2014 Price UT Mine Rescue Contest

You are located at the fresh air base inside the mine in the 3rd South section. This area was developed for rock storage rooms. Most of the equipment has been removed. Yesterday, 3 miners who were working on this section did not come out and we have had no contact with them. Explosive levels of methane, unsafe roof and low O2 were encountered when we attempted to find them.

The mine is ventilated by an exhausting fan on the surface, which is running, guarded, being monitored and cannot be reversed or turned off.
All electrical power inby the Fresh Air Base has been removed.
The mine map is up to date.
All authorities and backup mine rescue teams are present.

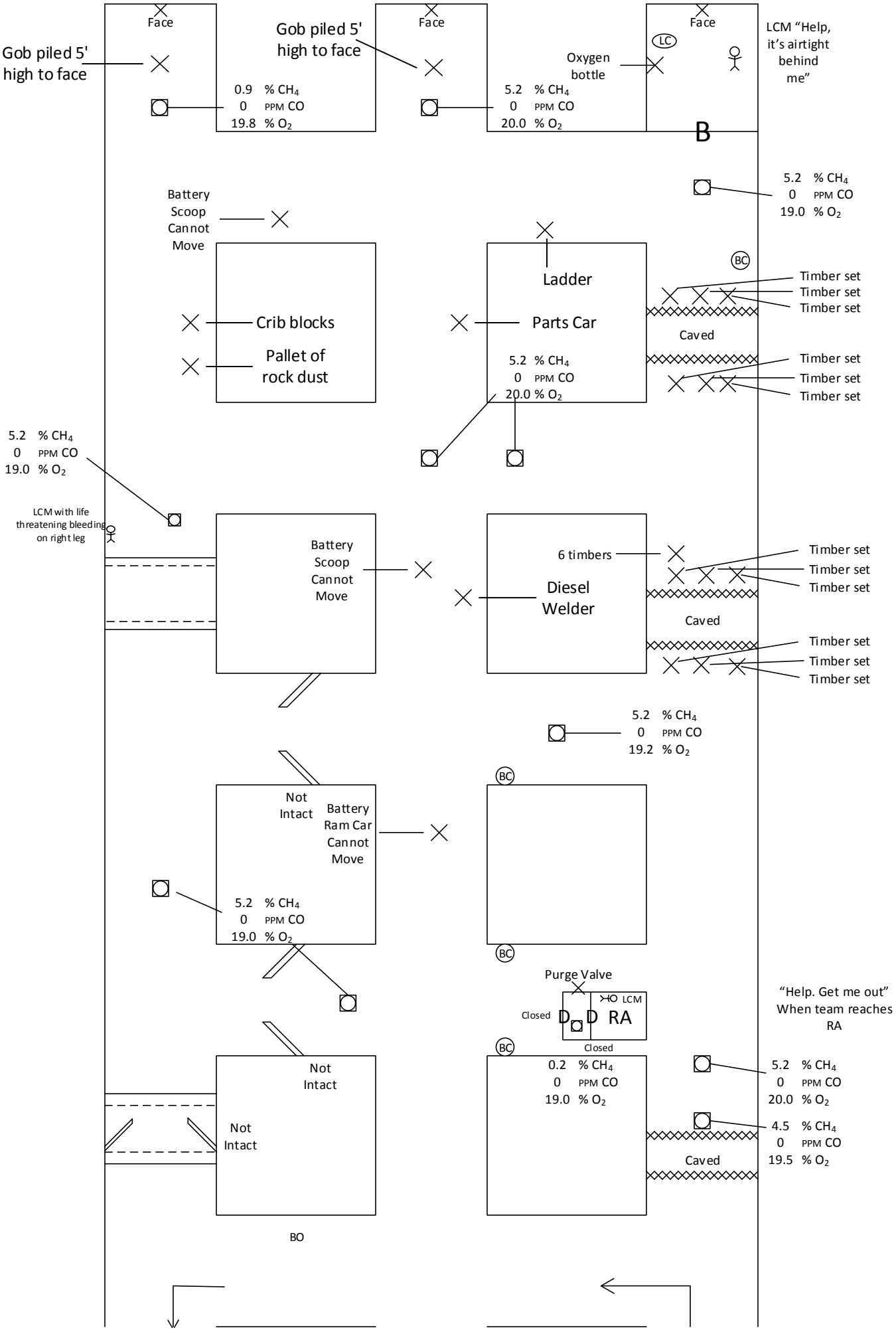
Problem:

1. Explore the entire section if it can be done safely.

2. Account for 3 missing miners and bring them to the FAB.

3. Ventilate all contaminants from the section so non-apparatus crews can rehabilitate the area.

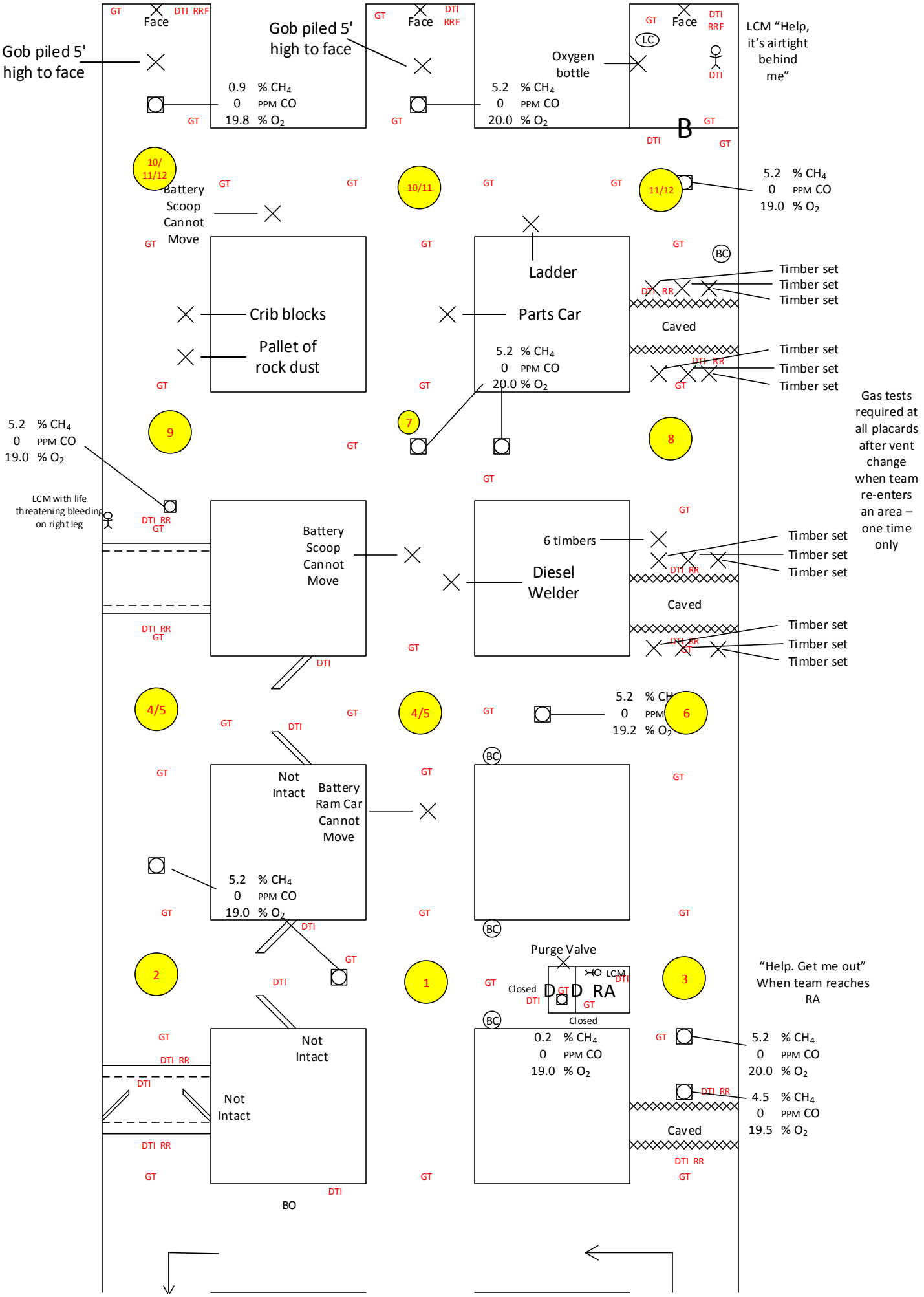
4. You have 90 minutes to complete this problem.


