

Company Name:	Equipment/Job Identification: LONGWALL MOVE Type of Equipment: (TEAR DOWN) Make: Model: Year: Use:
Mine Name:	
Date of Analysis:	

Pre-Assessment

• **List pre-requisites here**

- Longwall Move Plan
- Roof Control Plan
- Lock Out/Tag Out Procedures
- Proper Lifting Procedures
- Company Policies
- MSHA and State Regulations

Duty 1: Start-of-Shift Activities

Learner will demonstrate how to conduct safe and thorough start-of-shift activities. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Thorough start-of-shift activities should include the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Change clothes		1		
Get W-65	This protects you from CO in case you are in smoke in a fire and allows you time to get to your self rescuer	2		
<ul style="list-style-type: none"> • Conduct visual examination 	This protects you from CO in case you are in smoke in a fire and allows you time to get to your self rescuer	2		Seal and dents

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Obtain PPE	PPE is for your protection, failure to wear could result bodily injury or death	2		Safety glasses, hearing protection, steel toe shoes, respirator, hard hat, cap lamp, gloves
Obtain gas detector	Failure to take your properly maintained detector could result in a mine disaster, burns, death	3		
<ul style="list-style-type: none"> • Check charge 	Failure to take your properly maintained detector could result in a mine disaster, burns, death	3		
<ul style="list-style-type: none"> • Conduct visual examination 	Failure to take your properly maintained detector could result in a mine disaster, burns, death	3		
<ul style="list-style-type: none"> • Check calibration 	Failure to take your properly maintained detector could result in a mine disaster, burns, death	3		
Check in/Tag in		1		
Put on safety glasses		1		Company policy
Enter the mine by elevator		1		
<ul style="list-style-type: none"> • Get on mantrip 		1		Ensure mantrip has been pre-op'd (follow JSA)
<ul style="list-style-type: none"> • Travel to main track 		1		
<ul style="list-style-type: none"> ○ Check signal lights 		1		Follow mine plan

Duty 2: Enter Mine

Learner will demonstrate how to enter the mine safely and responsibly. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe entering the mine process includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct travelway examination Self-Performed Safety Assessment	Planned work, observe hazards, could save lives	3		
<ul style="list-style-type: none"> • Observe for mobile equipment 		1		Maintain 300' clearance between trips
<ul style="list-style-type: none"> • Check roof conditions 	Small pieces of rock could cut you, break bones, serious injury or death	2		Check for cracks, loose rock, taking on weight, water
<ul style="list-style-type: none"> • Check for loose ribs 	Small pieces of rock could cut you, break bones, serious injury or death	2		Check for overhang, check for ledges, check for sloughing
<ul style="list-style-type: none"> • Look for uneven bottom 		1		Rough spots and bumps in the road, soft spots/low spots
<ul style="list-style-type: none"> • Look for track damage 		1		Bent or broken rails, switch damage, loose fish plates
<ul style="list-style-type: none"> • Observe the high voltage cable 		1		
<ul style="list-style-type: none"> ○ Look for damage 		1		
<ul style="list-style-type: none"> ○ Look for downed high voltage cable 		1		
<ul style="list-style-type: none"> ○ Look for guarding and shielding 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
○ Look for proper clearance		1		Minimum of 12"
● Look for roadway debris		1		Look for crib blocks, rock, banding material, cable, bolts and knocked out timbers
● Check for damaged bolts		1		
● Correct and/or report any unsafe conditions	Don't set a trap for someone else	2		
● Exit mantrip		1		
○ Maintain a 3-point contact	One of leading cause of injury at our mine and third largest cause of injury in the industry	2		
● Observe walkway	One of leading cause of injury at our mine and third largest cause of injury in the industry	2		
○ Look for slip hazards	One of leading cause of injury at our mine and third largest cause of injury in the industry	2		
○ Look for trip hazards	One of leading cause of injury at our mine and third largest cause of injury in the industry	2		
○ Look for fall hazards	One of leading cause of injury at our mine and third largest cause of injury in the industry	2		
Meet with foreman	Communication is a key safety issue in a longwall move. The foreman should be able to make you aware of hazards and activities on the section	3		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
<ul style="list-style-type: none"> • Discuss longwall move activities 	Communication is a key safety issue in a longwall move. The foreman should be able to make you aware of hazards and activities on the section	3		Supplies, condition of longwall, condition of scoops, condition of mule, maintenance needed on scoops/mule
<ul style="list-style-type: none"> • Attend safety talk 	Important to know what is going on and what has happened during that work period. It will help to put you in the right frame of mind	2		Required company policy
<ul style="list-style-type: none"> ○ Discuss close calls 	Important to know what is going on and what has happened during that work period. It will help to put you in the right frame of mind	2		
<ul style="list-style-type: none"> ○ Discuss information passed on from previous shift 		1		
<ul style="list-style-type: none"> ○ Discuss any stop work authority 	Point out hazard someone else has encountered during shift	2		
<ul style="list-style-type: none"> • Discuss roof control plan/condition 	Small pieces of rock could cut you, break bones, serious injury or death.	3		Required company policy
<ul style="list-style-type: none"> • Discuss longwall move plan and activities for the day 	Awareness of what is going on. Conditions on the section could damage equipment and cause bodily injury.	2		Multiple tasks may be conducted at the same time. Find out what your task assignment is. Find out what other task are being performed and their status.

