49Th Southern Regional Mine Rescue Classic

JUDGE PACKET

Field Competition Day 1

April 30, 2019

New Iberia, Louisiana

Mine Information
New Iberia, LA
April 29 – May 2, 2019

General
The Davis Mine is an underground Multi-level Category II-A room and pillar salt mine. The mine is owned and operated Mike Davis. The mine is located in Southern Louisiana and is active and operating at full capacity. The mine operates two 12-hour shifts per day, 7 days a week. Hours of operation are from 5 am to 5 pm on day shift and 5 pm to 5 am on nights. All production is on the 1950' level. Boudreaux is VP of Operations and Thibodeaux is currently the Mine Manager.

Mine Access
Mine access is provided by two 14 foot diameter steel-lined shafts. The two 14 foot shafts are known as the #1 Intake shaft and the #2 Exhaust shaft. Pillar sizes are 16 feet by 16 feet and working areas of the mine are 10 feet by 10 feet with back heights averaging 26 feet.

Explosives
All explosives are stored on the 1950' level 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 Bayou Electric with the main disconnects located on surface. All face equipment in the mine is permissible. Power centers are located underground for mining equipment.

Gas
The mine is a gas category II-A (Subcategory II-A applies to Domal salt mines where an outburst reportable under 57.22004 (c) (1) has occurred. The mine generally experiences some nitrogen dioxide and carbon monoxide resulting from blasting and the operation of diesel equipment).

Communication
This is accomplished by two-way radios that are carried by mine personnel and femco phones 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.

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

Mining Methods
Room and pillar method is accomplished by conventional mining techniques. Material is hoisted to surface, screened and loaded to be shipped to the north east part of the country.

Mine Maps
The mine maps were last updated on October 1, 2018.

Mine Equipment
The mine currently utilizes under-cutters, face drills, haul trucks, loaders, bolters, battery operated scoops, and other smaller transportation equipment.

Ventilation
The mine is ventilated by a non-reversible 600,000 cfm fan that is located on surface. The mine utilizes a blowing system; ventilation enters the mine via the #1 Intake shaft and exits the mine via the #2 Exhaust shaft.

Water
Water flows into the mine via seepage on the 1950' level and accumulates primarily in the central part of the mine. There are two sumps in the mine known as Sump A and Sump B with submersible pumps. An 8" suction line runs underground and water is pumped to surface.

Notification
All federal, state and local officials have been notified.

Backup Teams
Two additional trained and fully equipped mine rescue teams are on site and are available for backup support.

TEAM BRIEFING

New Iberia, LA Day 1
April 29 - May 2, 2019

You have arrived at the Davis Mine and received the following information. There are currently four miners unaccounted for and we have not established communication with any of the missing miners. Last night the mine experienced a major blowout after a shot. The mine wide monitors indicated that the mine was inundated with methane and power automatically de-activated. The mine has ventilated until gas readings dropped to .1% methane and 21% Oxygen.

A crew of five mine rescue team members entered the mine this morning at approximately 6:00 am. The team was tasked to explore the mine and locate the missing miners. The team explored up to the Maintenance Shop and began reestablishing ventilation up to and in the Maintenance Shop. While pre-shifting a Mantrip for transportation, the Mantrip caught on fire and due to the intense heat the team immediately exited the shop and de-energized the shop fan. The Maintenance Shop has two equipment doors, the team reported that they sealed one door and regulated the second door. Just before they were able to fully seal the second door, they encountered an apparatus issue and were forced to retreat to the fresh air base. The team reported that smoke continued to exit the regulator and will continue to emit smoke until fully sealed.

It is now 1:00 p.m., there is power to the mine and the first team is now on surface, they have reestablished the fresh air base underground and ventilation is established in crosscut A. You will be the second team to enter the mine. We ask that you explore up to the Maintenance Shop and close the regulator in order to completely seal and isolate the fire. Once you have accomplished this, continue exploration for the four missing miners. Your objectives are listed below and the mine manager will be available for any questions or requests. GOOD LUCK!

