Thank you for responding to our mine emergency.

Last night, 4 miners were working in 2\textsuperscript{nd} North. The crew called out and reported they had mined into an oil well in the face of #2 entry. We had no knowledge of this oil well on our mine property. We have had no contact with them since that call. The 2\textsuperscript{nd} North entries are numbered from left to right 1, 2 and 3. A fresh air base has been set up in 2\textsuperscript{nd} North. A Command Center has been established on the surface.

The BLOWING mine fan on the surface is running, is guarded and cannot be reversed. All power into the mine is locked out.

If power is required to energize any equipment in the mine, switches will be available at the command center.

The mine uses battery powered haulage equipment. Your team is not to start up or move any mobile equipment or associated batteries found due to the methane present in our mine.

All officials and backup teams are present.
The mine map is up to date.
Price Utah 2019  Day 2
Written Problem

Explore all of the mine necessary to account for the 4 missing miners if it can be done safely.

Bring any live miners to the FAB.

Your team is not allowed to move any battery powered equipment or associated batteries.

Your team has 90 minutes to complete this problem.
No Response from inby side of barricade

Conscious "Help, It's aight in here"

Battery Scoop

Battery Ramcar

Airtight

Di1 = only 1 Di required on either side of well/dropping
go to required and immediately after breaching stopping/barricade
Price Utah 2019 Day 2  Judges Instructions

1. Initial opening checks entries at FAB. (unsafe roof found in 1 E, low O2 found in all 3 entries).
2. Teams can enter 2 or 3 entry - (apparatus check required at stop).
3. Team stop 1, 2 in 2E at XC 1 – stopping to left – no materials to airlock into.
4. Team stop 2, 1 in 3E at XC 1 – diagonal unsafe roof in intersection. Zig-zag RR required.
5. Team stop 3 – in 2E at XC 2 – unsafe roof in XC towards 3 E – no support available, XC towards 1 E accessible, ignition source found inby in 2E and BC found.
6. Team stop 4 – in 1 E at XC 2. Explosive mixture found in intersection. Caved found inby in 1 E.
7. Team stop 5 – in 1 E at XC 1. Teams must airlock from 2 E. (rule 44 E). Back side of unsafe roof found, zig-zag RR through intersection required. XC 1 tied across now.
8. Team stop 6 – in 2 E at XC 3. Stoppings found in both crosscuts. Must airlock toward 3 E. (XC 2 not tied in).
9. Team stop 7,8 – in 3E at XC 3.
10. Team Stop 8, 9 – in 3 entry at XC 2. 6 timbers found. XC 2 now tied in.
11. Team Stop 9, 10, 12 – in 3 E XC 4. Explosive mixture found in 3 E and at Barricade. Verbal contact with 1 missing miner in Barricade. Not enough information to Vent yet – can continue exploring.
12. Team Stop 10, 11 – in 2E at XC 4. ankle deep crude oil found inby XC 4 and face. Teams must airlock through XC 3
13. Team stop 9, 7, 11, 12, 13 – in 1E at XC 3. Body found in XC. Ignition source found outby XC 3 in 1 E and barricade found inby XC 3 in 1E. Explosive mixture found at barricade. Verbal contact made with 1 missing person in barricade. XC 3 tied in now.
Teams have enough information to vent this barricade.
IF TEAMS EXPLORE to Team stop 11, 12 in 1 E at XC 4, NO DELAY (Team stop 14 below won’t be necessary).
See VENT 1, 2 and 3. Timbers must be set in 1 E XC 0-1 and XC 2 between 2 and 3 entries.
Teams can breach barricade in 1 E and remove miner to FAB.
Teams have enough information to vent barricade in 3 E.
See VENT 4
Teams can breach barricade in 3 E from outby side and remove miner to FAB.
Teams must continue to explore. (only 3 miners accounted for unless stop 11, 12 was made)
14. Team stop 11, 12 in 1 E at XC 4. Inby side of barricade in 1 entry found (no response), body found inby intersection.
Team stop 14 not required as all 4 miners have been accounted for.
End of Problem