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GEOPEKO LIMITED

KING ISLAND

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DIAMOND DRILL HOLE REAPPRAISAL OF DOLPHIN OREBODY

by

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LIST OF FIGURES

(Presented as a separate compilation of plans and sections)

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INTRODUCTION

A diamond drill hole reappraisal of Dolphin Orebody was commenced early 1973 as part of a program of reassessment of the geological data and ore resource of the King Island Scheelite orebodies. This included the relogging of a substantial proportion of the core, construction of plans and sections, and calculations of the ore resources.

The tungsten mineralization at Grassy, King Island, consists of two orebodies, No. 1 (Open Cut) and Dolphin Orebody (extending seawards under the sea dump).

Dolphin Orebody is defined as all ore east of section 6 and outside the final design of the Open Cut, including the portion formerly referred to as the "eastern extension".

SUMMARY

A full diamond drill hole reappraisal of Dolphin Orebody commenced early in 1973.

Only five of the original 39 diamond drill holes drilled into the orebody were surveyed.

The orebody consists of three stratiform ore horizons, namely A,B, and C lens intersected and displaced by at least five known major faults and probably several smaller faults. The general stratigraphic sequence in descending order is Upper metavolcanics, Hangingwall biotite hornfels, B lens, Biotite hornfels, Pyroxene garnet hornfels (pgh), C lens skarn, Banded footwall beds, Biotite pyroxene hornfels, Lower Volcanics and Quartzites.

The present interpretation favours a fault controlled structure (ie. block faulted) rather than a SE plunging anticline previously invoked. The flattening of dips between Dolphin Orebody and the Open Cut can be explained by a broad flexuring of strata.

C lens andradite garnet skarn is the principal ore horizon with 88.4% of the calculated Probable resource; B lens represents 11.6% of the resource. The total ore resource within all lenses in Dolphin Orebody is 6,837,300 tonnes of Probable ore insitu with an average grade of 1.00% WO_3. In addition, approximately 1,290,000 tonnes is classified Possible ore.

Underground diamond drilling from cuddies spaced 40m apart can adequately define approximately 40% of the total C lens Probable ore resource. This will require approximately 3,400 metres of drilling at an estimated cost of $61,200.

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CONCLUSIONS

1. It is considered that further surface diamond drilling of Dolphin Orebody is unnecessary provided that the proposed underground ore blocking program is implemented in full.

2. **Previous drilling has broadly defined the orebody, however the spatial position of the ore intersections can be considered only approximate as most of the holes were unsurveyed.**

3. Faulting appears to be the major structural factor controlling the orebody. No

   (a) Three bordering faults (No. 3 Fault, Northern Fault and Grassy River Fault) and two other faults within the orebody (Wedge Fault and Central Fault) are known to exist.

   (b) The Wedge block is a fault block bound by the Northern and Wedge Faults.

   (c) The Central Fault offsets the orebody with a large dextral component (80 - 130m). ?

   (d) The Central Fault may represent the south - east strike extension of the No. 3 Fault from the Open Cut. ?

   (e) The eastern termination of the Central Fault is unknown.

   (f) It is highly probable that many minor faults exist in the Orebody with displacements less than 15 metres.

4. The Grassy River Fault zone (≃ 30 metres) may act as a major water channelway.

5. Many DDHs may be open to the ocean.

6. The incompetent ground in DDH 416 is most probably due to the presence of the Upper Metavolcanics rather than a fault ("Dividing Fault?"). If a fault exists it appears to offset the volcanics and not the mine series sequence.

7. **(a) The present interpretation favours a block faulted structure rather than the anticlinal structure previously invoked. The anticlinal interpretation generally fits most of the data.**

   inferring that the block faulted version fits all the data — Brilliant !!

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— you're dead right.

what about DDH 403.

(b) The block faulted structure is not considered the final and accurate interpretation but the one that best fits the present data considering the uncertainity in spatial position of the 34 unsurveyed diamond drill holes.

(c) The structure between No. 1 and Dolphin orebodies is uncertain due to lack of drill hole information: Faulting in this area appears to be highly probable.

(d) Some flexuring of strata exists east of section 1S with a flattening of dips from 35° SE to 15 - 20°S.

8. (a) The tungsten and molybdemum grade is higher in Dolphin Orebody than the Open Cut.

(b) The tungsten grade increases towards the Grassy River Fault and decreases in the south towards the Grassy Granite.

(c) Endoskarns can be expected at the contact between the sediments and the Grassy Granite. The potential tonnage is probably limited.

