

CONFIDENTIAL

14 November, 1957,
Mr. G. E. Anderson, Chief Technical Engineer,
J. L. Armstrong, Engineer-in-Charge, Nobel.
FIRING RANGE

As you are aware, Mr. Grinyer advocated in a presentation to the Board of Directors last July acquisition of property in the Nobel area to provide for expansion into advanced fields of development. I understand that the proposal was shelved, at least for the time being, due to lack of funds.

Recent international developments, however, have lent considerable point to Mr. Grinyer's suggestion, and raise the possibility that Orenda or AVRO Aircraft might shortly be interested in a missile firing range. For long range missiles, nothing short of a "Cape Canaveral" would suffice, but there is one possible range for small missiles you might wish to suggest to Mr. Keast.

It is a point extending out through the island cover into Georgian Bay. It is located roughly halfway between the Big River and Naiscot River inlets on Georgian Bay, and in Wallbridge Township (63 in V). It would be about 34 road miles from Nobel, 6 of which would be new construction from the Trans-Canada Highway to the point. It would be 6 air miles south-west of Byng Inlet, a community of several hundred. I do not believe there are many cottages in this immediate area, and land would undoubtedly be largely crown-owned. Open-water distance to Michigan would be about 170 miles, but a target area would probably have to be designated and placarded inside Georgian Bay rather than Lake Huron.

ORIGINAL SIGNED BY
J. L. ARMSTRONG

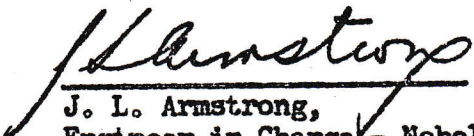
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SITE SURVEY
FOR
REMOTE TEST STATION

Approved for issue by:


J. L. Armstrong,
Engineer in Charge - Nobel.

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GENERAL VIEW OF PARTRIDGE LAKE AREA

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SITE SURVEY FOR REMOTE TEST STATIONIntroduction

At the request of the Vice-President, Engineering, and pursuant to Bll-57, "Future of Nobel as a Test Establishment for Orenda Engines Limited", a survey has been made in the general Nobel area of remote sites suitable for the testing of advanced propulsive or nuclear engineering systems.

Summary

Two sites have been investigated in detail. Each site could be cleared of habitation to a radius of $4\frac{1}{2}$ miles.

The inland site, adjacent to Partridge Lake, and some 12 miles by road from Nobel, could be cleared of private ownership and opened for development for about \$94,500. assuming a reasonable degree of cooperation from the Provincial Department of Lands and Forests. Purchase, except for timber rights, of all land within $4\frac{1}{2}$ mile radius, and acquisition of an adjoining property fronting on the new Trans Canada Highway would raise the cost to about \$303,500., but would be highly desirable since it would give Orenda complete control of the area.

Corresponding costs to develop the alternative Georgian Bay property in Wallbridge Township, some 32 road miles from Nobel, would be \$609,000. and \$966,250. respectively. The additional site potential, for missile firing and the like, would probably not justify the extra expense.

Investigation Methods

Two general areas, both relatively undeveloped, were chosen for investigation, one at the point of maximum spacing between the C.P.R. and C.N.R. lines north of Nobel, and the second on the Georgian Bay shoreline, opposite the Naiscoutaing Indian Reservation, where the highway and the C.P.R. line are both well removed from the bay.

Site survey was generally from the air, and all cottages, lodges and hunt camps were photographed from the air for evaluation purposes. Access road routing was determined from stereoscopic study of aerial photographs purchased through the Department of Lands and Forests. Finally, the sites were examined in detail by foot.

Description of Sites (See Figs. 1 to 6)Partridge Lake

The inland site is located in Burpee Township, and bounded on west,

north and east by Partridge Lake. This point is nearly rectangular and comprises some 500 acres, about half of which are fairly level and about 50 feet above lake level, although this latter was not precisely determined.

