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GENERAL GEOLOGY

The Lornex Copper-Molybdenum property is located in the heart of the Highland Valley in south-central British Columbia, adjoining Bethlehem Copper, Valley Copper and Highmont.

The deposit is classified as a complex porphyry type within the Guichon Granodiorite Batholith which forms a part of the interior plateau of British Columbia. The batholith is elongated in a north-westerly direction and has a length of 40 miles by a width of 16 miles. It consists of a series of several major magmatic intrusives, in general having a concentric zonal arrangement and becoming younger inwards. The complex intrusive is of lower jurassic age approximately 198,000,000 ± 8m. years old.

The Lornex ore body occurs in the Skeena Quartz Diorite or Bethlehem host rock, an intermediate intrusive phase of the batholith at the contact of the Bethsaida Granodiorite, the youngest intrusive phase. The host rock is a medium to coarse grained equigranular rock distinguished by the interstitial quartz and the presence of moderate ferromagnesian minerals, mostly hornblende and biotite, averaging 15% of the total mineral content. The Skeena Quartz has been intruded by several younger dykes including a Quartz Diorite Porphyry, Bethsaida Quarts Porphyry and small basic to intermediate dykes.

A major north-south fault, steeply dipping west, called the Lornex fault cuts the ore body off to the west.

Several other parallel faults dip to the east at 60^{o} from the horizontal. The Lornex mineralized area is divided into three zones: the original Discovery Zone, Camp Zone, and the North Zone or the main ore body.

The Lornex deposit is contained in a roughly elliptical area 4,000 feet in length, 1,600 feet in width and at least 2,000 feet in depth and still open. Its' long axis trends north-westerly. The sulphide ore is comprised primarily of chalcopyrite, bornite and molybdenite with minor pyrite, magnetite, hematite, rhenium, osmium, gypsum, epidote, calcite and chlorite. An oxide zone up to 200 feet thick caps the ore body and is made up primarily of malachite with minor tenorite, chalcocite, covellite, azurite, siderite, cuprite and native copper. The mineralization occurs mainly as fracture fillings either in quartz-carbonate veins up to a foot in width or along joints, slips and minute fractures and as sparsely disseminated mineralization generally replacing hornblende and biotite.

Fracture density and strong alteration appear to be keys to the higher grade copper molybdenum values. The altered minerals include: sericite, chlorite, clays and epidote.

