

TANACANA MINES LTD.  
500 - 475 HOWE STREET  
VANCOUVER, BRITISH COLUMBIA

GEOPHYSICAL REPORT  
on a  
C.E.M. SHOOTBACK E.M. SURVEY <sup>6</sup>  
on the  
WINGDAM CLAIMS  
CARIBOO MINING DIVISION  
N.T.S. 93 H/4W

82-588-10640

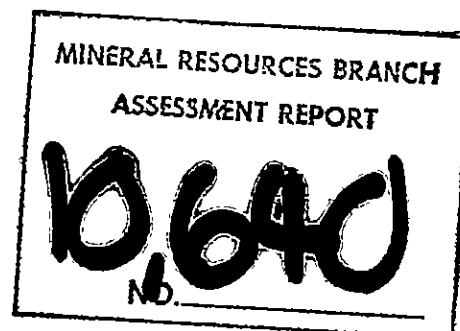
Lat. 53°12'N.

Long. 121°58'W.

by

R.J. ENGLUND  
STRATO GEOLOGICAL ENGINEERING LTD.  
103 - 709 DUNSMUIR STREET  
VANCOUVER, BRITISH COLUMBIA

JULY 15, 1982





STRATO GEOLOGICAL ENGINEERING LTD.  
103-709 DUNSMUIR STREET  
VANCOUVER, BRITISH COLUMBIA  
V6C 1M9

TELEPHONE (604) 687-4610

C.E.M. SHOOTBACK SURVEY

WINGDAM CLAIM GROUP

SUMMARY

A. C.E.M. Horizontal Shootback survey has outlined a number of conductive zones on the Wingdam #3 and #4 claims which warrant further investigation. Two near parallel, weak conductive zones on the Wingdam #3 have an indicated strike length of over 150 metres and possible continuity with conductive zones located over 600 metres to the south-southwest.

On the Wingdam #4 claim a broad graphitic zone has been located. This zone, since quartz veining was noted on its westerly side some 75 metres south, warrants geochemical exploration.

A geochemical program is recommended to establish the economic nature of conductive zones and an expansion of the geophysical work to extend the lengths of the zones. If geochemical results warrant, the A5 zone should be tested by diamond drilling.

Respectfully submitted,  
Strato Geological Engineering Ltd.

Ralph J. Englund, B.Sc.  
Geophysicist.

July 15, 1982

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## INTRODUCTION

Persuant to a request by the directors of Tanacana Mines Ltd., a C.E.M. Shootback electromagnetic survey was carried out over selected areas of the Wingdam 3, and Wingdam 4 claims during June 1982.

The intent of the geophysical work was to provide detailed information on several conductive zones previously located by Airborne H.E.M. survey work completed in April 1981. Work was done under the supervision of W.H. Myers, P.Eng., who selected the areas for ground follow-up and assisted in providing access to the survey areas. The results of 4.0 line kilometres of geophysical survey work are presented in this report.

## LOCATION, ACCESS, TOPOGRAPHY

The Wingdam claim groups are located some 33 kilometres west of Wells, B.C., at Wingdam, on Highway 26. Access to the property is along the Swift River Forest Road (#1300), leaving Highway 26 some 31 kilometres east of Quesnel, B.C., and branch road #1300C to the eastern claims areas. Other branch roads provide access to the southern claims areas, and road access to Wingdam Lake direct from



**PROPERTY  
LOCATION**

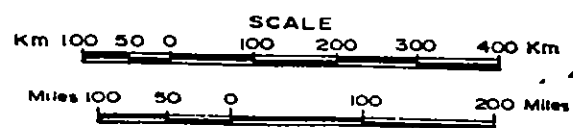
**FIGURE NO. 1**

**TANACANA MINES LTD.**

**WINGDAM CLAIMS  
CARIBOO M.D. 93-G-1 / H-4**

**LOCATION MAP**

**TO ACCOMPANY A REPORT BY R. ENGLUND  
STRATO GEOLOGICAL ENGINEERING**



Highway 26 would also be available with some repairs to the bridge across Lightning Creek at Wingdam.

Access to the survey areas, in the central Wingdam 3 and 4 claim areas, is by recently cut cat trails which join the eastern logging roads to previously established road access along Wingdam Creek.

The claims lie within the Quesnel Highland region in generally mountainous terrain. Elevations vary between 950 metres, along Lightning Creek in the southwest claim areas, to over 1450 metres above sea level in the eastern claims area. Although creeks are generally deeply incised and provide some steep areas, the topographic relief is considered to be low to moderate over most of the claims area. Lightning Creek, with a number of tributaries, flows northwesterly through the property.

The property is generally covered with timber of commercial value. Thick second growth and significant amounts of windfall make travel rather difficult in many areas.

