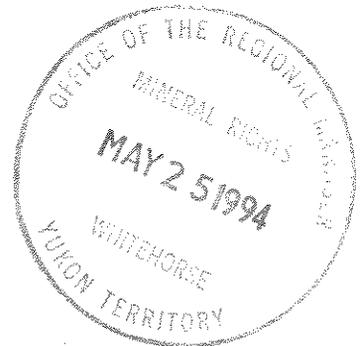




GEOPHYSICAL ASSESSMENT REPORT
HART RIVER PROJECT
MAYO MINING DISTRICT, YUKON TERRITORY

NTS: 116A/10

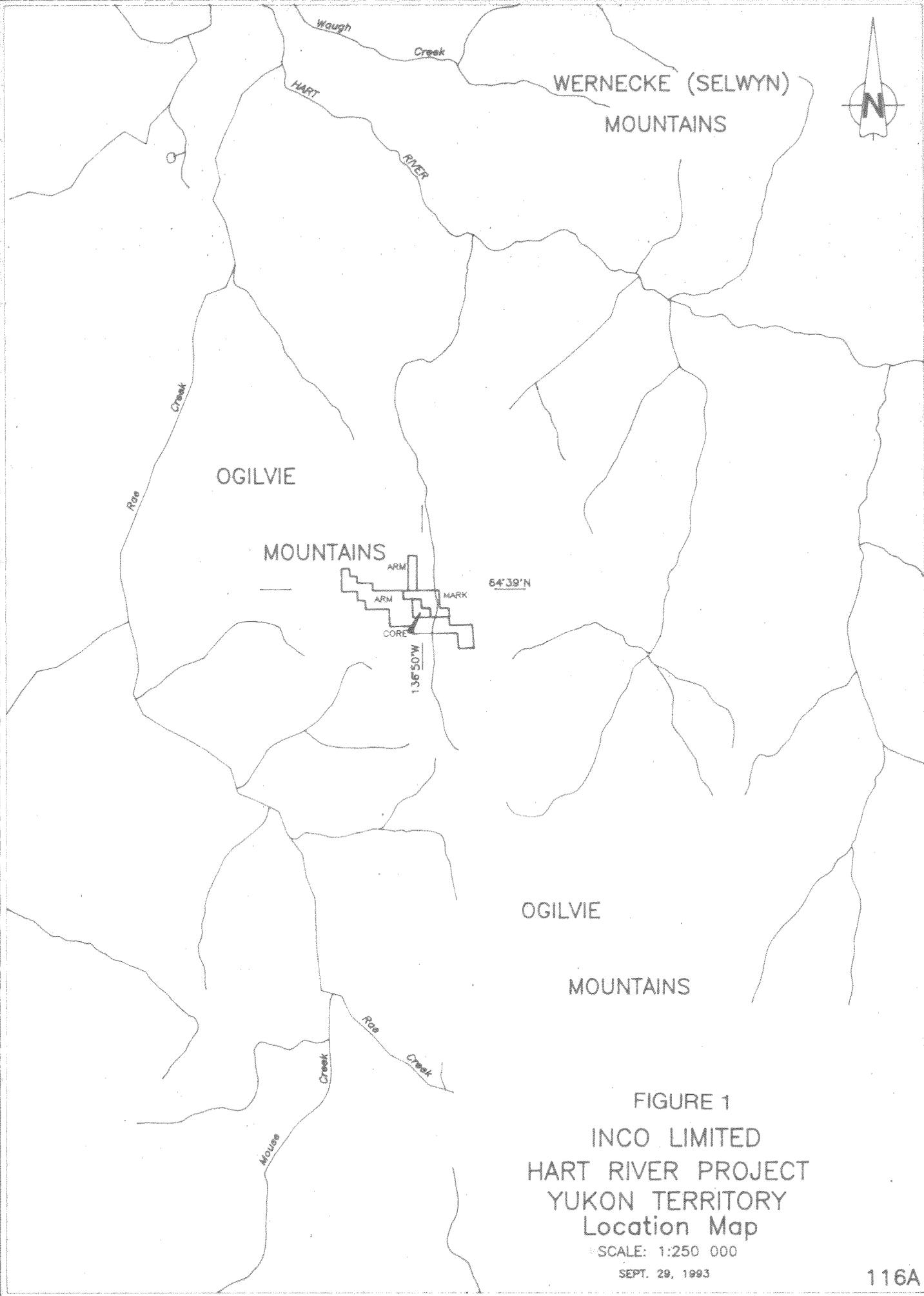
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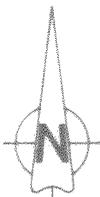
Bob B.H. Lo, B.A.Sc., M.Sc., M.B.A., P.Eng,
Senior Geophysicist,
Inco Exploration and Technical Services Inc.
Copper Cliff, Ontario P0M 1N0
May, 1994

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WERNECKE (SELWYN)
MOUNTAINS



OGILVIE

MOUNTAINS

64° 39' N

136° 50' W

OGILVIE

MOUNTAINS

FIGURE 1
INCO LIMITED
HART RIVER PROJECT
YUKON TERRITORY
Location Map

SCALE: 1:250 000

SEPT. 29, 1993

PREVIOUS WORK

- 1966: The original claims were staked over the gossan.
- 1967: Trenching of the gossan confirmed the presence of massive sulphides. Soil geochemical sampling and EM surveys were conducted near the main showing and two packsack holes of unknown length were drilled.
- 1968: A 901 - sample soil geochemical survey was done over 56 line kilometres and an EM survey (Craelius EM Gun) over 12.6 line kilometres. The geology of the property and surrounding area was mapped in detail and 31 holes were drilled from surface for a total of 2,215 metres.
- 1969: The 3,880 level (feet) adit was collared and 597 metres of lateral development intersected the deposit. The 3,960 level adit was collared and advanced 61 metres. Underground drilling totalled 2,472 metres in 33 holes and surface drilling totalled 864 metres in 8 holes. "Reserves" were estimated at 523,840 tonnes "proven ore" averaging 1.41 g/t Au, 49.7 g/t Ag, 1.45% Cu, 0.87% Pb and 3.65% Zn.
- 1970: Small-scale EM and geochemical soil surveys and an underground geological mapping programme were carried out. Ore reserves were calculated on the basis of stricter economic criteria at 479,447 tonnes (proven plus probable).
- 1971: A report was prepared that recommended further exploration to consist of diamond drilling along strike and down dip of the deposit. A fixed-source TURAM EM survey over the deposit and nearby area was also recommended.
- 1971-92: Some contiguous claim blocks were added but no work was carried out on the property. As the assessment that had been carried forward expired, the claims were maintained by cash payments to the Crown in lieu of work. By 1992, only 11 claims remained.
- 1992: The Federal Government (DIAND) released a map of the regional geology of the Hart River deposit area. IETS geologists conducted a field examination and recommended acquisition of the property. The ARM claims were staked by IETS to the west and south of the deposit. An agreement was negotiated between Inco Limited and Calypso Resources Ltd. with an effective date of January 2, 1993.

GEOLOGY

Regional geology

A Proterozoic sequence, which hosts the Hart River Deposit, is exposed in an 80 by 32 kilometre window in lower Palaeozoic continental margin sediments. The sequence includes the Late Proterozoic Windermere Supergroup, the Middle or Late Proterozoic Fifteenmile Group and the Middle Proterozoic Wernecke Supergroup.

The Wernecke Supergroup contains the Gillespie Lake Group and Quartet Group. The Hart River Deposit is within the Gillespie Lake Group.

Property geology and structure

The Gillespie Lake Group in the Hart River area consists of flaggy, orange - weathering argillaceous dolomite that is up to 900 metres thick. Minor thin argillite units are interbedded with the dolomite.

The Hart River Deposit is situated where the sedimentary facies changes from dolomite to calcareous and non-calcareous argillite, mafic tuff, and basalt lava flows (see Figure 3). The lava flows are absent to the west of the deposit, but the mafic tuff persists. Mafic sills are restricted to the stratigraphic sequence below the mafic flows at the Hart River Deposit.

The deposit is enclosed in black argillites which appear to be underlain and overlain by basalt flows. The footwall (north) consists of silicified black argillite cut by a stockwork of quartz-carbonate-chalcopryrite veins. The hangingwall consists of either barren black argillite or interlayered chert and pyrite.

The most significant structural element mapped on the property is a thrust fault that crops out 500 metres north of the deposit. The fault dips to the south at 60° and is projected to pass beneath the Hart River Deposit at a depth of one kilometre.

Mineralisation

The Hart River Deposit has been explored by drifting and drilling over a vertical extent of 137 metres between the elevations of 1,265 metres to 1,128 metres above sea level. The deposit is open to depth and along strike to the west. Workings on the 3,880 level (1,183 metres) expose the deposit in plan view as a lens with major and minor axial dimensions of 124 metres and 19 metres. The deposit strikes east - west and dips vertically to moderately southward.

