



FALCONBRIDGE

G YML

VER. ENK.

AUG 20 1984

D. M. D.
Please handle

Memorandum

Date: August 14, 1984

To: K. Morton

Copies to: K. Blower, G. Halverson, B. Cross, F.G.T. Pickard,
P.J. Raleigh/D.M. Dingwall

From: S.O. Fekete

Subject: EQUIPMENT FOR CARBON STRIPPING CIRCUIT

Following our discussions during my visit on August 7 through August 10, I have completed the review of equipment requirements for the stripping circuit. In the interest of minimizing costs and save on procurement time we will duplicate Lac Shortt equipment as much as possible. However, some items have to be changed to conform with conditions at Giant.

A list of the equipment with the corresponding Lac Shortt equipment number is given below, so that the necessary details can be retrieved from the files during your visit to Lac Shortt.

1. Tanks

<u>Item</u>	<u>Size</u> <u>Ø x height</u>	<u>Capacity</u> <u>Imp. Gal.</u>	<u>Materials</u> <u>of Const.</u>	<u>Lac Shortt</u> <u>Equip. No.</u>
Acid Mix Tank	7' x 7'	1,700	FRP	3515
Acid Wash Tank	4' x 5'	400	FRP	3485
Strip Sol'n Tank	10' x 9.5'	4,650	FRP	3625
Carbon Strip Vessel	3.3' x 8.5'	450	304SS	3805
Water Tank	Use 2,500 to 3,000 Gal. Polyethylene Tank			

As we discussed the water tank can be a low cost polyethylene vessel that Giant will have to select. Perhaps you can find a manufacturer that has standard sizes in which case you can select the nearest size available that meets the capacity indicated.

2. Pumps

Item	Flow Rate IGPM	Pump head feet	Mat'l Const.	HP	No Req'd	Lac Shortt Equip. No.
Acid Wash Circ. Pump	14.7	32.0	316SS	3/4	1	3545 <i>2,000</i>
Strip Sol'n Pump	14.7	200.0	316SS	7½	1	3655 <i>5,000</i>
Water Pump	26.0	100.0	C.I.	3.0	1	3755 <i>5,000</i>
Carbon Transfer Pumps	31.7	see below	C.I.	-	2	3495 & 3705

The carbon transfer pumps are recessed impeller type and the actual pump heads and speeds will depend on the layout and relative elevations. In addition to the above you will need two vertical sump pumps, one for the stripping area and the other for the acid wash area.

3. Agitators

Item	HP	Lac Shortt Equipment No.
Acid Mix Tank	3/4	3535 <i>2,000</i>
Strip Sol'n Tank	1.0	3645 <i>2,000</i>

The Lac Shortt equipment should be duplicated or alternatively we may have some units on hand that can be used.

4. Heaters and Heat Exchangers

Due to restrictions on power availability we cannot duplicate the equipment used at Lac Shortt. The following are recommended:

(a) Strip Solution Heat Exchanger

This heat exchanger would have to be designed for the following service:

	Flow Rate lit/min	Inlet temp. °C	Outlet temp. °C
Hot Side (strip vessel disch.)	56	150	50
Cold Side (strip sol'n)	56	45	145

I checked with Muirhead Engineering who supplied the plate heat exchangers for Lac Shortt. They indicated that a model HX-12 with 121 plates (153.7 square feet of heat exchange surface) would meet the requirements. *3,000*

(b) Inline Heater

This unit will heat the strip solution downstream of the plate heat exchanger from 145°C to 150°C. Power requirement will be 20KW. However, to provide a little additional capacity we should use a 30KW unit, duplicating that used at Lac Shortt. The Lac Shortt equipment number is 3605. *8,000*

(c) Strip Solution Tank Heater

Lac Shortt only uses a small heater in this service since the solution fed into the tank is hot, coming from the electrolytic cell. In contrast we would have to heat the solution from ambient condition (assumed 5°C) to 45°C. Assuming 16 ton batches per strip cycle it would take 750 KWHrs of power to accomplish the heating. Since we are restricted to 100 KW it would take about 7 to 8 hours to heat up the tank contents. *10,000*

It is recommended that we purchase a 100 KW heater similar to the Lac Shortt design, equipped with a thermostic controller. The unit could be turned on about 8 to 10 hours before the stripping cycle begins, allowed to heat up without a need for an operator to be present.

(d) Strip Vessel Heater

Lac Shortt uses two 75 KW units. We should use two 50 KW units and allow a heat up time from 45°C to 150°C of about 2 hours. *10,000*

(e) Acid Mix Tank Heater

As we agreed we can use your existing steam generator in service on the carbon drying oven. We can fabricate a coil out of stainless steel tubing to be installed in the tank with a condensate return to the steam generator. *5,000*

5. Miscellaneous Equipment

The following applicable items should be duplicated using the Lac Shortt specifications:

<u>Item</u>	<u>Lac Shortt Equipment No.</u>
Stripped Carbon Screen (Sweeco 30")	3715
Carbon Fines Filter	3765
Carbon reactivation Furnace	3675

*9,000
2,000
5,000
16,000*

In addition to the above we will need to design and fabricate two tote boxes as we discussed and provide for an overhead monorail with a 1.5 to 2.0 ton hoist for moving the carbon in and out of the circuit.

6. Actions Required

The following actions should be taken:

- (a) Gather all equipment specifications, purchase orders and suppliers drawings during our visit to Lac Shortt.
- (b) Provide a preliminary layout for the purpose of determining the adequacy of space available and to estimate the cost of the installation.
- (c) On the basis of the above update the cost estimate provided earlier and submit to management with a request for funding if justified.
- (d) Following approvals we can start detailed design and procurement of equipment.

S.O. Fekete

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SOF:sc

Wine
E/12/1
B1/12/1
172,000
200,000
21,000
25,000