

The President and Directors,  
Hardiman Bay Mines Limited,  
Suite 403 - 62 Richmond Street West,  
Toronto, Ontario.

Gentlemen:-

This report describes the results of a magnetometer survey conducted by Geo-Technical Development Co. Limited on the north part of your 30-claim group property located in Horwood Township, Sudbury Mining Division, Ontario. The results and interpretation are depicted on the plan accompanying this report.

#### CONCLUSIONS AND RECOMMENDATIONS

Magnetic data indicated that there are anomalous conditions in Claim 116596 where old surface work and drilling were located. The data also indicated the possibility of having a granitic mass at the eastern part of the surveyed area.

The east-northeasterly shear in volcanics observed by the writer during his brief examination of the property in 1962, appears to cut across diorite further east at the northeast corner of Claim 116596. This is apparently the choice location for assessment diamond drilling.

However, the interpretation is tentative and the writer recommends to carry out a program of geological prospecting to determine other targets for drilling. The purpose of the geological prospecting is to check the interpretation, to locate the old drill holes, to

examine the trenches, and to locate the prospect showing noted by Laird further to the southeast. Area of Laird's showing is not covered by the survey and it is recommended to extend the magnetic survey to cover Claims 116594 and 116604.

#### PROPERTY

The thirty claims are contiguous and aggregate about 1,200 acres. They are identified as follows:

8-116590 to 8-116597, inclusive;  
8-116599 to 8-116620, inclusive.

Horwood Township, Sudbury Mining Division, District of Sudbury, Ontario. The survey covered Claims 116592, 116595, 116596, 116597, 116599 to 116603 inclusive; 116607 to 116611 inclusive; 116615 and 116618 to 116620 inclusive.

The claims were staked in October, 1961, tied on to the east of the gold property of Orofino Mines Limited.

#### LOCATION

The location is at the southwest section of Horwood Township, between Swayze River and the south area of Horwood Lake. A small lake, known as Stangiff Lake, is located at the west central part of the property. The location is about 115 miles northwest of Sudbury, 65 miles southwest of Timmins, center of the famous Porcupine gold camp.

#### ACCESS

Access can readily be made by C.N.R. via Sudbury

to mile 128.6, flag stop, Horwood Lake (formerly Barite Siding), one mile northeast of Hardiman Bay, and from Hardiman Bay by boat to the southwest of Horwood Lake where a gravel road leads to the Orofino Mine and passes through the north part of your property.

A tourist camp, known as Wade's camp, is located at Hardiman Bay and can supply boats and trucks for the transportation.

Access can also be made by automobile from Timmins via Highway 101 to a private road which leads south from a point about 8 miles east of Foleyet to Horwood Lake. This private road is owned by Algoma Davies Lumber Company.

Stangiff Lake is too small for the landing of bush planes. However, such planes can land at Horwood Lake at the landing of the Orofino Road.

#### TOPOGRAPHY

The topography is marked by the Stangiff Lake located at the west central part of the property, and by hills of glacial debris at the north and eastern parts. There are outcrop areas located to the south and west of this lake which drains west and north to the Swayze River.

A swampy zone separates your property from the Orofino showings which are located on the top of a hill. The elevation at Horwood Lake is 1,100 feet and the hills between Horwood Lake and Swayze River are less than about 150 feet above the lake.

## HISTORY

The occurrence of gold-bearing quartz veins in this area was known as early as 1909. A small staking rush took place in 1918. Later in the fall of 1933, visible gold was found at now the property of Orofino Mines, and another small staking rush took place.

In 1934, H.C. Laird (Ref.1), examined the rocks in the vicinity of the more important gold discoveries. Part of the property here concerned was known as the Landy-Taylor groups of claims and a prospect showing with quartz veins was located immediately to the south of Stangiff Lake. He noted that feldspar porphyry dikes are especially abundant on the Landy-Taylor group of claims.

In 1936, W.D. Harding conducted a geological mapping of the area for the O.D.M. (Ref.2). Geological traverses made by his party, however, did not come across the prospect-showing with quartz veins noted by Laird.

Records in the Sudbury Office of the Mining Recorder, showed that 422 feet of diamond drilling was reported for assessment work within old Claim S-42767, now covered by Claims S-116596 and S-116597, located at the west part of the property. The said old claim was cancelled in 1954. There is no record of other work being carried out on other parts of the property. During his short visit to the property, the writer observed that some of the old claim boundaries were surveyed.