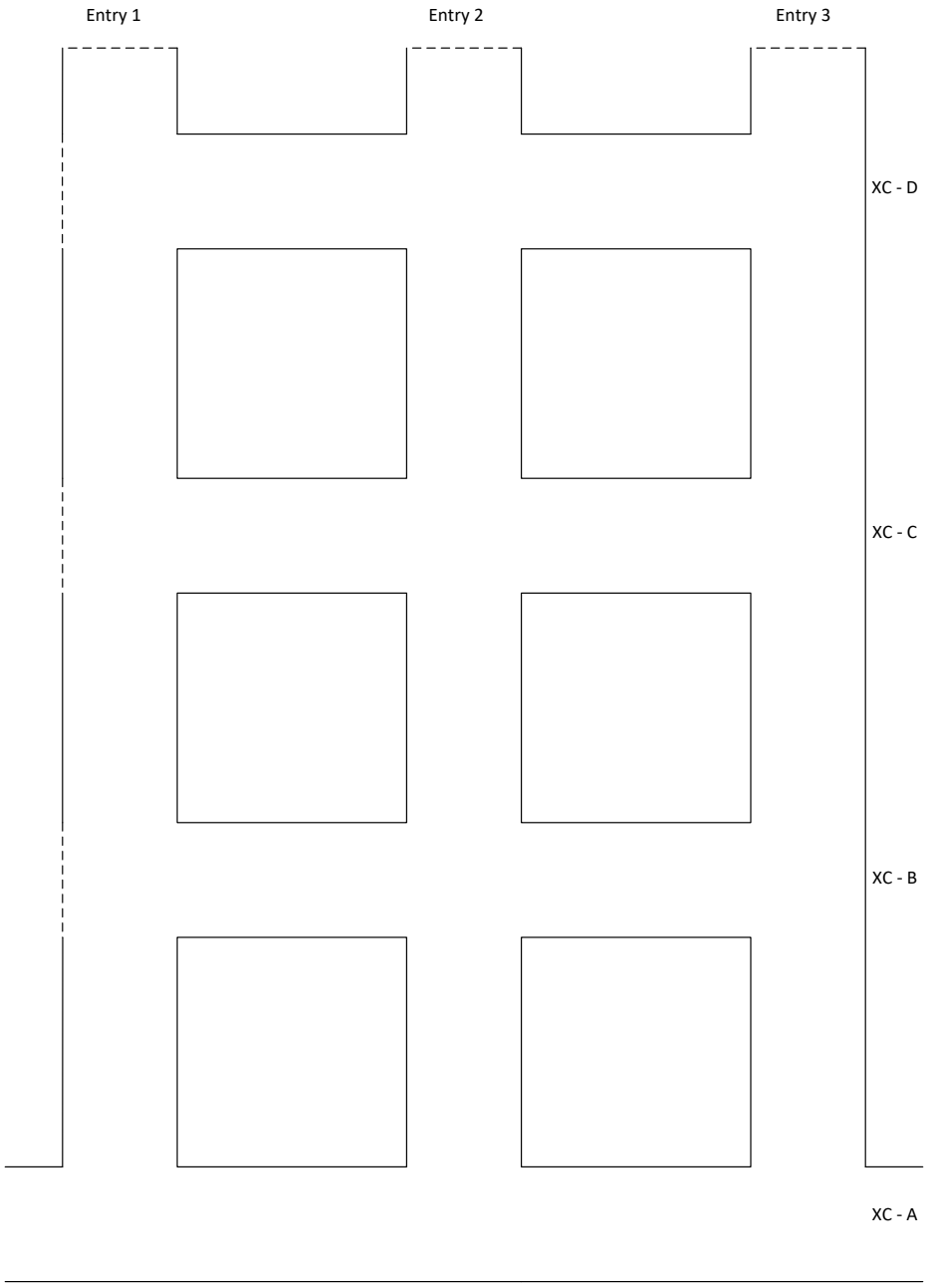
Field Problem Objectives:

- Explore up to the Maintenance Shop and close the regulator to completely seal the fire
- Explore all accessible areas of the mine
- Locate all missing miners
- Bring all survivors to the fresh air base

