2014 National Metal and Nonmetal Mine Rescue Contest

JUDGES' PACKET
Day #2

August 6, 2014
Lexington, Kentucky

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Introduction

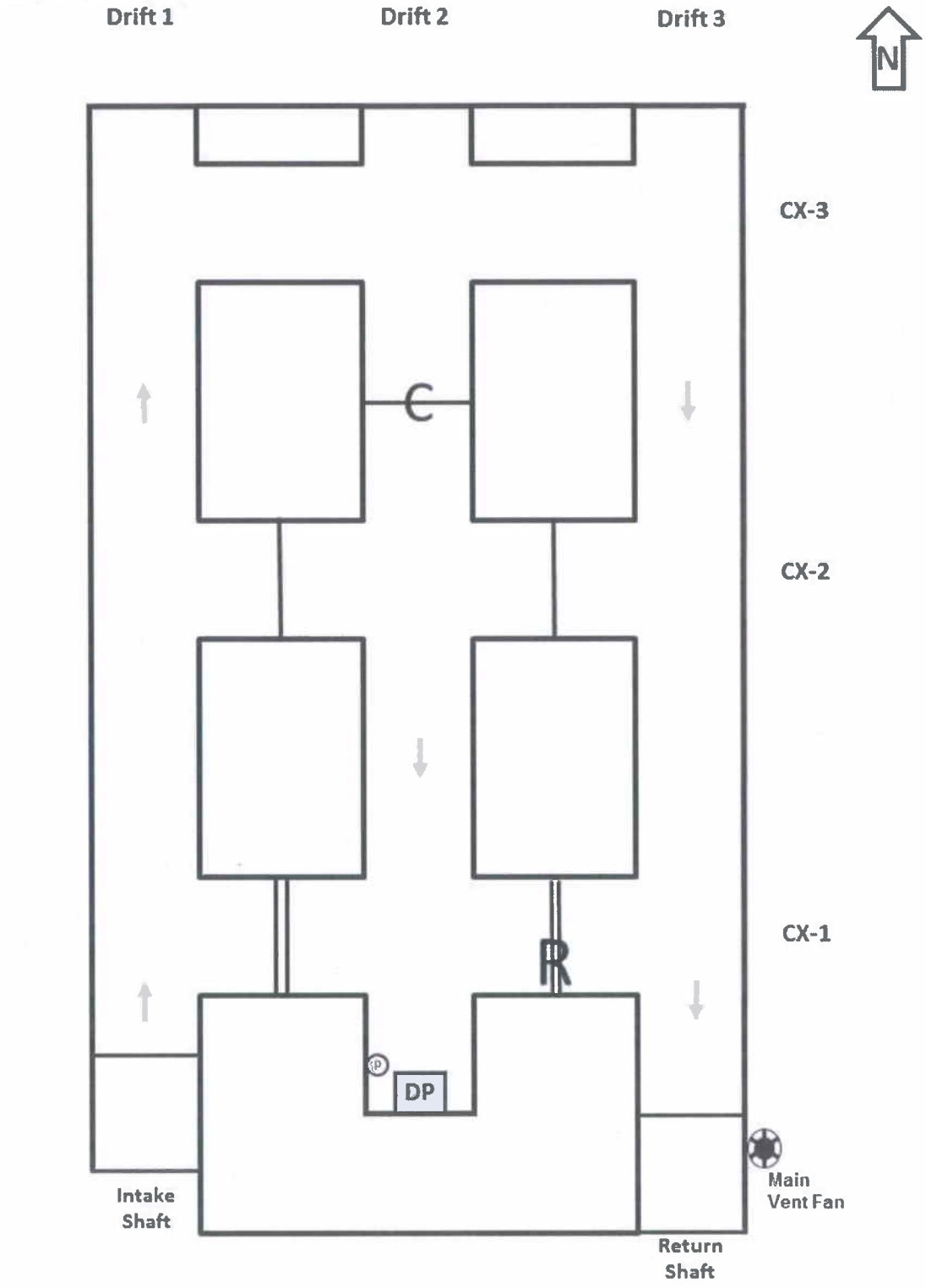
Congratulations! Each team has survived the Day 1 field problem and has returned today for more. Whether it is an opportunity to improve over yesterday's totals or to put your team further ahead of the others, we want to again commend each of you for your dedication to mine rescue and your willingness to participate in this important training function.