Previous development at the neighbouring Orofino property involved surface exploration diamond drilling and a 3-compartment shaft sunk to 306 feet with levels at 150 and 275 feet. Current interest in the area is revived by a deep drilling program now in progress at Orofino.

#### GENERAL GEOLOGY

General geology of the area is on Map No. 1933a, O.D.M. and the more detailed geology is on a sketch map prepared by Laird, 1934 (Reference 1) and on Map No. 46a, by Harding, 1938 (Reference 2).

The consolidated rocks of the area consist largely of early pre-Cambrian lavas and sediments which have been intruded first by diorite, then by granite, and again in late pre-Cambrian time by diabase.

The diabase (Keweenawan) forms northeasterly and east-northeasterly dikes. The granite and related rocks (Algoman) form large batholiths to the east and west and a smaller syenodioritic outlier to the southeast. There is a genetic relationship between these acid intrusives to pegmatite dikes, acid porphyry dikes and gold-bearing quartz veins occurring in great profusion in the area between the Swayze River and Hardiman Bay. The diorite (Haileyburian?) forms small bodies within the greenstone belt of lavas and sediments (Keewatin).

The greenstone belt at Horwood Lake is about one-township wide and lies between a large greenstone belt

located to the north and northeast and another large greenstone belt located to the south and southwest. Strong northeasterly shearing was noted to the southwest of Horwood Lake where the property is located.

#### ECONOMIC GEOLOGY

Development at the neighbouring property of Orofino Mines Ltd., has located 9 vein zones within faulted and sheared diorite. The veins are in close proximity to each other, more or less parallel, some dip north, others south, some exposed on surface, others by diamond drilling. They all occur within an area of about 1,200 feet from north to south, more or less parallel to a northeasterly striking main shear zone.

Free gold was observed in various surface exposures but the ore zones tested by diamond drilling are auriferous sulphide intermixed with quartz and the gold content increased proportionately with the sulphide (pyrite) content of the veins. (Reference 3).

There are short sections of high grade ore. Ore lengths opened on two levels average \$10.50 gold from a total of approximately 2,000 feet of lateral work on four vein zones (References 4 and 5).

A strong shear zone striking north  $65^{\circ}$  east magnetic was noted by the writer at the north part of Claim S-116596. This shear zone is on strike with the main shear at Orofino. Although there are small bodies of diorite on the property (Reference 2), the observed shear cuts volcanics. This shearing is also noted by Laird (Reference 1). A 3-inch

to 1 foot wide quartz vein with few specks of pyrite was noted by the writer at the sheared volcanics. Laird noted a prospect showing with quartz veins further to the southeast (Reference 1).

Three other gold occurrences are known to the east and within about 2 miles of the east boundary of the property. Previous mining operation (Commenced in September 1935) was confined almost entirely to an occurrence situated on the east shore of Horwood Lake, just south of Hardiman Bay. The operation was by Hollinger Consolidated Gold Mines Ltd., with shaft sinking to 570 feet (inclined at  $45^{\circ}$ ) to explore a gold-bearing quartz vein which had widths varied from  $2\frac{1}{2}$  to 6 feet with visible gold. A vein section 75 feet in length west of the shaft on the 570-foot level was reported to be of good grade over a mineable width. The rocks here consist mostly of dark-weathering Keewatin lavas which are striking northeast (Reference 2).

#### MAGNETOMETER SURVEY RESULTS AND INTERPRETATION

The survey encountered magnetic readings in the order of 400 to 2,950 gammas. Readings of over 600 gammas are, as a rule, located at the west half of the surveyed area. These higher readings are contoured to show several magnetic zones. The strongest magnetic zone is located in Claim 116596 and appeared to coincide with the location of an old trench.

Geological map No. 46a, O.D.M. indicates the occurrence of basic volcanics here which are cut by an acid dike. A quartz vein is located further to the southeast.

The magnetic "highs" are inferred as indicating anomalous conditions within the basic volcanics. A resistivity survey would indicate whether there is a widespread silicification associated with these acid dikes and quartz vein.

There are other weaker magnetic trends outlined on the west part to indicate a complex structure of the volcanics and a diorite intrusive. The diorite intrusive was observed by Harding at about 500 feet to the south of the old cabin. Magnetic data indicate that the zone extends northeast and probably north but cut by faults. The northeasterly shear observed by the writer appears to cut across this dioritic body at the northeast corner of Claim 116596. This inferred condition is somewhat similar to Orofino, except that the magnetic data do not indicate the occurrence of appreciable anomalous conditions. Nevertheless, it is the choice location for assessment diamond drilling.