Face
Gob piled 5' high to face
0.9 % CH_4
0 PPM CO
19.8 % O_2
Face
Gob piled 5' high to face
5.2 % CH_4
0 PPM CO
20.0 % O_2
Face
LC
Oxygen bottle
LCM "Help, it's airtight behind me"
B
5.2 % CH_4
0 PPM CO
19.0 % O_2
Battery Scoop Cannot Move
Crib blocks
Pallet of rock dust
Ladder
Parts Car
5.2 % CH_4
0 PPM CO
20.0 % O_2
BC
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH_4
0 PPM CO
19.0 % O_2
LCM with life threatening bleeding on right leg
Battery Scoop Cannot Move
6 timbers
Diesel Welder
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH_4
0 PPM CO
19.2 % O_2
Not Intact
Battery Ram Car Cannot Move
5.2 % CH_4
0 PPM CO
19.0 % O_2
BC
BC
Purge Valve
Closed
LCM
D D RA
Closed
"Help. Get me out" When team reaches RA
Not Intact
Not Intact
BC
0.2 % CH_4
0 PPM CO
19.0 % O_2
5.2 % CH_4
0 PPM CO
20.0 % O_2
4.5 % CH_4
0 PPM CO
19.5 % O_2
Caved
BO

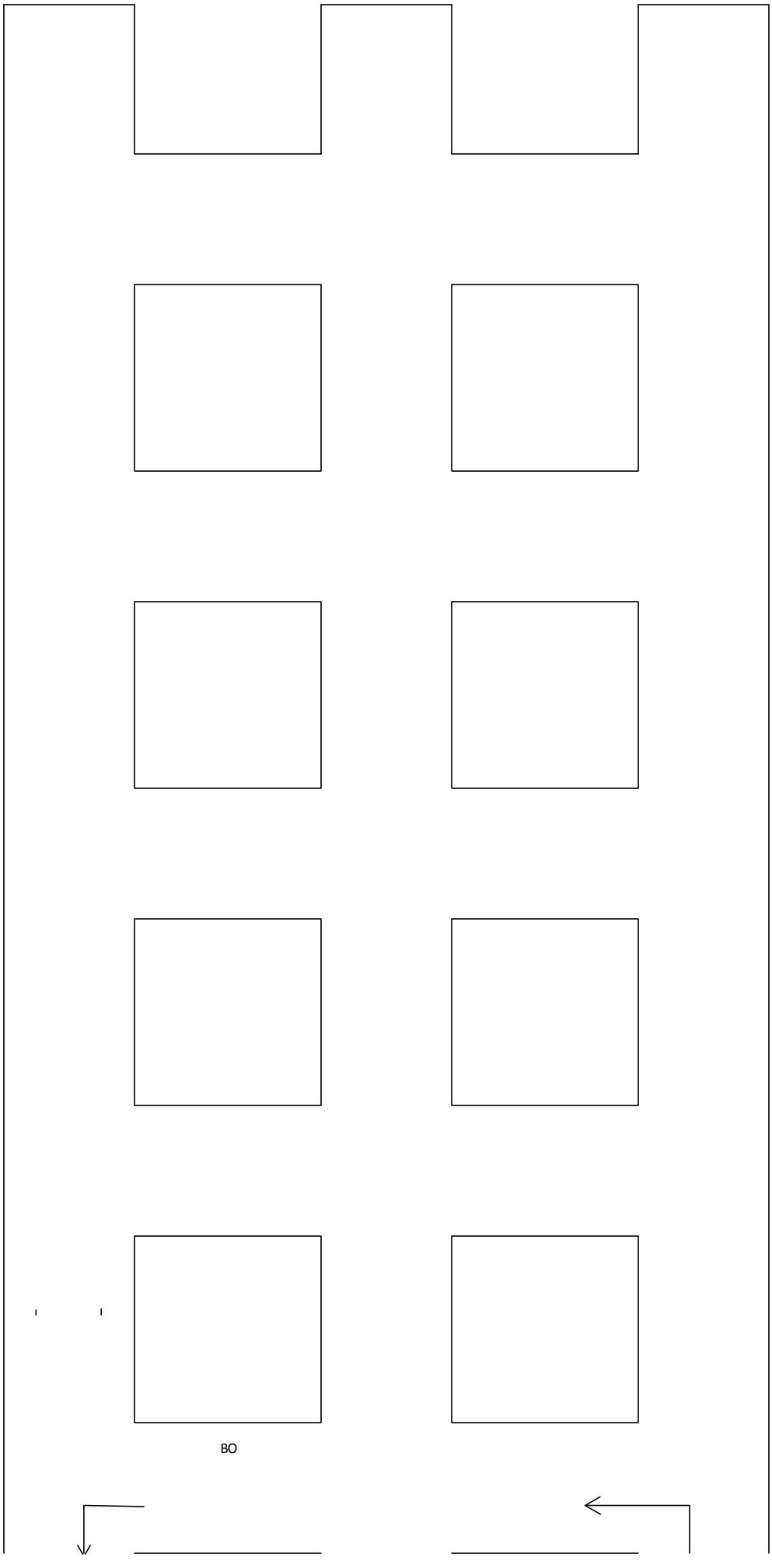
FAB – Teams start clock, go under O2, app checks, check all 3 entrances.
Team stop 1 – teams must advance in 2 entry to XC 1 (50 ft. app check).
Team stop 2 – teams must advance in XC 1 from 2 entry towards 1 entry (due to gas in XC 1), tie outby to unsafe roof.
Team stop 3 – teams must travel back to 2 entry and through XC 1 towards 3 entry. RA encountered – when team reaches RA, PT 1 statement is read.
Team can open outer door and enter, open purge valve for 5 seconds, open inner door and remove PT 1 to FAB.
Teams must return to XC 1 and entry 3, tie outby to cave.
Team stop 4 or 5 – teams must travel inby in 1 or 2 entry to XC 2. 1 and 2 entries must be tied across and outby before teams explore across XC 2 into 3 entry due to gas in 1 entry.
Team stop 6 – teams will tie outby in 3 entry and to the cave inby.
Team stop 7 – intersection is explosive mixture.
Team stop 8 – teams must travel in XC 3 towards 3 entry, due to gas in XC 3, and tie outby to cave and inby to cave.
Team stop 9 – teams must travel in XC 3 towards 1 entry and tie outby.
Teams will encounter PT 2 with LTB **(label on right leg)** laying down. PT 2 is responsive.
Teams must protect PT (SCBA or SCSR - low O2) AND control bleeding as per rule 34 A and B:

B. Critical skill treatment for life threatening bleeding.
1.Direct pressure and elevation
A. Apply direct pressure with a gloved hand
B. Apply a dressing to wound (cover entire wound) and continue to apply direct pressure
C. Elevate the extremity except when spinal injury exists
D. Bleeding has been controlled
E. If controlled, bandage dressing in place