The most common sulphide minerals are pyrite and pyrrhotite which, along with sphalerite, chalcopryrite, galena and rare tetrahedrite, form about 90% of the deposit. Gangue minerals are dolomite, quartz and calcite.

Discrete sulphide bands are common and range from less than one millimetre to one centimetre thick. Pyrite is the main layered sulphide, but there are also alternating layers of chalcopryrite and pyrrhotite, galena-sphalerite and pyrite, and pyrite and sphalerite. Pyrite also commonly occurs as fine grains within a matrix of coarse, rounded framboid-like aggregates of dolomite-quartz-calcite.

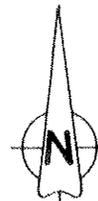
A crude zonation is apparent in the deposit. Lead, zinc, and pyrite are concentrated in the central and western part, while copper, gold and pyrrhotite are dominate in the eastern part.

1993 GEOPHYSICAL PROGRAMME

Rationale

Previous geophysics on the property included VLF, and horizontal loop (Craelius EM gun, and Geonics EM17) with 200 feet coil separation. The horizontal loop surveys will have had a depth detection of approximately ½ to ¾ the coil separation, or 100 to 150 feet. The horizontal loop EM profiles in Figure 13 of Guardia's report indicates that the overburden in the area is resistive. If the overburden in the valley is about the same, no problems with conductive overburden for EM methods will be encountered.

136°50' W



64°39' N

LEGEND



TILL

PALEOZOIC



ALTERED DOLOMITE

PROTEROZOIC

LOWER FIFTEENMILE GROUP



PRINCIPALLY SHALE, SANDSTONE AND CONGLOMERATE

GILLESPIE LAKE GROUP



UNDIVIDED SILTY DOLOMITE AND LIMESTONE



DOLOMITE



PHYLLITE; GREYWACKE, TUFF



MAFIC FLOWS



GABBRO SILLS AND DYKES



DOLOMITE AND LIMESTONE

QUARTET GROUP



SHALE AND SILTSTONE



NORMAL FAULT



THRUST FAULT



HART RIVER DEPOSIT



MARK/CORE CLAIMS



ARM CLAIMS

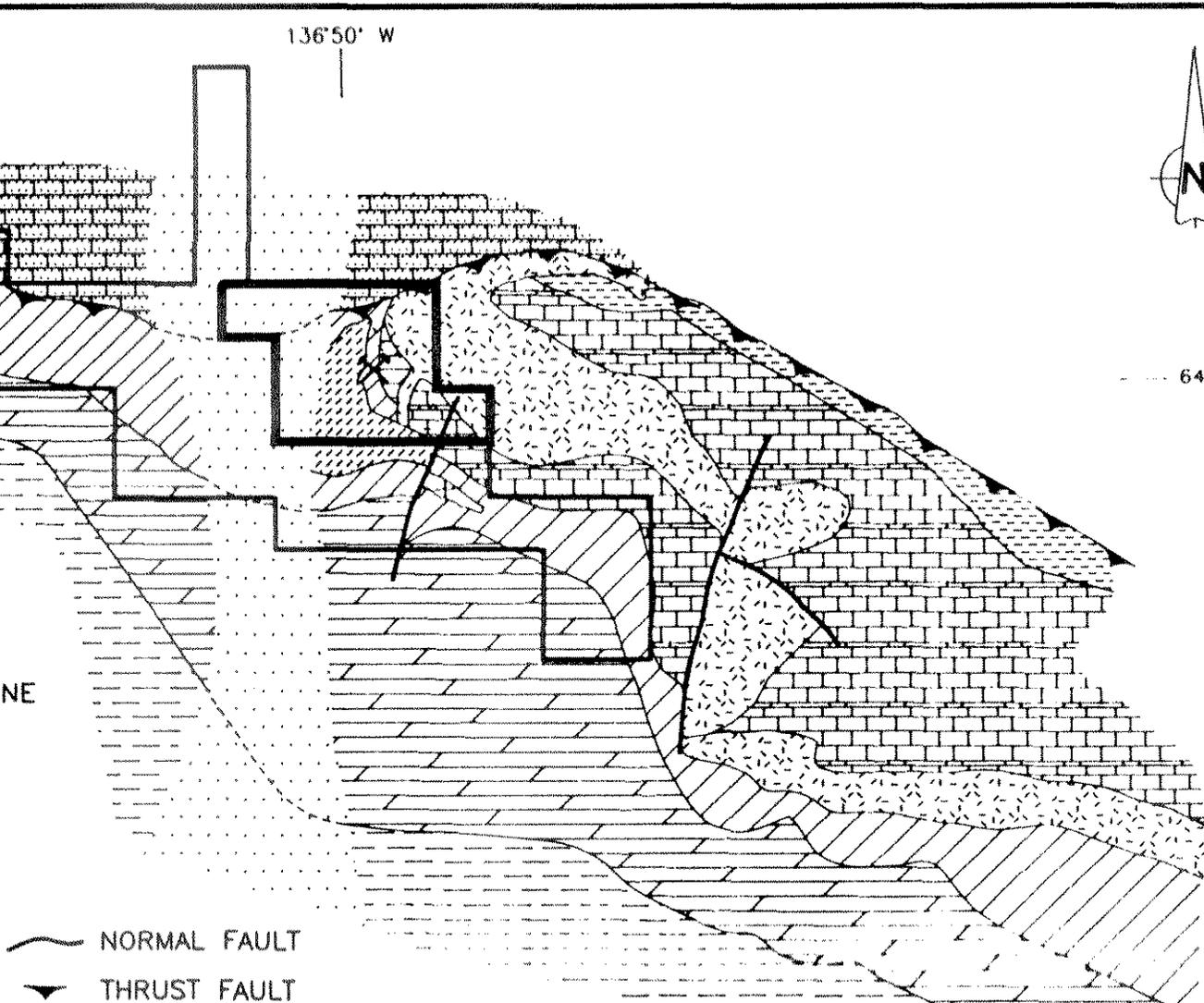
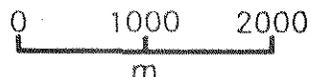


FIGURE 3

INCO EXPLORATION AND TECHNICAL SERVICES INC.

**YUKON TERRITORY
HART RIVER PROJECT
PROPERTY AND GEOLOGY**

Geology after Abbott and Roots, 1992

The horizontal loop method has not changed much in the last 20 years¹, but other techniques such as large loop time domain EM systems have been developed. The latter are capable of detecting a large conductive target buried over 400 metres.

The recommended geophysical surveys were a large loop time domain EM system and a magnetometer survey. The large loop EM system will target conductors, while the magnetometer survey will help in tracing out the geology from the areas of outcrop into the covered areas. As the mineralisation has pyrrhotite, the conductors can be screened by conductivity (it has to be fairly conductive) and by a magnetic signature. Using published nomograms on the old data, the conductance of the target is estimated² to be 42 siemens with a depth to the top of 26 feet.

One of the criteria for the volcanogenic massive sulphide targets to be economically viable is a minimum size. A tabular body of 500 by 500 metres by 10 metres thickness representing an idealized, and simplified massive sulphide deposit contains approximately 10 million tonnes of sulphides. Given these dimensions, survey lines spaced 200 metres will cross the hypothetical orebody twice which is sufficient for confirmation of the EM response. 100 metre spaced lines were used in the vicinity of the Hart River Deposit for greater detail of this deposit and to explore its potential along strike.

Personnel

A grid, which covered the favourable Middle Argillite Formation, was established over the property. The lines were spaced 100 metres apart over the area of the Hart River Deposit and 200 metres apart over the remainder of the property. Pickets were established every 25 metres. Ed Hunter of IETS (IETS, Suite 2690, 666 Burrard Street, Vancouver, B.C. V6C 2X8), established the grid.

Delta Geoscience Ltd. of Vancouver, B.C. was contracted to conduct an EM-37 electromagnetic survey and a magnetometer survey over the grid. Their crew consists of Craig Raynes, Martin Zahoree, and Mike Harrison (Delta Geosciences Ltd., 642 English Bluff Rd., Delta, B.C., V4M 2N4). They were on site from June 15 to July 26.

A two day site visit to check on the data quality was made in July. The personnel from IETS who were on the site visit were Jim Morin, Area Geologist -- Vancouver, Bob Lo, Senior Geophysicist, and Roger Lambert, Manager -- Geophysics and Technical Services.