(d) The orebody is limited to the south and south-east by the Grassy Granite and to the east by the Grassy River Fault.

9. Mine Series rocks may be present as down faulted blocks within the "quartzite" unit north - east of the orebody.

10. (a) Diamond drilling can be successfully undertaken from the proposed 1:7 Decline to define practically all of the ore above the -150m RL.

(b) Further drilling at lower levels will be required to define the ore below the -150m RL. (approx. 60% of resource).

(c) It is considered that good correlation between adjacent intersections can be maintained over distances of 30 - 40m. This is supported by a statistical study of the assay data.

RECOMMENDATIONS

1. No further surface diamond drilling of Dolphin Orebody be undertaken.

2. The proposed underground oreblocking program be implemented in full.

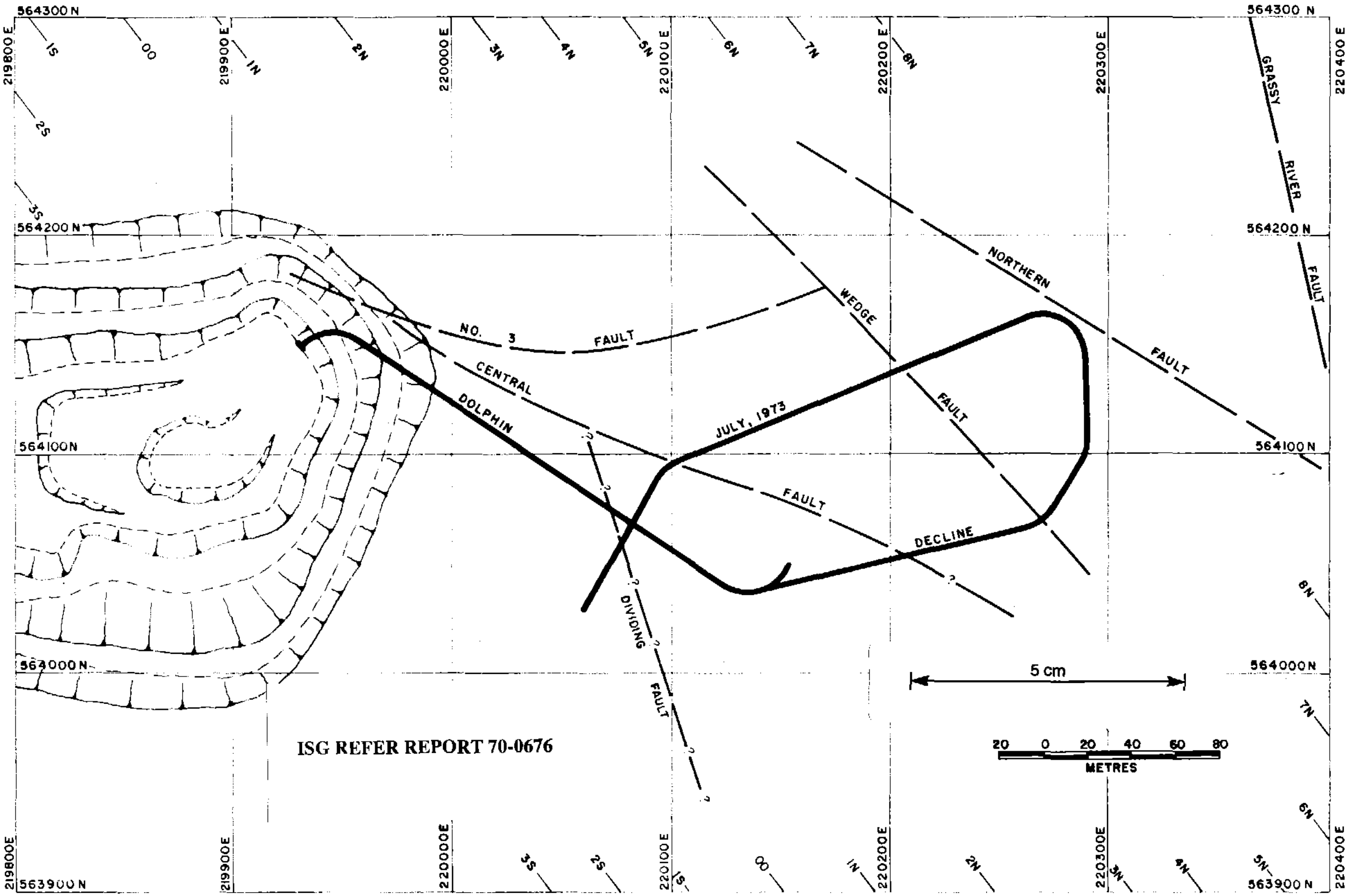
3. That diamond drilling be 'on section' using the I.S.G. system.