Team Map Day 1

Team Name: _____

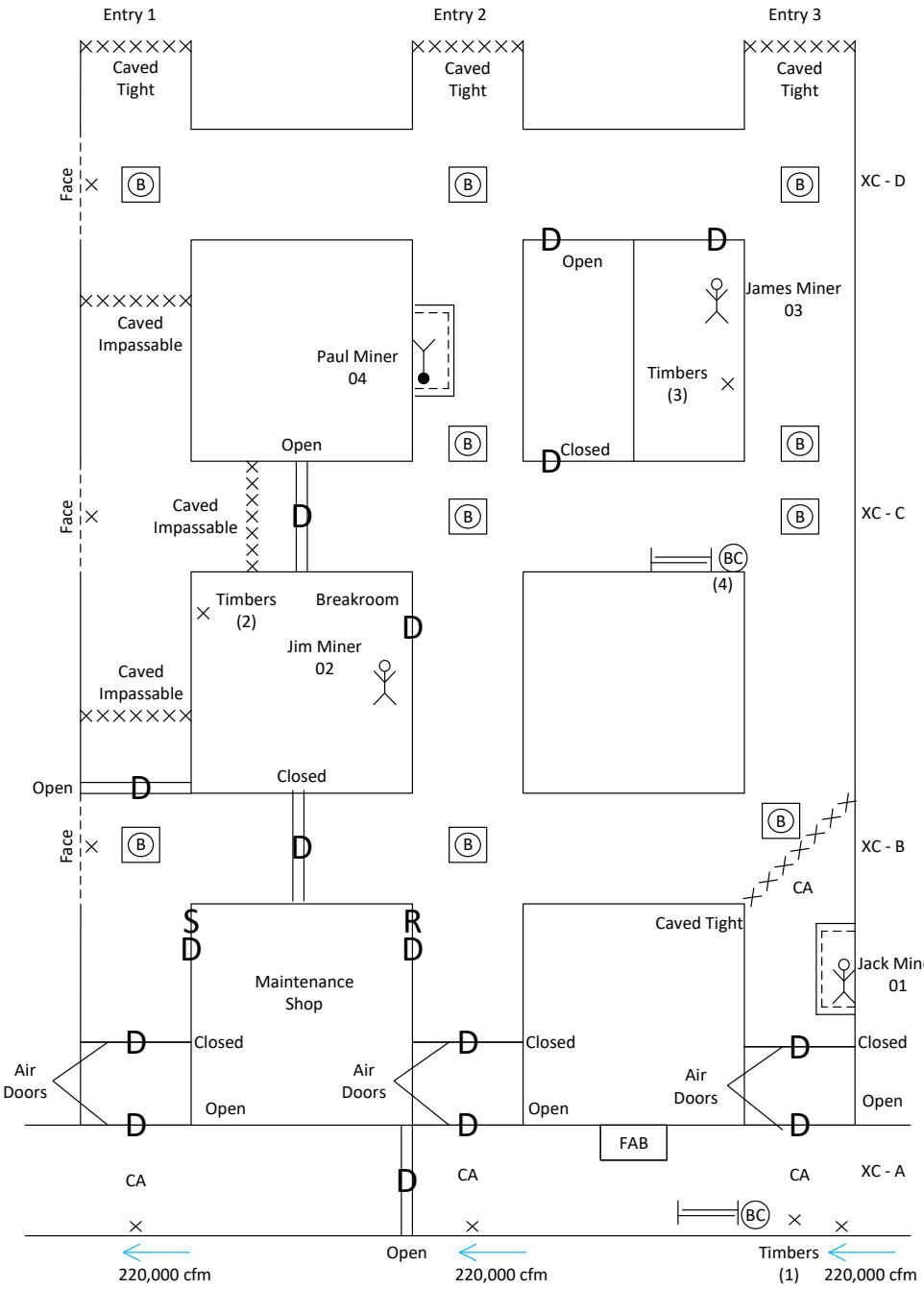
Team Draw # _____



Problem Map Day 1

Team Name: _____

Team Draw # _____



Gas Placard Key

CA = Clear Air

B = O_2 - 15%
CO - 0.25%
NO_2 - .0018%
CH_4 – 0%

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Southern Regional Mine Rescue Contest 2019
Day #1 Field Problem Solution
(See Solution Maps)

Fresh Air Base

The teams will arrive at the FAB and have introductions, the team will also be informed that they will be able to string out their communication line but will not be able to check functionality until they have started the clock. Once the clock has been started the team will receive all of their maps and information.

Note: Throughout the field problem, while advancing and at the intersections the team will check for loose ground (loose roof or rib).

Team Stop #1

Teams will explore the FAB area and all openings. The team will examine opening to Entry 3 and identify "brattice cloth and brattice frames (1)", "Timber (1)", "clear air", and a placard showing the direction and quantity of airflow "220,000 cfm". Stretching north the team will identify a set of "air doors" with the first door open and the second door closed.

Team Stop #2

The team will travel to the opening of Entry 2 to examine this opening. The team will identify placard showing the direction and quantity of airflow "220,000 cfm", "clear air" and "permanent stopping with door" the door will be open. Stretching north the team will identify a set of "air doors" with the first door open and the second door closed.

Team Stop #3

The team will travel to Entry 1 to examine this opening. The team will identify a placard showing the direction and quantity of airflow "220,000 cfm" and "clear air". The team will see that the ventilation drift continues but will not examine any further west. Stretching north in entry 1, the team will identify a set of "air doors" with the first door open and the second door closed.

Team Stop #4

The team will utilize the air doors to create an airlock to enter the mine. The team will explore north in Entry 1 until they reach the intersection of XC-B. Along the way the team will identify the "maintenance shop door with full seal". At the intersection of Entry 1 and XC-B the team will identify a "B" gas placard (see map for gas concentrations). The team will identify "face" to the west and stretching north the team will identify "permanent stopping with door" the door will be open, just north of the door the team will identify "caved impassable". The team will likely perform their 50' check. The team will continue east in XC-B trying to identify the other maintenance shop door to close the regulator. The team will identify a "permanent stopping with door" the door will be closed.

Team Stop #5

The team will retreat to Entry 2 and advance into the mine by creating an airlock with the air doors. The team will continue north, along the way the team will identify "maintenance shop door with open regulator". The team will need to close the regulator in order to seal the fire. The team will continue north until they reach the intersection of XC-B. the team will identify a "B" gas placard, stretching west the team will identify "permanent stopping with door" the door will be closed.

