

<b>Company Name:</b>	<b>Equipment/Job Identification: Oldenburg Cannon</b> <b>Type of Equipment: Roof Bolter</b> <b>Make: Cannon</b> <b>Model: DP12 – HED – RB3</b> <b>Year: 2002</b> <b>Use:</b>
<b>Mine Name:</b>	
<b>Date of Analysis: March 14-16, 2006</b>	

**Pre-Assessment:**

Part 48 New Miner Orientation Training;  
 JSA Reviews;  
 Mine Specific Ground Control Plan Review;  
 Safety Handbook Review;  
 Review the Manufacturer's Operating Roof Bolter Manual

**Duty 1: Start-of-shift Activities**

Learner will explain the importance of start-of-shift activities. The learner will explain each job step, why it is 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	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Impt 3=Critical		
Perform Self Assessment	Inattentiveness could lead to errors and mistakes which could result in injuries and property damage.	2		You should be mentally and physically ready for work; Refer to company drug policy.
Observe the parking lot		1		
<ul style="list-style-type: none"> <li>Observe mobile mine equipment, vehicles and pedestrian traffic</li> </ul>		1		
<ul style="list-style-type: none"> <li>Obey traffic and warning signs</li> </ul>		1		
<ul style="list-style-type: none"> <li>Be aware of road hazards and traffic patterns</li> </ul>		1		
Park vehicle in designated parking lot		1		
Enter change room		1		
<ul style="list-style-type: none"> <li>Don PPE</li> </ul>		1		Refer to company policy.

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/Notes/Comments
		1=Important 2=Very Impt 3=Critical		
<ul style="list-style-type: none"> <li>• Examine PPE for defects <ul style="list-style-type: none"> <li>○ Hard hat</li> <li>○ Safety shoes</li> <li>○ Mine Belt</li> <li>○ Hearing Protection</li> </ul> </li> </ul>				Replace PPE if necessary.
<ul style="list-style-type: none"> <li>• Ensure I.D. tag on person</li> </ul>		1		Required by company and MSHA; It identifies individuals in case of injury or death.
<ul style="list-style-type: none"> <li>• Check self rescuer <ul style="list-style-type: none"> <li>○ Assure seal is in tact/damage</li> </ul> </li> </ul>	In case of fire, it will provide you some time to get to safe air.	2		Replace if damaged.
<ul style="list-style-type: none"> <li>• Obtain assigned cap lamp <ul style="list-style-type: none"> <li>○ Examine lens and locking pin, water level and bulb</li> <li>○ Examine and test light</li> </ul> </li> </ul>	In case of fire, it will provide you some time to get to safe air.	1		This is to assure permissibility.
<ul style="list-style-type: none"> <li>• Remove all smoking articles from possession</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Fill water cooler with water and ice</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Check tag board to assure mine is clear for tag in</li> </ul>		1		If "mine not clear", do not tag in.
<ul style="list-style-type: none"> <li>• Tag in</li> </ul>				If "mine not clear", do not tag in.
Walk to the man cage		1		
<ul style="list-style-type: none"> <li>• Open shaft gate</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Open man cage door</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Enter man cage</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Close and secure latch on shaft gate</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Sound hoist signals</li> </ul>		1		Follow posted hoist signals.
<ul style="list-style-type: none"> <li>• Listen for return signal from hoistman</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Close man cage door when proper return signal is received</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Travel to required mine level</li> </ul>		1		

