1.0 Purpose

This procedure outlines the process for shutting down a crystallizer, if the shutdown will last longer than 6 hours, this is the procedure to be followed.

2.0 Scope

This procedure applies to all manufacturing workers.

3.0 Responsibility

Lead Operator, Material Handler

4.0 Safety Considerations

Safety shoes and safety glasses are required when working in, on, or around the crystallizers.

Safety is a condition of employment. Employees are not authorized to work in an unsafe manner and are prohibited from harming the environment of the facility or community.

5.0 Materials/Equipment

N/A

6.0 Procedure

A crystallizer may need to be shut down for whatever reason. If the shutdown lasts longer than 6 hours, this is the procedure to follow.

A. Shut Down of a Crystallizer:

1. At the centrifuge, open the sample valve and close the feed valve.
2. Close the Crystallizer discharge valve.
3. Stop the discharge pump and wash out the line with water.
4. Close the brine tank valve.
5. Connect water hose to brine pump valve and wash brine feed line into crystallizer.
6. Close the crystallizer brine feed valve and open the sample valve.
7. Stop the brine feed pump.
8. Close the ML pump valve and uncouple the mother liquor feed pump hose.
9. Wash the mother liquor line through to the crystallizer then stop ML pump.
10. Shut the mother liquor feed valve off, and open the sample valve.
11. Stop the vacuum pump and turn off steam to the eductor.

12. Shut the steam off of the fine salt loop heat exchanger.
13. Close the fine salt loop discharge valve and open washout on the fine salt loop.
14. Open the drain valve temporarily to ensure water is flowing through the loop.
15. Close the fine salt return valve and close the washout valve.
16. Stop the fine salt loop pump and watch the level, temperature, and density.

B. Restart from shutdown (assuming centrifuge and dryers are ready)

1. On the Monitoring System Crystallizers screen, reduce the Vacuum Control Valve set point to 0.85 and allow the Crystallizer to cool to 30 C.
2. At the Monitoring System Screen, set the discharge to the desired flow.
3. At the Monitoring System Screen, set the desired level (usually 165-170 inches)
4. Start discharge pump to resume flow to centrifuge.
5. At the centrifuge, close the solids sample valve and open the feed valve.
6. Begin feed of brine by opening the manual valves to get 12-14 gpm, and then start the brine feed pump.
7. Close ML sample valve, connect ML hose, open the pump valve, and start pump.
8. Open the mother liquor feed valve and adjust flow with the pump valve.
9. Start the Fine Salt Loop (see procedure for Fine Salt Loop)
10. Resume normal operation.

C. Dumping a Crystallizer

1. Use as much from the crystallizer as you can, pulling down do about 115 inches.
2. With the crystallizer shut down, connect a steam hose to the bottom valve and steam until the temperature reaches 45 degrees C.
3. Connect a hose from the bottom valve to the Liquid Load Pump.
4. Connect the outlet of the Small Press Pump to the Mother Liquor or Peco Tank.
5. Open the bottom valve and start the Small Press Pump.
6. Empty the crystallizer.
7. Close the bottom valve.
8. Close the Mother Liquor or Peco Valve and stop the Small Press Pump.
9. Uncouple the hoses and clean up.

7.0 Reference Documents

N/A

8.0 Change Information

Document review- updated format using new template and numbering system.