

Labrador's Julianne Lake deposit

## Half-billion tons of iron ore on the block

THE GOVERNMENT OF NEWFOUNDLAND is seeking a developer for the Julianne Lake iron deposit, an estimated half-billion tons of ore averaging 35% iron that lies just 13 air miles from the established iron ore producing center of Wabush-Labrador City in western Labrador. Mineral rights to the property, formerly held by Newfoundland & Labrador Corp. Ltd. (Nalco) and by Canadian Javelin Ltd., reverted to the province when the previous owners failed to meet specific requirements of the provincial mining act. (A 15% tax is applied on taxable income from mining operations in Newfoundland. However, the government's lack of desire for involvement and participation in mining is considered refreshingly anachronistic.)

Several companies are reported to have expressed interest in Julianne Lake, despite the current doldrums in the iron and steel industry; however, as of late 1976, the prospect remained open for a new owner.

The Julianne Lake deposit, on the Julianne Peninsula at the north end of Wabush Lake, is connected by a 20-mi access road to Wabush and Labrador City, which have a combined population of over 20,000. The Wabush area is served by rail transport from Sept Isles, Que., and by scheduled airline flights from Montreal and points within Newfoundland and Labrador. The deposit is 270 rail miles from Sept Isles, the main shipping port for iron ore from Labrador City. Power for the Labrador City-Wabush complex is drawn from the giant hydroelectric power plant at Churchill Falls, 120 mi to the east. A second major hydroelectric development is expected to be operational by 1981 at Gull Island on the lower Churchill River.

The Julianne Lake iron deposit was first noted in 1953 during a Nalco exploration program on the company's mineral concession area. The subsequent history of the deposit is detailed in a summary report issued in 1975 by the

Newfoundland Department of Mines and Energy.

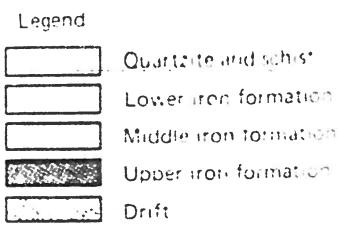
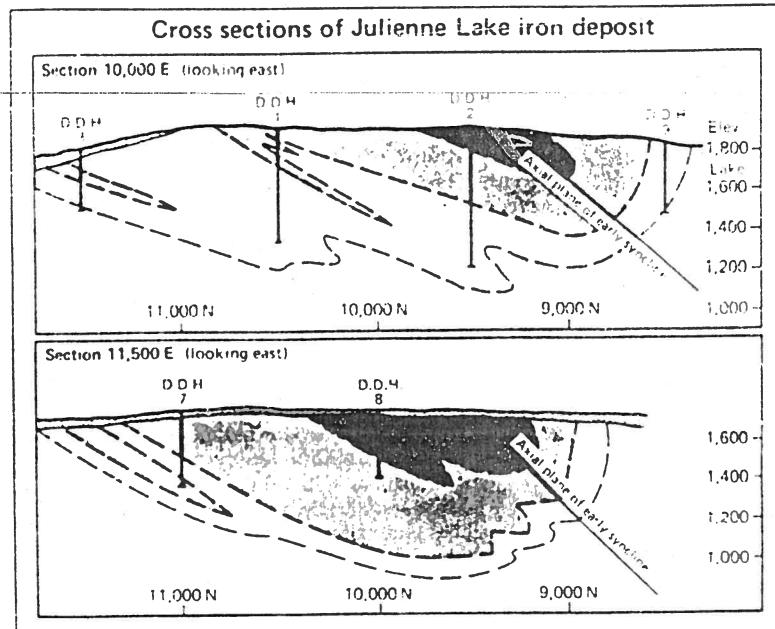
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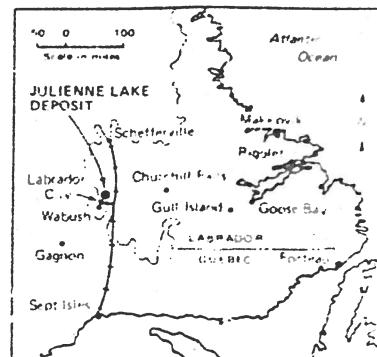
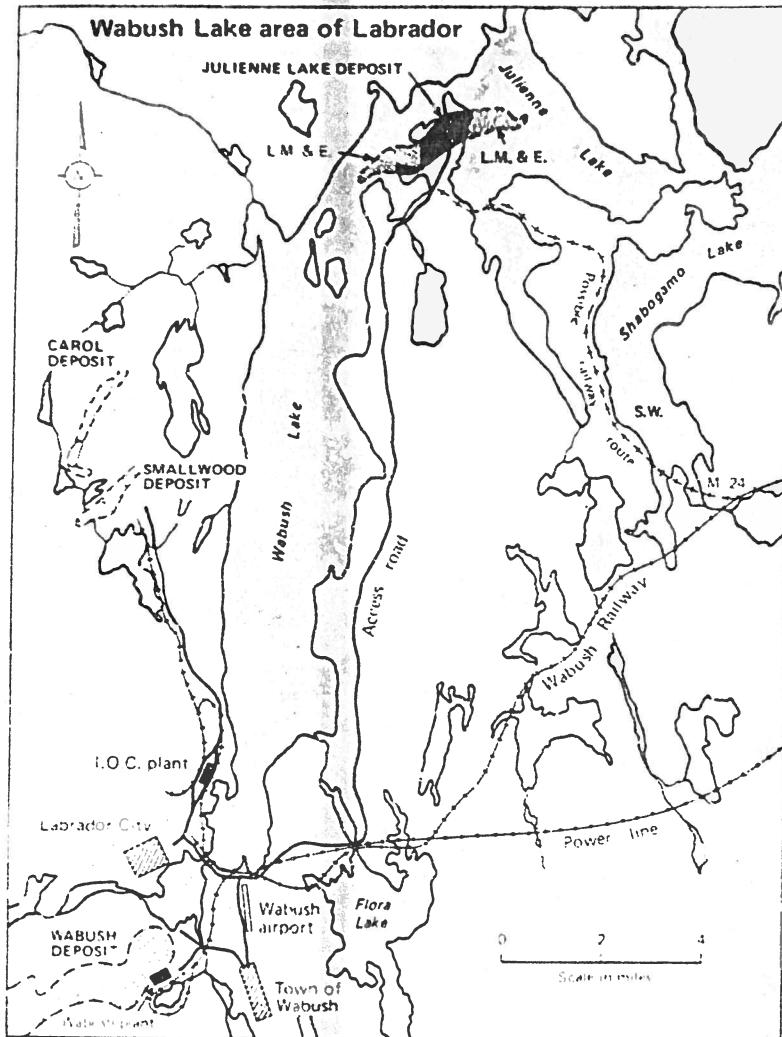
### Deposit is estimated to be 800 ft deep