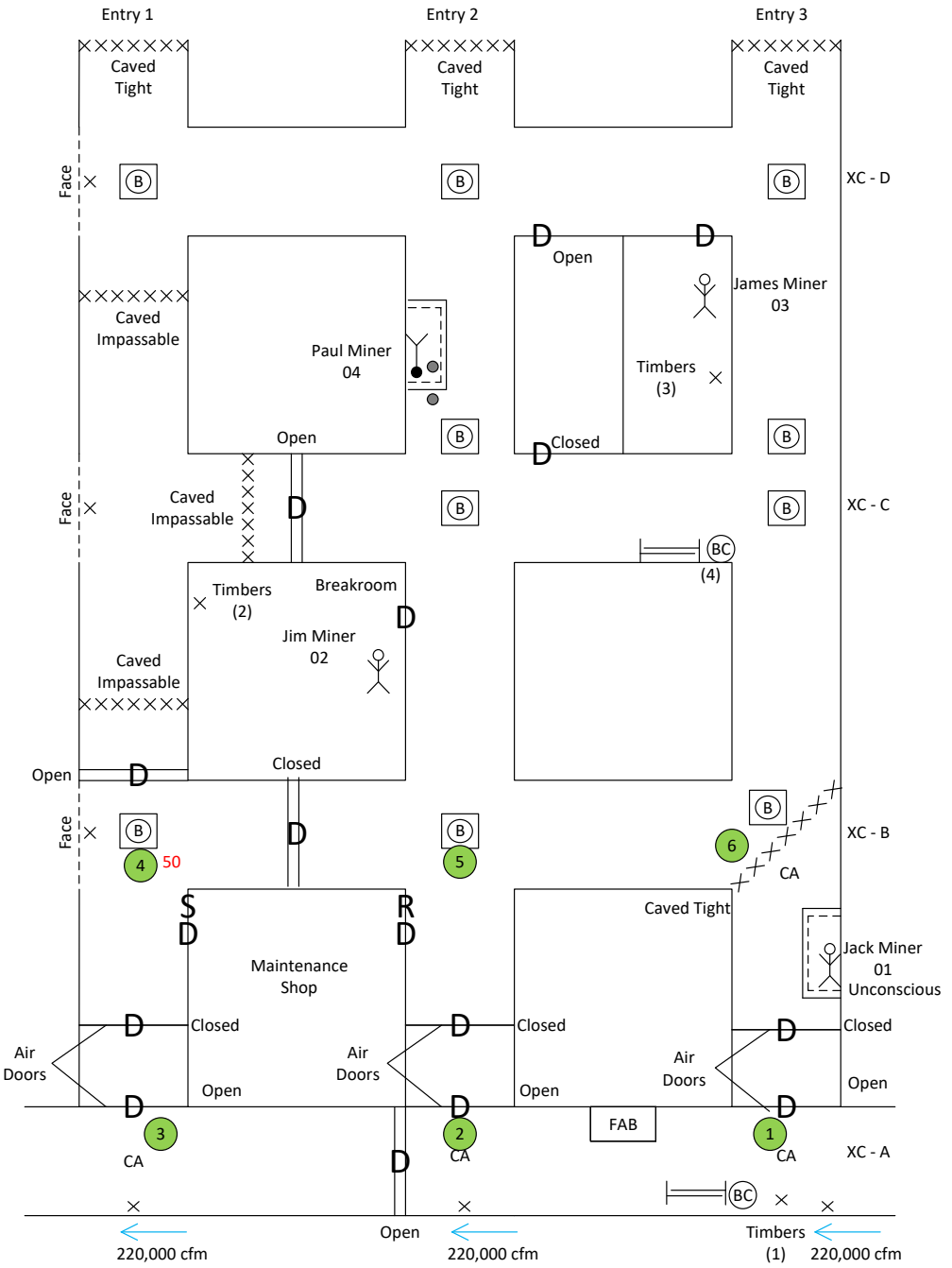
Team Stop #6

The team will continue east in XC-B to Entry 3, the team will identify a "B" gas placard and "caved tight" that extends across the entire intersection. The team will continue exploration north in Entry 3.

Solution Map Day 1

Team Name: _____

Team Draw # _____



Team Stop #7
The team will retreat to XC-A and Entry 3 to tie in the unexplored area behind the team. Traveling north the team will utilize the air doors to create an airlock. Just beyond the set of air doors the team will identify an area of unsafe roof with a visible miner in the marked area, the team will not have the means to support and assess the miner. The team will continue exploration and identify "clear air" and "caved tight" that extends across the entire crosscut.

Team Stop #8
The team will return to XC-B in Entry 2 and continue exploration north. The team will encounter the "breakroom door", knocking on the door they will make contact with a missing miner. "Jim Miner 02" will relay the following statement. "help me, I'm not injured, the air in here is ok and I'm completely enclosed." Due to the gas concentrations, it will be necessary for the team to clear the air in front of the breakroom door in order to enter. The team will not have the means to execute the first ventilation change and will need to continue exploration.

Team Stop #9
The team will continue exploration north until they reach the intersection of XC-C. Examining this intersection the team will identify a "B" gas placard, stretching west the team will identify a "permanent stopping with door" the door will be open. Just beyond the door the team will identify "caved impassable". Stretching north the team will identify a "B" gas placard and identify another missing miner under "unsafe roof". The team will not have the means to support the area and will have to continue exploration.

