

*2022 KMI  
Mine Rescue Contest  
May-2-5-2022*



*Central Bank Center  
Lexington, Kentucky*

*MNM Field Problem  
DAY 1  
May 3, 2022*

*KMI would like to thank all who took part  
In making this year's contest a success  
And a special thanks to all participating teams.*

*Day 1 Field Working Order for MNM Teams*

- 1-Carmeuse Black River*
- 2-Nuclear Waste-Wipp Red*
- 3-Carmeuse Rangers*
- 4-Doerunn Gray*
- 5-Doerunn Maroon*
- 6-Central Ky*
- 7-Nystar*
- 8-Vulcan*

# **2022 KMI Day 1 M/NM Team Statement**

Thanks for responding to our call for help. You are located on the surface of the #1 mine in the fresh air base. We know at this time we have 4 of our miners missing and unaccounted for. This morning around 6am the 4 employees went into the mine to clean around the newly installed intake shaft located in #1 entry. Around 8am our outside man heard what he thought was an explosion. The fan shut off, and he attempted to restart, with no luck. We have tried with no success contacting the 4 missing miners.

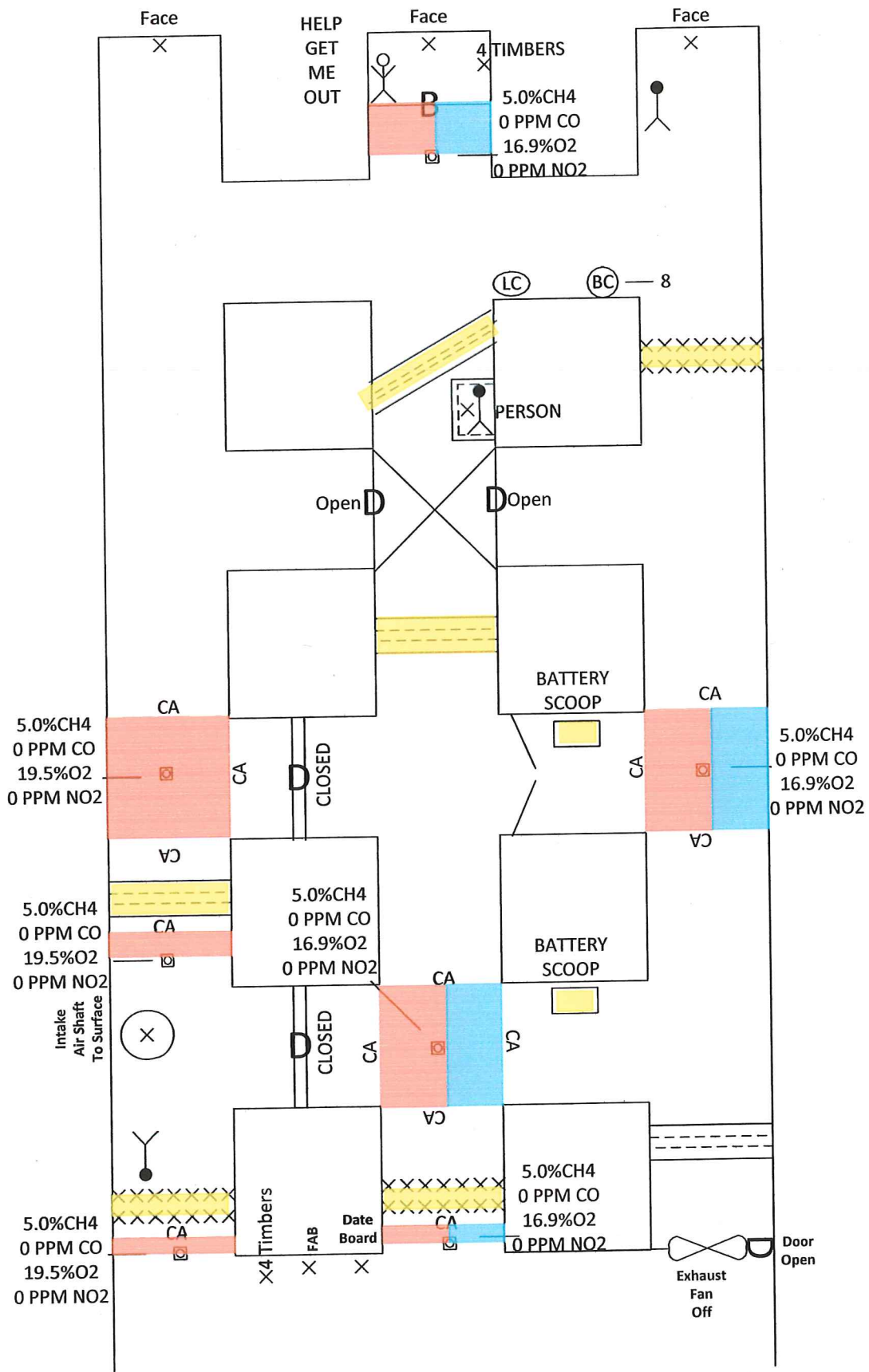
I will tell you a little about our mine, and what is expected of your team while working.