There are a number of substantial areas of fairly smooth granite outcroppings but something over half the area is gravelly. There is one small swamp.

Partridge Lake is in the Shawanaga River system, and the upstream drainage basin contains about 40,000 acres. Minimum water flow would be well over 1000 g.p.m., but for high cooling flow requirements, there might be some advantage in pumping from the upstream arm of the lake to the downstream. Water is about average for inland lakes, and moderately brown, but not muddy.

Alternative access road routes are shown on Fig 2. The southern route would be about $7\frac{3}{4}$ miles long. From the standpoint of economy, it would be preferable to the northern route since it joins the highway 2 miles south of the northern route, and this would result in a saving of commuting time from the Nobel plant.

The northern access route joins the highway at a point where terrain is quite exceptional for this country. Fronting on the highway is an area of some 75 acres which is very nearly flat and entirely gravel or loam. It would be excellent and low-cost insurance to purchase this site as a possible new location of the office and shop functions at the test establishment if it ever becomes necessary or advisable to leave the immediate Nobel area. Certain testing operations would be possible also on this site which fronts on two arms of Wiwassasegen Lake.

Cost estimates are detailed in Appendix A. It is estimated that it would cost about \$94,500. to purchase the 500 acre test site and any private holdings within $3\frac{1}{2}$ miles radius, and build a road to minimum standards. If it were desired to build a more substantial road, purchase the highway site as well as the test site, and purchase, except for timber rights, all lands within $4\frac{1}{2}$ miles radius of the site, the cost would be about \$303,500. Timber rights for the whole area would probably cost an additional \$150,000., but a roughly equivalent degree of control would be possible without the substantial initial outlay if the Department agreed to give Orenda first refusal rights on the lumbering of the various stands of timber as they matured.

Wallbridge V

The Georgian Bay site is in Wallbridge Township about 6 miles south of the village of Byng Inlet, and about 5 miles northwest of the high density cottage area which begins at Bayfield Inlet (incorrectly shown as Alexander Inlet on the map, Fig 3). Island properties within the $4\frac{1}{2}$ mile radius are quite expensive despite the fact that cottage density in this area is much below average for the Georgian Bay shoreline, and that this section has in recent years been closed to further development.

The immediate site is on a point, about 880 acres in area, which thrusts out through the island cover into the main bay. Open water past the Bruce Peninsula into Lake Huron extends to a relatively sparsely populated area in the State of Michigan some 175 miles distant. This feature would suit the site for missile launching work. The proposed site for static testing, however, is shown $1\frac{1}{2}$ miles in from the end of the point in order to minimize sound radiation up and down the bay shoreline over open water. The additional cost of an access road to the tip of the point would be between \$50,000 and \$100,000.

While the general terrain does not rise to significant elevations, the granite surface is creased with swampy crevasses. It is most unlikely that gravel could be found on site or within economical hauling distance for road building. Blast cutting to provide fill might be necessary.

The considerable highway distance, 27 miles in addition to the 5 miles of the access road, would make commuting from the Nobel establishment very time consuming, and is an additional economic disadvantage of the site.

The access road would pass through the Naiscoutaing Indian Reserve for one mile. Payment to the band would probably be on the basis of a small annual rental rather than cash purchase of right of way.

Construction of a road to minimum standards, purchase of the 880 acre site, and purchase of all private holdings within $4\frac{1}{2}$ mile radius would cost about \$609,000. A somewhat better access road, and ownership except for timber rights of all land within the $4\frac{1}{2}$ mile radius would cost \$966,250. approximately.

Recommendations

The inland site at Partridge Lake is preferred for reasons of both economy and convenience unless a development program on missiles of a size which could be safely test fired from the Georgian Bay site appears highly probable.

The "maximum protection" alternative for the Partridge Lake site would, money permitting, be very desirable. Outright purchase including timber rights should certainly be considered, although the resultant cost would approach \$425,000. It would give Orenda unchallengeable control in the area, and make the company independent of the vagaries of political policy.