Job Steps	Importance Narrative (Consider Safety, Production, Maintenance)	Importance Ranking	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
		1=Important 2=Very Impt 3=Critical		
<ul style="list-style-type: none"> <li>Exit man cage, close &amp; latch door</li> </ul>		1		Watch your step when exiting cage.
<ul style="list-style-type: none"> <li>Open shaft landing gate, pass through, close and latch gate</li> </ul>		1		
<ul style="list-style-type: none"> <li>Give appropriate hoist signal to hoistman</li> </ul>		1		
Travel to lunch room		1		
Communicate with other shift bolter operator		1		
<ul style="list-style-type: none"> <li>Discuss the operating condition of the bolter and mine condition of work area</li> </ul>		1		
Wait for work orders from supervisor		1		
Obtain additional PPE (gloves)		1		
Obtain transportation		1		Obtain pre-shift inspection form and conduct inspection; follow company policy
Travel to the location of the bolter		1		
<ul style="list-style-type: none"> <li>Observe location of trailing cables</li> </ul>	Contact with exposed trailing cables can lead to equipment damage and/or injury.	2		Never run over cables. Report and correct damage trailing cables.
<ul style="list-style-type: none"> <li>Yield to other mobile equipment</li> </ul>	Roof bolter trams slow and could cause collision with other equipment (equipment damage and injury)	2		
<ul style="list-style-type: none"> <li>Look for any previously installed fallen bolts</li> </ul>		1		Notify supervisor of fallen bolts.
<ul style="list-style-type: none"> <li>Look for loose scale on rib and roof</li> </ul>	Locating and fixing loose scale on roof and rib can prevent equipment damage and injury.	2		Notify supervisor of loose scale and take corrective measures.
<ul style="list-style-type: none"> <li>Be aware of bench area</li> </ul>	Benches advance daily; failure to identify the bench location could result in a fall of person or equipment.	2		Benches will be identified by warning signs, barriers, berms and ropes.
Conduct visual exam of work place		1		
<ul style="list-style-type: none"> <li>Loose scale on rib and roof</li> </ul>	Locating and fixing loose scale on roof and rib can prevent equipment damage and injury.	2		Notify supervisor of loose scale and take corrective measures.
<ul style="list-style-type: none"> <li>Trip and Slip Hazards</li> </ul>		1		Floors are slippery.
<ul style="list-style-type: none"> <li>Location of power centers and cable</li> </ul>	Contact with exposed electrical cables can lead to equipment damage & injury.	2		

## Duty 2: Conduct Pre-Op on Bolter (Power Off)

Learner will demonstrate how to safely and thoroughly perform pre-operational checks on the roof bolter (power off). Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. A safe and thorough pre-operational examination on the roof bolter (power off) 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 inventory of required materials		1		
<ul style="list-style-type: none"> <li>Minimum of 50 Bolts and Plates</li> </ul>		1		
<ul style="list-style-type: none"> <li>Bits</li> </ul>		1		
<ul style="list-style-type: none"> <li>Cotter pins</li> </ul>		1		
<ul style="list-style-type: none"> <li>Two Pipe wrenches</li> </ul>		1		
<ul style="list-style-type: none"> <li>Pliers</li> </ul>		1		
<ul style="list-style-type: none"> <li>Flat File</li> </ul>		1		
<ul style="list-style-type: none"> <li>Hammer</li> </ul>		1		
<ul style="list-style-type: none"> <li>Torque wrench</li> </ul>		1		
<ul style="list-style-type: none"> <li>Grease gun and cartridges</li> </ul>		1		
<ul style="list-style-type: none"> <li>Anti seizing compound</li> </ul>		1		
Obtain necessary materials if needed		1		Use good materials handling techniques and wear PPE.
Conduct walk around safety check with check list		1		
<ul style="list-style-type: none"> <li>Structural damage to engine covers</li> </ul>		1		
<ul style="list-style-type: none"> <li>Grab handles</li> </ul>		1		
<ul style="list-style-type: none"> <li>Steps</li> </ul>		1		
<ul style="list-style-type: none"> <li>Broken or damaged light housing</li> </ul>		1		
<ul style="list-style-type: none"> <li>Bent or damaged outriggers</li> </ul>		1		
<ul style="list-style-type: none"> <li>Oil leaks</li> </ul>		1		If it is an excessive oil leak, contact maintenance.
<ul style="list-style-type: none"> <li>Condition of cab</li> </ul>		1		While looking at the condition of the cab, look for a maintenance "do not operate" tag. If tag is found, contact maintenance.
<ul style="list-style-type: none"> <li>Obvious boom damage</li> </ul>		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		
• Broken braces		1		
• Bolting package		1		
o Feed cable		1		
o Centralizer		1		
o Stinger		1		
o Cable Sheaves		1		
o Drill Steel condition		1		
o Drill Bit condition		1		
• Wheel lugs and tires condition		1		
• Hydraulic fluid site glass		1		
• Diesel site glass		1		
• Coolant site glass		1		
• Compressor site glass		1		
• Motor oil level		1		
• Pelletizer Water Level		1		
• Housekeeping		1		Clean cab, remove trash
• Fire extinguisher		1		Follow Company Policy: the bolter can not be operated if the fire extinguisher pin is removed. Give trainee information about fire extinguisher checks.
• Fire suppression system		1		Follow Company Policy: do not operate bolter if the suppression system is not operational.
Grease the bolter head assembly	Premature component failure will shorten equipment life. Lock out / Tag Out is a Cardinal Safety Rule. It will prevent serious injury or death from unexpected motion.	2		Refer to lubrication chart; follow company lock out - tag out procedures.