Remember, your team's final placement will be based on your combined cumulative discounts for both day's field problems plus your written test discounts. Those teams with the least amount of total discounts will vie for the trophies. No matter what the outcome, we think that today's problem will test your mine rescue skills and serve to reinforce your preparedness for an actual emergency.

Based on what we have seen so far, the miners and their families, the communities, and the companies you represent can rest assured that you will continue to serve them well. Even though there can only be a handful of contest winners, each team has earned the respect and heartfelt thanks for a job well done!

Now, let us continue with the briefing for this year's Day 2 mine rescue problem.

Day 2 - Team Map



Mine Information Sheet
Bluegrass Mining, Inc. – Blue Mare Mine

Mining & Equipment:
The single-level mine uses a conventional room and pillar method to extract ore. The broken ore is loaded using load-haul-dumps (LHDs) and then transported to the shaft dump pocket. The ore is hoisted to the surface via production skips in the Return Shaft. The entries are initially driven 8 feet high and 10 feet wide. Typical pillar dimensions are 15 feet by 20 feet (W x L). All underground mobile equipment (including the LHDs, face drills, roof bolting machines, and transport jeeps) is diesel-powered.

Recovery:
No recovery work (or second mining) has been performed.

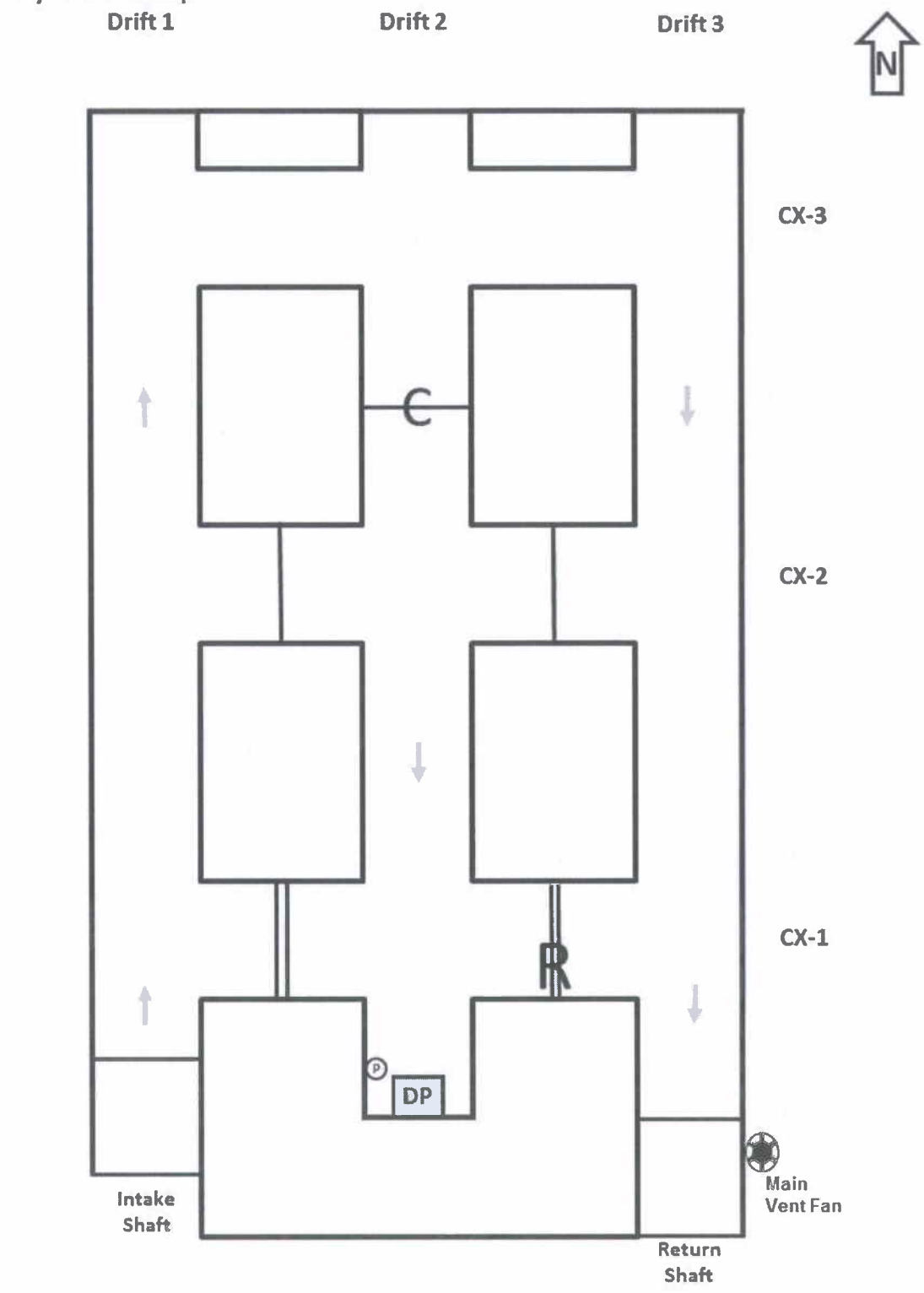
Gas and Oil:
In accordance with Title 30 CFR 57.22003, the mine is classified as Category VI. That is, the presence of methane has not been established in this mine, and there is no history of methane gas in any other mine in the area. Historical hygiene data from the mine, both MSHA and Company's samples, have indicated no presence of methane in the mine atmosphere.