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Obtain and examine tools	The use of defective tools or the wrong tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones, even death	2		Hammer, channel locks, lady slipper bar, solenoid wrench, flat tip screw driver, chisel, 6 or 8 inch adjustable wrench, other hand tools as needed
<ul style="list-style-type: none"> Conduct Self-Performed Safety Assessment 	Planned work, observe hazards, could save lives	3		

Duty 3: Face Preparation

Learner will demonstrate how to conduct a safe and thorough procedure of face preparation. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A safe and thorough procedure of face preparation includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Start with 9 passes from end of panel		1		
Get all shields straight faced		1		
Adjust overall face height		1		Follow Longwall Move Plan
<ul style="list-style-type: none"> Lower overall height 2 to 3" per pass 		1		
<ul style="list-style-type: none"> Increase height for mule clearance on last 4 passes 	Keeps water toward the face, heightens the entry for the mule, helps the shields tilt into the face, keeps the shields on the pillar side while removing	3		
Place gopher drills on last pass		1		
<ul style="list-style-type: none"> Load gopher drills on shearer 		1		Steel bits, hoses, steels, wrench, oiler, safety jacks
<ul style="list-style-type: none"> Unload gopher drills 		1		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Place two at mid-face on pontoon at the toe of the shield 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
○ Place one at tailgate at the toe of the shield		1		
Return shearer to Headgate cleaning bottom as you go		1		
• Look for loose roof and rib	Small pieces of rock could cut you, break bones, serious injury or death	2		
• Scale with shearer where necessary	Small pieces of rock could cut you, break bones, serious injury or death	2		
Load bolting supplies onto shearer		1		
Obtain 1-1/2" air hose		1		
• Hang reel of hose from shields		1		This is done at the same time as bolts are being distributed
• Attach end of hose to shearer		1		
Travel to tailgate		1		
• Place hose behind base jacks as advanced		1		
• Pull end of hose to end of tailgate		1		
Place roof bolt supplies on pass back to the head		1		This may take several passes to get roof bolt materials distributed
• Place two roof bolts at toe of each shield		1		
• Place two plates at toes of each shield		1		
• Place two T-boards at toe of		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
each shield				
<ul style="list-style-type: none"> Place one box of resin at every 10 shield intervals 		1		
<ul style="list-style-type: none"> Spot a couple sets of extra bolt supplies at 10 shield intervals 		1		
Clean bottom on each return pass and check for loose roof and rib	Small pieces of rock could cut you, break bones, serious injury or death, also important to clean bottom to get rid of loose coal and make travelway passable for the recovery	2		Normally takes 3 passes to supply the bolts
Set the shearer for tear down at headgate		1		
Spot face chain for removal		1		
<ul style="list-style-type: none"> Stop chain so connection link is on headgate sprocket 		1		
Move shields so that the tips are within 5' of the rib	This creates a supported work area for activities that need to be done during the tear down. Also creates a safe work zone for gopher drill operators and pinners	3		Mark a 12' joint of PVC pipe at 5' from one end. Use this 5' mark from the rib/face to the tip of the shield as a guide.

Duty 4: Supporting the Roof for Shield Removal

Learner will demonstrate how to conduct a safe and thorough procedure on supporting the roof for shield removal. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe procedure of supporting the roof for shield removal includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Planned work, observe hazards, could save lives	3		
Obtain tools and materials to attach air line	The use of defective tools or the wrong tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones, even death	2		Flat tip screw driver, 6 penny nails, bander, bands, six - 1 1/2" menders, hacksaw or knife and blades, extra drill oil, hammer, staple locks (1/2" and 3/8"), gas detector
Hook up air line to main source to the existing tee and cutoff valve		1		
<ul style="list-style-type: none"> Put bands on hose 		1		
<ul style="list-style-type: none"> Slide hose on connector 		1		May be necessary to lubricate
<ul style="list-style-type: none"> Band in place 		1		
<ul style="list-style-type: none"> Tag air line out 	Someone could turn air line on and debris could get in your	2		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
	eyes or embedded into your skin			
Hook up gopher drill		1		
• Cut 1 ½” air line		1		
• Install cut-off valve on each end of hose		1		
• Call headgate/tailgate to have air turned on		1		
• Flush air line		1		
• Hook up to oiler		1		
○ Band in place		1		
• Fill oiler with air tool oil		1		
• Hook shield water to drill		1		With 50” hose, tap on each shield, move as needed
• Grease drill head as needed		1		
Installing roof support	Small pieces of rock could cut you, break bones, serious injury or death	3		
• Conduct exam	Planned work, observe hazards, could save lives	3		
• Set temporary jacks	Main roof support until you get the area pinned	3		
○ Set jacks on unsupported side of the shield	Main roof support until you get the area pinned	3		
○ Keep your body under supported roof	Roof falls are the leading killer of miners	3		
• Conduct gas test	Failure to make gas test could	3		Gas test must be conducted

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
	result in a mine disaster, burns, death			every 20 minutes
<ul style="list-style-type: none"> • Set gopher drill between temporary support 	Roof falls are the leading killer of miners. Small pieces of rock could cut you, break bones, serious injury or death	3		
<ul style="list-style-type: none"> ○ Test the roof, sight, sound and vibration prior to drilling 	Roof falls are the leading killer of miners. Small pieces of rock could cut you, break bones, serious injury or death	3		
<ul style="list-style-type: none"> ○ Keep your body under supported roof 	Roof falls are the leading killer of miners. Small pieces of rock could cut you, break bones, serious injury or death	3		
<ul style="list-style-type: none"> ○ Set drill on the face side of pan line on skid plate 		1		This gives the drill solid footing to push from
<ul style="list-style-type: none"> ○ Place bits on steel 		1		1 1/2" starter bit 1 3/8" finishing bit
<ul style="list-style-type: none"> ○ Place steel in gopher drill head 		1		
Drill bolt hole and install roof bolt, resin and T-board		1		
<ul style="list-style-type: none"> • Turn air on at cut- off valve 		1		
<ul style="list-style-type: none"> • Position drill 		1		
<ul style="list-style-type: none"> • Extend drill foot (trigger on left hand side) 		1		
<ul style="list-style-type: none"> • Start head rotation slowly 		1		
<ul style="list-style-type: none"> • Turn water on once bit is 	Failure to drill with water will	2		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
in hole with the right lever	create a health hazard. You will burn bits up, could create an ignition hazard			
• Drill 2'		1		
• Lower drill		1		
• Turn water off		1		
• Remove starter steel		1		
• Install 4' driver with finishing bit		1		
• Raise drill head putting steel in hole		1		
• Turn water on	Failure to drill with water will create a health hazard. You will burn bits up, could create an ignition hazard	2		
• Drill hole		1		
• Lower the drill		1		
• Turn water off		1		
• Remove 4' driver steel		1		
• Put 4' pusher attach with 2' driver		1		
• Raise drill and put steel in hole		1		
• Turn water on	Failure to drill with water will create a health hazard. You will burn bits up, could create an ignition hazard	2		
• Proceed to drill 6'		1		
• Lower drill		1		
• Turn water off		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
• Remove steel		1		
• Assemble 6' pin with plate and T-board and resin		1		
• Take resin and place in hole		1		
• Take plate, board and pin and put in hole		1		
• Put bolt wrench in drill		1		
• Take pin and put in wrench		1		
• Raise drill and push pin to top with board parallel with shield and face		1		
• Spin the bolt until tightened	Failure to tightened the bolt to roof control plan specifications will result in inadequately supported roof	2		
• Lower drill		1		
• Reposition jacks	Main roof support until you get the area pinned	3		
• Repeat cycle		1		

