

<b>Company Name:</b>	<b>Equipment/Job Identification: Sand Dredge Operator</b> <b>Type of Equipment:</b> <b>Make: Dredge Supply</b> <b>Model: Marlin Class</b> <b>Year:</b> <b>Use:</b>
<b>Mine Name:</b>	
<b>Date of Analysis:</b>	

### Pre-Assessment

- List pre-requisites here**

- Part 46 Training
- Hand tool Training
- Proper Lifting Procedures
- Company lock and tag policy

### 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. Safe and thorough 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 Important 3=Critical		
Clock in				
<ul style="list-style-type: none"> <li>Enter code</li> </ul>		1		
<ul style="list-style-type: none"> <li>Scan fingerprint</li> </ul>		1		
Obtain PPE	PPE is for your protection – serious injury can be prevented by wearing your PPE	3		Hard hat, life jacket, safety goggles, work boots, hearing protection, flashlight (during hours of darkness)
Attend Pre-shift Meeting with plant manager	Failure to attend could affect daily production You may not be aware of hazards that exist on dredge	2		
<ul style="list-style-type: none"> <li>Discuss today's production agenda</li> </ul>	Failure to attend could affect daily production	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		
	You may not be aware of hazards that exist on dredge			
<ul style="list-style-type: none"> <li>Location of dredge</li> </ul>	Failure to attend could affect daily production You may not be aware of hazards that exist on dredge	2		
<ul style="list-style-type: none"> <li>Discuss safety issues</li> </ul>	Failure to discuss safety issues could result in injury You may not be aware of hazards that exist on dredge	3		
<ul style="list-style-type: none"> <li>Discuss maintenance issues</li> </ul>	Failure to attend could affect daily production You may not be aware of hazards that exist on dredge	2		
<ul style="list-style-type: none"> <li>Discuss problems</li> </ul>	Failure to attend could affect daily production You may not be aware of hazards that exist on dredge	2		
<ul style="list-style-type: none"> <li>Make contact with previous operator (if possible)</li> </ul>	Failure to attend could affect daily production You may not be aware of hazards that exist on dredge	2		
Travel to dock area		1		
Put on life jacket and hard hat	Failure to wear life jacket and hard hat could result in personal injury or drowning	3		
Check walkway and dock area		1		
<ul style="list-style-type: none"> <li>Ensure walkway/dock area is secure</li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Dock should not be floating away</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Dock should be anchored</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Ground under walkway should not be washed away</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>Check handrails</li> </ul>	Prevent you from falling into water	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		
• Check safety chains	Prevent you from falling into water	2		
• Check for tripping hazards	Prevent person injury Slip/trip/fall accidents leading cause of injuries and fatalities in mining	2		
• Verify power is on to the dredge		1		
o Check transformer		1		
o Look for light on dredge		1		
Board the boat				No smoking on the boat
• Use 3-point contact	Prevent personal injury while boarding the boat (slip/falls leading cause of injuries)	2		
• Pump off rain water		1		
• Check fuel		1		
• Check dock lines		1		
• Ensure oar/paddle is on boat		1		
• Check fire extinguisher	Could prevent burns or prevent an explosion from gasoline onboard	2		
o When using small boat, obtain fire extinguisher from locker and place on boat	Could prevent burns or prevent an explosion from gasoline onboard	2		
Travel to the dredge		1		
• Start the outboard		1		
• Untie dock lines		1		
• Watch for any obstructions in water	Prevent personal injury, damage to boat and motor, could knock you out of boat	2		Logs, loose pipe, debris, etc.
• Never pass over power cable	Prevent damage to cable; Prevent being electrocuted; 4160 volts in cable	3		Electrical shock hazard
• Note location and condition of pipe line		1		Kinks, holes, leak, floats
• Note location and condition of power cable	Prevent damage to cable; Prevent being electrocuted; 4160 volts in cable	3		Floats (continuous pvc pipe. floating balls), strain clamp on electric line at dredge,
• Note location of swing cables		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 cutter head from boat</li> </ul>		1		Do not position yourself under the cutter head or ladder unless the safety chains have been installed
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Check for broken teeth</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Check for missing teeth</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Check for wear to teeth</li> </ul> </li> </ul>		1		Worn teeth get shorter and shorter
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Check for lodged debris</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>Check the rock guard from the boat</li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Inspect for wear</li> </ul> </li> </ul>	Could result in decreased production; noticing spaces opening up will allow us to schedule maintenance; failure of this seal could result in major expense	2		Rock guard is location behind cutter hub in front of cutter tube protecting the cutter tube seal Rock guard will appear tight against the hub. As it wears, the space between the hub and the rock guard will increase. When this distance becomes 1/16 <sup>th</sup> of an inch, replace or re-shim.
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Check for debris</li> </ul> </li> </ul>	Could result in decreased production; removing debris could prevent wear on the rock guard; failure of this seal could result in major expense	2		Fishing line
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Check cutter tube for oil leak at rock guard</li> </ul> </li> </ul>	This indicates seal failure Leaking could result in major expense Allowing oil to flow into lake This is a shut down condition	3		
<ul style="list-style-type: none"> <li>Check the gatlin plate and suction mouth piece for intactness, wear and obstructions</li> </ul>	If plate is broken or plugged, could cause downtime	2		
Arrive at dredge		1		
<ul style="list-style-type: none"> <li>Shut off outboard</li> </ul>		1		
<ul style="list-style-type: none"> <li>Tie off boat</li> </ul>		1		Tie off at bow and stern
<ul style="list-style-type: none"> <li>Position boat to accommodate safe access to dredge</li> </ul>	Prevent slip/fall injuries	2		
Board the dredge	Prevent slip/fall injuries	2		
<ul style="list-style-type: none"> <li>Unhook chain</li> </ul>	Prevent slip/fall injuries	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		
<ul style="list-style-type: none"> <li>Use 3-point contact to board dredge</li> </ul>	Prevent slip/fall injuries	2		
<ul style="list-style-type: none"> <li>Re-hook chain</li> </ul>	Prevent slip/fall injuries	2		
Inspect between pontoons for oil film on water		1		