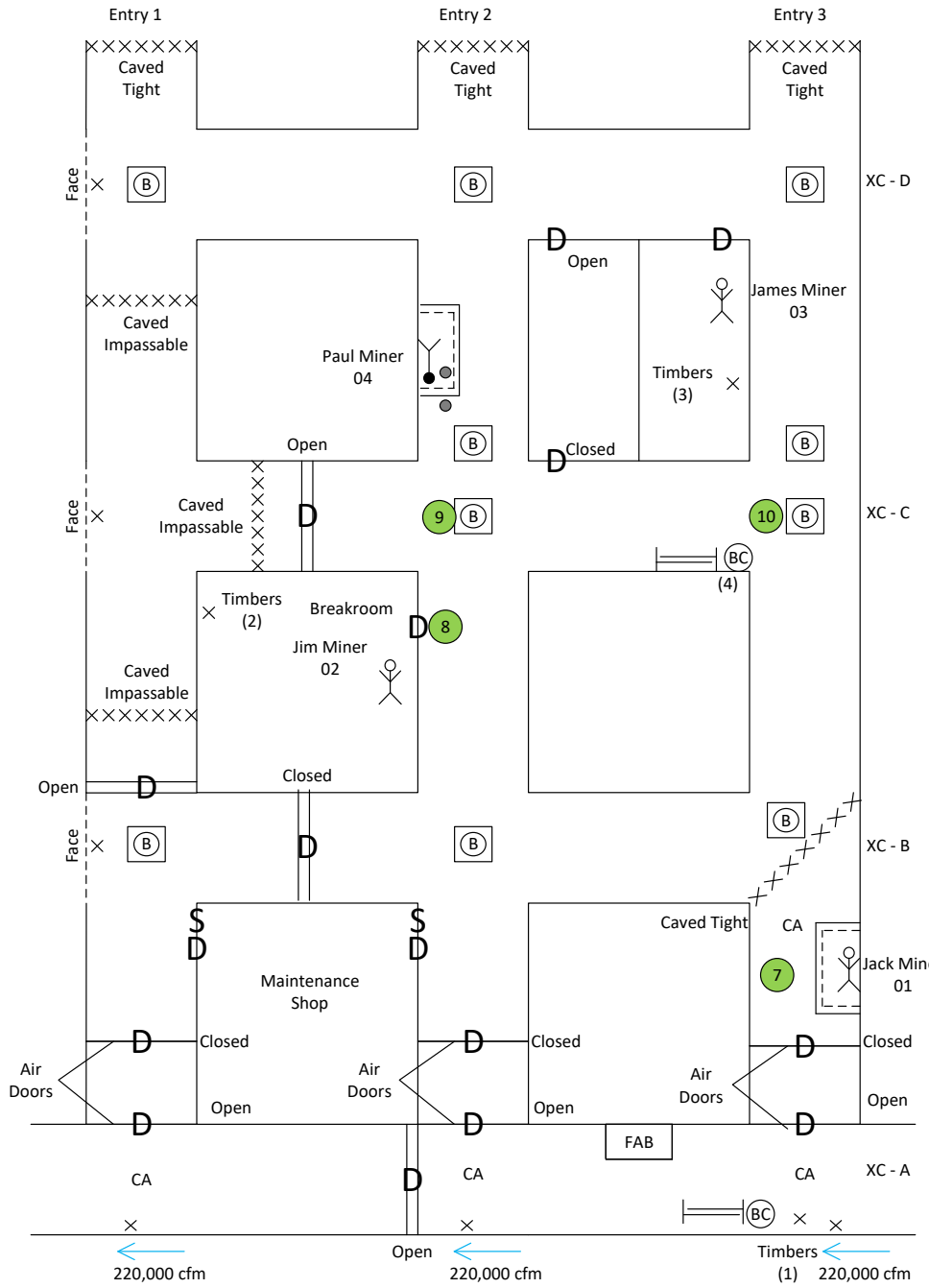
Team Stop #10
The team will continue east in XC-C, along the way the team will identify "tool crib A door" the door will be closed. Knocking on the door the team will get no response. The team will identify "brattice cloth and brattice frames (4)". At the intersection the team will identify a "B" gas placard, stretching north the team will identify another "B" gas placard. The team will travel south in Entry 3 in order to tie-in this area.

The team has now found the materials necessary to execute the first ventilation change to enter the breakroom and rescue Jim Miner.

Solution Map Day 1

Team Name: _____

Team Draw # _____



Gas Placard Key

CA = Clear Air

B = O_2 - 15%
CO - 0.25%
NO_2 - .0018%
CH_4 – 0%

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Ventilation Change to enter the Breakroom (See attached map)

The team will request a ventilation change, once granted the following steps will be required to clear the area in front of the Breakroom.

- Close door in Entry 1 between XC-B & XC-C
- Open door XC-B between Entry 1 & Entry 2
- Close door XC-C between Entry 1 & Entry 2
- Build Temp Stopping Entry 2 between XC-C & XC-D
- Build Temp Stopping Entry 3 between XC-C & XC-D
- Utilize 2 sets of material to build diagonally across the intersection of XC-B & Entry 2
- Open both air doors in Entry 1 & Entry 2
- Close door in ventilation drift A to course air

Note: Ventilation path is indicated by blue arrows on the map and will clear gases in front of the breakroom.

Note: Upon reentry into areas cleared of smoke and toxic or dangerous gasses, teams shall make gas tests rib to rib at all openings along the route they travel.

Team Stop #11

The team knows the conditions inside of the breakroom and can enter. The team will identify "Jim Miner 02", he will not be injured and can walk out with the team. The team will also identify "timbers (2)"

The team will transport the miner to the FAB and will also have the means to support the area around the miner located in Entry 3.