Duty 5: Remove Tailgate Drive

Learner will demonstrate how to conduct a safe and thorough procedure for removing a tailgate drive. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A safe and thorough procedure for removing the tailgate drive includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Planned work, observe hazards, could save lives	3		
Obtain and examine tools	The use of defective tools or the wrong tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones, even death	2		Lady slipper bar, 3/8" punch, chisel and shovel, torches, strikers, water hose, fire extinguisher, rock dust, methane detector, goggles, welding gloves
Lock out/Tag out tail drive motor	Prevents electrical shock, burns and death	3		
Unplug at 8 bay box	Ensures lock out/tag out procedures being followed	3		
Cut cable at junction box		1		Use bow saw/hacksaw
Remove dog bone face side		1		
• Clean dog bone socket		1		
• Take out keepers		1		
• Remove dog bone		1		
• Place dog bones in pan line		1		
Remove dog bone shield side		1		Same procedures as above
Cut face chain at tailgate				
• Make continuous gas exam	Failure to make gas test could result in a mine disaster, burns, death	3		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
<ul style="list-style-type: none"> Cut chain on the head gate side where the dog bones are being removed 		1		Make sure you have 240 pound of rock dust and/or 10 pound fire extinguisher
<ul style="list-style-type: none"> Wet area down 	Prevent ignition of coal on bottom or other materials	2		
<ul style="list-style-type: none"> Rock dust 10' in all directions 	Prevent ignition of coal on bottom or other materials	2		Make sure you have 240 pound of rock dust and/or 10 pound fire extinguisher
<ul style="list-style-type: none"> Cut chain on a connection link 		1		
<ul style="list-style-type: none"> Shut torches down 	Failure to shut torches down according to company policy could result in a fire or explosion from the gases in the tank	2		
Remove tail drive		1		
<ul style="list-style-type: none"> Obtain 6' chain Grade 8 or higher 	Lower grade chains can break with great force and could become a projectile	2		
<ul style="list-style-type: none"> Hook to gob plate pin 		1		
<ul style="list-style-type: none"> Lower shield and hook chain to shield 		1		
<ul style="list-style-type: none"> Raise shield and pull pin out 		1		
<ul style="list-style-type: none"> Pull drive back to shields <ul style="list-style-type: none"> Use rams on shield 		1		
<ul style="list-style-type: none"> Push drive back in face 		1		
<ul style="list-style-type: none"> Unhook relay bars <ul style="list-style-type: none"> Remove keeper Slide out relay pin 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
○ Pull relay bar back using the ram on shield		1		
○ Slide relay pin back in		1		
○ Replace keeper		1		
● Obtain duck bill scoop		1		
● Move unnecessary people out of the area	Moving this creates a lot of pinch points, could cause crushing injuries to bystanders	3		
● Remove drive with scoop		1		
● Bind the drive to scoop using winch cable	Drive could slide causing broken bones, death. If the drive falls off or lose the drive it will cause severe delays.	3		
● Store drive in designated area		1		See longwall move plan

Duty 6: Installing Pan Line Pinner with Duck Bill

Learner will demonstrate how to conduct a safe and thorough procedure for installing pan line pinner with duck bill. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A safe and thorough procedure for installing a pan line pinner with duck bill includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Planned work, observe hazards, could save lives	3		
Place pan line bolter on scoop	Bolter could slide causing broken bones, death. If the bolter falls off or is lost it will cause severe delays.	3		Drill head must point away from the scoop operator
<ul style="list-style-type: none"> Place bolter trapping shoe 12" to left of center hole on the duck bill 		1		
<ul style="list-style-type: none"> Bind the bolter with winch cable 	Bolter could slide in transit causing crushing injuries to bystanders	3		
Tram the scoop to pan line at the tailgate		1		
Lower pinner to bottom		1		
Back out from under bolter until trapping shoe drops off duck bill		1		
Move scoop forward		1		
Place duck bill on top of trapping shoe		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Move scoop forward until duck bill comes in contact with trapping shoe pin		1		
Lift the bolter up until the trapping shoe is even with the accu-trac		1		
Push bolter onto pan line with scoop		1		
Take scoop binding cable off		1		
Remove scoop		1		
Lock out/Tag out #6 cable from the distribution box at the headgate	Failure to lock and tag could result in electrical shock, burns or fatality	3		Follow Lock Out/Tag Out Procedures
<ul style="list-style-type: none"> Splice the pinner cable 		1		Must be done by qualified electrician.
<ul style="list-style-type: none"> Turn the power on to #6 cable 		1		
<ul style="list-style-type: none"> Check rotation 		1		

Duty 7: Installing Pan Line Pinner with Bucket Scoop

Learner will demonstrate how to conduct a safe and thorough process of installing pan line pinner with bucket scoop. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A safe and thorough process for installing pan line pinner with bucket scoop includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Planned work, observe hazards, could save lives	3		
Place pan line bolter on scoop		1		
<ul style="list-style-type: none"> Place bolter on left side of scoop bucket drill head pointing away from the scoop operator 		1		Handrail of the pan line would be in the way. Pan line can be slewed with the ram
<ul style="list-style-type: none"> Bind the bolter to the scoop bucket with the winch cable 		1		With the scoop bucket there is virtually no chance of the pinner falling off or sliding
<ul style="list-style-type: none"> Tram to the pan line 		1		
<ul style="list-style-type: none"> Drop the bucket 		1		
<ul style="list-style-type: none"> Loosen the winch cable 		1		
<ul style="list-style-type: none"> Back out from underneath the bolter until the trapping shoe drops below the bucket 		1		
<ul style="list-style-type: none"> Tightened cable back up until bucket comes on top of trapping shoe 		1		
<ul style="list-style-type: none"> Raise bolter up to align with the pan line 		1		May have to slew pan line
<ul style="list-style-type: none"> Push bolter on to pan line with the scoop ram 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
<ul style="list-style-type: none"> Remove scoop binding cable 		1		
<ul style="list-style-type: none"> Remove scoop 		1		
Lock out/Tag out #6 cable from the distribution box at the headgate	Failure to lock and tag could result in electrical shock, burns or fatality	3		Follow Lock Out/Tag Out Procedures
<ul style="list-style-type: none"> Splice the pinner cable 		1		Must be done by qualified electrician.
<ul style="list-style-type: none"> Turn the power on to #6 cable 		1		
<ul style="list-style-type: none"> Check rotation 		1		