## Duty 2: Pre-Shift/Pre-op Dredge

Learner will demonstrate how to conduct a safe and thorough pre-shift/pre-op exam. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and thorough examinations 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		
Begin on starboard side		1		
Check for slip/trip hazards	Prevent injury from slipping/tripping	3		
Check all handrails	Prevent injury from slipping/tripping Could prevent you from falling overboard	2		Loose cables, broken, bent uprights, openings are chained off, toe boards in place
Check service water pump and jet pump	If this pump goes down, you can't produce	3		Packing Suction Physical damage U-bolts along the ladder
Check electrical room		1		
• Check for breakers thrown		1		
• Check for breakers locked out		1		
• Check for trips/faults		1		On Benshaw starter Siemens dc drive
• Check air conditioning	If this room gets too hot, all electrical components will trip and the dredge will be down	2		
Check static oil tanks	If low, indicates seal failure or possibly a broken/leaking hose	2		
• Look at oil canisters mounted on ladder	If low, indicates seal failure or possibly a broken/leaking hose Color of oil could indicate seal failure also (water)	2		Oil levels, color of oil
Check hydraulic room	This is the most likely place to have a fire and a lot of necessary equipment is housed in this room	2		
• Check for hydraulic leaks	Fire explosion hazard - especially misting leaks	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"> <li>• Check hydraulic oil levels</li> </ul>	Adding hydraulic fluid would indicate a leak somewhere in the system	2		Look for oil level between high and low marks
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Use site glass</li> <li>○ Add oil if needed</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>• Check hydraulic oil temperature</li> </ul>	Could result in pump failure; pump could be totally destroyed; affect production	3		ISO 32 or ISO 45 as needed Should be between 80 and 100 degrees F Never start cutter pump if oil temperature is less than 80 degrees
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ If less than 80 degrees, start winch pump and put the system into oil heat mode</li> </ul> </li> </ul>	Could result in pump failure; pump could be totally destroyed; affect production	3		
<ul style="list-style-type: none"> <li>• Check filter indicator</li> </ul>	Failure to change filter could cause long-term damage to system	2		Should be in the green with unit not running
<ul style="list-style-type: none"> <li>• Drain water from air compressor tank</li> </ul>	Could result in operation failure if water gets into valves and causes malfunction in valves; water is the enemy of any pneumatic system	2		
<ul style="list-style-type: none"> <li>• Visually examine pump motors for damage and missing bolts</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Visually inspect hydraulic hoses and valves</li> </ul>	Fire explosion hazard - especially misting leaks	2		
Check stern winch		1		
<ul style="list-style-type: none"> <li>• Check for leaks</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Check wire rope for bird nesting</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>• Check winch mounting nuts/bolts</li> </ul>		1		If loose, retighten or replace with Grade 5 or better nuts/bolts
<ul style="list-style-type: none"> <li>• Check fair leads</li> </ul>	If fair leads are not turning, you can damage the wire rope Could result in loss of production due to unscheduled down time	2		
Inspect port side deck		1		
<ul style="list-style-type: none"> <li>• Check all handrails</li> </ul>	Prevent injury from slipping/tripping Could prevent you from falling overboard	2		Loose cables, broken, bent uprights, openings are chained off, toe boards in place
<ul style="list-style-type: none"> <li>• Check for slip/trip hazards</li> </ul>	Prevent injury from slipping/tripping	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		
Climb steps to ladder at bow of dredge		2		
• Use 3-point contact	Prevent injuries due to falls	2		
Travel down port side of ladder to cutter				
• Use 3-point contact	Prevent injuries due to falls	3		
• Check oil lines for leaks	Leaking oil lines could become an environmental hazard Depending on size of leak, could result in damage to equipment	2		