At the eastern part, the magnetic readings are ranged from 400 to about 600 gammas. There is hardly any appreciable trend. These characteristics are inferred as indicating the occurrence of a mass of acidic intrusive (granite) such as that known at Hardiman Bay. The inferred contact between this granitic mass and the volcanics appears to run north-south. Laird's prospect showing (see section on History) located to the south of Stangiff Lake, may be along this contact zone but



the area is not covered by the survey. It may be postulated that the said Laird's prospect showing is also associated with a magnetic anomaly. It follows that the magnetometer survey should be extended to cover Claims 116594 and 116604, located immediately to the south of Stangiff Lake.

An inferred geology is depicted on the plan accompanying this report. The known geology is not sufficient for a satisfactory interpretation and a geological prospecting is apparently needed.

#### SURVEY METHOD AND INSTRUMENT

Base-check method was followed by the magnetometer survey with the base-control station established on the base line at L24W. Seven (7) other control stations were established along the base line at 800 foot intervals.

A Sharpe A-2 magnetometer with a sensitivity of 29.0 gammas per scale division was used.

#### SURVEY DATA

The magnetometer survey was conducted by Geo-Technical Development Co. Limited in April, 1963 to cover the north 18 claims of the property.

A north-northeasterly base line was out across the north part of the property for the turn-off of picket lines at 400 foot intervals to cover the 18 claims.

A total of 16.3 miles of lines was out for the survey and a total of 14.7 miles of magnetometer survey was

carried out with 100 foot station readings.

The number of eight-hour man-days required for the work is as follows:

	<u>8-hour Man-Days</u>	<u>Attributable to Assessment Work</u>
Line cutting and chaining	39 x 4	156
Operating magnetometer survey	27 x 4	108
Preparation of report and typing	4 x 4	16
Drafting	<u>6 x 4</u>	<u>24</u>
	<u>76</u>	<u>304</u>

Respectfully submitted,

GEO-TECHNICAL DEVELOPMENT CO. LIMITED,

*S. S. Szetu*  
S.S. SZETU, Ph.D.  
Consulting Geologist.

SSS:5

*Tech - 37*  
*Time - 37 (reduced from 39)*

April 23rd., 1963.

24 Wellington Street West,  
Toronto, Ontario.

*74*  
*x 4*  
*296 - 18 = 16.44*



- L E G E N D
- LINE CUT AND CHAINED MAGNETIC READINGS OBSERVED AND PLOTTED ON EAST SIDE OF PAPER LINE.
  - MAGNETIC CONTOUR.
  - ⊙ A.C.S. MAGNETIC BASE CONTROL STATION.
  - ⊙ C.S. MAGNETIC CONTROL STATION.
  - S.W.A.M.P.
  - HIGHER GROUND.
  - STEEP HILL.
  - CLIFF.
  - OUTCROP AREA.
  - CLAIM POST LOCATION AND CLAIM BOUNDARY.
- INFERRED GEOLOGY
- CROSS FAULT.
  - SHEAR OR FAULT.
  - GEOLOGICAL BOUNDARY.
  - (4) DIABASE DIKE.
  - (3) GRANITIC ROCK.
  - (2) DIORITE WITH SOME BASIC VOLCANICS.
  - (1) BASIC VOLCANICS.
  - CHOICE LOCATION FOR ASSESSMENT DRILLING.

**LOCATION MAP**  
NEWTON TWP. DALE TWP. SCALE: 1" = 1 MILE

**LEGEND**

RECREATION	SWAMP AND MUSKIEG
OLIVINE DIABASE	TRAIL OR PORTAGE
QUARTZ DIABASE	WAGON ROAD
ALGOMAN	BUILDING
QUARTZ VEIN	STRIKE AND DIP OF BEDDING
QUARTZ FELDSPAR PORPHYRY	STRIKE AND DIP OF SCHISTOSITY
HALESTHRON	STRIKE AND DIP OF FOLIATION
DIORITE	GEOLOGICAL BOUNDARY
KEEWATIN	CONGLOMERATE
BASIC VOLCANICS	GLACIAL STRATIGRAPHY
(C) FELLOW DATA	MINE SHAFT

NOTE: GEOLOGY FROM MAP 48-A O.D.M.