Duty 8: Roof Bolting with the Pan Line Bolter

Learner will demonstrate how to conduct a safe and thorough roof bolting with the pan line bolter. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and thorough procedures for roof bolting with the pan line bolter should include the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Make exam	Planned work, observe hazards, could save lives	3		Follow Roof Control Plan
Make gas exam	Failure to make gas test could result in a mine disaster, burns, death	3		Gas test required every 20 minutes
Raise canopy	Small pieces of rock could cut you, break bones, serious injury	2		Anyone assigned to run this bolter must be task trained
Lower stab jack		1		
Check roof and rib	Small pieces of rock could cut you, break bones, serious injury or death	2		
Obtain starter steel with bit		1		1 1/2" bit
Place starter steel in chuck		1		
Raise bit to roof		1		
Slowly start steel rotation		1		Use hand off drilling techniques
Drill hole 2' deep		1		
Lower steel		1		
Stop rotation		1		
Remove starter steel		1		
Replace with finishing steel		1		1 3/8"
Raise bit into hole		1		
Start rotation		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Finish drilling hole to 6'		1		
Lower and stop rotation		1		
Remove steel		1		
Assemble pin, plate, T-board		1		
Insert resin cartridge into the hole		1		
Insert assembled pin into hole		1		
Insert wrench into drill chuck		1		
Raise to the top and tighten bolt		1		
Check torque according to Roof Control Plan	Failure to tightened the bolt to roof control plan specifications will result in inadequately supported roof	3		
Lower the boom		1		
Raise the stab jack		1		
Lower canopy		1		
Swing boom and rotate to next face bolt		1		
Repeat bolting sequence		1		
Remove temporary jack		1		
Move temporary jack forward 5' and reinstall	Main roof support until you get the area pinned	3		Stay out from unsupported roof
Get in the seat of the bolter		1		
Tram bolter up 5'		1		Dead man has to be activated before tramping bolter
Repeat bolting sequence		1		

Duty 9: Remove Face Chain

Learner will demonstrate how to conduct a safe and thorough process of removing the face chain. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A safe and thorough procedure for removing the face chain includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Planned work, observe hazards, could save lives	3		Everyone on the longwall must be aware of chain removing activities. When pulling the top chain, you need positive communication with anyone working on the pan line. Follow cutting and welding plan. Chain must be cut at tailgate before you can pull
Obtain and examine necessary tools	The use of defective tools or the wrong tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones, even death	3		Torches, gas detectors, rock dust, burning goggles, welding gloves, strikers, water hose, Allen wrench, socket set, hammer, assorted wrenches, chain boxes, mule, scoop
Remove #1 and #2 motor cables from the 8-bay box, lock and tag	Electrical shock, burns or death	3		Follow lock out/tag out procedures
Cut the power cables at the junction box at the #1 and #2 motors		1		
Remove 6 Allen head bolts and remove access door		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
<ul style="list-style-type: none"> Hook door to mule or scoop with #8 chain 	Failure to use a Grade 8 chain could cause the chain to break and become projectile	3		Only Grade 8 chain 3/8" or better should be used
<ul style="list-style-type: none"> Pull door out of work area 		1		Caution: Keep people clear while pulling with chain
Cut face chain		1		
<ul style="list-style-type: none"> Make continuous gas exam 	Failure to make gas test could result in a mine disaster, burns, death	3		
<ul style="list-style-type: none"> Wet area down 	Prevent coal or other debris on bottom from catching on fire	2		
<ul style="list-style-type: none"> Rock dust 10' in all directions 	Prevent coal or other debris on bottom from catching on fire	2		Have a 10 pound fire extinguisher and/or 240 pound of rock dust
<ul style="list-style-type: none"> Cut chain on a connection link 		1		
<ul style="list-style-type: none"> Shut torches down 	Failure to shut torches down according to company policy could result in a fire or explosion from the gases in the tank	2		
Hook mule to chain		1		
Notify anyone working on the pan line that chain pulling is about to start	Failing to notify people down the pan line could result people in pulling with the chains, falls, fractures, or fatality	3		Everyone on the longwall must be aware of chain removing activities. When pulling the top chain, you need positive communication with anyone working on the pan line
Pull chain 250' to connector		1		May take several pulls

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Repeat process until all chain is removed		1		

Duty 10: Remove the Pan Line in Sets of Two

Learner will demonstrate how to conduct a safe and thorough procedure of removing the pan line in sets of two. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A safe and thorough procedure for removing the pan line in sets of two includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Planned work, observe hazards, could save lives	3		
Obtain and examine the following tools	The use of defective tools or the wrong tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones, even death	3		Lady slipper bar, hammer, 3/8" punch, chisel, shovel, gloves, safety glasses, channel locks, screw driver
Prepare pan line for removal		1		
• Clean dog bone socket		1		
• Take out keepers		1		
• Remove dog bone on both sides		1		
• Place dog bone in pan line		1		
• Pull accu-trac pin on headgate side where pin is being separated		1		
• Pull keeper pin		1		
• Push accu-trac pin out toward shield		1		
• Lift accu-trac, replace pin and keeper		1		
• Remove horizontal pin		1		Removal of the horizontal pin