• Check water lines for leaks and bulges	Depending on size of leak, could result in damage to equipment	2		
• Check swing cables for broken wires and flattening		1		
• Check for missing/loose nuts/bolts		1		
• Check suction pipe for physical damage, nuts/bolts in place		1		
• Check port-side swing block for wear		1		
• Check cutter gear for leaks, loose/missing bolts	Loss of production	2		
• Check cutter tubes for leaks, loose/missing bolts	Could result in loss of production due to unscheduled down time	2		
Travel back up starboard side of ladder				
• Use 3-point contact	Prevent injuries due to falls	3		
• Check starboard swing block for wear		1		
• Check starboard swing cable for broken wires, flattening		1		
• Check suction pipe for physical damage, nuts/bolts in place	Loss of production	2		
○ Inspect bolts on maximizer (loose, missing)	Could result in loss of production due to unscheduled down time	2		This is an area where the bolts come loose quite often
• Check lift chains and lifting eyes on hoist block (upper and lower)	If you loose the lifting eye, you're out of business	3		
○ Check the sheaves for wear	Worn sheaves can destroy the cable and result in loss of production due to	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		
	unscheduled down time			
o Check for loose pins/bent shackles	Could result in loss of production due to unscheduled down time	2		
• Check ladder winch				
o Check for leaks		1		
o Check wire rope	Could result in loss of production due to unscheduled down time; damage to equipment	3		
o Check winch mounting nuts/bolts	Could result in loss of production due to unscheduled down time; damage to equipment	3		If loose, re-tighten or replace with Grade 5 or better nuts/bolts
o Check shackle dead end of cable	Could result in loss of production due to unscheduled down time; damage to equipment	3		
• Check pin tightness/beckett	Could result in loss of production due to unscheduled down time; damage to equipment	3		
• Ensure clean-out lid is in placed and tight on suction side of dredge pump	Could result in loss of production due to unscheduled down time	2		
• Examine vacuum sensor for physical damage		1		
• Examine underwater pump	Could result in loss of production due to unscheduled down time; catastrophic failure	3		
o Check for missing nuts/bolts	Could result in loss of production due to unscheduled down time; catastrophic failure	3		
o Check for oil leaks	Could result in loss of production due to unscheduled down time; catastrophic failure	3		Shaft seals, hose, drain plug
o Check for holes in pump shell	Could result in loss of production due to unscheduled down time	3		
o Check 90-degree elbow for wear/hoses	Could result in loss of production due to unscheduled down time	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		
o Check the spool piece behind the 90-degree elbow for wear/holes	Could result in loss of production due to unscheduled down time	2		
• Examine torque tubes	Could result in loss of production due to unscheduled down time	2		
o Check shim packs	Could result in loss of production due to unscheduled down time	2		
o Check taper locks	Could result in loss of production due to unscheduled down time	2		
o Check paint wear	Could result in loss of production due to unscheduled down time	2		Warning of potential failure
o Check water leaks and cracks	Could result in loss of production due to unscheduled down time; requires unscheduled major repair	3		
o Check intermediate bearings and seals	Could result in loss of production due to unscheduled down time	2		
• Examine swing cable fair leads (port and starboard side)	If fair leads are not turning, could result in damage to cable	2		
o Check for wear	If fair leads are not turning, could result in damage to cable	2		
o Check for rotation	If fair leads are not turning, could result in damage to cable	2		
• Examine discharge pipe along the ladder	Could result in loss of production due to unscheduled down time	2		
o Check for wear		1		
o Check for leaks	Could result in loss of production due to unscheduled down time	2		
o Check for clamp bolts		1		
• Examine swing winches	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		
o Check for leaks		1		
o Check wire rope for bird nesting	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		
o Check winch mounting nuts/bolts		1		If loose, re-tighten or replace with Grade 5 or better nuts/bolts

