**STATEMENT**

**Thank you for responding to our call for assistance, and this is the most current information that we have about our problem.**

**You are located on the surface of this mine which has just started development. This mine has a slope on one end of the mine and a split wall air shaft on the other end of the mine. There is an exhaust fan on top of the return side of the split wall air shaft and an elevator on the intake side of the split wall air shaft. The elevator is equipped with automatically opening doors that open when the elevator arrives on the bottom or top of the shaft. To go down on the elevator you must close the door by clipping the rope to the upright post and you will be instantly on the bottom of the shaft. To come back up you must clip the rope to the upright and you will be instantly back on the surface. At this time the elevator is the only way in and out of the mine we have sent our rescue team down the slope to find our missing miners, but they encountered a roof fall about a third of the way down the slope which blocked their exploration in that direction. Gas test performed down the slope at the caved area indicated that the air was clear, and safe to ventilate out of from that side of the caved area to the surface.**

**At the start of day shift today the foreman and four men went into the mine to start mining operations off the slope bottom. About noon there was a large rush of air that came up the slope and out of the fan. The fan shut down at that time, but has been repaired. The fan can be turned on at your team’s request to the superintendent. Power to a pump breaker just off the elevator bottom powers a pump that maintains water in a low place in the # 3 entry. The pump can be turned on or off by requesting the command center to turn on or off the power outside and noting the request on the B/O or Command Center Attendant’s map. The power to the elevator has been re-established and it is safe and ready for use. The mine is supported by roof bolts and is walking height.**

**The Fan is exhausting and once started it can be turned on or off by asking the superintendent at the command center, but it cannot be stalled or reversed. The maps that you will receive are up to date and all agencies are on site along with back up mine rescue teams.**

**Good Luck**

**1**

**PROBLEM**

**EXPLORE ALL AREAS OF THE MINE THAT CAN BE EXPLORED SAFELY**

**ACCOUNT FOR ALL MISSING MINERS AND BRING ALL SURVIVORS TO THE SURFACE**

**THE FAN IS CURRENTLY OFF BUT CAN BE STARTED OR STOPPED BY YOUR TEAM’S REQUEST BY ASKING THE SUPERINTENDENT AT THE COMMAND CENTER. IT IS EXHAUSTING AND ONCE STARTED IT CANNOT BE REVERSED OR STALLED**

**BARRICADES CAN NOT BE RELOCATED OR MOVED BUT CAN BE USED FOR VENTILATION AT THE LOCATION THAT THEY ARE FOUND**

**ONCE YOUR TEAM STEPS ONTO THE ELEVATOR AND ATTACHES THE LINKED ROPE TO THE UPRIGHT YOUR TEAM WILL BE INSTANTLY ON THE BOTTOM. TO RETURN TO THE SURFACE FROM THE BOTTOM OF THE ELEVATOR SHAFT YOUR TEAM NEEDS TO ATTACH THE LINKED ROPE TO THE UP RIGHT AND IT WILL BE INSTANLY ON THE SURFACE**