Instrumentation, and survey parameters

An EM37 system, consisting of the TEM37 transmitter unit with the three component Protem receiver, both manufactured by Geonics Limited of Mississauga were used for the survey. The current waveform is bipolar rectangular with a 50% duty cycle. Measurements are made during the off-time where only the currents which have been induced in any nearby conductors have any contributions to the decaying magnetic field. The rate of decay of the induced magnetic fields is measured by the Protem receiver. It has a dynamic range of 132 dB. Synchronized clocks were used for timing. The 20 channels of decay times are stored digitally.

¹ Small incremental improvements in transmitted power, signal stability, and digital output have been made.

² This is an underestimate as the response appears to be saturated at the EM17 frequency of 1600 Hz.

Rectangular shaped loops of approximately one kilometre by one kilometre were used and readings were taken at 25 metre intervals. To obtain optimal coupling between the transmitter loop and any vertical tabular bodies (which may be due to economic concentrations of sulphides), two transmitter loops were used for the longer lines. Appendix A lists the loop coordinates. While three components of EM data were collected at each station, only the vertical and the in-line horizontal components are used. The transverse horizontal component is too susceptible to alignment noise and is generally not used.

OMNI-IV Plus magnetometers manufactured by Scintrex/EDA of Concord, Ontario, were used for the magnetometer survey. These systems are of proton precession design and measure the total intensity to 0.1 nanoTelsa resolution and accuracy. They can store the data digitally for data transfer to portable computers.

The magnetometer data was collected on 12.5 metre stations. A base station was used to monitor, and thus remove the diurnal variations in the Earth's main field.

Data presentation

The base station corrected magnetometer data is presented in contour form, at a scale of 1:5,000. Stacked profiles of the EM data are also presented at a scale of 1:5,000. Because there is so much change in the signal amplitude between the first time channel and the last time channel of data, three separate plans are made showing channels 1 to 7, channels 8 to 14, and channels 15 to 20 respectively. Horizontal and vertical components are plotted separately.

Geophysical Interpretation

A steeply dipping conductor will appear as a local maximum on the horizontal component and as a cross-over in the vertical component. The trace of the conductors found are labelled and plotted on a plan of the grid. Conductors are then screened by observing the number of channels with which the conductor can be detected. Greater size and higher conductance corresponds to an increased number of detectable channels in which the conductor response can be distinguished. Conductors which are only detected in the early channels are rejected. This conductor discrimination step eliminates those low conductance conductors due to variations in the overburden. Most sulphides (sphalerite is one exception) are many orders of magnitude more conductive than the surrounding host rocks. Other sources can produce a conductive response which mimics the response due to sulphides. Graphite, clays, and water filled shears are examples. Structural features such as faults or contacts, etc., also typically have low conductance values.

The Hart River Deposit, labelled **H** is located over 4 lines, L205E, L206E, L207E, and L208E. The general trend is east-west. East of L207E, the trend is slightly north (going east to west) while west of L207E, the anomaly trend is slightly south (going from east to west). This is the same trend as seen in the detailed horizontal loop survey done by previous operators over 20 years ago. The EM37 anomaly due to the deposit is of fairly small amplitude, but persistent -- detected until about channel 17. The small amplitude, along with the short strike length indicates a small, conductive body. Possible extensions of the deposit may be represented by anomaly **F**, **I**, **U**, or as Jim Morin has pointed out, by **G** and the furthest east response of **D**. All of the above may be extensions of the mineralisation and have unknown sources. They should be prospected and/or drill tested.

North of the deposit area are conductors **AA**, **A**, **B**, **C**, **D**, and **E** which are loosely termed the northern conductor. With the exception of **E**, these are fairly long conductors and are fairly close to the surface. One possible interpretation of these conductors is that they are due to clay/water/graphite at a thrust fault. This is supported by the magnetic data which suggests a contact in the same area. But, part of the magnetic

response (of the contact) is caused by mafic intrusions, and the thrust fault, as mapped by others, is further to the north. In addition, there is a strong conductor, interpreted from partial anomalies, to the north of the survey lines and this may represent the mapped thrust fault.

Outcrop is lacking in the area of the northern conductor and in the morning of July 21, Lambert, Lo, Morin and Hunter prospected along most of conductor **A** and could not find an explanation for the conductor. More work is required on these conductors.

South of the deposit is what was termed the south conductor which is now interpreted to consist of the rest of the anomalies (**J, K, L, M, N, O, P, Q, R, S, T, W, X, and Y**). Some, such as **K** have strike lengths of over 800 metres while others such as **S** are single line responses. All are fairly persistent conductors (seen over most of the channels), which together with their size indicates a conductance which may be due to sulphide mineralisation. All require further work as the source of the conductivity is unknown and because they are relatively close to a deposit. It is worthwhile to note that the previous horizontal loop survey detected either conductor **K** (more probable) or **L** as the third saddle anomaly. An IETS crew had traversed to anomaly **K** and could not find an explanation for the conductivity. This was somewhat of a mystery as the conductor is well located by the EM37 survey and the data shows that the conductivity is very close to the surface. Previous operators have drilled and trenched the area, but did not explain the geophysical anomaly. These EM37 responses require further work.

It is also worthwhile to point out that all of the EM responses appear to correlate with areas of higher and more active magnetics. The mafic intrusions and the basalt are mapped well by the magnetics.

The physical parameter which the magnetic method maps is based upon magnetic susceptibility and/or remanent magnetization. Generally, magnetic susceptibility is lowest in sedimentary and metasedimentary rocks³. Rocks of acidic composition are slightly higher and ultrabasic rocks have the highest values. The possible range of susceptibility which any one rock type can have is very large and there can be considerable overlap of susceptibility values amongst the different rock types. In practise, the magnetic response of rocks is dominated by the contained volume of magnetite in that rock. The application for magnetometer surveys is the recognition and delineation of structural or stratigraphic environments favourable for mineral deposits. Specifically, this may involve the delineation of volcanic-sedimentary contacts, intrusive bodies, faults, shears, and alteration zones.

Faults are recognized as linears and by offsets of other magnetic features. Shears and sericitic alteration zones are areas where ground water flow or alteration may have destroyed the magnetite of the host rocks. This can create areas of lower magnetic susceptibility.

The magnetometer survey was useful in tracing the basalt into areas of deep overburden. The magnetic pattern indicates that the basalts continue to the west into the broad Mark Creek valley, terminating about 500 metres west of Mark Creek.

SUMMARY and RECOMMENDATIONS

A magnetometer and EM37 survey was conducted over the Hart River Deposit and over the favourable Middle Argillite Formation. The Hart River Deposit was located as a short strike length conductor. Other conductors of unknown origin were located. The magnetic data was useful for geological mapping purposes.

³ Sedimentary oxide iron formations are an exception to this generalization.

A plan to test as many of these conductors as possible will involve drilling a fence of holes along line 203E, testing the north and south conductors as well as several of the possible extensions of the known mineralisation. This test, if implemented, will examine conductors **D, G, I, J, K** and perhaps **L**. This line has good access and will not require helicopter support to move the drillers back and forth from camp. The conductors to the east of the deposit are located in rugged topography and some trenching and prospecting should be done on these to decide if they are to be drill tested.

Mapping and geochemical surveying of the project may also yield further targets and help eliminate some of the geophysical anomalies as being drill targets.

BL\md

A handwritten signature or scribble consisting of several overlapping loops and a long horizontal line extending to the right.

Bibliography

Gallagher, P., Ward, S., and Hohmann, G., *A model study of a thin plate in free space for the EM37 transient electromagnetic system*, **Geophysics**, Vol. 50, no. 6, 1984.

Grant, F.S., and West, G.F., **Interpretation theory in applied geophysics**, McGraw-Hill Inc., Toronto, 1965.

Guardia, F.J., Report on Mark Group claims, Hart River, Yukon Territory, unpublished report for Hart River Mines Ltd., 1971.

Nabighian, M., and Macnae, J., Chapter six: Time domain electromagnetic prospecting methods, in **Electromagnetic Methods in Applied Geophysics**, Volume 2, Application, Part A, edited by M. Nabighian, Society of Exploration Geophysicist, Tulsa, 1991.

Statement of Qualifications

I, Bob B.H. Lo am employed as a Senior Geophysicist by Inco Exploration and Technical Services Incorporated.

My work address is: Inco Exploration and Technical Services Inc.
Engineering Building
Highway 17 West
Copper Cliff, Ontario
Canada
P0M 1N0

I reside at: 35 Harju Crescent
R.R.#2, Site 20, Box 63
Sudbury, Ontario
Canada
P3E 4M9

I graduated from the University of Toronto with a Bachelor of Applied Science degree in the Geophysics option of Engineering Science in 1981 and with a Masters of Science degree in Physics--Geophysics also from the University of Toronto in 1985. In 1992, I received a Masters of Business Administration Degree from Laurentian University in Sudbury, Ontario.

