

2024 COLORADO REGIONAL
Mine Rescue Contest
LOVELAND, CO

JUDGES' PACKET
Field Competition

DAY2

Mine Information Sheet
Rock Springs Mining Co. #2 Mine

General:

The Wango mining Co. #1 Mine is a new, single-level Class IV underground room and pillar Trona mine. It is owned and operated by Allied Chemical Company. The mine operates Continuous Miner development sections with continuous conveyor 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 two slopes, A main rubber-tired haulage and the second, has a 48-inch conveyor system to transport mined material to the surface. It is generally isolated by stoppings from the main air course.

Pillars are 14 feet by 14 feet, and openings are 9 to 10 feet wide. The typical back height is 8 feet, undulating occasionally.

Ventilation:

The mine is ventilated by a non-reversible, 200,000 CFM Main Fan. The Main Fan is located on the exhaust shaft in 3 Left. Air enters the mine from intake slopes and is coursed through the various sections. All air exhausts through the exhaust shaft. The fan cannot be stopped or reversed.

Mine Classification & Other Mine Gases:

In accordance with Title 30 CFR 57.22003, the mine is classified as Category IV. Category IV applies to mines in which noncombustible ore is extracted and which liberate a concentration of methane that is not explosive nor capable of forming explosive mixtures with air based on the history of the mine or the geological area in which the mine is located.

Electric Power:

Electrical service is provided to the mine from the local electric company. All power in the underground mine has been de-energized but can be energized at switch stations and motor control centers.

Mine Map:

The mine map was last updated July 28, 2024.

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 sets are used as additional supplemental support.

Explosives:

Explosives are used occasionally in this mine. Explosives are stored on the surface. There are no underground magazines located at this mine.

Materials:

All materials to work the problem are located underground or on the surface. Materials needed to complete this problem can be delivered upon request with a time delay to the fresh air base, FAB.

Communications:

Communication is provided by battery mine phones, and the wireless communications and tracking system.

Mining Methods:

The mine is a single-level room and pillar mine. Mining is accomplished with continuous miner and continuous conveyor haulage. The mine is currently in a development mode with no pillar extraction done to date.

Water, Pumps, and Waterlines:

The mine does have a history of water, and our 1000 HP main mine pump is located just off the main haulage.

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.

2024 Day 2

Written Statement

Thank you for responding to our mine emergency.

You are located at the Fresh Air Base that has been established in the 3rd North Development Section. The 3rd North headings are numbered from left to right 1, 2, and 3. Fresh air is coming into the FAB from the #1 entry side and returning out the #3 side.

A Command Center has been established on the surface.

Thanks to your team for accounting for 3 of our missing miners on your last exploration. Backup teams have restored power to the area and the water roofed that you encountered has been pumped. Temporary stoppings have been built in the 1, 2, & 3 entries and we need your assistance in finding the other 4 missing miners.

The EXHAUSTING mine fan on the surface is running currently. It is guarded but cannot be reversed or turned off. All power into the section has been locked out. If power is required to any equipment in the section, switches will be available at the command center.

Our mine has a history of ground water, hydrogen sulfide, and occasional bad back in areas.

The mine uses battery powered haulage equipment.

All officials and backup teams are present.

The mine map we have for you is not up to date.

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
- Extinguish or seal any fires.
- 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.

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.

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 (XC-0)

The captain introduces his team and remarks “We are here to offer our help. I have a fully equipped, properly trained, and physically fit mine rescue team and we are ready to do anything that you may require in the rescue and recovery work at your mine.” The official in charge will reply that they do require the service of mine rescue teams, and that if they are ready, they can be of immediate service.

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**.

Examining Mine Openings

1BC found at the Fab

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

Entry 1, 2, and #3 have temporary stoppings and (DI) is required at each, an airlock is required to enter all entries using the BC at the FAB. Captain will most likely airlock into the #1 entry 1st and encounter the outby side of unsafe back where a (GT), (RT) and (DI) are required.

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)

The teams may conduct 50' check at this point or the team will airlock back out of the #1 entry and either airlock into the #2 or the #3 entry.

Stop 1/2: Entering the mine. Team must count off.

The team may enter the mine through Entry 2 or 3. Team must perform 50' check since this is the first team stop in the mine. Airlock required to remove stopping in #2 entry.

Travel inby to Xct.1 Cave airtight between entry #1 and entry #2 RT, GT at opening RT, GT, DI at the cave. Entry #2 inby XC1 nothing, RT, GT. Mantrip between #2 entry & #3 entry, RT, GT at the opening.

50' Check is Judge 1 - UG Rule #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)

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

Stop 2/1

Team must airlock in and advance to XC-1. Between #2 & #3 entry Mantrip RT, GT at the opening. #3 entry inby nothing RT, GT at opening.