**2**

**Top of Slope to caved area has been explored by previous team**

**Top of slope**

**Caved**

**XXXXXXXXXX**

**X**

**Elevator door opens when on the bottom of shaft**

**Door on surface for elevator open**

**Intake side of Air shaft with an elevator in the shaft**

**X**

**X X**

**Return side of air shaft**

**D**

**D**

**XX**

**Separation wall of shaft from surface to mine floor**

**X**

**The Command Center and Clock are on the surface**

**3**

**Top of Slope to caved area has been explored by previous team**

**Top of Slope**

**Live man talking “Help get me out”**

**Caved**

**XXXXXXXXXXX**

**5% CH4 5 PPM CO 18% O2**

**XXXXXXXXXX**

**FACE**

**FACE**

**X**

**Elevator door opens when on the bottom of shaft**

**Door on surface for elevator open**

**X**

**X X**

**D**

**D**

**Ram Car**

**Continuous Miner**

**Barricade**

**B**

**5% CH4 5 PPM CO 18% O2**

**X**

**X**

**X**

**Battery Scoop on fire**

**Caved**

**Battery man-trip**

**X**

**XXXXXXXXXXX**

**XXXXXXXXXXX**

**X**

**Roof Bolter**

**X**

**X**

**B**

**4% CH4 5 PPM CO 18% O2**

**4% CH4 200 PPM CO 18.0% O2**

**Open borehole**

**X**

**5% CH4 5PPM CO 18% O2**

**Caved**

**X**

**X**

**X**

**X**

**Unsafe roof**

**Person/Body**

**X**

**BC**

**Caved airtight**

**XXXXXXXXXXX**

**XXXXXXXXXX**

**LC**

**BC**

**BC**

**Unsafe Roof**

**6 timbers**

**X**

**Door Open**

**D**

**Unconscious live person**

**X**

**Return side of air shaft**

**FACE**

**FACE**

**X**

**X**

**Battery phone**

**Water Roofed**

**Stationary Pump**

**Pump cable**

**Pump breaker**

**X**

**Intake side of Air shaft with an elevator in the shaft**

**X**

**X**

**Bottom of slope**

**X**

**X**

**Temporary Stopping down**

**BC**

**BC**

**Water Roofed**

**Permanent stopping**

**Permanent Stopping down**

**X**

**X**

**Separation wall of shaft surface to mine floor**

**The Command Center and Clock is on the surface**

**Pump power cable from surface**

**4**

**Team Stops, Roof and Rib Test & Extent of Gases**

**3**

**Top of Slope to caved area has been explored by previous team**

**Top of Slope**

Team Stop= Roof & Rib Test =

**Live man talking “Help get me out”**

**Caved**

**XXXXXXXXXXX**

**5% CH4 5 PPM CO 18% O2**

**XXXXXXXXXX**

**FACE**

**FACE**

**X**

**Elevator door opens when on the bottom of shaft**

**X**

**X X**

**D**

**D**

**Ram Car**

**Continuous Miner**

**Barricade**

**B**

**5% CH4 5 PPM CO 18% O2**

**X**

**X**

**X**

**Battery Scoop on fire**

**Caved**

**Battery man-trip**

**X**

**XXXXXXXXXXX**

**X**

**Roof Bolter**

**X**

**X**

**B**

**4% CH4 5 PPM CO 18% O2**

**4% CH4 200 PPM CO 18.0% O2**

**Open borehole**

**X**

**5% CH4 5PPM CO 18% O2**

**Caved**

**X**

**X**

**X**

**X**

**Unsafe roof**

**Person/Body**

**X**

**BC**

**Caved airtight**

**XXXXXXXXXXX**

**XXXXXXXXXX**

**LC**

**BC**

**BC**

**Unsafe Roof**

**6 timbers**

**X**

**Door Open**

**D**

**Unconscious live person**

**X**

**Return side of air shaft**

**FACE**

**FACE**

**X**

**X**

**Battery phone**

**Water Roofed**

**Stationary Pump**

**Pump cable**

**Pump breaker**

**X**

**Intake side of Air shaft with an elevator in the shaft**

**X**

**X**

**Bottom of slope**

**X**

**12**

**11**

**10**

**XXXXXXXXXXX**

**X**

**Separation wall of shaft surface to mine floor**

**Temporary Stopping down**

**BC**

**BC**

**Water Roofed**

**7, 8 or9**

**7 , 8 or 9**

**7 , 8,9**

**Permanent stopping**

**6**

**3**

**2**

**Permanent Stopping down**

**5**

**4**

**1**

**Door on surface for elevator open**

**The Command Center