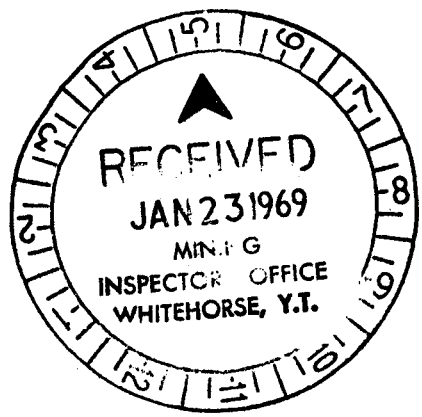
REPORT OF GEOPHYSICAL INVESTIGATIONS
REDFORT CLAIMS, QUARTZ LAKE, YUKON TERRITORY
FOR
SURVEYMIN LIMITED
VOLUME I

060680



PREPARED BY

BARRINGER RESEARCH LIMITED
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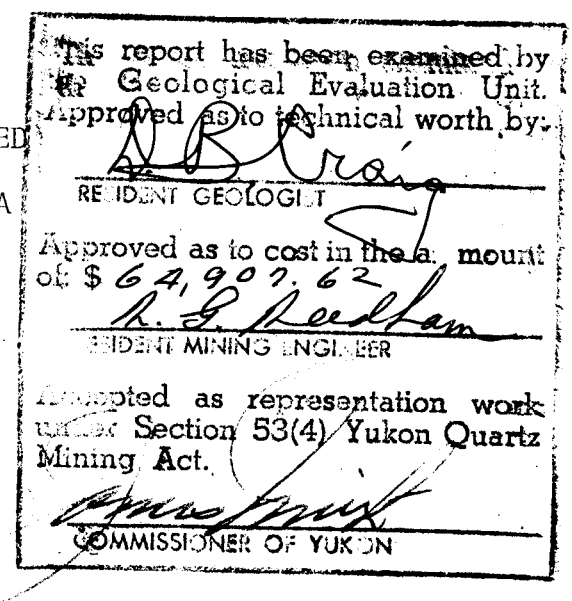

DECEMBER - 1968

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INTRODUCTION

The discovery of the lead-zinc mineralization that was later to be known as the Macmillan ore-body at Quartz Lake, about 40 air-miles northeast from Watson Lake, Yukon Territory, drew early attention to the mineral possibilities in the local sedimentary environment. The area also had the appeal of being reasonably accessible to the Canada Tungsten road 15 miles to the west, the road running south to Watson Lake, itself on the Alaska Highway and an important airport. As a result a large group of claims were staked in the area adjacent to the Macmillan zone and on its structural strike. These claims are controlled by the Redfort Syndicate under the management of Surveymin Limited, 25 Adelaide Street East, Toronto.

In 1966, an airborne electromagnetic and magnetic survey was carried out over the claims group by Lockwood Survey Corporation Limited under contract to Surveymin Limited. This coverage was conducted on roughly E-W lines nominally 1/4 mile apart, but due to an excessive noise condition in the EM system at the time, together with the limitations provided by the terrain, the electromagnetic results from this survey were commonly sub-standard. The area in consequence was re-flown in part a year later on lines roughly N-S, or orthogonal to the previous coverage. The whole of these data were assessed in the spring of 1968, and formed the basis of a ground follow-up programme in the succeeding summer season. The geophysical aspects of this work was undertaken by Barringer Research Limited, the results of which are the subject of this present reporting.

WORK UNDERTAKEN

From the study of the air-records in conjunction with all known geology, thirteen airborne EM anomaly situations were selected for ground investigation. The latter took the form of electromagnetic, magnetic and gravimetric traversing on a prepared grid of lines, laid out over the target airborne anomaly following a preliminary reconnaissance to determine first, the probability of its being derived from bedrock and second, its essential location and strike bearing. The programme remained flexible, and in consequence of the initial reconnaissance, some original anomalies were rejected, others added, as more became known of the governing conditions.

The ground electromagnetic investigations were effected with a portable, battery-powered vertical loop unit (Barringer type LEM-2) measuring dip angles out of the vertical of the total resultant field. Magnetic traversing was undertaken with a proton nuclear precession magnetometer, also of Barringer manufacture (model GM-102); and the gravity surveying by a Sharpe Instruments CG2 gravimeter. Field work was conducted by a four-man crew led by Mr. G. Burton and Mr. J. Hulse, geophysicists with Barringer Research, and was completed in the period 24th June-15th September 1968 based on a camp at Quartz Creek with helicopter support.

DISCUSSION OF RESULTS

(a) General

The present programme was designed primarily to investigate and evaluate on the ground a number of airborne electromagnetic anomalies that appeared to offer the best chances of expressing occurrences of mineralization similar to the MacMillan ore-zone. This last is a fracture-controlled mineralization presenting overall steep dips to geophysics in an otherwise fairly flat lying geology. For this reason, and the fact that the airborne EM system itself as applied was sensitive to conducting sources that were both shallow (within 100' of surface) and steeply dipping, a portable dip angle ground EM unit was employed to screen the airborne targets in an operation that would be at the same time effective and efficient. While magnetic relief was expected to be minimal, ground magnetic traversing was carried out nevertheless for what it may provide in the way of local detail of the immediate conductor setting. However, it was just because so little was expected from the magnetic coverage that the main reliance for discriminating conductor sources was placed on the gravimeter, even though its application in the prevailing conditions of a steep terrain and rapidly changing overburden was far from ideal.

(b) Detail

The results of these applied methods in the various anomaly situations are discussed in detail below, each separate grid area being identified by number as shown in the locality plan (Dwg. No. 5-194-1). Geophysical data pertinent to each situation are presented in plan at a scale of 1"=200'.

ANOMALY #1

This airborne EM anomaly represented one of the stronger individual closures provided by the aerial survey. Moreover, it occurred in the valley of Quartz Creek, and as such stood an above average chance of being intimately associated with through-going structure running north with the creek to the vicinity of the MacMillan zone mineralization. Ground investigations, rather surprisingly, revealed conductor strikes running nearly E-W, but closer study of the air-records at this point confirmed that this was consistent with the air-data.

Thus there is little doubt that the shallow, apparently modestly dipping conductor crossing the BL at 8E is indeed the main source to the air-response, even though the grid orientation is not optimum for its ground definition. However it is not the only conductor indication within the grid area, and the general amount of dip angle variation obtained throughout suggests a regional formational setting in which the 8E/BL conductor is but a part. Certainly the magnetics give no hint of distinctiveness to this one horizon, and the gravity likewise, the minor relief in the latter's profiles largely reflecting changes in the overburden thickness with respect to the bedrock surface. The only measure of interest provided by the single soil sampling traverse (line 00) which yielded up to 50 ppm in trace lead at the conductor position(s) with associated zinc down-drainage (max. 450 ppm). Not sufficient in themselves to be considered significantly anomalous, these local peakings nevertheless give evidence of why an individual horizon in the presumed sedimentary sequence has a somewhat improved conductivity, viz. very minor disseminations of lead mineralization oriented with the bedding at certain strata.

ANOMALY #2

About 1 mile to the north and west of the Anomaly #1 situation, an even stronger cluster of airborne EM anomalies had been resolved, again in the general environment of the Creek valley and its probable structural connotations. However in this case, the anomaly grouping appeared larger, more complex, probably multiple with an overall strike that was more clearly E-W. As the plotted position for this group lay on a tributary to the main stream that also flowed in the same strike direction, there appeared the good chance that the location was transgressed nearby by a cross-structure with all the attendant possibilities this allowed.

On the ground, the anomalous group essentially devolved into two conducting features somewhat divergent to each other. One, the more singular and consistent, was traced as a linear over 1600' of strike length bearing ENE close to the BL. Although strong and apparently steeply dipping, it was found over this distance to coincide with an outcropping ridge of gently dipping carbonaceous shales. Since the correlation was indisputable, it is concluded that the conductor axis as defined represents the edge effect to a generally conducting formational bed extending as a sheet to the south. Indeed it is possible the second conductor(s) represent much the same thing, that is, two edge effects to the one flat lying horizon coming to surface at differing locations as provided by local topography. This would explain the tendency of this conductor to separate into two separate axes on some lines only to join up again along strike. However no outcrop has been observed along this system to confirm its essential character.

These two conductors as traced out on the grid are fully consistent with the air-data. From all appearances, the geologic setting to them is very similar to that postulated for Anomaly #1. It is quite in character therefore that the magnetic traversing here is equally without feature, and that the gravity coverage again consists only of changes due to local overburden and broader regional effects. It is perhaps also in character that some geochemical activity

should be obtained here. However, in this case, it is confined wholly to zinc, values north of the BL reaching in excess of 2000 ppm. Whether this is significant is debatable, as zinc in these amounts may be endemic to large sections of the environment. In any event, zinc in the form of sphalerite would be contributing nothing to the observed conduction.

North of the main grid area, the creek, and on the opposite slope, tetrahedrite mineralization was noted in limestone outcrop in one or two places. Lines 12N and 16N were extended north to cover the general section of the noted mineralization, and were surveyed by EM. Although considerable tilts were encountered towards the north end of these lines, it was eventually shown that these were due to conducting axes curving with the terrain high up on the slope just below the crest. There appeared little doubt that these axes were in effect the southern end of the large airborne system that runs with the ridge northwards past Anomaly #10 to the vicinity of #4. This system occurs at the western limit of the airborne coverage, and is the subject of a separate investigation at the #10 situation.

ANOMALY #2A

Although given an Anomaly number, for convenience of identification this situation is in fact entirely divorced from the airborne survey, and actually lies outside the limits of the air-survey coverage. Its interest centres on copper mineralization, chalcopyrite and chalcocite discovered in outcroppings of limestone in regional prospecting. A grid of lines was placed over the main initial showings and geophysically investigated.