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
from the pan clevis				must be done before any of the cables are removed from the cable tray
○ Remove keeper		1		
○ Slide pin out		1		
○ Pull relay bar back		1		
○ Reinstall pin and keeper in clevis		1		
• Open two cable tray doors		1		
• Drop cables to the bottom		1		
• Move pinner cable to toe of shield		1		
Pan line removal		1		
• Notify scoop operator that first set of pans are ready		1		
• Communicate with scoop operator and other employees in that area	Moving this creates a lot of pinch points, could cause crushing injuries to bystanders	3		Caution: Notify all personnel in the area of the danger of pan line removal. Use start up signals before starting scoop and moving
• Scoop will take two pans each time		1		
Repeat process every two pans until all pans are removed		1		

Duty 11: Remove Headgate Drive

Learner will demonstrate how to conduct a safe and thorough procedure to remove headgate drive. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe procedure to remove headgate drive includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Planned work, observe hazards, could save lives	3		
Obtain and examine the following tools	The use of defective tools or the wrong tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones, even death	3		Lady slipper bar, 3/8" punch, chisel and shovel, torches, strikers, water hose, fire extinguisher, rock dust, methane detector, goggles, welding gloves, 3/4" socket set, 2 rock bars, 5/8" Grade 8 chain, drawing of headgate drive highlighting parts to be remove
Lock out/Tag out #1 and #2 drives	Electrical shock, burns and/or death	3		Follow lock out/tag out procedures
Unplug at 8 bay box		1		
Cut cable at junction box		1		Use bow saw/hacksaw
Remove dog bone face side		1		
Remove #2 headgate motor and gear case as a unit		1		
<ul style="list-style-type: none"> Remove all top covers 		1		
<ul style="list-style-type: none"> Load on pallets and send out 		1		
<ul style="list-style-type: none"> Remove the 6 bolts on 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
gear box mounting				
<ul style="list-style-type: none"> Take 5/8" Grade 8 chain and chain gear box to canopy to support while being removed 	The use of a lower grade chain could result in the chain breaking and becoming a projectile	3		
<ul style="list-style-type: none"> Take coupling cover off and remove spline keeper 		1		
<ul style="list-style-type: none"> Slide the gear coupling apart 		1		
<ul style="list-style-type: none"> Utilize the shield to free the gear case 		1		
<ul style="list-style-type: none"> Bring the mule in and load the # 2 motor and gear case 		1		
<ul style="list-style-type: none"> Unload gear box 		1		
<ul style="list-style-type: none"> Repeat for removing #1 motor and gear case except for removing top covers and utilizing shield 		1		
Remove dog bone		1		
<ul style="list-style-type: none"> Clean dog bone socket 		1		
<ul style="list-style-type: none"> Take out keepers 		1		
<ul style="list-style-type: none"> Remove 6 dog bones 		1		As per drawings. This is to separate the drive from stage loader, pan line and face conveyor. Shields can be used to maneuver head drive for bone removal
<ul style="list-style-type: none"> Place dog bones in pan 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
line				
Pull the head gate drive back utilizing the shields		1		
Cut stage loader chain, top and bottom		1		
<ul style="list-style-type: none"> Make continuous gas test 	Failure to make gas test could result in a mine disaster, burns, death	3		Be sure to make gas test in the tunnel
<ul style="list-style-type: none"> Wet area down 	Prevent ignition of coal on bottom or other materials	2		
<ul style="list-style-type: none"> Rock dust 10' in all directions 	Prevent ignition of coal on bottom or other materials	2		10 pound fire extinguisher and/or 240 pounds of rock dust
<ul style="list-style-type: none"> Cut chain 		1		Follow cutting and welding plan
<ul style="list-style-type: none"> Shut torches down 	Failure to shut torches down according to company policy could result in a fire or explosion from the gases in the tank	3		
Remove adapter plate		1		
<ul style="list-style-type: none"> Remove 6 horizontal pins from head drive to the adapter plate 		1		
<ul style="list-style-type: none"> Remove the 3 dog bones in the adapter plate 		1		As per drawing
<ul style="list-style-type: none"> Remove shield clevis horizontal pin 		1		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Remove the keeper 		1		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Slide the pin out 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
○ Pull the relay bar back		1		
○ Reinstall pin and keeper		1		
Bring the mule in and load the adapter plate		1		
Lift all the cables and hoses from headgate drive and hang up to the roof		1		Use come-a-long
Remove head drive with duck bill scoop	Moving this creates a lot of pinch points, could cause crushing injuries to bystanders	3		Caution: Notify all personnel in the area of the danger of the head drive. Use start up signals before starting scoop and moving
• Bind with a winch cable		1		
• Tram scoop	Moving this creates a lot of pinch points, could cause crushing injuries to bystanders	3		Caution: Notify all personnel in the area of the danger of pan line removal. Use start up signals before starting scoop and moving
Store in designated area		1		

Duty 12: Disassemble Shearer

Learner will demonstrate how to conduct a safe and thorough procedure to disassemble shearer. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe procedure to disassemble shearer includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Plan work, observe hazards, could save lives	3		
Obtain and examine tools	The use of defective or wrong tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones or death.	3		Torches, hand wrenches (metric and standard), methane detector, striker, goggles, welding gloves, water, rock dust, fire extinguisher, Allen wrenches (metric and standard), hacksaw, socket sets 1/2" drive (metric and standard) lady slipper bar, rock bar, channel locks, chisel, hammer, sledge hammer, 3 sets 3-ton come-a-longs, T-boards, cribs, crib blocks (6x6x24), wedges, 4' pin punch, torque multiplier 18 to 1 (1" to 3/4" drive adapter) socket sets 3/4 " drive, 3/4" drive impact wrench, 3- 12" puller bolts
Use lock out/tag out procedures as required	Failure to lock and tag could result in electrical shock, burns or fatality	3		Follow lock out/tag out procedures

