2016 National Metal and Nonmetal Mine Rescue Contest

JUDGES' PACKET
Field Competition
Day 1

July 26, 2016
Reno, Nevada

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Introduction

Welcome to the 2016 National Metal and Nonmetal Mine Rescue Contest. Before we begin, we want to commend each of you for the countless hours that you have volunteered, and your selfless dedication and willingness to participate as a mine rescue team member. We would also like to recognize each team for the hard work spent during this past year while training and preparing to help your fellow miners during a mine emergency. In addition, we want to thank each team's company for their support and financial backing for this important training function.

This year all teams will participate in a two-day field competition. We have put together a very challenging problem for each day. Both of which will make you think and exercise all of your mine rescue skills. Hopefully, every team will go away feeling that they are better prepared for an actual emergency based on what they have learned.

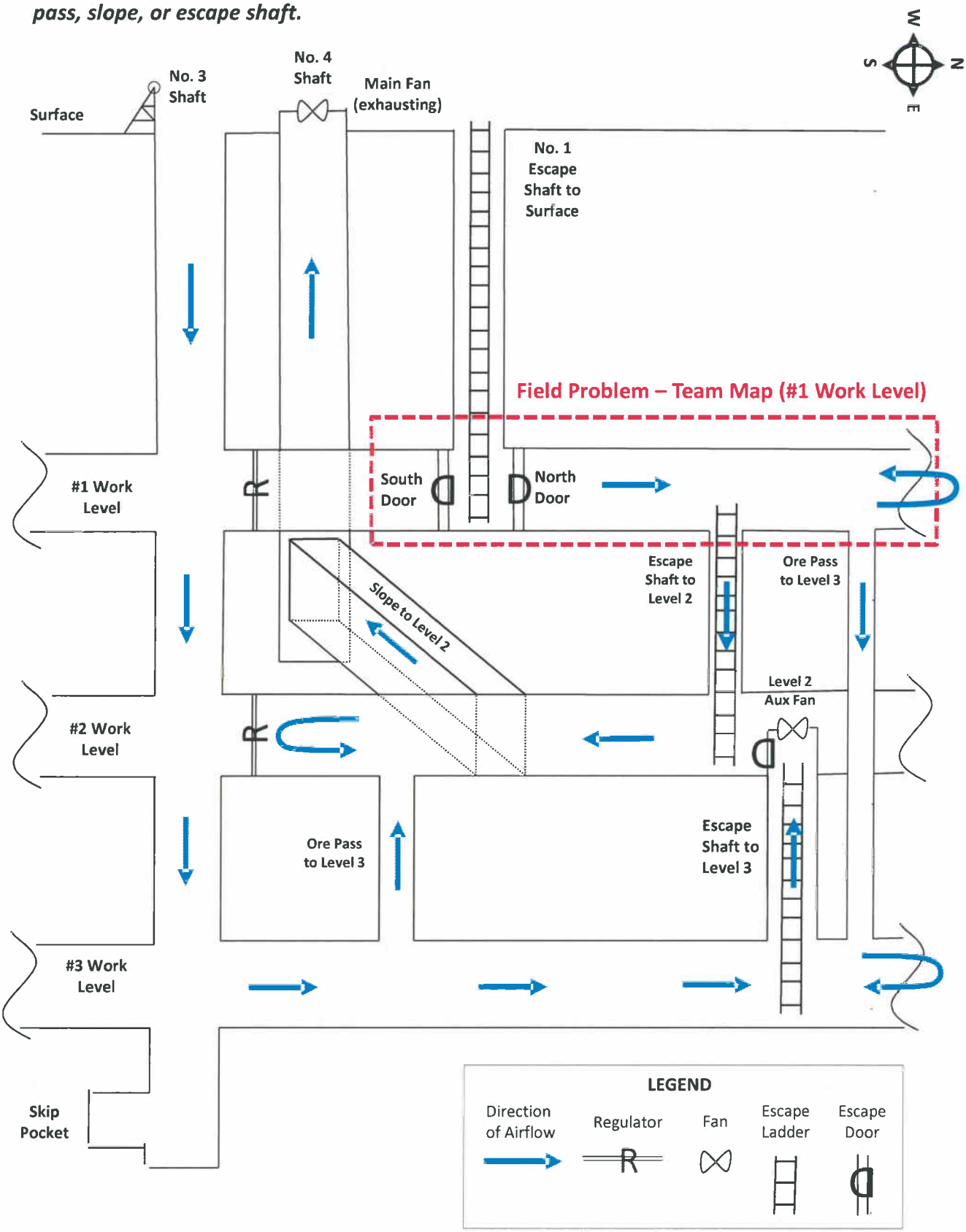
Your team's final placement will be based on your combined cumulative discounts for both day's field problems plus your written test discounts. Those teams with the least amount of total discounts will vie for the trophies.