- This mine is a new mine and has only been in operation for about 2 months.
- In this short period of time, we have encountered bad roof conditions, and in the last couple of shifts we have detected methane gas.
- The newly completed intake/downcast shaft in the #1 entry is not provided with means to hoist people or supplies.
- The shaft has been checked on the surface and gas readings are clear.
- The shaft can be used for ventilation purpose if needed.
- The only fan we have at the mine is an exhaust fan that is located in the #3 drift. The fan is currently off but is available if needed.
- The fan can be started, stopped, but cannot be reversed or stalled.
- Your team will make ventilation request through the #1 judge such as, start the exhaust fan or stop the exhaust fan. The #1 judge will reply back with the fan is on or off.
- If the team encounters water that needs pumped, and if pumps are available, your team will also make request through the #1 judge such as, start the pump or stop the pump. The #1 judge will reply with the pump is on or off.
- All our mobile equipment is powered by batteries, these batteries are located onboard each piece of equipment and cannot be unhooked or removed.
- The equipment cannot be removed from the location found.
- The mine is walking height.
- The roof/back is being supported with 6ft bolts.
- The mine map is up to date.
- All power to the underground has been de-energized, locked out, and guarded.
- We have called all government agencies, and they are on site.
- All available equipment and materials to work the problem is located here at the mine and identified with placards.

- We have a backup team, here on the surface to serve as your backup.
- Your team has **75 minutes** to complete the problem, before being replaced by another team.
- Your team should explore the entire mine that can be done safely.
- Your team should account for all missing miners.
- Your team should bring all survivors to the surface fresh air base.
- Your team can only carry one line curtain and three brattice cloths with them.
- Your team can carry with them as many post/timbers they encounter.
- If stoppings are built by your team in intersections, you are required to use two.
- **NOTE: beside what is required to be mapped by the rules, the team must show how the mine was left at end of the problem**, the maps should reflect, any team built stopping left intact, if doors are left opened or closed, how barricades were left either up or down, if person are rescued the team should state removed to the fresh air base (FAB), the location of timbers/post set by the team, if the fan is on or off, if pumps are on or off, and location of any pump at end of problem.

“Good Luck”

DAY 1 MNM  
FIELD PROBLEM





### Team reporting to field

On reporting to the field, the communication cable can be strung out prior to starting the clock, if the team has elected to use a command center attendant, the Visio mapping device will be up and running with the SD card in place during this time. S/J1/R9--No other work can be performed before starting the clock.

Afterward, the team captain should have the team line up at the place indicated by the #1 judge. The team captain should introduce his team and state "we are here to offer our help".

#1, and #2 judge will introduce themselves to the team. The #1 judge will tell the team they were briefed on the problem and the mine information prior to reporting to the field. The #1 judge will then read the following statement to the team.

### #1 Judge prepared statement

At this time, I have no new information for your team. During 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/Briefing Officer, and anyone other member assigned to the FAB must remain at the fresh air base. Only the fresh air base attendant/briefing officer should speak with the team via the communication system to discuss the rescue activities performed or proposed while all others listen in. If your team returns to the fresh air base, only the attendant/briefing or assistant should assist them. However, no one assigned to the FAB can physically go beyond the fresh air base/or underground to assist the team unless he/she becomes a team member if someone drops out. If ventilation changes are requested by your team, the team must inform the #1 judge of their intentions, but this does not relieve your team of the responsibility of their decisions.

"Good Luck!"