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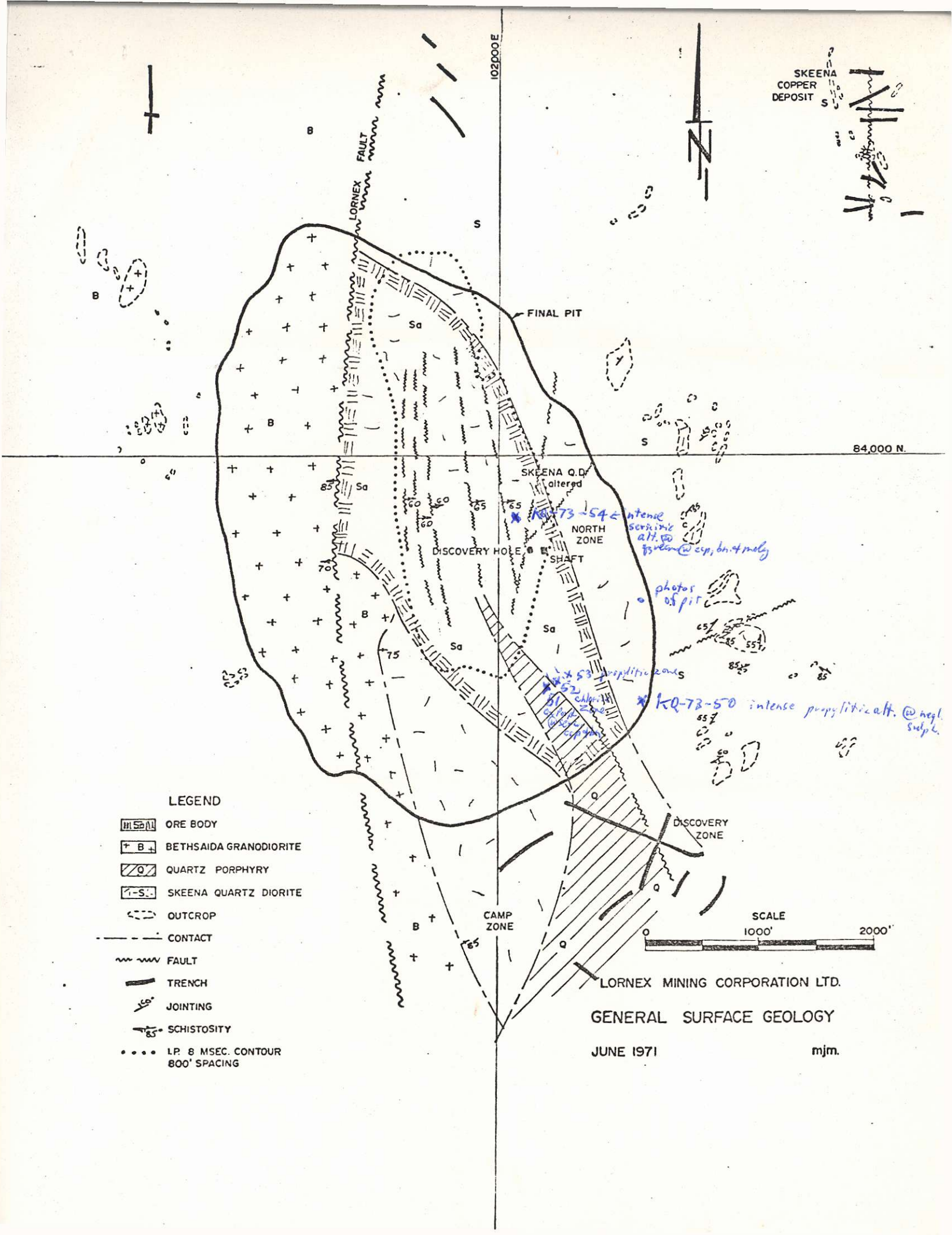
SKEENA COPPER DEPOSIT
102000E
LORNEX FAULT
FINAL PIT
84,000 N.
SKEENA Q.D. altered
NORTH ZONE
DISCOVERY HOLE
SHAFT
DISCOVERY ZONE
CAMP ZONE
KQ-73-54 intense sericitic alt. to below @ cpy, bn, & moly
photos of pit
KQ-73-53 propylitic zone
KQ-73-52 calc-silicate zone
KQ-73-50 intense propylitic alt. @ negl. sulph.
LEGEND
ORE BODY
BETHSAIDA GRANODIORITE
QUARTZ PORPHYRY
SKEENA QUARTZ DIORITE
OUTCROP
CONTACT
FAULT
TRENCH
JOINTING
SCHISTOSITY
I.P. & MSEC. CONTOUR 800' SPACING
SCALE
1000'
2000'
LORNEX MINING CORPORATION LTD.
GENERAL SURFACE GEOLOGY
JUNE 1971
mjm.

CONCENTRATOR

PRODUCTION: (DST/YR)

Crude Ore	13,680,000
Copper Concentrate (33.2% cu.)	162,000
Molybdenite Concentrate (54% mo.)	2,300

OPERATING SCHEDULE:

Shifts/Week	21
Days/Year	360

FEED RATES: (DST)

Per effective hour	1,760
Per scheduled day	38,000

METAL RECOVERIES:

Copper	92%
Molybdenum	64%

MAJOR EQUIPMENT ITEMS:

Primary Crusher: 60" x 89" Allis Chalmers (700 HP)
Main Ore Conveyor: 60" x 3,000 ft. (350 HP)

AUTOGENOUS MILLS:

2 Mills
Size: 32 ft. diam. x 15'6" long
Motors: 2@ 4,000 HP 180 RPM with 1.15 S.F.
Weights: 600 tons - without liners
270 tons - liners
70 tons - balls
940 tons - total
Ring Gear: 40 ft. diam. x 31-1/2" face - Wt. 75 tons
Speed: 10 RPM

BALL MILLS:

4 Mills
Size: 16 ft. 6 in. diam. x 23 ft. long
Motors: 4,000 HP 180 RPM 1.15 S.F.
Weights: 280 tons - without liners
84 tons - liners
230 tons - balls
594 tons - total
Speed: 14.14 RPM

SCREENS:

Four 8' x 20' Tyler Tyrocket

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SCREEN FEED PUMPS:

- Four (2 operating, 2 standby) 16" x 16" Georgia Iron Works 44 in. impeller
- Flow 6,000 - 7,000 GPM @ 375 RPM 97 ft. total dynamic head
- % Solids 55
- Motor 450 HP 900 RPM V Belt drive