#### CLAIMS

The Wingdam claims are located in the Cariboo Mining

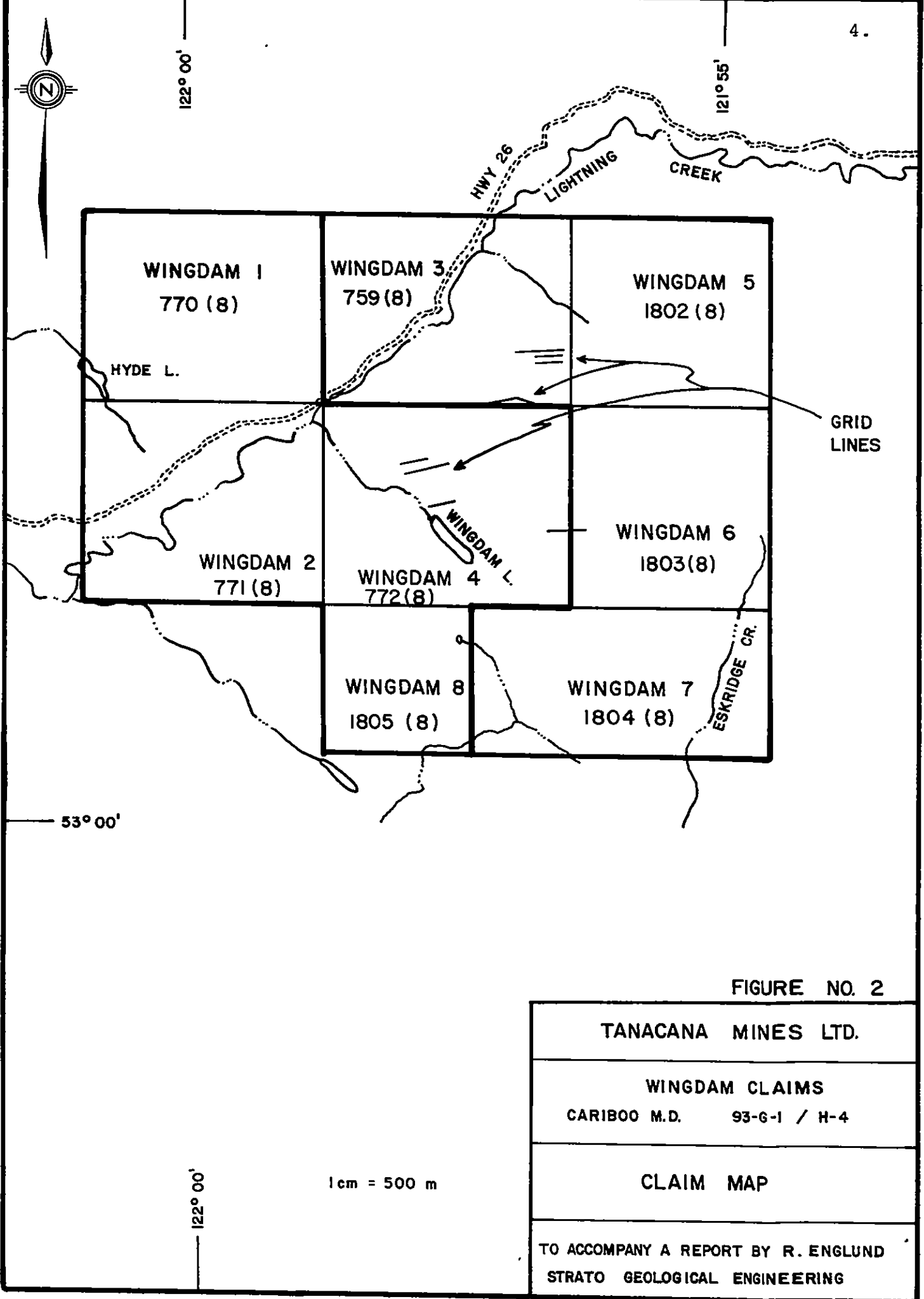


FIGURE NO. 2

<b>TANACANA MINES LTD.</b>	
<b>WINGDAM CLAIMS</b>	
CARIBOO M.D.	93-6-1 / H-4
<b>CLAIM MAP</b>	
TO ACCOMPANY A REPORT BY R. ENGLUND STRATO GEOLOGICAL ENGINEERING	

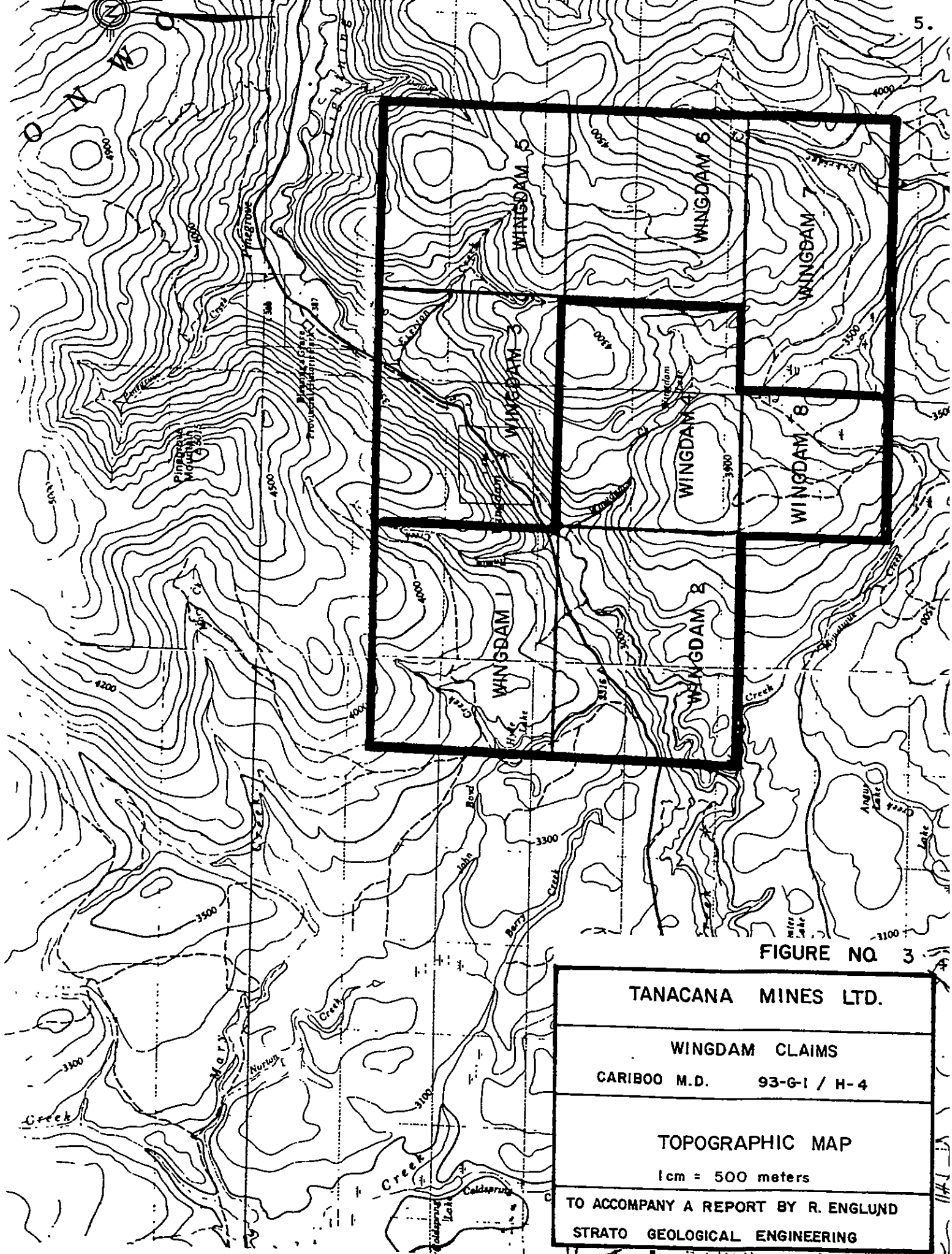


FIGURE NO 3

TANACANA MINES LTD.	
WINGDAM CLAIMS	
CARIBOO M.D.	93-G-1 / H-4
TOPOGRAPHIC MAP	
1cm = 500 meters	
TO ACCOMPANY A REPORT BY R. ENGLUND	
STRATO GEOLOGICAL ENGINEERING	



Division some 33 kilometres west of Wells, B.C., and are recorded as follows:

<u>Claim Name</u>	<u>Record No.</u>	<u>No. Units</u>	<u>Expiry Date</u>
<u>WING GROUP</u>			
Wingdam #1	770 (8)	20	Aug. 8, 1982
Wingdam #2	771 (8)	20	Aug. 8, 1982
Wingdam #4	772 (8)	20	Aug. 8, 1982
Wingdam #8	1805 (8)	9	Aug. 11, 1982
<u>DAM GROUP</u>			
Wingdam #3	759 (8)	20	June 23, 1982
Wingdam #5	1802 (8)	16	Aug. 11, 1982
Wingdam #6	1803 (8)	16	Aug. 11, 1982
Wingdam #7	1804 (8)	18	Aug. 11, 1982

The geographical coordinates of the center of the claims are 53°31' N. latitude and 121°58' W. longitude and are shown on British Columbia Mineral Claim Maps M93G/3E and H/4W (Figure 2). Assessment work has been filed, this report being a part of the work to maintain the claims in good standing until 1983.

#### PREVIOUS WORK

An airborne electromagnetic and magnetic survey was conducted by Aerodat Limited in April 1980. The H.E.M. survey located a significant number of conductive zones

which were then recommended for ground follow-up geological and geophysical investigation.

Subsequently, Max-Min electromagnetic surveys were carried out over selected airborne targets on the Wingdam #4, #6, and #7 claims in June 1981. Several conductors were outlined and follow-up trenching and rock geochemistry was carried out.

#### GENERAL GEOLOGY

The regional geology in the northeastern portion of the claims area is mapped as the Cariboo Series consisting of quartzites, argillite slate and limestone, while in the southwestern areas the rocks are shown to be of the Quesnel River Group (Hansen, B.C. Memoir 181, 1935 and Map 335A). These rocks consist of shales, argillite, and greenstones.

W.H. Myers, P.Eng., in mapping the property has indicated that the contact between the two formations, although it could not be defined in the field, lies within the Wingdam claim group. Myers, 1979, mapped "argillites with quartz veins and limestone" in the western claims area and found that "the rocks are very similar to those in the Barkerville area mapped as the Basil Member of the Richfield Formation of Precambrian Age."

The geological strata generally trends north-westerly through this area and a "distinct northerly trend of faulting and topographic relief" is easily observed in the field within the claims area.