### Duty 3: Conduct Pre-Op on Bolter (Power On)

Learner will demonstrate how to conduct a safe and thorough pre-operational exam on the powered on roof bolter. Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. A safe and thorough pre-operational exam on the roof bolter (power on) includes the following 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		
Pre Start up		1		
<ul style="list-style-type: none"> <li>Remove wheel chocks</li> </ul>		1		
<ul style="list-style-type: none"> <li>Turn on main switch</li> </ul>		1		
<ul style="list-style-type: none"> <li>Enter cab</li> </ul>		1		Use three points of contact
<ul style="list-style-type: none"> <li>Apply park brakes</li> </ul>		1		
<ul style="list-style-type: none"> <li>Ensure pump unloading valve is disengaged</li> </ul>		1		
<ul style="list-style-type: none"> <li>Assure all boom toggle switches are in the neutral position</li> </ul>		1		
<ul style="list-style-type: none"> <li>Assure air compressor switch is off</li> </ul>		1		
<ul style="list-style-type: none"> <li>Assure toggle switch is in low tram mode</li> </ul>		1		
<ul style="list-style-type: none"> <li>Assure engine speed control toggle switch is in the auto position</li> </ul>		1		
<ul style="list-style-type: none"> <li>Assure emergency stop button is pulled out</li> </ul>		1		If it is pushed in, it will not start.
<ul style="list-style-type: none"> <li>Turn on ignition switch</li> </ul>		1		
<ul style="list-style-type: none"> <li>Observe oil pressure light</li> </ul>		1		Notify maintenance if light does not work.
<ul style="list-style-type: none"> <li>Press pre-heat glow plugs for 15 to 30 seconds</li> </ul>		1		
<ul style="list-style-type: none"> <li>Press and hold by pass button</li> </ul>		1		This by passes the oil pressure sensor.
<ul style="list-style-type: none"> <li>Rotate ignition key to the start position and release as engine starts</li> </ul>		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"> <li>Hold by pass button until the red low engine oil pressure light goes out</li> </ul>		1		If light remains on, shut down bolter and contact maintenance.
<ul style="list-style-type: none"> <li>Release by pass button</li> </ul>		1		
<b>Post Start Up</b>				
<ul style="list-style-type: none"> <li>Observe return filters plugged warning indicator light</li> </ul>		1		Shut down bolter and notify maintenance if indicator light stays on after five minutes.
<ul style="list-style-type: none"> <li>Observe hydraulic level light</li> </ul>		1		
<ul style="list-style-type: none"> <li>Increase engine speed to full</li> </ul>		1		
<ul style="list-style-type: none"> <li>Check turret package functions</li> </ul>		1		A switched hose could cause machine components to operate incorrectly. Any malfunction needs to be corrected immediately. Shut down bolter and notify supervisor and maintenance.
<ul style="list-style-type: none"> <li>o Tilt: <ul style="list-style-type: none"> <li>Push lever down to tilt turret in toward cab</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>o Tilt: <ul style="list-style-type: none"> <li>Push lever up to tilts turret out away from cab</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>o Roll <ul style="list-style-type: none"> <li>Push lever down to roll the package left</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>o Roll <ul style="list-style-type: none"> <li>Push lever up to roll the package right</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>o Secondary Stinger <ul style="list-style-type: none"> <li>Push lever down to retract stinger</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>o Secondary Stinger <ul style="list-style-type: none"> <li>Push lever up to extend stinger</li> </ul> </li> </ul>		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"> <li>• Check the boom control functions</li> </ul>		1		A switched hose could cause machine components to operate incorrectly. Any malfunction needs to be corrected immediately. Shut down bolter and notify supervisor and maintenance.
<ul style="list-style-type: none"> <li>○ Swing</li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>• Push lever down to swing boom left</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>• Push lever up to swing boom right</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>○ Extend / Retract</li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>• Push lever up to extend</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>• Push lever down to retract</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>○ Raise / Lower:</li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>• Push lever up to raise boom</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>• Push lever down to lower boom</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>• Assure boom is centered</li> </ul>	If it is not centered, there is potential for the bolter to tip over if outriggers are raised.	2		
<ul style="list-style-type: none"> <li>• Assure hydraulic hoses are not dragging</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Check that all four outriggers are functioning properly</li> </ul>		1		A switched hose could cause machine components to operate incorrectly. If hoses are switched, contact maintenance.
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Push to lower</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Pull to Raise</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>• Raise outriggers</li> </ul>		1		Raise riggers to assure machine is balanced.