CYCLONES:

- Four pods 16 cyclones each Krebs D20B

CYCLONE FEED PUMPS:

- Four (one each mill) 16" x 16" Georgia Iron Works 39 in. impeller
- Flow 8,500 - 9,500 GPM @ 435 RPM 84 ft. total dynamic head
- 55% Solids
- Motors 450 HP 900 RPM V Belt drives

BULK FLOTATION:

Rougher & Scavenger	72	Denver 600 H.
Cleaners	36	Denver 30 DR
Total No. cells	108	

MOLYBDENITE FLOTATION:

Roughers & Scavengers	18	Denver 24 DR.
Cleaners (8 stages)	10	Denver 18 Specials
	30	Denver 15 Sub A
Total	58	

CONCENTRATE THICKENERS:

Bulk 85 ft. diam. Dorr Oliver
Final Copper 100 ft. diam. Dorr Oliver

FILTERS:

Copper Concentrate - Two 8'6" diam. x 7 disc. Dorr Oliver
Molybdenite Concentrate - One 6 ft. x 6 disc.
One 6 ft. x 8 disc.

DRIERS:

Copper 8 ft. x 48 ft. Standard
Molybdenite 4 ft. x 4 hearth Skinner

TAILINGS THICKENERS:

Three 325 ft. diam. centre drive Dorr Oliver 7 ft. wall 23 ft. centre

PUMPS:

Total number of pumps - 170
Water System - 26
Reagent System - 58
Slurry Systems - 86

TAILINGS SYSTEM:

Distance Plant to Upper Dam	4.2 Miles
Distance Plant to Lower Dam	6.7 Miles
Length of Disposal Area	2.5 Miles

Ground Elevation:	Upper Dam	3,850 ft.
	Lower Dam	3,800 ft.
Height of Lower Starter Dam		100 ft.
Final Elevation of Dams		4,085 ft.
Capacity		300,000,000 tons

Total length of Tails Line 10 Miles

Description of Sections

A. 1,600 ft. 42 in. wood stave gravity (mill to thickeners)

B. 4,800 ft. 36 in. (gravity line)
250 ft. wood stave, 4,150 ft. asbestos cement
400 ft. Urethane lined rubber

C. Two 17,000 ft. sections 20 in. steel pressure lined (max. slope 7%)

D. 27,000 ft. 36 in. asbestos cement and drop boxes

E. 2,600 ft. 30 in. asbestos cement cyclone header - max. slope - 0.5% all gravity lines

TAILINGS PUMPS:

- First Station - 3 G.I.W. 16" x 16" pumps in series in each line 700 HP.
- Booster Station - 2 G.I.W. 16" x 16" pumps in series in each line 700 HP.

ELEVATIONS:

Emergency Dam	4,105
Tailings line at plant outlet	4,187 ft.
Discharge tailings thickener collection box	4,109 ft.
First pump station	3,962
Booster pump station	4,174
Maximum line elevation	4,471

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WATER SUPPLY:

FRESH WATER

Description: 6,000 GPM system intake in Thompson River at Spatsum. Three deep well pumps in intake feed. Four centrifugal pumps which elevate water in Single Stage to reservoir. Flow from reservoir to plant head tanks by gravity.

INTAKE PUMPS

Peerless Vertical Turbine
- Three (2 operating, 1 standby)
- 3,800 GPM 100 ft. total dynamic head
- 125 HP 1,800 RPM

BOOSTER PUMPS

- Byron Jackson 6" x 8" 11 B 9 Stage
- Four Pumps (3 operating, 1 standby)
- 2,000 GPM 4,390 ft. total dynamic head
- 3,000 HP 3,560 RPM
- Clear well tank capacity gallons 1.5 x 106

PIPELINE

- Total length 16 Miles
- River to reservoir 11 Miles
- Reservoir to Concentrator 5 Miles
- Elevation at Booster Pump Station 860 ft.
- Elevation at reservoir 4,769.5 ft.
- Elevation at Mill Head Tank 4,460. ft.
- Reservoir capacity 60 x 106 gallons

- 20 in. diameter to reservoir
- 24 in. gravity section 20,000 ft.
- 20 in. gravity to mill

RECLAIM WATER TAILINGS POND

Description: Three vertical turbine pumps on floating barge pump to booster station. Booster station discharge rises to maximum elevation at reservoir and flows by gravity to mill head tanks.