Team Stop #12

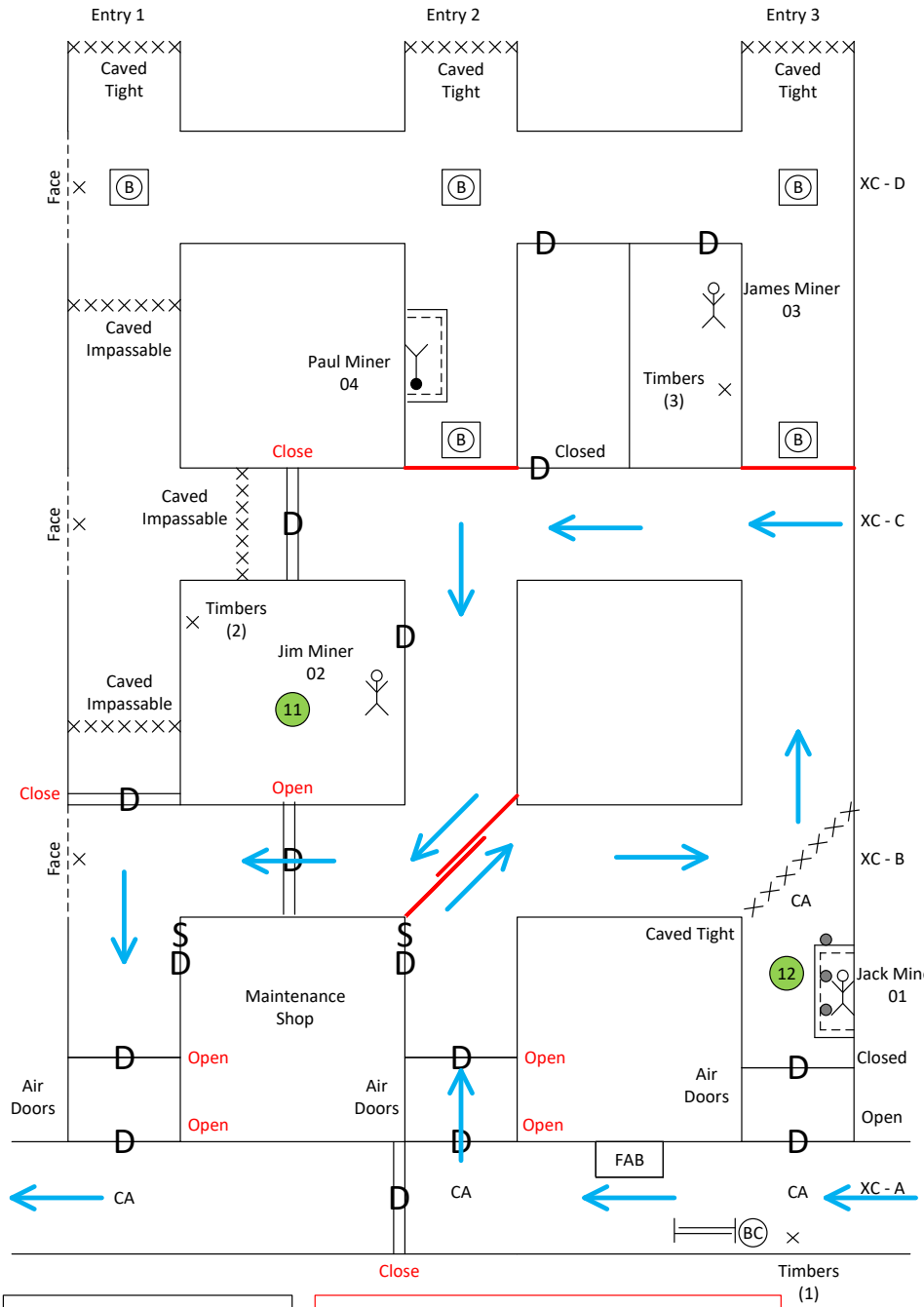
The team will return to Entry 3, utilizing the roof support techniques as outlined in the contest rule book, the team will install three timbers and assess the missing miner. The team will identify that the miner is unconscious and will need to perform an emergency drag move to remove the miner from the unsafe roof. The team will need to provide the miner with full face respiratory protection and transport the miner to FAB.

Note: the team will need to restore ventilation to the original path in order to continue exploration north beyond XC-C. This can be done by closing one of the air doors in Entry 1 and Entry 2 and opening the door in ventilation drift A.

Ventilation Change #1
Enter Breakroom

Team Name: _____

Team Draw # _____



Gas Placard Key

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Ⓑ = O_2 - 15%
CO - 0.25%
NO_2 - .0018%
CH_4 – 0%

Ventilation Change #1

- Close door in Entry 1 between XC-B & XC-C
- Open door XC-B between Entry 1 & Entry 2
- Close door XC-C between Entry 1 & Entry 2
- Build Temp Stopping Entry 2 between XC-C & XC-D
- Build Temp Stopping Entry 3 between XC-C & XC-D
- Utilize 2 sets of material to build diagonally across the intersection of XC-B & Entry 2
- Open both air doors in Entry 1 and Entry 2
- Close door in ventilation drift A

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Team Stop #13
The team will return to the intersection of Entry 2 and XC-C and continue exploration north. The team has already identified the missing miner under the unsafe roof but still does not have the means to support the area. Team will continue until they reach the intersection of XC-D. The team will identify a "B" gas placard. Stretching north the team will identify "caved tight".

Team Stop #14
The team will continue exploration west in XC-D until they reach Entry 1. The team will identify a "B" gas placard and a "face". Stretching north the team will identify "caved tight", stretching south the team will identify a "caved impassable".

Team Stop #15
The team will continue exploration east in XC-D and identify "tool crib A door" the door will be open and the team will explore up to the opposite door that is closed.