The Julianne Lake deposit is a broad-belt iron formation striking northeasterly across the northern tip of the Julianne Peninsula, which separates Wabush Lake from Julianne Lake. Average grade of the deposit has been estimated at 35% iron by several sampling programs involving both diamond drilling and surface sampling. Of the nine holes drilled, totaling 3,477 ft, core recovery data are available for only four holes. In the spring of 1966, the warehouse in Wabush containing the drill core from the deposit burned down, and all core was lost. Drilling to date has not been sufficient to define variations of the grades laterally and vertically, and anyone interested in the project should be prepared to drill extensively prior to development.

Reserves have been classed as indicated and potential. Indicated reserves can be recovered by conventional open-pit methods; potential reserves will require the construction of a dam in Julianne Lake. According to Canadian Javelin Ltd., indicated reserves total 416,660,000 tons, and potential reserves 83,371,000 tons. While the subsurface shape of the deposit is not well defined by drilling, it is thought to have a synclinal or trough shape with a maximum thickness of 600 to 800 ft. Magnetometer surveys have traced extensions of the deposit for considerable distances under both Wabush Lake and Julianne Lake.

The deposit is a coarsely recrystallized cherty-iron formation consisting principally of quartz, specular hematite and magnetite, occurring in a variety of banded mineralogic assemblages. The iron formation is underlain by





quartzite and schist. Most of the deposit has only a very thin cover of glacial overburden. Material is similar to the ore that is mined by open pit, concentrated, and pelletized at Wabush and Labrador City.

Very minor, localized amounts of carbonate minerals, anthrophyllite, grunerite, and seams of fine-grained hematite-manganese are present. Post-metamorphic leaching removed most of the carbonate minerals and anthrophyllite, while oxidation converted most of the magnetite to martite, spread a certain amount of red hematite and limonite throughout the deposit, and converted the grunerite schist to siliceous goethite. The iron oxides occur in three forms:

- Coarse-grained, platy, bright specular hematite.
- Medium-grained, dull, granular hematite and martite.
- Fine-grained, earthy hematite-limonite, or crystalline goethite-hematite.

Nine basic mineralogic varieties of iron formation are visually recognizable in the deposit. These mineralogic varieties are distinguished on the basis of the amounts and forms of iron oxide present, crystalline quartz content, and textural features. The varieties may be traced as mappable bands that reflect the internal stratigraphy and original composition of the deposit. Three varieties probably account for 90% of the material in the deposit:

■ Quartz-specular hematite that is clean, massive, or banded.

■ Quartz-specular hematite intermixed with quartz-granular hematite, often thinly banded but massive in bulk, usually accompanied by red hematite or limonite-goethite.

■ Quartz-granular hematite (martite), often massive and accompanied by red hematite or limonite-goethite.

The deposit has undergone at least two periods of deformation. During the first deformation, all formations were folded more or less isoclinally with one overturned limb. The axial plane of the folding strikes N60°E and dips to the southeast. The second deformation produced cross-folds that plunge to the southeast.

The deposit has been traced across the peninsula for a strike length of 6,000 ft, and the width varies from 1,800 to 3,400 ft. The boundary of the deposit with the underlying quartzite and schist has been determined approximately from outcrop mapping and magnetometer surveying. As shown in the accompanying illustration of the cross section, most drillholes failed to intersect the underlying quartzite.

Further information on the Julianne Lake deposit is available from the Newfoundland Department of Industrial Development, St. John's, Newfoundland. □