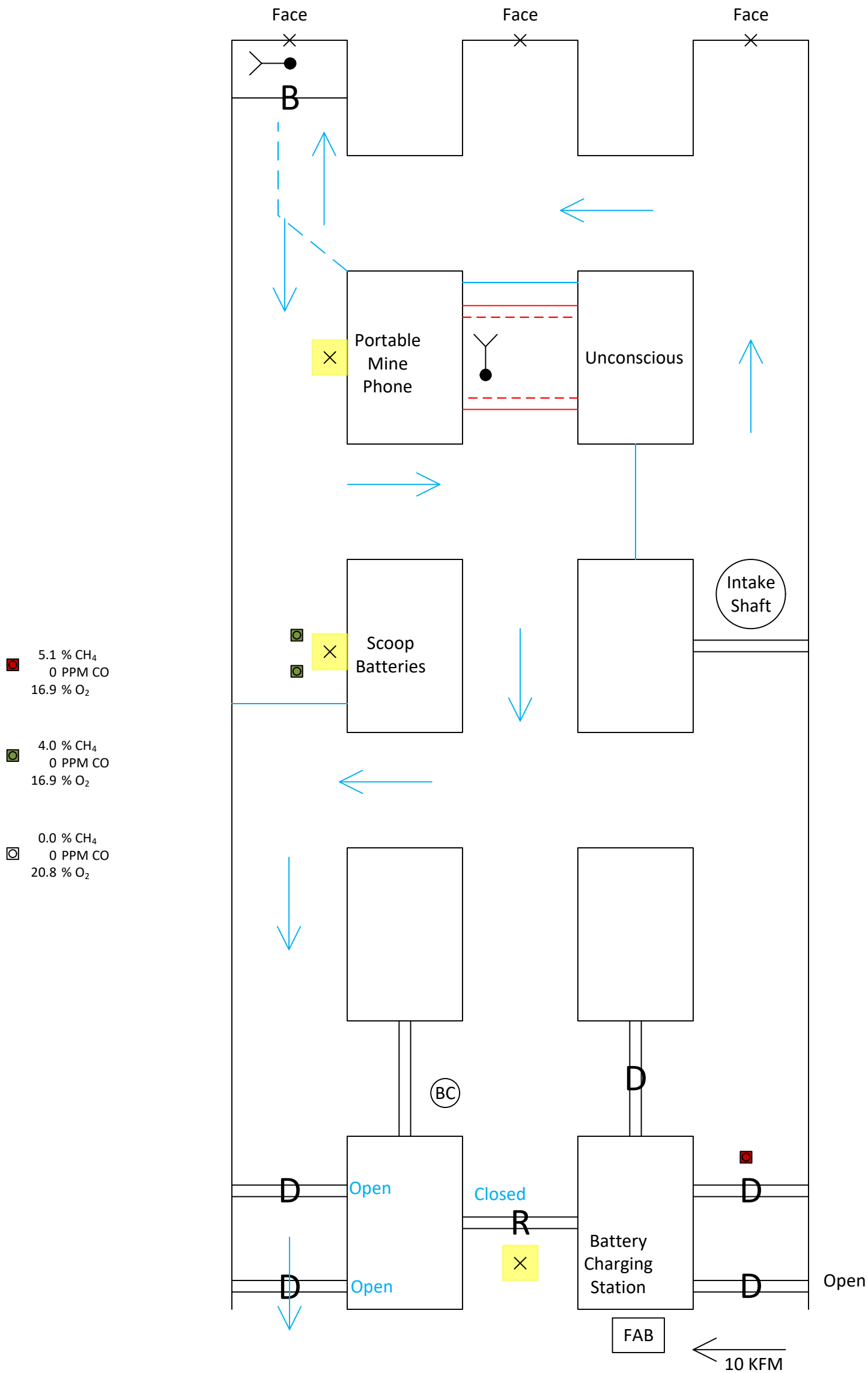
Touching Patient without clean BSI is Judge 1 – UG Rule #18

