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REPORT ON TURAIR
AIRBORNE ELECTROMAGNETIC-MAGNETIC SURVEY
LAKE SELINA PROSPECT
QUEENSTOWN, TASMANIA
ON BEHALF OF
THE MOUNT LYELL MINING & RAILWAY COMPANY LTD.

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PRIVATE AND CONFIDENTIAL

REPORT ON TURAIR
AIRBORNE ELECTROMAGNETIC-MAGNETIC SURVEY
LAKE SELINA PROSPECT
QUEENSTOWN, TASMANIA
ON BEHALF OF
THE MOUNT LYELL MINING & RAILWAY COMPANY LTD.

by

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PERTH, WESTERN AUSTRALIA

JUNE, 1973.
Job No. T.1031A

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PLATES

[illegible] PTY. LTD.

GEOPHYSICAL CONSULTANTS AND CONTRACTORS

1031 Wellington Street, West Perth. W.A. 6005

SUMMARY

With the Turair airborne electromagnetic-magnetic method, about 15 line miles of geophysical traverses were flown at the Lake Selina Prospect, near Queenstown.

The anomalous EM responses have been analysed, where possible, for depth and conductivity-thickness values, as the amplitudes of these distortions are extremely weak and often near or within the noise level of the system.

The conductors that are formed by the anomalies, are graded by their general characteristics, and show in some cases a relationship with ground geophysical data. A detailed evaluation of the Turair conductors with all the available geophysical and geological information is warranted, and pending a favourable relationship, detailed ground follow-up work is recommended.

REPORT ON TURAIR AIRBORNE ELECTROMAGNETIC-MAGNETIC SURVEY LAKE SELINA PROSPECT QUEENSTOWN, TASMANIA ON BEHALF OF THE MOUNT LYELL MINING & RAILWAY COMPANY LTD.

INTRODUCTION

An Orientation Turair airborne electromagnetic-magnetic survey was carried out by Seigel Associates Australasia Pty. Ltd. on February 27, 1973 at the Lake Selina Prospect, near Queenstown, Tasmania on behalf of The Mount Lyell Mining & Railway Company Ltd.

The purpose of the present airborne geophysical survey was to detect and locate any sub-surface conducting zones which may be indicative of sulphide mineralization. In addition the magnetic and electromagnetic data can aid the interpretation of the geology, and can be especially useful in covered areas.

The present survey area is approximately 12 miles north of Queenstown. 15 line miles were flown, being made up of 12 east-west lines and 4 north-south lines. The mean terrain clearance of the EM bird (receiver coils) was a nominal 200 ft. The interline spacing for the east-west lines was 800 ft.

Measurements of both the electromagnetic and magnetic fields were made and recorded, utilizing a Scintrex Turair-II unit at 400 Hz and a Scintrex MAP-2 nuclear resonance total intensity magnetometer. This equipment, together with all necessary ancillary equipment was installed in a Bell 206A Jet Ranger helicopter.

The reader is referred to Appendix I for the equipment used and for Appendix 2 for a general discussion of the Turair method.

GEOLOGY AND GEOPHYSICAL CONSIDERATIONS

A limited amount of geological information is available. Drilling has shown copper mineralization about the Cambrian volcanic-Ordovician conglomerate contact, but it has proved difficult to find extensions. From drill core logging it has been found that high conductivity tends to be associated with copper mineralization. Pyrite in the area is non-conducting even though it has a content of up to 25%. Both rock types are resistive, particularly the conglomerate.

In summary, the primary target mineralization for the present survey system is copper mineralization that forms with sulphide mineralization, an electrical conductor.

Other potential conductors which may give rise to electromagnetic anomalies are interconnected graphite, mineralization water saturated fault or shear zones. The conductors can, however, often be separated from massive sulphide conductors on the basis of their EM response.

PRESENTATION OF DATA

The original data records are presented in a binder, the data being recorded on a 6 channel, heat sensitive strip chart recorder and operated at a speed of 10 cm per minute. The chart is 38 cm wide with each channel being 5 cm wide. The parameters recorded and their details are as follows:

Altimeter: The altitude of the helicopter above the ground is recorded in an analog form, where approximately 1 cm = 100 ft. The E.M. bird is 100 ft. below the helicopter. Calibration records of the altimeter are presented in the binder.

Amplitude: The amplitude of the signal output from the preamplifiers is recorded in analog form. It shows the automatic switchings that occur to keep the signal within the necessary amplitude range for the equipment operation.