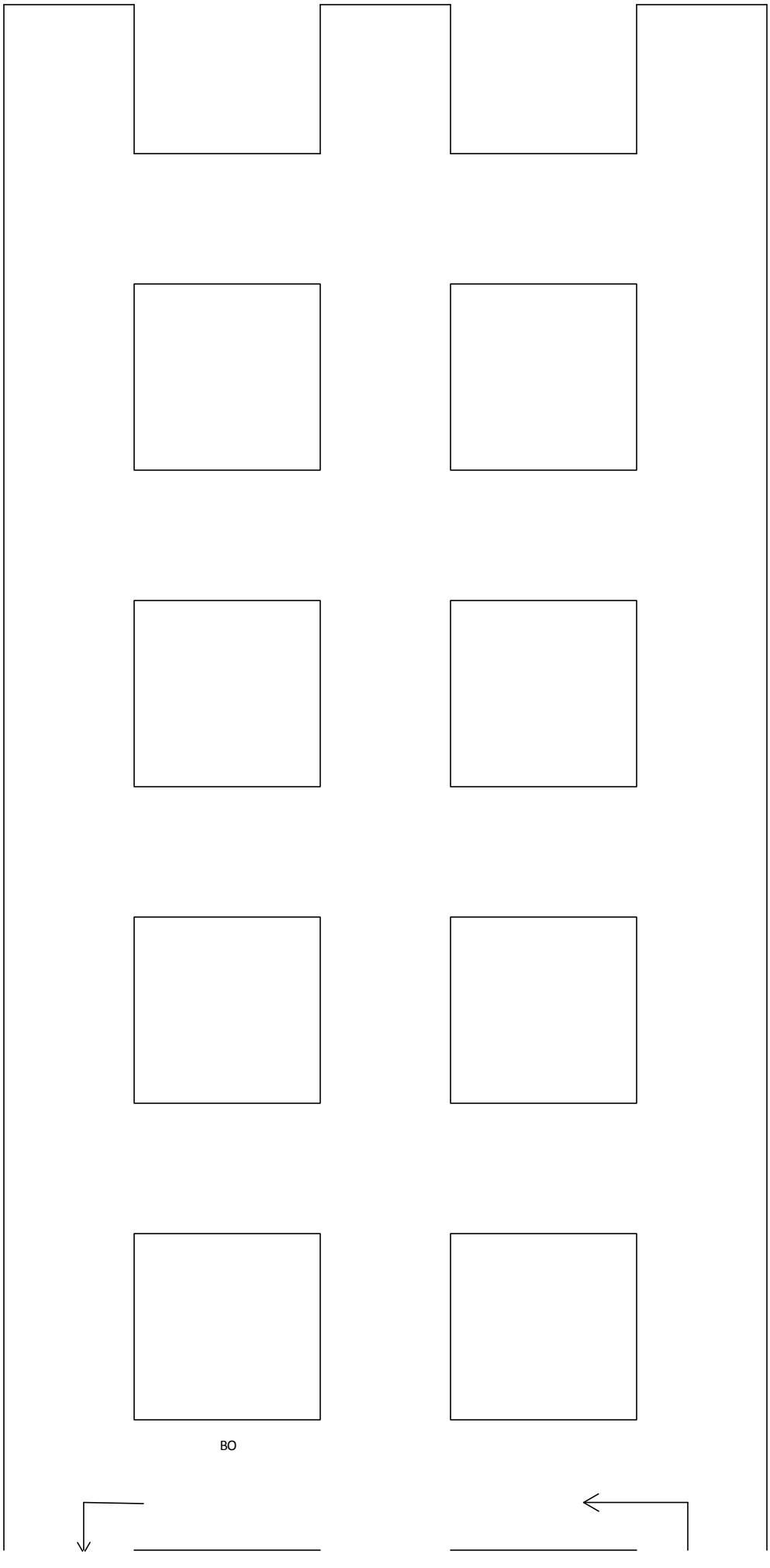
Teams will remove PT 2 to FAB, (PT 2 can walk) then return to complete exploration at team stop 9.
Team stops 10,11 and 12 are optional regarding sequence, BUT when teams explore team stop 11/12 they can ventilate the barricade to remove PT 3 after tying outby in 3 entry.
PT 3 statement is read when teams knock on barricade wall.
ALL AIR from one opening must be used to CLEAR gases. ANY air can move gases.
Vent 1 removes gases in 3 entry, XC 2 (these must be removed to get fresh air inby XC 2) and 1 entry outby XC 2, after outby unsafe roof is timbered in 1 entry. Two of the three optional (dashed lines) stoppings must be erected inby crosscut 2 AND one of the three optional (dashed lines) stoppings must be placed as shown on vent 1 map.
Alternative to Vent 1 is to bring air in # 2 entry (block 3 entry), however the gas in 3 entry between FAB and XC 1 will need to be vented as per problem written instructions.
Vent 2 removes gases in XC 3 and 1 entry outby XC 3, after inby unsafe roof is timbered in 1 entry between xc 2 and 3.
Vent 3 removes gases in front of barricade. Barricade can be entered w/o airlock. PT 3 can be removed to FAB. PT 3 can walk, barefaced.
Vent 4 removes contaminant in 2 entry inby XC 4 as per problem statement.
Vent 5 removes contaminant in XC 1 between 1 and 2 entries – this can be done during other ventilation steps but must be cleared as per problem statement. Two of the three optional (dashed lines) stoppings must be erected inby crosscut 1.
If done prior to breaching barricade, as a single ventilation step, consider delay of PT 3 in barricade.
Extra GT's in XC 4 and XC 2 are due to options of exploration.
Estimated time for this problem is 90 minutes.

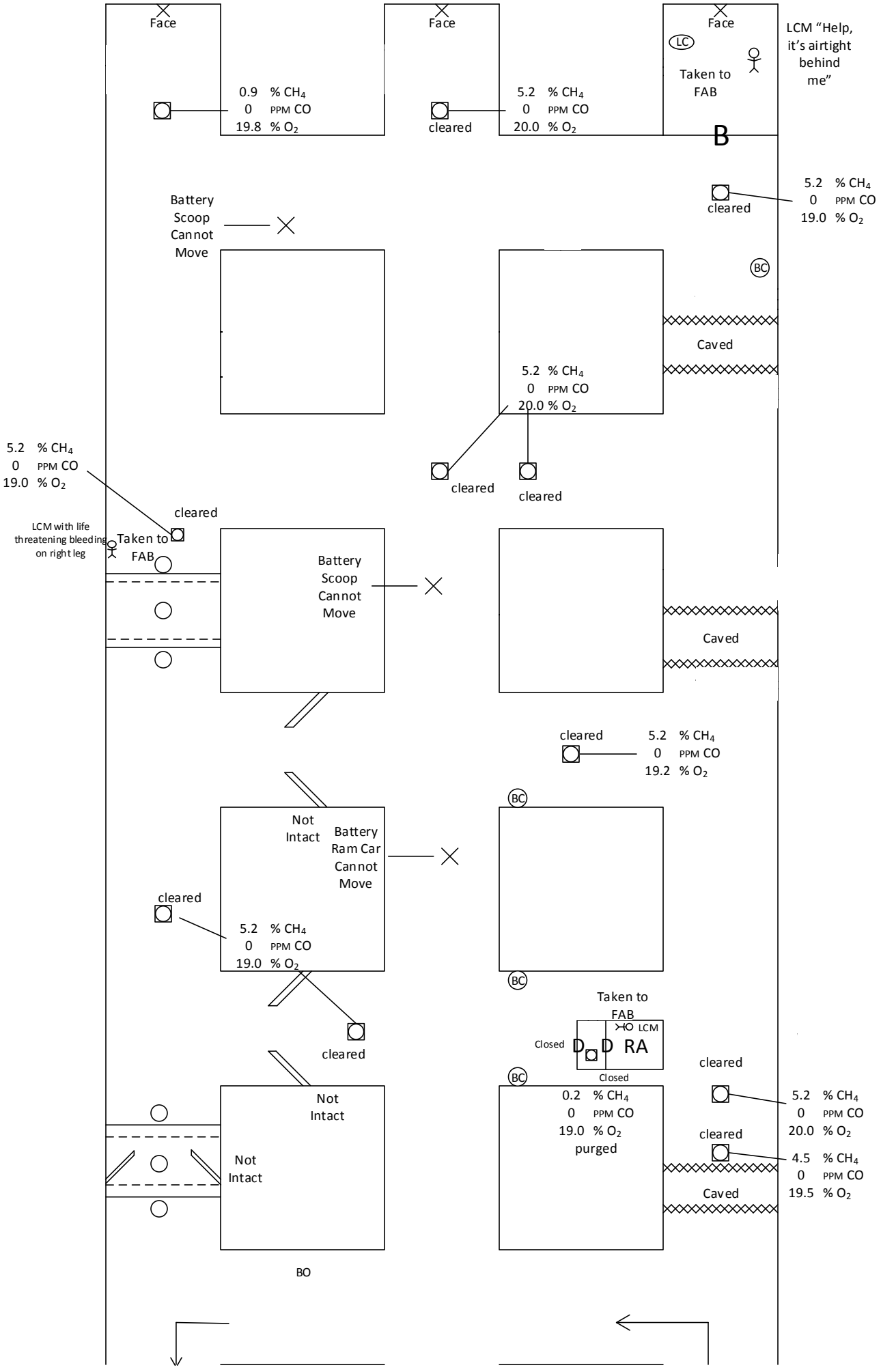

Gob piled 5' high to face
Face
GT
DTI RRF
0.9 % CH4
0 PPM CO
19.8 % O2
Gob piled 5' high to face
Face
5.2 % CH4
0 PPM CO
20.0 % O2
Oxygen bottle
LC
LCM "Help, it's airtight behind me"
B
10/ 11/12
Battery Scoop Cannot Move
10/11
11/12
5.2 % CH4
0 PPM CO
19.0 % O2
Crib blocks
Pallet of rock dust
Ladder
Parts Car
5.2 % CH4
0 PPM CO
20.0 % O2
BC
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
9
7
8
5.2 % CH4
0 PPM CO
19.0 % O2
LCM with life threatening bleeding on right leg
Battery Scoop Cannot Move
6 timbers
Diesel Welder
Gas tests required at all placards after vent change when team re-enters an area – one time only
4/5
4/5
5.2 % CH4
0 PPM
19.2 % O2
6
Not Intact
Battery Ram Car Cannot Move
5.2 % CH4
0 PPM CO
19.0 % O2
Purge Valve
LCM
Closed
D D RA
Closed
2
1
3
"Help. Get me out" When team reaches RA
0.2 % CH4
0 PPM CO
19.0 % O2
5.2 % CH4
0 PPM CO
20.0 % O2
4.5 % CH4
0 PPM CO
19.5 % O2
Not Intact
Not Intact
BO

