Company Name:	**Equipment/Job Identification: ROOF BOLTER OPERATOR** **Type of Equipment:** **Make:**
Mine Name:	**Model:**
Date of Analysis:	**Year:** **FLETCHER** **Use:** **ROOF RANGER II**

Pre-Assessment

- **List pre-requisites here**

  Review the Fletcher Video
  Review the Roof Control Plan
  Review the Fletcher Operator's Manual

Duty 1: Start-of-Shift Activities

Objectives: Learner will explain the importance of the start-of-shift activities. The learner will explain each job step, why they are conducted, any associated risk, and how to implement appropriate controls. Start-of-shift activities include the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Self-evaluation				
• **Am I rested**				
• **Can I keep my mind on the work today**	**Possible serious injury to self or someone else**			
• **Am I drug and alcohol free**	**Difficult to operate this equipment in a confined area, impairment increases the risk of injury or accident.**			
Check in/tag in				
Change clothes				
Get W-65	**Protects you against smoke and contaminants in smoke**			

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
• Conduct visual examination	Make sure it will work			
o Seal and dents	Make sure it will work			
Get CSE SR-100	Provides you oxygen for a hour			
• Check indicators	Make sure it will work			
• Conduct visual examination	Make sure it will work			
o Seal and dents	Make sure it will work			
Obtain PPE	Help ensure your safety May not need all of the equipment all of the time, but you should have it available to you			Metacarpal Gloves Safety glasses Hearing protection Metatarsal safety shoes, leather boots strongly recommended Respirator Reflective material on clothing Hardhat
Get spotter	Can't take gas test			
• Check battery	Make sure it will work			
• Zero out	Make sure it will work			
Obtain tools				Hammer Channel locks Cresent wrench 6"flat screw driver
Obtain supplies	Don't have supplies you can't get the job done			Bits Inserts Bit clips Drill steel Drill wrenches Reflectors Dust filters Rope hangars
Meet with foreman	Need to find out what you need to do that day			
• Discuss roof control plan	Could cause roof falls, could cause injuries, delays in mining, promotes awareness.			Bolted/unbolted areas
• Attend safety talk	Promotes awareness			
• Talk with previous shift bolter				Supplies, Condition of roof,

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
operator or check white board				Condition of bolting machine, Maintenance needed on roof bolter, test holes, entry width
Enter the mine				
• Get on mantrip	Need to be on time Long way to walk or crawl			Ensure mantrip had been pre-oped
o Put on safety glasses	Prevent eye injuries			
o Ensure everyone is seated before mantrip moves	Low clearance areas			
• Ensure clearance is granted	Prevent collisions with other haulage			

Duty 2: Arrive at workplace

Objectives: Learner will demonstrate how to conduct safe and thorough work place and face examinations. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Thorough work place and face examinations include the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Exit mantrip				
Conduct work place examination	Observe for hazards, good housekeeping			
• Observe for mobile equipment	Prevention from getting ran over by the equipment (low coal)			
• Check for bad top	Prevent serious injury or fatality from falling rock			Check for cracks, loose rock, taking on weight, water
• Check for loose ribs	Prevent serious injury or fatality			Start at corner of last open crosscut Check for cracks Check for brows

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
				Check for sloughage
• Look for uneven bottom				undulation
• Check for slip/trip fall hazards				Look for crib blocks, rock, banding material, cable, bolts
• Check ventilation	Prevents gas and dust accumulations			
o Check Fly pads	Prevents gas and dust accumulations			
o Check Line curtains	Prevents gas and dust accumulations			
• Check for damaged bolts and bolts spacing	Prevents serious injury or fatality People take for granted the roof is adequately bolted			
• Visually inspect roof bolter cable	Prevent shock Prevent serious injury or fatality			
o Check for flat places	Damage to cable and could be a shock hazard			
o Check for torn jacket	Damage to cable and could be a shock hazard			
o Ensure cable is hung properly	Prevents cables from being damaged			Insulated hangers Insulated wire
• Correct and/or report any unsafe conditions	Safe work place examinations promote safer working places, more productivity			
Conduct work place examination	Ensures safety of employees			Repeat examination for each cut bolted
• Observe for mobile equipment	Prevention from getting ran over by the equipment (low coal)			
• Check for unsupported and bad top	Prevent serious injury or fatality from falling rock			Check for cracks, loose rock, taking on weight, water
o Scale loose top with slate bar if necessary	Prevent serious injury or fatality from falling rock			
o Spot bolt any areas that can't be scaled	Prevent serious injury or fatality from falling rock			
• Check for loose ribs	Prevent serious injury or fatality from falling rock			Start at corner of last open crosscut Cracks Brows Sloughage Support or scale any loose ribs