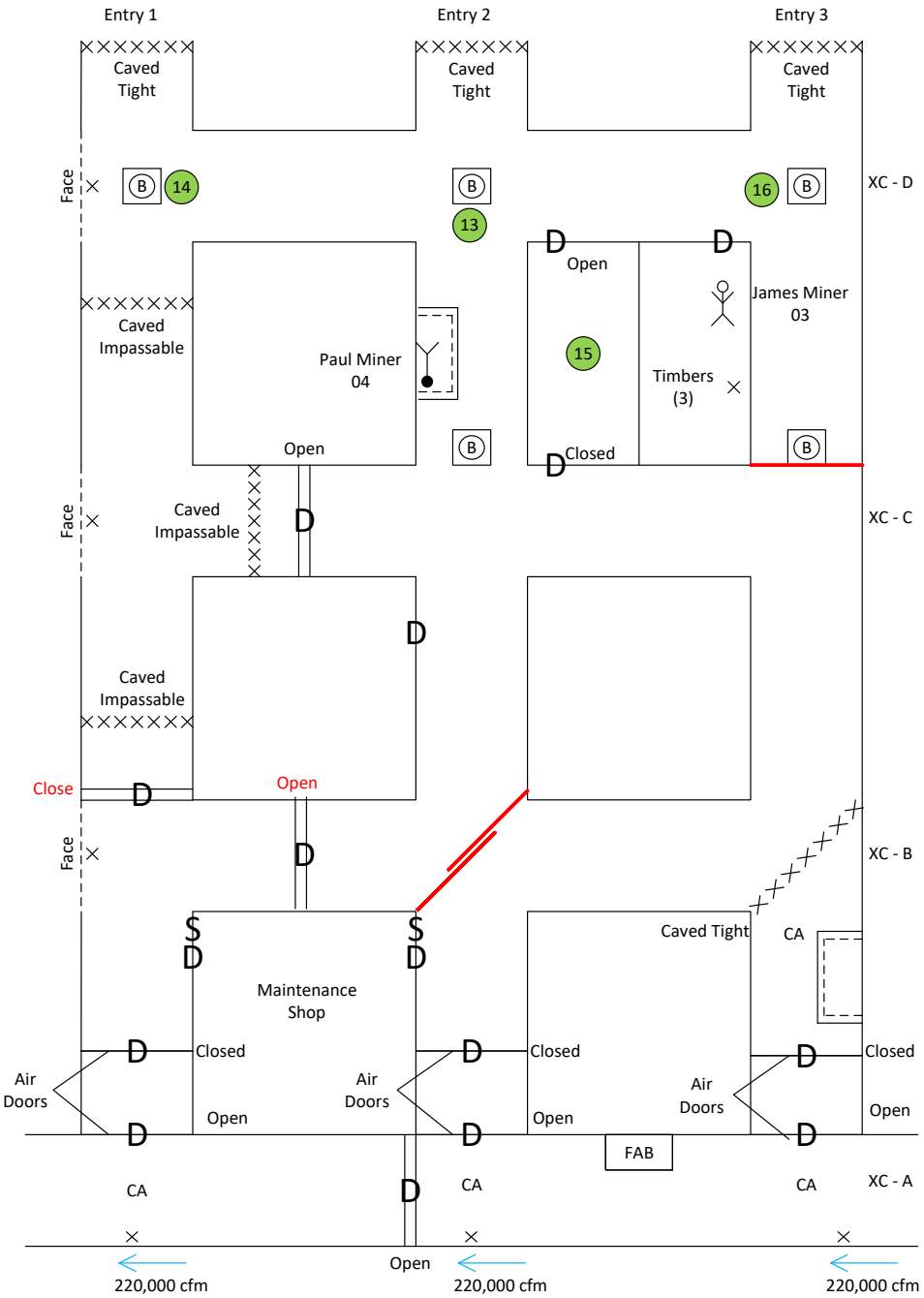
Team Stop #16
The team will return to XC-D and continue exploration east. The team will identify "tool crib B door" the door will be closed, knocking on the door they will make contact with a missing miner. "James Miner 03" will relay the following statement. "help me, I'm not injured, the air in here is ok and I'm completely enclosed." Due to the gas concentrations, it will be necessary for the team to clear the air in front of the tool crib door in order to enter. The team will elect to explore the remaining area that is unexplored prior to executing ventilation change #2. the team will identify a "B" gas placard, stretching north the team will identify "caved impassable" and south the team will tie-in the remaining area.

The team has explored all accessible areas of the mine to this point and will need to clear the gas in front of the tool crib B in order to enter and rescue James Miner.

Solution Map Day 1

Team Name: _____

Team Draw # _____



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NO_2 - .0018%
CH_4 – 0%

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Ventilation Change to enter the Tool Crib B (See attached map)

The team will request a ventilation change, once granted the following steps will be required to clear the area in front of Tool Crib B.

- Maintain the door closed in Entry 1 between XC-B & XC-C
- Maintain the door open in XC-B between Entry 1 & Entry 2
- Maintain door closed in XC-C between Entry 1 & Entry 2
- Build Temp Stopping Entry 2 between XC-C & XC-D
- Build Temp Stopping XC-D just west of Tool Crib A door
- Build Temp Stopping XC-C just east of Tool Crib A door
- Open tool crib A door
- Utilize 2 sets of material to build diagonally across the intersection of XC-B & Entry 2
- Open both air doors in Entry 1 & Entry 2
- Close door in ventilation drift A to course air

Note: Ventilation path is indicated by blue arrows on the map and will clear gases in front of Tool Crib B.

Note: Upon reentry into areas cleared of smoke and toxic or dangerous gases, teams shall make gas tests rib to rib at all openings along the route they travel.