Briefing Officer Map

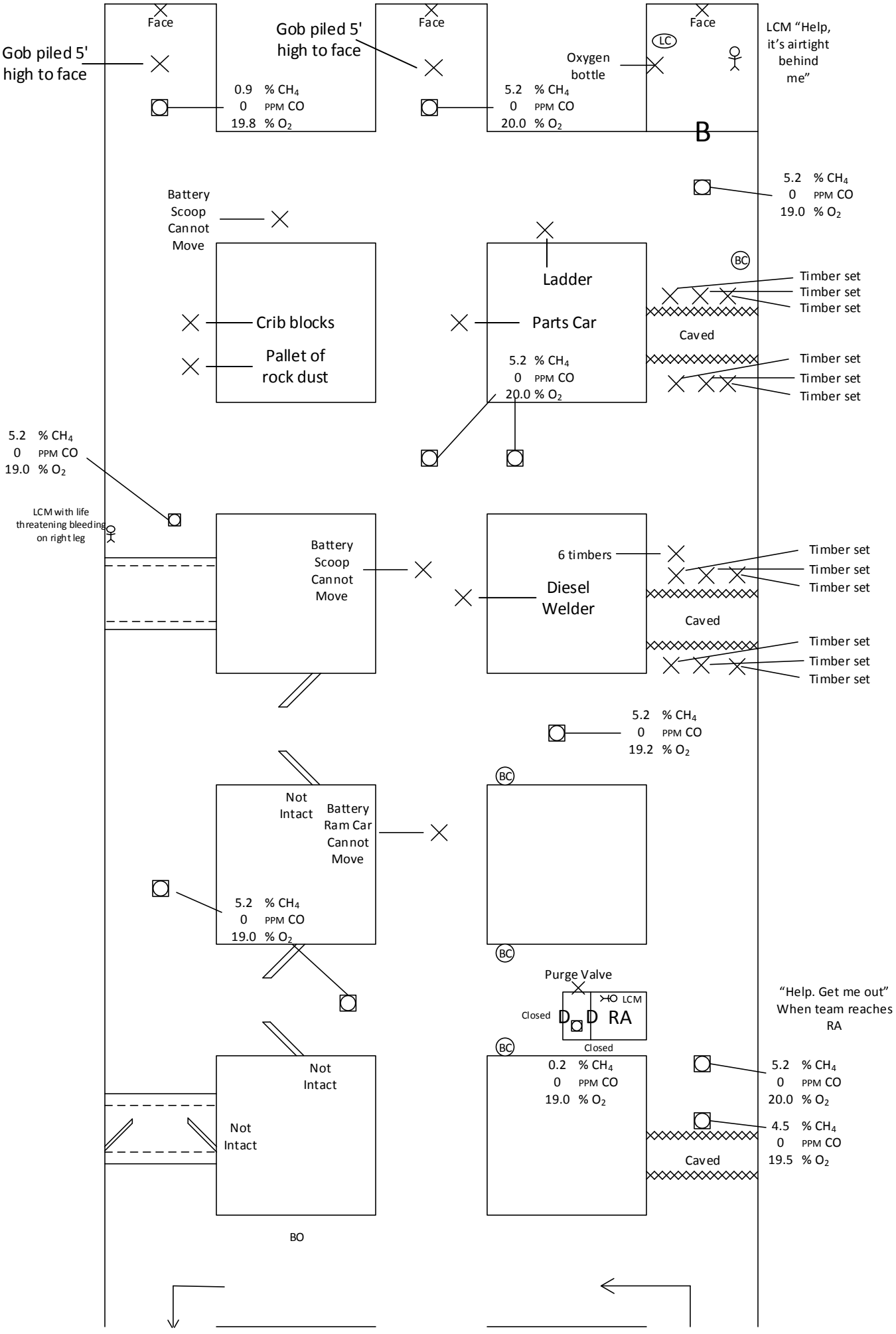


TEAM
MAP

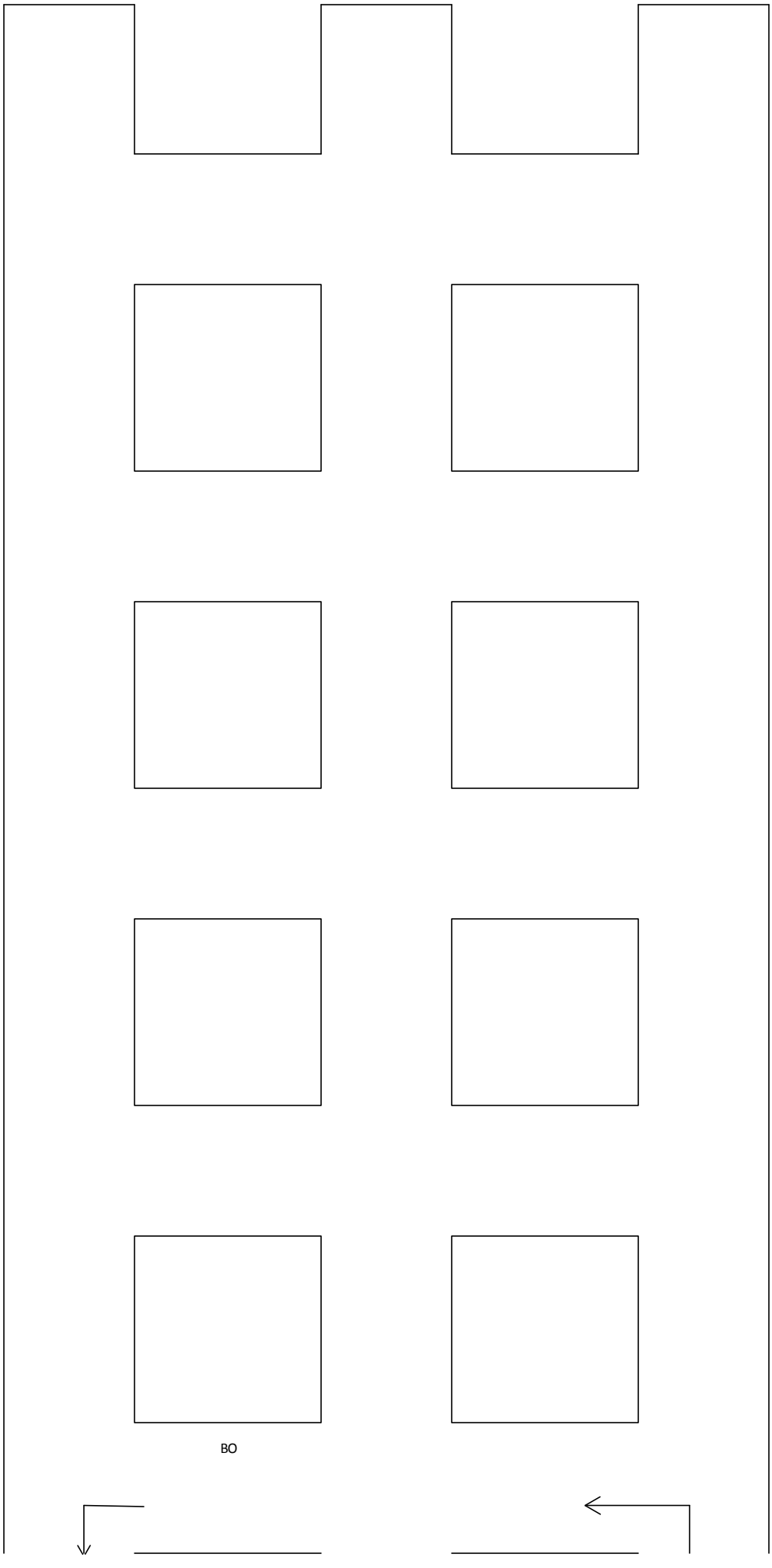


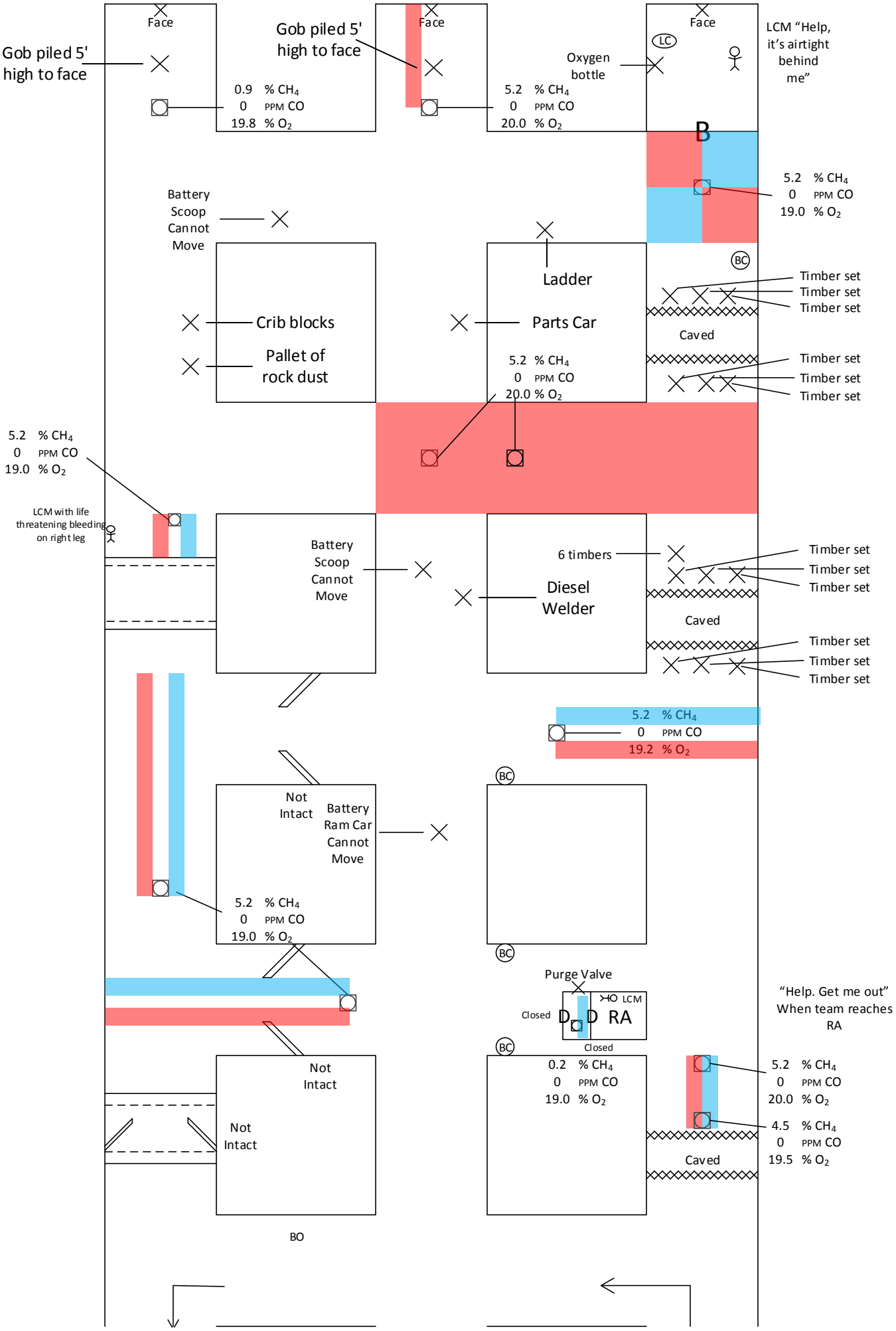

Face
0.9 % CH4
0 PPM CO
19.8 % O2
Face
cleared
5.2 % CH4
0 PPM CO
20.0 % O2
Face
LC
Taken to FAB
LCM "Help, it's airtight behind me"
B
cleared
5.2 % CH4
0 PPM CO
19.0 % O2
Battery Scoop Cannot Move
BC
Caved
5.2 % CH4
0 PPM CO
20.0 % O2
cleared
cleared
5.2 % CH4
0 PPM CO
19.0 % O2
LCM with life threatening bleeding on right leg
Taken to FAB
cleared
Battery Scoop Cannot Move
Caved
cleared
5.2 % CH4
0 PPM CO
19.2 % O2
Not Intact
Battery Ram Car Cannot Move
BC
cleared
5.2 % CH4
0 PPM CO
19.0 % O2
BC
Taken to FAB
LCM
Closed
D
D
RA
Closed
cleared
Not Intact
BC
0.2 % CH4
0 PPM CO
19.0 % O2
purged
5.2 % CH4
0 PPM CO
20.0 % O2
cleared
4.5 % CH4
0 PPM CO
19.5 % O2
Not Intact
Caved
BO

