

**University of Missouri at Rolla
Mine Rescue Contest
Ron Parmer Underground Mine
October 5th and 6th, 2000**



**PROBLEM ORIENTATION
MANAGER STATEMENT
UMR MINE RESCUE CONTEST
ROLLA MO, OCTOBER 5&6 2000**

1. The team briefing judge will introduce himself to the team. “Ron Mesa”
2. The briefing judge will provide the team with the following instructions.
 - (a) Prior to arriving at the fresh air base you will review a taped narrative on the problem. After which you will be given a copy of the team briefing information and mine information sheet to study for 10 minutes prior to moving to the fresh air base. This briefing will contain the instructions on the conditions at the mine. The briefing team will answer no questions except those connected to the showing of the tape. I will collect the briefing information after 10 minutes. The team can take notes.
3.
 - (a) On arrival at the fresh air base the # 1 Judge will introduce himself to the team as the mine manager and #1 judge. Then introduce the No 2 & 3 judges to the team.
 - (b) No work can be done before the clock is started. If the team unloads the stretcher before they start the clock dock them accordingly. Unloading the stretcher after the clock is started is required. The team captain and fresh air base attendant will each give a copy of a team briefing statement, mine information sheet and team map. While the team is underground. The fresh air base attendant and alternate can study the problem map and documents. When the team comes to the surface or calls for assistance from the mine the fresh air base attendant and alternate may communicate with the team and assist in decision making.
 - (c) The fresh air base attendant and team alternate stationed at the fresh air base can communicate with the team when they are on the surface. Only the fresh air base attendant (#6 man) can assist the team once the clock is started or travel with the team when he becomes a member of the team when someone drops out.
 - (d) Tell the team you will answer questions only as the rules require, during the working of the problem . **You will answer questions only as required by the rules.** The #1 judge will answer questions dealing with obvious conditions that is if a question is asked that normally would have an answer because the actual condition would be obvious, such as a power cable would be available if a pump was electric powered.. No one but the # 1 judge is allowed to communicate with the team after they leave the surface.
3. Caution - Fresh Air Base Attendant and Mine Rescue Team Alternates are not to speak to anyone during the working of the problem except the team members or judging staff.

After the clock is started only the 5 team members and the fresh air base attendant will be allowed to work at the fresh air base. (See page 14 contest rules 2nd paragraph)

TEAM BRIEFING STATEMENT

You have arrived at the Ron Parmer Underground Mine. The mine is operated by the Ron Parmer Mining Company. **THIS PROGRAM IS DEDICATED TO ONE OF OUR DECEASED MINE RESCUE FRIENDS. RON WORKED FOR THE STATE OF MISSOURI AS A STATE MINE INSPECTOR FOR MANY YEARS. HE HAS WORKED EVERY CONTEST AT THE ROLLA OPERATION DURING THIS PERIOD. HE HAS ALSO ASSISTED THE MINE SAFETY AND HEALTH ADMINISTRATION WITH OTHER CONTEST HELD THROUGHOUT THE DISTRICT. WE THANK HIM FOR HIS ABLE ASSISTANCE. HE WILL BE GREATLY MISSED BY ALL OF US IN THE MINING INDUSTRY.**

The mine is a sedimentary ore body located in the Morrison formation from the Jurassic period. The formation is 8 ft. to 10 ft in depth and folded causing the formation to roll along the 1000 ft plain. The water ditch is located on the footwall wall side of the mine where the ground is fairly level. Water from the face regions is channeled to this water ditch. The formation is a highly folded, first moving to the North and the folding back to the East.

The mine is a single level mine opened by 2 shafts extending to the 1000 ft. level. The No. 1 shaft is for men and supplies and has a sump at the bottom to collect water dripping in the shaft. The entrance to the sump is through a manway at the shaft station. The No. 2 shaft is the production shaft. The skip pocket is located below the 1000 ft level at the production shaft. Entrance to the skip pocket is through a raise (manway) on the 1000ft level.

Mining on the west side of the mine has been completed and the area walled off. All of the equipment has been moved to the east side of the mine. A temporary shop has been set up in 2 Xcut. most of the maintenance is conducted on the graveyard shift.