4. Drilling cuddies be initially spaced 40 metres apart (plan projection) and in some areas, as determined by drilling, the cuddies be 20 metres apart.

5. Two DDH's be drilled in the 'quartzite' area to the north of the Northern Fault to determine whether any downfaulted blocks of mine series rocks are present.

6. Future ore resource - reserve calculations be calculated using both manual and computer methods.

ACTION SHEET



ISG REFER REPORT 70-0676

Dolphin Area Showing Fault Relationship

PREVIOUS WORK

In late 1969, Geopeko Limited assumed control of the geological activities of the former King Island Scheelite (1947) Limited. By this time 39 diamond drill holes had been drilled into the Dolphin Orebody area. Of these, 14 were vertical holes and the remainder inclined holes, bearing between 295^{o} and 350^{o} magnetic with the majority bearing 315^{o} (Table 1). None of the 39 holes were surveyed.

Early in 1970, five of the 39 holes were effectively surveyed using a Tropari and on the basis of the deviation of these holes towards the west, an approximation method was devised whereby unsurveyed holes were replotted as a function of depth, bearing and inclination, (Kitto, March 1970). As no information was available on the dip of the holes, all were assumed to lift one degree/100 feet hole depth. To date, hole collapse and surface fill have prevented any attempt to survey the remaining 34 drill holes. None of these holes - as far as is known - have been cemented and hence may be open to the ocean.

Sampling and assaying of all unsplit core which showed scheelite under U.V. light also commenced early in 1970. A total of 1,223 feet (372.8 m.) was sampled, yielding 324 feet (98.8 m.) of additional ore (Kinnane, July 1970). Ore outlines altered considerably. C lens ore intersections increased by up to 30 feet (9.1 m.) while B lens remained virtually unchanged.

Prior to October 1968, when the new X.R.F. machine came into operation, all samples were assayed by the colorimetric method. In September 1972, all samples assayed by the colorimetric method were reassayed using X.R.F. The Wilcoxon matched - pairs signed - rank test (nonparametric statistical test on related samples) revealed that at the 0.05 significance level there was no difference in the average grade of the original and reassayed intersection.

Conversion to the Integrated Survey Grid System (I.S.G.) commenced in Feb. - Mar. - 1970.

Three separate proposals for underground oreblocking were put forward by Danielson (December 1971) and it was recommended that :-

(i) Exploration of C lens be undertaken by three development levels, (125m, -160m, and -210m) all driven within the C lens horizon (ie. Proposal 1), and

(ii) Underground oreblocking be carried out initially on 20m section spacings.

Mineralisation was initially considered in terms of two separate orebodies, No. 1 (Open Cut) and No. 2 (Dolphin Orebody). These orebodies were thought to be part of some original structure dislocated by No. 3 Fault (interpreted as a strike - slip fault) with No. 2 Orebody lying on the NE side of mine series rocks and mineralisation between the two orebodies.

The structure of Dolphin Orebody was interpreted by Kinnane (September 1970, January 1971) and Danielson (May 1971, September 1971, April 1972) as a anticline plunging SE at approximately 25-30^{o}.

GEOLOGY

The Dolphin Orebody consists of three stratiform ore bearing horizons broadly conformable within their host rocks.

STRATIGRAPHY The general stratigraphic sequence in decending order is as follows :-

(i) Upper Metavolcanics.
Strongly fractured and jointed, highly chloritic, often spotted and variable Fe/Mg rich rocks. This unit is of unknown thickness and uncomformably overlies the mine series sequence.

(ii) Hangingwall Biotite Hornfels.
A thick sequence (20-35m) of well jointed, finely crystalline, massive mica rich rocks. The lower 5-12m generally consists of sulphide lenses and bands (usually pyrrhotite with minor pyrite and chalcopyrite) rimmed by green pyroxene and actinolite. A lens, represented by a thin altered marble horison, occurs in places near the top of the unit.

(iii) B lens.
A zone of variable thickness (3-30m) consisting of grossularite garnet, garnet skarn, pyroxene hornfels and marbles. Pyroxene hornfels usually encloses the marbles and is also found within the marbles. Mineralization is patchy and associated with both pyroxene hornfels and garnet hornfels.

(iv) Biotite Hornfels.
A massive dark brown-grey rock unit containing varying amounts of actinolite hornfels.