Electromagnetics: The sensitivity of the Turair records are as follows:

Field strength ratio (FSR) 1 cm = 0.5%

Phase difference 1 cm = 0.25 degrees.

Magnetometer: The magnetic data is recorded on two channels, a detailed channel with full scale deflection (FSD) of 100 gammas, and a second channel with FSD of 1000 gammas.

The fiducial marks are recorded on the event markers, thn intervals being 1.6 seconds.

The survey flight lines and points recovered are shown on the 1 : 10,000 photographs, the points being recovered with the aid of the on-board tracking camera. Plate 1 presents the overlay plan of the 1 : 10,000 photomosaic plan and shows the flight lines.

Plate 1 shows the Turair anomalies while Plate 2 presents the aeromagnetic contour plan.

INTERPRETATION

The electromagnetic records are interpreted to determine the presence of conducting bodies and to obtain some information relating to their character. The intervalometer time marks are synchronized with the positioning camera film strip and thereby permit the relating of the conductors with approximate ground locations. The terrain clearance is obtained from the altimeter data.

Normally, a plan is prepared, either using a subdued photomosaic or an overlay from a mosaic or topographic plan as base. The flight path of each survey line is obtained by means of "tie points", which are features on the mosaic or topographic plan, identified on the positioning camera film. The flight path is interpolated between these tie points.

Where field distortion occurs the curves indicate the location and the depth of the main current flow. The "current axis" is well defined when the current is concentrated, for instance, in thin, steeply dipping conductors. In wide, banded conductors, or in horizontal conductors, the current is usually more dispersed and the anomalies yield less positive information.

(a) Peak Location

The peak location of the amplitude ratio using the horizontal coplanar coils is shown on the plan by a circle in the appropriate location. In the case of broad conductors or closely spaced multiple conductor zones there may be more than one peak, in which event all major peaks are shown. A conductor which is likely man-made is indicated by an X rather than by a circle.

As a rule the current axis is located right below the maximum field strength ratio deflection or the maximum phase anomaly. The depth under the traverse is indicated by the shape of the anomaly.

(b) Depth and Conductor Width

The "Half width", i.e. the distance between the points of half the maximum response amplitude is, for simple line current sources, approximately equal to the depth of the source under the detector. Flat-lying conductors characteristically give rise to very large half widths, combined with rather irregular curve shapes. Here the half width may reflect the conductor width rather than the depth and the latter can usually not be determined. In cases where the conductivity zone is interpreted to have indicated on the plan by an open bar symbol along the flight line. Well defined peaks within this zone should be marked, and if possible interpreted as individual anomalies. The subsurface depth of the current axis (subtract detector altitude) is marked below the peak location circle.

(c) Conductor Grading

Field strength ratio and phase difference anomaly amplitudes are dependent on the overall geometry as well as on target size and σt value. Their primary significance is in the degree of certainty they lend to detectability and quantitative interpretation. For the purpose of amplitude grading three categories are used: Category 1, fully shaded, greater than 100 mhos; Category 2, half shaded, between 10 and 100 mhos; and Category 3, unshaded, less than 10 mhos. (See Table II and legend of Plate 1).

(d) Conductivity-Thickness Factor

The field strength ratios and phase differences provide a measure of the conductivity of the conducting bodies, i.e. good conductors are characterized by field strength distortion combined with relatively little phase shifting, whereas poor conductors affect the phase rather than the strength of the resultant field.

For an accurate grading the conductivity-thickness factor (σt value) of individual conductors can be derived from the calculated in-phase and out-of-phase components, taking into consideration the exciting frequency and the strike length of conductor. The σt value is then marked below the peak location circle, and next to the depth.

Large, highly conducting bodies such as massive sulphides or graphite and seawater, etc., generally have high σt values. Moderate conductors will have σt values between 10 and 100 mhos. Poorly conducting bodies (e.g. most overburden and some sulphide and graphitic zones) will have σt values of less than 10 mhos. In areas where there is a clear differentiation in conductivity between the targets of potential economic interest and other possible conductors, the σt values may form the main basis for discrimination. When the conductivity ranges of economic and non-economic overlap, the σt value cannot, of course, be rigidly relied upon.

(e) <u>Current Pattern</u>

To obtain the projection of the current pattern, the anomalies are connected between lines, using depth σt values and other characteristics of the curves as criteria. The strike of the formation, if known, is also taken into consideration.

(f) Magnetic Correlation

With magnetic data available, any correlating magnetic expression is noted for the pertinent conductor peak. A conductor peak with direct magnetic correlation is indicated by a double concentric circle.