Gold mineralization in the area has been found to occur with medium to coarse-grained pyrite, in both quartz veins and as replacement lenses in the limestones. In the Wells area, east of the property, the host rocks for gold mineralization has been the Lower Cambrian phyllites, quartzites, and limestone which have been intensely deformed by folding. In the Island Mountain mine the best mineralization occurred in fractures and lenses at or near the contact between the darker quartzites and phyllites of the Rainbow member and the lighter, calcerous Baker rocks.

#### INSTRUMENTATION AND SURVEY PROCEDURE

The Crone C.E.M. Shootback electromagnetic system was used for this survey. This system, using two identical coils each being capable of transmitting and receiving, is designed to measure the secondary electromagnetic field which results from a conductive structure. The shootback system was developed to provide an E.M. system that provides accurate and effective results under conditions where elevation, coil separation, and direction between

coils are highly variable in rugged, heavily timbered terrain.

Both E.M. coils, in turn, transmit and then measure the electromagnetic field dip angle at their positions. The resultant of the measured dip angle is then a measure of the secondary electromagnetic field generated by a conductive medium between the two coils (i.e. if no conductors are present the "resultant dip angle" equals zero. The field strength measure at the "null" also gives a quantitative measure of the out-of-phase (quadrature) component of the secondary field. The C.E.M. system has both a visual and audio "null", three frequencies (390, 1830, and 5010 Hz), and a range of 200 metres coil separation.

The survey procedure was established to (1) to confirm survey parameters and calibrate the instrument by repeating a Max-Min II survey line over a known conductive zone and (2) to locate, on the ground, and delineate conductive zones previously indicated by an airborne H.E.M. survey.

Max-Min II survey line Wingdam #4, Line 0+00, was surveyed at frequencies of 390 Hz and 1830 Hz with 100 metre coil separation. Previous E.M. work was repeated

very accurately and survey parameters of 50 metre coil separation and 1830 Hz frequency using the Horizontal Shootback method was chosen to complete additional field work.

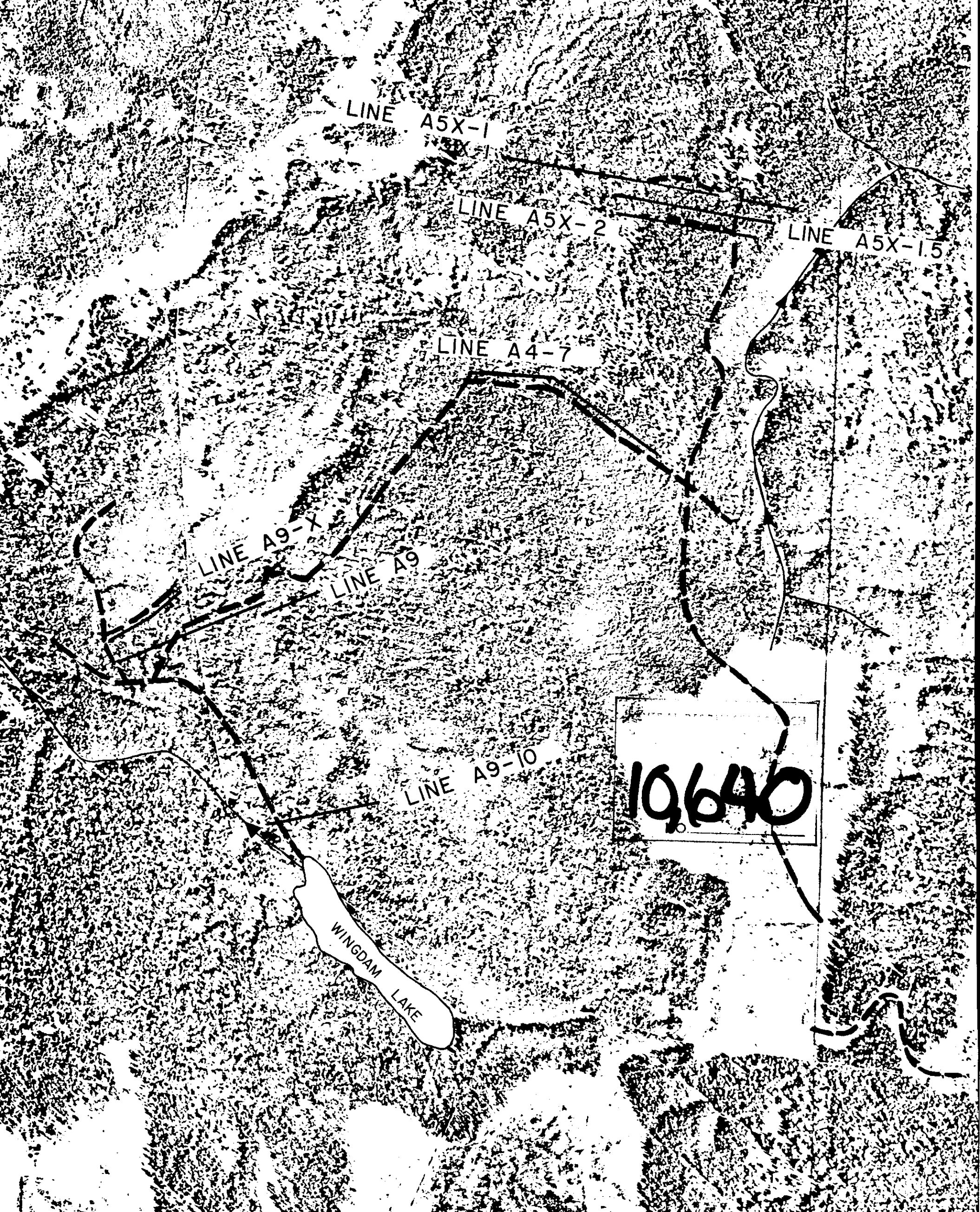
E.M. surveys were then conducted over two airborne target areas; anomalies 5, 7 (Wingdam #3) and anomalies 9, 10 (Wingdam #4) as shown on Figures No.2 and No.4.

Both dip angle and out-of-phase results were recorded and are presented in profile plot plan form as Figures 5 through 7. The C.E.M. methods are well known and fully described in the literature.




#### DISCUSSION OF RESULTS

##### Test Line 0+00 (Wingdam #4) Figure 5

The Shootback E.M. results match closely with Max-Min II results from previous work on this line. The highly negative dip angle results on 1830 Hz and 390 Hz along with out-of-phase values indicate a very conductive, near surface, bedrock (possibly argillites) from about 2+00E through 7+00E. The contact is shown at approximately 1+75E with a less conductive rock unit to the west.



**LEGEND**

 ROAD  
 SURVEY LINE  
 CREEK

SCALE : 1 : 10,000

FIGURE NO 4

TANACANA MINES LTD.

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WINGDAM CLAIMS  
CARIBOO M.D. 93-G-1 / H-4

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EM SURVEY  
LINE LOCATION MAP

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TO ACCOMPANY A REPORT BY R. ENGLUND  
STRATO GEOLOGICAL ENGINEERING

Two separate conductive zones have been located at 3+75E, near surface and dipping steeply to the northeast, and at 5+40E. This conductor is also near surface, broader, widens with depth, and dips very steeply to the southwest.

A third narrow conductor, although not well defined due to masking effects, is indicated between the two major conductive zones at about 4+50E.

Lines A5 (Wingdam #3) Figure 6

Two near parallel, relatively weak conductive zones are located between 0+00 and 1+25W on Lines A5X-1 through A5X-2. The conductors trend slightly west of north and their separation increases to the north. These conductive zones are near surface, have an indicated strike length of over 150 metres, dip very steeply to the west, and lie within a relatively non-conductive host rock.