The production shaft is on upcast air and the personnel and supply shaft is the downcast airway. **The fan is located in an air lock close to the #2 shaft. There are fan controls on the surface and underground.** The fan can be reversed from the surface or underground.

Seven men were working underground when the fire started. A crew of 4 men was assigned to install a conveyor and crusher in the foot wall drift past the skip pocket ore pass. At the time they were eating lunch in the fan air lock out of the breeze and noted smoke entering the area from the return air east of their work area. They put on their self rescuer's and went to the surface up # 2 shaft. There are 3 miners missing. Two men were cleaning the skip pocket below the 1000 ft level and have had no communications with the surface. One man was drilling a drift round in the face of the hanging wall drift and is missing.

The 4 man crew had to use their self rescuer's as the smoke was black and dense. The 4 man crew indicated that the air temperature on the station of the # 2 shaft had warmed considerably.

We tested it with a thermometer and the temperature was 28 degrees centigrade the normal temperature in the mine is 22 degrees centigrade. They stated they were eating lunch in the fan air lock when they noticed the smoke.

There is a temporary lunch room in the face of the foot wall drift. It was lunch time and normally

the crew eats in that area. The underground shop has ben moved from the west side of the mine to the east side of the mine. The west side has been mined out and is wall off. All mining has moved to the eastern ore body.

If you are ready and willing the service of your mine rescue team is needed. It is now 1:30 PM your team will be the first team to enter the mine. We want you to give us a damage report extinguish or seal all fires, account for all missing miners and map all accessible areas of the mine.

MINE INFORMATION SHEET

Geology The mine is located is located in a sedimentary ore body located in the Morrison formation from the Jurassic period. The formation Is from 8 to 10 ft in depth. The ore body contain a rich concentration of silver with a small amount of gold laced in with the ore.

Gas The mine does not have a history of methane. The mine is not classified as gassy.

Water The mine 1000 foot level has consistently produced about 250 gallons of water per minute. The sump normally handles the inflow of water that comes from the face regions drifts via the water ditch.

Waterlines There is a 2-inch waterline that runs down the #1 shaft and to the face regions. Water is used for drilling and dust control. There is water pipes located in the face regions

Airlines There is a 4-inch diameter air line down the No. 1 shaft. There are air manifolds to the mining faces. The air is used to operate drills and air driven water pumps. The line is charged by a surface compressor that produces 1000 cubic feet of air per minute at 120 pounds per square inch.

Electricity The underground electric power is **ON**. A 4160 volt power feeder cable runs down the utility compartment of the No. 2 shaft to a portable transformer and feeder Sub-station located in 1 Xcut underground. It services the entire underground mine.

Ventilation The production shaft (#2 shaft) is down cast and the man/supply shaft (#1 shaft) is up cast. The mine ventilation system operates on positive pressure. The fan is located in an air lock on the 1000 level in the footwall drift . The fan is reversible. We shut the main fan off to limit the amount of oxygen reaching the fire, we have controls on both the surface and underground.

The surface fan controls are locked out and guarded. We have vent tubbing to the face region by and air door on footwall side at 2 XCUT. Air was drawn into the fan when the door was opened and exhausted through the # 2 shaft air way. The mine

is in negative pressure. The #3 cross cut was recently extended to join the hanging wall and footwall drifts in the face regions.

Mining Equip.

Mining equipment is, electric and diesel powered.

Fuel

There is a 1000 gallon fuel tank in 2 Xcut, it was just moved into the area a Storage concrete catch basin has been installed around the tank. Most of the fueling is conducted on the graveyard shift.

Notification All federal, state and local officials have been notified.

Backup Team A backup team has been called out and should be available by the time you are ready to go underground.

Mine Map The mine map was up-to-date as of the first of Sept.

Other Mines This mine does not connect to any other mines.

Explosives Explosives are available and are stored underground

Materials All available equipment and materials to work the problem are located in the mine and identified by placards.

Hoist The man hoists have been checked out and are working OK. To expedite movement in the shaft travel from the surface to the mine level will take 5 seconds. The # 1 Judge will time the travel.