Even though there can only be a handful of contest winners, the real winners are the miners and their families, the communities, and the companies you represent. It is for all of them that we are here today.

Now, let us continue with the briefing for this year's Day 1 mine rescue problem.

2016 Day 1 – North Block Ventilation Map

DISCLAIMER: ***This schematic should be used for ventilation purposes only. It shows how airflow travels throughout the multiple levels of the North Block portion of the mine. The schematic is not to scale and does not depict the specific locations of any air shaft, ore pass, slope, or escape shaft.***



Mine Information Sheet
Sparks Mining Co. – Late Night Mine

Mine Design and Openings:
The Sparks Mining Co.'s Late Night Mine is a multi-level underground development opened by six shafts. Air lock fire doors separate the mine into two portions known as the North Block and South Block, each portion has three shafts and its own ventilation system.

In the North Block, the downcast No. 3 Shaft (intake air) is equipped with the production skips, as well as an escape compartment which can be used to hoist six persons to the surface. There is access to the No. 3 Shaft on all three work levels. The upcast No. 4 Shaft (return air) is equipped with a hoist used to transport people and to convey supplies. The North Block is ventilated by an exhausting Main Fan located on the surface at this shaft. The No. 1 Escape Shaft extends from the surface to the #1 Work Level and has no conveyances. A ladder way is maintained in the shaft to provide escape from the #1 Work Level. Doors located at the bottom of this shaft keep it isolated from the North Block ventilation system.

Ventilation:
The Main Fan for the North Block is located on the surface at the upcast No. 4 Shaft. The Main Fan pulls approximately 250,000 cfm of fresh air into the mine through the downcast No. 3 Shaft. Intake air circulates through the work levels as shown on the 2016 Day 1 North Block Ventilation Map. Return air exhausts from the mine through the upcast No. 4 Shaft. The Main Fan operates in the stable portion of its performance curve and cannot be reversed. Currently, the electrical power to the fan is on and the fan is operating.

Ventilation on each level of the mine is achieved utilizing concrete block stoppings and brattice curtains. Air is directed to the faces using these permanent and temporary ventilation controls. On the #2 Work Level, a 20,000 cfm auxiliary fan is located at the top of the Escape Shaft to Level 3 to assist primary airflow from the lowest level.