The electromagnetic surveying produced evidence of two conducting axes, neither of them directly associated with the showing mineralization. One closely follows the limestone contact as mapped where gradational rock-types have been noted including graphite. The second axis is not as well defined, and is at best a vague conductor event in a belt of slates striking virtually parallel to the traverse lines in this vicinity. It is highly probable therefore that the conductor axis as shown is not valid, the tilts observed in this region being pertinent to slate members striking almost at right angles. Since the magnetics on this grid are again without significant change, geophysics to the extent applied has done little to enlarge upon the definition of the exposed showings. Considering the nature of the mineralization, this is only to be expected, and it remains for geochemistry to provide the best amplification.

The soil sample results, while perhaps extending the main showing some 800', nevertheless suggest that the copper distribution in the limestone unit is spotty. However considerable possibilities remain to the environment, considering the relative small area sampled to date, and future investigations including IP could yield promising localizations of copper mineralization.

ANOMALY #3

The target for this investigation was a weak but discrete anomaly peaking much in the order of that obtained over the MacMillan ore-zone. However on the ground it proved to be located in an area of heavy moraine cover perched above Quartz Lake, and it became a good probability that the air-response, if real at all, was derived from the overburden.

Nothing obtained in the ground work refutes this likelihood. Only the most meagre of conductor indications was obtained, the sort of thing that can be found almost anywhere where there is cover. The magnetics yielded little feature, and no gravity was attempted. There is nothing in this situation that deserves further consideration.

ANOMALY #4

This airborne response while situated at the west side of the air coverage in common with most of the other strong large anomalies recorded in the survey, nevertheless gives some evidence of being a relatively discrete occurrence in proximity to what could be a major transgressive fault break. However on the ground, the evidence more suggests lengthy formational horizons that could extend for some distance beyond the limits of the grid.

Two conductors have been resolved, over a 1200' strike length, both strong and roughly parallel to each other. Steep dips are inherent but because of cross-interference are difficult to interpret, but are possibly steeply east. Geological information is scant, and the magnetics uninformative, but the probability is that the conductors relate to a slate sequence striking into the area from the SSE.

The more westerly conductor appears to possess positive gravity in local correlation, although this is rarely precise and distinctive. Some of the difficulty in determining the validity of the correlation stems from the regional gravity gradient which changes appreciably from line 00 to line 4S. Since it is unlikely that a sudden rock-type change is involved here, it is presumed that the most southerly line at the higher elevations is being markedly affected by terrain effects to the east and south of the line. On this basis, a reasonable gradient can be established for the other lines to the north, yielding a fair mass expression (0.25 mgal) to the conductor on the most northerly line (8N). Since the quality of the conductor resolution and strength shows some improvement on the section, significance of the correlation at this point could well stand investigation. Assuming that additional lines to the north support it is a fair target, a drill hole could be sited to explore the conductor setting as follows:

Collar : 1+00W on line 8+00N
Bearing : grid west
Dip : -70°
Est. Length : 200'

The easterly conductor, as strong and stronger, tends to be associated with a gravity low. However, again on the most northerly line, this relationship changes for the better with the replacement of the low with the vaguest hint of a positive correlation. As the postulated regional structure lies beyond to the north. the apparent improvement of conductor interest in this direction just might prove to be important.

ANOMALY #5

This anomaly situation has been treated separately in that indicated strikes appear more east-west than north-south, and are therefore quite transgressive to regional trends. This strike bearing has been confirmed on the ground in the resolution of two, roughly parallel conductor axes 600' apart running virtually E-W over a defined distance 800'. They remain open at both ends, but in fact both axes extend onto the northern end of the nearby Anomaly #13 grid where they are seen to swing rather rapidly on to a NW bearing. The most northerly of the two conductors is the stronger and becomes particularly strong to the east.

By this evidence and the continuity of the conductors, the probability is that the two axes represent formational horizons, as seen elsewhere, but in this case, are increasingly coming under the influence of a major structure, presumably lying further north and presumably is a cross-break of substantial proportions. While there is a little more magnetic relief than normal on this grid, it is quite local and is devoid of regional significance. The gravity data reflect a very uniform setting to the limits of the grid, thereby supporting the essential formational character to the conductors. A modest linear gradient decreasing to the north is evident, and since this is not apparent to Anomaly #7 grid to the south, it could have signifance to the postulated cross-structure.

Despite these considerations, there is very little on the present grid to suggest the localization of mineralization, and graphite is therefore the likely cause to the observed conduction.

ANOMALY #7

This strong complex air-anomaly, dominating the north map sheet on the west side has been shown on the ground, to the limits of grid coverage, to be derived from a sequence of conducting axes ranging from strong to very strong in strength. The axes in each case extend beyond the grid area, and can be presumed to possess lengthy strikes. Although occurring outside the limits of previous geology, they fall on strike with a mapped unit of slates, and on all probabilities therefore represent individual graphitic horizons within.

As defined on the grid, these axes tend to converge towards the south, possibly as a function of dip, but in any event they appear as a system of conductors very typical of formational bedding. The indicated dips to the EM profiles are steep to very steep with a dip to the west most suggested.

Both the magnetic and gravity profiles are largely without feature, as might be expected from a fairly uniform environment. The most westerly, and the strongest conductor resolved correlates with a gravity low in support of its likely graphitic cause; although not as clearly, the most easterly conductor (not fully detailed) has a similar correlation of cause and effect. The central and weaker conductor, by contrast shows itself to be in association with what might be construed as a weak gravity high. However this correlation is believed more simulated than real, in part caused by regional gradient (increasing to the west at about the rate of 0.25 mgal/1000'), and in part by overburden changes. The latter is far more a factor in the centre of the grid area as the creek valley is approached. On the line 00, an appreciable 0.3 milligal anomaly appears in local correlation, but in view of its position on the hill slope just above the valley floor, it needs at this time be treated with a good deal of discretion. It could readily be explained by a local approach to surface of the

underlying bedrock, particularly as a second similar anomaly appears 800' north at the BL without correlating EM support. However, a case can be made for drilling the line 00 situation as a representative testing of the setting. A suitable hole would be:

Collar	:	2+50E/00
Bearing	:	grid west
Depression	:	45°
Est. Length	:	300'

ANOMALY #8

Of all the air-anomalies followed-up, this response was at once one of the most isolated and one of the most discrete. Also it provided on the air-record one of the nearest approaches to the MacMillan in strength and character of resolution. On the ground, it developed into an EM axis not unlike the MacMillan conductor in terms of the general strength, and the improved resolution over a central section. Much of this could be coincidence of course, but the appearance of a local gravity anomaly on the best EM line (line 00) raises this situation to a point where it can be considered on its own merits.

The geology for this vicinity is presently unknown. However the grid area is comparatively high and close to the tree-line, and there is good possibility that some local outcrop control exists. While the gravity correlation is not strong in itself (about 0.20 mgal), it nevertheless exhibits a fair character resolution, and what is more important it could be symptomatic of the mineral chances in the setting. This is given substance by the possibility that a broader gravity high exists at the BL and east of it on line 4S in association with a second defined conductor response. As it stands, this latter relationship is not certain enough to warrant a strong recommendation, but remarkably it does find some support for its reality in the magnetics. Quite a marked magnetic low of about 50γ amplitude has been resolved at this point, a circumstance that is not unencouraging to local sulphides, particularly since the magnetics usually provide so little hint of local anomaly throughout the general region.

The magnetics also suggest that there is some change between lines 00 and 4N. This is consistent with the first conductor apparently terminating before it reaches 4N, and while the second may extend this far, it is not certain that the conductor at the BL on line 4S is in fact directly related to that cross-over obtained at 2+50E on line 4N. Indeed it is possible to speculate that a conducting fault linear might pass through this latter point striking roughly

NNE-SSW. If so, it could have significance to the mineral potential of the setting.

On the basis of all these considerations, it is recommended that the line 00 gravity correlation be drill-tested, failing outcrop evidence that directly discounts the geophysical implications. An appropriate hole would be:

Collar	:	2+00W on line 00
Bearing	:	grid east
Dip	:	-60°
Est. Length	:	200'

Dips to the EM axis could well be steeply to the west, but because of the hill slope, an alternative hole from the up-dip side may be required, for which possibility the following is given:

Collar	:	00+50W on line 00
Bearing	:	grid west
Dip	:	-45°
Est. Length	:	225'

ANOMALY #10

This anomaly situation lies adjacent to the extensive airborne zone at the western extremity of the coverage. Representing a chance for a discrete conductor separated from the main zone, the ground results are somewhat disappointing. For the most part, obtained conductor expressions are weak and nebulous, and outside one axis in the SE corner, are without established strike relationships. This one axis strikes NE largely as a result of the terrain. Perhaps the best conductor indication occurs at 4E on line 12S, the most southerly line of the grid. It remains to be fully defined. However there is nothing in either the magnetic or gravity data to give weight to this or any of the other conducting indications in the grid area. The magnetics are without feature, and the gravity profiles are largely influenced by terrain effects superimposed upon a regional gradient increasing to the east. Two possible local gravity anomalies viz. at 4N/line 00 and at 1N/8S, could not be induced to conduct. They appear therefore as near-approaches to surface of bedrock at breaks in the hillslope.

ANOMALY #11

Picked as a discrete and local anomaly peaking within a general trend of conduction, this airborne response was resolved on the ground as a fairly lengthy axis bearing roughly N-S and with little change apparent to its properties over the strike distance delineated. The conductor effectively remains open at both ends.

On the evidence of the profiles, a consistent dip to the west of about 60° is apparent to the zone under a cover of about 50' and less. In striking N-S, the axis cuts across topography in conformity with regional trends, and taking this circumstance in the light of the other electrical consistencies, the zone takes on all the appearances of a formational horizon.

The magnetic and gravity coverages are not particularly informative. Both sets of profiles are devoid of marked feature, and indeed exhibit very little in the way of gradients. This result indicates essentially the one rock-type unit for the setting presumably a quartzite. Local effects within are minor, and in many cases peobably relate to overburden causes. There is some suggestion that a local gravity expression exists in correlation with the conductor axis on various sections, but generally this is far too vague an association, and the expressions themselves too ambiguous, to conclude a distinctive and diagnostic mass effect to the conductor.