- U/J1/R10b2— The team was given information indicating that explosive gas(es) is/are or may be present in the mine, they must have non-sparking tools while they are working the problem so as not to endanger themselves. If teams do not have non-sparking tools, they must ask the official in charge at the fresh air base to provide them with such tools before they go underground. The teams may tell the judge prior to starting the clock or before going underground they have non-sparking tools. **NOTE:** if team does not tell the judges prior to going underground the judges should ask team at end of the problem their tools were non-sparking.

### **Starting the clock**

- S/J1/R8--The team captain will now start the clock and the judges will also start his or her timing device. The maps and problem statement will be given to the teams at this time by the #2 judge.
- S/J1/R9 – The captain must date & put team working number on date board.
- U/J1/R10a6 – the team must go under oxygen before going underground to check entrances.
- S/J1/R6--The team members will don their apparatus, and the captain will check all apparatuses being worn by each team member having his or her also checked.

### **#1 Drift**

- U/J1/R8c – captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b – captain must verbally state checking for back or roof at the location of the caved area.
- U/J1/R9 – captain must place initials at the caved area. (Maybe simulated)
- U/J2/R1 – Gas test in the opening. (Must be rib to rib)
- U/J1/R14 – team must notify the FAB of the explosive mixture.

### **#2 Drift**

- U/J1/R8c – captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b – captain must verbally state checking for back or roof at the location of the caved area.
- U/J1/R9 – captain must place initials at the caved area. (Maybe simulated)
- U/J2/R1 – Gas test in the opening. (Must be from rib to rib)
- U/J1/R14 – team must notify the FAB of the explosive mixture.

### **#3 Drift**

- U/J1/R8c—captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b—captain must verbally state checking for back or roof at the location of the unsafe roof.
- U/J1/R9—captain must place initials at the unsafe roof. (Maybe simulated)
- U/J2/R1—Gas test in the opening. (Must be rib to rib)

**The entire team is now ready to start underground by the #3 drift due to #1 & #2 drifts are blocked by caved areas.**

- S/J2/R8— all team members must be connected or have hold of the lifeline when traveling.
- S/J1/R10--The team will count off during first entering the mine to be explored and at the end when leaving the mine. (The first count off may have already been done after clock was started).
- U/J1/R3--The captain must perform a 50ft apparatuses check. (Must be done at first team stop).
- U/J1/R5—after 50ft check is completed, the team must make additional apparatus checks at intervals not exceeding 20 minutes.
- S/J2/R5--After the team has completed its 50ft check, they will not be allowed to physically compare the team map with the fresh air base attendant's map or the 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 fresh air base.
- U/J1/R10a—the captain must set at least 3 posts through the unsafe roof area to keep from endangering his team when traveling through. (1 in good roof, 1 in bad roof, and 1 on back side).

### **1<sup>st</sup> line of crosscuts in #3 intersection**

- U/J1/R8c—captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J2/R1—Gas test in both openings. (Must be rib to rib)



### **1<sup>st</sup> line of crosscuts in #2 intersection**

- U/J1/R11 – team must tie across first due to it is not blocked before advancing to 2<sup>nd</sup> line.
- U/J1/R8c – captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b – captain must verbally state checking for back or roof at the location of the caved area.
- U/J1/R9 – captain must place initials at the caved area and stopping. (Maybe simulated)
- U/J2/R1 – Gas test in all the openings and at the stopping/door. (Must be rib to rib and the gas test at stopping will suffice for this opening).
- U/J1/R14 – team must notify the FAB of the explosive mixture in intersection.
- U/J2/R9 – Team has no means to airlock at this time to open the closed door in stopping. Team may advance to 2<sup>nd</sup> line of crosscuts by either #2 or #3 entries.

### **2<sup>nd</sup> line of crosscuts in #2 intersection**

- U/J1/R11 – at this stop the team can only travel no more than 3ft in by the intersection. IF all the first line of accessible areas has not been explored.
- U/J1/R8c – captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b – captain must verbally state checking for back or roof at the location of the unsafe roof
- U/J1/R9 – captain must place initials at the unsafe roof and on stopping with door. (Maybe simulated)
- U/J2/R1 – Gas test in all the openings and at the stopping/door. (Must be rib to rib and the gas test at stopping will suffice for this opening).
- At this stop the team has found a temporary stopping they will need to use to airlock through the doors in the permanent stoppings that was found closed. The team may still travel to the #3 entry prior to airlock to #1.