Water, Pumps & Sumps:
The ore body dips toward the South; therefore, standing water is typical in the drifts near CX-1. Diversion ditches have been installed in Drift 1 and Drift 3 to direct water into the shaft sumps. Although a nuisance, the water has never caused any significant production problems. Each shaft is equipped with a 10-foot deep sump. A large pumping station has been installed on the surface to keep the water levels to a minimum.

Mine Openings:
The mine is opened by two 16-foot diameter shafts approximately 1,100 feet deep. The Intake Shaft is equipped with a hoist used to transport people and to convey supplies. The shaft also serves as the primary escapeway from the mine. The Return Shaft which is equipped with production skips, as well as an escape compartment which can be used to hoist six persons to the surface.

Ventilation:
The 6-foot diameter Main Vent Fan is located on the surface near the Return Shaft and is <u>not</u> reversible. The fan exhausts approximately 100,000 cfm and operates in the stable portion of its performance curve. The electrical power to the fan is on, and the fan is operating. The air enters the mine through the Intake Shaft and exhausts from of the Return Shaft. Air is directed to the faces using permanent (concrete block) and temporary (brattice cloth) ventilation controls. The normal airflow direction is shown on the mine maps.

Day 2 - Team Map



Mine Information Sheet (continued)
Bluegrass Mining, Inc. – Blue Mare Mine

Ground/Rib and Roof Control:
The immediate roof, or back, is supported by eight-foot rock bolts. The back is fairly competent, but problem areas are supported by wooden posts or stacked crib blocks.

Explosives:
Explosives are available and stored on the surface. They are used during the mining cycle, and blasting is conducted at the end of each shift while all persons are out of the mine. Only enough explosives for a day's use are stored in day boxes on the blaster's jeep.

Electric Power:
The electrical power to the shafts and the surface pumping station has been restored; however, all power to the underground has been de-energized, locked out, and guarded.

Materials:
Most available equipment and materials to work the problem are located in the mine and are identified with placards. The materials are stored in several areas underground and can be readily located if needed. If there is something else deemed necessary by the team, upon request, it can be delivered in a reasonable amount of time.