and Clock is on the surface**

**Pump power cable from surface**

**5**

**Gas Test and Date and Initials Locations**

**Top of Slope to caved area has been explored by previous team**

**Top of Slope**

**Live man talking “Help get me out”**

**Caved**

**XXXXXXXXXXX**

**5% CH4 5 PPM CO 18%O2**

**XXXXXXXXXX**

**FACE**

**FACE**

**X**

**Elevator door opens when on the bottom of shaft**

**X**

**X X**

**D**

**D**

**DI**

**DI**

**GT & DI**

**GT & DI**

**GT & DI**

**GT**

**Ram Car**

**Continuous Miner**

**Barricade**

**B**

**5% CH4 5 PPM CO 18% O2**

**X**

**X**

**X**

**Battery Scoop on fire**

**Caved**

**Battery man-trip**

**X**

**XXXXXXXXXXX**

**XXXXXXXXXXX**

**X**

**Roof Bolter**

**X**

**X**

**B**

**4% CH4 5 PPM CO 18% O2**

**4% CH4 200 PPM CO 18.0% O2**

**Open borehole**

**X**

**5% CH4 5PPM CO 18% O2**

**Caved**

**X**

**X**

**X**

**X**

**Unsafe roof**

**Person/Body**

**X**

**BC**

**Caved airtight**

**XXXXXXXXXXX**

**XXXXXXXXXX**

**LC**

**BC**

**BC**

**Unsafe Roof**

**6 timbers**

**X**

**Door Open**

**D**

**Unconscious live person**

**X**

**Return side of air shaft**

**FACE**

**FACE**

**X**

**X**

**Battery phone**

**Water Roofed**

**Stationary Pump**

**Pump cable**

**Pump breaker**

**X**

**Intake side of Air shaft with an elevator in the shaft**

**X**

**X**

**DI**

**GT**

**GT**

**Bottom of slope**

**X**

**DI**

**GT & DI**

**DI**

**DI**

**GT**

**X**

**Separation wall of shaft surface to mine floor**

**Temporary Stopping down**

**BC**

**BC**

**Water Roofed**

**DI**

**GT**

**GT**

**GT**

**DI**

**GT& DI**

**GT & DI**

**DI**

**DI**

**GT**

**GT**

**GT**

**DI**

**GT**

**DI**

**Permanent stopping**

**GT**

**GT**

**DI**

**DI**

**GT**

**GT**

**GT**

**Permanent Stopping down**

**GT**

**DI**

**DI**

**GT**

**DI**

**GT & DI**

**GT**

**DI**

**DI**

**GT**

**DI**

**GT**

**DI**

**DI**

**GT**

**GT**

**Door on surface for elevator open**

**The Command Center and Clock is on the surface**

**Pump power cable from surface**

**6**

**First Ventilation**

**Top of Slope to caved area has been explored by previous team**

**Top of Slope**

**Live man talking “Help get me out”**

**Caved**

**XXXXXXXXXXX**

**5% CH4 5 PPM CO 18% O2**

**XXXXXXXXXX**

**FACE**

**FACE**

**X**

**Elevator door opens when on the bottom of shaft**

**X**

**X X**

**D**

**D**

**Ram Car**

**Continuous Miner**

**Barricade**

**B**

**5% CH4 5 PPM CO 18% O2**

**X**

**X**

**X**

**Battery Scoop on fire**

**Caved**

**Battery man-trip**

**X**

**XXXXXXXXXXX**

**XXXXXXXXXXX**

**X**

**Roof Bolter**

**X**

**X**

**B**

**4% CH4 5 PPM CO 18% O2**

**4% CH4 200 PPM CO 18.0% O2**

**Open borehole**

**X**

**5% CH4 5PPM CO 18% O2**

**Caved**

**X**

**X**

**X**

**X**

**Unsafe roof**

**Person/Body**

**X**

**BC**

**Caved airtight**

**XXXXXXXXXXX**

**XXXXXXXXXX**

**LC**

**BC**

**BC**

**Unsafe Roof**

**6 timbers**

**X**

**Door Open**

**D**

**Unconscious live person**

**Return side of air shaft**

**FACE**

**FACE**

**X**

**X**

**Water Roofed**

**Stationary Pump**

**Pump cable**

**Pump breaker**

**X**

**Intake side of Air shaft with an elevator in the shaft**

**X**

**X**

**Bottom of slope**

**X**

**X**

**Separation wall of shaft surface to mine floor**

**Temporary Stopping down**

**BC**

**BC**

**Water Roofed**

**Team can build any two of the three locations and be alright**

**Timbers set by team**

**Permanent stopping**

**Permanent Stopping down**

**Can move Battery phone**

**X**

**The Command Center and Clock is on the