I am a Licensed Professional Engineer in the Province of Ontario, an Associate member of the Society of Exploration Geophysicists (Tulsa), a member of the Environmental and Engineering Geophysical Society (Denver), Canadian Exploration Geophysicists (Toronto), and the Prospectors and Developers Association (Toronto).

Since 1981, I have been involved in the use of geophysics for mineral exploration, geotechnical, and environmental applications. I have supervised projects and interpreted data from Canada and the United States of America and overseas.

I planned, technically supervised, interpreted and reported on the geophysical surveys at the Hart River Project during 1993. I visited the project while the surveying was in progress in July, 1993.



APPENDIX A - LOOP COORDINATES OF THE EM37 SURVEY

	Size	Diagonal Corners
Loop 1	900m by 1,000m	21300E/4050N 22300E/4950N
Loop 2	900m by 1,000m	20300E/4350N 21300E/5250N
Loop 3	900m by 1,000m	20300E/5350N 21300E/6250N
Loop 4	1,100m by 1,000m	20400E/5350N 19300E/6350N
Loop 5	1,100m by 1,000m	20400E/5350N 19300E/4350N
Loop 6	1,000m by 1,000m	18300E/5350N 19300E/6350N
Loop 7	1,000m by 1,000m	17300E/5600N 18300E/6600N
Loop 8	1,000m by 1,000m	17300E/5850N 16300E/6850N

093192

0931.2

STATEMENT OF COSTS

TIME PERIOD: JUNE 8, 1993 - JULY 28, 1993

WORK DONE (along 42.4 line-km) by Delta Geoscience Ltd.:

EM-37 survey @ \$560.00/km.....\$23,744.00

Magnetic survey @ \$95.00/km.....\$4,028.00

Total.....\$27,772.00

I attest that these charges were incurred by Inco Exploration and Technical Services Inc. for the work described in the accompanying assessment report by R. Lo.



J.A. Morin, (P. Eng. Yukon Territory)

x.c. B. Randa, IETS, Copper Cliff



INCO Exploration and Technical Services
American Copper & Nickel Company, Inc.
2690-666 Burrard Street, Vancouver, BC V6C 2X8

093192

0531-6

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Facsimile (604) 669-6901

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NUMBER OF PAGES INCLUDING COVER: 7

TO: TREVOR BREMNER @ 403-667-3198

FROM: JIM MORIN DATE: June 24/94

COPY: _____

SUBJECT: Statement Costs - ARM PROJECT # _____ FILE # _____

claims assessment report.
Thanks for catching us up on this.
I trust attached is ok.
Regards
Jim

MAP NO.: 116A/10
ASSESSMENT REPORT X
PROSPECTUS
CONFIDENTIAL X
OPEN FILE

DOCUMENT NO: 093192
MINING DISTRICT: MAYO
TYPE OF WORK: GEOPHYSICAL

REPORT FILED UNDER: INCO LTD

DATE PERFORMED: 15 JUNE, 1993 - 26 JULY, 1993 DATE FILED: 25 MAY, 1994

LOCATION: LAT.: 64°38'06"N

AREA: HART RIVER

LONG.: 136°49'22"W

VALUE \$: 20 000.00

CLAIM NAME & NO.: ARM 1-40 (YB29400-29439)

1

WORK DONE BY: B.B.H. LO

WORK DONE FOR: INCO LTD

DATE TO GOOD STANDING:

REMARKS: A magnetometer and EM survey was conducted over the Hart River VMS deposit which showed up as a short strike length EM conductor. Other conductors were located in the favourable Middle Argillite formation, including six north of the deposit and 14 to the south. The magnetic survey was used to outline the basalt.

REFERENCES

ABBOTT, G., AND ROOTS, C., 1993. Geological map of map area 116A/10, southeastern Ogilvie Mountains, Yukon Territory. Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 1993-7(G).

ABBOTT, G., 1993. Revised stratigraphy and new exploration targets in the Hart River area, southern Ogilvie Mountains. In: Yukon Exploration and Geology 1992, Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 19-28.

ASBESTOS CORP., Dec/56. Assessment Report by P.M. Kavanagh.

GEORGE CROSS NEWSLETTER, 12 Nov/92.

HART RIVER MINES LTD, Feb/70. Vancouver Stock Exchange Open File Report by D.C. McKelvie.

HART RIVER MINES LTD, May/73. Vancouver Stock Exchange Open File Report by R.G. Jury.

INCO EXPLORATION AND TECHNICAL SERVICES LTD., Mar/94. Assessment Report #093186 by E. Hunter.

INCO EXPLORATION AND TECHNICAL SERVICES LTD., Mar/94. Assessment Report #093192 by R. Lo.

KLONDIKE MINER, Nov/69, p. 39-40.

MINERAL INDUSTRY REPORT 1969-70, p. 23-25.

MINERAL INDUSTRY REPORT 1977, p. 92-94

OLSSON, J.W., Apr/73. The geology and petrology of the Mark group claims. Unpublished B.A.Sc. thesis, Queen's University.

needs
approval

copy

MINFILE: 116A 009
PAGE NO: 1 of 2
UPDATED: 07/21/94

**YUKON MINFILE
STANDARD REPORT
EXPLORATION AND GEOLOGICAL SERVICES DIVISION, DIAND
WHITEHORSE**

NAME(S): Hart River (Mark)	NTS MAP SHEET: 116 A 10
MINFILE #: 116A 009	LATITUDE: 64°38'06"N
MAJOR COMMODITIES: Cu,Zn	LONGITUDE: 136°49'22"W
MINOR COMMODITIES: Ag,Pb,Au,Bi	DEPOSIT TYPE: Volcanogenic
TECTONIC ELEMENT: Mackenzie Platform	STATUS: Deposit

CLAIMS (PREVIOUS AND CURRENT)

RAE, HOFFMAN, COPPER, MARK, LUKE, ARK, GEN, CORE, ARM

WORK HISTORY

Copper mineralization was first found in this area in the 1930's by trapper Frank Rae but the earliest staking records are for the Rae cl (57973) in Apr/55 and Hoffman cl (80000) in Jun/56 by F. Hoffman and Copper cl (80026) in Jun/56 by R. McKamey. Asbestos Corp optioned the property in 1956 and explored with mapping, hand trenching and sampling.

Restaked by the Callison Syndicate as Mark cl (Y6283) in May/66 and optioned in 1967 to Ventures ML and Anglo Western MIs L, which explored with soil sampling, EM surveys and two packsack holes (21.9 m) before forming a new company, Hart River ML in Dec/67 to finance further work. Hart River drilled 31 holes (2214.4 m) and enlarged the property in 1968, then constructed a winter road and explored the main zone with 530.4 m of underground development plus 1645.9 m of underground drilling (32 holes) and 1028.1 m of surface drilling (9 holes) in 1969. A lower adit was also driven 67 m before operations terminated.

A feasibility study was conducted in 1969 by Kaiser Engineering. Subsequent exploration consisted of detailed soil sampling, an EM survey and 823.0 m of underground drilling (2 holes) in 1970, and 277.7 m (4 holes) in 1971, and the restaking of a few lapsed claims in Jun/75. In 1976, the company changed its name to North Hart Res L. Welcome North ML tied on 111 Luke cl (YA37588) in Aug/78 and H. Wall tied on Ark cl (YA62799) in Jun/81.

North Hart restaked the southwest side as GEN cl (YA76492) in Feb/82 and Core cl (YA77560) in Jul/84. In Aug/84, North Hart Res L changed its name to Calypso Developments Ltd.

In Nov/92, Inco Ltd optioned the 11 remaining Mark claims from Calypso and added 40 Arm claims (YB29409). In June and Jul/93, Inco Ltd. ran 42.4 line-km of EM37 and magnetometer surveys over the Arm claims. The Arm 41-44 cl (YB22481) were added in Aug/93, and in Sept/93, Inco Ltd. diamond drilled 1556 metres in 5 holes and conducted geological mapping and geochemical sampling.

GEOLOGY

A massive sulphide deposit occurs within the Middle Proterozoic Gillespie Lake Group where orange dolomite exhibits a facies change to calcareous argillite and black argillite. The sedimentary rocks are cut by numerous diabase sills and dykes. Contact metamorphism of the dolomite has formed serpentine and talc, and the argillite is hornfelsed. The Gillespie Lake Group is overlain unconformably by Late Proterozoic Pinguicula Group basalt and argillite.

The steeply dipping sulphide body has a lens shaped cross section up to 124 m long by 19 m wide and has been traced for some 150 m downdip. The footwall side is silicified and cut by a stockwork of quartz-carbonate-chalcopyrite veinlets while the hanging wall is a concordant, layered, chert-pyrite horizon. The deposit consists of thinly layered pyrite, pyrrhotite, sphalerite, galena and chalcopyrite with minor tetrahedrite, tennantite and the argyrodite-canfield sulphosalt series.