Acquisition of property for speculative purposes is certainly not recommended, but it is difficult to see how, in the long term, the company could lose money on the Partridge Lake property, as construction of a road would open it up for individual lot resale if the company requirement for a remote site came to an end.

Price of land acquisition has of course not been discussed with the Department of Lands and Forests. Indeed, sale of large blocks of land is strictly counter to general policy. It is essential that any plan to set up a remote test site in a crown land area be discussed with the Minister and the Deputy Minister of Lands and Forests.

MAP REFERENCE



PRIVATELY OWNED LOT



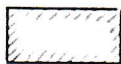
LAND AGAINST WHICH MINING PERMIT HAS BEEN ISSUED.



LAND USE PERMIT, FOR COTTAGE OR EQUIV, ISSUED ON A PORTION OF LOT.



CROWN LAND.



RESERVED LAND. NO FURTHER DEVELOPMENT.

+5

COTTAGE AS SPOTTED FROM AIR. VALUE IN \$ - 1000.



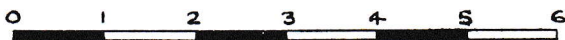
PROPOSED FOR ACQUISITION OR CONTROL BY ORENDA.



PROPOSED TEST SITE.

----- PROPOSED ACCESS ROAD.

----- ALTERNATE ROUTE FOR ACCESS ROAD.