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 Lufkin gear box	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		
○ Check for leaks	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		
○ Check coupling	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		
○ Check oil level	Could result in loss of production due to unscheduled down time	2		Should look like oil – not milk (milky color indicates water)
○ Check mounting nuts/bolts	Could result in loss of production due to unscheduled down time	2		
○ Check manual temperature gage	Could result in loss of production due to unscheduled down time	2		
○ Check pressure gage	Could result in loss of production due to unscheduled down time	2		Should be at zero
○ Check wiring on electronic temperature gage	Could result in loss of production due to unscheduled down time	2		
• Check dc driver motor	Could result in loss of production due to unscheduled down time	2		
○ Check mounting nuts/bolts	Could result in loss of production due to unscheduled down time	2		If loose, retighten or replace with Grade 5 or better nuts/bolts
○ Check temperature		1		Should be warm at all times to keep condensation from forming inside motor
○ Check bolts in coupling between gear box and motor	Could result in loss of production due to unscheduled down time and could result in severe equipment failure	2		
○ Check for unusual odors (burnt smell)	Failure to investigate unusual odors could result in fire, could result in loss of production due to unscheduled down time, increased damage to equipment, personal injury due to burns	2		
• Check dc blower motor	Failure of blower working could cause dc motor to overheat and result in fire, could result in loss of production due to	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		
	unscheduled down time, increased damage to equipment, personal injury due to burns			
○ Check mounting nuts/bolts		1		If loose, retighten or replace with Grade 5 or better nuts/bolts
● Inspect trunion pins	Could result in loss of production due to unscheduled down time	2		
○ Ensure they are greased		1		
○ Check keeper bolt	Could result in loss of production due to unscheduled down time	2		
Examine steps to operators cab	Prevent injuries due to slips/falls	3		
▪ Check for slip/trip hazards	Prevent injuries due to slips/falls	3		
Examine operator's cab		1		Keep neat, clean, orderly
● Check fire extinguisher		1		
Complete pre-op report		1		

### Duty 3: Dredge Startup

Learner will demonstrate how to conduct a safe and thorough dredge startup. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and thorough dredge startup 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		
Remove window guards		1		
Enter operators' compartment		1		Can remove life-jacket
Get in seat		1		
Check diary/log		1		
Check alarm/warnings	Failure to follow-up on alarms could result in loss of production due to unscheduled down– these are warnings of current or future problems	2		
<ul style="list-style-type: none"> <li>Take necessary action</li> </ul>	Failure to follow-up on alarms could result in loss of production due to unscheduled down time– these are warnings of current or future problems	2		
Start oil cooling pump		1		
Start service water pump	Failure to start – no production Can't start dredge pump	2		
Start cutter pump		1		Allow time delay during starting sequence to limit peak power demand Do not start cutter if oil temperature is below 80 degrees
Check cutter system charge pressure	If the pressure is not in correct range, indicates problem with the dredge	2		Minimum 250 psi – maximum 400 psi
Start system hydraulic pump and wait for normal running pressure		1		Allow time delay during starting sequence to limit peak power demand
Start jet pump (if needed)		1		Allow time delay during starting sequence to limit peak power demand
Turn on controls		1		This activates the controls on operators chair
Check all instruments		1		
Log on to plant computer		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 ladder		1		
Swing dredge port to starboard to check cable slack		1		Failure to do this could get swing cables caught in cutter
Turn cutter on (forward)		1		
Contact plant prior to pumping fresh water	Sending fresh water before crew is ready could result in a personal injury	2		
Enable the dc drive		1		
Check operation of maximizer	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>Check indicator light on dash</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>Check vacuum change</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>Look for air bubbles</li> </ul>	Could result in loss of production due to unscheduled down time	2		
Throttle the underwater pump up to priming speed slowly	Throttling up too quickly could cause the pump to cavitate and it won't prime itself; could also blow discharge pipe apart	2		
Contact plant operator to tell them fresh water is coming	Sending fresh water before crew is ready could result in a personal injury	2		
Throttle underwater pump up to operating speed		1		
Lower ladder to mining face		1		
Notify plant operator that you are sending material	Sending material before crew is ready could result in a personal injury and possibly result in equipment damage at plant	2		