Location of a conductor on the flank of a magnetic anomaly is indicated by means of one half of a concentric circle on the side of the magnetic high.

The significance of direct or flank correlation depends on the search problem. In the former case the magnetic and conductive properties may be coincident or belong to two narrow adjoining zones. In the latter case the conductor may be located at the contact of a wider magnetic formation.

DISCUSSION OF RESULTS

The records are characterized by an extremely high signal amplitude, which is for most parts just off scale. This is mainly due to the loop being small and the ground being highly resistive. This has produced a high and uniform vertical field which tends to saturate the signal. Possibly if the current was lowered, a more reasonable signal level would have been obtained but the motor generator was on its minimum setting for power output.

With the approaching bad weather it was decided to complete the area, rather than experiment with a larger loop or extra loads.

In general, apart from the beginning and end of lines where saturation occurs over or near the loop's wire, the FSR and phase difference records are apparently unaffected by the high signal. The traces are uniform, almost linear, implying a high resistivity region. There are some extremely weak distortions but they are usually about or less than 0.1 percent and 0.1 degrees, which is usually taken as the noise level of the system.

In view of the low noise level of the traces, the lack of other anomalies and the interest of the area, these extremely weak distortions are considered.

By considering amplitudes, definition, depth, correlation with adjacent lines and conductivity-thicknesses it is possible to evaluate these distortions.

The magnetics do not appear to be directly related to the anomalies, and little reference is made to them. It is understood that no magnetic interpretation is required.

A total of about 27 anomalous electromagnetic responses have been interpreted and presented on Plate 1.

The conductors are discussed below:

Conductor A is formed by four extremely weak FSR distortions (0.03 percent) giving it a length of 1,000 ft. Their depth is about 100 ft. and the FSR response implies a high conductivity-thickness. The anomalous response is reversed, implying a possible shallow westward dip. The conductor is over the conglomerate. Being very weak and over the conglomerate it is of minor interest. It is also near a minor magnetic contact.

Conductor B is formed by 10 weak phase anomalies (0.03 - 0.08 degrees) and has a length of 3,000 ft. The depth averages about 300 ft. and the phase response implies a very low conductivity-thickness. The responses are possibly reversed, but being in the centre of the loop, it has little significance. The conductor which is over the swamp and conglomerate suggests a shear or fault zone by its phase response. Ground EM indicates a conductor axis near conductor B. Of little interest.

Conductor C is defined by four phase anomalies (0.03 - 0.08 percent). The reverse response implies a possible shallow eastward dip. The depth is about 250 ft. and conductivity thickness is extremely low. It is over the volcanics and is near ground conductors and IP anomalies. Its length is 1,000 ft. Of secondary interest.

<u>Conductor D</u> is defined by 2 very weak FSR anomalies (0.04 percent on lines 144E and 136W) and one phase anomaly on 128E. The FSR anomalies have depths of about 100 ft. and imply a high conductivity-thickness. Their reversed response indicates a possible shallow westward dip. It is on the western contact of a magnetic high. The length is 1000 ft. Of secondary interest.

<u>Conductor E</u> is defined by two very weak phase anomalies about the conglomerate-swamp boundary. Their depth is about 200 ft. and a westward dip is inferred.
Of little interest.

<u>Conductor F</u> is formed by two extremely weak phase distortions, implying a possible westward dip.
Of little interest.

<u>Conductor G</u> is an isolated very weak phase response which does not relate to adjacent lines. Of no interest.

<u>Conductor H</u> is a reversed FSR response of 0.10 percent, that has a depth of 400 ft. and implies a high conductivity and a westward dip. It is on line with the phase conductors E and F and implies a mineralized zone on a fault or shear. Unfortunately it does not repeat, or only minutely, on overlaying lines. However, it remains an interesting conductor. Of secondary interest.

CONCLUSIONS AND RECOMMENDATIONS

A total of 15 line miles were surveyed at the Lake Selina Prospect. In general the Turair traces are remarkably free of noise, with the anomalous responses being about 0.1% or 0.1 degree or less. About 27 anomalous electromagnetic responses have been analysed and interpreted where possible, for depth, conductivity-thickness and magnetic correlation.

The depths are occasionally quite variable, but this is mainly due to the weakness and error in the anomalous half-widths, and to a lesser extent, the variable helicopter speed. The conductivity-thicknesses could not be determined accurately. Normally if the signal to noise ratio is greater than 2, a more accurate value can be determined.