Guards Guards have been posted at all mine entrances. **THE ELECTRIC POWER TO THE MINE IS IN THE ON POSITION AND IS GUARDED.**

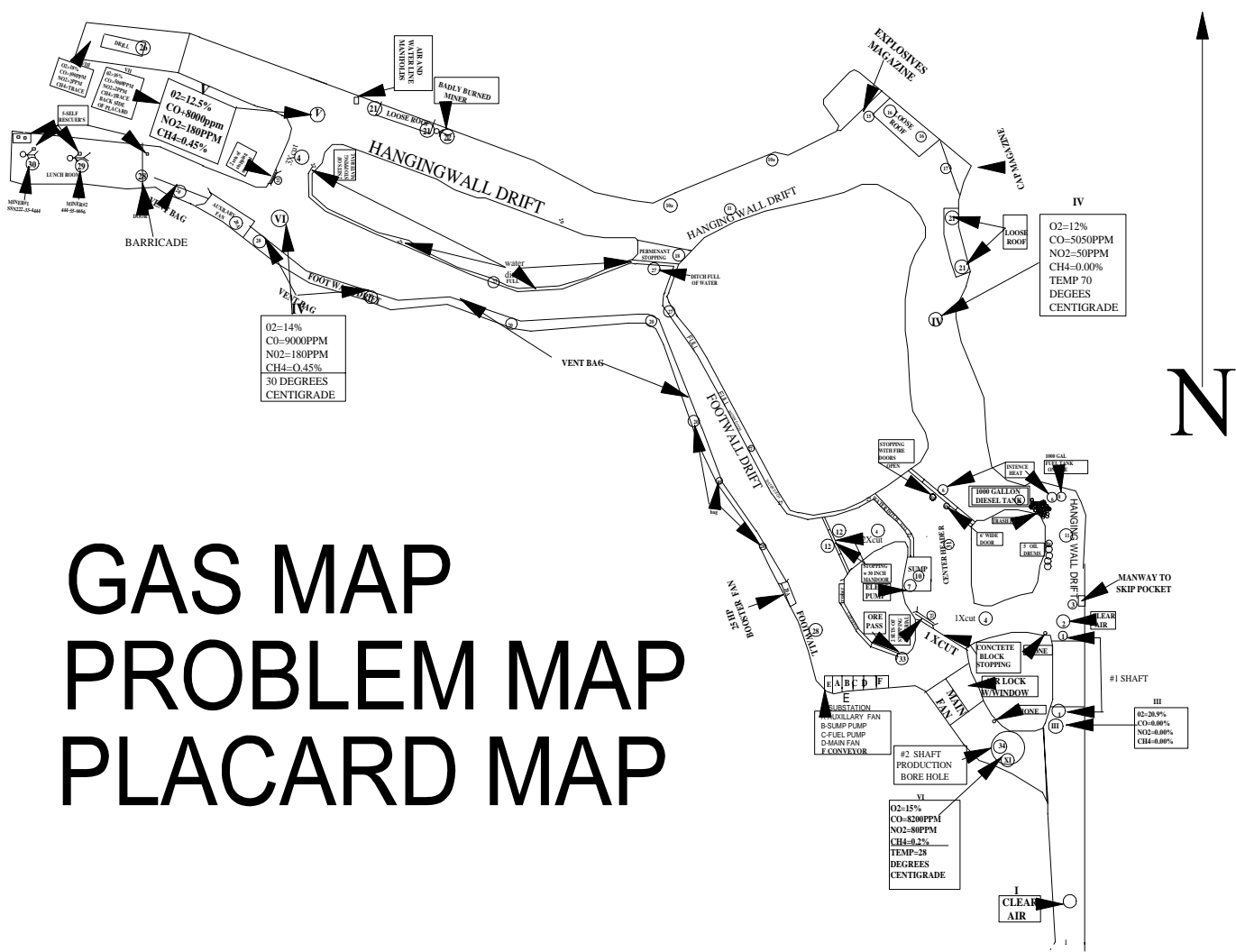
Roof Most roof support is by roof bolts and timber sets. The ground requires constant monitoring.