## Duty 4: Mining

Learner will demonstrate how to safely and efficiently mine. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient mining 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		
Establish instrument baseline readings ON WATER (flow/velocity, vacuum, and discharge pressure)	Failure to establish these base lines will result in poor production	2		
Check cutter pressure		1		Approximately 1500 psi
Check for vacuum	Low vacuum indicates no material flow	2		Should be above water vacuum
Check for discharge pressure	High discharge pressure indicates the line may be loading up and could plug	2		Above water base line
Set auto flow control	If auto flow is not set correctly, material may flow too slowly through the pipe and cause plugging or high flow could cause excessive wear	2		Normally at 19 - based on pipe size, density of material, pipe length, distance
Start starboard swing winch		1		
Adjust swing speed to maximize cutter pressure, swing pressure, or vacuum	To maximize production	2		
Get to end of swing and change direction		1		
Adjust swing speed to maintain vacuum	To maximize production	2		This is a clean up pass May return quicker than mining pass
Continuously monitor instruments	Failure to monitor gages could cause the line to plug up or overload the plant	3		
Get to the end of swing and stop		1		
Advance a few feet or lower ladder		1		Refer to mine plan
Repeat cycle		1		
Inspect oil filter bypass gages	Failure to observe a bypass condition could result in major pump damage	2		Filtration return filter, ladder swing return filter, cutter return filter, cutter charge filter
Maintain communications with plant personnel	Failure to maintain communications could overload the plant, cause personal injury to plant personnel,	2		Lack of communication is a factor in a large number of injuries and fatalities
Monitor plant computer (CSR)	Failure to monitor production rates could	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		
	result in plant overload and downtime			
<ul style="list-style-type: none"> <li>• Monitor production rate/flow</li> </ul>	Failure to monitor production rates could result in plant overload and downtime	2		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Monitor <b>TOTAL TONS PER HOUR</b></li> </ul> </li> </ul>	Failure to monitor production rates could result in plant overload and downtime	2		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Monitor concrete sand: tons per hour</li> </ul> </li> </ul>	Failure to monitor production rates could result in plant overload and downtime	2		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Monitor mason sand: tons per hour</li> </ul> </li> </ul>	Failure to monitor production rates could result in plant overload and downtime	2		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Monitor specialized sand: tons per hour</li> </ul> </li> </ul>	Failure to monitor production rates could result in plant overload and downtime	2		
<ul style="list-style-type: none"> <li>• Monitor for proper operation of tanks</li> </ul>	You're contributing to the quality of the product being produced	2		
Clean cutter head as needed		1		A rise in vacuum without a rise in production would indicate a plugging condition (suction mouth)
Use jet pump only when needed for the following conditions:		1		Never operate if not needed (conserve energy costs) Water direction must be manually selected with switch on dash
<ul style="list-style-type: none"> <li>• If you cannot maintain maximum vacuum</li> </ul>		1		
<ul style="list-style-type: none"> <li>• To help clean cutter</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Use water cannon on deck for cut the bank above water</li> </ul>		1		



## Duty 5: Dredge Shutdown

Learner will demonstrate how to conduct a safe and thorough dredge shutdown. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Conducting a safe and efficient dredge shutdown 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		
Swing dredge to port side of cut		1		
Raise ladder to fresh water		1		
Pump water to clear materials from pipeline (approximately 15 minutes)		1		
Observe instruments for return to baseline readings		1		Flow, vacuum and discharge pressure
Notify plant operator dredge is shutting down	This lets plant personnel know material is not coming anymore and they can go ahead and begin their shutdown	2		
Throttle down underwater pump to zero		1		
Disable underwater pump		1		
Shut cutter direction off		1		
Shut jet pump down		1		
Raise ladder to safety chain		1		
Tighten up swing cables		1		
Shut down system hydraulics		1		
Shut cutter hydraulic pump down		1		
Shut oil cooling pump off		1		
Turn off controls		1		
Log off of plant computer		1		
Install window guards		1		
Make necessary entries in diary/log		1		
Allow service water pump to continue operating		1		Pump is left running to allow flushing of vacuum, depth and discharge sensors
Exit operator's compartment		1		Wear life jacket and hard hat

## Duty 6: End of Shift Activities

Learner will demonstrate how to conduct safe and efficient thorough end-of-shift activities. Learner will also explain the job duties, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient 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		
Begin on starboard side		1		
Check for slip/trip hazards	Prevent personal injury due to slip/fall accidents – leading cause of injuries in the mining industry	3		
<ul style="list-style-type: none"> <li>Check for icing in the winter months (use calcium/propane torch if necessary)</li> </ul>	Prevent personal injury due to slip/fall accidents – leading cause of injuries in the mining industry	3		
Check all handrails	Prevent injury from slipping/tripping Could prevent you from falling overboard	2		Loose cables, broken, bent uprights, openings are chained off, toe boards in place
Check service water pump and jet pump	If this pump goes down, you can't produce	3		Packing Suction Physical damage U-bolts along the ladder
Check electrical room		1		
<ul style="list-style-type: none"> <li>Check air conditioning/heating system</li> </ul>	If this room gets too hot, all electrical components will trip and the dredge will be down	2		
Check static oil tanks	If low, indicates seal failure or possibly a broken/leaking hose	2		
<ul style="list-style-type: none"> <li>Look at oil canisters mounted on ladder</li> </ul>	If low, indicates seal failure or possibly a broken/leaking hose	2		Oil levels, color of oil
Check hydraulic room	This is the most likely place to have a fire and a lot of necessary equipment is housed in this room	2		
<ul style="list-style-type: none"> <li>Check for hydraulic leaks</li> </ul>	Fire explosion hazard – especially misting leaks	3		
<ul style="list-style-type: none"> <li>Check hydraulic oil levels</li> </ul>	Adding hydraulic fluid would indicate a leak somewhere in the system	2		Look for oil level between high and low marks