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Remove shearer drums		1		
<ul style="list-style-type: none"> • Remove water spiders 		1		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Remove 12 mounting bolts and see drawing 		1		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Insert three 12" puller bolts into puller holes 		1		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Thread puller bolts into the spider equally 	Failure to tighten these bolts equally could cause the spider to bind requiring a lot of extra work	2		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Attach come-a-long to one of the puller bolts to stabilize the spider 	Failure to control the spider as it is being pulled could cause it to fall on you or someone else, broken bones, cuts, crushing injuries	3		Caution: The spider is very heavy, it must be supported to prevent unexpected motion
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Tighten the puller bolts equally in a clockwise motion until spider is free 	Failure to tightened these bolts equally could cause the spider to bind requiring a lot of extra work	2		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Lower the spider to the bottom utilizing the come-a-long 		1		
<ul style="list-style-type: none"> • Remove cutter drum 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
○ Loosen bolts with torque multiplier		1		
• Look in the drum		1		
• Put torque multiplier on the bolt		1		
• Place the handle against the inside of the drum to lock the tool in place		1		
• Insert the male part of 1/2" ratchet in the female receptacle in the torque multiplier		1		
• Turn counterclockwise or left to loosen bolts		1		
• Remove 18 bolts with impact wrench		1		
○ Loosen drum		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
<ul style="list-style-type: none"> Utilize 4 of the mounting bolts as puller bolts 		1		
<ul style="list-style-type: none"> Thread puller bolts equally in clockwise motion until drum is free 		1		
<ul style="list-style-type: none"> Remove the puller bolts 		1		The drum is self supporting on its mount
<ul style="list-style-type: none"> Reinstall the spider using the come-a-long 	Failure to control the spider as it is being reinstalled could cause it to fall on you or someone else, broken bones, cuts, crushing injuries	2		
<ul style="list-style-type: none"> Secure spider to drum with 4 bolts 		1		
Remove ranging arms		1		
<ul style="list-style-type: none"> Block ranging arms securely using 6 x 6 crib blocks 		1		One crib

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
<ul style="list-style-type: none"> ○ Place crib under the cutting motor and arm 		1		This allows the ranging arm to cantilever and takes the pressure off the ranging arm pins
<ul style="list-style-type: none"> ● Remove access covers to the ranging arm pins 		1		
<ul style="list-style-type: none"> ● Remove the ring fetter 	Failure to follow procedures outline could result in major lost time, and could cause significant damage to the shearer and ranging arm	3		Per instructions and drawing. There are two pins and four ring fetters and repeat for each pin
<ul style="list-style-type: none"> ● Install 3 come-a-longs to support the ranging arm 		1		Two come-a-longs at the motor. One come-a-long on the ranging arm near the drum
<ul style="list-style-type: none"> ● Remove the two ranging arm pins 		1		
<ul style="list-style-type: none"> ● Remove water lines in the hinge area 		1		
<ul style="list-style-type: none"> ● Remove the cover from the ranging arm jack pin – 4 bolts 		1		
<ul style="list-style-type: none"> ○ Leave jack attached to shearer 		1		
<ul style="list-style-type: none"> ● Remove ranging arm jack pin 		1		The shearer hydraulic system can be used to help free the pin
<ul style="list-style-type: none"> ○ Drive pin toward shields to remove 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Repeat this cycle on the second shearer drum and ranging arm		1		
Remove shearer plug		1		
Lock out/tag out shearer on 8 bay box	Failure to lock and tag could result in electrical shock, burns or fatality	3		Follow lock out/tag out procedures
Cut the cable at the shearer stand-off		1		
Cut the motor guts		1		
Ensure water is cut off at the headgate and tagged		1		
Disconnect water at the shearer		1		
Disconnect bretby chain from shearer		1		
Notify the scoop operator that shearer is ready to move		1		Store shearer in designated area according to plan

Duty 13: Removing the Pan Line Pinner

Learner will demonstrate how to conduct a safe and thorough process of removing the pan line pinner. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe process for removing the pan line pinner includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Plan work, observe hazards, could save lives	3		
Bolt the roof as per the longwall move plan up to the last pan	Small pieces of rock could cut, break bones or serious injury or death could occur	3		This bolting is a continuation of bolting being done on face
Stop the bolter		1		
Disconnect the pan the bolter is sitting on		1		
Connect the winch cable from the scoop to the pan line that the bolter is sitting on staying under the shield		1		
Instruct the scoop operator to advance the pan and the bolter as instructed by the bolter operator		1		Normally 5'
Install bolts according to the Roof Control Plan	Pieces of rock could cut, break bones or serious injury or death could occur	3		
Repeat this cycle until all roof is supported	Failure to torque bolt to roof control plan specifications will result in inadequate roof support	3		
Remove bolter power at power center		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Lock out/Tag out	Failure to lock and tag could result in electrical shock, burns or fatality	3		Follow lock out/tag out procedures
Cut bolter cable		1		
Instruct scoop operator to scoop up pan line and bolter		1		
Secure with winch cable	Bolter could slide in transit causing crushing injuries to bystanders	3		
Remove bolter from face area and put in designated area	Moving this creates a lot of pinch points, could cause crushing injuries to bystanders	2		See Longwall Move Plan

Duty 14: Prepare Shields for Removal

Learner will demonstrate how to conduct a safe and thorough procedure to prepare shields for removal. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe procedure to prepare shields for removal includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Plan work, observe hazards, could save lives	3		
Obtain and examine tools	The use of defective or wrong tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones or death.	3		Pull rope, channel locks (320 and 640), lady slipper bar, chisel, punch, rock bar, penetrating oil, stapler puller, anti seize, 15/16" socket ratchet (3/8" drive), side cutters
Bypass the methane monitors		1		
Double check all outgoing power from the 8 bay box is off and locked and tagged out	Failure to lock and tag could result in electrical shock, burns or fatality	3		Follow lock out/tag out procedures
Isolate emulsions pressure lines at the headgate	By isolating these emulsions pressure lines we would relieve 3000-4000 psi in the hydraulic lines. Oil injection under the skin, lose a limb, struck by a hose	3		
<ul style="list-style-type: none"> Turn off pressure valves located on the back flush filters at the stage loader 		1		
<ul style="list-style-type: none"> Open bypass valves on the back flush filters to bleed pressure 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
<ul style="list-style-type: none"> Tag out the valves that have been turned off and opened 		1		
Turn water off at the headgate mini master		1		Call outby to turn water off at the header
<ul style="list-style-type: none"> Bleed the water pressure at first shield 		1		
Lower cables and hoses previously hung at the headgate		1		Use come-a-long
Cut all cables at the corner		1		
Disconnect all hoses at the coupler nearest the corner		1		
Plug pressure and return emulsion lines		1		2" super staple and 2" regular staple
Tram mule to mid-face		1		
Secure all cables and hoses to the mule with a pull strap		1		
Notify everyone on face that the cables are going to be pulled	Could cause loss of limb or serious injury.	3		Caution: Notify all personnel in the area of the danger of cable removal. Use start up signals before starting scoop and moving
Pull cables and hoses out of the headgate to the designated area		1		See longwall move plan