Published reserves are 523 454 tonnes (proved) grading 3.6% Zn, 1.45% Cu, 0.9% Pb, 49.7 g/t Ag and 1.4 g/t Au plus 544 320 tonnes (probable) of similar grade. The deposit exhibits proximal exhalative features and is synsedimentary. Lead dating by the GSC suggests an age between 1238 and 1288 Ma.

REFERENCES

ABBOTT, G., AND ROOTS, C., 1993. Geological map of map area 116A/10, southeastern Ogilvie Mountains, Yukon Territory. Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 1993-7(G).

ABBOTT, G., 1993. Revised stratigraphy and new exploration targets in the Hart River area, southern Ogilvie Mountains. In: Yukon Exploration and Geology 1992, Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 19-28.

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GEORGE CROSS NEWSLETTER, 12 Nov/92.

HART RIVER MINES LTD, Feb/70. Vancouver Stock Exchange Open File Report by D.C. McKelvie.

HART RIVER MINES LTD, May/73. Vancouver Stock Exchange Open File Report by R.G. Jury.

INCO EXPLORATION AND TECHNICAL SERVICES LTD., Mar/94. Assessment Report #093186 by E. Hunter.

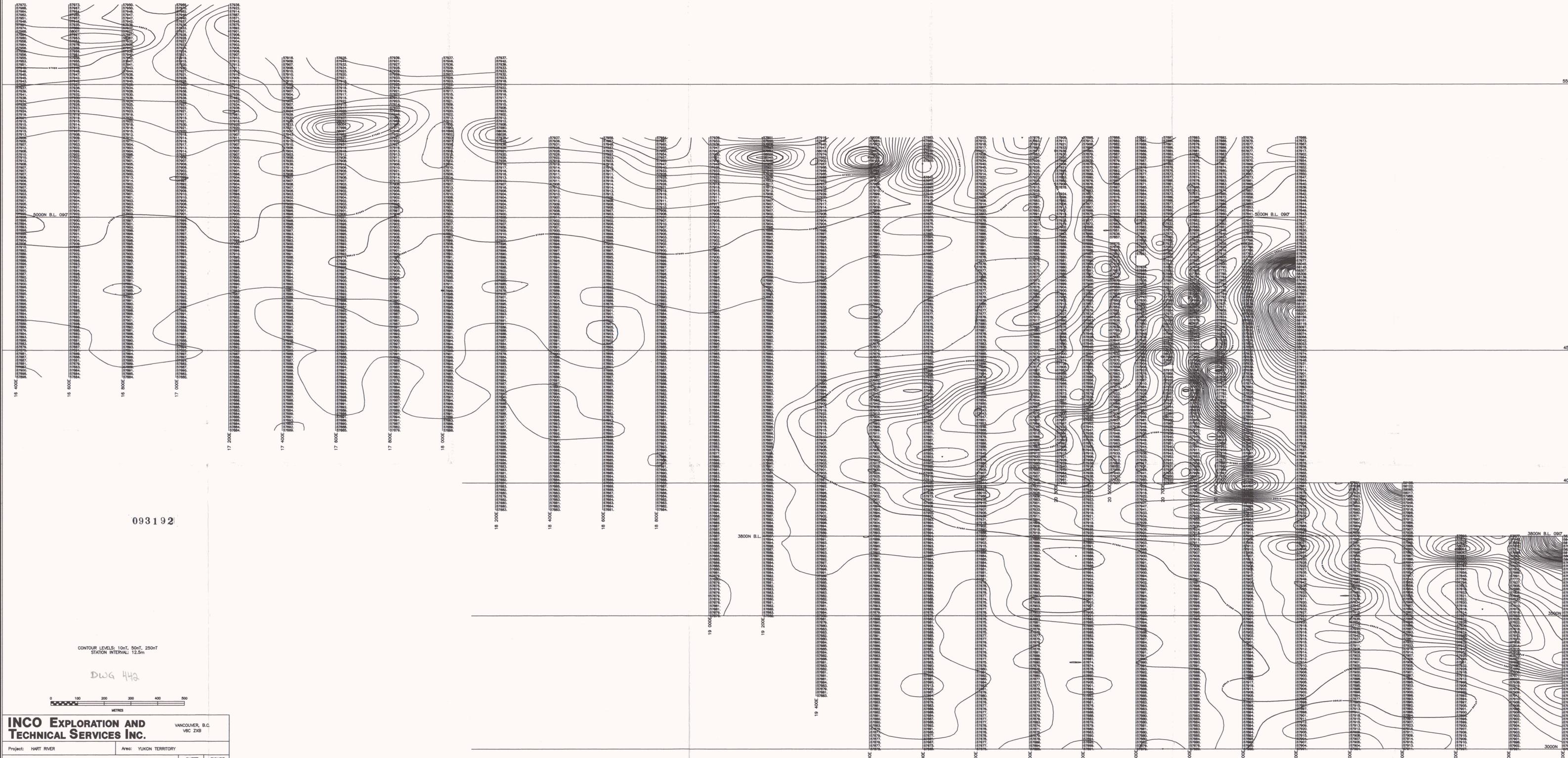
INCO EXPLORATION AND TECHNICAL SERVICES LTD., Mar/94. Assessment Report #093192 by R. Lo.

KLONDIKE MINER, Nov/69, p. 39-40.

MINERAL INDUSTRY REPORT 1969-70, p. 23-25.

MINERAL INDUSTRY REPORT 1977, p. 92-94

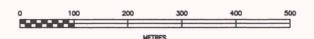
OLSSON, J.W., Apr/73. The geology and petrology of the Mark group claims. Unpublished B.A.Sc. thesis, Queen's University.