Team Stop #17

The team knows the conditions inside of the tool crib and can enter. The team will identify "James Miner 03", he will not be injured and can walk out with the team. The team will also identify "timbers (3)". The team will transport the survivor to the FAB. the team will also have the means to support the area around the final missing miner.

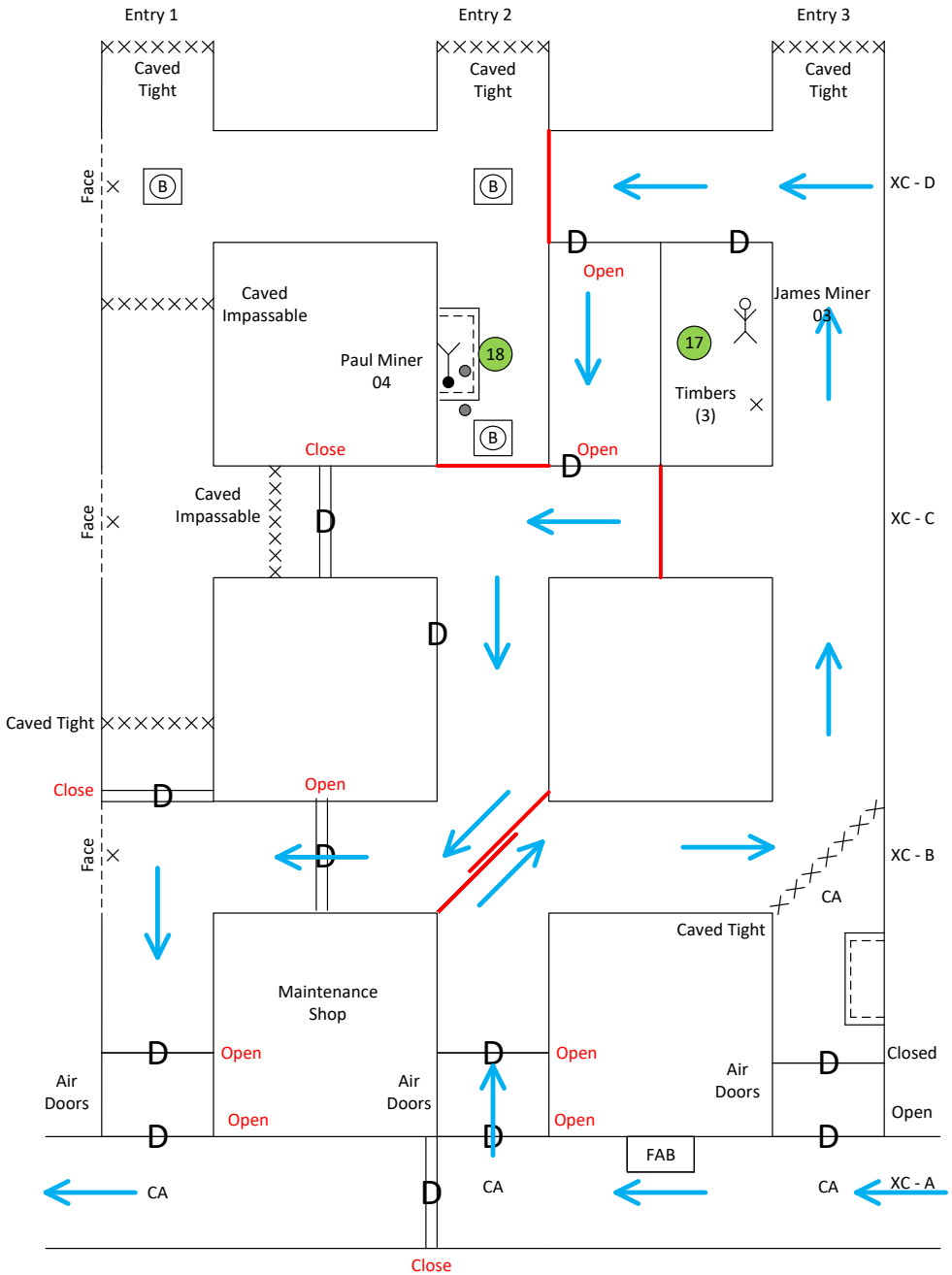
Team Stop #18

The team will return to Entry 2, utilizing the roof support techniques as outlined in the contest rule book, the team will install two timbers and identify "Paul Miner 04". When they assess the miner, the team will identify that the miner is deceased. The team will return to the FAB, report their finding, turn in all maps and stop the clock. THE END!

Ventilation Change #2
Enter Tool Crib B

Team Name: _____

Team Draw # _____



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CH_4 – 0%

Ventilation Change #2

- Maintain door closed in Entry 1 between XC-B & XC-C
- Maintain door open in XC-B between Entry 1 & Entry 2
- Maintain door closed in XC-C between Entry 1 & Entry 2
- Build Temp Stopping Entry 2 between XC-C & XC-D
- Build Temp Stopping in XC-D just west of tool crib A door
- Build Temp Stopping in XC-C just east of tool crib A door
- Utilize 2 sets of material to build diagonally across the intersection of XC-B & Entry 2
- Open both air doors in Entry 1 and Entry 2
- Close door in ventilation drift A

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Placard Map Day 1

Team Name: _____

Team Draw # _____