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"> <li>• Test the brakes</li> </ul>		1		If the bolter moves during test, chock wheels, tag out, and notify maintenance.
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Engage tram forward</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Engage tram in reverse</li> </ul> </li> </ul>		1		
Turn on tram light		1		
Turn off park brakes		1		Audible alarm will indicate brakes are released.
Fill out the relevant part of the Pre-shift form		1		If problems arise during the shift, make note on the form; turn in form at end of shift.

## Duty 4: Tram to Workplace

Learner will demonstrate how to safely and efficiently tram to the workplace. Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient tramping procedures include the following 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		
Place the boom in a safe zone		1		
Turn off compressor		1		
Raise outriggers		1		
Release brakes		1		
Operate the joy stick		1		This is a self-centering control. If you let go of joystick, it will return to neutral / stop position. Never disable the self-centering control.
<ul style="list-style-type: none"> <li>Push forward and hold to move forward</li> </ul>		1		
<ul style="list-style-type: none"> <li>Push back and hold to move in reverse</li> </ul>		1		
<ul style="list-style-type: none"> <li>Push right and hold to move right</li> </ul>		1		
<ul style="list-style-type: none"> <li>Pull left and hold to move left</li> </ul>		1		
Ensure safe travel to work place		2		
<ul style="list-style-type: none"> <li>Observe roof and rib conditions</li> </ul>	Locating and fixing loose scale on roof and rib can prevent equipment damage and injury.	2		
<ul style="list-style-type: none"> <li>Yield to other mobile equipment</li> </ul>	Roof bolter trams slow and could cause collision with other equipment. (equipment damage and injury)	2		
<ul style="list-style-type: none"> <li>Do not tram over exposed trailing cables</li> </ul>	Contact with exposed trailing cables can lead to equipment damage and/or injury.	2		
Tram to work site		1		
Position bolter to begin installation		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		
Perform work area examination		2		
<ul style="list-style-type: none"> <li>Observe roof and rib conditions</li> </ul>	Locating and fixing loose scale on roof and rib can prevent equipment damage and injury.	2		
<ul style="list-style-type: none"> <li>Exposed trailing cables</li> </ul>	Contact with exposed trailing cables can lead to equipment damage and/or injury.	2		
<ul style="list-style-type: none"> <li>Other mobile equipment</li> </ul>	Roof bolter trams slow and could cause collision with other equipment. (equipment damage and injury)	2		
<ul style="list-style-type: none"> <li>Exposed hanging cables</li> </ul>	Roof bolter could accidentally make contact with the energized hanging cable; could cause potential injury, equipment damage, and loss of productivity.	2		
<ul style="list-style-type: none"> <li>Pedestrian traffic</li> </ul>		1		

