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Field Report

From: Edward D. Dunsmuir, Jeffrey J. Stohr

Date: 5/10/10

Subject: Imperial Sugar Savannah

Contact: Russ Beasley, Corky Hebert

The purpose of this trip was to inspect the subject customer's Western States, (WS), centrifuges for mechanical/electric serviceability and if necessary, to present possible solutions that will bring all of their centrifuges back up to full safe operating serviceability and capacity.

Contents

Part I	Centrifuge inspection
Part II	Processing Observations
Part III	Conclusion
Part IV	Action Item(s)

**SAMPLE
SERVICE REPORT
MAINTENANCE EVALUATION**

Part I

Centrifuge inspection

All of the centrifuges are basically in the same state of unserviceable condition. It appears that little preventive maintenance if any is being practiced, we would presume from what we observed that only break down maintenance is being practiced.

Affination Station

Raw Battery:

Unit #1, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Discharger/ Plow Air Cylinder has air leak.
- Servo box cover missing.
- No Gate Flush Water.
- Gate Cylinder has air leak.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head buffer appears to be loose.
- Head Bearing noisy.
- Head cover panels missing.
- Basket spindle has radial scouring at basket valve area.
- Brake pads worn out.
- Brake Hoses in bad condition.
- Load control paddle riding on sugar after load cycle complete.

- No hanger springs on brake bands.
- Head cover panels missing.
- Basket spindle has radial scouring at basket valve area.
- Brake pads worn out.
- Discharger Ram Bushings are loose.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.
- Heavy Vibration at high speed.

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H 2, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gate Cylinder has air leak.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Discharger Ram Bushings are very loose.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging. Plow is adjusted too far away from wall.
- Discharger "Down" Prox. Switch Target is loose and falling apart.

H 3, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- Motor Level has not been checked in recommended time frame.
- Brakes are making a chattering noise when applied.
- Discharger Ram Bushings are very loose.

H 4, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head buffer appears to be loose.
- Head cover panels missing.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.

H 5, G8A 48x36

- Spindle has excessive runout at all times.

- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Very noisy at High Speed.
- Discharger Base needs shimmed to level Ram.

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E 4, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- Head cover panels missing.
- Basket spindle has radial scouring at basket valve area.
- Discharger Ram Bushings are loose.
- Motor Level has not been checked in recommended time frame.

E 5, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gate Cylinder has air leak.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- Discharger Ram Bushings are loose.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.

E 6, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- Head cover panels missing.
- Basket spindle has radial scouring at basket valve area.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Discharger Base needs shimmed to level Ram.

“H” Battery:

H 1, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.

- No Gate Flush Water.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Basket spindle has radial scouring at basket valve area.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.
- Discharger Base needs shimmed to level Ram.
- Curb Top is leaking.

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"E" Battery:

E 1, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Discharger/ Plow Air Cylinder has air leak.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- Head cover panels missing.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.

E 2, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Discharger/ Plow Air Cylinder has air leak.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 3/4".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Discharger Ram Bushings are loose.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.

E 3, G8A 48x36

****This machine had the Brake Drum, Spindle, and Basket drop while in operation.****

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head Bearing noisy.
- Head cover panels missing.

- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head Bearing noisy.
- Basket spindle has radial scouring at basket valve area.
- Discharger Ram Bushings are loose.
- Discharger Rest bolts are loose.
- Discharger Rest Stop is worn.
- Load Control Servo Spring broken.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Basket inspection cover is leaking.

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G 4, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Discharger Rest Stop is worn.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.
- Heavy Vibration at high speed
- Gate linkage is very worn
- Discharger Base needs shimmed to level Ram.

G 5, G8A 48x36

- Basket and Spindle have excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 3/4".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head buffer appears to be loose.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.
- Becket Valve is leaking.
- Discharger Base needs shimmed to level Ram.

G 6, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Discharger/ Plow Air Cylinder has air leak.
- Servo box cover missing.

- Motor Level has not been checked in recommended time frame.
- Discharger Base needs shimmed to level Ram.
- There is sugar left in basket after completion of discharging.

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Unit #12, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Discharger/ Plow Air Cylinder has air leak.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 3/4".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Load Control Servo Spring broken.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.

"G" Battery:

G 1, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Discharger Ram Bushings are loose.
- Discharger Rest Stop is worn.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.

G 2, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Discharger Rest Stop is worn.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.

G 3, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.

Unit #8, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head buffer appears to be loose.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.