(v) Pyroxene Garnet Hornfels (pgh).
A 2-15m thick, greenish-brown grey hornfels with scattered ovoids and fragments of calcite (up to 30cm in maximum dimension) often rimmed by brown, orange grossular garnet. The base of the pgh is often mineralized in patches and is not well defined. In a number of holes the top 2-10m of C lens garnet skarn may be massive mineralized pgh.

(vi) C lens Skarn.

This is the principal ore bearing horizon consisting of three rock types. The upper portion of C lens (0 - 20m) is a pale brown - black andradite garnet skarn of high ore grade with minor quartz and carbonate. The lower portion of C lens (5 - 20m) is generally a weakly banded andradite skarn and mineralized Banded Footwall Beds of lower grade than the upper portion. The upper and lower portions of C lens are occasionally separated by a barren or weakly mineralized marble marker at the eastern end of the Open Cut, or by barren biotite and pyroxene hornfels.

(vii) Banded Footwall Beds.

A banded (1 - 5m) sequence of white - grey marble-tremolite, brown - orange grossularite garnet, green pyroxene hornfels and brown biotite hornfels. Invariably, the grossularite garnets and hornfels surround the marble-tremolite, and these in turn are surrounded by pyroxene hornfels and then massive unaltered biotite hornfels. Variable scheelite is present.

(viii) Biotite Pyroxene Hornfels.

A thick sequence (20 - 30m) of thinly banded (0.5 - 1.0cm) biotite and actinolite-pyroxene hornfels.

(ix) Lower Volcanics.

Metavolcanic exhibiting remmant doleritic texture and containing olivine (forsterite rich), tremolite, phlogopite - biotite, chlorite, and magnetite. Relict vesicles (?) of epidote and carbonate occur in a number of holes.

(x) Quartzite.

An undefined thickness of grey quartzite underlying the mine series sequence.

(xi) Granite (-aplite).

Light pink - white, coarse - fine crystalline occasionally porphyritic granite.

FAULTING.

Faulting appears to be the major structural factor within the orebody. At least five major faults are known to displace and cut across the orebody (Table 2.)

TABLE 2.

FAULT	APPROX. THROW.	APPROX. HEAVE.	APPROX. STRIKE.	APPROX. DIP.
No. 3	>200 m	unknown	EW	70° S
Northern	>200 m	unknown	N 125° E	85° SW
*Wedge	20 - 30m	45m	N 140° E	60 - 65° W
*Central	15 - 45m	80 - 130m	N 110° E	50 - 75° N
Grassy River	unknown	unknown	N 170° E	unknown

* Reverse Faults.

The terminating fault in the north is the No. 3 Fault which brings the ore horizons into contact with quartzites. This fault was interpreted by Danielson (May, 1971) as an extension of the No. 3 Fault from the Open Cut. This was based upon its apparent change in strike from NW - SE to a more E - W direction as observed in the Open Cut.

The limiting faults in the north - east are the Northern Fault and the Grassy River Fault respectively. The latter probably represents a major structural feature influencing both faulting and folding in the Dolphin and No. 1 Orebodies. The position of the fault has been drawn from aerial photos and is considered to be approximate. A breccia zone of up to 30 metres in width, and lack of structural competency can be expected along the fault. This breccia zone may also act as a major water channelway.

The Wedge Fault intersects No. 3 Fault (since No. 3 Fault does not appear to cross Geological Drilling - Assay Section 6N) and together with the Northern Fault forms a "wedge" of mine series rocks within quartzites. This wedge has been defined by DDH's 414 and 415, and a series of surface percussion holes. The dip of the Wedge Fault appears to decrease from approximately 80°W to 60°W on moving north away from No. 3 Fault.

410 The additional geological information offered by DDH 416 indicated the presence of a major reverse ? fault, the Central Fault, with a relative movement of south block down. On section 3N the

fault exists between DDH's 184 and 199, while on section 2N the exact intersection is unknown, but must be present between DDH's 416 and 405. No significant displacement occurs on section 4N and 5N to suggest a fault. The throw of this Fault appears to increase as the Open Cut is approached. The major fault entending from the eastern end of the Open Cut (No. 3 Fault?) has a similar dip direction as the Central Fault and may represent the south - east strike extension of this fault. The fault virtually bisects the orebody with a large dextral component.

The reverse fault intersected in DDH 408 (Section 3N) indicates that considerable lateral movement (compare thickness of pgh on either side of fault) as well as vertical movement has taken place. Although the true strike and dip is unknown the fault may possibly strike in a NE - SW direction, this being the most likely direction indicated by existing data.