Support

Timber Yard There is some 2 by 4 timber, brattice cloth, support timber, and cribbing material available underground.

Phone's There are phones located at each of the shafts. During any emergency the phones have a direct line to the manager's office on the surface. You may contact him at any time from any one of the mine phones.

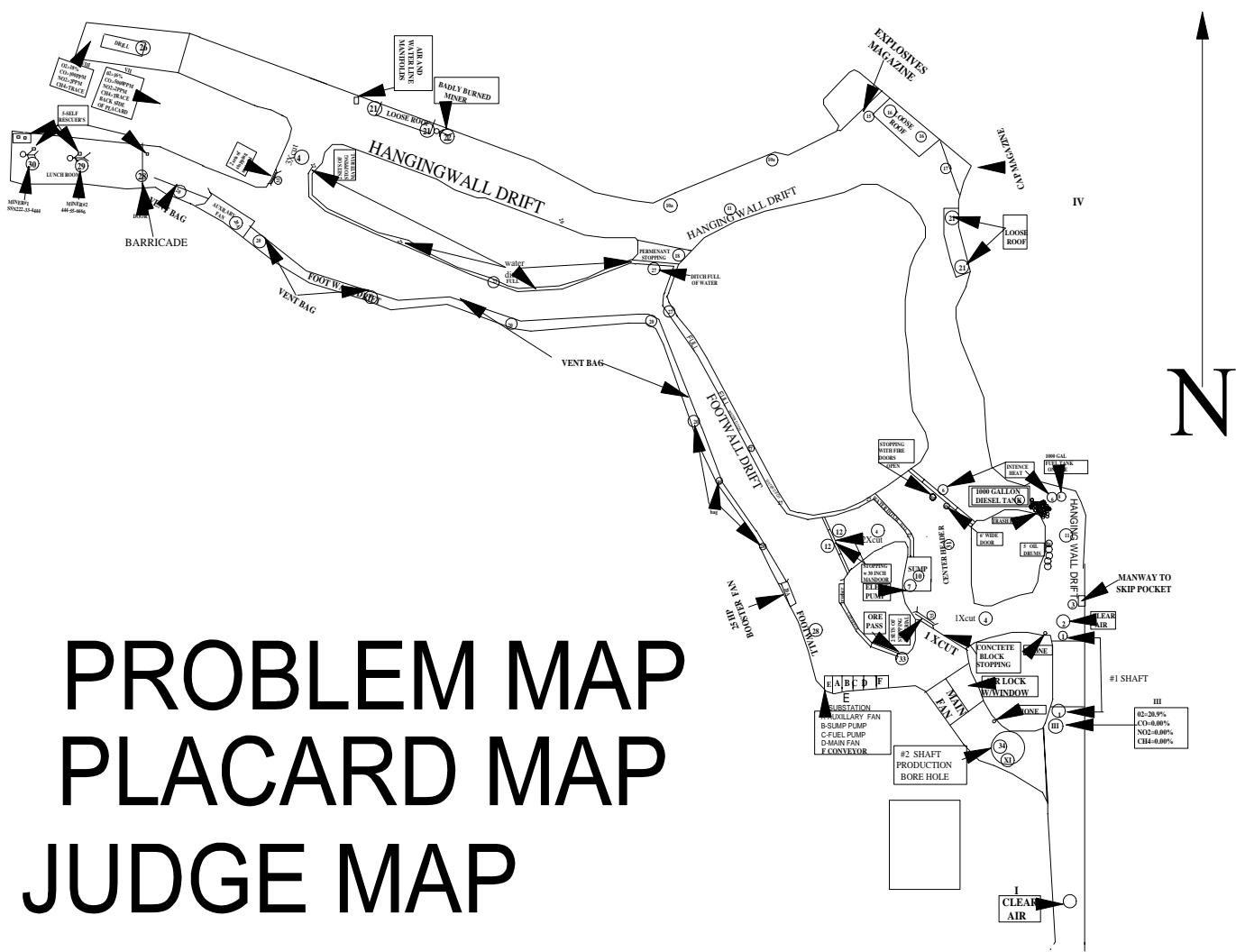
The End.