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		
o Use site glass		1		
o Add oil if needed		1		ISO 32 OR ISO 45 AS NEEDED
• Check filter indicator	Failure to change filter could cause long-term damage to hydraulic system	2		Should be in the green with unit not running
• Drain water from air compressor tank	Could result in operation failure if water gets into valves and causes malfunction in valves; water is the enemy of any pneumatic system	2		
• Visually examine pump motors for damage, missing bolts		1		
• Visually inspect hydraulic hoses, valves	Fire explosion hazard – especially misting leaks	2		
Obtain grease gun		1		
Grease trunion pins (starboard and port)	This is the pivot point for the ladder; constantly moving – failure to grease will cause bearing failure; could shear the keeper off and cause a lot of unnecessary work	2		
• Check keeper bolt	Could result in loss of production due to unscheduled down time	2		
Grease packing gland and two bearings on service water pump	Could result in loss of production due to unscheduled down time	2		
Grease two bearings on jet pump		1		
Check stern winch		1		
• Check for leaks		1		
• Check wire rope for bird nesting	Could result in loss of production due to unscheduled down time	2		
• Check winch mounting nuts/bolts		1		If loose, retighten or replace with Grade 5 or better nuts/bolts
• Check and grease fair leads	If fair leads are not turning, you can damage the wire rope Could result in loss of production due to unscheduled down time	2		
Inspect port side deck		1		
• Check all handrails	Prevent injury from slipping/tripping Could prevent you from falling overboard	2		Loose cables, broken, bent uprights, openings are chained off, toe boards in place