To the south the down-dip extension of the orebody is still open. However the limiting factor here is the intrusive Grassy Granite rather than faulting. The major stratigraphic units dip into the granite.

The existence of the possible "Dividing Fault" has been thrown into doubt since the Central Fault would account for the displacement of the ore lenses previously attributed to this fault. The apparent displacement in the Upper Metavolcanics on the -75m level plan may only reflect the uncomformable nature of the volcanics rather than the possible "Dividing Fault". If a fault exists it appears only to offset the volcanics and not the mine series sequence. The poor - incompetent ground encountered in DDH 416 between 135 - 141m may be due to the presence of the Upper Metavolcanics. Such incompetent around is very common near the contact between Upper Metavolcanics and Hangingwall Biotite Hornfels.

It is highly probable that many more faults exist within the orebody - particularly judging by the frequency of faulting in the Open Cut. However projection of ore outlines over distances of up to 50 metres has shown that the displacement of the mineralisation by these faults, if they exist will probably not exceed 15m.

STRUCTURE AND FOLDING.

Both Kinnane (1970,1971) and Danielson (1971,1972) described the structure of Dolphin Orebody as an anticline plunging SE at approximately 30°. This interpretation (portrayed as dashed lines on all I.S.G. sections and level plans) assumes that the 34 unsurveyed drill holes deviated 20° to the west from the collared bearing. (Most of the surveyed holes deviated by varying degrees to the west). However, the present interpretation (portrayed as solid lines and assuming that the unsurveyed holes have not deviated from the collared bearing of 323° I.S.G. favours a fault controlled structure ie. block faulting, rather than an anticlinal structure.

The anticlinal structure was based upon the N - S strike of the base of the pgh east of section 5N and the apparent increase in grade of ore in the south east (ie. the nose of the anticline).

Subsequently, drilling has revealed that this may not be the case. The N - S strike from the pgh east of section 5N is now doubtful since the stratigraphic units strike approximately N40-N50°E in the Wedge area (obtained from recent DDH's 412, 414, 415 and section 6N) and consequently must extend beyond No. 3 Fault. This would explain the large lateral displacement (from 40-60m) of both the pgh and B lens on the level plans.

The interpretation of a plunging anticline generally fits the data (with some exception) and the fold axis direction follows those of minor folds seen in the Open Cut. This interpretation may not yet be completely invalidated, however it is considered that the existing data favours a fault controlled structure. The fault controlled structure (block-faulted) is not considered to be the final and accurate interpretation but the one that best fits the present data. The possibility of the presence of a faulted anticline cannot be excluded.

The structure between No. 1 and Dolphin orebodies has not been fully elucidated due to lack of drill hole information. Absence of pyroxene garnet hornfels and severe disturbance of the hangingwall sediments below B lens in DDH 425, led Danielson (April, 1972) and Fee (April, 1972) to postulate the existance of a synclinal flexure centred around DDH 425. It is here suggested that the absence of pgh and severe disturbance in DDH 425 may not be due to synclinal flexuring but due to faulting (Central Fault?). This is supported by the very poor correlation between DDH's 424 and 425 (14m apart) as well as between DDH's 405, 424 and 425. The area around DDH's 405, 424 and 425 is a region where at least two major faults (No. 3 and Central Fault) and probably several smaller faults exist.

Level plans reveal that there is some broad flexuring of strata between sections 1S - 00 and 00 - 1N. The units west of section 00 strike approximately N40 - N50°E and dip approximately 35°SE. East of section 1N a distinct flattening of strata has occured with an approximate E - W strike and dip of 15 - 20°S. The large intersection of B lens on some level plans (eg. section lines 2N and 3N on the -125m level plans) is directly due to this flattening. East of the Wedge Fault the units steepen with a strike of N40 - N50°E and dip of 25 - 30°SE.

MINERALIZATION.

Three distinct stratiform ore bearing horizons occur within Dolphin Orebody, namely A, B and C lens.

Intrusion of the Grassy Granite has differentially contact metamorphosed and metasomatised the mine series sequence and converted the limestone horizons to tungsten bearing skarn.

A lens. This is the upper lens which has only been intersected in three holes (DDH's 187, 194 and 200). The lens is very thin and apparently extremely discontinuous. With a maximum intersection of 0.72% WO_3 over 3 metres and a probable tonnage of 1,500 tonnes (Tables 3 and 4) it is not likely to be economic.