Vent Change 3

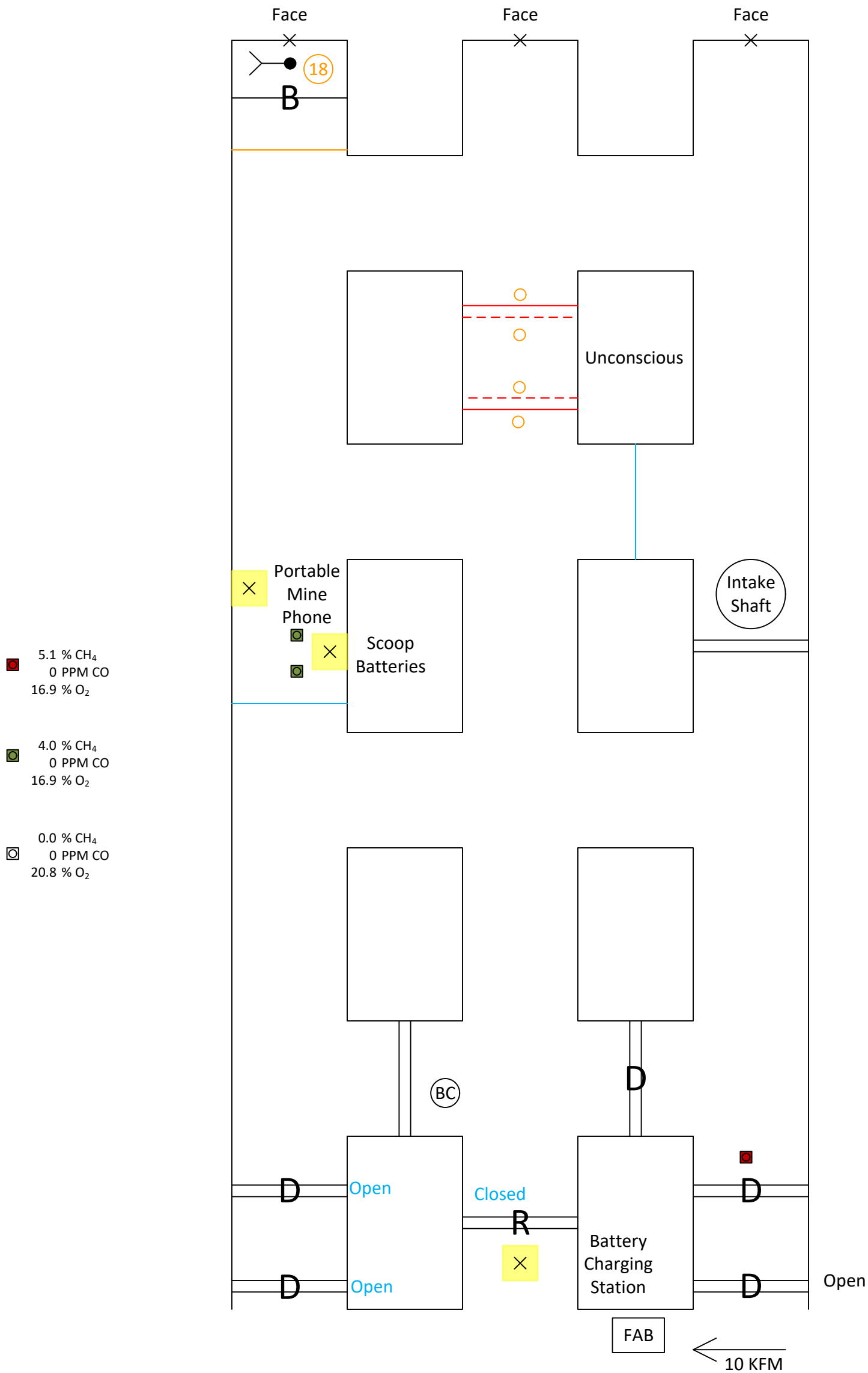
The team has the means to now ventilate the barricade in Drift #1. Team will hold the Line Curtain to sweep the barricade.