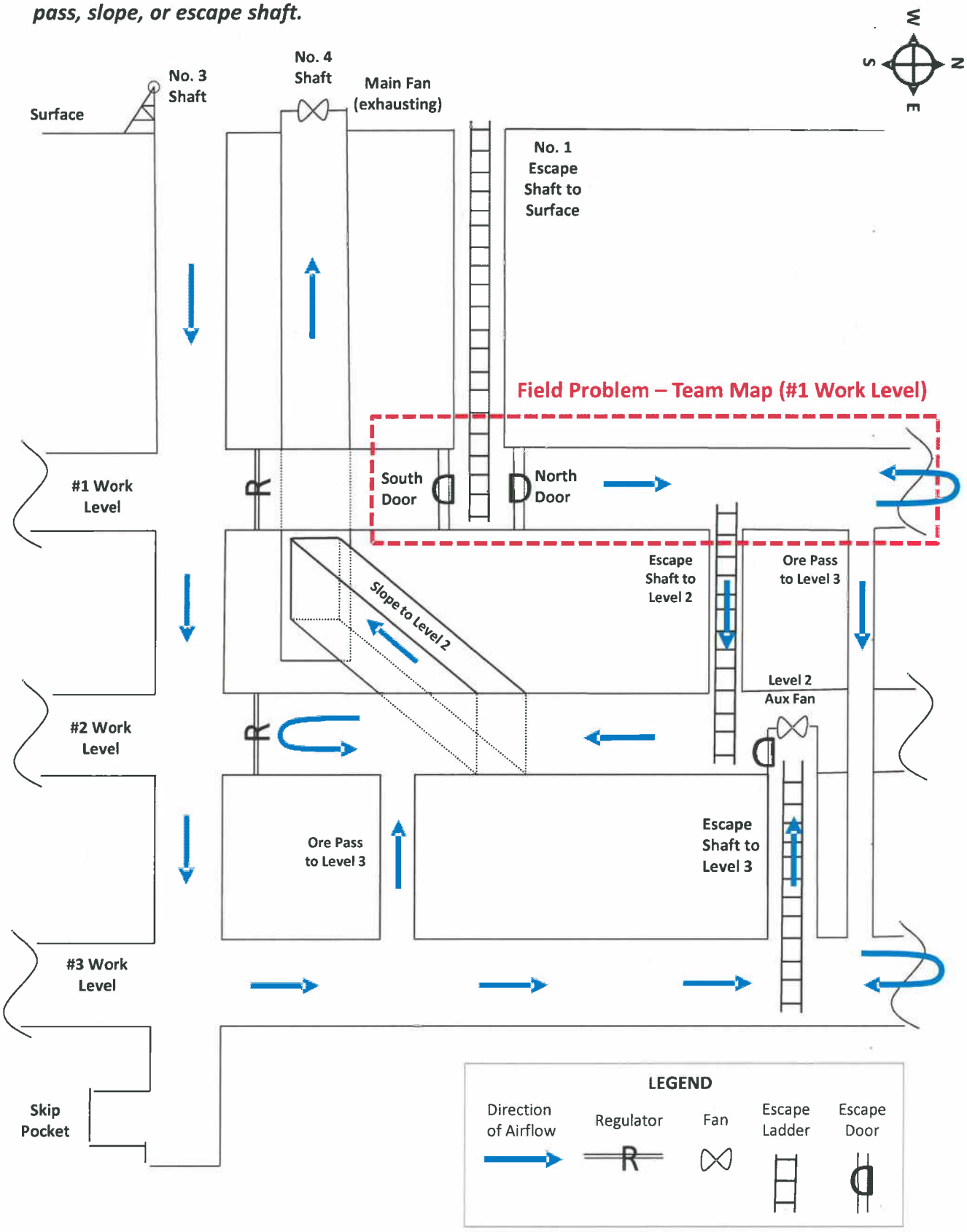
Mine Classification & Other Mines:
In accordance with Title 30 CFR 57.22003, the mine is classified as Category VI. That is, the presence of methane has not been established in this mine and there is no history of methane gas in any other mine in the area. At this time, the Late Night Mine is not connected to any of these mines.

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

Mine Map:
The onsite Engineering Department updated the mine map on July 15, 2016.

2016 Day 1 – North Block Ventilation Map

DISCLAIMER: ***This schematic should be used for ventilation purposes only. It shows how airflow travels throughout the multiple levels of the North Block portion of the mine. The schematic is not to scale and does not depict the specific locations of any air shaft, ore pass, slope, or escape shaft.***