On the balance, this is a situation more likely reflecting the manifestations of a regional belt in a section that comes close to surface than it is a local conductor with mineral connotations. From this standpoint, no further recommendations are made, unless geochemistry or new geologic considerations specifically direct interest to the locality.

ANOMALY #12

This isolated weak anomaly proved on the ground to be both weak and without character. Linear over 800' of its defined strike, it is a very minor event yielding no relief in either its magnetic or mass properties. A suggested gravity high in correlation on line 4S is in fact simulated by the adjacent low at the base of a steepening slope. While there is no interest residual to this situation, the fact that the conductor strikes more E-W than N-S may mean that its cause is due to a local fracture or shear transgressing the setting.

ANOMALY #13

This air-response attracted interest as a fairly sharp peaking, discrete and rather isolated in its occurrence in the manner of the MacMillan ore-incidence. It is also quite a weak air-anomaly, a fact testified to by the ground result. Geologic control to this situation however is minimal, and the indicated chances for mineralization here therefore are largely no better than those allowed by geophysics.

It is of some considerable importance therefore that a well resolved gravity zone emerges from the coverage in correlation with one of the two central conducting axes delineated. Since the whole of the immediate setting is located on a reasonably uniform hill slope, this gravity expression needs to be taken at face value as representing a local excess mass in the bedrock, and not simply an overburden change. The conduction for its part is not strong, and if due to sulphides, there is likely to be a certain amount of quartz gangue and possibly sphalerite present. Because of such a chance this situation deserves drill testing; however not only to explore the intrinsic possibilities but to enlarge on the local geologic knowledge, and to allow evaluation of the further geophysical events in the general vicinity. Should encouragement be met here, there would need to be some additional geophysics in extension since with only three lines, strikes remain open for the most part.

To the north, two curved conductor axes have been resolved at approximately 8N and 10+50N on line 00. These may be formational horizons, but their probability of being structurally distorted in the light of the regional geophysical evidence is heightened by the result at Anomaly #5. Confusing the picture at present is an obvious gravity error between stations 6N and 8N on line 00. Since this does not reside in the field notes, a faulty reading in either the gravity or the levelling exists here somewhere, and needs to be picked up in any future work. However, this does not alter the merit of the central setting, and the following drill hole is recommended:

Collar	:	2+00N on line 4+00E
Bearing	:	grid south
Dip	:	-65°
Est. Length	:	200'

The hole is placed on the most easterly line of the grid since it bids fair to be the most definitive for the shortest drill footage. Moreover as only a small grid is involved the result should be diagnostic to the target zone to the extent it has been covered.

ANOMALY #14

A fair local peaking in a more broad conductive zone, this airborne response provided a short, discrete conductor on the ground with some rather attractive characteristics. It occurs in the north-west of the map area, and falls just beyond the extent of the geologic mapping in this direction. However, it is not difficult to project a contact between slates and quartzites through the immediate locality of the anomlay.

The ground EM coverage resolved a medium strength conductor (22° peak-to-peak) over three lines for a total strike length of approximately 1000'. In this distance, the conductor axis exhibits a gently curved strike independent of topography. Giving it character is the improved strength and quality of resolution on the central line (4N) at the apex of the strike change. Here the cross-over indicates a near-vertical dip, possibly grid west to the conductor under about 50' of cover.

The auxiliary coverages point up the likelihood of a geologic contact across the grid area. The gravity profiles, exhibit a gross change in background level of approximately 1.5 milligals from west to east, and even the magnetics hint at contrasting rock-types on either side of the BL. Together with the geologic evidence, this places the conductor in quartzites, a less dense and slightly more magnetic unit than the adjacent slates. Being so located, there would appear less chance that the conductor has been caused by graphitic material, and proportionately more chance therefore that it is due to sulphides. The latter possibility is enhanced by a local gravity anomaly in consistent correlation with the conductor axis, the best mass expression (0.25 milligal) occurring on the strongest EM-line. While this gravity correlation is not in itself strong, it typically represents one of the main chances in the region, a near-vertical mineralized fracture in a flat-lying geology accompanied by disseminations into the wall rocks. It is a situation that merits drilling. A suitable test hole would be:

Collar : 2+00W on line 4N
Bearing : grid west
Depression : -50°
Est. Length : 200'

RECONCILIATION WITH DRILLING

By season's end, six holes had been drilled testing five of the foregoing geophysical situations. Details of these holes are supplied in the complementary report compiled by Western Geological Services Limited. In each case, sufficient graphitic material was intersected in the holes to explain the observed conduction. One exceptional case was the Anomaly #14, on ground EM results one of the most attractive of conductor targets, shallow, steeply dipping and fully delineated. The investigative drill hole probed to 176' without reaching bedrock. In a way, this result was not surprising, since at first appraisal the grid area appears located on a perched bench of glacio-fluvial overburden. What proved surprising in fact was the very fair air-response and subsequently the good ground conductor situation obtained here. The drill testing reconciled the two contrasting pieces of evidence by intersecting graphite in the overburden itself, a somewhat unusual circumstance which nevertheless could add seriously to the ambiguity of EM data in any general exploration of the region.

Since in each of the drilled situations some case was made for the testing by the apparent presence of correlating gravity expressions to the conductors, the virtual complete lack of notable sulphides in the cores, or of any other high density materials causes a reconsideration of the relative effectiveness of the gravity discrimination. In so doing, it is noted that at no time did the gravity correlations exceed 0.3 mgal. local excess mass, while over the MacMillan ore-zone a residual anomaly in the order of 1.0 mgal. was obtained. Thus it is concluded that as a result of the drilling, local relief of 0.3 mgal. and less must be considered within the noise level of the method in the prevailing conditions of sweeping changes in terrain and overburden thickness. Indeed it may be that the threshold for a significant anomaly in this region be as high as 0.5 mgal. Again this would prove limiting to future applications of the gravimeter in the area.

CONCLUSIONS AND RECOMMENDATIONS

The present programme completes a highly selective sampling of the results provided by the preceding airborne EM survey. The selection process itself deliberately sought to screen discrete anomalous events with relatively short strike lengths and comparatively weak response signatures of the type provided by the only known mineral concentration in the area, the MacMillan ore-body. At the same time several of the stronger and longer anomaly features were included in the programme to provide a fair orientation of the probabilities with respect to the environmental background. Inasmuch as these present investigations have yielded little encouragement but a good perspective of the ambiguities, particularly from graphite, inherent to the area, it is concluded that the programme has been taken as far as it can reasonably go without facing inhibitive odds. A very fair testing of the possibilities represented by the air-survey has thus been achieved, and no recommendations are made to pursue this manner of approach.

Looking to the future, the one grid area that retains residual interest is #2A, a target area provided not by geophysics, but by prospecting. This discovery represents one of the main alternatives for future exploration programmes in the area, an extensive prospecting programme followed by geology and detailed geophysics and geochemistry in sections of maximum interest. The second alternative embraces areas of cover for which regional geologic and structural considerations ascribe a favourable potential. In both cases, it is recommended that the essential geophysical approach be by induced polarization, although allowances, should be retained for limited applications of EM and gravity. In any event, widespread application of any geophysical method in this environment faces serious difficulties, the lack of magnetic contrast, the frequent and extensive incidence of graphite, the commonly disseminated or broken up nature of the mineralization, the likelihood of sphalerite, the varying cover and the terrain itself all conspire

to reduce the effectiveness of geophysical methods, and such applications should be avoided wherever possible. In the detailed scale however, and particularly under good geologic controls, geophysics can be expected to be definitive and most valuable in furthering the future exploration of this general environment.

BARRINGER RESEARCH LIMITED

J. B. Boniwell for

J. B. Boniwell
Chief Geophysicist

JBB:np

QUARTZ LAKE

14

13

5

7

12

11

3

4

10

2

2A

1

8

N

A

No MAP#

Doc# 060680

Vol# 1

31

Work undertaken by

BARRINGER RESEARCH LTD, Toronto, Canada.

REDFORT SYNDICATE

REDFORT PROPERTY, YUKON

LOCALITY PLAN

AUGUST 1968	Scale 1"= 2,000'	DWG. 5-194-1

REX GROUP
Claims 1-45 incl.

RED GROUP
Claims 1-96 incl.

SUB GROUP
Claims 1-20 incl.

BUS GROUP
Claims 1-140 incl.

JIM GROUP
Claims 1-16 incl.
17-18 "

PLUS GROUP
Claims 1-20 incl.
21-24 "
25-32 "

FORT GROUP
Claims 1-64 incl.

ED GROUP
Claims 1-12 incl.

Magnetic North N33°30E

128°-00'

60° 30'

Said to Adjoin

LIARD RIVER MINING CO. LTD. (70 Claims)

McMillan Lake

Asarco Drill Camp 1968

Fort Reliance Camp 1968

BUS MOUNTAIN (5294 Ft.)

MOUNT REDFORT (5150 Ft.)

MOUNT RELIANCE (5913 Ft.)

Quartz Lake

Roy Lake

Andy Creek

Mine Creek

Mine Creek

4000

3500

4000

5000

4500

4000

MAP INDEX

105A9 | 95D12 | 95D11
105A8 | 95D5 | 95D6
105A1 | 95D4 | 95D3

128°-00'

60°30'

REDFORD PROSPECT
YUKON - TERRITORY

PLAN OF PROPERTY HOLDINGS

FORT RELIANCE MINERALS LIMITED
25 ADELAIDE ST. EAST, TORONTO 1.