### **2nd line of crosscuts in #3 intersection**

- U/J1/R11--At this stop the team can only travel no more than 3ft inby the intersection. IF all the first line of accessible areas has not been explored.
- U/J1/R8c--captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J2/R1 -- Gas test in all the openings. (Must be rib to rib)
- U/J1/R14--team must notify the FAB of the explosive mixture in intersection.

### **When air locking:**

- U/J1/R8b--captain must verbally state checking for back or roof at the location of the build prior to starting the build.
- U/J2/R10--must be airtight, (this would be done by hooking all available hooks provided on the cloth to the simulated ribs).
- U/J2/R1--When breaching a door or barricade a gas check is required on backside.

### **2nd line of crosscuts in #1 intersection**

- U/J1/R11--At this stop the team can only travel no more than 3ft inby the intersection. IF all the first line of accessible areas and the bottom of the shaft has not been explored yet.
- U/J1/R8c--captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b--captain must verbally state checking for back or roof at the location of the unsafe roof.
- U/J1/R9--captain must place initials at the unsafe roof. (Maybe simulated)
- U/J2/R1 -- Gas test in all the openings. (Must be rib to rib)
- U/J1/R14--team must notify the FAB of the explosive mixture in intersection

### **1st line of crosscuts in #1 intersection**

- U/J1/R8c—captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b—captain must verbally state checking for back or roof at the location of the unsafe roof and caved area.
- U/J1/R10a5--The team member tipping the body placard must have gloves on (BSI).
- U/J1/R9—captain must place initials at the unsafe roof, caved area and at the location of the body. (Maybe simulated)
- U/J2/R1—Gas test in all the openings. (Must be rib to rib)
- U/J1/R14—team must notify the FAB of the explosive mixture.

### **3rd line of crosscuts in #3 intersection**

- U/J1/R8c—captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b—captain must verbally state checking for back or roof at the location of the caved area.
- U/J1/R9—captain must place initials at the caved area. (Maybe simulated)
- U/J2/R1—Gas test in all the openings. (Must be rib to rib)

### **3rd line of crosscuts in #2 intersection**

- U/J1/R8c—captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b—captain must verbally state checking for back or roof at the location of the elongated unsafe roof and both unsafe roofs that are rib-to-rib.
- U/J1/R9—captain must place initials at both of the unsafe roof from rib-to-rib areas. (Maybe simulated)
- U/J2/R1—Gas test in all the openings. (Must be rib to rib).
- The team has no timbers to check the placard identified as a person located in the elongated unsafe roof. The team should place an X on the map due too there is no symbol for a placard identified as person only live persons or body symbols are shown in mapping legend. When the team finds timbers, they will then be required to timber into the placard.



### **3<sup>rd</sup> line of crosscuts in #1 intersection**

- U/J1/R8c—captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J2/R1—Gas test in all the openings. (Must be rib to rib)

### **4<sup>th</sup> line of crosscuts in #1 intersection**

- U/J1/R8c—captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b—captain must verbally state checking for back or roof at the location of the face.
- U/J1/R9—captain must place initials at the face. (Maybe simulated)
- U/J2/R1—Gas test in all the opening and at the face. (Must be rib to rib and the gas test at face will suffice for this opening).

### **4<sup>th</sup> line of crosscuts in #2 intersection**

- U/J1/R8c—captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b—captain must verbally state checking for back or roof at the location of the unsafe roof.
- U/J1/R9—captain must place initials at the unsafe roof and on the barricade. (Maybe simulated)
- U/J2/R1—Gas test in all the openings and at the barricade. (Must be rib to rib and the gas test at barricade will suffice for this opening).
- U/J1/R14—team must notify the FAB of the explosive mixture.
- U/J1/R18a—team cannot breach the barricade due to the IDLH atmosphere outside or they have endangered the person inside.
- U/J1/R18f---The person behind the barricade will yell "HELP GET ME OUT" The team must now ventilate before advancing to the #3 intersection if team goes to #3 before ventilating, they have broken this rule)