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
• Look for uneven bottom				Check for slip/trip hazards
• Check ventilation before tramming through	Prevent gas/dust accumulations			Check fly pads and line curtains Curtains must be maintained within two rows of bolts at all times until it is within 10' of the face. Avoid standing behind line curtain
• Check for methane with spotter	Prevents explosion			1' from face/roof/rib If magnet on head of miner is not used you must use a probe
• Check for damaged bolts and wide bolt spacing	Prevent roof falls and serious injury of fatality			
• Correct and/or report any unsafe conditions	Don't set a trap for someone else			
• Ensure reflectors are installed on second row of bolts from face	Don't set a trap for someone else			

Duty 3: Conduct dust parameter exam

Objectives: Learner will demonstrate how to conduct a thorough dust parameter examination. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough dust parameter examination includes the following job steps:

NOTE: Some dust parameter exams may be completed in conjunction with the roof bolter machine.

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Energize machine				
Check dust boxes	Too must dust it loses suction Can put respirable dust in the air			Seals Filters Latches

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Check water boxes				
Check suction on drill head	Must have good suction to get the cuttings away			
Check cut ventilation	Prevents explosions/controls dust			
Report completion of exam to foreman				Foreman is required to record

Duty 4: Pre-op on Roof Bolter

Objectives: Learner will demonstrate how to conduct a safe and thorough pre-operational inspection of the Fletcher roof bolter with the machine powered on. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough pre-operational inspection of the Fletcher roof bolter machine with the machine powered on includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Ensure everyone is clear of the red zone	Prevents crushing injuries			
Check fire suppression	If machine caught on fire there would be no way to put fire out			
Check panic strip	Prevent serious injury, stops the machine quickly			
Check operational controls	All controls must function the way the machine was manufactured			Make sure levers don't overlap or stick and proper "C" clips Check boom up/down/rotation, foot jack, swing control, canopy jack, fast feed, torque valve and boom extend
Check tram controls	If any lever is sticking can cause injury or death			

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
• Deck				Make sure levers don't overlap or stick and proper "C" clips
o Check Front lift				
o Check Rear lift				
o Check Cable reel take-up				
o Check panic strip	Stops machine in case of an emergency			
o Check right and left trams controls	Make sure levers are working properly. If not working properly can cause serious injury or death			
o Check foot control				
• Inch tram	Make sure levers are working properly. If ATRS are not working you are not able to bolt			Make sure levers don't overlap or stick and proper "C" clips, Check the ATRS functions, ATRS up and down, ATRS extend, ATRS front lift, ATRS beam extend, and right and left tram control
Check lights				
Check bolts/pins on canopies	You don't want canopy to fall on your head			
Check slate bar	Must have slate bar to pull hanging rock			
Check grease gun	Prevents mechanical failure that could prevent injury or down time			
Check for probe	Necessary to make proper gas checks			
Check for torque wrench	Necessary to check the torque on the bolts for safety precautions			
Check for pre-op sticker				
Look for hydraulic fluid leaks	Could be a violation, could cause damage to the machine.			

Duty 5: Tramming

Objectives: Learner will demonstrate and explain how to safely tram the bolter. Learner will demonstrate and explain job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Tramming steps include:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Communicate to others before starting roof bolter	Prevent injuries to others			Verbally
Get out of the red zone before restarting bolter	Prevent injuries to yourself and others			
Hang cable and tie off at last open break	Protect cable from mobile equipment. Prevent shock hazards.			Use existing roof bolt
Walk to and examine new work area	Ensure work area is safe			Ensure gas test is taken before tramming bolter to the face Ensure quality work place exam is conducted Ensure proper ventilation is provided
Tram bolter to next work place	Prevents damage to the equipment, makes moves more efficient			Swing booms in Raise booms Raise up foot jacks Lower boom canopies Ensure front of machine is off the bottom and the rear of the machine is not in the top
• Ensure ATRS is lowered				
• Disengage the reel valve				Allow the cable to free spool, if necessary Make sure all levers in deck are centered
Tramming bolter from inch tram controls	Prevent damage to equipment and to ensure your safety			Engage diversion valve Push valve down from deck Locate last row of bolts Inch tram forward to last row of bolts Offside operator must be at least

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
				two rows of bolts back Extend ATRS boom out Extend ATRS beam out Set ATRS against roof Engage inch tram diversion valve to begin drilling