Conductor D is the most promising conductor, and to a lesser extent, conductors A and H, having high conductivity. Conductor D is over the volcanics and near an IP zone. Conductor H is probably on a shear or fault with poor conductors E and F.

Conductor B possibly relates to the fault contact between the conglomerates and volcanics under the swamp. Conductor C relates to IP and EM axes but is a poor conductor, implying a disseminated body.

On the more negative aspects, the high amplitude signals has probably seriously affected the sensitivity of the method, especially as most of the anomalies occur with weak signal locations, but weak signals are expected over conductive areas. Possibly the general distortions interpreted as Conductors B, E, G and H could relate to a horizontal current sheet over the swamp, but the conductors give a more consistent and meaningful interpretation.

In summary, the results show very weak responses which nevertheless enable a significant and meaningful interpretation to be obtained.

As an initial follow-up procedure, all available geological, geophysical and geochemical information should be used to correlate and evaluate these conductors. A favourable correlation could significantly upgrade a conductor.

The follow-up procedures which are usually given for most Turair surveys are listed below:

1. Comprehensive geological evaluation of the electromagnetic anomaly environment, perhaps including geochemical sampling.
2. All mainly FSR anomalies to be defined by ground electromagnetics.

a) For shallow sources (less than 100 ft.) horizontal or vertical loop methods can be applied.
b) For deeper sources, the Turam technique should be used.

3. All mainly phase anomalies should be defined on the ground by induced polarization.

4. Any drilling thought warranted, should be based on ground geophysics. No drill hole should ever be spotted on the basis of the airborne data alone.

We will be pleased to discuss these results at any time especially in the light of any detailed geological information.

for SEIGEL ASSOCIATES AUSTRALASIA PTY. LTD.

J.G. Linford, B.Sc.(Hons), Ph.D.
Chief Geophysicist.

PERTH, WESTERN AUSTRALIA. JUNE, 1973.

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GEOPHYSICAL CONSULTANTS AND CONTRACTORS

APPENDIX I

LIST OF TURAIR EQUIPMENT

A. AIRBORNE EQUIPMENT

Description & Scintrex Model	Wt. Lbs.	Brief Specifications
Turair Console TAR-II	15	POWER: 20 to 30 V.D.C., 400 mA. INPUT: Preamplified 400 or 200 Hz sine wave from bird. OUTPUT: A. Signal amplitude, meter display and Recorder output. B. Amplitude ratio in percent, meter display and recorder output. C. Phase difference in degrees, meter display and recorder output.
Turair Bird Cable Assembly TAR-II	125	POWER: ± 15 V.D.C. supplied by Turair Console through tow cable - 2 preamps. INPUT: Induced EMF from two horizontal coplanar coils, 1µV to 1mV., sine wave. GAIN OF PREAMPS: AV = 1000 OUTPUT: Sine wave to shielded conductors in 100 ft. two cable.
Magnetometer Console MAP-2	12	POWER: 24 to 30 V.D.C., 3.2A Max. INPUT: Precession signal from sensor coil. OUTPUT: Total magnetic field intensity in three forms. (1) Digital display, 5 figures. (2) Digital binary coded decimal 5 decimal places. (3) Analog, 5 V. full scale. Choice of 1000γ full scale or 100γ full scale. SAMPLING RATE: Once per second. ACCURACY & SENSITIVITY: ± 1 gamma. optimum

Magnetometer Sensor 771 021	18	POWER: 3.0A energizing pulse applied to double coil for 660 msec. OUTPUT: Precession frequency from kerosens atoms within coils.
Positioning Camera VINTEN MK III (12v)	13	INPUT: 12 V.D.C. pulses from intervalometer. FUNCTION: Camera shutter and film advance actuated once every 1 to 4 sec. to take an aircraft positioning photo.
Turair Recorder MFE 6 Channel	39	POWER: 115 VAC 60 Hz 250 VA INPUT: Analog voltage representing 1) Signal amplitude 2) Amplitude ratio 3) Phase angle 4) Altitude above ground 5) Magnetometer 100 γ FS and 6) 1000 γ FS and fiducial marks OUTPUT: Excepting fiducials all information recorded in analog form
Intervalometer EIA-5	2	POWER: 24V DC FUNCTION: Provide DC pulse to operate positioning camera at intervals variable from 1 sec. to 4 sec. Simultaneously provides voltage pulses to operate fiducial counters and fiducial marks on recorder event markers.
Inverter Flite-tronics PC-16	16	INPUT: 28 V.D.C., 10 to 14 amps. OUTPUT: 115 V.A.C., 250 VA FUNCTION: Provides power source for recorder.