### **SEE 1<sup>ST</sup> VENT MAP**

- U/J1/R10B3— explosive mixtures cannot be ventilated over battery equipment or through unexplored areas. All identified on map in yellow. This would mean all battery equipment found in this mine, all unsafe roof areas that extend from rib to rib the team has not timber through, and all caved areas would be an endanger to the entire team if they passed an explosive mixture over them and the team would be assessed 75 points for each.
- U/J1/R18b—the team cannot direct an IDLH atmosphere through a vent change over the person location in the elongate unsafe roof.
- U/J2/R1—after a vent change all areas along the route of travel that have been cleared of toxic or dangerous gases must be rechecked by the team during reentering. (Must be rib to rib)

### **SEE 2<sup>ND</sup> VENT MAP**

- U/J2/R1—after vent change all areas along the route of travel that have been cleared of toxic or dangerous gases must be rechecked by the team during reentering. (Must be rib to rib)

**The team has now ventilated the IDLH atmosphere located in front of the barricade.**

U/J2/R9 – team must airlock to breach the barricade

- U/J1/R8b – captain must verbally state checking for back or roof at the location of the build prior to starting the build.
- U/J2/R10 – must be airtight, (this would be done by hooking all available hooks provided on the cloth to the simulated ribs).
- U/J2/R1 – When breaching a door or barricade a gas check is required on backside. (Must be rib to rib)
- U/J1/R8c – captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R10a5 – The team member tipping the person must have gloves on (BSI).
- U/J1/R9 – captain must place initials at the location of the person. (Maybe simulated)
- U/J1/R8b – captain must verbally state checking back or roof at the location of the face.
- U/J1/R9 – captain must place initials at the face. (Maybe simulated)
- U/J2/R1 – Gas test at face. (Must be rib to rib)
- U/J2/R11 – Team does not need to airlock to get back out of #2 face area with person. If team request the fan to be turned off, they will not need to airlock to go through any doors they make encounter closed to leave the mine. If they don't, they will change ventilation and will be discounted under this rule.
- U/J2/R1 – after all areas along the route of travel that have been cleared of toxic or dangerous gases must be rechecked by the team during reentering. (Must be rib to rib)

**U/J1/R18e – The team after taking person to FAB will now have timbers to check person in the elongated unsafe roof.**

- The captain will set one timber in good roof and at least one in unsafe if he can reach the placard he can now check.
- U/J1/R10a5 – The team member tipping the placard must have gloves on (BSI).  
U/J1/R9 – captain must place initials at the location of the person placard. (Maybe simulated)
- When the team captain tips the placard the #1 judge will flip the placard and on the backside the word body will be found.
- The team will then put the symbol for body on map alongside the X. No orientation will be discounted for head placement on the maps.

#### 4<sup>th</sup> line of crosscuts in #3 intersection

- U/J1/R8c—captain must visually check for ground conditions before other members do work or move into the area. (a team member may travel behind the captain during this check)
- U/J1/R8b—captain must verbally state checking back or roof at the location of the face and cave area.
- U/J1/R9—captain must place initials at body, the face, and cave area. (Maybe simulated)
- U/J1/R10a5--The team member tipping the person must have gloves on (BSI).
- U/J2/R1—Gas test in all the openings and at the face. (Must be rib to rib and the gas test at face will suffice for this opening).

#### The team has completed the problem and should check their maps before coming to the FAB.

- S/J1/R10--The team will count off during first entering the mine to be explored and at the end when leaving the mine.