SCALE IN MILES

FIG. 1



FIG. 2 - MAP SHOWING PARTRIDGE LAKE SITE



FIG. 3 - MAP SHOWING WALLBRIDGE V SITE

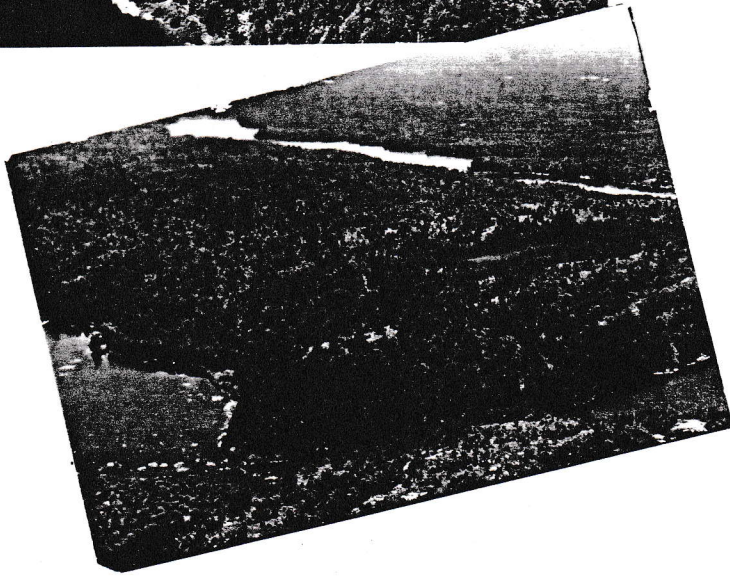


FIG. 4 - PARTRIDGE LAKE SITE

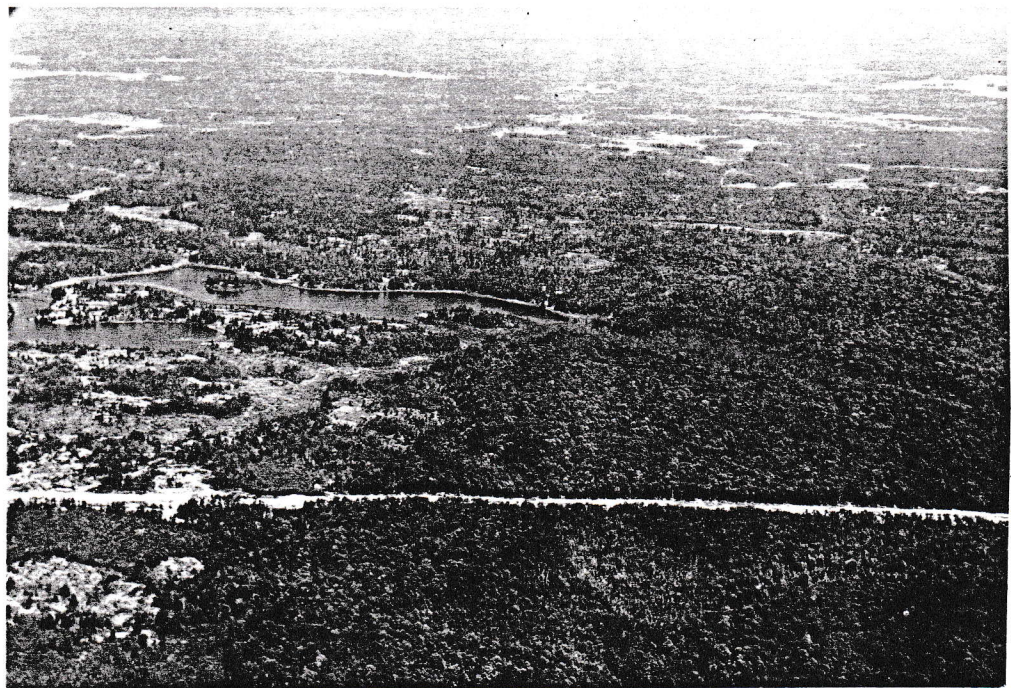
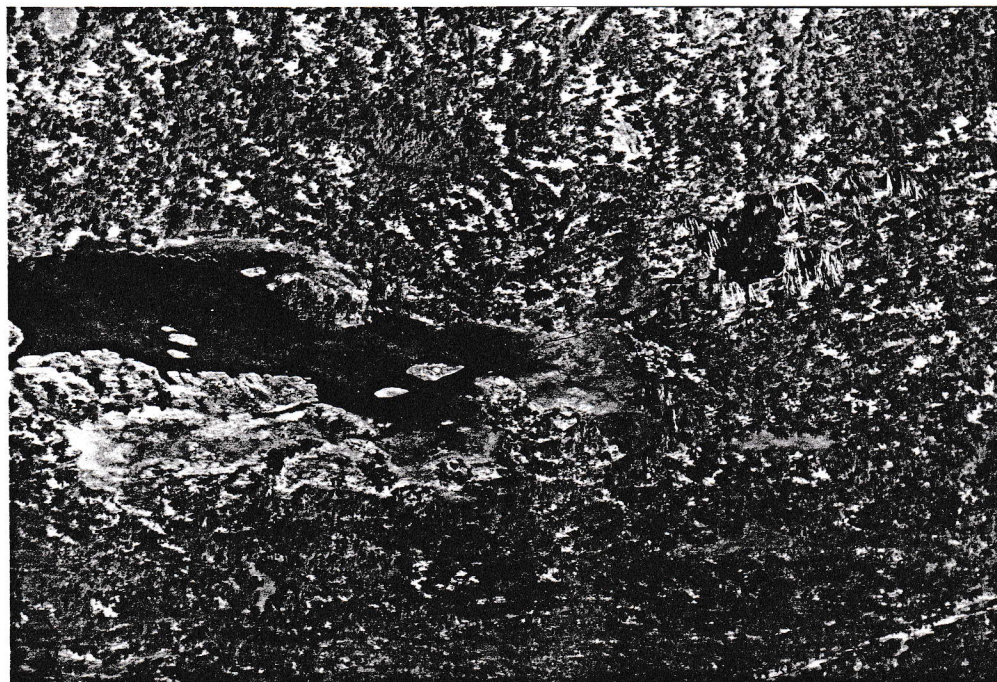
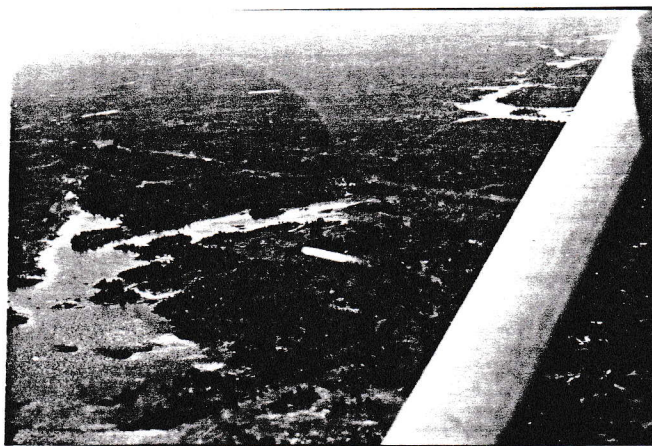
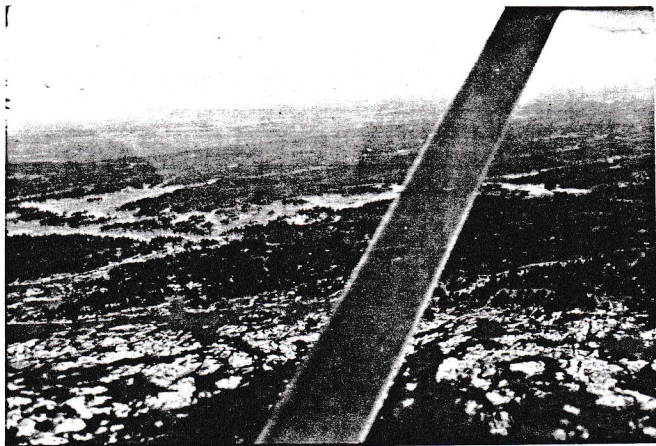