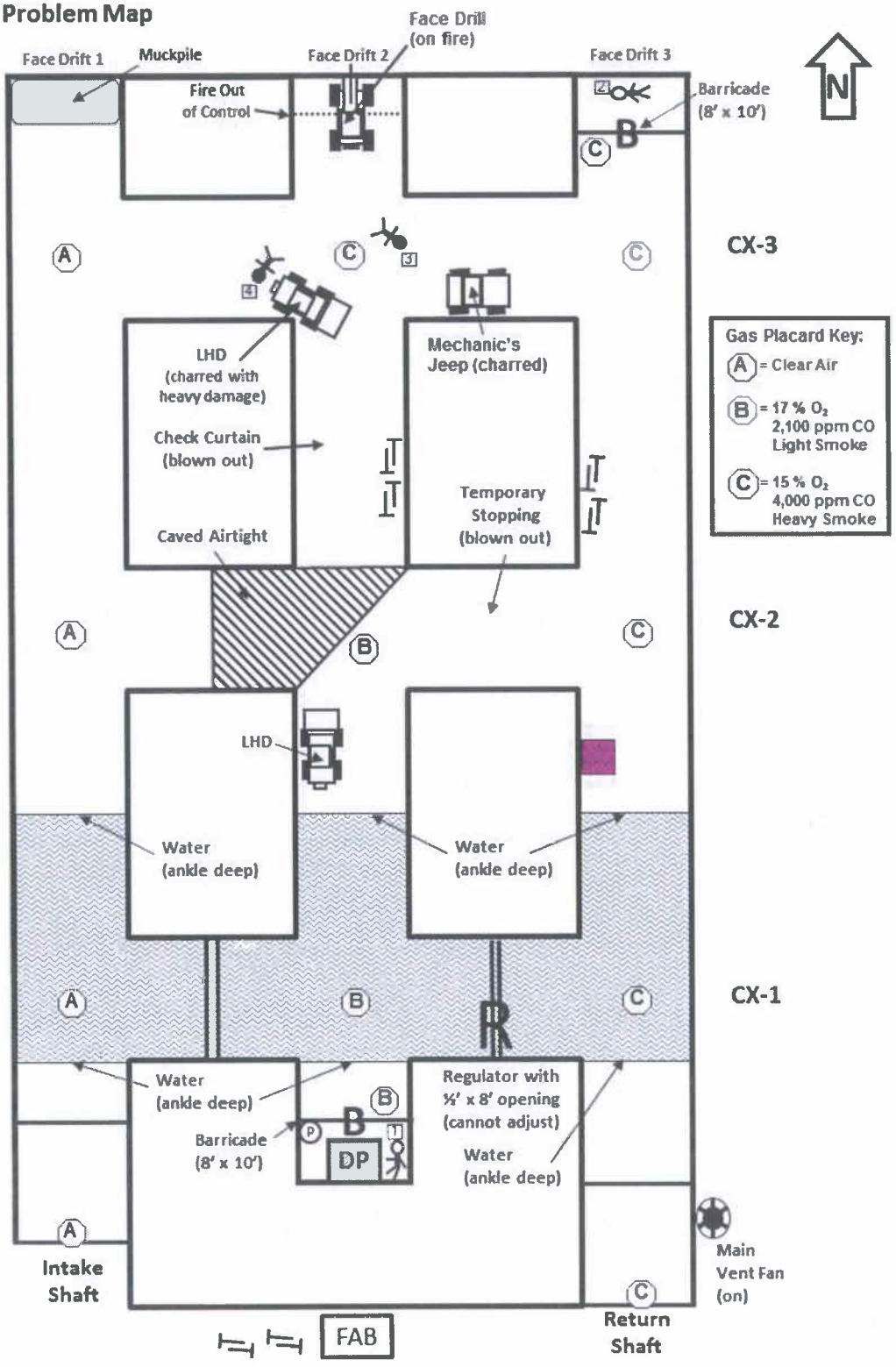
> **Note: The new brattice material available for use by the team is relatively lightweight and compact (10-foot strips of brattice cloth with a clip on each end). For the sake of realism, the team will only be allowed to carry two sets of material at any one given time.**

Communications:
A pager phone is available in the mine for contact with the surface. The current phone location is marked on the mine map. At this time, we do not know the status of the communication system, because there has been no contact with the missing miners.

Mine Map:
The mine map was updated on July 28, 2014, by the onsite Engineering Department.

Other Mines:
There are several known mines, active and abandoned, in Lexington, Kentucky. At this time, the Blue Mare Mine is not connected to any of these mines.