3000 0 3000 6000 9000 12000
FEET

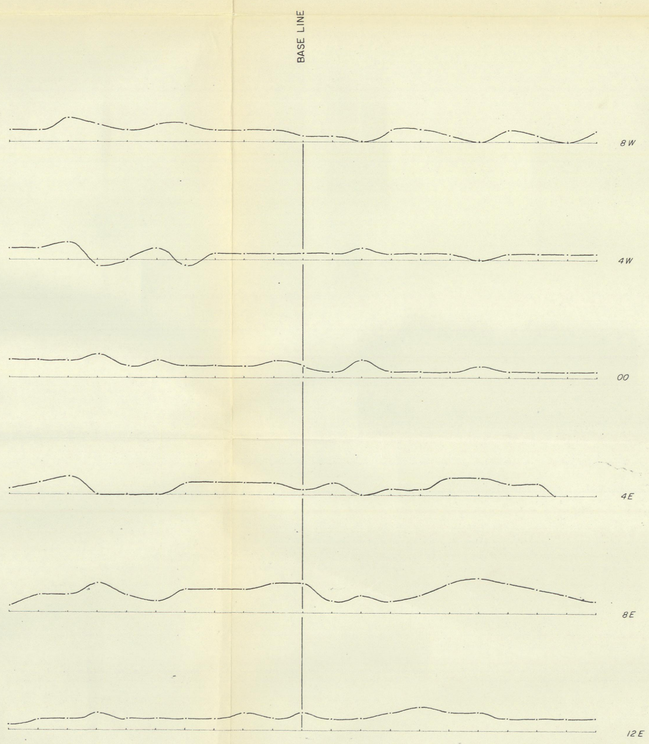
FIG 'A'
DECEMBER, 1968

SURVEYMIN LTD CONSULTANTS
TORONTO - VANCOUVER

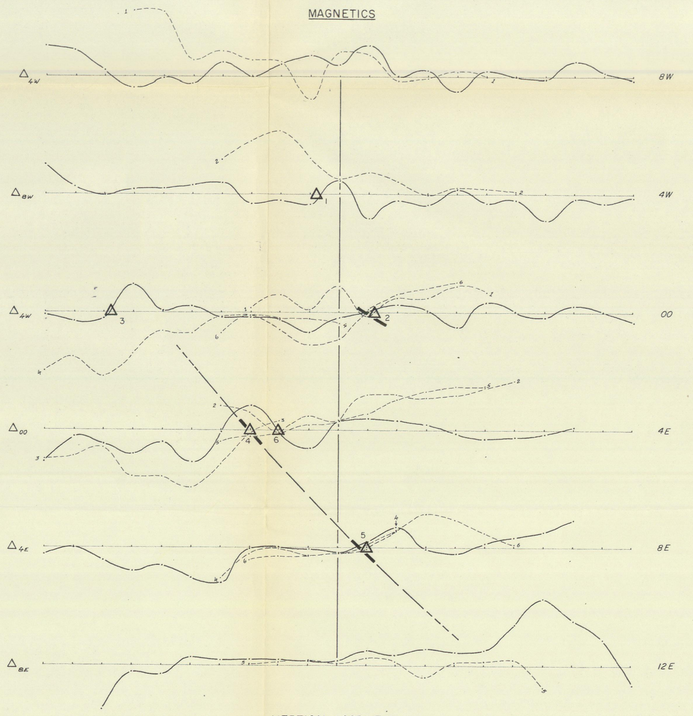
drawn by des o'shannessy mapping service/a. günther.

inches
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

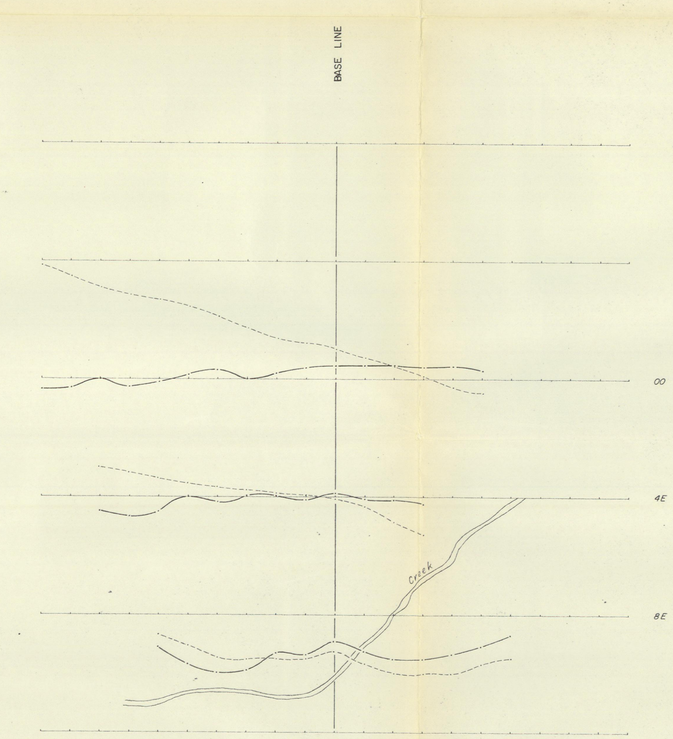
060680



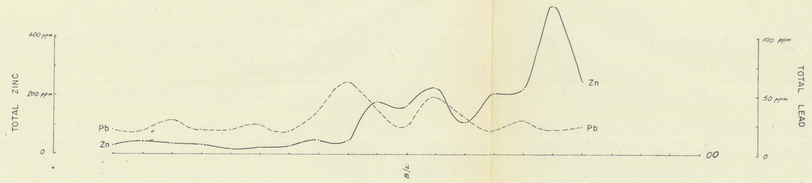
MAGNETICS



VERTICAL LOOP E.M.



GRAVITY & ELEVATION



GEOCHEM SOIL SAMPLES

LEGENDS

VERTICAL LOOP E.M.

Parallel Line

Detail

Profile - Scale 1"= 20°

Transmitter location

Conductor - Definite
- Possible

MAGNETICS

Profile - Scale 1"= 100γ

Datum 58,900 γ

GRAVITY & ELEVATION

Gravity Profile - Scale 1"= 1mgl.

Elevation Profile - Scale 1"= 100'

No MAP#
Doc#060680 (33)
Vol#1

Work undertaken by
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REDFORT SYNDICATE

ANOMALY 1 , REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

AUGUST 1968	Scale 1"=200'	DWG. 5-194-2

LEGENDS

VERTICAL LOOP E.M.

Parallel Line	Detail	
·——·	·- - -·	Profile - Scale 1" = 20°
△ 8W	△ 4	Transmitter location
	——	Conductor - Definite
	- - -	- Possible

MAGNETICS

·——· Profile - Scale 1" = 100γ

Datum 58,900 γ

GRAVITY & ELEVATION

·——· Gravity Profile - Scale 1" = 1mgl.

·- - - -· Elevation Profile - Scale 1" = 50'

No MAP #
Doc # 060680 (34)
VOL # 1

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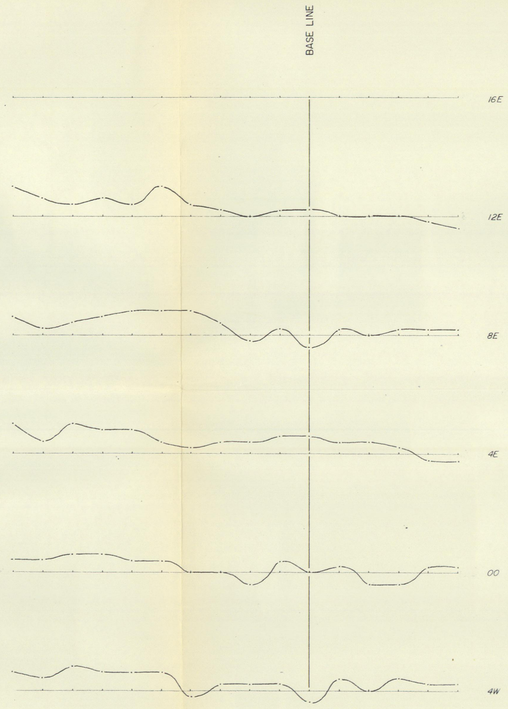
REDFORT SYNDICATE

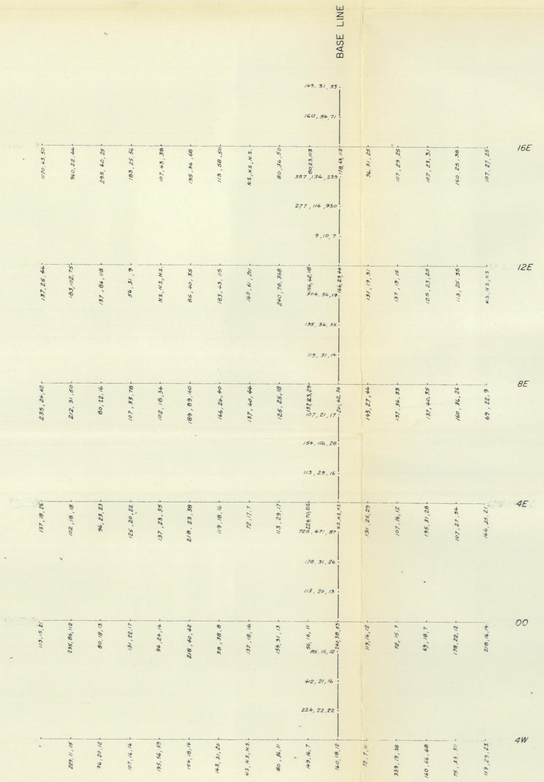
ANOMALY 2, REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

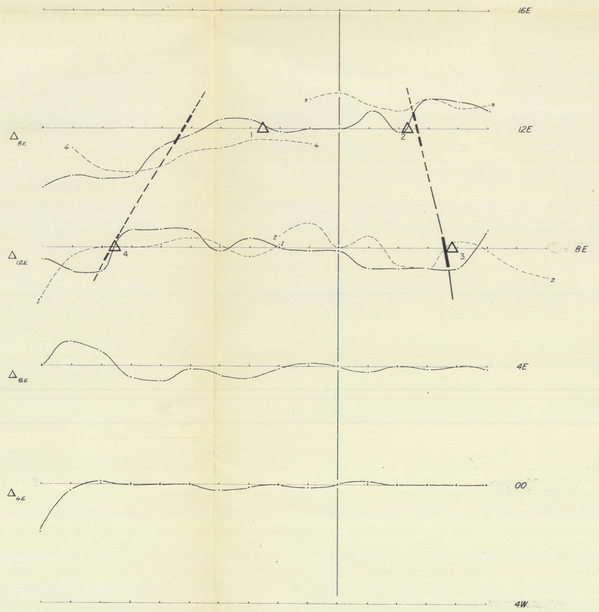
AUGUST 1968	Scale 1" = 200'	DWG. 5-194-3



MAGNETICS



GEOCHEM. SOIL SURVEY



VERTICAL LOOP E.M.

