

Company Name:	Equipment/Job Identification: Tower Cleaning (CARDOX) Type of Equipment: Make: Model: Year: Use:
Mine Name:	
Date of Analysis:	

Duty 1: Planning

Objective: The learner will explain the importance of the planning meeting in determining work to be accomplished. The learner will explain and interpret information received in the planning meeting to the trainer. The learner will explain each job step, why it is conducted, any associated risk, and how to implement appropriate controls. Planning activities include the following duties:

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
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Duty 2: Preparation Work

Objective: Learner will demonstrate safe preparatory work procedures. The learner will explain the results of committing unsafe acts on the job. The learner will explain and demonstrate the steps to preparatory work. The learner will explain listed job steps, why they are conducted, any associated risk, and how to implement appropriate controls. Preparatory work includes the following duties:

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 all safety precautions are met				Ensure strobe lights are on. Discharge and shut off air cannons. Don necessary PPE (drillers and installers): FR - hood with face shields; hats; coats; and gloves. Hearing protection. Must be a minimum of two persons are present before opening port. Perform workplace exam. No one is to enter the area without getting permission from the shift supervisor.
Identify ports to be shot				Explain build-up identification process/procedure
Call Supervisor				

Duty 3: Execute

Objective: The Learner will demonstrate how to execute the job. The learner will explain the job steps listed, why they are conducted, any associated risk, and how to implement appropriate controls. A thorough execution of the job 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
Drilling				
<ul style="list-style-type: none"> • Remove cap 				
<ul style="list-style-type: none"> • Obtain drill 				Pneumatic drills and hoses are located on each level (3 rd , 3 ½ , and 4 th) on retractable hose reels. Make certain that hoses do not become a tripping hazard, and all connections are pinned to prevent whipping action.
<ul style="list-style-type: none"> a. Make certain that drilling depth is a minimum of 17 inches. 				Ascertain that drilling procedure is as straight as possible (tube will not lock into collar , if not properly aligned). Use extreme caution in blow-back mode, when clearing hole (Extremely hot materials may be present).
<ul style="list-style-type: none"> • Retract drill 				

Loading				
<ul style="list-style-type: none"> • Load tube 				<p>Tube loading will be done concurrently by another crew member, per JBC training.</p> <p>Show JBC video.</p>
<ul style="list-style-type: none"> • Go into CARDOX room, turn on CO2 bottle at fill station 				
<ul style="list-style-type: none"> • Visually examine CARDOX tube 				<p>Make sure mating surfaces are clean and true.</p>
<ul style="list-style-type: none"> • Install tube into assembly stand 				
<ul style="list-style-type: none"> • Install copper gasket, shear disc, and then select appropriate discharge head 				<p>Rounded edge of shear disc should be against copper gasket</p>
<ul style="list-style-type: none"> • Install generator and detonation head on other end 				<p>Generator end of tube is chromed –polished end</p>
<ul style="list-style-type: none"> • Impacted both ends with short bursts 				
<ul style="list-style-type: none"> • Check continuity with Ohm meter to ensure good connection (low resistance) 				<p>Zero to three ohms is good; three to five marginal; and above five is not acceptable.</p>
<ul style="list-style-type: none"> • Install tube into fill station 				
<ul style="list-style-type: none"> • Open spindle valve three-quarters turn 				
<ul style="list-style-type: none"> • Open CO2 fill station valve 				
<ul style="list-style-type: none"> • Open air pump ball valve 				
<ul style="list-style-type: none"> • Pump cycles until it almost stalls 				
<ul style="list-style-type: none"> • Close spindle valve (hand-tight) 				
<ul style="list-style-type: none"> • Shut pump hand valve and CO2 hand valve off 				
<ul style="list-style-type: none"> • Open bleed-off valve (bleeds off bottle pressure in lines) 				
<ul style="list-style-type: none"> • Carry tube to collar stand on proper floor 				

Shooting				
<ul style="list-style-type: none"> Install locking collar and safety cap and chain on tube 				Wrench tightened.
<ul style="list-style-type: none"> Lay out detonation wire and shunt 				Shunt wires at detonation end
<ul style="list-style-type: none"> Secure tube into port to be shot <ul style="list-style-type: none"> a. Turn clockwise ¼ turn until it stops. 				
<ul style="list-style-type: none"> Insert tube-end probes (wires) 				
<ul style="list-style-type: none"> Clear the blast area 				
<ul style="list-style-type: none"> Un-shunt detonation wires and check continuity 				Be sure to use permissible Blaster's ohmmeter (yellow or orange in color)
<ul style="list-style-type: none"> Connect wires to detonator <ul style="list-style-type: none"> a. One crew member sounds alarm 				
<ul style="list-style-type: none"> Radio transmission of " Fire in the hole " 				
<ul style="list-style-type: none"> Initiate firing sequence <ul style="list-style-type: none"> a. Charge detonator 				Hold button until green light appears.
<ul style="list-style-type: none"> <ul style="list-style-type: none"> b. FIRE 				Press detonate button immediately after alarm stops.
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 1) Misfire 				DO NOT REMOVE tube at this time
<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> a) Disconnect and shunt wires b) Slowly open spindle valve to bleed off pressure. 				Tube is still under full pressure.
<ul style="list-style-type: none"> Remove wires from detonator 				
<ul style="list-style-type: none"> Remove tube 				
<ul style="list-style-type: none"> Re-install cap on port 				
<ul style="list-style-type: none"> Return tube to CARDOX room 				
<ul style="list-style-type: none"> Put tube back into assembly stand and lock in 				

Duty 4: Clean-up

Objective: The Learner will demonstrate how to safely startup the roller mill circuit. The learner will demonstrate the proper procedure for a startup. The learner will also explain and demonstrate other job steps listed, and explain why they are conducted, any associated risk, and how to implement appropriate controls. The proper startup procedure will include the following job steps and activities:

Job Steps	Importance Narrative (Consider Safety, Production, and Maintenance)	Importance Narrative 1=Important 2=Very Important 3=Critical	Satisfactory or Needs Work	Procedures/Risk Resolution/ Notes/Comments
<ul style="list-style-type: none"> Turn off warning light switch when shooting is completed 				
<ul style="list-style-type: none"> Loosen spindle valve 				
<ul style="list-style-type: none"> Remove both heads at each ends 				
<ul style="list-style-type: none"> Remove generator 				
<ul style="list-style-type: none"> a. Spent generator goes into trash 				
<ul style="list-style-type: none"> b. Misfire generator goes into kiln 				
<ul style="list-style-type: none"> Place tube in vertical position 				
<ul style="list-style-type: none"> Clean tube with bore brush and blow out with compressed air. 				
<ul style="list-style-type: none"> Place tube back into storage rack 				
<ul style="list-style-type: none"> Clean detonator head with wire wheel 				
<ul style="list-style-type: none"> Shut off CO2 bottle, and install safety cap 				
<ul style="list-style-type: none"> Turn air cannons back on, and fire 				
<ul style="list-style-type: none"> Return all equipment to proper storage areas. 				