Mine Information Sheet (continued)
Sparks Mining Co. – Late Night Mine

Mining & Equipment:
The mine operates three shifts per day, six days per week. Routine maintenance is performed on all shifts and major maintenance projects are scheduled "as needed" on Sundays. High grade ore is mined using a conventional "room and pillar" method on all three work levels. Typical pillar dimensions are 15 feet by 20 feet (W x L). The entries were initially driven approximately eight feet high and ten feet wide. Each level is connected to the lower level by an ore pass and a ladder way. On the #1 Work Level, the broken ore is loaded into rock trucks by front-end loaders and then transported to the ore pass where it is dropped to the #3 Work Level below. Front-end loaders and haul trucks operating on the #3 Work Level load and transport the ore to a main ore pass leading to the No. 3 Shaft skip pocket. The ore is then hoisted to the surface via the production skips. All underground mobile equipment (including the front-end loaders, rock trucks, face drills, roof bolting machines, and transport jeeps) is diesel-powered.

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

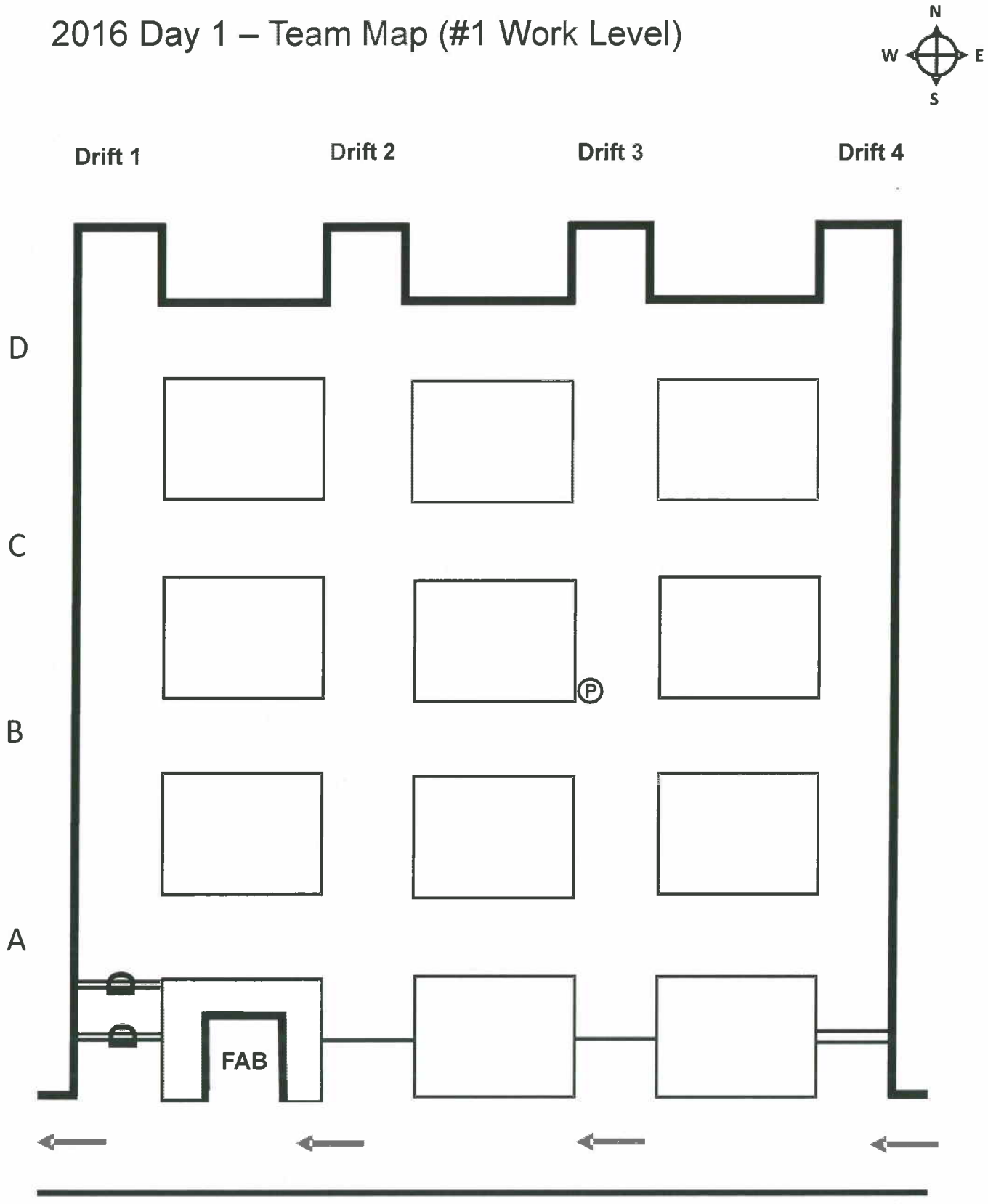
Water, Pumps, and Waterlines:
The mine has a history of water problems in the active workings. The ore body dips toward the East. Culverts are used to divert water from the active areas. Submersible pumps and waterlines have been installed to minimize water levels in the travel ways. Each shaft is equipped with a ten-foot deep sump. The main water pump, located on the surface, can easily handle the volume of water produced in the mine and the shafts. The main water pump has been activated along with the power to the shafts.