N

VERTICAL LOOP E.M.

Parallel Line — Detail

Profile - Scale 1"= 20°

Transmitter location

Conductor - Definite - Possible

LEGENDS

MAGNETICS

Profile - Scale 1"= 1000 ɣ

Datum 58,000 ɣ

GEOCHEM SOIL SURVEY

Geochem Values in P.P.M for Zn, Pb & Cu

No MAP #
Doc #060680 (35)
VOL #1

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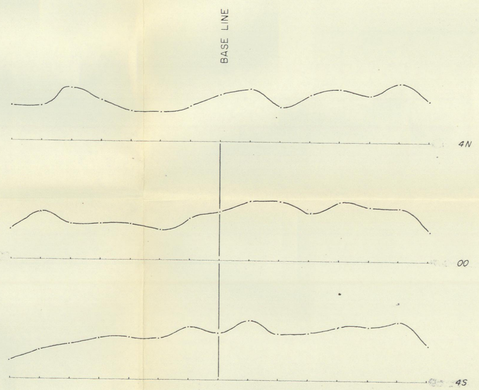
REDFORT SYNDICATE

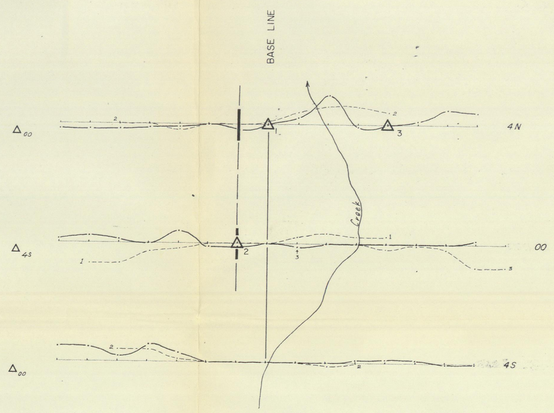
ANOMALY 2A, REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

AUGUST 1968 | Scale 1"=200' | DWG. 5-194-4



MAGNETICS



VERTICAL LOOP E.M.

N

VERTICAL LOOP E.M.

Parallel Line — Detail

Profile - Scale 1"= 20°

Transmitter location

Conductor - Definite
- Possible

LEGENDS

MAGNETICS

Profile - Scale 1"= 100 γ

Datum 58,800 γ

No MAP#
Doc# 060680 (36)
VOL#)

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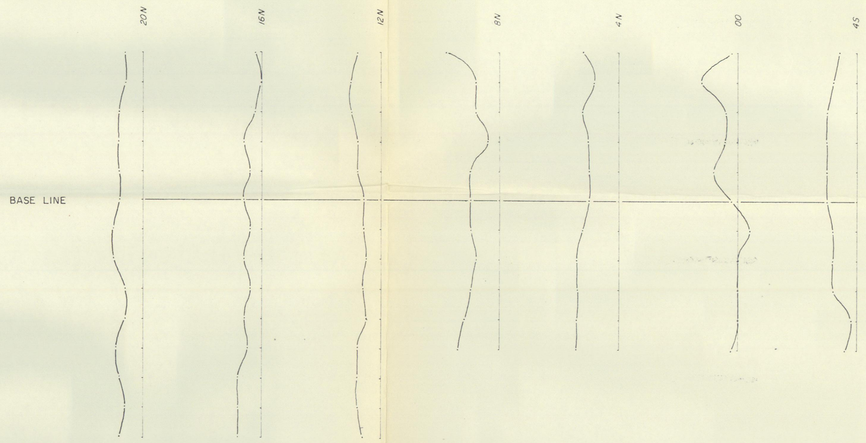
REDFORT SYNDICATE

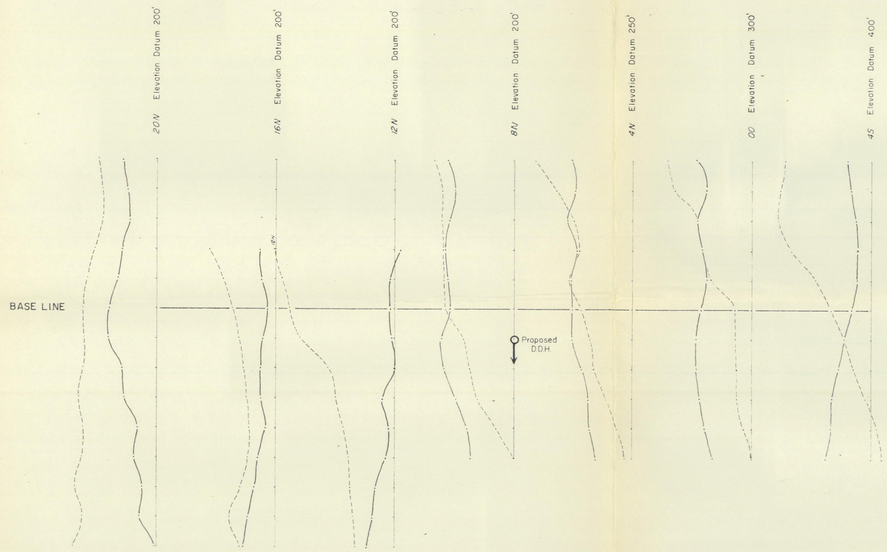
ANOMALY 3 , REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

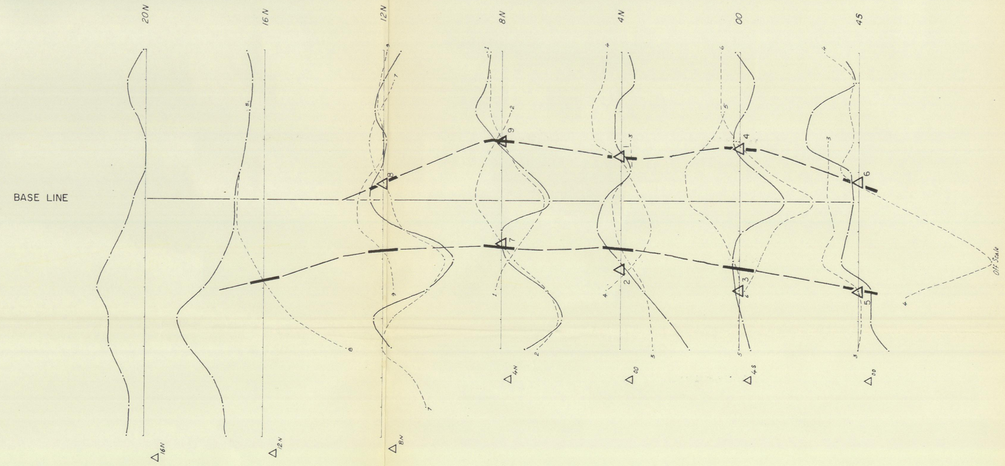
AUGUST 1968 | Scale 1"=200' | DWG. 5-194-5



MAGNETICS



GRAVITY & ELEVATION



VERTICAL LOOP E.M.

VERTICAL LOOP E.M.

Parallel Line — Profile - Scale 1"= 20°

Detail — Transmitter location

Conductor - Definite
- Possible

LEGENDS

MAGNETICS

Profile - Scale 1"= 100 ɣ

Datum 58,900 ɣ

GRAVITY & ELEVATION

Gravity Profile - Scale 1"= 1 mgl.

Elevation Profile - Scale 1"= 100'

No MAP#
Doc# 060680 (37)
Vol# 1

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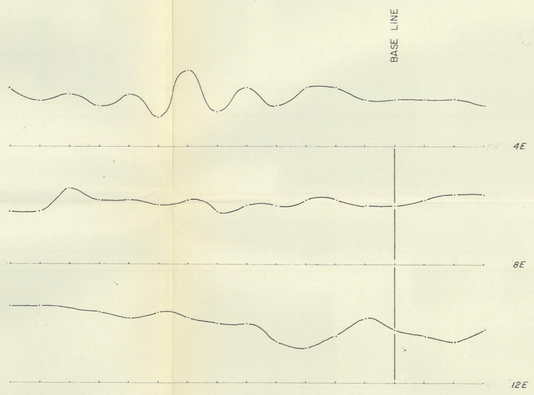
REDFORT SYNDICATE

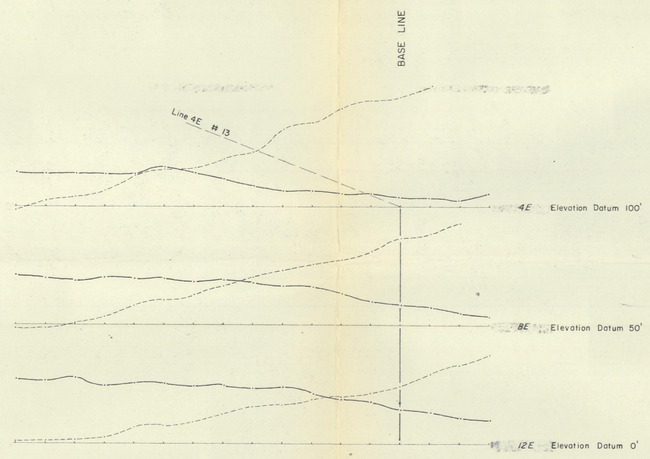
ANOMALY 4 , REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

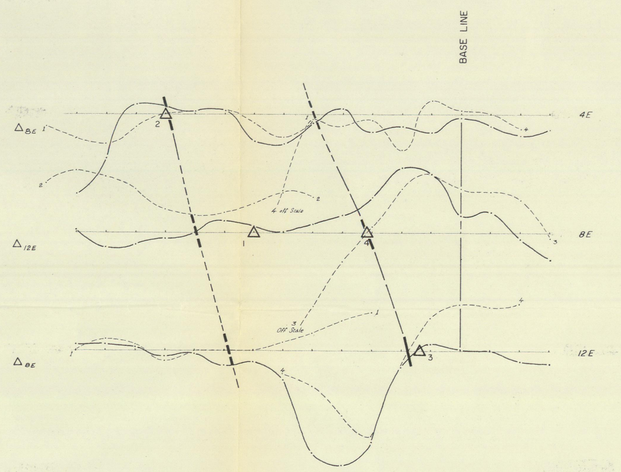
AUGUST 1968 | Scale 1"=200' | DWG. 5-194-6



MAGNETICS



GRAVITY & ELEVATION



VERTICAL LOOP E.M.