Duty 15: Preparing Shields for Removal

Learner will demonstrate how to conduct a safe and thorough process of preparing shields for removal. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe process of preparing shields for removal includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Plan work, observe hazards, could save lives	3		
Obtain and examine tools	The use of defective or wrong tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones or death.	3		Pull rope, channel locks (320 and 640), lady slipper bar, chisel, punch, rock bar, penetrating oil, stapler puller, anti seize, 15/16" socket ratchet (3/8" drive), side cutters
<ul style="list-style-type: none"> Manually relieve pressure on each shield by pushing solenoid button 		1		
Listen for pressure release		1		
Uncouple manifold lines 1¼" pressure lines and a 2" return on the tailgate side of each shield		1		
Take the hoses that have been uncoupled from the tailgate side and loop back and recouple in the shield they are attached to		1		See diagram This must be uniformly done on each shield
Remove the ¾" plug from the manifold and tape it to the	Bodily injured or death due to back pressure and hydraulic	3		Caution: If manifold is not opened and is pressurized,

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
looped hoses	lines exploding			serious injury could occur
Remove water hose from tailgate side		1		
Take loose end of water hose and put in between the legs of the shield		1		
Disconnect the shield to shield cable on the tailgate side of PM 4		1		
<ul style="list-style-type: none"> • Pull staples 		1		
<ul style="list-style-type: none"> • Replace staples after cable is separated 		1		
Roll cable up and tape into roll and place between the legs of the shield		1		
Take the chain through the relay bar and fasten to the pin at the base lift jack		1		Use 15/16" socket wrench
Take the bridle off the base lift jack		1		
Take the hose off the tailgate side of the base lift jack		1		
Remove the hydraulic hose off the base lift jack on the headgate side at the source (on headgate leg)		1		
Take this hose and connect it to the port that is opened on the base lift jack		1		
Take the hose that was previously in the base lift jack,	Failure to connect this hose properly could result in being	2		See diagram

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
tailgate side, and put in open port of leg jack	struck by loose end of hose or oil injection			
Lay base lift jack down on the relay bar	Hand injuries could occur. Wear hand protection and use proper lifting procedures	2		
Turn KN valves off on each shield	If KN valves are not off, support failure could fall, roof could crush shield or persons	3		Failure to turn the KN valve off could allow the shield tip to float down
Continue on each shield to the headgate		1		

Duty 16: Remove Electrical Components

Learner will demonstrate how to safely and efficiently remove electrical components. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient procedures for removing electrical components include the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Plan work, observe hazards, could save lives	3		
Obtain and examine tools	The use of defective tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones or even death.	3		Side cutters
Remove phones				
<ul style="list-style-type: none"> Pull magnetic mounted phone from canopy 		1		
<ul style="list-style-type: none"> Cut phone cable 		1		
<ul style="list-style-type: none"> Lay on toe of shield to be recovered 		1		
Remove lights				
<ul style="list-style-type: none"> Slide lights out of rubber mounting brackets 		1		
<ul style="list-style-type: none"> Unplug cable at light, splitters, and neighbor shield 		1		
<ul style="list-style-type: none"> Roll cable up and place on toe along with the light fixtures 		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Disconnect and remove all cables from power supply box				Use 620 channel locks Turn brass nut counter clockwise until it can be removed by hand
<ul style="list-style-type: none"> Place PVC protector on all plugs and receptacles 		1		It protects the threads
<ul style="list-style-type: none"> Roll up, tape, and put on toe of shield 		1		
Remove light power supply box				
<ul style="list-style-type: none"> Pull pin from bracket 		1		
<ul style="list-style-type: none"> Tilt box toward gob 		1		
<ul style="list-style-type: none"> Lift box out of holder 		1		
<ul style="list-style-type: none"> Replace the pin 		1		
Continue this process for each shield to the headgate		1		

Duty 17: Clear the Face

Learner will demonstrate how to conduct a safe and thorough process of clearing the face. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe clear the face process includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Plan work, observe hazards, could save lives	3		
Contact scoop operator		1		
Load part box in the bucket of scoop	Bodily injury, loss of limbs, or death could occur.	3		Caution: Communication between scoop operator and employees loading materials into the boxes is essential
Have the scoop with the box travel from tailgate to headgate		1		
Load all loose parts in the box		1		SCSR, phone, light cables, splitters, lights, fire extinguisher, power supply boxes,
Load boxes onto the flat car for transporting		1		
<ul style="list-style-type: none"> Secure with chains and binders 		1		
Scoop the face		1		

Duty 18: Final Set-Up for Shield Removal

Learner will demonstrate how to conduct a safe and thorough final set-up for shield removal. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe final set-up for shield removal includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Plan work, observe hazards, could save lives	3		
Obtain and examine tools	The use of defective tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones or even death.	3		Hammer, screw driver, channel locks, chisel, lady slipper bar, 1/2" high pressure hose, (1,200'), Ten 1/2" cut-off valve, 24 to 26 couplers and 50 1/2" staples, two 1/2" tee, one 1/2" to 3/4" male to male staple fitting, 3/4" staple lock coupler, 620 scoop
Starting at the dump valve on the stage loader run 1/2" holes to tailgate with cut off valve every 100'		1		
Install the first tee on the corner at the headgate		1		
Run second line from the tee to the track with cut off valve on the end		1		
Set the walkers in place at tailgate	Prevent bodily injury or death	3		Caution: Notify all personnel in the area of the danger of setting walking shield. Shield could slide off duckbill. Use start up signals before