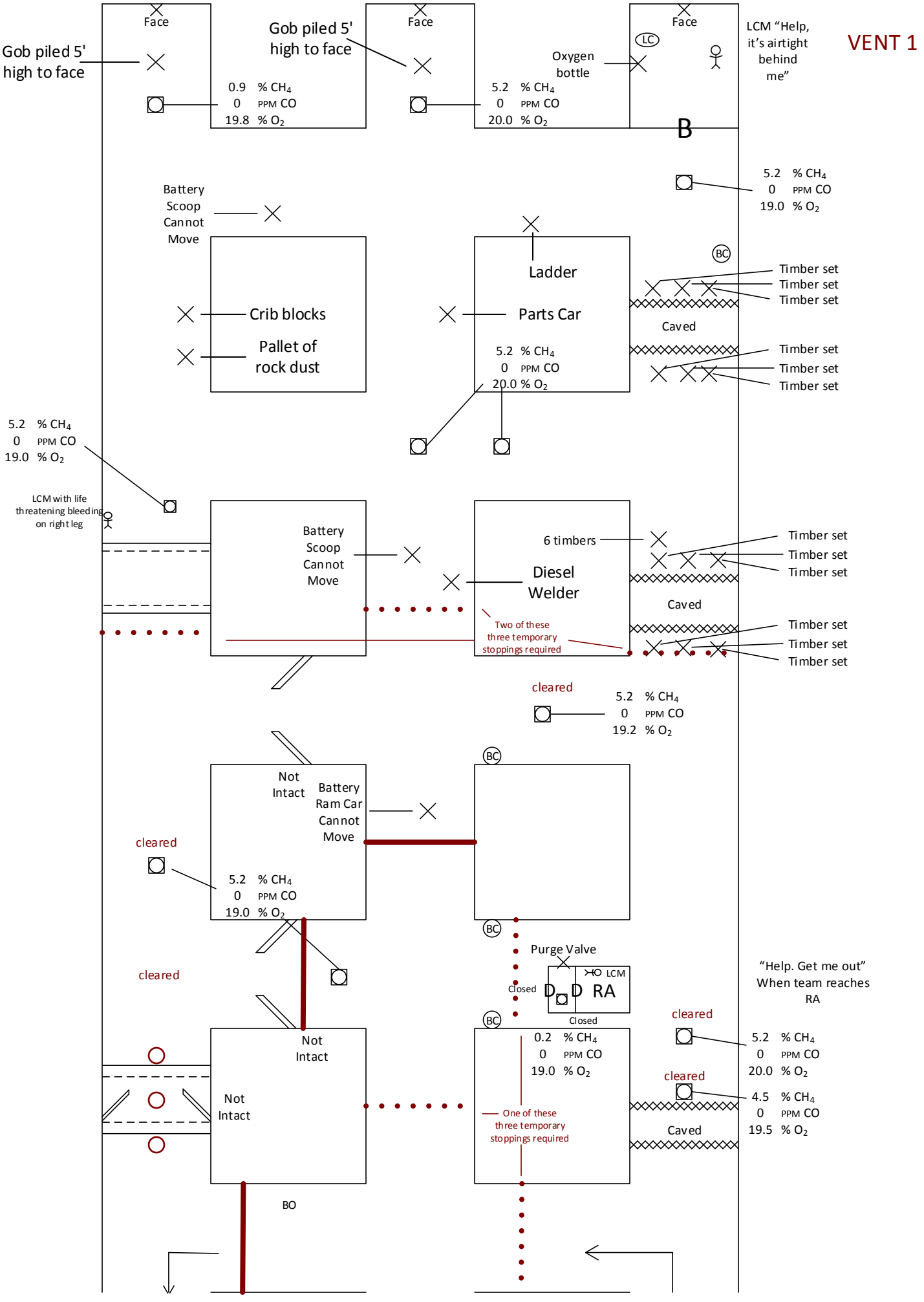
BO MAP KEY

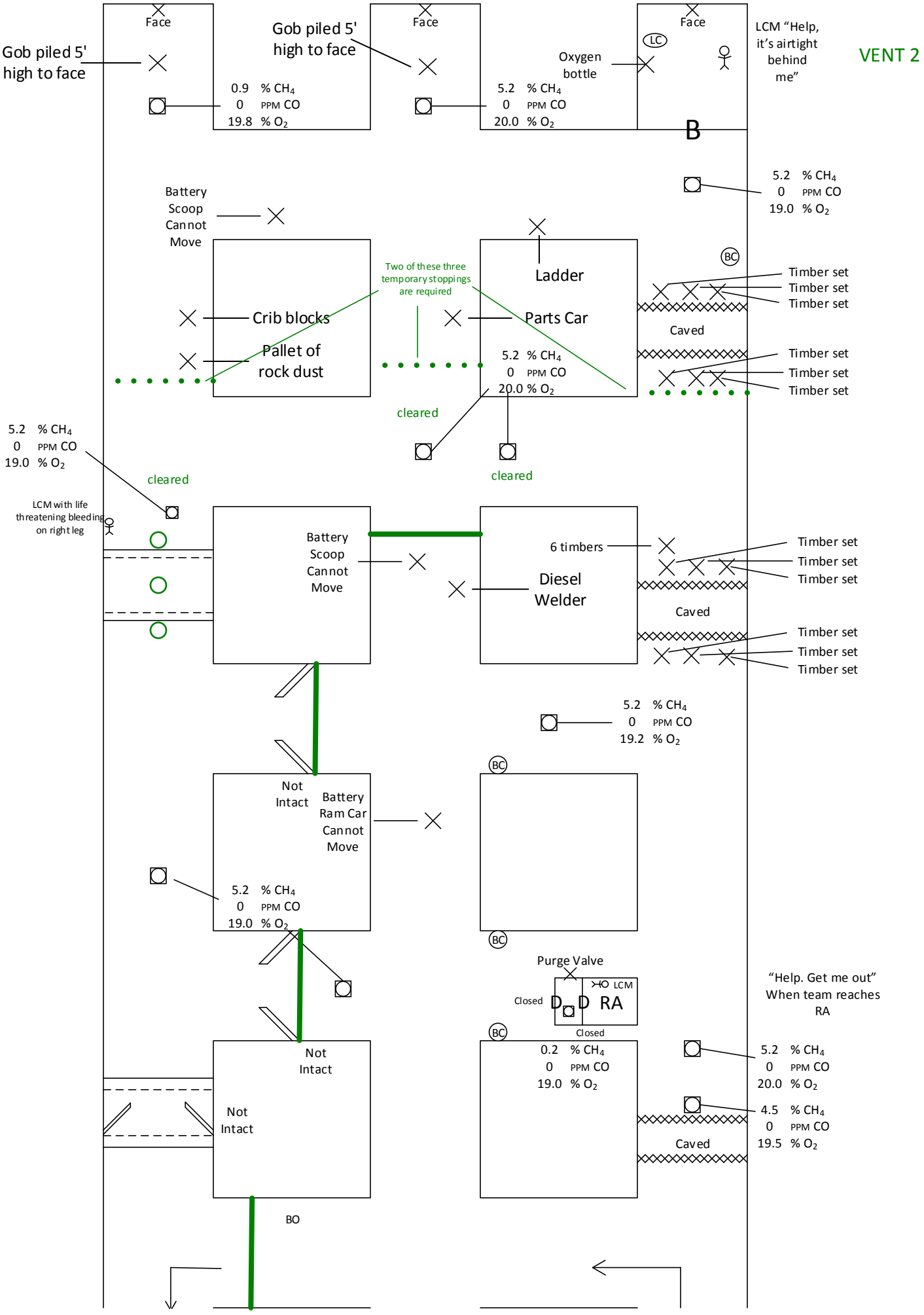

Face
Gob piled 5' high to face
0.9 % CH_4
0 PPM CO
19.8 % O_2
Face
Gob piled 5' high to face
5.2 % CH_4
0 PPM CO
20.0 % O_2
Face
LC
Oxygen bottle
LCM "Help, it's airtight behind me"
B
5.2 % CH_4
0 PPM CO
19.0 % O_2
Battery Scoop Cannot Move
Crib blocks
Pallet of rock dust
Ladder
Parts Car
5.2 % CH_4
0 PPM CO
20.0 % O_2
BC
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH_4
0 PPM CO
19.0 % O_2
LCM with life threatening bleeding on right leg
Battery Scoop Cannot Move
6 timbers
Diesel Welder
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH_4
0 PPM CO
19.2 % O_2
Not Intact
Battery Ram Car Cannot Move
5.2 % CH_4
0 PPM CO
19.0 % O_2
BC
BC
Purge Valve
Closed
LCM
D D RA
Closed
"Help. Get me out" When team reaches RA
Not Intact
Not Intact
BC
0.2 % CH_4
0 PPM CO
19.0 % O_2
5.2 % CH_4
0 PPM CO
20.0 % O_2
4.5 % CH_4
0 PPM CO
19.5 % O_2
Caved
BO