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 for slip/trip hazards	Prevent injury from slipping/tripping	3		
Grease upper ladder hoist sheave	Failure to grease will cause excessive wear	2		
Climb steps to ladder at bow of dredge	Prevent injuries due to falls	2		
▪ Use 3-point contact	Prevent injuries due to falls	2		
Travel down port side of ladder to cutter	Prevent injuries due to falls	3		
▪ Use 3-point contact	Prevent injuries due to falls	3		
• Check oil lines for leaks	Leaking oil lines could become an environmental hazard Depending on size of leak, could result in damage to equipment	2		
• Check water lines for leaks and bulges	Depending on size of leak, could result in damage to equipment	2		
• Check swing cables for broken wires and flattening		1		
• Check for missing/loose nuts/bolts		1		
• Check suction pipe for physical damage, nuts/bolts in place		1		
• Check port-side swing block for wear		1		
• Grease port side swing block	Failure to grease will cause excessive wear	2		
• Grease lower travel sheave block	Failure to grease will cause excessive wear	2		
• Check cutter gear for leaks, loose/missing bolts	Could result in loss of production due to unscheduled down time	2		
• Check cutter tubes for leaks, loose/missing bolts	Could result in loss of production due to unscheduled down time	2		
Travel back up starboard side of ladder				
▪ Use 3-point contact	Prevent injuries due to falls	3		
• Check starboard swing block for wear		1		
• Grease starboard swing block	Failure to grease will cause excessive wear	2		
• Check starboard swing cable for broken wires, flattening		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 suction pipe for physical damage, nuts/bolts in place</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Inspect bolts on maximizer (loose, missing)</li> </ul> </li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>• Check lift chains and lifting eyes on hoist block (upper and lower)</li> </ul>	If you loose the lifting eye, you're out of business	3		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Check the sheaves for wear</li> </ul> </li> </ul>	Worn sheaves can destroy the cable and result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Check for loose/bent connectors</li> </ul> </li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>• Check ladder winch</li> </ul>				
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Check for leaks</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Check wire rope</li> </ul> </li> </ul>	Could result in loss of production due to unscheduled down time, damage to equipment	3		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Check winch mounting nuts/bolts</li> </ul> </li> </ul>	Could result in loss of production due to unscheduled down time, damage to equipment	3		If loose, re-tighten or replace with Grade 5 or better nuts/bolts
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Check shackle dead end of cable</li> </ul> </li> </ul>	Could result in loss of production due to unscheduled down time, damage to equipment	3		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>• Check pin tightness/beckett</li> </ul> </li> </ul> </li> </ul>	Could result in loss of production due to unscheduled down time, damage to equipment	3		
<ul style="list-style-type: none"> <li>• Ensure clean-out lid is in placed and tight on suction side of dredge pump</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>• Examine vacuum sensor for physical damage</li> </ul>		1		
<ul style="list-style-type: none"> <li>• Flush vacuum and depth sensors</li> </ul>	Could affect production because these monitor the flow of material	2		
<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>○ Open both valves</li> </ul> </li> </ul>	Could affect production because these monitor the flow of material	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		
<ul style="list-style-type: none"> <li>○ Ensure both valves are closed after flushing sensors</li> </ul>	Could affect production	2		
<ul style="list-style-type: none"> <li>● Examine underwater pump</li> </ul>	Could result in loss of production due to unscheduled down time; catastrophic failure	3		
<ul style="list-style-type: none"> <li>○ Check for missing nuts/bolts</li> </ul>	Could result in loss of production due to unscheduled down time; catastrophic failure	3		
<ul style="list-style-type: none"> <li>○ Check for oil leaks</li> </ul>	Could result in loss of production due to unscheduled down time; catastrophic failure	3		Shaft seals, hose, drain plug
<ul style="list-style-type: none"> <li>○ Check for holes in pump shell</li> </ul>	Could result in loss of production due to unscheduled down time; catastrophic failure	3		
<ul style="list-style-type: none"> <li>○ Check pump packing and adjust if necessary</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>○ Check 90-degree elbow for wear/hoses</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>○ Check the spool piece behind the 90-degree elbow for wear/holes</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>● Examine torque tubes</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>○ Check shim packs</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>○ Check taper locks</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>○ Check paint wear</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>○ Check for water leaks and cracks</li> </ul>	Could result in loss of production due to unscheduled down time; requires unscheduled major repair	3		
<ul style="list-style-type: none"> <li>○ Check intermediate bearings and seals</li> </ul>	Could result in loss of production due to unscheduled down time	2		
<ul style="list-style-type: none"> <li>● Examine swing cable fair leads (port and starboard side)</li> </ul>	If fair leads are not turning, could result in damage to cable	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		
o Check for wear	If fair leads are not turning, could result in damage to cable	2		
o Check for rotation	If fair leads are not turning, could result in damage to cable	2		
• Grease swing cable fair leads until you have a show of grease	Failure to grease could cause excessive wear	2		
• Examine discharge pipe along the ladder	Could result in loss of production due to unscheduled down time	2		
o Check for wear		1		
o Check for leaks	Could result in loss of production due to unscheduled down time	2		
o Check for clamp bolts		1		
• Examine swing winches	Could result in loss of production due to unscheduled down time	2		
o Check for leaks		1		
o Check wire rope for bird nesting	Could result in loss of production due to unscheduled down time	2		
o Check winch mounting nuts/bolts		1		If loose, re-tighten or replace with Grade 5 or better nuts/bolts
• Check Lufkin gear box	Could result in loss of production due to unscheduled down time	2		
o Check for leaks	Could result in loss of production due to unscheduled down time	2		
o Check coupling	Could result in loss of production due to unscheduled down time	2		
o Check oil level	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		Oil should be visible in site glass Should look like oil – not milk (milky color indicates water)
o Check mounting nuts/bolts	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		
o Check manual temperature gage	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		
o Check pressure gage	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		Should be at zero

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 wiring on electronic temperature gage	Could result in loss of production due to unscheduled down time and downtime due to unscheduled maintenance	2		
● Check dc driver motor	Could result in loss of production due to unscheduled down time	2		
○ Check mounting nuts/bolts	Could result in loss of production due to unscheduled down time	2		If loose, retighten or replace with Grade 5 or better nuts/bolts
○ Check temperature		1		Should be warm at all times
○ Check bolts in coupling between gear box and motor	Could result in loss of production due to unscheduled down time and could result in severe equipment failure	2		
○ Check for unusual odors (burnt smell)	Failure to investigate unusual odors could result in fire, could result in loss of production due to unscheduled down time, increased damage to equipment, personal injury due to burns	2		
● Check dc blower motor	Failure of blower working could cause dc motor to overheat and result in fire, Could result in loss of production due to unscheduled down time, increased damage to equipment, personal injury due to burns	2		
○ Check mounting nuts/bolts		1		If loose, retighten or replace with Grade 5 or better nuts/bolts
Complete "dredge daily lubrication and maintenance report		1		
Fill out log book/diary for shift		1		
Shut service pump off		1		
Close all windows		1		
Lock all doors		1		
Board the boat		1		No smoking on the boat
● Use 3-point contact	Prevent injuries due to slip/falls	3		
● Pump off rain water		1		
● Ensure oar/paddle is on boat		1		
● Check fire extinguisher		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>○ When using small boat, return fire extinguisher to locker</li> </ul>		1		