Duty 6: Drill test holes

Objectives: Learner will demonstrate how to safely and productively drill test holes. Learner will demonstrate and explain job steps why you drill test holes. Operational steps include:

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Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Drill test hole at least 1 foot deeper than length of bolts installed	Test hole tells you the composition of the roof, helps to determine what roof support is adequate.			Review approved roof control plan and/or mine policy for exact location of test holes
Watch for steel to jump	Tells you if there is a separation in the rock above you or a rider seam			This comes with experience
Look, listen, and feel for changes in the roof	Tells you if there is a separation in the rock above you or a rider seam			This comes with experience
Measure test hole	Test hole tells you the composition of the roof, helps to determine what roof support is adequate.			Drag tip of tape measure against side of hole while withdrawing Catches with the tip of the tape measure indicates separation or cracks
Mark test hole				Depth Person who drilled the test hole

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
				Paint test hole Leave test hole open
Determine the length of bolts	Ensures adequate roof support			All bolts must anchor in at least 1 foot of solid roof at the end of the bolt. Notify section foreman to determine supplemental Support if you are unsure

Duty 7: Drilling and Installing Roof Bolts

Objectives: Learner will demonstrate how to safely and productively drill roof, rib and install bolts. Learner will demonstrate and explain job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Operational steps include:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Advance bolter 4 foot from last row of bolts	Wide spacing will cause inadequate roof support			
Set ATRS	For your protection			Refer to drilling test hole
Swing booms out no more than 4 foot from rib	Wide spacing will cause inadequate roof support			Use 48” roof bolt to measure distance Use marked drill steel
Set foot jack	Stabilizes the drill boom			
Set canopy	Prevents roof from hitting operator			Do not pressurize canopy against top
Examine roof	Prevents roof from hitting operator			Sight and sound at each drill hole location

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Place starter steel in drill pod				Hands off drill steels are used Keep body from over the boom
Raise boom, put steel against the roof, begin rotation and up pressure to the right depth of the hole				Look, listen and feel Discuss up pressure and rotation with trainee
Drop boom add pusher to finish depth of hole to same length of bolt				Discuss methods of extracting steel from hole
Get resin				
Get bolt and plate				
Insert resin into hole				
Insert bolt with plate				
Push bolt up with boom within 1" of top of roof	Prevents metal shavings coming off the plate rotation Ensures your glue mixes properly			
Rotate 3 to 8 seconds	Ensures your glue mixes properly			Rotate 35 revolutions This mixes the resin
Push bolt and plate against roof	Provides a beam of support across the entry			
Hold until resin sets up	Provides a beam of support across the entry			Follow manufacturer's directions
Drop boom				Keep body from under boom
Swing boom in 4 to 5 feet	If spacing is incorrect would be considered inadequate roof support			
Repeat drilling process				
Torque first and third bolt on the first row installed				Use torque wrench Refer to roof control plan for torque specs and report torques that do not meet the minimum requirement.
Torque second and fourth bolt on fourth row than alternate every four rows after				If you follow this sequence you check the mandatory 10 percent of all bolts installed
Make gas test with probe	Protects from gas build up and explosion			Before entering workplace Every 20 minutes thereafter
Advance line curtain as bolting progresses up to the second line of roof bolts outby	Protects from gas and dust explosion Helps carry gas away			
Bolt as close to face as possible				
Place reflectors/streamers on second	Gives warning to people they are			

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
row of roof bolts outby the face	approaching unsupported roof			
Clean dust box every second cut				In the last open line of breaks Wear respirator Keep air at your back Remove pan and dump on ground Clean filter

Duty 8: Service Roof Bolter

Objectives: Learner will demonstrate and explain how to safely service a Fletcher Roof Bolter. Learner will demonstrate and explain job steps, why they are conducted, and associated risk. Training steps include:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Grease pot	Make sure everything is working properly, lack of grease will cause failure			
Grease leveling arm	Make sure everything is working properly, lack of grease will cause failure			
Grease swing arm	Make sure everything is working properly, lack of grease will cause failure			

Duty 9: End of Shift Activities

Objectives: Learner will demonstrate how to safely and efficiently conduct end-of-shift duties. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient performance of end-of-shift duties includes the following job steps:

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
Report conditions to foreman or next bolt crew				Problems Supplies Things that was done to correct problems
Hang reflectors	Prevent people going under unsupported roof			
Properly dispose of damaged resin				
Move the machine to the last open crosscut				
De-energize machine if necessary	If no one makes a gas test you have an ignition source			
Go to mantrip do a head count				
Tag out				
Place methane spotter on charger				
Place cap light on charger				
Make notations on white board as needed				
Go home				