Day 2 - Problem Map



Team Briefing Statement

You are located at the surface of the Bluegrass Mining, Inc.'s Blue Mare Mine. The mine started production on June 7, 2013. It is a single-level underground mine opened by two shafts approximately 1,100 feet deep. Air enters the mine through the Intake Shaft which is equipped with a hoist used to transport people and to convey supplies. This shaft serves as the primary escapeway from the mine. Air exhausts from the Return Shaft which is equipped with production skips, as well as an escape compartment which can be used to hoist six persons to the surface. The mine is ventilated by the surface-mounted exhausting Main Vent Fan operating at the Return Shaft. The fan draws 100,000 cfm from the mine and cannot be reversed.

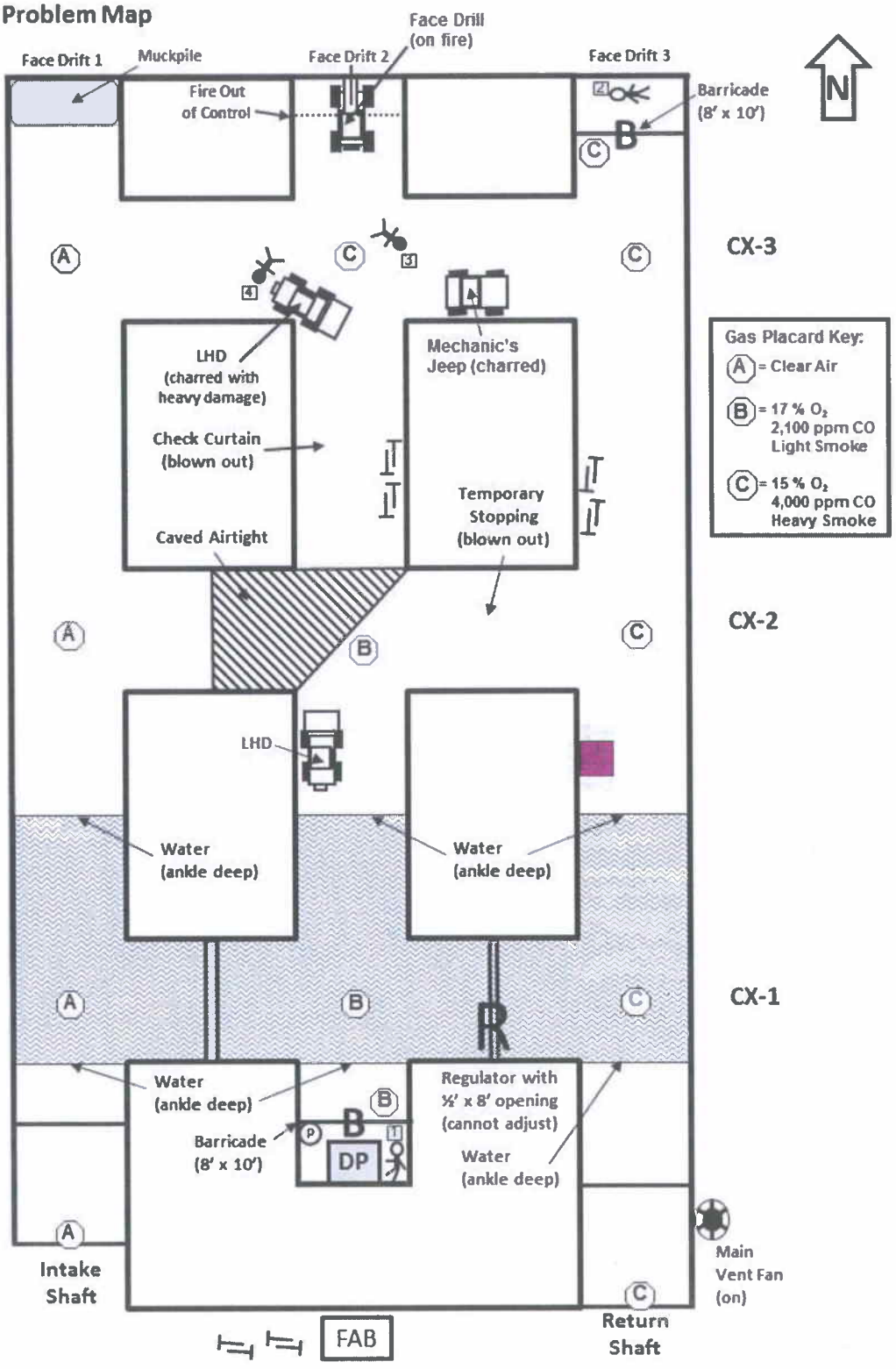
Ore is mined by the traditional room and pillar method. The entries are initially driven 8 feet high and 10 feet wide. Pillars dimensions are typically 15 feet by 20 feet (W x L). The immediate roof, or back, is supported by eight-foot rock bolts. The back is fairly competent, but problem areas are supported by wooden posts or stacked crib blocks. The ore body dips toward the South, and standing water is typical in the drifts near CX-1. Although a nuisance, the water has never caused any significant production problems.

