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Personnel responsible:

1. Lead Operator, Material Handler

Safety:

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

Summary:

To start a crystallizer, it is emptied of any water, filled from the bottom, and slowly brought to operating condition for production.

A. Fill the Crystallizer

1. Drain the elbow with the elbow drain and close it.
2. Open the bottom valve on the crystallizer to ensure it has been drained.
3. Connect a hose from the Brine Tank #2 discharge valve to the Liquid Load Pump.
4. Connect the outlet of the Liquid Load Pump to the bottom of the crystallizer.
5. Open the Brine Tank #2 discharge valve and start the Liquid Load Pump.
6. Adjust the density with dilution water to 1.32 – 1.34.
7. When the level goes above the elbow, (based on sight glass view from above) start the elbow pump (#1-47Hz, #2-43Hz, #3-60Hz)
8. Fill the crystallizer with brine. In the sight glass, the level should be above the circulating line.
9. When the liquid reaches the proper level, close the bottom valve.
10. Stop the Liquid Load Pump and close the Brine Tank #2 discharge valve.
11. Uncouple the hoses and clean up.

B. Start the Crystallizer

1. Ensure the small condenser pump is running.
2. Start the large condenser water pump and the mass flow pump.
3. Start the vacuum pump, open the valve at the small condenser to begin water flow, and turn on the steam to the steam eductor.
4. The temperature will begin to drop. When it gets to 30 deg C. (temperature reading from mass flow meter and/or production screen)crystals will appear in the sight glass. The crystallizer is now ready for production.
5. Adjust the elbow pump (53 Hz on #1, 47 Hz on #2, 60 Hz on #3) as crystal size develops.
6. Begin feeding brine at 15 gpm into the heat exchanger and back to the Mother Liquor Tank.
7. Start the discharge pump to the centrifuge at about 15 gpm to begin with because the crystals will be fine. After 8 to 12 hours the crystals will grow enough to increase the discharge rate as required (example 22-25gpm for 70 ton rate) for production needs.
8. Very important that all lines used in starting crystallization production be cleaned to prevent salt buildup.

Deleted: <#>Start the elbow pump and adjust to 43 Hz (47 Hz on #1) to circulate brine within crystallizer body.¶

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TRAINING DOCUMENTATION

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REVISION HISTORY

Revision Date	Revision Number	Revision Description
11/10/05	00	New Document
12/15/06	01	Update from Operator training