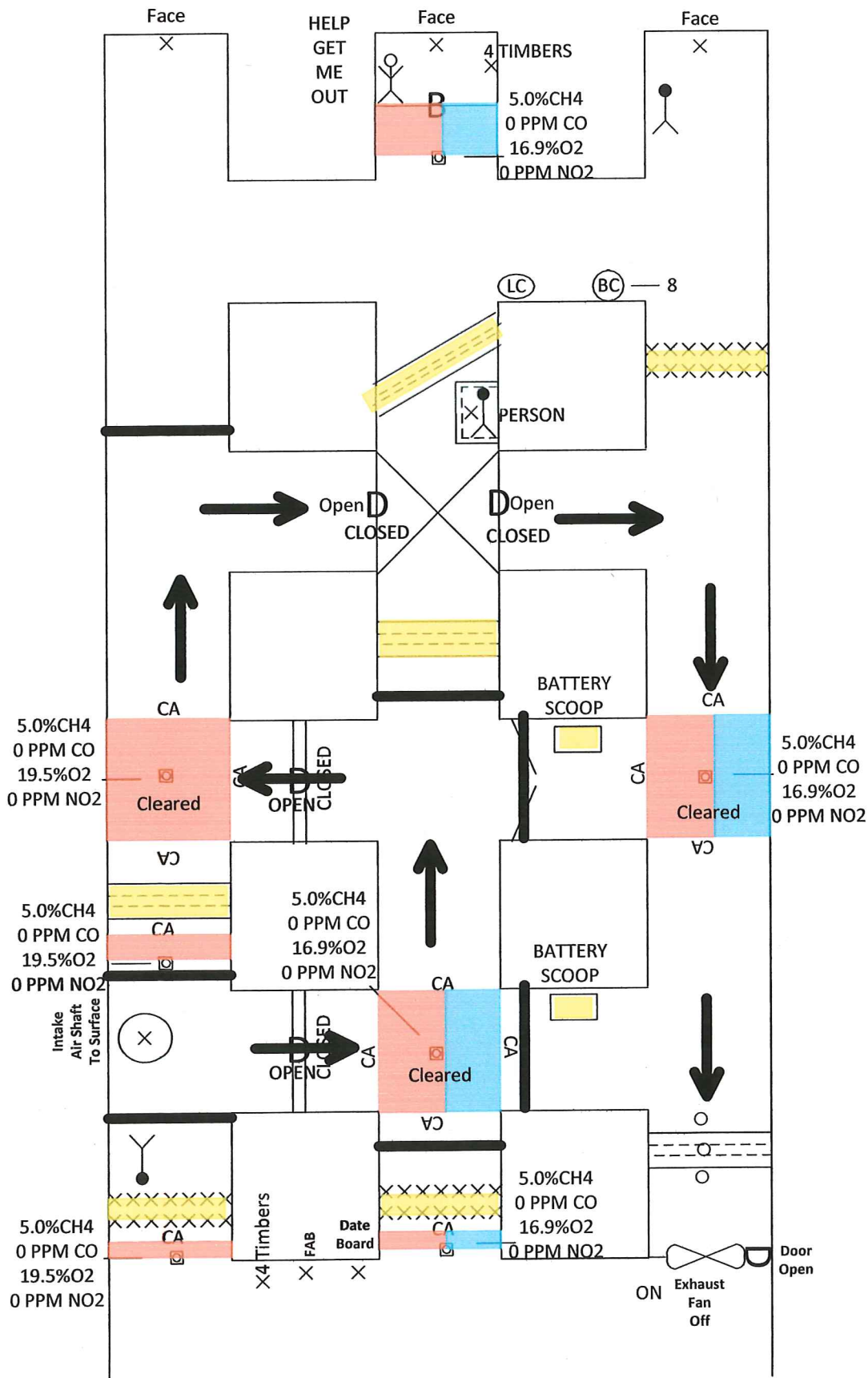
The captain will now turn off the clock. At the end of the problem, (clock stopped), both the team map, the fresh air base attendant's map and command center attendant, SD card will be collected by the #2 judge. All map editing must take place prior to stopping the clock.

Upon completion of the problem, a 5-minute review will be conducted regarding their working of the problem. At that time, the team will be informed of infractions and will be permitted to verbally appeal these with the field judge or the chief judge. If not resolved, the chief judge will make the final decision until an appeal can be filed by the team. Note: During this process mutual respect for the judges and team members is paramount and civility must be demonstrated by all involved or the review will be stopped before the allotted time. A final map will be completed by the judge walking the field with a team during this time.

The judges will now leave the field with the team packet and will go to the assigned area for filling out the score cards. The maps & SD card will be given to the map judges for scoring.