FIG. 5 - HIGHWAY ENTRANCE (NORTH ROUTE) TO PARTRIDGE LAKE SITE



Upside Down

FIG. 6 - WALLBRIDGE V SITE

APPENDIX "A"COST ESTIMATES

1. BASIC COST FIGURES

Cost estimates are based on the following facts:

- 1.1 Lake frontage of large island shoreline suitable for cottages is sold to individuals (200 foot maximum in this area) on the basis of \$1. per foot frontage, plus survey fee.
- 1.2 Island cottage property is sold to individuals at \$175. per acre plus survey fee. Minimum price for a habitable island is \$225. plus survey fee.
- 1.3 It is not known precisely which unoccupied properties on Georgian Bay are privately owned, so a portion of the figure shown against 2.4.1.3 should properly be shown against 2.3.2.1 and 2.4.2.1.
- 1.4 Local lumbermen pay for privately owned land up to \$10. per acre for timber stands ready for cutting. Average value of non-agricultural land in the area would not be over \$5. per acre. After cutting, they offer the land for re-sale at about \$1. per acre.
- 1.5 Cottage roads through gravelly sites, or where gravel is available within half a mile and only a gravel dressing is required following dozing, can be built for under \$1. per foot. Due to the exceedingly difficult nature of the terrain leading to the Wall-bridge site, cost figures for this access road are unreliable.

2. COST SUMMARY

2.1 Partridge Lake point, minimum cost

2.1.1 By negotiation with Department of Lands and Forests

2.1.1.1 Purchase outright about 500 acres on Partridge Lake point including $2\frac{1}{2}$ miles of shoreline. \$4500.

2.1.1.2 Arrange to have all land within $4\frac{1}{2}$ mile radius, not so designated at the present time, closed to further development. N.C.

2.1.2 By negotiation with private individuals

2.1.2.1 Purchase all privately held properties within $3\frac{1}{2}$ mile radius, at assumed premium of 100% over "business property" evaluation. \$50,000.

2.1.2.2 Build access road by southern route to minimum standards, 8 mi. @ \$5,000. \$40,000.

Total cost, exclusive of site development \$94,500.