LEGENDS

VERTICAL LOOP E.M.

Parallel Line — Detail

Profile - Scale 1"= 20°

Transmitter location

Conductor - Definite
- Possible

MAGNETICS

Profile - Scale 1"= 100 ɣ

Datum 58,800 ɣ

GRAVITY & ELEVATION

Gravity Profile - Scale 1"= 1mgl.

Elevation Profile - Scale 1"= 100'

No MAP# Doc# 060680 Vol#2.

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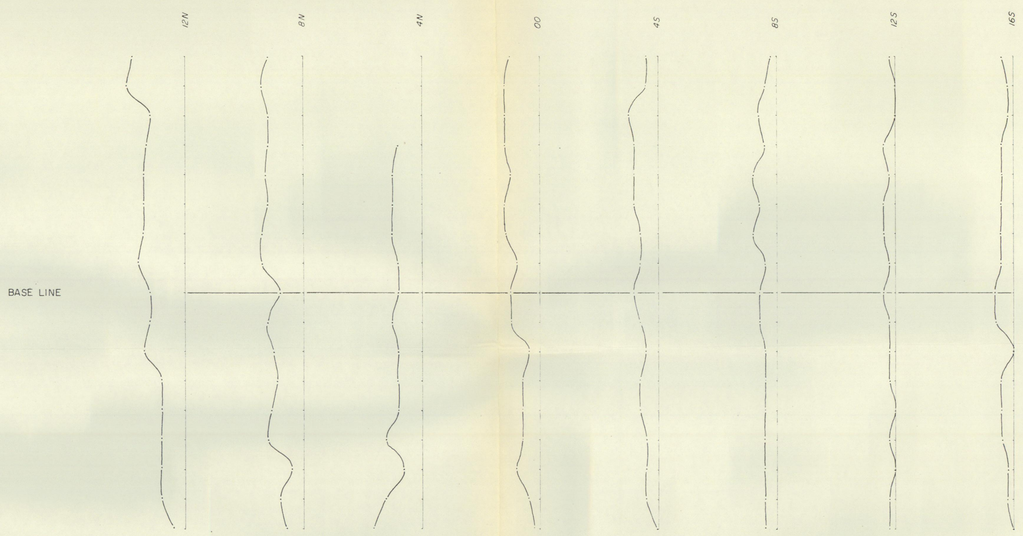
REDFORT SYNDICATE

ANOMALY 5 , REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

AUGUST 1968 | Scale 1"=200' | DWG. 5-194-7



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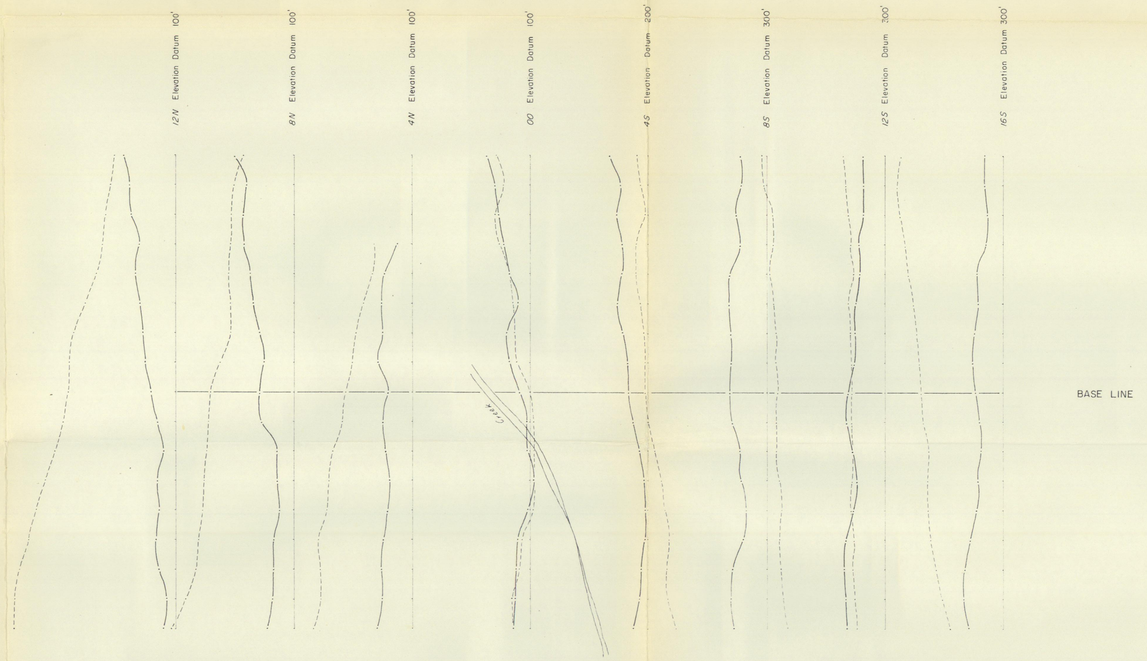
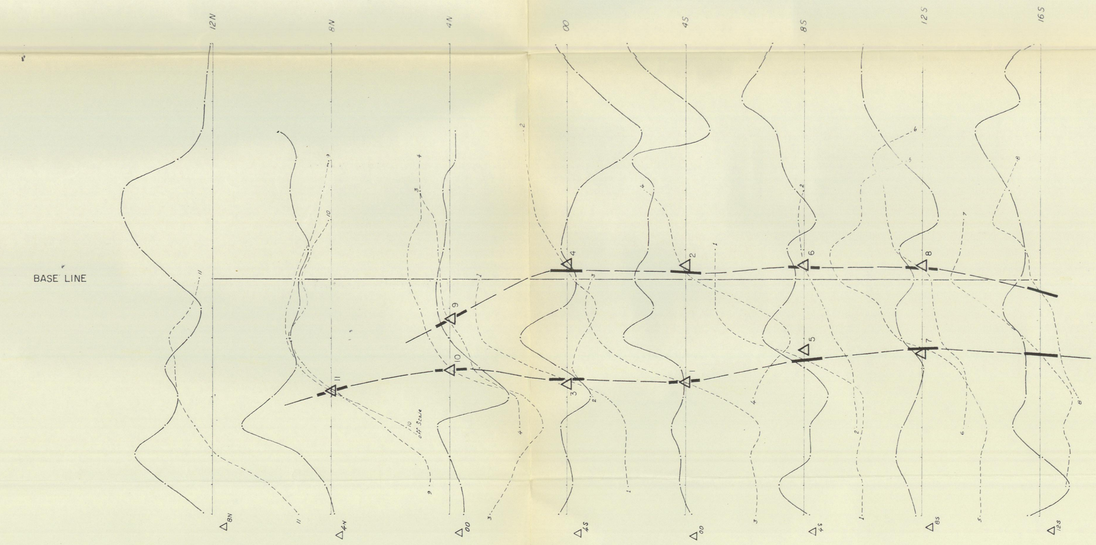


GRAVITY & ELEVATION



VERTICAL LOOP E.M.

VERTICAL LOOP E.M.

Parallel Line — Detail

Profile - Scale 1"= 20°

Transmitter location

Conductor - Definite - Possible

LEGENDS

MAGNETICS

Profile - Scale 1"= 100γ

Datum 58,900 γ

GRAVITY & ELEVATION

Gravity Profile - Scale 1"= 1mgl.

Elevation Profile - Scale 1"= 100'

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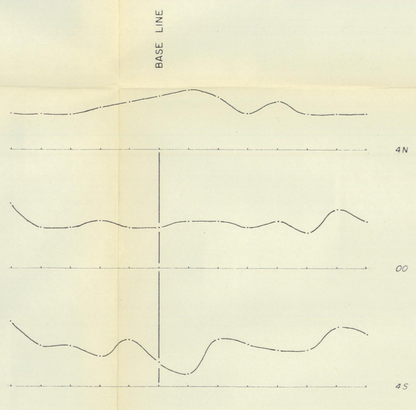
REDFORT SYNDICATE

ANOMALY 7 , REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

AUGUST 1968 | Scale 1"=200' | DWG. 5-194-8



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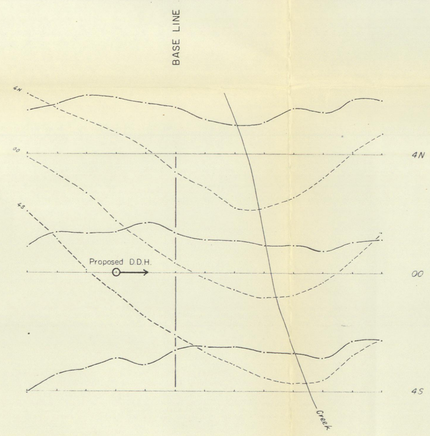
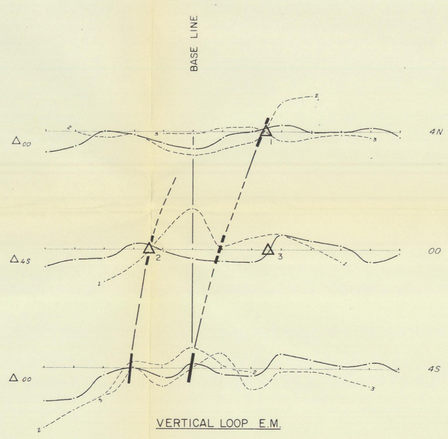
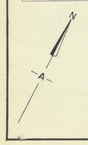


GRAVITY & ELEVATION



VERTICAL LOOP E.M.