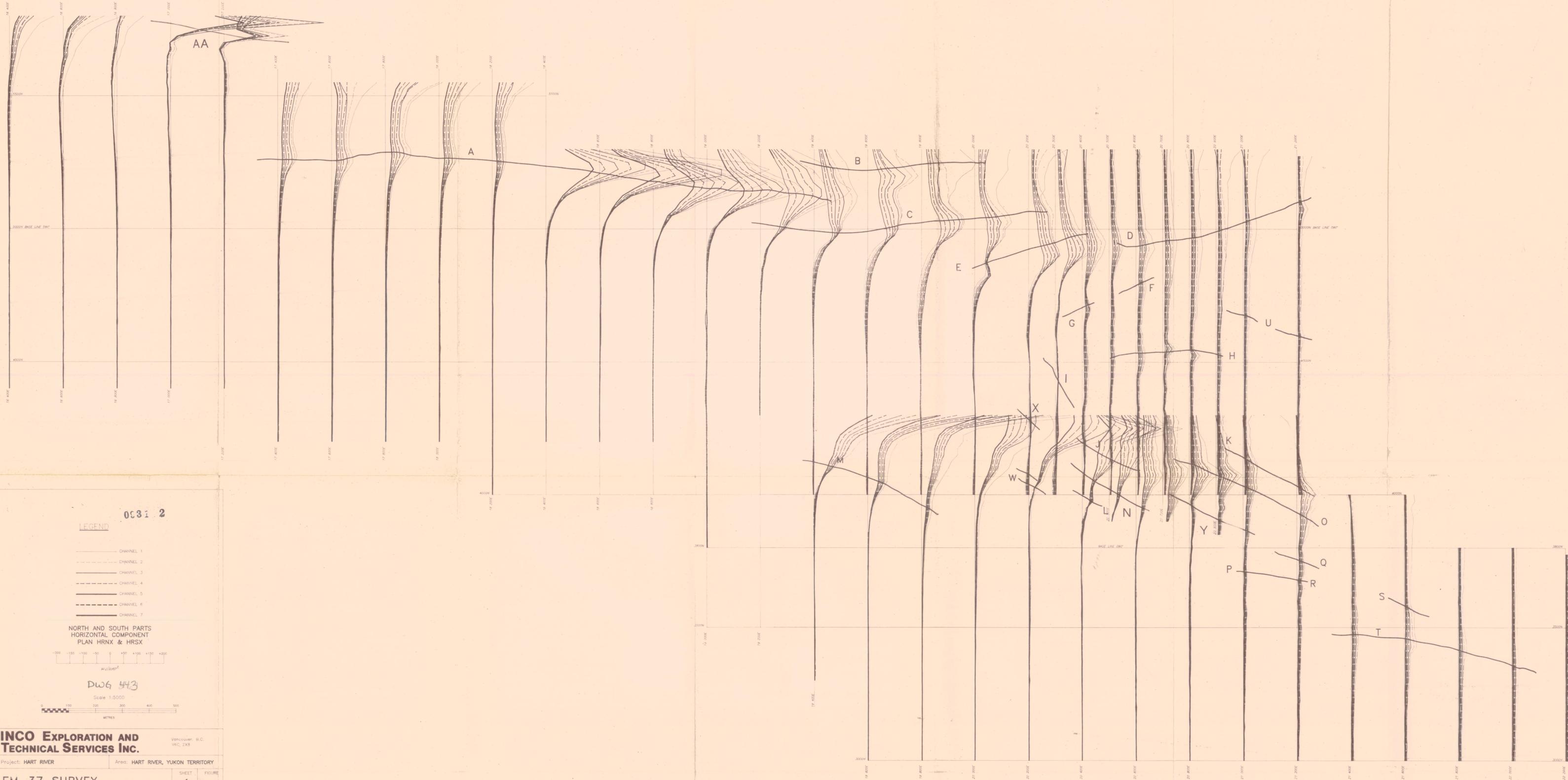
093192

CONTOUR LEVELS: 10m, 50m, 250m
STATION INTERVAL: 12.5m

DWG 442



INCO Exploration and Technical Services Inc.		VANCOUVER, B.C. V6C 2X8	
Project: HART RIVER		Area: YUKON TERRITORY	
MAGNETIC SURVEY		SHEET 1 of 1	FIGURE
Supervisor: BOB B.H. LO	Instrument: OMNI-N PLUS	Survey date: 07/93	
Survey by: DELTA GEOSCIENCE LTD	Drawn by: W.E. MARSAW	Date drawn: 09/24/93	Revised:
Scale: 1:5000	File: HRTM5K.DWG	N.T.S. 1164/10	



0031 2

LEGEND

- CHANNEL 1
- - - CHANNEL 2
- CHANNEL 3
- - - CHANNEL 4
- CHANNEL 5
- - - CHANNEL 6
- CHANNEL 7

NORTH AND SOUTH PARTS
HORIZONTAL COMPONENT
PLAN HRNX & HRSX



DWG 443

Scale 1:5000



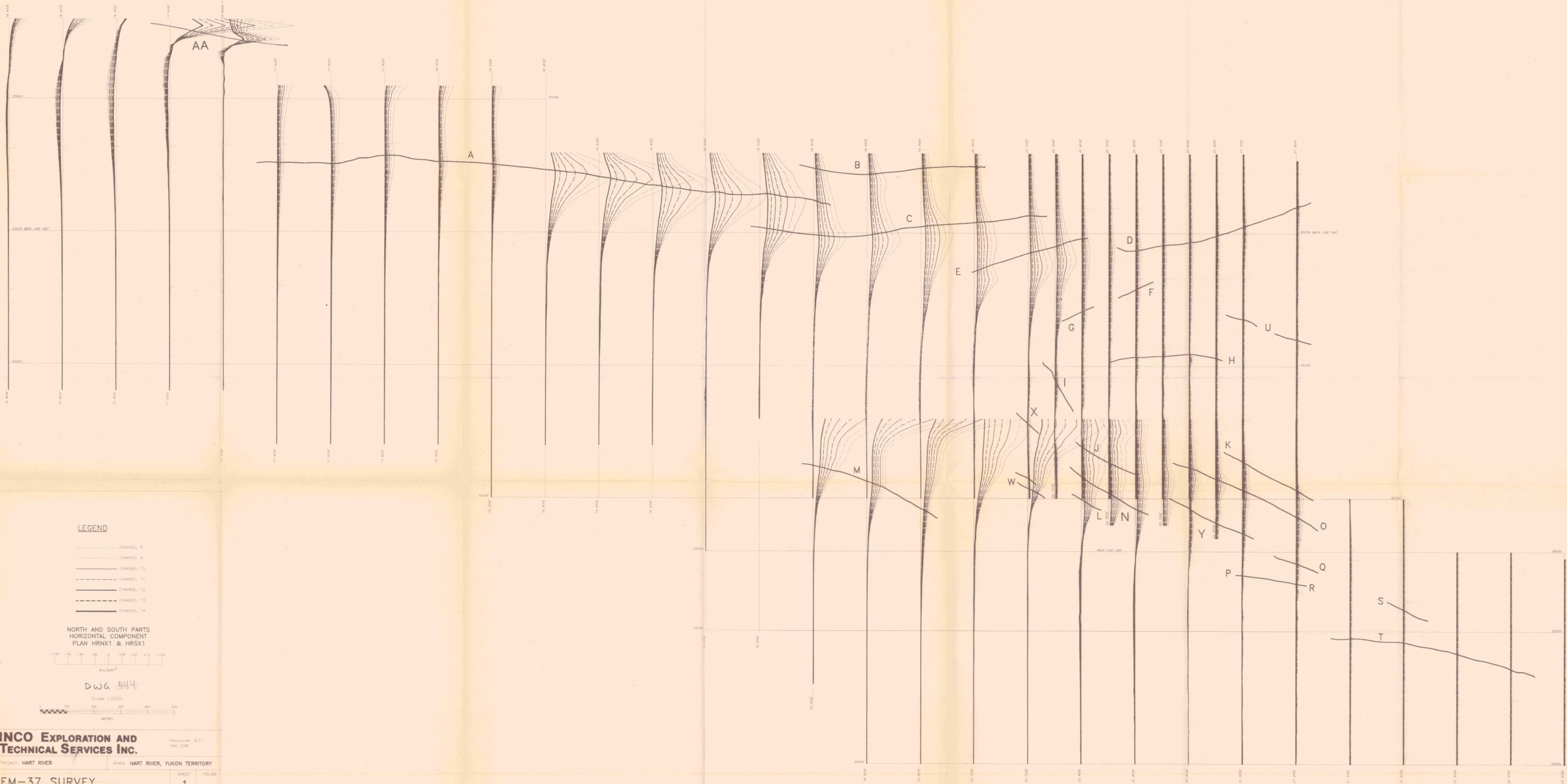
**INCO EXPLORATION AND
TECHNICAL SERVICES INC.**

Vancouver, B.C.
V6C 2K6

Project: HART RIVER Area: HART RIVER, YUKON TERRITORY

EM-37 SURVEY SHEET 1 FIGURE

Supervisor:	Instrument:	Survey date:	
Compiled by: Bob Lo	Drawn by: W.M. Casidy	Date drawn: 04/04/94	Revised:
Scale: 1:5000	File: HAR041.DWG	N.T.S. 116 A/10	