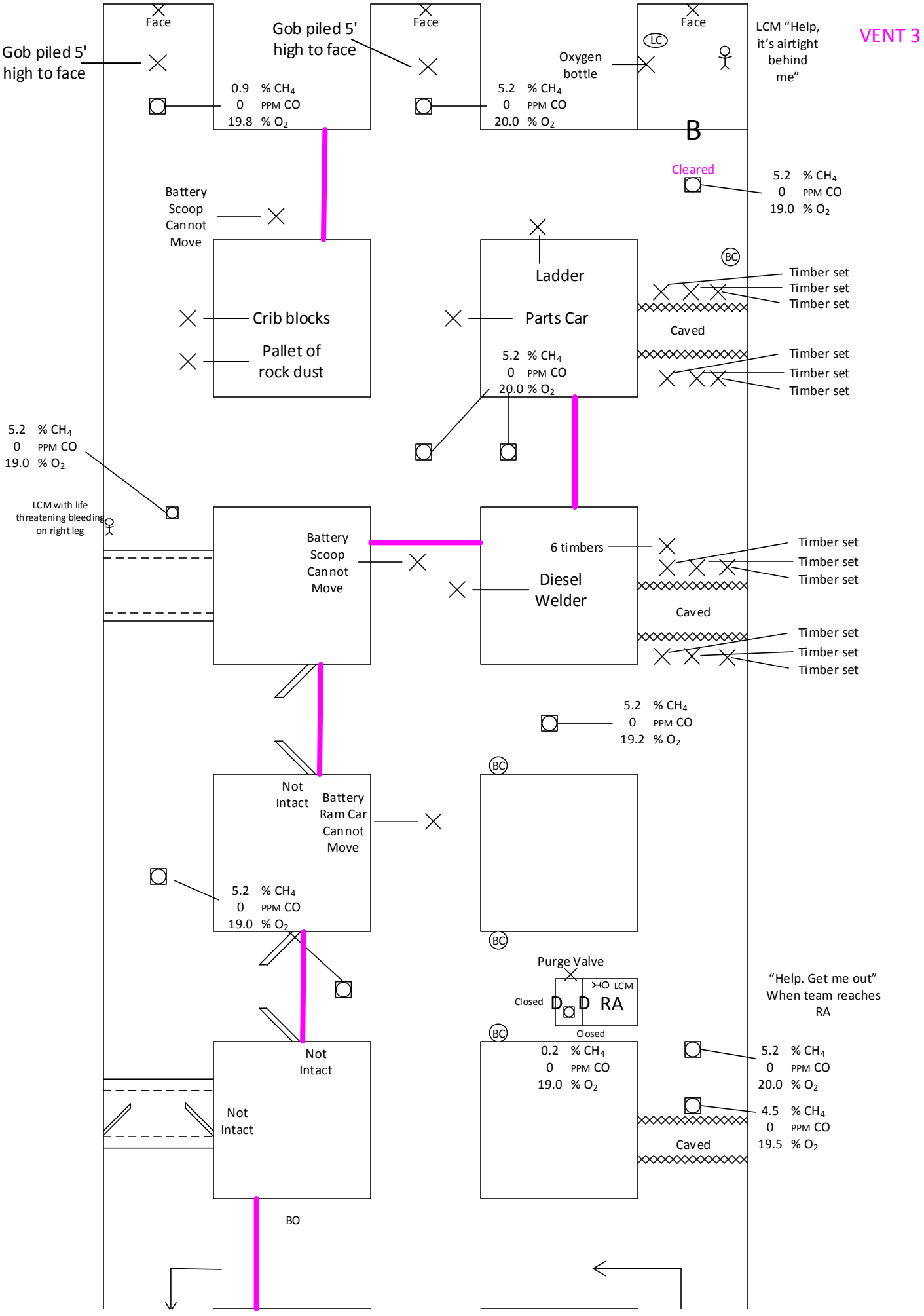
Attendant Map

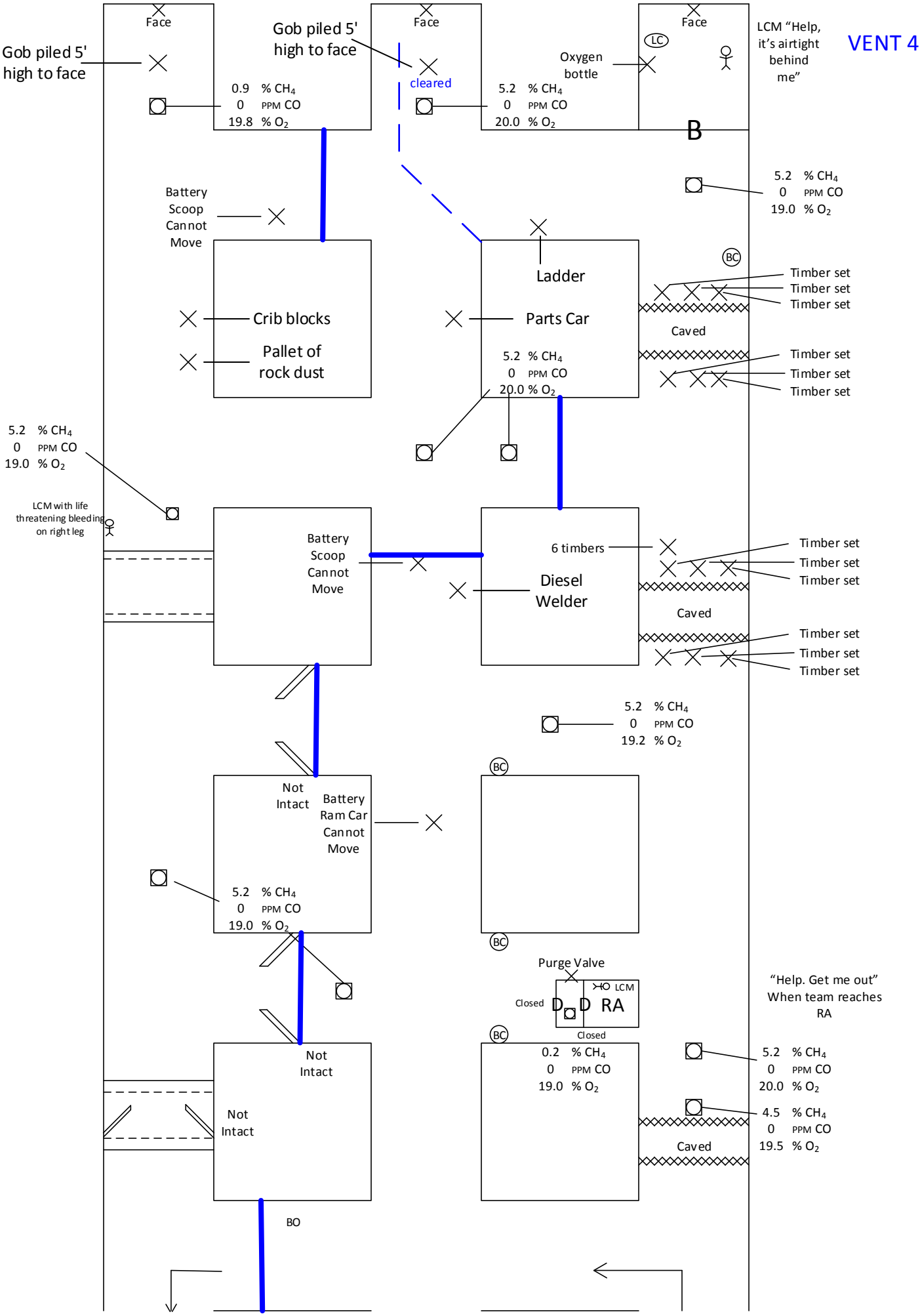


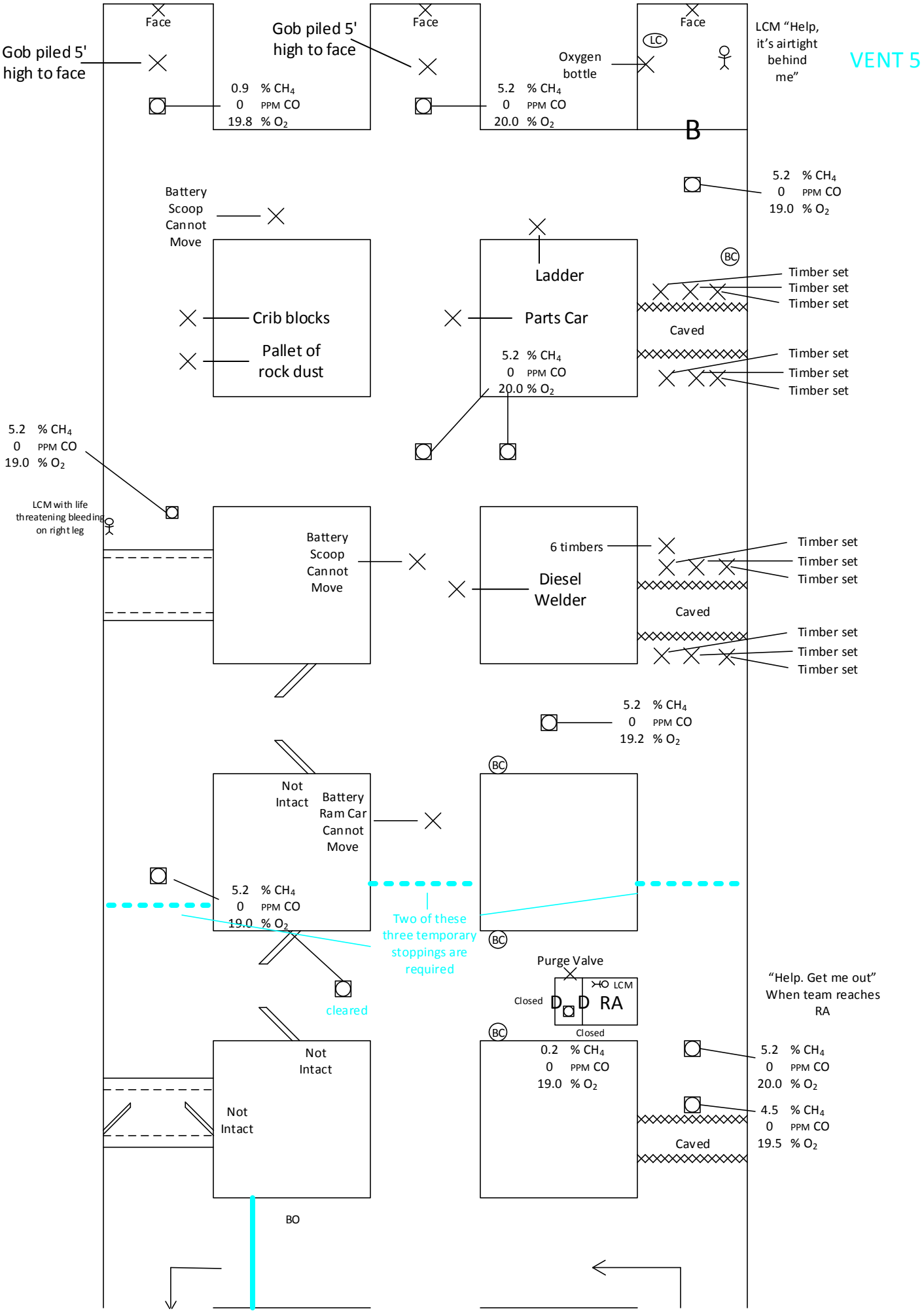

Face
Gob piled 5' high to face
0.9 % CH4
0 PPM CO
19.8 % O2
Face
Gob piled 5' high to face
5.2 % CH4
0 PPM CO
20.0 % O2
Face
LC
Oxygen bottle
LCM "Help, it's airtight behind me"
B
5.2 % CH4
0 PPM CO
19.0 % O2
Battery Scoop Cannot Move
Crib blocks
Pallet of rock dust
Ladder
Parts Car
5.2 % CH4
0 PPM CO
20.0 % O2
BC
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH4
0 PPM CO
19.0 % O2
LCM with life threatening bleeding on right leg
Battery Scoop Cannot Move
6 timbers
Diesel Welder
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH4
0 PPM CO
19.2 % O2
Not Intact
Battery Ram Car Cannot Move
5.2 % CH4
0 PPM CO
19.0 % O2
BC
BC
Purge Valve
Closed
LCM
D D RA
Closed
"Help. Get me out" When team reaches RA
BC
0.2 % CH4
0 PPM CO
19.0 % O2
5.2 % CH4
0 PPM CO
20.0 % O2
4.5 % CH4
0 PPM CO
19.5 % O2
Caved
Not Intact
Not Intact
BO