surface**

**Door on surface for elevator open**

**Pump power cable from surface**

**7**

**Top of Slope to caved area has been explored by previous team**

**Top of Slope**

**Live man talking “Help get me out”**

**Caved**

**XXXXXXXXXXX**

**5% CH4 5 PPM CO 18% O2**

**XXXXXXXXXX**

**FACE**

**FACE**

**X**

**Elevator door opens when on the bottom of shaft**

**X**

**X X**

**D**

**D**

**Ram Car**

**Continuous Miner**

**Barricade**

**B**

**5% CH4 5 PPM CO 18% O2**

**X**

**X**

**X**

**Battery Scoop on fire**

**Caved**

**Battery man-trip**

**X**

**XXXXXXXXXXX**

**XXXXXXXXXXX**

**X**

**Roof Bolter**

**X**

**X**

**B**

**4% CH4 5 PPM CO 18% O2**

**4% CH4 200 PPM CO 18.0% O2**

**Open borehole**

**X**

**5% CH4 5PPM CO 18% O2**

**Caved**

**X**

**X**

**X**

**X**

**Unsafe roof**

**Person/Body**

**X**

**BC**

**Caved airtight**

**XXXXXXXXXXX**

**XXXXXXXXXX**

**LC**

**BC**

**BC**

**Unsafe Roof**

**6 timbers**

**X**

**Door Open**

**D**

**Unconscious live person**

**Return side of air shaft**

**FACE**

**FACE**

**X**

**X**

**Water Roofed**

**Stationary Pump**

**Pump cable**

**Pump breaker**

**X**

**Intake side of Air shaft with an elevator in the shaft**

**X**

**X**

**Bottom of slope**

**X**

**X**

**Separation wall of shaft surface to mine floor**

**Temporary Stopping down**

**BC**

**BC**

**Water Roofed**

**Down**

**Permanent stopping Removed**

**Permanent Stopping down**

**8**

**Must move Battery phone**

**X**

**Door on surface for elevator open**

**The Command Center and Clock is on the surface**

**Pump power cable from surface**

**JUDGES INSTUCTIONS**

Team stop #1 can be made from the elevator bottom over to the first intersection in A-Line in # 3 entry under NMRA 2015 Rule #28 paragraph 4. The separation wall that extends to the bottom of the shaft will require the captain’s dates and initials since it stops his advance in that direction under Rule 27. Gas test will need made in all openings at the first intersection in A-line of # 3 entry. Outby the team will find two brattice builds and a face which requires a roof, face, rib test a gas test and date and initials. The water roofed will require date and initials and the outby face will require date and initials with a roof, face, and rib test at the face and a gas test at the face.

The team will need to airlock to pump the water roof under Rule 42 and this can be accomplished by building in the cross cut back toward the elevator or near the location of the water roofed. Note to the judges the pump breaker that near the bottom of the elevator will have power to it once the command center says it is on the team does not need to turn on the breaker. This will allow the team to be within one cross cut length to air lock as stated under rule 42 paragraph 5. Once the water has been pumped it will be gone so the team may make it’s reach inby through the area where the water was however the captain is required under Rule 24 D to make a gas test before any team member advances inby the airtight separation that was there. The captain will be able to reach the unconscious live man and make contact by hand and date and initial him under Rule 32. An assessment must be done by a team member under Rule 12 and since the patient is unconscious he must be properly loaded on a stretcher under Rule 11 to be removed from the mine. The captain should be able to make his reach to the corner under Rule 41 while the patient is being made ready for transport. Since the fan is off the airlock can be removed and left down on exit from the mine with the patient.