A geological contact, with a broad, conductive rock unit to the west, is indicated on Line A5X-1 at about 3+00W. The contact is estimated to be about 2+00W and 2+50W on Lines A5X-1.5 and A5X-2 respectively. Insufficient data to the west on these lines prevents accurate positioning of the contact.

A third, moderate conductor is indicated on Line A5X-1 at 6+00W. This zone, although associated with a creek draw, warrants further investigation.

Line A4-7 (Wingdam #3) Figure 8

This line, run on a road cut near the southern boundary of the Wingdam #3 claim, indicates two relatively weak conductive zones at 2+25E, with a steep easterly dip, and at 3+50E. These conductors are approximately 600 metres south-southwest of the zones outlined on grid lines A5. Both conductors are near surface and lie within a relatively non-conductive rock unit.

Line A-9 (Wingdam #4) Figure 7

Two narrow conductive zones are shown on Line A-9 at 4+75W and 5+00W. The zone likely represents a fault structure which may trend northwesterly through the area since a continuation of the zones was not picked up on Line A-9X, some 50 metres to the north.

Line A9-10 (Wingdam #1) Figure 8

This line, some 150 metres north of Wingdam Lake, crosses over a graphitic shale zone at least 200 metres in width. The center of this zone is associated with a swampy area at the base of a steep sidehill and the



eastern contact is located at about 2+25E. Results here indicate a possible secondary conductor within the graphitic zone.

#### CONCLUSIONS

The C.E.M. Horizontal Shootback has proven to be a useful instrument for ground follow-up of airborne E.M. anomalies in this area. The present survey repeated Max-Min II E.M. results on a selected test line very successfully and has outlined several conductive zones on the Wingdam #3 and #4 claims which warrant further investigation.

The parallel conductors delineated on grid lines A5 show a strike length of over 150 metres and might be associated with the conductors outlined on Line A4-7 some 600 metres to the south-southwest. These zones warrant further investigation to test their mineral potential and to check their possible continuity.

The broad graphitic zone shown on Line A9-10 warrants geochemical sampling to test the zone for potential mineralization. This zone may extend north-westerly and connect with the conductors indicated on Line A-9. Since a swarm of quartz veining was noted in a

road cut some 75 metres south of the graphitic zone, the extension of the zone and possible continuity with conductors to the northwest should be tested.

#### RECOMMENDATIONS

The outlined conductive zones on grid Lines A5 and Line A4-7 should be tested geochemically and continuity between the zones should be investigated electromagnetically. Since cat trails have been cut in these areas bedrock geochemistry on the conductive zones can easily be accomplished. If geochemical results warrant, the zones should be tested by diamond drilling.

The graphitic zone area, Line A9-10, requires soil geochemical testing, particularly on its western boundary. Pending geochemical results, the zone should be extended to both the northwest and southeast.

Respectfully submitted,

Strato Geological Engineering Ltd.



Ralph J. Englund, B.Sc.  
Geophysicist

July 15, 1982

REFERENCES

- (1) Geological-Geophysical Report on Reconnaissance Geological Mapping and Electromag (VLF-EMIC) Survey of Mineral Claims Wingdam 1, 2, and 4 done for TanaCana Mines Ltd., W.H. Myers, P.Eng. November 1979.
- (2) Geophysical Report on a Max-Min II E.M. Survey on the Wingdam Claims, R.R. Fassler, September 9, 1981.
- (3) British Columbia Ministry of Energy, Mines and Petroleum Resources Paper 1980-1, Mosquito Creek (93H/4E), pp. 120, by G.H. Klein.

TIME-COST DISTRIBUTION

The geophysical survey was conducted over the WINGDAM Claim Group by Strato Geological Engineering Ltd. during the period June 17 to 21, 1982. A listing of personnel and distribution of costs are as follows:

Personnel

R.J. Englund, B.Sc.

Geophysicist,  
Project Supervisor.

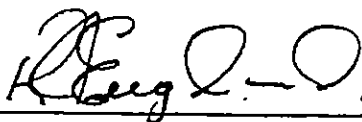
H. Leis, B.Sc.

Geophysical Operator.

Cost Distribution

	<u>Dam Group</u> <u>(Wingdam #3)</u>	<u>Wing Group</u> <u>(Wingdam #4)</u>
Labour	\$ 930.00	\$ 470.00
Room & Board	225.22	112.50
Transportation	317.12	158.56
Instrument Rentals	288.00	144.00
Drafting, Data Compilation, Field Supplies, & Misc.	321.78	160.90
Geophysical Report	<u>670.00</u>	<u>330.00</u>
	\$ 2,752.12	\$ 1,375.96
Total:		<u><u>\$ 4,128.08</u></u>

Signed: \_\_\_\_\_



Strato Geological Engineering Ltd.