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)

Stop 3/4

Lithium battery Lube Truck "Fire out of control" between #1 & #2 entry GT, RT at opening, GT, RT at Lube Truck. If team did not bring the temporary with them, they will have to retreat back to get it, and erect temporary to seal the #2 entry side of the fire. Sealing the fire becomes the team's 1st priority as per Judge 1 UG rule 13. #2 entry inby RT, GT at opening. XC2 between #2 & #3 entry power center RT, GT at opening.

Stop 4/3

RT, GT XC-2 between #2 & #3 entry, power center. RT, GT inby 3# entry. Diagonal unsafe roof #3 entry between XC-2 & XC-3 RT, GT, DI required. Due to the unsafe roof being diagonal the team can see into it and will note that there is a body in it. No need to timber in and check the body. Do not discount the captain for no DI on the body as it is under unsafe roof.

Stop 5

Gas placard in the middle of the intersection irrespirable and explosive. XC-2 Between #1 & #2 entry RT, GT at opening, stopping not intact DI. #2 entry inby nothing, RT, GT at opening. XC-3 between #2 & #3 entry RT, GT at opening, Clear air.

Stop 6/7

#1 Entry outby caved on the plane RT, GT, DI. Teams are still tied to the sealing of the fire but cannot seal it here because the cave is on the plane. #1 entry inby RT, GT at opening. Line curtain & BC found.

Stop 7/6

#3 entry inby RT, GT at opening battery ram car. #3 Entry outby RT, GT at opening, back side of the diagonal unsafe roof RT, GT, DI.

No matter what sequence the team does stops 8, 9, and 10 as soon as they find the timbers they have the means to seal the back side of the fire and must retreat outby to the #1 Entry.

Stop 8/9/10

XC-4 Between #1 & #2 entry nothing, RT, GT at opening. #1 entry inby RT, GT at opening, Continuous Miner, and 6 timbers found. Cut into old works RT, GT, DI, and FPA. At this point the team has the means to seal the back side of the fire. Teams should retreat back to the fresh air base and enter the #1 entry. 3 timbers should be set in the unsafe roof between XC-0 & XC-1 allowing passage into the #1 entry.

Stop 9/10/8

XC-4 Between #1 & #2 Entry nothing RT, GT at the opening. #2 Face RT, GT at the opening, RT, GT, DI at the barricade "no response". XC-4 Between #2 & #3 entry nothing RT, GT.

Stop 10/9/8

XC-4 between #2 & #3 entry nothing RT, GT at the opening. #3 Face RT, GT at the opening, roof bolter, cut into old works RT, GT, DI, FPA.

Stop 11

3 timbers set in unsafe roof allowing access into the #1 entry RT, GT, DI back side of the unsafe roof. Smoke is encountered just inby the unsafe roof, Captain must perform team check and 1 in smoke all in smoke team required to be on the line before captain passes smoke placard. XC-1 Between #1 & #2 entry RT, GT at opening, back side of airtight cave RT, GT, DI. #1 entry inby nothing RT, GT at the opening.

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

RT is Judge 1 - UG Rule #8b

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

DI is Judge 1 - UG Rule #9

Enters smoke and is not connected to the lifeline. Rule #10b9.

Teams must be checked immediately before entering smoke Rule #12

Stop 12

XC-1 inby RT, GT at the opening, unsafe roof RT, GT, DI. XC-2 RT, GT at the opening, back side of the cave inby the plane RT, GT, DI. Team should build stopping to seal the back side of the fire at this point.

After sealing the fire, the team has the means to timber through the unsafe roof #1 entry inby. 3 timbers should be set and RT, GT, DI the inby side of the unsafe roof. RA is found GT, DI at RA, response from RA "Help". Captain and another team member should enter outer door of RA, close door, open purge valve for 5 seconds. Enter inner door GT, 1 live conscious patient no injuries DI and assess the patient. Respiratory protection should be provided prior to evacuating the survivor to the FAB. 1 body DI. At some point the captain will need to RT, GT, and DI the cave inby the RA.

The team also has the means to ventilate the barricade SEE VENT 1.

Remember that the team must seal the fire prior to getting into the RA or the barricade, for team safety.

When vent 1 is complete clear the gas placards. The team will be required to airlock into the barricade, RT, GT just inside the barricade, body DI, lunch bucket W/note "We went to the RA". RT, GT, DI at the face.

All the missing miners are now accounted for.

The team will now retreat out to the FAB. Watch for gas checks at all the cleared gas placards.

When they do this, the captain can state that the team has completed its mission. The captain will then stop the clock.

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****