VERTICAL LOOP E.M.

Parallel Line

Detail

Profile - Scale 1"= 20°

Transmitter location

Conductor - Definite
- Possible

LEGENDS

MAGNETICS

Profile - Scale 1"= 100 ɣ

Datum 58,900 ɣ

GRAVITY & ELEVATION

Gravity Profile - Scale 1"= 1 mgl.

Elevation Profile - Scale 1"= 100'

No MAP # Doc # 060680
Vol #2

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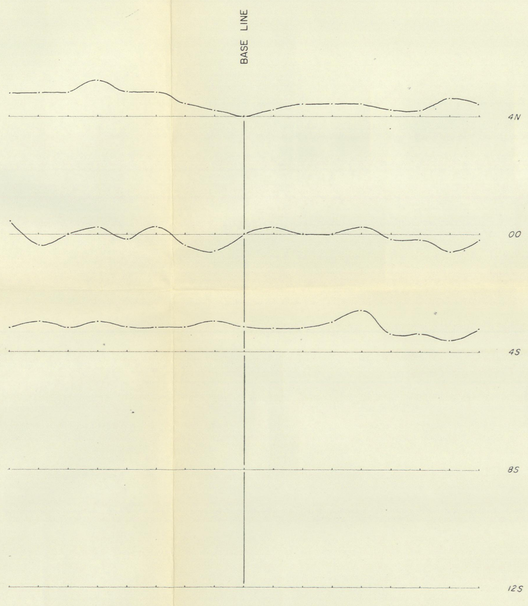
REDFORT SYNDICATE

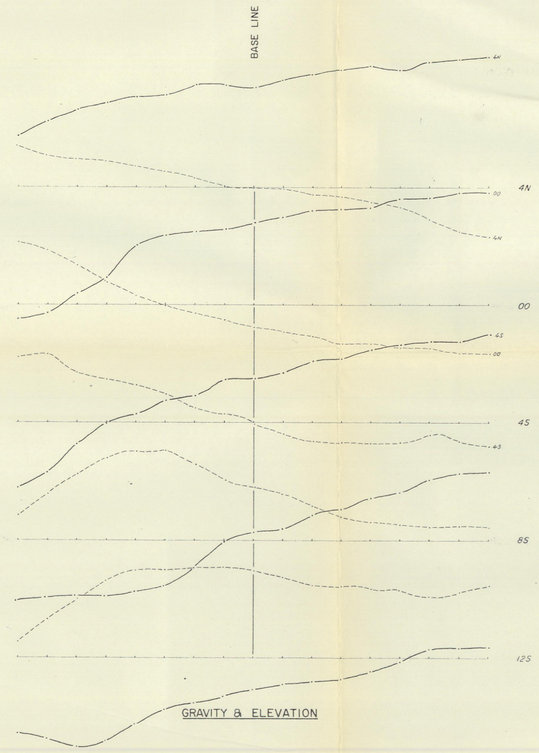
ANOMALY 8 , REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

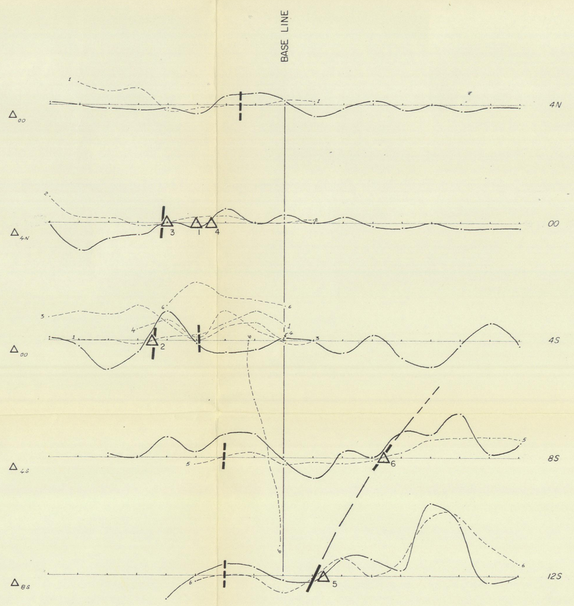
AUGUST 1968	Scale 1"=200'	DWG. 5-194-9



MAGNETICS



GRAVITY & ELEVATION



VERTICAL LOOP E.M.

N

VERTICAL LOOP E.M.

Parallel Line — Detail

Profile - Scale 1"= 20°

Transmitter location

Conductor - Definite - Possible

LEGENDS

MAGNETICS

Profile - Scale 1"= 100γ

Datum 58,900 γ

GRAVITY & ELEVATION

Gravity Profile - Scale 1"= 1mgl.

Elevation Profile - Scale 1"= 100'

No Map# Doc# 060680 Vol #2

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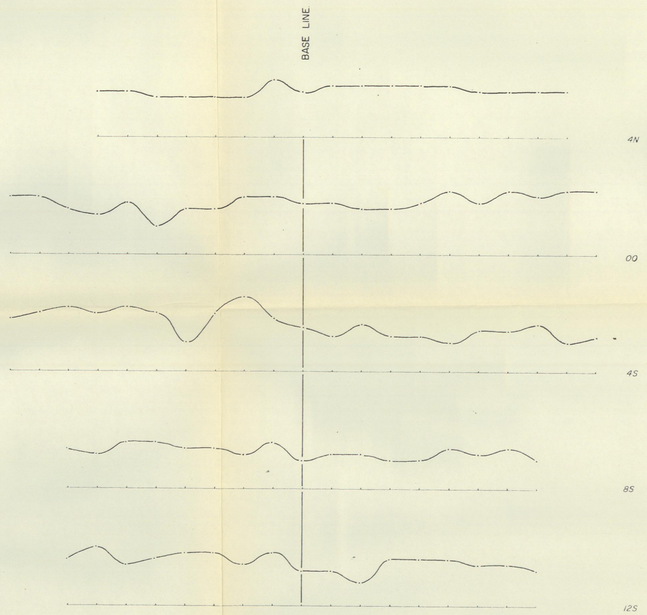
REDFORT SYNDICATE

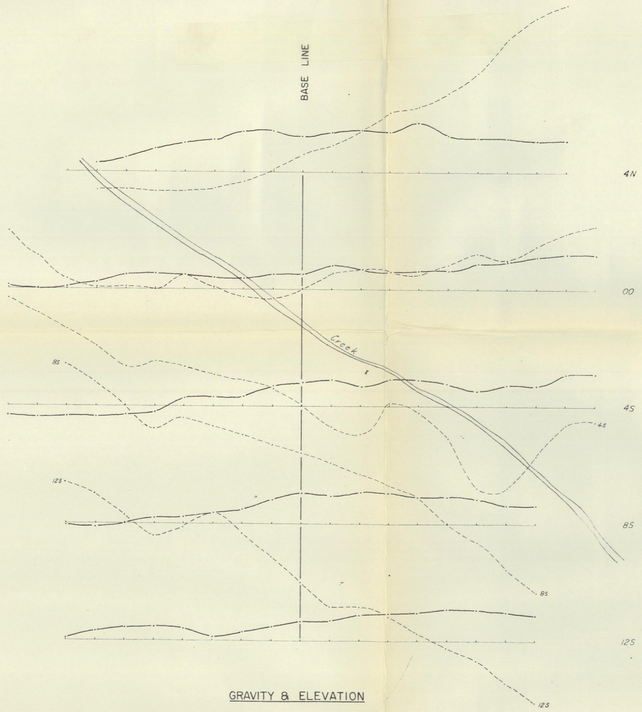
ANOMALY 10, REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

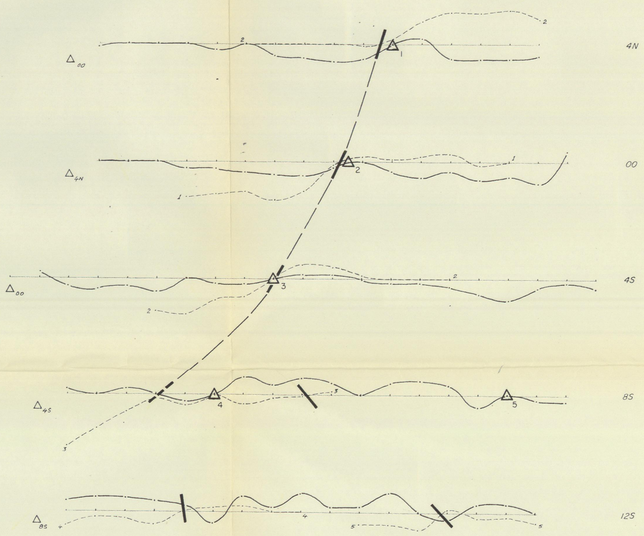
AUGUST 1968 | Scale 1"=200' | DWG. 5-194-10



MAGNETICS



GRAVITY & ELEVATION



VERTICAL LOOP E.M.

VERTICAL LOOP E.M.

Parallel Line — Profile - Scale 1"= 20°

Detail — Transmitter location

Conductor - Definite - Possible

LEGENDS

MAGNETICS

Profile - Scale 1"= 100ɣ

Datum 58, 0 ɣ

GRAVITY & ELEVATION

Gravity Profile - Scale 1"= 1 mgl.