## Duty 8: Non-Routine Activities, Emergency/Unusual Situations

Learner will demonstrate how to perform non-routine activities safely and efficiently, and explain procedures for responding to emergency or unusual situations. Learner will also explain the duties, why they are conducted, any associated risk, and how to implement appropriate controls. Safe and efficient performance of non-routine activities and response to emergency or unusual situations 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		
Maintain communications with plant personnel (follow posted instructions for contacting company personnel and regulatory agencies)	Maintaining communications with plant personnel in any emergency will assist in obtaining needed EMS services	3		Be prepared to provide information such as who is injured, location of victim, hazards in the area, extent of injuries (provide location if call is placed to 911 from dredge phone, plant phone or cell) NOTE: 2 <sup>nd</sup> workboat to be used as a rescue vehicle if necessary
Medical and fire emergencies	Time is of the essence when someone is injured; when in doubt – CALL 911	3		
<ul style="list-style-type: none"> <li>• Call 911</li> </ul>	Time is of the essence when someone is injured; when in doubt – CALL 911	3		Be prepared to provide information such as who is injured, location of victim, hazards in the area, extent of injuries (provide location if call is placed to 911 from dredge phone, plant phone or cell) NOTE: 2 <sup>nd</sup> workboat to be used as a rescue vehicle if necessary
<ul style="list-style-type: none"> <li>• Location of first aid supplies</li> </ul>	All employees must know the location of first aid supplies -	3		Located on dredge in the electrical room, at plants, office
Weather conditions				
<ul style="list-style-type: none"> <li>• Lightening <ul style="list-style-type: none"> <li>○ Run material at a lighter load</li> </ul> </li> </ul>		1		
<ul style="list-style-type: none"> <li>○ Stay in the operators cab</li> </ul>	Prevent being struck by lightening	3		
<ul style="list-style-type: none"> <li>○ Shut down when/if instructed</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>• Snow/Icing</li> </ul>				
<ul style="list-style-type: none"> <li>○ Wear PPE</li> </ul>	Prevent personal injury from slips/fall, drowning	3		
<ul style="list-style-type: none"> <li>○ Maintain 3-point contact</li> </ul>	Prevent personal injury from slips/falls	3		
<ul style="list-style-type: none"> <li>○ Clear decks</li> </ul>	Prevent personal injury from slips/falls	1		
Man overboard	Prevent drowning	3		
<ul style="list-style-type: none"> <li>• Know the location of the life preserver</li> </ul>	Prevent drowning	3		
<ul style="list-style-type: none"> <li>• Throw the preserver to the victim</li> </ul>	Prevent drowning	3		
Plugged discharge line (when in full production load)	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		Caused by sloughing of material, cave-in
<ul style="list-style-type: none"> <li>• Raise ladder up to pump fresh water</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		These steps will unplug the discharge 90% of the time
<ul style="list-style-type: none"> <li>• Speed dredge pump up to maximum rpm's</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>• Open up maximizer valve</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>• Observe instruments (discharge pressure, vacuum gage, and flow rate)</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>• Feel for cavitations</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>• Look for drop in tail line pressure</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and	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		
	blow out manually			
<ul style="list-style-type: none"> <li>Look for increase in flow rate</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>Contact supervisor if plugged line persists</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
Plugged Discharge Line (Power Failure or any interruption in the dredging process)	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		Could be a rupture in the pipe line These steps will unplug the discharge 90% of the time
<ul style="list-style-type: none"> <li>Wait for power to come back on</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>Restart dredge</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>Raise ladder to fresh water</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>Slowly increase underwater pump rpm</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>Maintain a lower rpm</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>Maintain discharge pressure at 30 psi</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>Check flow gage for increase</li> </ul>	Could result in loss of production due to	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		
	unscheduled down time; lots of hard work to break discharge line down and blow out manually			
<ul style="list-style-type: none"> <li>If you observe an increase in flow gage, bring rpm's up slowly to increase pressure/flow</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		
<ul style="list-style-type: none"> <li>Repeat until line is clear</li> </ul>	Could result in loss of production due to unscheduled down time; lots of hard work to break discharge line down and blow out manually	3		