Certificate of Qualifications

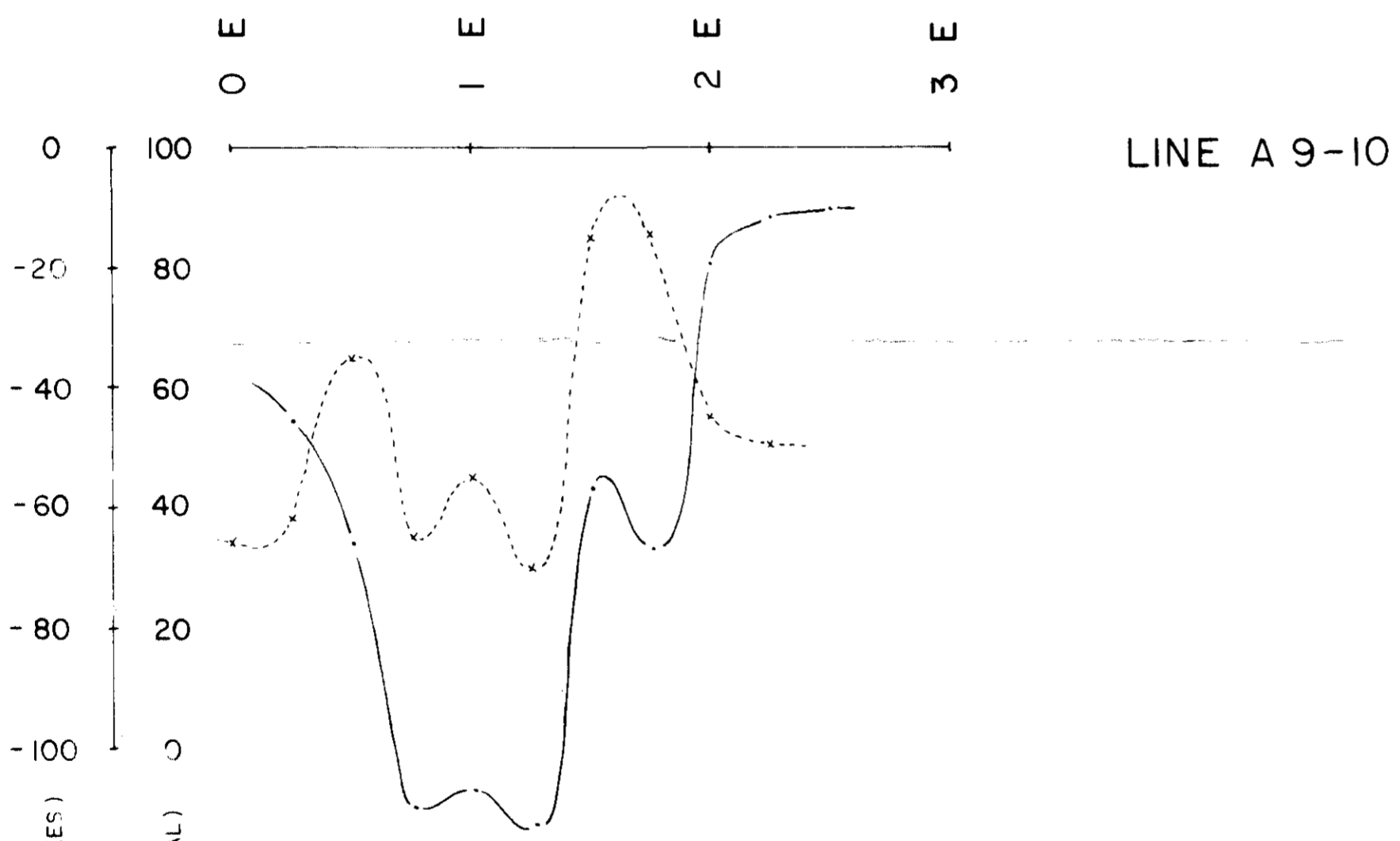
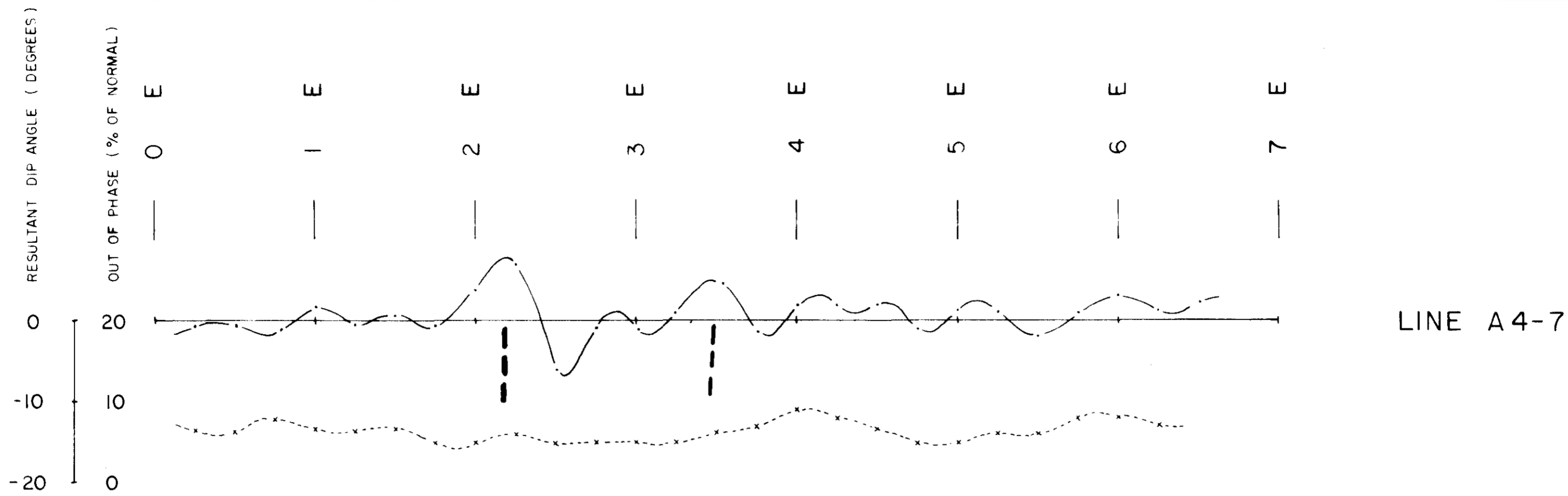
I, Ralph J. Englund, do hereby certify that:

- (1) I am a practising geophysicist with offices at 103 - 709 Dunsmuir Street, Vancouver, B.C., Canada, V6C 1M9.
- (2) I am a graduate of U.B.C. where I obtained my B.Sc., (Physics) in 1971.
- (3) I am a member in good standing of the following professional organization:
  - (a) B.C. GEOPHYSICAL SOCIETY
- (4) I have been engaged in the study, teaching, and practice of exploration geophysics continuously for 9 years. I have worked as a geophysical consultant on numerous projects in Western North America since 1972.
- (5) The Geophysical field work and the interpretation of the results in this report were done under my direct supervision.
- (6) I have no direct, indirect or contingent interest in the securities of Tanacana Mines Ltd., or the Wingdam claim group, nor do I expect to receive any such interest.

Dated in Vancouver, B.C. this 15th day of July, 1982.



Ralph J. Englund, B.Sc.,  
Geophysicist



DIP ANGLE ————

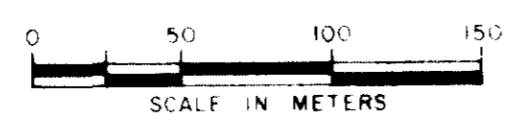
OUT OF PHASE - - - - -

NOTES:

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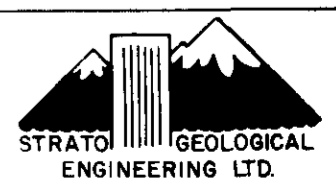
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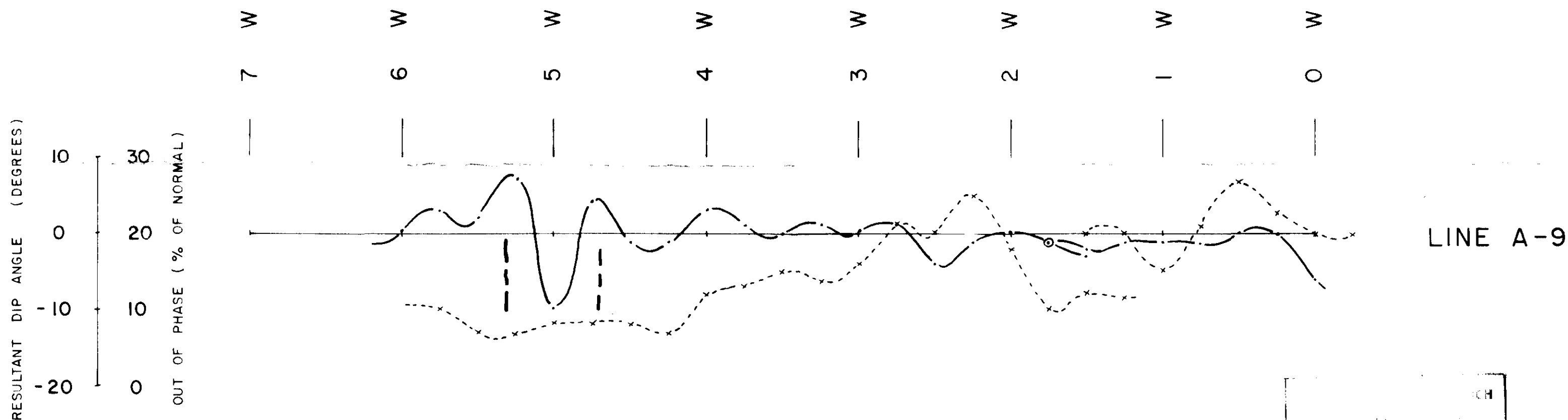
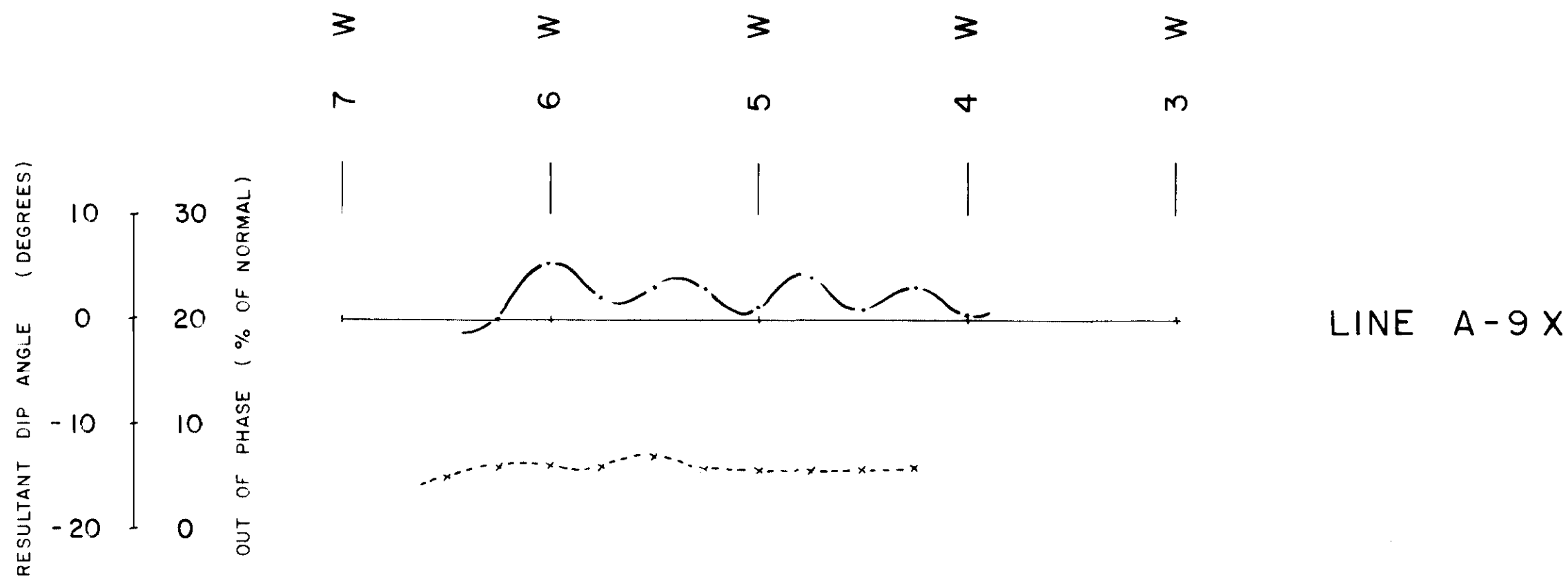
50 METER COIL SEPARATION , FREQUENCY -1830 Hz.