Elevation Profile - Scale 1"= 100'

No MAP# Doc# 060680 Vol#2 (42)

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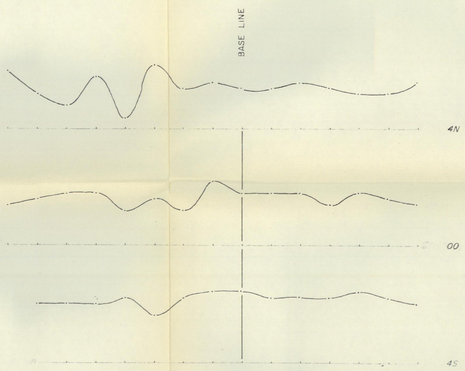
REDFORT SYNDICATE

ANOMALY II, REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

AUGUST 1968 | Scale 1"=200' | DWG. 5-194-11



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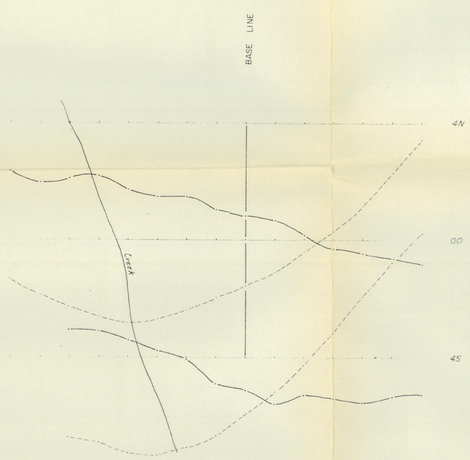
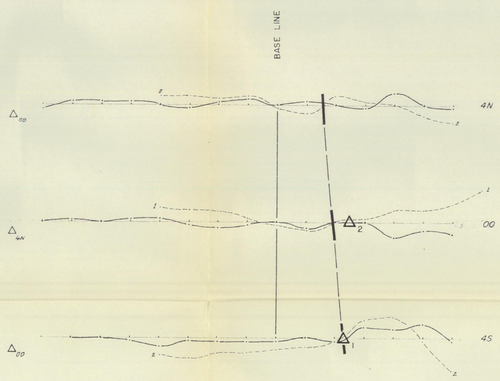


GRAVITY & ELEVATION



VERTICAL LOOP E.M.

VERTICAL LOOP E.M.

Parallel Line — Detail

Profile - Scale 1" = 20°

Transmitter location

Conductor - Definite
- Possible

LEGENDS

MAGNETICS

Profile - Scale 1" = 100 ɣ

Datum 58,800 ɣ

GRAVITY & ELEVATION

Gravity Profile - Scale 1" = 1 mgl.

Elevation Profile - Scale 1" = 100'

No MAP # Dat#060680

Vol#2

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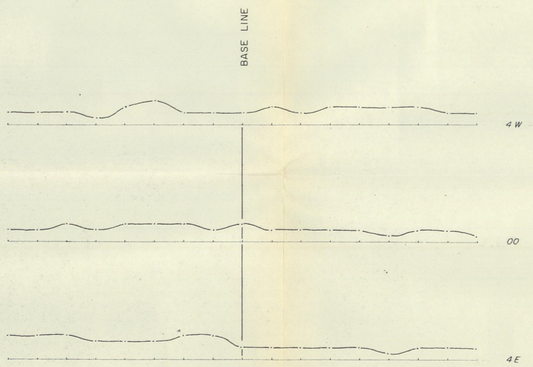
REDFORT SYNDICATE

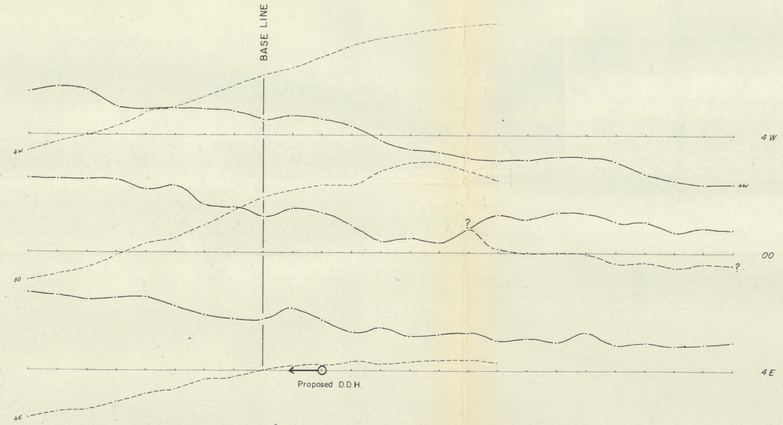
ANOMALY 12 , REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

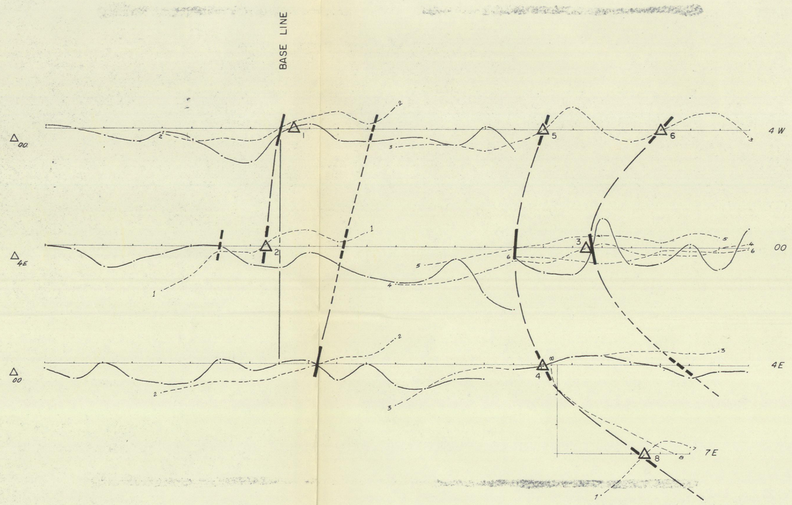
AUGUST 1968 | Scale 1"=200' | DWG. 5-194-12



MAGNETICS



GRAVITY & ELEVATION



VERTICAL LOOP E.M.

LEGENDS

VERTICAL LOOP E.M.

Parallel Line — Detail

Profile - Scale 1"= 20°

Transmitter location

Conductor - Definite

- Possible

MAGNETICS

Profile - Scale 1"= 100 ɣ

Datum 58,900 ɣ

GRAVITY & ELEVATION

Gravity Profile - Scale 1"= 1 mgl.

Elevation Profile - Scale 1"= 100'

NoMAP# Doc# 060680

Vol#2

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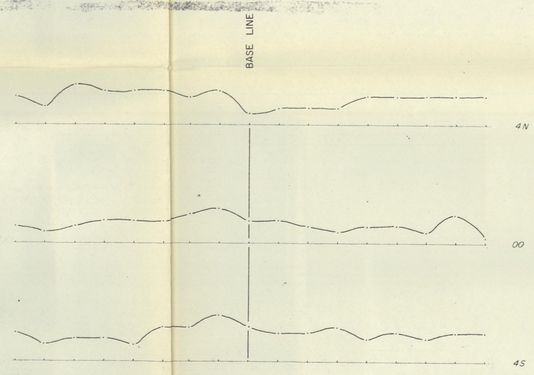
REDFORT SYNDICATE

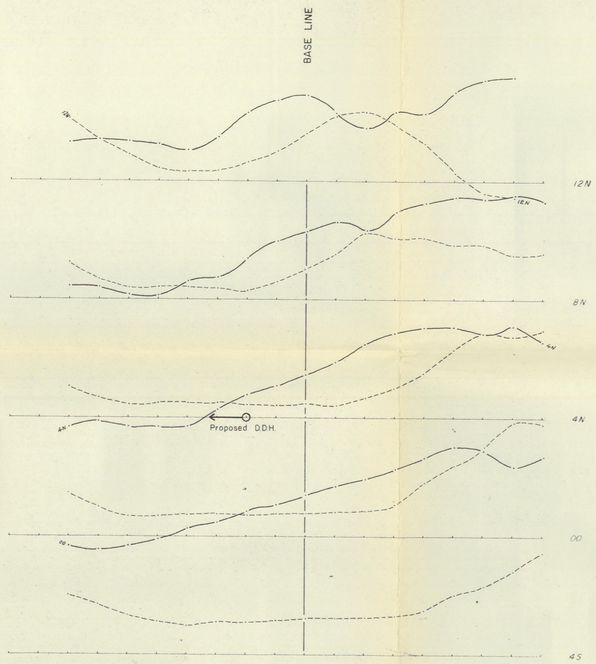
ANOMALY 13, REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

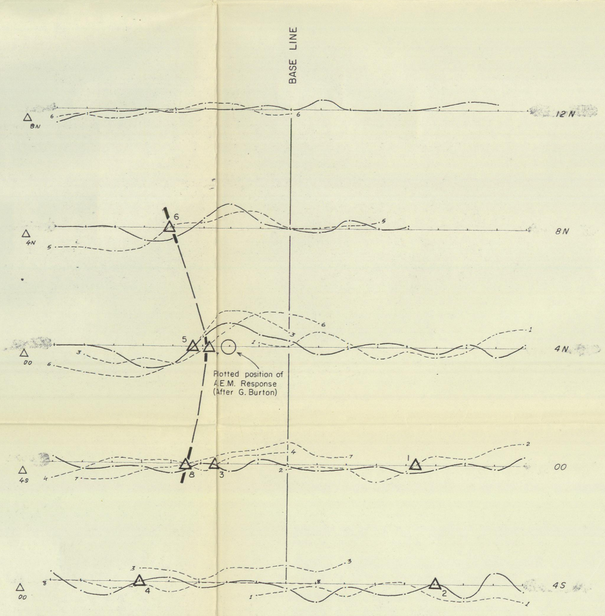
AUGUST 1968 | Scale 1"=200' | DWG. 5-194-13



MAGNETICS



GRAVITY & ELEVATION



VERTICAL LOOP E.M.

LEGENDS

MAGNETICS
Profile - Scale 1"= 100ɣ
Datum 58,850 ɣ

GRAVITY & ELEVATION
Gravity Profile - Scale 1"= 1mgl.
Elevation Profile - Scale 1"= 100'

VERTICAL LOOP E.M.
Parallel Line
Detail
Profile - Scale 1"= 20°
Transmitter location
Conductor - Definite
- Possible

No MAP # Doc # 060680
Vol # 2

(45)

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REDFORT SYNDICATE

ANOMALY 14, REDFORT PROPERTY, YUKON

AIRBORNE FOLLOW-UP PROGRAMME

AUGUST 1968 | Scale 1"=200' | DWG. 5-194-14