BARGE PUMPS

- 3 Peerless 16 H x B Vertical Turbine
- 3,200 GPM, 310 ft. total dynamic head
- 350 HP 1,800 RPM

RECLAIM BOOSTER PUMPS

- 3 Peerless 16 H x B Vertical Turbine
- 3,200 GPM 952 ft. total dynamic head
- 1,000 HP 1,800 RPM

PIPELINE

Total length 7-1/2 Miles
Barge Booster Station 1,600 ft. 20 in.
Booster Station to reservoir 11,000 ft. 20 in.
Reservoir to Mill Head Tanks 20,000 ft. 24 in.
7,000 ft. 20 in.
Elevation at barge (variable 3,800 ft.)
(to 4,080 ft.)
Elevation at reservoir (stand. pipe) 4,780 ft.
Elevation at Mill Head Tanks 4,460

THICKENER OVERFLOW

Overflow from tailings thickeners collected in two tanks and pumped directly to mill water head tanks.

THICKENER OVERFLOW PUMPS

- 4 Allis Chalmers 10" x 8" SJD
- 3,000 GPM 387 ft. total dynamic head
- 450 HP 1,800 RPM

PIPING SYSTEM

Pipe size	24 in.
Approx. total length	2,000 ft.
Tank capacity 2 @ 100,000 each	
Elevation at Pump Station	4,132
Elevation at Mill Head Tanks	4,460 ft.

CONCENTRATOR OPERATION

Laboratory scale grinding and flotation testing was carried out on diamond drill samples to establish basic parameters such as metal recovery, fineness of grind required and an indication of reagent consumption. The low grade of the ore combined with the "gouge" seams encountered in drilling indicated that autogenous grinding should be investigated as a method of size reduction. The very large units available for Autogenous Milling would reduce capital costs and the elimination of the fine crushing plant would avoid operating problems as with wet ore and fine ore.

A pilot plant capable of treating 100 tons per day was constructed to determine the feasibility of autogenous grinding, to develop a suitable molybdenite recovery process and to obtain design data for construction of a large Concentrator. The pilot plant operated from March 1967 to March 1968 and processed approximately 20,000 tons of ore. Ore samples for the autogenous milling program was obtained from a small surface pit and from the underground work.

The Lornex Concentrator was designed to treat 13,680,000 tons crude ore per year producing 162,000 tons of copper concentrate (33.2% copper) and 2,300 tons of molybdenite concentrate (54% Mo). The plant will operate 24 hours a day, seven days a week.

Ore is delivered from the Mine in 120 ton rear dump trucks and discharged directly in a 60" x 89" primary crusher for reduction to minus 6 inches. The crushed ore is conveyed about 3,000 ft to a 150,000 ton live capacity stockpile. Pan feeders located in concrete tunnels below the stockpile reclaim the ore and feed through a system of conveyors directly into the autogenous mills.

The grinding plant consists of two sections each equipped with a 32 ft. x 15 1/2 in. autogenous mill and two 16 1/2 ft ball mills. The autogenous mills operate in closed circuit with vibrating screens to produce a 4 mesh product for the ball mills. The ball mills operating in closed circuit with cyclones produce the final grind of 5% plus 65 mesh (50% - 200 mesh).

Copper minerals and molybdenite are recovered together into a bulk concentrate by flotation. The bulk flotation circuit consists of rougher scavenger and two stages of cleaning. Isopropyl and omyl xonthete are used as collectors and pine oil and Dowfroth 250 as frothers. Lime is added as required. The bulk concentrate is dewatered in a thickener before separation of the copper from the molybdenite. The tailing from the bulk flotation scavenger is pumped to waste.