After vent change is completed, **flip affected gas placards**. Team will have to retest gas at each location that placards were flipped if they pass through these areas.

Day 2: Vent 3



Day 2: Team Stop 18



Stop 18

Team must airlock to enter barricade. Captain must be first to enter and perform a RT and GT. Team will find a body. Captain must DI location of body and face as FPA.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

End of Problem

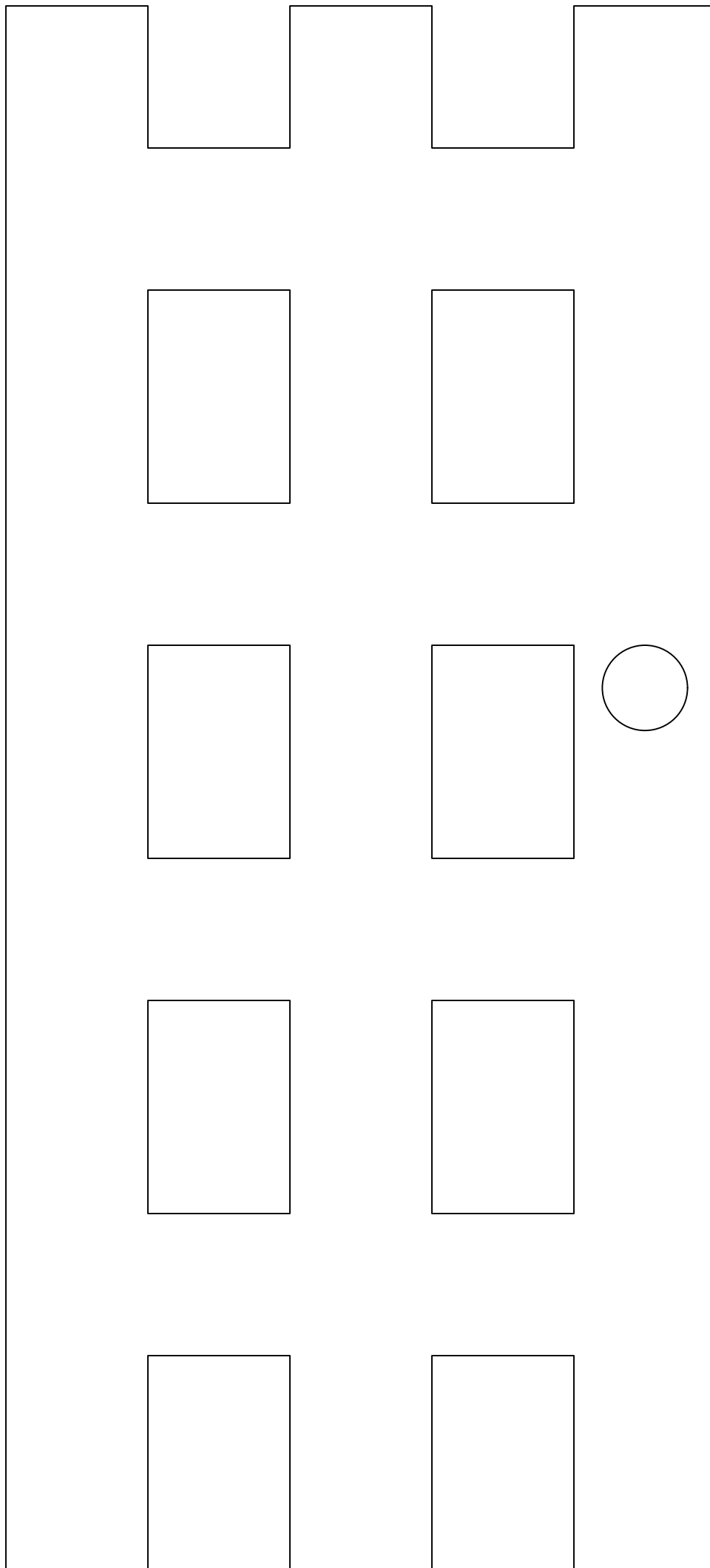
#1 Judge will quickly walk the field with the team captain and write in the final location of the ventilation controls on the map titled **Final Vent Control Location Map**. After this, have the captain sign the map. This will be used to compare the working map with the final condition.