Unit #9, G8A 48x36

- Basket has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is not adjusted.
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Motor Level has not been checked in recommended time frame.
- Discharger Base needs shimmed to level Ram.
- There is sugar left in basket after completion of discharging.

Unit #10, G8A 48x36

- Basket and Spindle have excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Basket spindle has radial scouring at basket valve area.
- Load Control Servo Spring broken.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.

Unit #11, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Discharger Rest Stop is worn.
- Load Control Servo Spring broken.

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- Head Bearing noisy.
- Basket spindle has radial scouring at basket valve area.
- Load Control Servo Spring broken.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.
- Chrome plating on Discharger Ram is bad.
- Discharger Base needs shimmed to level Ram.

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Unit 5, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Discharger/ Plow Air Cylinder has air leak.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Basket spindle has radial scouring at basket valve area.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Motor Level has not been checked in recommended time frame.
- Discharger Ram is pitted.
- Machine throws massecuite out of curb during loading.

Unit 6, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Basket spindle has radial scouring at basket valve area.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.
- Discharger Base needs shimmed to level Ram.

Unit #7, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Load control paddle riding on sugar after load cycle complete.
- Discharger Ram Bushings are loose.
- Motor Level has not been checked in recommended time frame.
- There is sugar left in basket after completion of discharging.
- Discharger Base needs shimmed to level Ram.

- Discharger Ram Bushings are loose.
- One Mac Solenoid Valve is held to manifold by hose clamp.
- Discharger Rest bolts are loose.
- Discharger Rest Stop is worn.
- Load Control Servo Spring broken.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.

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Unit 2, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gate Cylinder has air leak.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head buffer appears to be loose.
- Head cover panels missing.
- Discharger Ram Bushings are loose.
- Discharger Rest Stop is worn.
- Load Control Servo Spring broken.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.

Unit 3, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Discharger/ Plow Air Cylinder has air leak.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head buffer appears to be loose.
- Head cover panels missing.
- Discharger Rest Stop is worn.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Discharger Base needs shimmed to level Ram.
- Load control arm seized.

Unit #4, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- Head buffer appears to be loose.
- Head Bearing noisy.
- Head cover panels missing.
- Basket spindle has radial scouring at basket valve area.
- Brake pads worn out.
- Load control paddle riding on sugar after load cycle complete.
- One Mac Solenoid Valve is held to manifold by hose clamp.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Heavy Vibration at high speed.

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H 6, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Basket spindle has radial scouring at basket valve area.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Plow dropping way to fast for good sugar removal.
- Basket Valve Switch missing roller.
- This could be the worst Basket and Spindle set.

"F" Battery:

F 1, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Discharger/ Plow Air Cylinder has air leak.
- Servo box cover missing.
- No Gate Flush Water.
- Gate Cylinder has air leak.
- Gyration Switch is adjusted to 1/2" but not directed at spindle.
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- Basket spindle has radial scouring at basket valve area.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Very bad Basket and Spindle set.

F 2, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2" but misaligned.
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Basket spindle has radial scouring at basket valve area.
- Brake Hoses in bad condition.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Heavy Vibration at High Speed.
- Discharger recently rebuilt but going down too fast.

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F 3, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gate Cylinder has air leak.
- Gyration Switch is adjusted to 1".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- Basket spindle has radial scouring at basket valve area.
- Discharger Ram Bushings are loose.
- One Mac Solenoid Valve is held to manifold by hose clamp.
- Discharger Rest bolts are loose.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Heavy Vibration at High Speed.
- Very bad Basket and Spindle set.
- Discharger Base needs shimmed to level Ram.

F 4, G8A 48x36

- Load Control box has no cover.
- Load box linkage is loose.
- Servo box cover missing.
- No Gate Flush Water.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head cover panels missing.
- Load control paddle riding on sugar after load cycle complete. It is still touching at discharge.
- Discharger Ram Bushings are loose.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.

F 5, G8A 48x36

- Basket and Spindle has excessive runout at all times.
- Load Control box has no cover.
- Load box linkage is loose.

- Servo box cover missing.
- No Gate Flush Water.
- Gate Cylinder has air leak.
- Gyration Switch is adjusted to 1/2".
- No Drip Pan.
- Missing Adjustment Hardware for brake bands.
- No hanger springs on brake bands.
- Head buffer appears to be loose.
- Head cover panels missing.
- Load control paddle riding on sugar after load cycle complete.
- Discharger Ram Bushings are loose.
- Motor Level has not been checked in recommended time frame.
- Basket Valve is bent.
- There is sugar left in basket after completion of discharging.
- Discharger Ram is scored and the plating is coming off.