GAS MAP PROBLEM MAP PLACARD MAP

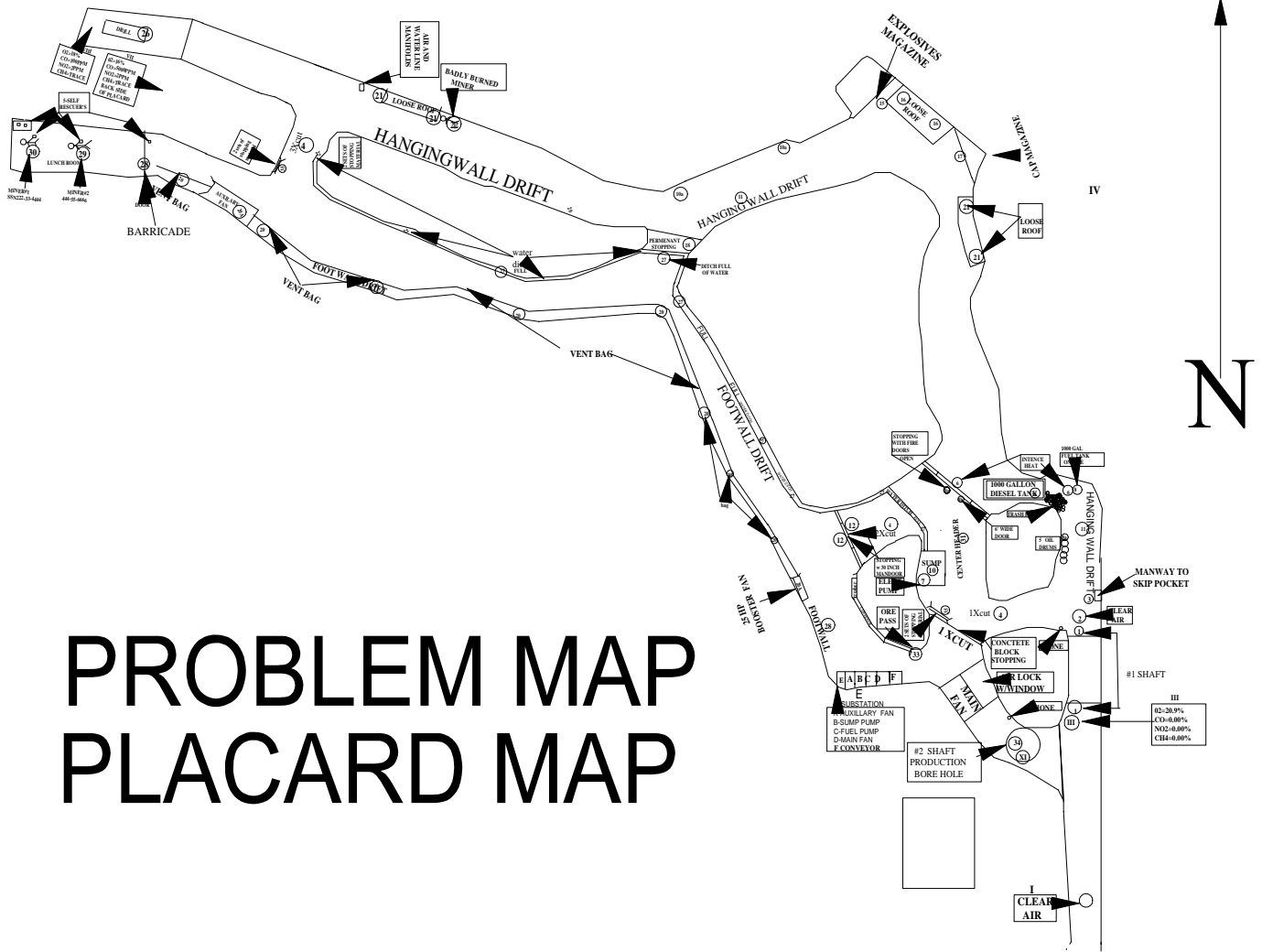
LEFT MINE

Scale 1"=20'