Team stop # 2 will be in the first intersection of B-line in # 3 entry here all the openings require a gas test. The permanent stopping in the cross cut toward # 2 entry will require a gas test at it and this can suffice for the gas test in that opening also. The captain is required his/her date and initials at the stopping under Rule 27. Inby up # 3 entry toward C-line there is an explosive and irrespirable gas mixture then there is an area of unsafe roof on the left rib and a caved on the right rib which requires a zig-zag roof and rib test under Rule 23. The person that is located under the unsafe roof is passed by the captain’s presence and therefore the person is known but can’t be reached at this time so the team is allowed to continue to explore under Rule 41 C. Inby the area of unsafe roof the team encounters an open borehole that requires a gas test at it under Rule 24 which results of the test are no gas shown so the explosive/irrespirable gas will stop at the open borehole.

Team stop # 3 will be in B-line in # 2 entry the team will have to airlock through the permanent stopping in the cross cut toward # 2 entry in B-line to make Team stop # 3 in the intersection in # 2 entry. There an air lock is required to breach the permanent stopping under Rule 42. The captain is required to take a gas test after he breaches the air tight separation under Rule 24 D. The team may advance through the cross cut into the intersection of # 2 entry of B-line. Gas test are required in all openings of the intersections in the cross cut toward # 1 entry the team will pass by a stopping that is down which requires a date and initial under Rule 27. Outby the team encounters a battery phone and inby the team will only find a brattice build.

Team stop # 4 will be in A-line in # 2 entry at the return side of the air shaft due to the open accessible outby requires to tie outby and behind under Rule 44 D. Gas test will be required in the opening toward # 1 entry and the separation wall will need date and initials because it stops the captain’s advance in that direction under Rule 27. The battery phone that is found in # 2 entry just before the intersection can be moved at this time but will not need moved for the first ventilation.

**9**

Team Stop #5 will be in # 1 entry of A-line. Here the team needs gas test in all openings outby they will encounter a body that will require the captain’s touch by hand and date and initials under Rule 32. Also there is a face that will require a roof, face, and rib test a gas test and date and initials. Inby the team will find a line curtain which will be the means to remove the irrespirable mixture at the barricade in # 1 entry and a caved airtight rib to rib across the entry. This will require a roof and rib test and date and initials.

Team Stop # 6 will be in # 1 entry in B-line due to the open accessible cross cut toward #1 entry and there being no continuing contaminate in # 3 entry. Gas test are required in all openings. Inby there is nothing and outby there is a caved airtight across the entry that requires a roof and rib test, and date and initials.

For Team Stops 7, 8, or 9 the team may choose any entry to advance in since the contaminate was cleared before C-line in at the open bore hole in # 3 entry. This means that team stops #7, # 8 or # 9 can be in C-line in either, #1, #2, or # 3 entry.

If Team Stop #7, 8 or 9 is in # 1 entry at C-line the team needs gas test in all openings then they will find a barricade inby with a gas placard that is irrespirable in front of it and no response from the barricade. They are required to remove the irrespirable gas from in front of the Barricade under Rule 35, but have no response from the barricade so they are allowed to continue to explore. In the cross cut toward # 2 there they find a brattice build then an overcast wall which will require a gas test at the overcast wall and a date and initials.

If team stop # 7, 8 or 9 is in # 2 entry in C-line the team will find an overcast in that intersection which requires gas test at each wall under Rule 24 and date and initials at the walls under Rule 27. There is an open man door in the overcast wall toward # 3 entry. Inby the team will find water roofed date and initials are required here under Rule 27. The team can extend through the open door in the wall of the overcast which will require the team to take a gas test on the back side wall of the overcast and a date and initials. Then the captain may reach toward # 3 entry and will find 6 timbers and an area of diagonal unsafe roof which requires a roof and rib test and date and initials. This diagonal unsafe roof has now been examined by the captain’s presence and can be safe to ventilate through. The timbers require the team now to return to # 3 entry to the person under the unsafe roof to post into him under Rule 41 C. The team may perform all normal functions from this stop which is why the captain can test the diagonal unsafe roof before leaving the area to go timber to the person under the unsafe roof.