## Duty 5: Set Up in Work Place

Learner will demonstrate how to properly set up the roof bolter in the work place. Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Setting up of the roof bolter safely in the workplace 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		
Apply park brake		1		
Set all outriggers		1		
Place turret in up right position		1		
<ul style="list-style-type: none"> <li>Assure the turret rotate switch is in the drill position</li> </ul>		1		
<ul style="list-style-type: none"> <li>Press and hold reverse rotation toggle switch to assure the magazine is fully rotated.</li> </ul>		1		
<ul style="list-style-type: none"> <li>Place the turret rotate switch to the bolt position</li> </ul>		1		
Place turret on floor		1		
Reduce engine motor speed to auto		1		
Assure hydraulic system is unloaded by disengaging the unloading valve		1		
Shut off engine		1		
Don PPE		1		Gloves
Exit cab		1		Use three points of contact.
Proceed to the backside of the turret		1		
Pull up the magazine rotation manual lock		1		
Rotate magazine manually in a counterclockwise direction		1		
Stop rotation at the last bolt slot		1		
Place hydraulic line in a safe location		1		Could slide in and cause problems.
Return to the basket in front of bolter		1		

## Duty 6: Assemble Bolts

Learner will demonstrate how to work safely while assembling bolts. Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. The proper procedures for working safely and efficiently while assembling bolts 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		
Place bolt bundles on bolter frame across the basket		1		
Remove tie wire from bolt bundles		1		Do not leave ties on mine floor (house keeping).
Place nut end of bolts on mine floor		1		
Remove tie wires from bolt plates		1		
Remove expansion anchor shell from bolts		1		
Place the plate on the bolt		1		Place the embossed side upward.
Replace the anchor shell		1		
Prepare ten bolts		1		

## Duty 7: Load Bolt Magazine

Learner will demonstrate how to safely and thoroughly load the bolt magazine. Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and thorough bolt magazine loading 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		
Carry prepared bolts to the turret		1		
Place first bolt into the storage slot		1		Use correct lifting procedures; do not attempt to carry too many at a time.
<ul style="list-style-type: none"> <li>Place plate end down</li> </ul>		1		
Rotate the bolt magazine manually clockwise to the next slot		1		
Repeat installation until bolt magazine is full		1		
Assure all bolts are in place		1		
Rotate clockwise until magazine manually locks into position		1		Attempt to rotate it counter clock wise to ensure the magazine manual lock is locked.

## Duty 8: Prepare for Bolt Installation

Learner will demonstrate how to safely and efficiently prepare for bolts installation. Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient bolt installation 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		
Enter Cab		1		Use three points of contact.
Start Roof Bolter		1		
Engage hydraulic unloading valve		1		
Place engine speed control to full		1		
Turn on air compressor and observe gauge		1		Must obtain 140 psi.
Raise boom approximately five feet above floor		1		
Flip turret rotation toggle switch to drill position		1		