2.2 Partridge Lake Point maximum protection

2.2.1 By negotiation with Department of Lands and Forests.

- 2.2.1.1 Purchase outright about 500 acres on Partridge Lake point, including $2\frac{1}{2}$ miles of shoreline. \$4500.
- 2.2.1.2 Purchase, except for timber rights, about 31,500 acres, unsuitable for cottage use within $4\frac{1}{2}$ mile radius. (Outright purchase would cost \$150,000.) \$30,000.
- 2.2.1.3 Purchase, except for timber rights, approx. 93 miles of lakefront and approx. 126 acres of habitable islands, rated at 1/5 nominal value due to present inaccessibility. \$100,000.

2.2.2 By negotiation with private individuals

- 2.2.2.1 Purchase all privately held properties within $4\frac{1}{2}$ mile radius, at assumed premium of 100% over "business property" evaluation. \$80,000.
- 2.2.2.2 Purchase additional 680 acres adjoining the Highway, plus abandoned farm house now used as a private hunt camp, for possible future relocation of Nobel establishment. 9,000.
- 2.2.2.3 Build access road from highway property to test site to reasonable standards, 8 mi. @ \$10,000. \$80,000.

Total cost, exclusive of site development \$309,500.

2.3 Wallbridge V Point, minimum cost

2.3.1 By negotiation with Department of Lands and Forests

- 2.3.1.1 Purchase outright 880 acres on Wallbridge V point, including 3 miles of shoreline. \$9,000.
- 2.3.1.2 Achieve understanding with the Department of Lands and Forests that "no further development" policy will be otherwise strictly adhered to. W.C.

2.3.2 By negotiation with private individuals

- 2.3.2.1 Purchase all privately held properties \$450,000.

within approx. $4\frac{1}{2}$ mile radius, at assumed premium of 100% over cottage or "business property" evaluation, as applicable.

2.3.2.2 Build access road to minimum standards \$150,000
5 Mi. @ \$30,000.

Total cost, exclusive of site development \$609,000.

2.4 Wallbridge V point, maximum protection

2.4.1 By negotiation with Department of Lands and Forests

2.4.1.1 Purchase outright 880 acres on Wallbridge V point, including 3 miles of shoreline. \$9,000.

2.4.1.2 Purchase, except for timber rights, about \$21,750.
21,750 acres of non-cottage land on the mainland or towards the centre of large islands.

2.4.1.3 Purchase, except for timber rights, \$205,500.
3.5 miles Big Lake frontage; 36 miles Georgian Bay mainland frontage;
39 miles shoreline on large islands;
approx. 370 smaller islands of habitable size comprising some 1050 acres, rated at 1/3 nominal value due to bulk purchase and general unsuitability of some parcels.

2.4.2 By negotiation with private individuals

2.4.2.1 Purchase all privately held properties \$450,000.
within approx. $4\frac{1}{2}$ mile radius, at assumed premium of 100% over cottage or "business property" evaluation, as applicable.

2.4.2.2 Build access road to reasonable standards, \$300,000.
5 Mi. @ \$60,000.

Total cost, exclusive of site development \$966,250.

Excerpts from

"J58 Reflects Navy Development Changes" P. 18 & 19, Aviation Week,
June 9, 1958.

Florida Test Facilities

Testing facilities at the Florida site now consists of four open air jet engine test cells located a few miles from the engineering offices and shop so that they do not require soundproofing. - - -

The Pratt & Whitney facility in Florida is located on a 10 mile square tract which is over 10 miles from any populated area and about 18 miles from Palm Beach. Selection of this site on the edge of the Everglades for new engine development work was based on many factors but the primary considerations included obtaining maximum isolation with close proximity to a desirable living area to attract personnel.

Isolation was required to maintain good community relations while developing very large and very noisy rocket engines and other high speed power-plants that Pratt & Whitney has long been rumored to be working on. - - -

JLA:MMc.