**KEY MAP**

**CLAIM MAP**  
HORWOOD TWP. NEWTON TWP. SCALE: 1" = 1/2 MILE

25 CLAIMS OWNED BY HARDIMAN BAY MINES LTD.

116592, 116593, 116594, 116595, 116596, 116597, 116598, 116599, 116600, 116601, 116602, 116603, 116604, 116605, 116606, 116607, 116608, 116609, 116610, 116611, 116612, 116613, 116614, 116615, 116616, 116617, 116618, 116619, 116620, 116621, 116622, 116623, 116624, 116625, 116626, 116627, 116628, 116629, 116630, 116631, 116632, 116633, 116634, 116635, 116636, 116637, 116638, 116639, 116640, 116641, 116642, 116643, 116644, 116645, 116646, 116647, 116648, 116649, 116650, 116651, 116652, 116653, 116654, 116655, 116656, 116657, 116658, 116659, 116660, 116661, 116662, 116663, 116664, 116665, 116666, 116667, 116668, 116669, 116670, 116671, 116672, 116673, 116674, 116675, 116676, 116677, 116678, 116679, 116680, 116681, 116682, 116683, 116684, 116685, 116686, 116687, 116688, 116689, 116690, 116691, 116692, 116693, 116694, 116695, 116696, 116697, 116698, 116699, 116700, 116701, 116702, 116703, 116704, 116705, 116706, 116707, 116708, 116709, 116710, 116711, 116712, 116713, 116714, 116715, 116716, 116717, 116718, 116719, 116720, 116721, 116722, 116723, 116724, 116725, 116726, 116727, 116728, 116729, 116730, 116731, 116732, 116733, 116734, 116735, 116736, 116737, 116738, 116739, 116740, 116741, 116742, 116743, 116744, 116745, 116746, 116747, 116748, 116749, 116750, 116751, 116752, 116753, 116754, 116755, 116756, 116757, 116758, 116759, 116760, 116761, 116762, 116763, 116764, 116765, 116766, 116767, 116768, 116769, 116770, 116771, 116772, 116773, 116774, 116775, 116776, 116777, 116778, 116779, 116780, 116781, 116782, 116783, 116784, 116785, 116786, 116787, 116788, 116789, 116790, 116791, 116792, 116793, 116794, 116795, 116796, 116797, 116798, 116799, 116800, 116801, 116802, 116803, 116804, 116805, 116806, 116807, 116808, 116809, 116810, 116811, 116812, 116813, 116814, 116815, 116816, 116817, 116818, 116819, 116820, 116821, 116822, 116823, 116824, 116825, 116826, 116827, 116828, 116829, 116830, 116831, 116832, 116833, 116834, 116835, 116836, 116837, 116838, 116839, 116840, 116841, 116842, 116843, 116844, 116845, 116846, 116847, 116848, 116849, 116850, 116851, 116852, 116853, 116854, 116855, 116856, 116857, 116858, 116859, 116860, 116861, 116862, 116863, 116864, 116865, 116866, 116867, 116868, 116869, 116870, 116871, 116872, 116873, 116874, 116875, 116876, 116877, 116878, 116879, 116880, 116881, 116882, 116883, 116884, 116885, 116886, 116887, 116888, 116889, 116890, 116891, 116892, 116893, 116894, 116895, 116896, 116897, 116898, 116899, 116900, 116901, 116902, 116903, 116904, 116905, 116906, 116907, 116908, 116909, 116910, 116911, 116912, 116913, 116914, 116915, 116916, 116917, 116918, 116919, 116920, 116921, 116922, 116923, 116924, 116925, 116926, 116927, 116928, 116929, 116930, 116931, 116932, 116933, 116934, 116935, 116936, 116937, 116938, 116939, 116940, 116941, 116942, 116943, 116944, 116945, 116946, 116947, 116948, 116949, 116950, 116951, 116952, 116953, 116954, 116955, 116956, 116957, 116958, 116959, 116960, 116961, 116962, 116963, 116964, 116965, 116966, 116967, 116968, 116969, 116970, 116971, 116972, 116973, 116974, 116975, 116976, 116977, 116978, 116979, 116980, 116981, 116982, 116983, 116984, 116985, 116986, 116987, 116988, 116989, 116990, 116991, 116992, 116993, 116994, 116995, 116996, 116997, 116998, 116999, 117000.

GEOLOGICAL SURVEY DATA ON NORTH-HALF PART ON PROPERTY  
**HARDIMAN BAY MINES LIMITED**  
 MAGNETIC AND CONTOURS  
 GEOLOGICAL INTERPRETATION

HORWOOD TOWNSHIP  
 ONTARIO

GEOLOGICAL SURVEY BY:  
**GEO-TECHNICAL DEVELOPMENT CO. LIMITED**  
 PLAN NO. 11  
 APRIL-1983  
 SCALE: 1" = 200'

S. J. S. J. S. J.