LEGEND

- CHANNEL 8
- CHANNEL 9
- CHANNEL 10
- CHANNEL 11
- CHANNEL 12
- CHANNEL 13
- CHANNEL 14

NORTH AND SOUTH PARTS
HORIZONTAL COMPONENT
PLAN HRNX1 & HRSX1



DWG 444

Scale 1:5000



**INCO EXPLORATION AND
TECHNICAL SERVICES INC.**

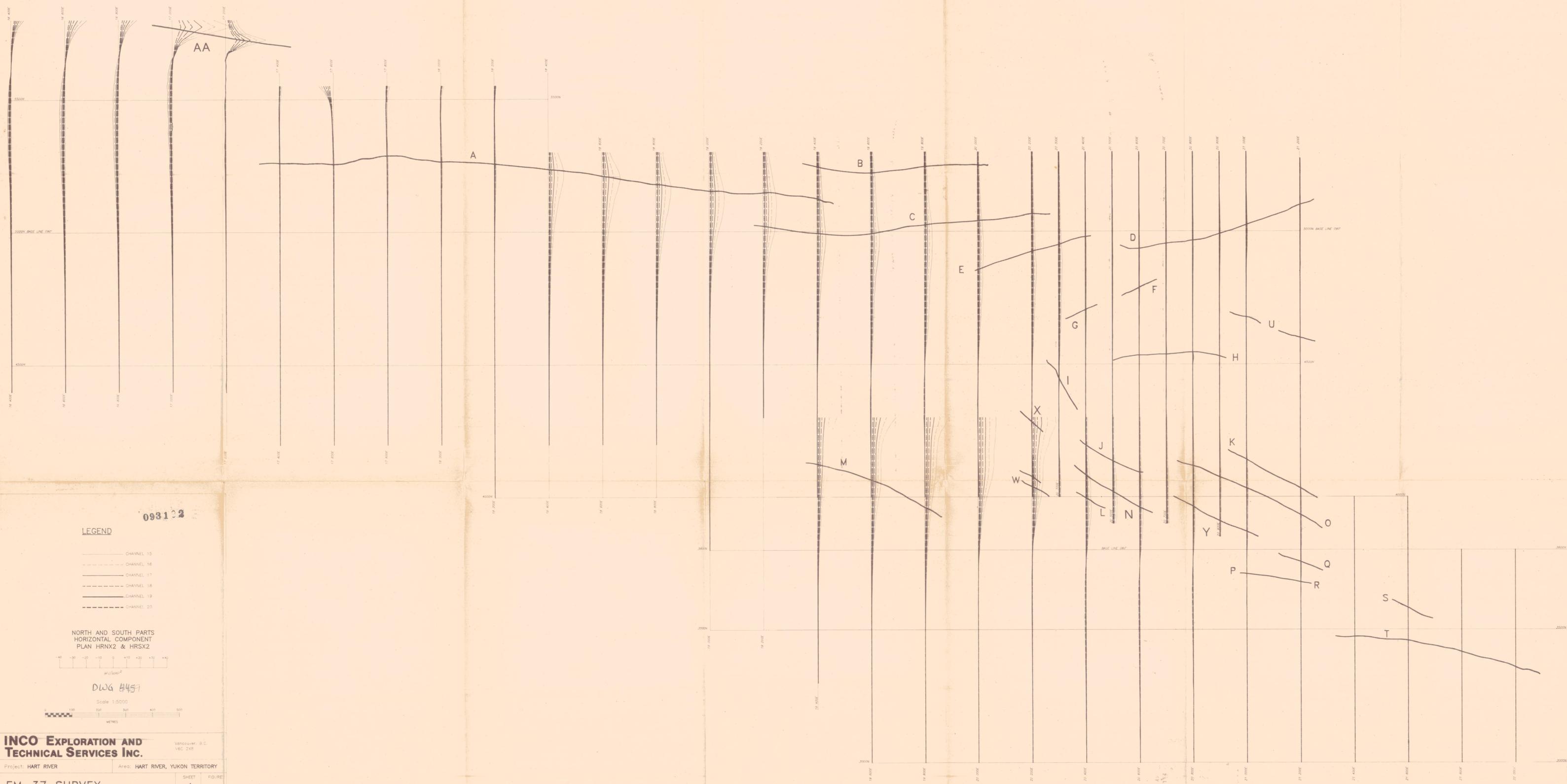
Vancouver B.C.
V6C 2A8

Project: HART RIVER Area: HART RIVER, YUKON TERRITORY

EM-37 SURVEY SHEET 1 FIGURE

Supervisor:	Instrument:	Survey date:
Compiled by: Rob Lo	Drawn by: W.M. L. Cassidy	Date drawn: 04/04/94
Scale: 1:5000	File: HAR04.DWG	N.T.S. 116 A/10

053132



098123

LEGEND

- CHANNEL 15
- CHANNEL 16
- CHANNEL 17
- CHANNEL 18
- CHANNEL 19
- CHANNEL 20

NORTH AND SOUTH PARTS
HORIZONTAL COMPONENT
PLAN HRNX2 & HRSX2

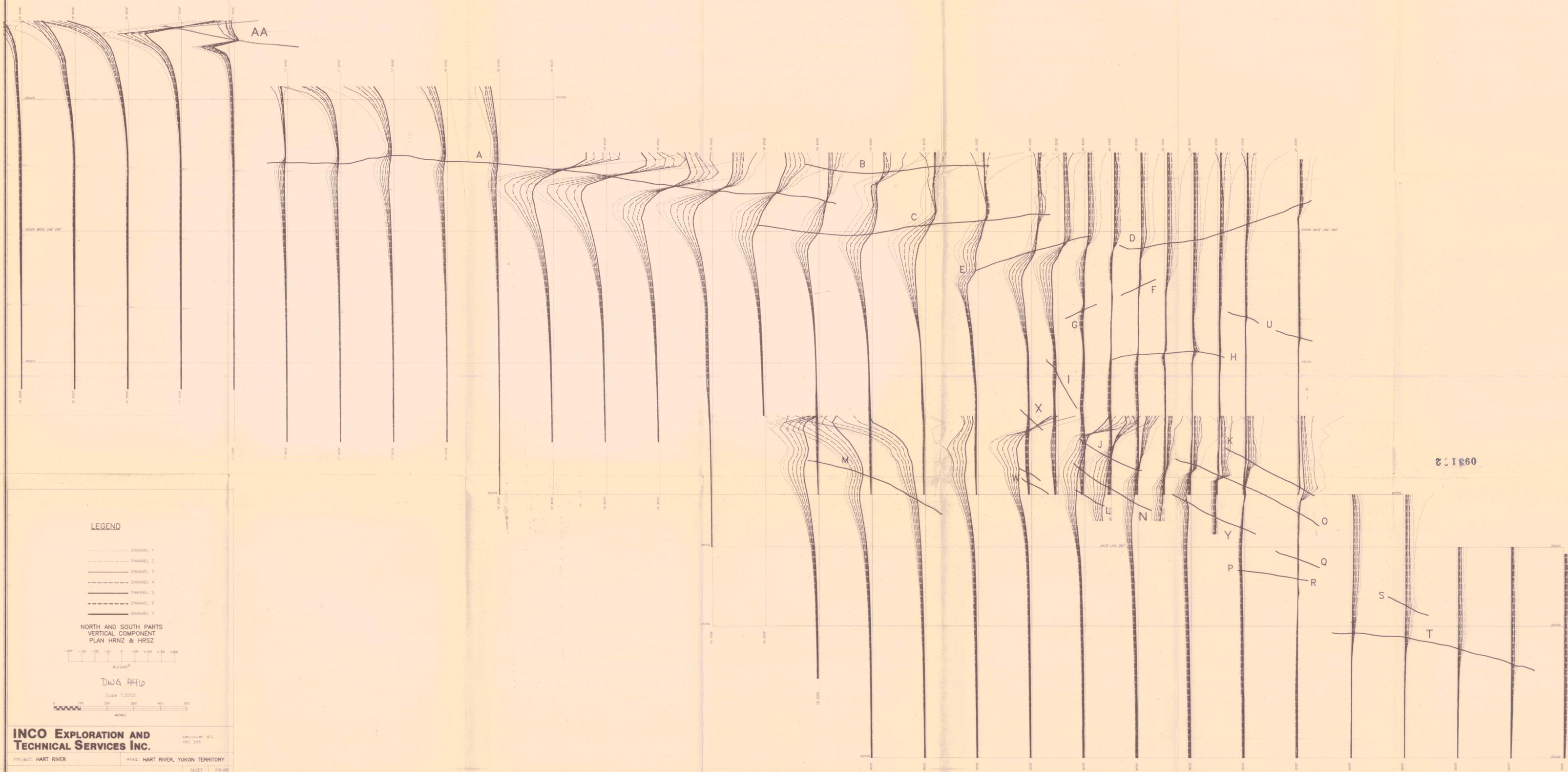


DWG #457

Scale 1:5000



INCO EXPLORATION AND TECHNICAL SERVICES INC.		Vancouver, B.C. V6C 2A8	
Project: HART RIVER		Area: HART RIVER, YUKON TERRITORY	
EM-37 SURVEY		SHEET	FIGURE
		1	
Supervisor:	Instrument:	Survey date:	
Compiled by: Bob Lo	Drawn by: W.M., I.Casidy	Date drawn: 04/04/94	Revised:
Scale: 1:5000	File: HAR043.DWG	N.T.S. 116 A/10	