Radar Altimeter In-Flight Devices 2 GAR or BONZER VME	POWER:	9 to 30 V.D.C., 1.0 amp.
	OUTPUT:	Direct readout of altitude above ground level in the range 80 ft. to 3000 ft. Also provides warning if aircraft drops below a pre-set height-above-ground.
	BONZER POWER:	12 or 28 volts DC 0.5 amp Meter readout 80-1000 ft.
Helicopter Intercom Set 2	POWER:	24v DC.
	FUNCTION:	To provide headset earphone and mike communication between pilot, navigator and operator.

NOTES:

All instrumentation is mounted on a rack bolted in place on the Bell 206A right hand rear seat. All external equipment (tow cables and birds) is attached to the helicopter by means of the cargo hook only.

B. GROUND EQUIPMENT

10 KVA Motor Generator	700	FUNCTION: To provide 400 Hz ± 10 Hz stable, sine wave current into a ground loop of the order of two miles square 10 KVA alternator used is driven by a mechanically-governed 1600 cc Volkswagen engine.
Matching Transformer	60	Matches the resistance of the ground loop to the output voltage of the 10 KVA motor generator to obtain the correct current. Primary 240V., 10 KVA. Secondary taps at 400V., 500V., 650V., 800V., 100V., 1500V.

C. TEST EQUIPMENT

Oscilloscope SONY 323	7	Calibrating Turair; Trouble shooting
Sine Wave Generator H-P 208 A	9	Calibrating Turair; Trouble shooting
Voltmeter H-P 427 A	4	Trouble Shooting
Decade Resistance	2	Trouble Shooting
Decade Capacitance	2	Trouble Shooting

APPENDIX 2

SURVEY EQUIPMENT AND PROCEDURES

SEMI-AIRBORNE ELECTROMAGNETIC SYSTEM - TURAIR-2

APPENDIX 2

SURVEY EQUIPMENT AND PROCEDURES

SEMI-AIRBORNE ELECTROMAGNETIC SYSTEM - TURAIR-2

In the application of electromagnetic prospecting methods, it has long been recognized that, other things being equal, much greater exploration depths can be attained with systems employing a fixed source than with systems where both source and receiver are moved in unison. This is an extremely important consideration in Australia where surface weathering may extend to considerable depth.

Most present-day airborne electromagnetic (AEM) systems are of the moving source type, and although such systems have tangible advantages over the ground versions, it appears difficult to increase their useful penetration substantially beyond their present range. Under very favourable conditions the better moving source AEM systems may reach exploration depths of as much as 300 ft. or in exceptional cases 370 ft. below the ground surface. This is sufficient for many search problems but in some areas the geologic and topographic conditions necessitate a much deeper penetration to conduct meaningful mineral surveys.

The foregoing considerations have led to the development of the Turair method for the purpose of deep electromagnetic exploration. The system, which can be described as a fixed source, semi-airborne, gradient measuring device, employs a large transmitting loop on the ground as a primary source. The horizontal gradients of amplitude and phase of the vertical magnetic field are measured from the air, along traverse lines across the source and perpendicular to the regional geological strike.

The Turair method, because of its semi-airborne character, is particularly suitable for the detailed, deep investigation of structures having geologically favourable characteristics or a magnetic expression suggesting favourable geology. Because of its potential depth of exploration, it can be employed in areas of deep sedimentary cover, deep weathering, or tall tree cover (tropical area), or in areas where shallower exploration has established the presence of ore deposits and a deeper search is desired. It is, because of its fixed source configuration, less affected by near-surface conduction and can be applied with a very low exciting frequency (e.g. 200 Hz or less). Finally, as a helicopter-borne system it can operate in mountainous topography. Terrain clearance has far less effect on the exploration depth of the Turair system than it has on moving source methods and it can penetrate deep talus cover and valley fillings.

Economic ore deposits may have strike lengths less than 600 ft. If we want to search for such targets, particularly at greater depths, line spacing should not be much greater and for the average survey a line spacing of one-eighth mile should be considered optimum.

EQUIPMENT

The Scintrex Turair-2 is a fixed source, semi-airborne electromagnetic system designed for helicopter operation.