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Part II

Processing Observations

During our inspections, we noticed that quite a number of centrifuge baskets had an excessive amount of sugar left in the basket after discharging, in some cases as much as approximately 172 lbs. This problem is caused by any one or all of the following problems:

1. Basket out of round due to bent spokes, bent spindle, distorted basket side wall. If the basket wall is eccentric to the centerline of the spindle it will cause a vertical band of sugar to be left on the high spot as it passes the discharger plough tip; this phenomenon was observed during our inspection.
2. Many of the discharger shoe rams were loose in their housing. This would render the ram to be able to move horizontally excessively as it ploughed sugar out, worse case being at the bottom of the basket. This problem also is the main cause for tearing out filter screens.
3. The discharge cycle is discharging too fast, 17 sec. on affination and 27 sec. on white. Typical discharging time is approximately 35 to 40 seconds. This slower time allows the discharger to better remove the sugar from the screen and move it down the discharge chute.
4. Basket valves not being lifted high enough; this inhibits the sugar passing through the basket bottom.

We observed that some of the machines were overcharging the baskets; this is generally due to loose linkages on the loading and servo box, broken link cylinder springs or servo/loading box incorrect calibration.

We found that there are some centrifugals, see * above, that in our opinion are operating outside the Western States Machine Co. recommended range of safety.

While we were at the centrifuge station we witnessed a head spindle failure that caused the head and basket to drop. We also heard several head and motor bearings that were in the failure mode and witnessed screens being ripped out of a basket by the discharger, several ancillary items were damaged by this failure.

If what we witnessed in one day is typical, the chances of a major wreck happening is highly probable.

Part III

Conclusion:-

Mechanical/Electrical

Our inspection of the subject centrifuges indicates that (WS) recommended preventative and periodic maintenance is not being fully practiced. If the centrifuges are to operate safely and be brought back up to there original production capacity, one of the following options are recommended:

- Option 1:** Utilizing Imperial Sugar Company's (ISC) existing maintenance staff, ensuring that they are properly trained in the care of the WS centrifuges; this may include immediate training and subsequent continuing refresher schools; under the supervision of WS field service group, all of the centrifugals would be overhauled. This would require one unit to be removed from service, for the time period necessary to complete the work Part of this we would recommend removing the basket for full NDT inspection. When this unit is put back into service, we would move on to the next and continuing

until all were complete. It may not be necessary for WS to participate in the complete overhaul, if after several machines were complete, and ISC felt comfortable in completing the task unsupervised, WS could conclude their services. For the above work to be successfully and to keep production interruption to a minimum, all necessary repair parts and/or rebuilt or new assemblies would have to be available at the start of the project.

Option 2:

ISC would complete the above mention "Option 1" without the participation of WS. ISC is in receipt of WS general drawings and maintenance manuals, these drawings and manuals include all the necessary instructions for repair and overhauling plus daily through annual maintenance. These instructions must be adhered to, to ensure optimum performance.

WS currently has a rebuild and replacement program. This program gives our customers the opportunity of sending their centrifuge ancillary parts to us for full refurbishment or exchange. The customer would receive the item back in an as new condition; the returned assembly would also carry a warranty. Credit would be given for certain returned item that was replaced.

Using this program will ensure that, if all proper adjustments are made to the replaced part and the centrifuge, it should operate at optimum performance.

Option 3:

Replace the current centrifugals with new WS Titan centrifugals. It may be possible to utilize the existing support steel with minor modifications to install our Titan Model 1600; this unit has a cubic capacity of 32.8 ft³; an increase of 14 ft³ over existing G-8A at 18.8 ft³. Computation shows that to replace all 35 units, would take only 24 Titan 1600's. Another gain from this option would be less break down time due to superior design, therefore decrease production losses.

Part IV

Action Item(s)

- Cost and list of required parts and implementation of option 1&2 mentioned above – Sales & Service
- Send information on WS analog feedback mechanical load control - EDD
- Send information on the existing centrifugals designed cycle curve, as originally shipped - EDD
- Send information on the existing centrifugals designed piping, as originally shipped – EDD
- Send information on the existing centrifugals past process testing by WS – EDD
- P&D of WS Titan type wash pipe; this to replace original wash pipe – Sales
- A sales visitation to apprise ISC of available upgrades and enhancements for their existing equipment and a presentation on WS newer centrifugals – Sales

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