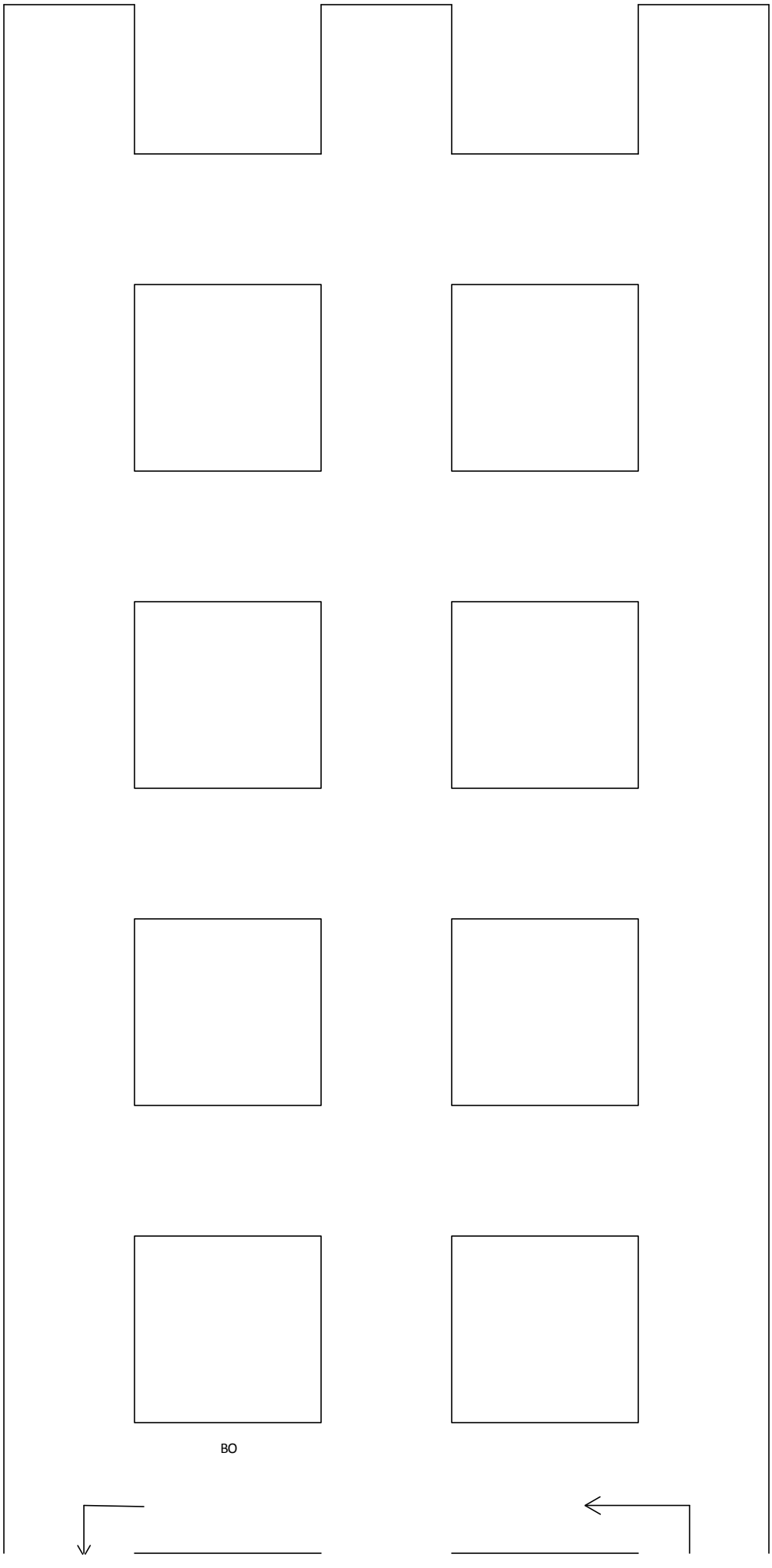

VENT 1
Face
Gob piled 5' high to face
0.9 % CH4
0 PPM CO
19.8 % O2
Face
Gob piled 5' high to face
Face
LC
Oxygen bottle
5.2 % CH4
0 PPM CO
20.0 % O2
LCM "Help, it's airtight behind me"
B
5.2 % CH4
0 PPM CO
19.0 % O2
Battery Scoop Cannot Move
Crib blocks
Pallet of rock dust
Ladder
Parts Car
5.2 % CH4
0 PPM CO
20.0 % O2
BC
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH4
0 PPM CO
19.0 % O2
LCM with life threatening bleeding on right leg
Battery Scoop Cannot Move
6 timbers
Diesel Welder
Two of these three temporary stoppings required
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
cleared
5.2 % CH4
0 PPM CO
19.2 % O2
Not Intact
Battery Ram Car Cannot Move
BC
cleared
5.2 % CH4
0 PPM CO
19.0 % O2
BC
Purge Valve
Closed
D D RA
LCM
Closed
"Help. Get me out" When team reaches RA
cleared
5.2 % CH4
0 PPM CO
20.0 % O2
cleared
4.5 % CH4
0 PPM CO
19.5 % O2
Caved
Not Intact
Not Intact
BC
0.2 % CH4
0 PPM CO
19.0 % O2
One of these three temporary stoppings required
BO


Face
Gob piled 5' high to face
0.9 % CH4
0 PPM CO
19.8 % O2
Face
Gob piled 5' high to face
Face
LC
Oxygen bottle
5.2 % CH4
0 PPM CO
20.0 % O2
B
LCM "Help, it's airtight behind me"
VENT 2
5.2 % CH4
0 PPM CO
19.0 % O2
Battery Scoop Cannot Move
Crib blocks
Pallet of rock dust
Two of these three temporary stoppings are required
Ladder
Parts Car
5.2 % CH4
0 PPM CO
20.0 % O2
BC
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
cleared
cleared
5.2 % CH4
0 PPM CO
19.0 % O2
cleared
LCM with life threatening bleeding on right leg
Battery Scoop Cannot Move
6 timbers
Diesel Welder
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH4
0 PPM CO
19.2 % O2
BC
Not Intact
Battery Ram Car Cannot Move
5.2 % CH4
0 PPM CO
19.0 % O2
BC
Purge Valve
Closed
LCM
D D RA
Closed
"Help. Get me out" When team reaches RA
BC
0.2 % CH4
0 PPM CO
19.0 % O2
5.2 % CH4
0 PPM CO
20.0 % O2
4.5 % CH4
0 PPM CO
19.5 % O2
Caved
Not Intact
Not Intact
BO


VENT 3
Face
Gob piled 5' high to face
0.9 % CH4
0 PPM CO
19.8 % O2
Face
Gob piled 5' high to face
5.2 % CH4
0 PPM CO
20.0 % O2
Face
LC
Oxygen bottle
LCM "Help, it's airtight behind me"
B
Cleared
5.2 % CH4
0 PPM CO
19.0 % O2
Battery Scoop Cannot Move
Crib blocks
Pallet of rock dust
Ladder
Parts Car
5.2 % CH4
0 PPM CO
20.0 % O2
BC
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH4
0 PPM CO
19.0 % O2
LCM with life threatening bleeding on right leg
Battery Scoop Cannot Move
6 timbers
Diesel Welder
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH4
0 PPM CO
19.2 % O2
BC
Not Intact
Battery Ram Car Cannot Move
5.2 % CH4
0 PPM CO
19.0 % O2
BC
Purge Valve
Closed
LCM
D D RA
Closed
"Help. Get me out" When team reaches RA
BC
0.2 % CH4
0 PPM CO
19.0 % O2
5.2 % CH4
0 PPM CO
20.0 % O2
4.5 % CH4
0 PPM CO
19.5 % O2
Caved
Not Intact
Not Intact
BO


VENT 4
Face
Gob piled 5' high to face
0.9 % CH4
0 PPM CO
19.8 % O2
Face
Gob piled 5' high to face
cleared
5.2 % CH4
0 PPM CO
20.0 % O2
Face
LC
Oxygen bottle
B
LCM "Help, it's airtight behind me"
5.2 % CH4
0 PPM CO
19.0 % O2
Battery Scoop Cannot Move
Crib blocks
Pallet of rock dust
Ladder
Parts Car
5.2 % CH4
0 PPM CO
20.0 % O2
BC
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH4
0 PPM CO
19.0 % O2
LCM with life threatening bleeding on right leg
Battery Scoop Cannot Move
6 timbers
Diesel Welder
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH4
0 PPM CO
19.2 % O2
Not Intact
Battery Ram Car Cannot Move
5.2 % CH4
0 PPM CO
19.0 % O2
BC
BC
Purge Valve
Closed
LCM
D D RA
Closed
"Help. Get me out" When team reaches RA
Not Intact
Not Intact
BC
0.2 % CH4
0 PPM CO
19.0 % O2
5.2 % CH4
0 PPM CO
20.0 % O2
4.5 % CH4
0 PPM CO
19.5 % O2
Caved
BO


Face
Gob piled 5' high to face
0.9 % CH_4
0 PPM CO
19.8 % O_2
Face
Gob piled 5' high to face
5.2 % CH_4
0 PPM CO
20.0 % O_2
Face
LC
Oxygen bottle
LCM "Help, it's airtight behind me"
VENT 5
B
5.2 % CH_4
0 PPM CO
19.0 % O_2
Battery Scoop Cannot Move
Crib blocks
Pallet of rock dust
Ladder
Parts Car
5.2 % CH_4
0 PPM CO
20.0 % O_2
BC
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH_4
0 PPM CO
19.0 % O_2
LCM with life threatening bleeding on right leg
Battery Scoop Cannot Move
6 timbers
Diesel Welder
Timber set
Timber set
Timber set
Caved
Timber set
Timber set
Timber set
5.2 % CH_4
0 PPM CO
19.2 % O_2
Not Intact
Battery Ram Car Cannot Move
BC
5.2 % CH_4
0 PPM CO
19.0 % O_2
Two of these three temporary stoppings are required
BC
Purge Valve
LCM
Closed
D D RA
Closed
cleared
Not Intact
Not Intact
BC
0.2 % CH_4
0 PPM CO
19.0 % O_2
"Help. Get me out" When team reaches RA
5.2 % CH_4
0 PPM CO
20.0 % O_2
4.5 % CH_4
0 PPM CO
19.5 % O_2
Caved
BO


Final Vent
BO