LEGEND

- CHANNEL 1
- - - CHANNEL 2
- CHANNEL 3
- - - CHANNEL 4
- - - CHANNEL 5
- - - CHANNEL 6
- - - CHANNEL 7

NORTH AND SOUTH PARTS
VERTICAL COMPONENT
PLAN HRNZ & HRSZ

-200 -150 -100 -50 0 +50 +100 +150 +200

M/AMPS

DWG 441b

Scale 1:5000



**INCO EXPLORATION AND
TECHNICAL SERVICES INC.**

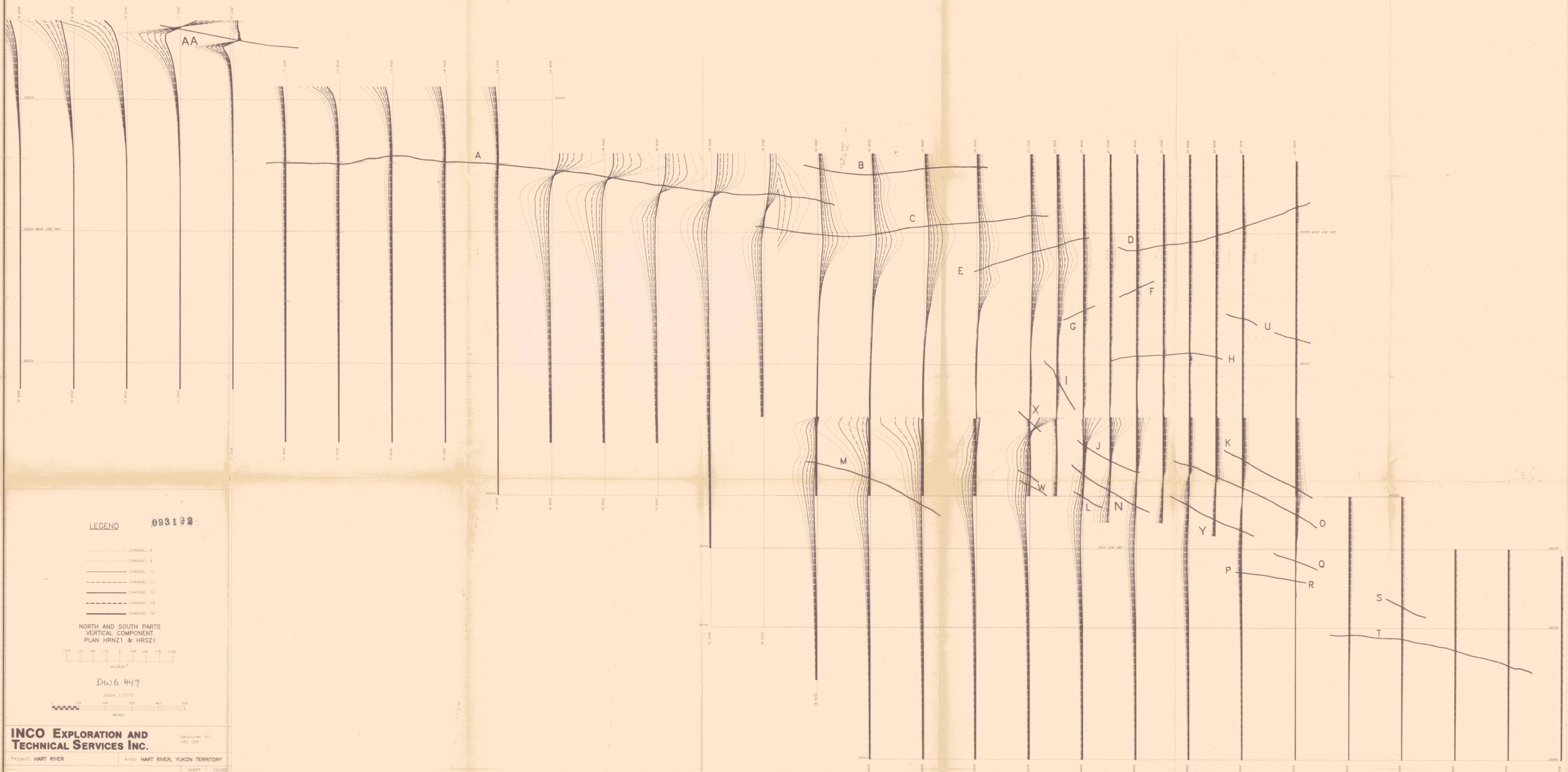
Vancouver, B.C.
V6C 2Y8

Project: HART RIVER Area: HART RIVER, YUKON TERRITORY

EM-37 SURVEY SHEET 1 FIGURE

Supervisor:	Instrument:	Survey date:	
Compiled by: Bob Lo	Drawn by: W.M., I.Casidy	Date drawn: 04/04/94	Revised:
Scale: 1:5000	File: HAR044.DWG	N.T.S. 116 A/10	

093122



LEGEND 093199

- CHANNEL 8
- CHANNEL 9
- CHANNEL 10
- CHANNEL 11
- CHANNEL 12
- CHANNEL 13
- CHANNEL 14

NORTH AND SOUTH PARTS
VERTICAL COMPONENT
PLAN HRN21 & HRSZ1



DWG 447

Scale 1:5000



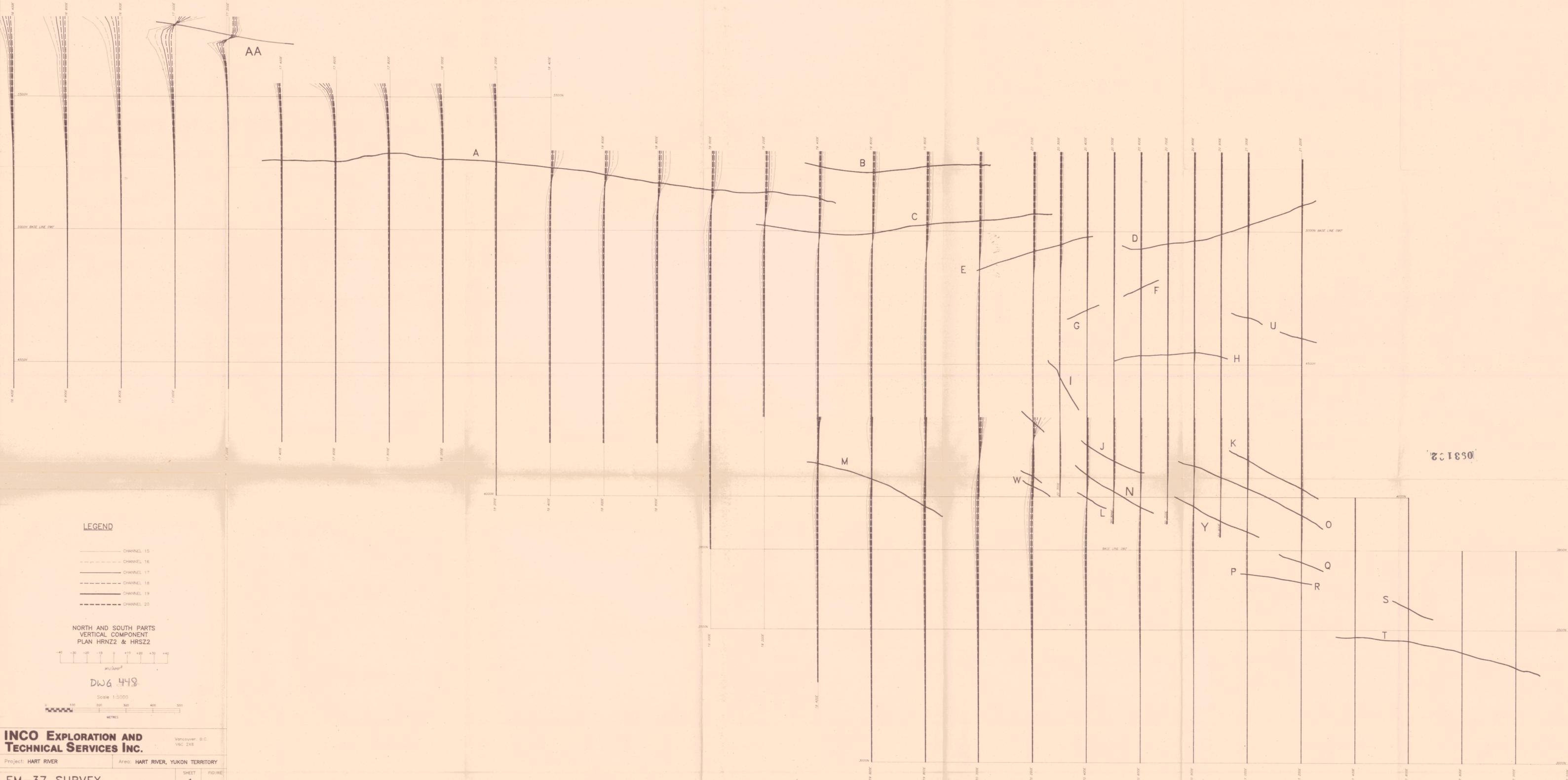
**INCO EXPLORATION AND
TECHNICAL SERVICES INC.**

Vancouver, B.C.
V5C 2X8

Project: HART RIVER Area: HART RIVER, YUKON TERRITORY

EM-37 SURVEY SHEET 1 FIGURE

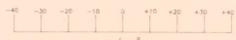
Supervisor:	Instrument:	Survey date:
Compiled by: Bob Lo	Drawn by: W.M. Cassidy	Date drawn: 04/04/94
Scale: 1:5000	File: HAR045.DWG	N.T.S. 116 A/10



LEGEND

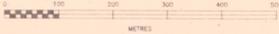
- CHANNEL 15
- - - CHANNEL 16
- CHANNEL 17
- - - CHANNEL 18
- CHANNEL 19
- - - CHANNEL 20

NORTH AND SOUTH PARTS
VERTICAL COMPONENT
PLAN HRNZ2 & HRSZ2



DWG 448

Scale 1:5000



**INCO EXPLORATION AND
TECHNICAL SERVICES INC.**

Vancouver, B.C.
V6C 2N8

Project: HART RIVER Area: HART RIVER, YUKON TERRITORY

EM-37 SURVEY SHEET 1 FIGURE 1

Supervisor:	Instrument:	Survey date:
Compiled by: Bob Lu	Drawn by: W.M., I.Casidy	Date drawn: 04/04/94
Scale: 1:5000	File: HART046.DWG	N.T.S. 116 A/10

058122