MINERAL RESOURCES BRANCH  
 APPROVED  
**10,640**  
 No.

*R.J. Englund*

TANACANA MINES LTD. NORTH VANCOUVER B.C.	
WINGDAM CLAIM GROUP CARIBOO M.D. 93-G-1 / H-4	
C.E.M. SHOOTBACK E.M. SURVEY PROFILES LINES A4-7 & A9-10 AIRBORNE ANOMALIES 4,7 & 9-10 GROUND E.M. FOLLOW-UP	
TO ACCOMPANY A REPORT BY R.J. ENGLUND	
FIGURE NO. 8	DATED : JULY, 1982
 STRATOGEOLOGICAL ENGINEERING LTD.	



NOTES :

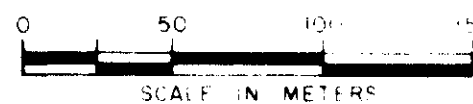
EQUIPMENT : CRONE C.E.M. SHOOTBACK SYSTEM

METHOD : HORIZONTAL SHOOTBACK CONFIGURATION

50 METER COIL SEPARATION , FREQUENCY - 1830 Hz.

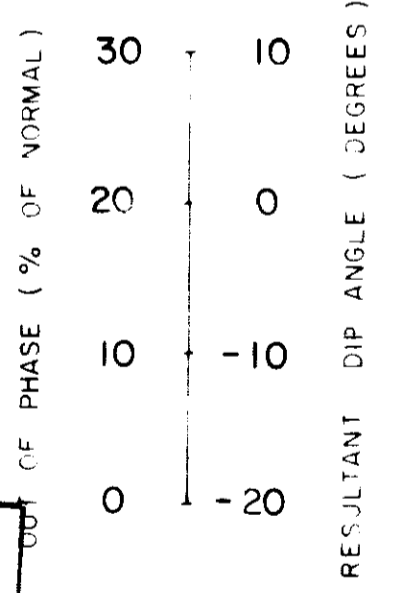
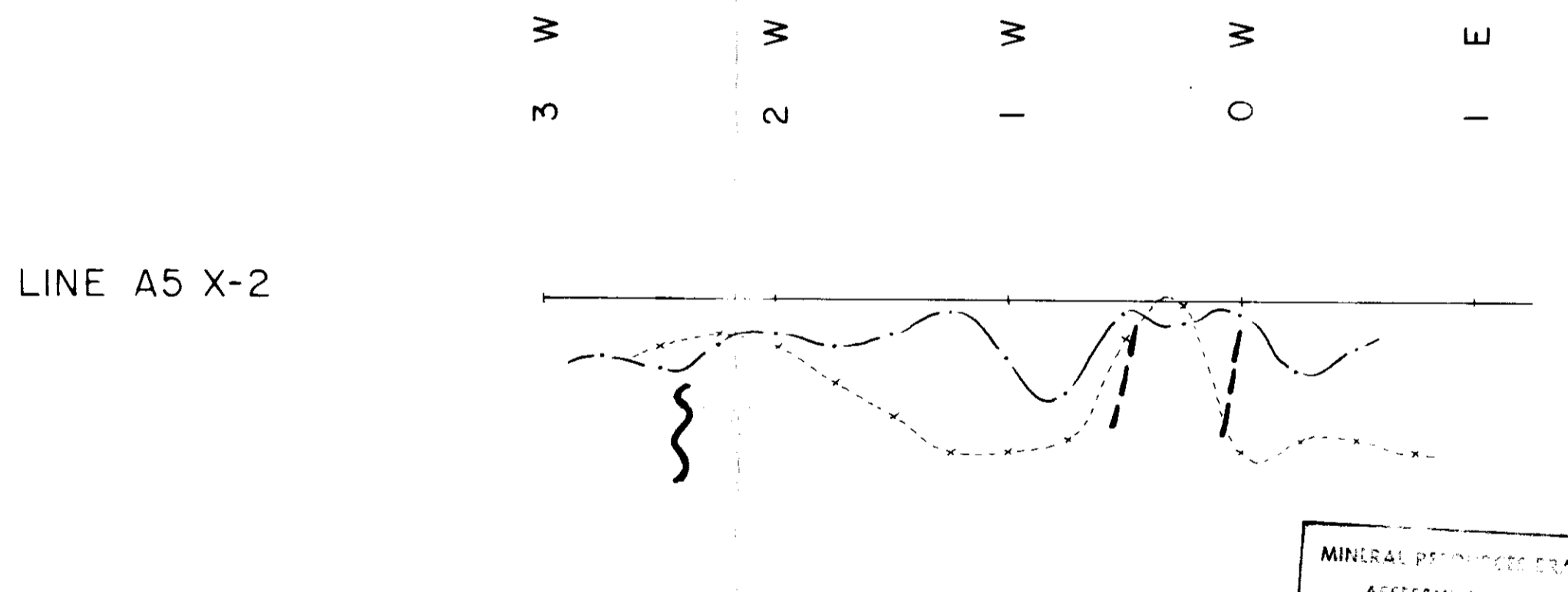
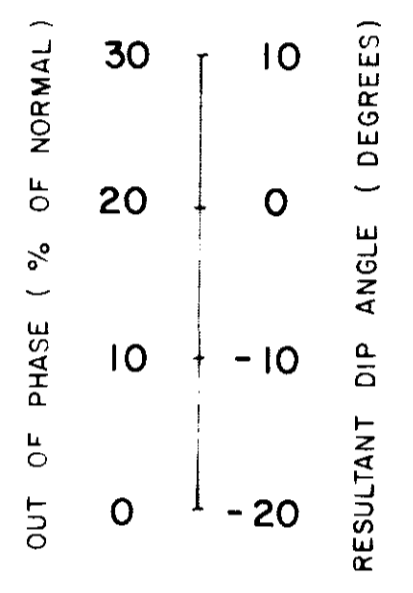
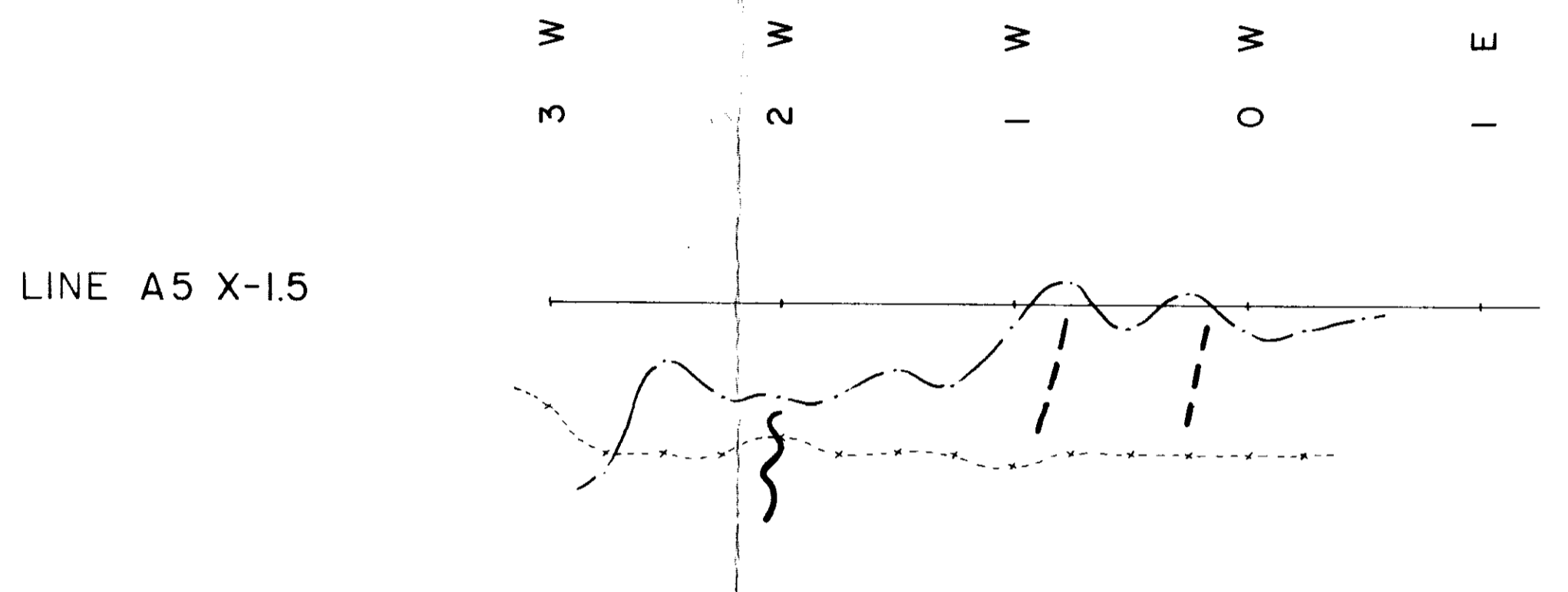
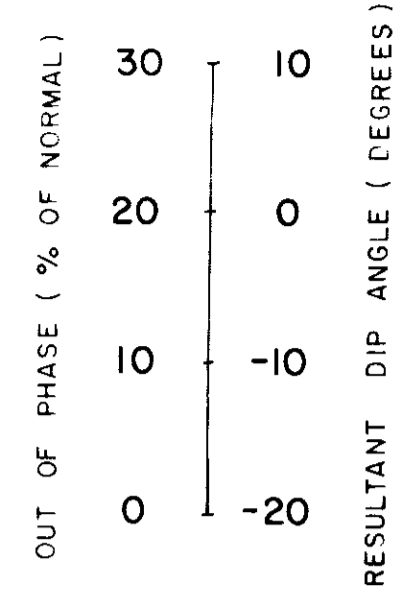