This morning at 5:30 a.m., the shift foreman and a five-person crew went underground to start their shift. At about 6:15 a.m., one crew member called out from the shaft dump pocket and informed the hoist engineer that there was a piece of equipment burning in the face areas, and dark black smoke was filling the mine. He was unsure of the locations of the shift foreman and the rest of his crew. The engineer called the superintendent who immediately gave the order to activate the stench warning system to evacuate the mine. Five minutes later, the same crew member called out again and said that an explosion had rocked the mine, and he thought that the intersection behind him had collapsed. At that time, communication with the underground was lost.

Approximately 10 minutes ago, two crew members signaled the hoist engineer and exited the mine via the escape hoist in the Return Shaft. The miners stated that the crew had donned their W-65 filter self-rescuers because the face drill was on fire in one of the drifts. When they smelled the stench warning, the two miners decided to leave and head out. But, the others remained behind to fight the fire. As they approached the shaft station, an apparent air blast knocked them to the ground. One miner received a deep laceration on his forehead, and the other miner dislocated his left shoulder. Both were sent by ambulance to the local hospital for medical treatment.

All power to the underground has been de-energized, locked out, and guarded. Both hoists are operational, and the Main Vent Fan is operating. Continuous gas monitoring has been established at both shafts. The latest readings show "clear air" at the Intake Shaft and 15 % oxygen (O_2) and 4,000 ppm carbon monoxide (CO) with heavy smoke at the Return Shaft.

Day 2 - Problem Map



We are still not able to establish contact with anyone underground. We have called all of the government agencies for help. Guards have been posted at the shafts and at the main fan. There is a fully equipped mine rescue team located on the surface, and they are ready to serve as your team's backup.

If your team is willing to help, we would like you to account for all missing miners; bring any live miners to the surface; extinguish or seal any fires; and explore and map all accessible areas of the mine. **Another team will be sent into the mine to replace you after 75 minutes.**

All available equipment and materials to work the problem are located in the mine and are identified with placards. The materials are stored in several areas underground and can be readily located if needed. If there is something else deemed necessary by the team, upon request, it can be delivered in a reasonable amount of time.

When you reach the mine rescue course, the Mine Manager will introduce you to the judges. Once the Team Captain has started the timer, the Mine Manager will provide you with any changes to the briefing information that you have received. The Mine Manager will not answer any additional questions concerning the team briefing statement. However, if you do not understand a term, it will be defined. The Manager will only respond to questions allowed by the rules while you are working the problem.

The fresh air base attendant and alternate will be assigned a location where they can study the team briefing information, mine information, and map. Only one attendant or alternate will be allowed to assist at the fresh air base. This fresh air base attendant can assist the team and communicate with them while they advance past the fresh air base using the wire communication system. He must maintain an accurate map indicating all initial information that the team relays to him. He may also assist the team by relaying information to the mine manager when required by the problem. He may also assist the team when they retreat to the fresh air base.

The fresh air base attendant and mine rescue team alternate are not allowed to speak to anyone during the working of the problem except their team members, the mine manager, and the judging officials.

GOOD LUCK!