## Duty 9: Install Test Bolt

Learner will demonstrate how to safely and efficiently install the test bolt. Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient test bolt installation includes the following 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		
Maneuver boom tilt and roll functions to contact centra stinger against rib		1		
Extend secondary stinger against the rib		1		This holds it in place and prevents further movement.
Flip the drill motor feed switch to the forward position using your right thumb and pointer finger		1		
Flip the pelletizer / water switch using your left thumb and pointer to the on position		1		
Place the drill rotation motor switch to the forward position using your left hand		1		Drilling has started; Drill feed has stopped.
Flip the drill motor feed switch to the reverse position using your right thumb and pointer finger		1		
Flip the pelletizer / water switch using your left thumb and pointer to the off position		1		
Turn drill rotation motor off		1		Turn off when drill steel is three feet out of the hole. This cleans out hole and extends the bit life.
Engage the magazine rotation switch forward, loading bolt into grabber		1		
Flip the turret rotate switch to bolt		1		
Engage the feed switch forward		1		
Flip centralizer switch to open position after the bolt reaches two-thirds penetration		1		It permits the plate and motor to pass through the centralizer.

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		
Flip bolt driver switch to forward position once bolt is fully inserted		1		
Observe torque pressure gauge for proper torque installation		1		*Torque to 3000 psi; This permits the bolt to torque to the proper range.
Flip the bolt driver switch to the neutral position		1		
Place feed switch to the reverse position		1		
Retract secondary stinger		1		
Swing boom away from rib once the motor reaches the end of travel		1		
Flip centralizer switch to the closed position		1		
Flip turret rotate switch to drill		1		
Rotate and center the boom to upright position		1		
Lower boom to rest on the mine floor		1		
Switch engine speed to auto		1		
Reposition torque wrench on cab floor		1		
Exit cab		1		Use three points of contact.
Remove torque wrench from cab		1		
Proceed to the test bolt location		1		
Check bolt torque		1		Torque to 150 FP; Notify maintenance if the torque is incorrect.

\*Torque measurement is an approximation. Please see supervisor for updated information.

## Duty 10: Install Bolt into Roof

Learner will demonstrate how to safely and efficiently install roof bolts. Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient installation of roof bolts 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		
Maneuver boom tilt and roll functions to contact centra stinger against roof		1		
Extend secondary stinger against the roof		1		This holds it in place and prevents further movement.
Flip the drill motor feed switch to the forward position using your right thumb and pointer finger		1		
Flip the pelletizer / water switch using your left thumb and pointer to the on position		1		
Place the drill rotation motor switch to the forward position using the left hand		1		Drilling has started; Drill feed has stopped.
Flip the drill motor feed switch to the reverse position using your right thumb and pointer finger		1		
Flip the pelletizer / water switch using your left thumb and pointer to the off position		1		
Turn off drill rotation motor		1		Turn off when drill steel is three feet out of the hole. This cleans out hole and extends the bit life.
Engage the magazine rotation switch forward, loading bolt into grabber		1		
Flip the turret rotate switch to bolt		1		
Engage the feed switch forward		1		
Flip centralizer switch to open position after the bolt reaches two-thirds penetration		1		It permits the plate and motor to pass through the centralizer.

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		
Flip bolt driver switch to forward position once bolt is fully inserted		1		
Observe torque pressure gauge for proper torque installation		1		*Torque to 3000 psi; This permits the bolt to torque to the proper range.
Flip the bolt driver switch to the neutral position		1		
Place feed into reverse position		1		
Retract secondary stinger		1		
Lower boom from roof once the motor reaches the end of travel		1		
Flip centralizer switch to the closed position		1		
Flip turret rotation switch to drill		1		
Swing boom over to next bolt location		1		
Place bolts approximately six feet apart unless condition warrants otherwise.		1		Bolt pattern will be according to supervisor instructions.
Tram to the next location		1		See Duty: "Tram to Workplace"

\*Torque measurement is an approximation. Please see supervisor for updated information.