The system embodies a fixed transmitter on the ground and a receiver carried in the helicopter. The size of the transmitting loop is guided by geological conditions and the character of the survey. A typical loop size is a 2 miles x 2 miles square - other shapes and sizes can be used. The loop is usually laid out from a truck or by helicopter. For airborne placement a special dispensing device is used which feeds out continuously, several miles of wire. The primary field of the present system is excited by means of a 15 Kw motor driven generator which supplies a current of 4-10 amperes into the transmitting loop. The system can operate at 200 or 400 Hz, the selected frequency depending on the geological conditions in the survey area.

The receiver system comprises 2 horizontal coplanar air-cored coils, rigidly mounted 7 feet apart in a "bird". This bird is towed approximately 100 feet below the helicopter by means of a cable which also carries the electrical signals from the bird. In Australia, measurements are normally taken inside the loop. In environments with more resistive surface layers, such as parts of Canada, measurements are also taken outside the loop, thus greatly increasing area that can be surveyed with one loop.

The quantities measured with this dual coil measuring electromagnetic system are the ratio of the field strength and the phase differences of the alternating magnetic field at the two coils. The changes in field strength ratio and phase difference are expressed in percent and degrees respectively, the noise level being less than 0.1 percent and 0.1 degrees. Both parameters are recorded in analogue form.

Flying towards or away from the loop the amplitude of the field detected at the coils changes gradually but considerably. An automatic switch connected to the signal detector amplifier changes so that the amplified output of the preamplifiers is within the signal strength limitations necessary for the equipment operation. These switching markers are sometimes evident on the recorder charts.

At one or more points during each flight, the scale sensitivities and zero levels are checked by means of calibration and zeroing signals respectively. The reference or zero level for each Turair electromagnetic trace is an arbitrary one, and is obtained empirically from the regional level of each section of a trace.

Since the gradients of the signals recorded within about 600 ft. to the loop sides are too strong, it is not possible to distinguish field changes due to conductors of geologic origin lying in these "blind zone" regions.

The field strength ratio and phase difference are recorded in such a way that flying "towards" the wire of loop's side system, a normal anomaly shows a positive sign (i.e. upward deflection), while flying "away" from the wire the sign is reversed. Reversed anomalies can also be the result of particular geometric situation, e.g. when the source is located on the hanging wall side of a flatly dipping conductor. Man-made disturbances including power lines, pipe lines, metal fences, railways, etc. may cause spurious anomalies. The former are recognizable as such when they appear as cyclic noise of irregular shape and phase relationship. Non-energized, grounded power lines (e.g. 3 phase systems) sometimes give rise to anomalies that are more difficult to identify. Such indications as well as those from pipe lines and metal fences, etc. are however, of short duration and can be distinguished from most geologic sources except for very narrow, near-surface conductors. In some instances, ground investigation may be necessary in order to resolve the ambiguity of possible sources. Although the airborne geophysical crew attempts to note visible man-made conductors of the above type, the ground moves by so rapidly at the low flight elevation employed that 100% recognition of such sources cannot always be expected from the air.

The normal terrain clearance of the bird is 100 - 200 ft. depending on the surface topography, tree cover, etc., with the helicopter 100 ft. above.