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
				starting scoop and moving
Hook 1/2" hose to the face side walker		1		
Uncouple ring line hoses from storage onto the walker shields		1		
Connect the hoses from walker shield to other walker shield	Hoses under pressure could cause bodily injury or death if not secured properly	3		
Plug open ports on walker manifolds	Failure to plug open ports could cause bodily injury or death if pressurized	3		
Remove the 1/2" plug from the manifold of the gob side walker and install 1/2" cut off valve		1		
Install 10', 1/2" hose to cut off valve		1		
Install 1/2" tee with two cut off valves with one being on the hose		1		See diagram
Install 1/2" to 3/4" fitting		1		
Install 3/4" coupler		1		
Disconnect the 3/4" hose from the pressure valve on the line shield and connect to the 3/4" coupler from the walker		1		

Duty 19: Shield Removal

Learner will demonstrate how to conduct a safe and thorough shield removal process. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe shield removal process includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Plan work, observe hazards, could save lives	3		
Build cribs per Roof Control Plan	Improperly built or placed cribs could result in bodily injury or death	3		See diagram
Tram mule from track to 65 shield with cable on machine		1		
Establish cable anchor at approximately 65 shield		1		
Tram mule to the tailgate		1		Someone must be assigned to watch the cable to be sure you have enough to reach the tailgate
Tram mule back to the track		1		Someone must be assigned to watch the cable to be sure you have enough to reach the track. Before the mule returns to the tailgate the cable must be manually moved to the toe of the shields
Tram the mule back to the tailgate and hook to the face side walker		1		
Use bridle bar and d-ring chain		1		
Put pressure on the line shield		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Hook GPU to shield to shield cable for shield electrical power		1		
Lower the shield 18" from the roof		1		
Advance the mule and face side walker within 6" of the last shield set in top	Bodily injury, loss of limb or death could occur	3		Caution: Notify all personnel in the area of the danger of close clearances and moving equipment. Use start up signals before starting mule and moving. Communication should be maintained with everyone involved. Be aware of pinch points and close clearances Only one person needs to direct the mule operator Avoid lights in operator's eyes
Pull mule up to gob side walker and hook to relay bar		1		
Advance the mule and gob side walker within 6" of the last shield set in top		1		Be aware of pinch points and close clearances Only one person needs to direct the mule operator Avoid lights in mule operator's eyes
Unhook mule from walker		1		
Swing boom to the line shield		1		
Hook D-ring to the toes of the line shield		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Lower shield to transport level		1		Pre-measure transport height marker. This could be a stick or PVC pipe.
Bleed pressure line between gob walker and line shield at 1/2" cut off		1		
Unhook pressure line from line shield	Unhooking pressurized hoses will cause bodily injury or death	3		
Unhook GPU from line shield		1		
Communicate with people in face area and mule operator		1		
Lift toe of shield to raise toe from bottom with mule boom		1		
Swing mule boom until the tip of the shield is within 6" of the face	Because of close clearances when mule is along shield line, serious injury or death could occur	3		Caution: The mule may swing toward the shield line
Retract the mule boom and pull shield toward headgate		1		Make sure line shield canopy stays on top of the mule boom to prevent breaking chain
Tram mule to the headgate pulling shield to the load out area		1		
Build crib to replace shield that has been extracted	Unsupported roof could cause serious injury or death	3		Follow the Roof Control Plan Caution: Use a roof spotter, have a planned escape route
Load mule with roof control material for the next shift		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Repeat process for entire shield line		1		

Duty 20: Loading Shields for Transport

Learner will demonstrate how to conduct a safe and thorough process of loading shields for transport. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough and safe process of loading shields for transport includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Conduct exam	Plan work, Observe hazards, could save lives	3		
Obtain and examine tools	The use of defective tools is a basic unsafe act. People tend to improvise, putting themselves at risk, hand tool injuries, cuts, broken bones or even death.	3		Screw driver, lady slipper bar, 12" chain, solenoid wrench, 5/16" bolt, nut, washer
	Prevent bodily injury, loss of limb or life	3		
Stop mule so the shield in tow is in the center of the intersection		1		
Pick toe of the shield up with boom of mule		1		
Tram duck bill scoop under shield		1		
Shut all equipment off		1		
Put chain in relay bar in the back of the shield	Loose rock sliding off shield could cause bodily injury or death	3		Caution: Rock may slide off the back side of the shield. Clean any visually loose rock off the shield prior to installing the chain

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Important 3=Critical		
Notify duck bill operator and mule operator when you are in the clear	Communication with ground person and mule operator is essential to prevent accidents from occurring	3		Ground man is the only person to give signals to equipment operators Equipment may not start until ground person has made contact with both equipment operators. Prior to starting either the duck bill or the mule, an audible warning must be given.
Start mule		1		
Lower the boom		1		
Unhook bridle chains		1		
Back mule up 5'		1		
Swing boom left clearing shield		1		
Raise boom to level of the canopy		1		
Swing boom to right to make contact with the shield tip		1		
Utilize the boom to line shield on duck bill		1		
Ensure the ground person instructs the operator that everyone is in the clear	Communication with ground person and mule operator is essential to prevent accidents from occurring	3		
Return mule to tailgate to get next shield		1		
Observe area	Prevent bodily injury, loss of limb or life	3		Stop all activity in loading area if any miners are in the travel area

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Lift shield with duck bill 12" to 14" just enough to clear the shield car to load		1		
Approach the shield car slowly		1		
Get the gob side of the shield over the car until the duck bill touches the shield car		1		
Lower the duck bill allowing the end of the shield to rest on the car		1		
Back the duck bill away from the car until the duck bill is within 10" edge of the toe		1		
Raise the duck bill until it takes the weight of the shield		1		
Swing the duck bill hard to the left without tramming		1		This should put the shield on the car so the duck bill can be trammed out from under the shield
Lower the duck bill		1		
Straighten the duck bill scoop up		1		
Back the scoop until you clear the toe of the shield. (Completely from under the shield)		1		
Raise the duck bill level with base of shield		1		
Tram forward slowly to align shield on car		1		Shield may tip of lift slightly on the duck bill side as it is being aligned

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Important 3=Critical		
Check height of shield for transportation	Improperly lowered shields could cause damage to equipment and slow the transportation process	2		Follow Longwall Move Plan
Build a crib under any canopy that shows signs of drift down		1		
Clean the top of the shield		1		
Bind the shield to the car utilizing binding chains and binders		1		See diagram
Spot the next shield car		1		
Set up for next shield		1		
Repeat the process until shields are removed		1		