5-minute Look

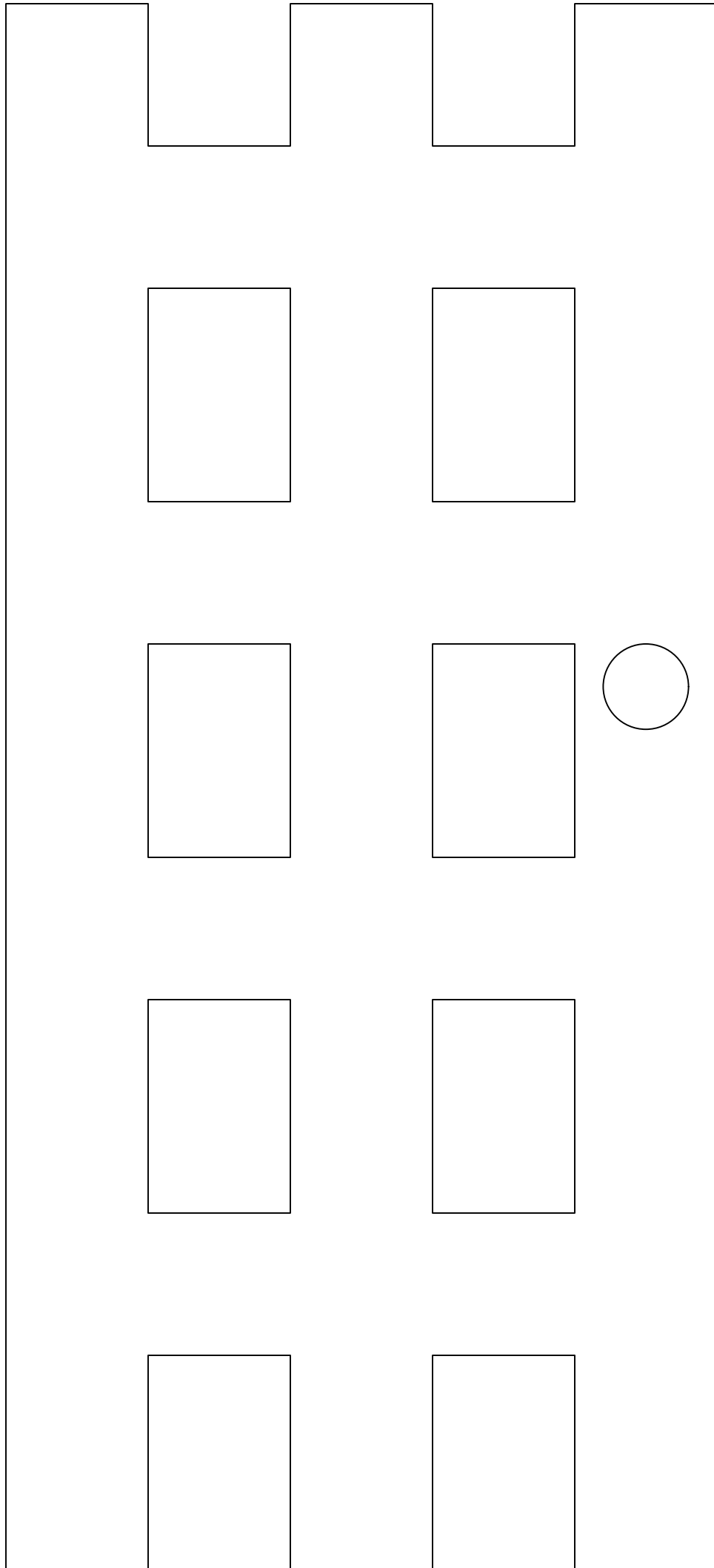
Inform team of any infractions that have occurred. This should be brief. This is to discuss what infractions they incurred, not how many docks they will be assessed.