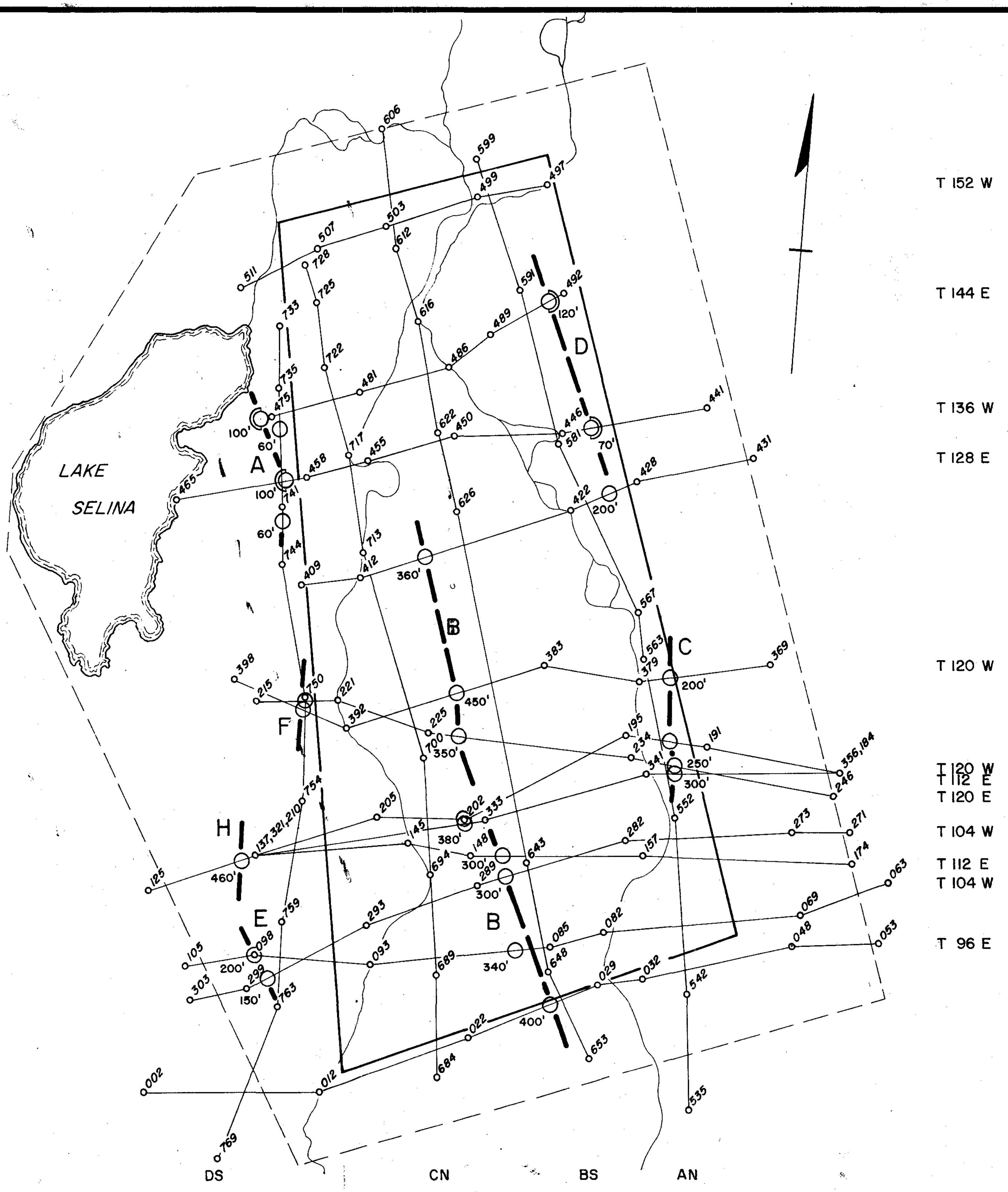
The established useful depth of the system for moderate-to-large conducting bodies of 1000 ft. in length, is at least 600 ft. sub-bird under conditions of low extraneous geologic noise, i.e. where the general level of conductivity of the overburden and rock types of the area is low.

TABLE II

Coding	Category	Signal/ Noise	$\Delta\%/\Delta^{o}$ Q	Remarks
——●——	1	>2	>1	Anomaly well defined, good conductivity.
- - - -◒- - - -	2	>2	<1	Anomaly well defined, low to medium conductivity.
·······○·······	3	<2		Anomaly poorly defined, weak. Quantitative determination not possible.
$○^{\sigma t}$	Conductivity (σ) x thickness (t) of target conductor.			Marked only if Q can be determined with some certainty and no appreciable overburden distortion is present.
$_{a}○$	Subsurface depth (a) to current concentration.			Marked on if a can be determined with sufficient certainty. a is maximum depth, current axis 10-15 m below upper edge of body.
□	Reversed current flow.			
	Magnetic Correlation			
◉ ⧈	Direct Coincidence			
◉)	Magnetic high off-set to right.			
(◉	Magnetic high off-set to left.			
⊗	Spurious Anomalies			Mainly man-made conductors.

LEGEND

T 15 W ——o1518——	*Flight line showing line number and numbered tie points*
○	*Category 3: σt < 10 MHOS, signal/noise < 2*
70'	*Depth to current axis in feet*
◌	*Near contact showing side of magnetic anomaly*
B ▬	*Conductor axis and code*
———	*Survey boundary*
— —	*Approximate position of loop*



THE MOUNT LYELL MINING & RAILWAY COMPANY LTD.

LAKE SELINA
TASMANIA

TURAIR AIRBORNE ELECTROMAGNETIC SURVEY
FLIGHT PATH AND ANOMALY PLAN

SURVEYED AND COMPILED BY
SEIGEL ASSOCIATES AUSTRALASIA PTY. LTD.
FEBRUARY 1973

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5 cm

Scale 1: 10,000

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JOB Nº T 1031A SHEET 1 OF 1 PLATE 1

THE MOUNT LYELL MINING & RAILWAY COMPANY LTD.