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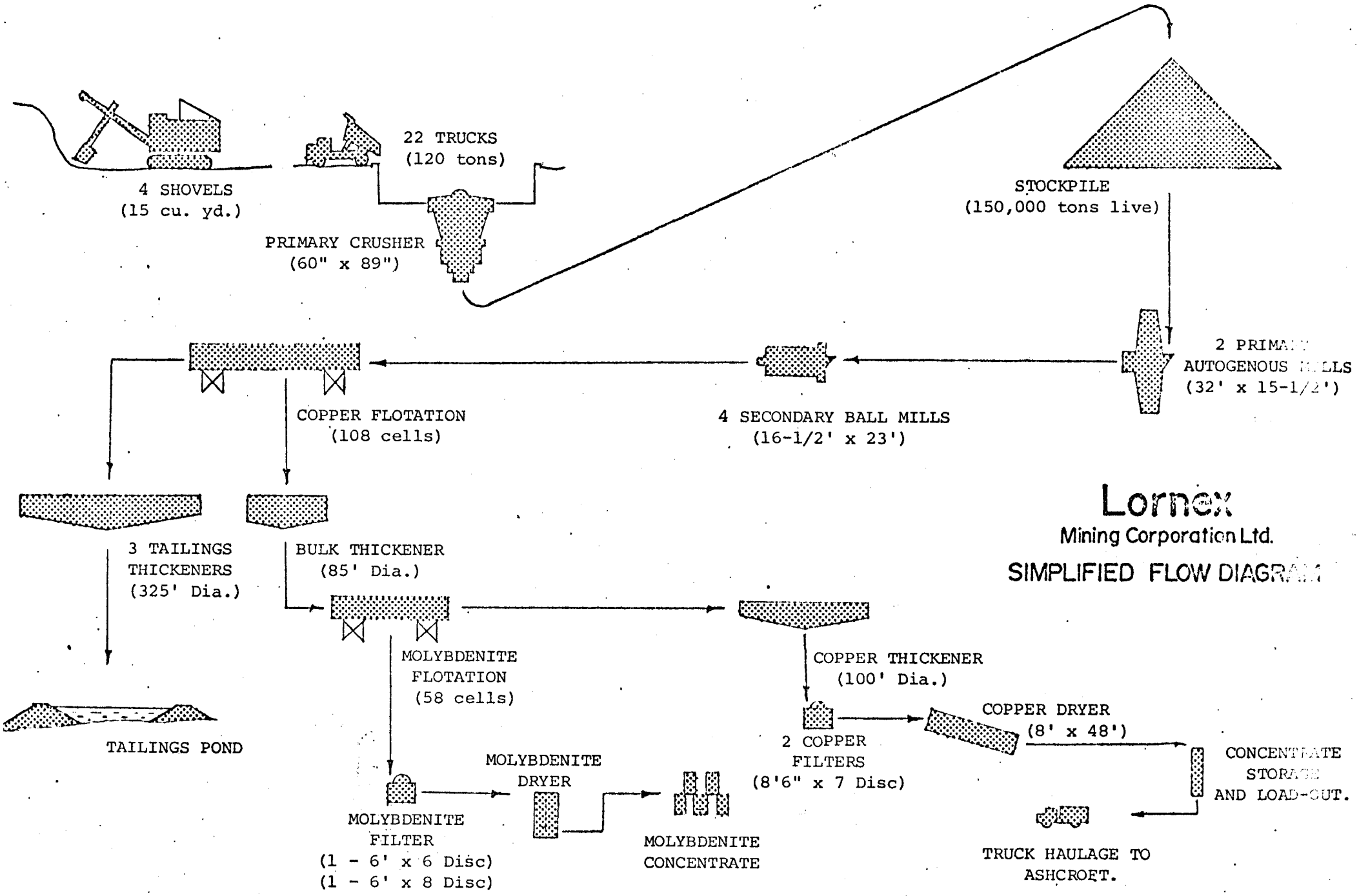
Concentrator Operation (Continued)

Molybdenite is separated from the copper minerals in additional flotation stages by depressing the copper and floating molybdenite. The rougher concentrate is cleaned eight times and reground twice to produce a final molybdenite concentrate. The molybdenite concentrate is filtered, dried and packed in drums for shipment to market.

The tailing from the molybdenite recovery process is of course the final copper concentrate. This is thickened, filtered, dried and shipped by truck to railway at Ashcroft. From Ashcroft the concentrate is hauled to Vancouver and shipped to Japan.

The waste from the flotation process is impounded between two tailings dams located between four and seven miles from the concentrator. The tailings are dewatered to about 50% solids in thickeners near the plant to reduce the load on the pumping system. The clear water recovered is returned to the process. The thickened tailings are conveyed through a combination of gravity and pumped lines, a total of ten miles to the disposal area. Clear water from the tailings area is also returned to the process. There is no positive discharge of any waste or process water to the surrounding streams.

Critical operations are monitored and controlled from two central control rooms; one in the crushing plant and one in the main Concentrator Building.



Lornex
Mining Corporation Ltd.

SIMPLIFIED FLOW DIAGRAM