PROBLEM MAP PLACARD MAP JUDGE MAP

LEFT MINE
Scale 1"=20'



PROBLEM MAP PLACARD MAP

LEFT MINE
Scale 1"=20'

Labor
#3 JUDGE

FIRST AID DISCOUNT SHEET

AS THE VICTIM IS UNCONSCIOUS PERFORM THE HEAD TO TOE SURVEY AND TELL the team captain

THE LEAD MAN WILL STATE : THAT HE HAS BEEN GIVING THE LABORER MOUTH TO MOUTH RESUSCITATION OFF AND ON FOR ABOUT AN HOUR. HE HAS STOPPED BREATHING SEVERAL TIMES. THAT THE LABORER HAD TRIED TO GET TO THE SURFACE AND WAS TURNED BACK BY THE HEAT AND SMOKE. AS A RESULTS HE WAS EXPOSE TO SOME HIGH CONCENTRATIONS OF CO. WHEN HE ENTERED THE LUNCH ROOM HE WAS ABOUT DONE. The laborer will have discoloration of the lips and face

They must put the unconscious miner under oxygen after hearing this comment. Any failure to do this with out undo delay will cause the laborer to stop breathing if they give the oxygen to the lead man first the patient will stop breathing . they will install the face piece on the laborer and then have to give him artificial respiration using the Silvester Method, laying the miner on his back and lifting both arms by raising them above the chest so they are straight. (This enlarges the chest cavity) and then crossing the arms as you lower them towards the chest so they rest on the lower potion of the chest and then applying pressure to the chest (this diminishes the size of the chest) this movement is requires about 2 seconds. The team should hit the bypass and allow pure O2 into the face piece. This should be repeated 12 to 15 times a minute. After several cycles while under O2 the miner will start breathing again. If nothing is done to try bring the miner back he will die. The team must conduct the primary and secondary survey as listed below, any violations will cause a total of 4 discounts for the violation in each section for a total of 8 discounts. If the patient dies they will receive a total of 50 discounts.

PRIMARY SURVEY

- ___1. Establish responsiveness.
- ___2. Position victim.
- ___3. Check Breathing.
- ___4. Check Pulse.
- ___5. Visually check for bleeding.

SECONDARY SURVEY

- ___1. Neck - Gently feel and look for any abnormalities. Check for medical alert necklace.
- ___2. Head - Without moving the head, check for blood in the hair, scalp lacerations, and contusions. Gently feel for possible bone fragments or depressions in the skull.
- ___3. Chest - Check the chest for cuts, impaled objects, fractures, and penetrations (sucking) wounds by observing chest movement.
- ___4. Abdomen - Gently feel the abdominal area for cuts, penetrations, and impaled objects, observing for spasms and tenderness.
- ___5. Lower back - Feel for deformity and tenderness.
- ___6. Pelvis - Check for grating, tenderness, bony protrusions, and depressions in the pelvic area.
- ___7. Genital region - Check for any obvious injury.
- ___8. Lower extremities - Check for discoloration, swelling, tenderness and deformities which are sometimes present with fractures and dislocations. Stroke soles of feet for paralysis.
- ___9. Upper extremities - Check for discoloration, swelling, tenderness, and deformities which are sometimes present with fractures and dislocations. Stroke palms for paralysis. Check for medical alert bracelet.
- ___10. Back surfaces - Injuries underneath the victim are often overlooked. Examine for bony protrusions, bleeding, and obvious injuries.
- ___11. Secure victim to the stretcher with bandages or straps one on body and one around legs (minimum) cover with blanket.

Driller
#3 JUDGE

FIRST AID DISCOUNT SHEET

The team must conduct a head to toe survey or they will be docked 4 points for each survey.

As the driller is dead the team must conduct a primary assessment including positioning the patient. They must move him away from the loose roof

PRIMARY SURVEY

- _____ 1. Establish responsiveness.
- _____ 2. Position victim.
- _____ 3. Check Breathing.
- _____ 4. Check Pulse.
- _____ 5. Visually check for bleeding.