**** THE END ****

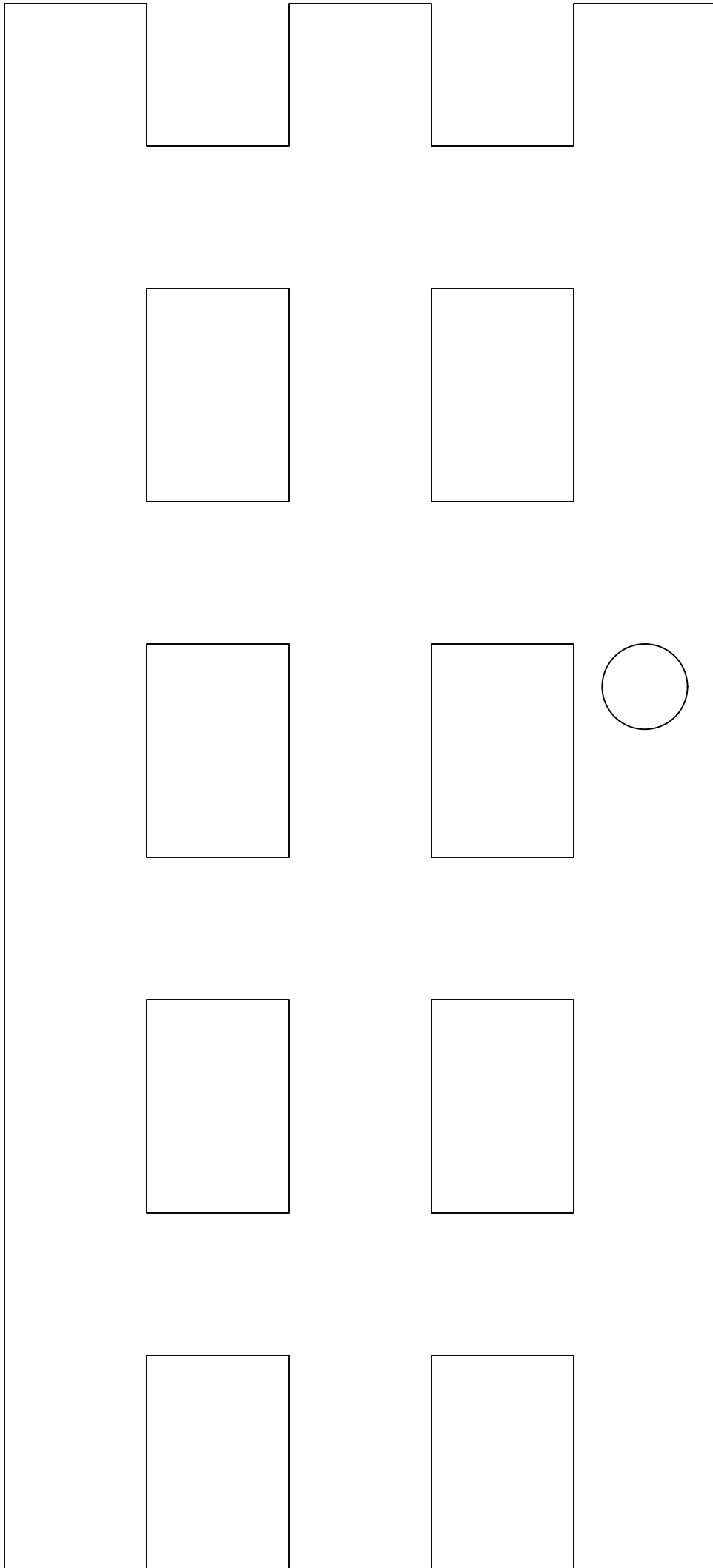
Day 2: FAB Map



Day 2: Team Map



Day 2: Alternate Map



Day 2: Final Vent Map