## Duty 11: End of Shift Activities

Learner will demonstrate how to safely and efficiently perform end of shift activities. Learner will also explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and thorough end of shift activities 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		
Tram bolter to a safe location		1		
Lower outriggers		1		
Apply park brakes		1		
Turn on air compressor switch		1		
Exit cab		1		Use three points of contact
Unwrap wash down hose		1		The hose is mounted on the front right side of the cab.
Turn on water valve		1		
Wash turret structure	It extends life of components.	2		Removes pelletizing slurry from key components and prevents wear.
Turn off water valve		1		
Hang up the wash down hose		1		
Enter cab		1		Use three point of contact
Turn off compressor switch		1		
Swing boom to rib		1		Minimize damage by passing mobile equipment.
Lower boom approximately one foot above the floor		1		
Ensure all switches are in neutral position		1		
Place engine speed control switch to auto		1		
Disengage unloading valve		1		
Turn off ignition key		1		
Exit Cab		1		Use three points of contact.
Turn off main switch		1		
Chock wheels		1		This prevents unplanned movement.
Travel to production office		1		
Complete roof bolting report		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		
Turn in pre-shift report		1		Document discrepancies on work request form; This initiates the work order process.
Communicate with the on coming roof bolter operator		1		
Walk to the man cage		1		
• Open shaft gate		1		
• Open man cage door		1		
• Enter man cage		1		
• Close and secure latch on shaft gate		1		
• Sound hoist signals		1		Follow posted hoist signals.
• Listen for return signal from hoistman		1		
• Close man cage door when proper return signal is received		1		
• Travel to surface		1		
• Exit man cage, close and latch door		1		Watch your step when exiting man cage.
• Open shaft landing gate, pass through, close and latch gate		1		
• Give appropriate hoist signal to hoistman		1		
Enter change Room				
• Tag out	Until everyone is tagged out and accounted for, production will be stopped.	3		Remove your tag indicating you are out of the mine.
• Place mine light on charger		1		This ensures the light is ready for use on your next scheduled shift.

## Duty 12: Replace worn steels

Learner will demonstrate how to safely and efficiently replace worn or broken steels. Learner will explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient worn or broken steel replacement 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		
Tilt turret forward		1		
Lower boom to comfortable working height		1		
Place all switches in neutral position		1		
Turn off compressor switch		1		
Place Engine Speed Control to auto		1		
Disengage the unloading valve		1		
Turn off engine		1		
Remove key from ignition		1		
Lock out and tag out	This is a Cardinal Safety Rule. It will prevent serious injury or death from unexpected start up.	3		Refer to lock out / tag out policy.
Exit cab		1		Use three points of contact
Acquire two pipe wrenches		1		Wrenches are found in the toolbox outside cab.
Unscrew steel		1		
Remove steel				
Place worn / broken steel in basket until the end of day		1		Operator will dispose the damaged steels at end of shift in the designated area.
Obtain steel from storage		1		
Apply anti-seizing compound to steel threads and adaptor		1		
Replace with new steel by screwing steel into adaptor		1		

## Duty 13: Replace worn bits

Learner will demonstrate how to safely and efficiently replace worn bits. Learner will explain the job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient replacement of worn bits 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		
Tilt turret forward		1		
Lower boom to comfortable working height		1		
Place all switches in neutral position		1		
Turn off compressor switch		1		
Place Engine Speed Control to auto		1		
Disengage the unloading valve		1		
Turn off engine		1		
Remove key from ignition		1		
Lock out – tag out	This is a Cardinal Safety Rule. It will prevent serious injury or death from unexpected start up.	3		Refer to lock out / tag out policy.
Obtain hand tools		1		
• Pliers				
• Hammer				
• Screw driver				
Obtain replacement bit and cotter pin		1		
Exit cab		1		Use three points of contact.
Travel to turret		1		Observe potential slippery conditions.
Remove old bit and pin		1		Operator disposes the damaged bits at end of shift in the designated area.
Replace with new bit and pin		1		New bit will drill faster.