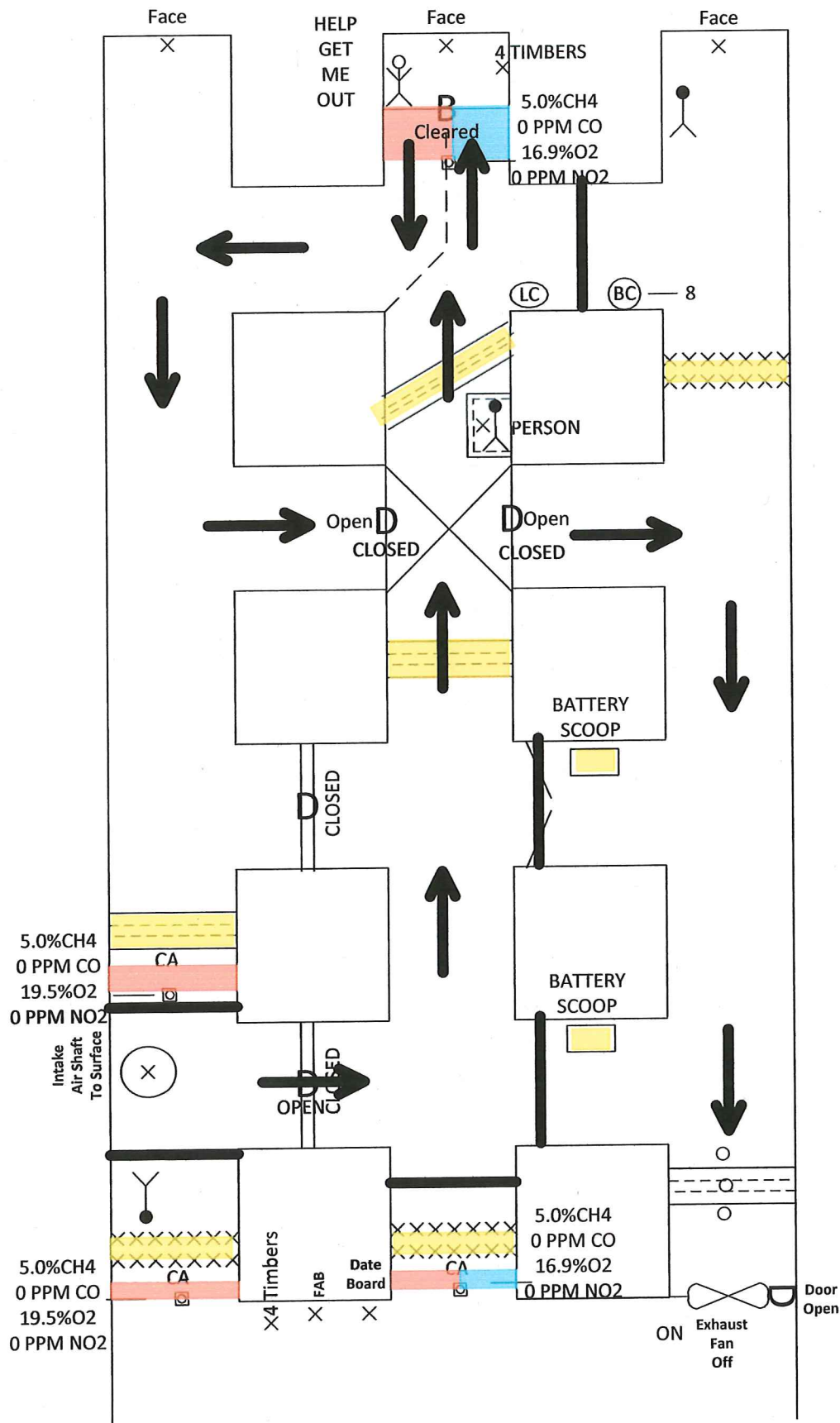


DAY 1 MNM  
FIELD PROBLEM  
FIRST VENT



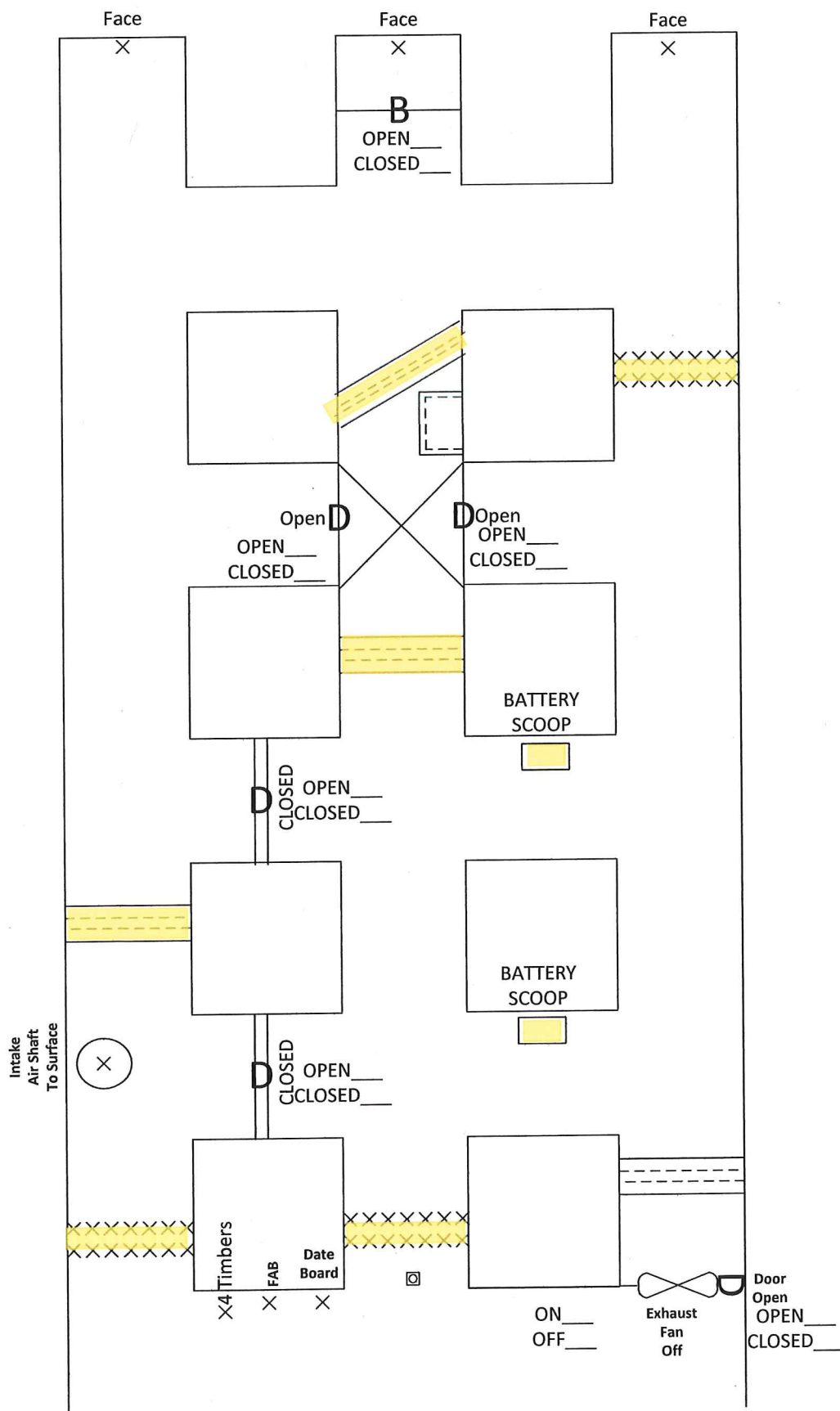


DAY 1 MNM  
FIELD PROBLEM  
SECOND VENT



SHOW  
STOPPING  
INTACT  
AT  
END OF PROBLEM

DAY 1 MNM  
FIELD PROBLEM  
FINAL MAP



DAY 1 MNM

Person behind barricade statement,  
person will continue to yell “HELP GET  
ME OUT” When team reaches  
intersection in front of barricade.

**HELP GET ME OUT**

## DAY 1 MNM

When the team timbers into the person in the unsafe roof in #2 and the captain touches placard, the #1 judge will state the person is a body with head toward the face.



TEAM # \_\_\_\_\_

DAY 1 MNM  
TEAM MAP

TEAM NAME: \_\_\_\_\_

Intake  
Air Shaft  
To Surface



X4 Timbers  
FAB  
Date Board

X X

Exhaust  
Fan  
Off

Door  
Open

TEAM # \_\_\_\_\_

DAY 1 MNM  
BRIEFING OFFICER  
MAP

TEAM NAME: \_\_\_\_\_  
SCORE BO MAP \_\_\_\_\_  
SCORE VISIO MAP \_\_\_\_\_

Intake  
Air Shaft  
To Surface



X4 Timbers  
X FAB  
X Date Board

Exhaust  
Fan  
Off

Door  
Open