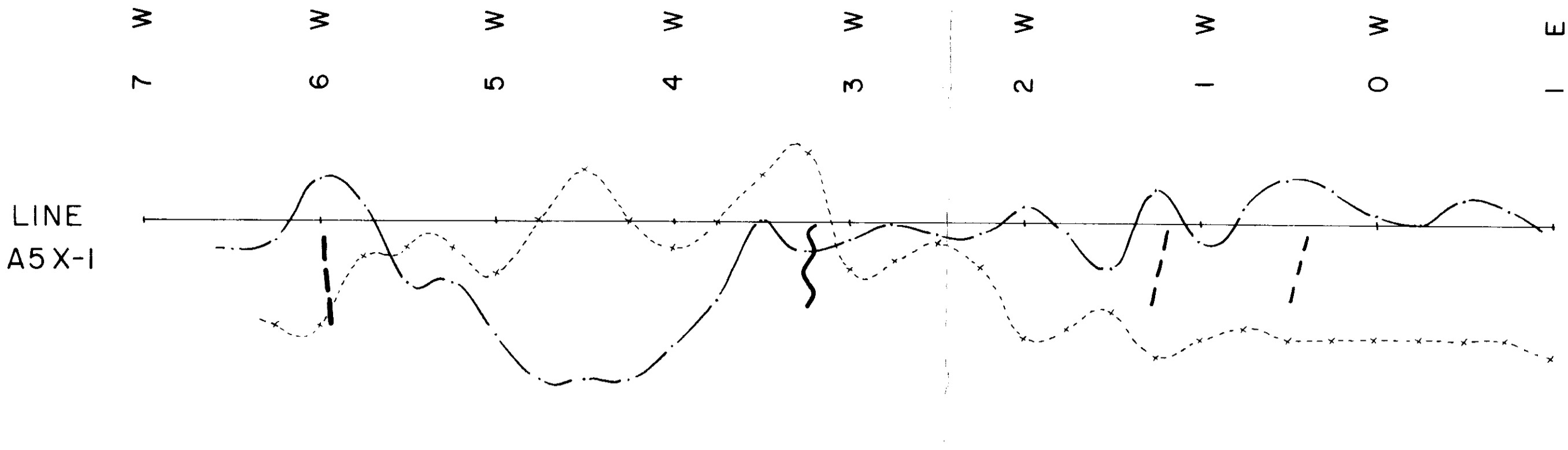
DIP ANGLE -----

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*R.P.S.-O.*  
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TANACANA MINES LTD. NORTH VANCOUVER B.C.	
WINGDAM CLAIM GROUP CARIBOO M.D. 93-G-1 / H-4	
C.E.M. SHOOTBACK E.M. SURVEY PROFILES - LINES A-9, A-9X AIRBORNE ANOMALY 9 GROUND E.M. FOLLOW-UP	
TO ACCOMPANY A REPORT BY R.J. ENGLUND	
FIGURE NO. 7	DATED : JULY, 1982



NOTES :

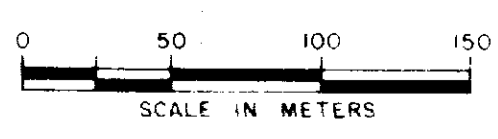
EQUIPMENT : CRONE C.E.M. SHOOTBACK SYSTEM

METHOD : HORIZONTAL SHOOTBACK CONFIGURATION

50 METER COIL SEPARATION , FREQUENCY - 1830 Hz.

DIP ANGLE ————

OUT OF PHASE - - - - -



MINERAL REVENUE BRANCH  
ASSESSMENT REPORT

10,640

TANACANA MINES LTD.  
NORTH VANCOUVER B.C.