Explosives:
Explosives are 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 truck.

Materials:
Most available equipment and materials to work the problem are located in the mine and are identified with placards. If there is something else deemed necessary by the team, upon request, it can be delivered in a reasonable amount of time. **Note: The team will only be allowed to carry two sets of brattice material at any given time.**

Communications:
Pager phones are available in the mine for contact with the surface. The current phone locations are marked on the mine map. However, there has been no contact with the missing miners.

2016 Day 1 – Team Map (#1 Work Level)



Team Briefing Statement

You are located underground at the fresh air base that has been established at the #1 Work Level of the Sparks Mining Co.'s Late Night Mine. The mine is a multi-level underground development opened by six shafts. Air lock fire doors separate the mine into two portions known as the North Block and South Block; each portion has three shafts and its own ventilation system. The #1 Work Level is part of the North Block.

In the North Block, the downcast No. 3 Shaft (intake air) is equipped with the production skips, as well as an escape compartment which can be used to hoist six persons to the surface. There is access to the No. 3 Shaft on all three work levels. The upcast No. 4 Shaft (return air) is equipped with a hoist used to transport people and to convey supplies. The North Block is ventilated by a Main Fan located on the surface at this shaft. The Main Fan exhausts 250,000 cfm from the mine and cannot be reversed. The No. 1 Escape Shaft extends from the #1 Work level to the surface and has no conveyances. A ladder way is maintained in the shaft to provide escape from the #1 Work Level.

High grade ore is mined using a conventional "room and pillar" method on all three work levels. The entries were initially driven approximately eight feet high and ten feet wide. Each level is connected to the lower level by an ore pass and a ladder way. The immediate roof, or back, is supported by six-foot rock bolts. The back is fairly competent, but problem areas are supported by wooden posts or stacked crib blocks. The mine has no history of water problems in the active workings. The mine is classified as Category VI, since the presence of methane has not been established and there is no history of methane gas in any other mine in the area. At this time, the Late Night Mine is not connected to any of these mines.

Last night at 11:00 p.m., the production crews assembled on the surface to start their shift. By 11:30 p.m., a total of 54 persons went underground. An eight-person crew traveled to the #1 Work Level. At about 3:15 a.m., a mechanic called out from the Maintenance Shop on the #1 Work Level and informed the hoist engineer that there was an apparent fire underground and dark black smoke was filling the level. At that time, communication was lost. The engineer called the mine foreman who immediately gave the order to activate the warning system to evacuate the mine. By 4:00 a.m., a total of 46 persons exited the mine.

A short time later, two miners exited the #1 Work Level through the No. 1 Escape Shaft. They reported that they had difficulty getting to shaft due to smoke in the face areas and Drift 1. Once they found their way, they climbed to the surface. The two miners had worn their MSA W-65 filter self-rescuers while escaping to the surface. They had no specific information as to what had happened nor were they aware of the condition or location of the rest of their crew. We do not know the status of the communication system, because there has been no further contact with the missing miners.

2016 Day 1 – Team Map (#1 Work Level)