SECONDARY SURVEY

- _____ 1. Neck - Gently feel and look for any abnormalities. Check for medical alert necklace.
 - _____ 2. Head - Without moving the head, check for blood in the hair, scalp lacerations, and contusions. Gently feel for possible bone fragments or depressions in the skull.
 - _____ 3. Chest - Check the chest for cuts, impaled objects, fractures, and penetrations (sucking) wounds by observing chest movement.
 - _____ 4. Abdomen - Gently feel the abdominal area for cuts, penetrations, and impaled objects, observing for spasms and tenderness.
 - _____ 5. Lower back - Feel for deformity and tenderness.
 - _____ 6. Pelvis - Check for grating, tenderness, bony protrusions, and depressions in the pelvic area.
 - _____ 7. Genital region - Check for any obvious injury.
 - _____ 8. Lower extremities - Check for discoloration, swelling, tenderness and deformities which are sometimes present with fractures and dislocations. Stroke soles of feet for paralysis.
- _____ Treat compound fracture of left lower leg.
- _____ A. Do not touch the wound with your hand or anything that is not clean if possible.
 - _____ B. Must support the open fracture of the left leg between the knee and the ankle at this time.
 - _____ C. Dress the wound before splinting. Do not remove the boot.
 - _____ D. Use a well padded splint under the victim while the leg is supported on both sides. The splint should reach from the buttocks to beyond the heel. Tie the bandages on the outer side near the splint as follows.
 - _____ (1) Pass the end of the first bandage around the inner side of the thigh at the groin pass it over the thigh under the splint and tie.
 - _____ (2) Pass two bandages around the thigh and splint, one at the middle of the thigh the other just above the knee and tie.
 - _____ (3) Place additional padding around the knee and ankle.
 - _____ (4) Place a padded splint on the outer side of the leg.
(SEE FIGURE BELOW)
 - _____ (5) Pass a fourth bandage around the leg, the padding and splint below the knee and tie; pass a fifth bandage just above the fracture and tie. NOTE:(Do not tie over the fracture)
 - _____ (6) Pass a sixth bandage around the instep and bring the ends up each side of the ankle. cross the ends around the ankle and splint, cross the ends under the splint, return to the top of the ankle, cross and carry down each side if the ankle and tie under the instep.

NOTE FOR THE TEAM CAPTAIN FROM THE LEAD MINER

THE LEAD MAN WILL STATE THAT HE HAS BEEN GIVING THE LABORER MOUTH TO MOUTH RESUSCITATION OFF AND ON FOR ABOUT AN HOUR. THAT THE LABORER HAD TRIED TO GET TO THE SURFACE AND WAS TURNED BACK BY THE HEAT. AS A RESULTS HE WAS EXPOSE TO SOME HIGH CONCENTRATIONS OF CO. WHEN HE ENTERED THE LUNCH ROOM HE WAS ABOUT DONE. WE KEEP A DRAEGER GAS DETECTOR IN HERE AND THE CO IS ABOUT 100 PPM. I HAVE BEEN WEARING MY SELF RESCUER AND TRIED TO KEEP ONE IN THE LABORERS MOUTH. AND THE SELF RESCUER HAS BEEN BURNING MY MOUTH. WE STORE A FEW SELF RESCUERS IN HERE AND I'M ON MY THIRD ONE. I HAVE A BAD HEADACHE. GET ME OUT OF HERE

- _____9. Upper extremities - Check for discoloration, swelling, tenderness, and deformities which are sometimes present with fractures and dislocations. Stroke palms for paralysis. Check for medical alert bracelet.
- Treat 2 inch wound to the outside of the upper left arm.
- A. Apply the pad of a sterile bandage compress over the wound.
 - B. Pass the ends several times around the arm and tie them over the pad.
 - C. Place the center of a cravat bandage over the pad.
 - D. Pass the ends, around the arm, cross them, continue around the arm and tie the pad.
 - E. Place the forearm and hand in a triangle or cravat bandage sling.
- _____10. Back surfaces - Injuries underneath the victim are often overlooked. Examine for bony protrusions, bleeding, and obvious injuries.
- _____ Secure victim to the stretcher with bandages or straps one on body and one around legs (minimum) cover with blanket.