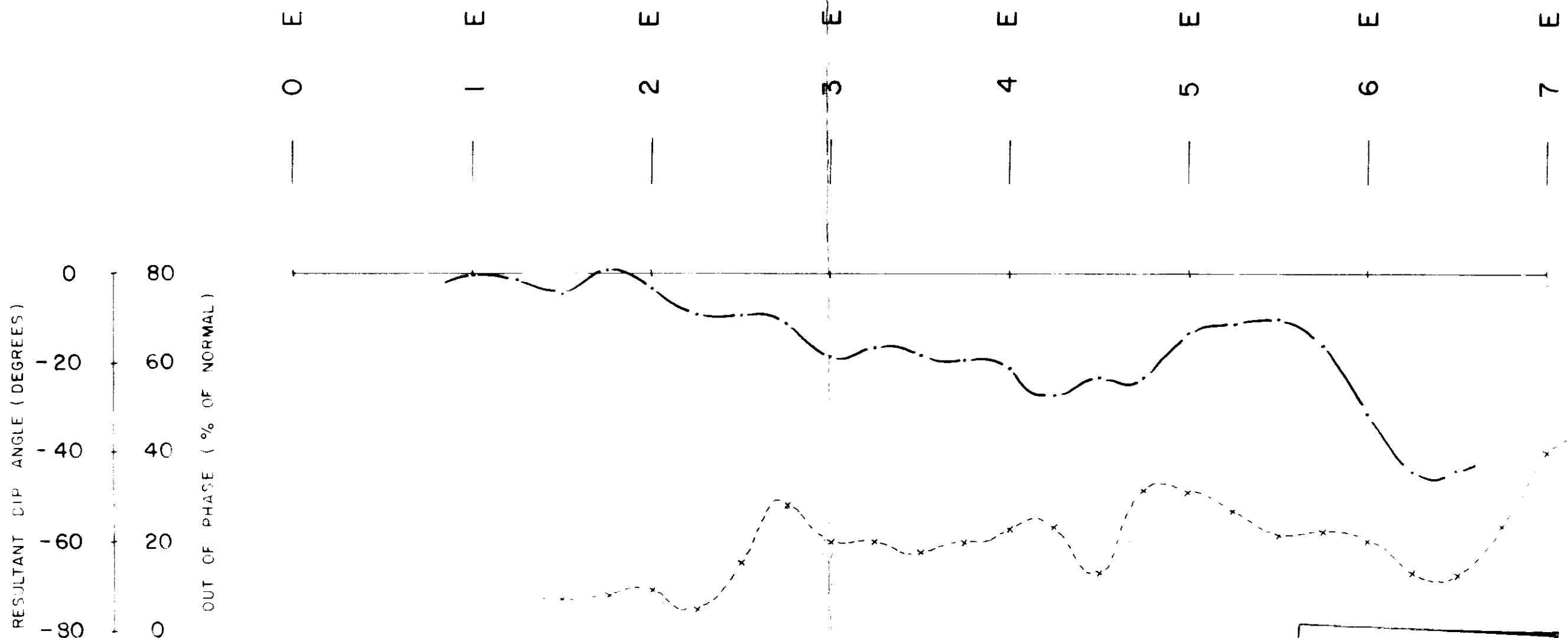
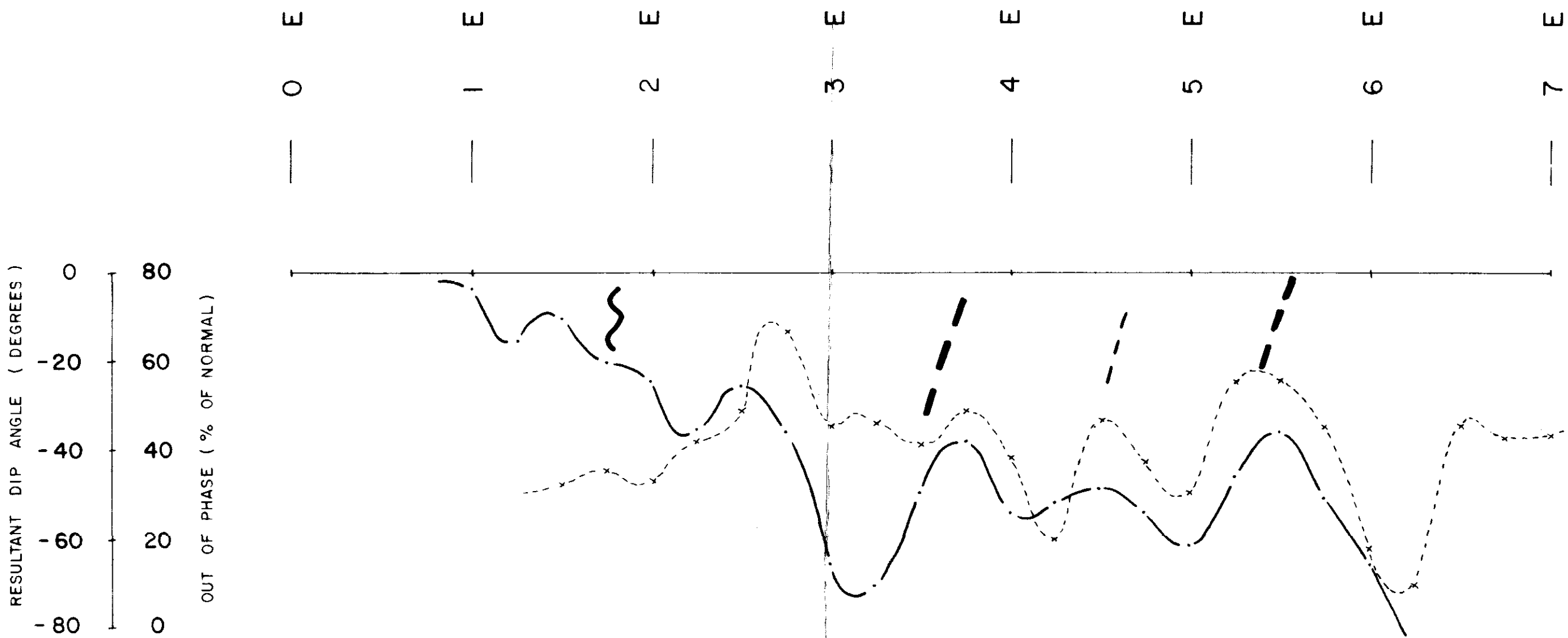
WINGDAM 3 CLAIM  
CARIBOO M.D. 93 - H - 4

C.E.M. SHOOTBACK E.M.  
SURVEY PROFILES - LINES A 5  
AIRBORNE ANOMALY 5  
GROUND E.M. FOLLOW-UP

TO ACCOMPANY A REPORT BY R.J. ENGLUND

FIGURE NO 6      DATED : JULY, 1982





NOTES :

EQUIPMENT : CRONE C.E.M SHOOTBACK SYSTEM

METHOD : HORIZONTAL SHOOTBACK CONFIGURATION

100 METER COIL SEPARATION , FREQUENCIES - 1830 Hz & 390 Hz.

DIP ANGLE ————

OUT OF PHASE - - - - -



MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT

10640

NO

*RJ Englund*

TANACANA MINES LTD. NORTH VANCOUVER B.C.	
WINGDAM 3 CLAIM CARIBOO M.D. 93-H-4	
C.E.M. SHOOTBACK E.M. SURVEY PROFILE LINE 0+00 - WINGDAM 4 SURVEY CALIBRATION LINE	
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FIGURE NO. 5	DATED : JULY, 1982

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