If Team stop 7, 8, or 9 are in C-line of # 3 entry gas test are required in all openings inby in # 3 entry the team finds a gas placard that is irrespirable and evidence of fire. The captain will encounter battery scoop on fire which will require a gas test, a roof and rib test prior to extinguishing the fire, and extinguishing the fire. Please note that the gas test required here will stop the evidence of fire from the gas placard that is outby from extending pass the fire area under rule 24. Once the fire has been extinguished the captain may then extend up to the caved area and a roof and rib test along with his date and initials are required there. In the cross cut toward # 2 entry in C-line the captain encounters a diagonal area of unsafe roof across the entry which will stop his advance and requires a date and initials.

Team Stop #7, 8, or 9 depending on how the team explored will be in # 1 entry of C-line here the team needs to remove the irrespirable mixture at the barricade in # 1 entry. Since the team has the means to sweep the irrespirable mixture (line curtain), they may now set up their ventilation. See the first ventilation map in this package as the example of the first step ventilation. Once the irrespirable has been removed the team will need to form an air lock in order to breach the barricade under Rule 42 since there was no response and conditions are unknown. Once breeched the captain needs to take the gas test under Rule 24 D then the team can advance inby.

**10**

Team stop # 10 will be in D-line of # 1 entry here gas test are required in all openings there is a body in the center of the intersection that the captain must touch by hand and date and initial it before passing it under Rule 32. There is a face inby that requires a roof, face, and rib test a date and initial and a gas test. In the cross cut toward # 2 entry there is an area of caved air tight on the right rib that will require a roof and rib test made in a zig zag pattern under Rule 23 and shown in Figure 1a on page 40 of the NMR Rules.

Team stop # 11 will be in # 2 entry of D-line here gas test in all openings outby the team will find the inby side of the water roofed which requires a date and initial. Inby the team encounters a face that require a roof face and rib test, a gas test, and a date and initial. In the cross cut toward # 3 entry they will encounter a gas placard that is explosive and irrespirable in direction of travel. Please note that if a team stops and decides to FPA at this point believing that this is a withdraw situation it should be discounted for not following written instructions under Rule 50, not bring all live persons to the fresh air base since they have not found all missing miners yet and for any map items that should have been found if they had completed the problem. This is because it is not a withdraw situation since the gas test at the fire in # 3 entry did not indicate that the evidence if fire extended inby the fire or through the caved area. The reason it is not discounted under Rule 3 of the A card is that would apply if the team runs out of time in a timed problem or due to being short on time decides to quit the problem which may accrue since time limit is involved in this problem and the judges must make that decision on the field as it applies.

Team stop # 12 will be in D-line in # 3 entry gas test are required in all openings outby the team encounters a battery man trip. This also is not a withdraw situation since it is outby the intersection where a gas test is required in the opening and results of the test are clear. Then they will encounter the inby side of the caved which will require a roof and rib test and date and initials. Inby toward the slope there will find the slope bottom and a gas placard inby the imaginary line of the intersection that is explosive and irrespirable. Then they will encounter the barricade from which they get a response of “ HELP GET ME OUT” this requires a gas test, and date and initials. They must remove the irrespirable from in front of the barricade under Rule 35 and since they have a response from inside the barricade the now have the location of the last missing man. This will allow them to ventilate irrespirable air through unexplored areas since everyone is accounted for. Please see Ventilation Map Step 2 to see the builds and course of air to remove the person. Please note that if the team does not or has not yet moved the battery phone that is located in A-line by the return side of the shaft out of the course of air it will result in two separate gas mixtures being passes over an ignition source and should be discounted under Rule 31. Once the irrespirable has been removed the team will need to air lock into the barricade under Rule 42 since the person does not say it is airtight. Then once the barricade is breached a gas test is needed by the Captain. The live person inside the barricade will need to be touched by hand and date and initials by the Captain and an assessment needs made on him under Rule 12. While the patient is being made ready for transport the captain may then perform a roof and rib test at the caved area and date and initial it. Since the ventilation that is in place will not move any irrespirable or explosives through any unexplored or over any ignition sources the team may air lock out or just open the air lock and come out if they have not turned off the fan yet. Once they start out they will have two gas placards on the way out that will need retested under Rule 19. The gas placard between 2 to 3 in D-line and the gas placard in # 1 entry by the first barricade. Then they proceed to the surface and clock out.

**11**

**12**