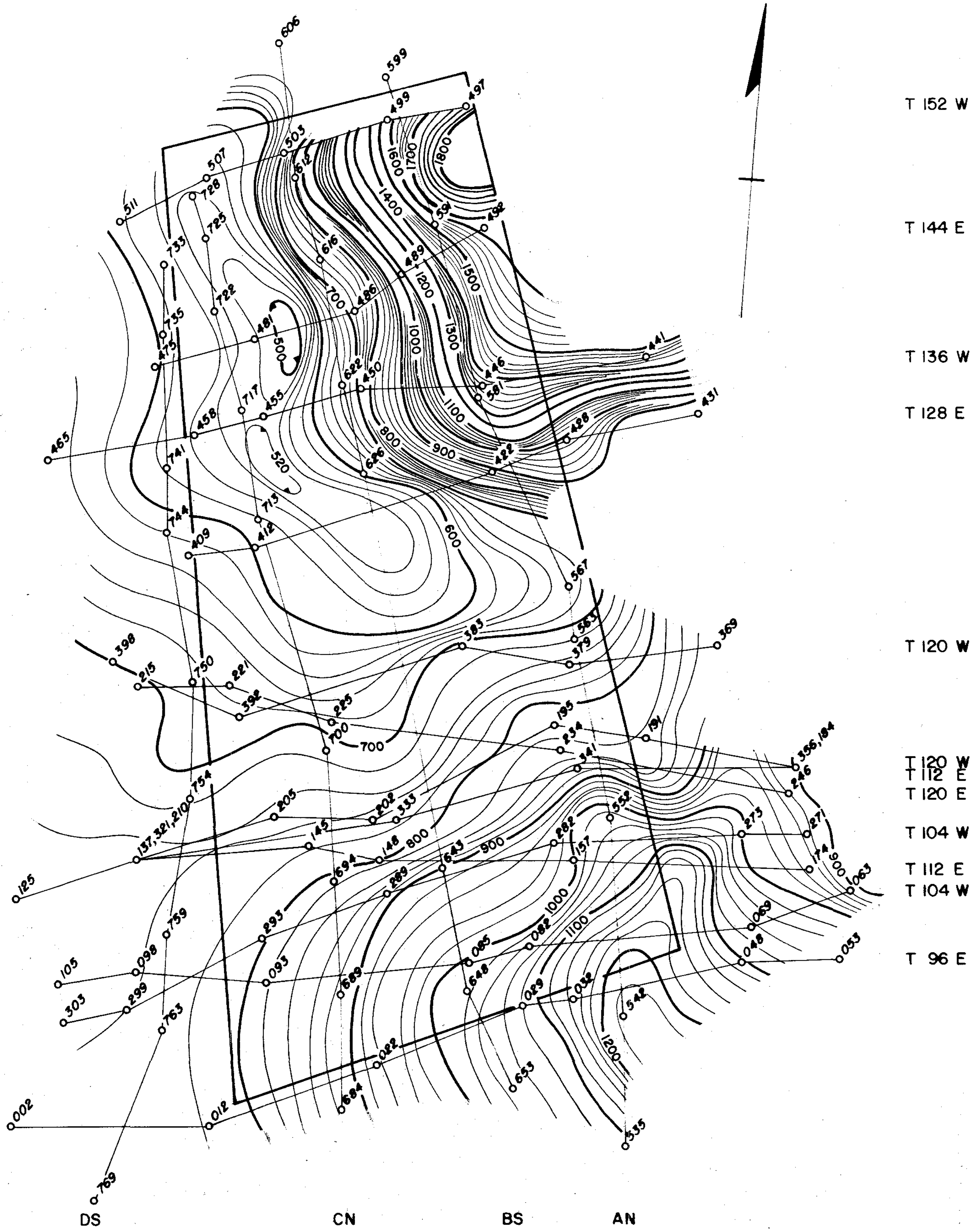
LAKE SELINA
TASMANIA

AEROMAGNETIC CONTOUR PLAN AND FLIGHT PATH RECOVERY PLAN

LEGEND

T 15 W ——o—— 1518 Flight line showing line number and numbered tie points

——900—— / ——1000—— Magnetic contours, 20 Gammas contour interval. Add 62,000 Gammas to values shown for total magnetic field intensity



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5 cm

Scale 1 : 10,000

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JOB Nº T 1031A | SHEET 1 OF 1 | PLATE 2