B lens. This lens represents 11.6% of the present Probable resource (Tables 3 and 4) and occurs within a pyroxene andradite bearing skarn. Mineralization is rather patchy but best developed east of the Wedge Fault around section 6N and 7N where intersection of 10 metres and grades in excess of 1% WO_3 are not uncommon. The horizon thins considerably in places and often breaks up into 3 or 4 minor lenses before thinning out completely.

C lens. This is the principal ore horizon with 88.4% of the Probable resource, (Tables 3 and 4). It is generally between 30 - 40 metres in thickness.

The bulk of the scheelite occurs in the form of idio- to subidioblastic crystals disseminated throughout skarn rocks, pyroxene garnet hornfels and the upper part of the Banded Footwall Beds. Coarse scheelite is usually found in quartz (and calcite) filled tension gashes and joints.

Upper C lens (andradite garnet skarn) is invariably higher in grade than lower C lens (replaced banded footwall beds). Mineralization appears to be more continuous and replacement within the Footwall beds much greater, in Dolphin Orebody than the Open Cut.

A distinct increase in grade occurs in the east and south east as the Grassy River Fault is approached. To the south and south west both grades and width of ore intersections decrease (with corresponding increases in thickness of barren marbles) on approaching the Grassy Granite. This feature is also evident in the Open Cut.

Minor sulphides are common throughout the sequence, particularly in the skarn.

The distribution of molybdenum in skarns approximately follows that of tungsten such that where the tungsten grade is high the molybdenum is high. (Table 5). However, skarns close to No. 3 and the Northern Faults show an increase in molybdenum grade whereas no such trend is apparent in the tungsten grade.

The present grade of Mo mined from the Open Cut averages approximately 0.02% (D. Whent, pers. comm.). The average grade in the east of Dolphin Orebody (ie. around DDH's 400,402,403 and 409) is approximately 0.04% Mo. (arithmetic average of all assays in C lens).

Grades in excess of 0.06% Mo can be expected around DDH 409 and closer towards the Grassy River Fault. Grades of up to 0.05% Mo can be expected close to No. 3, the Northern and possibly the Central Fault.

Other sulphide minerals present include pyrite, pyrrhotite, chalcopyrite, bismuthinite and arsenopyrite. Minor sulphide lenses and bands (usually pyrrhotite with minor pyrite and chalcopyrite) are common in the lower 5 -12m of the Hangingwall biotite hornfels. Pyrite lenses and bands are common above B lens in the eastern end of the Open Cut.

ORE RESOURCE CALCULATION

GRADE CALCULATION. The minimum grade cut off applied was 0.25% WO_3. All areas of assay less than 0.25% were excluded from the calculation except where the lower grade portions formed part of the natural population within areas of above cut off grade.

The maximum grade cut off applied was 4.0% WO_3. All assays greater than 4.0% were reduced to 4.0%, so as to minimize the effect of extreme values, such as 12.0% WO_3, on the weighted arithmetic grade. These extreme values would otherwise inflate the grade.

The area of influence between drill holes, on any particular section, was taken as half the distance between the holes in question.

Grades for B and C lens were calculated on a section by section, level by level basis (ie. 0 to -75m RL, -75 to -100m RL, -100 to -125m RL, -125 to -150m RL, -150 to -200m RL and below -200m RL). The grade of any particular block within an ore lens was calculated by weighting the area and grade on one section with that on the other. The total grade for each lens was obtained by weighting together the individual blocks.

The A lens grade was calculated as the arithmetic grade of the intersection.

TONNAGE CALCULATION. Tonnages were calculated as metric ton units on a section by section basis for each individual lens (eg. A,B and C) between the levels - 0 to -75m RL, -75 to -100m RL, -100 to -125m RL, -125 to -150m RL, -150 to 200m RL, and below -200m RL.

The truncated cone formula,

$$V = \frac{d}{3}\left(A_1 + A_2 + \sqrt{A_1 \times A_2}\right)$$

where A_1 = area on section 1

A_2 = area on section 2

d = perpendicular distance between section 1 and 2,

and V = volume

was used to calculate the volume.

The density factor used was 3.3 tonnes/cubic metre. This factor was revised in September 1970 from the 3.12 tonnes/cubic metre used prior to Sept. 1970 following a series of 40 specific gravity tests on ore samples (mineralised pyroxene garnet hornels, skarn and replaced banded footwall beds) from all three orebodies.

Small areas of waste within massive ore were not excluded in the tonnage and grade calculation.

CLASSIFICATION OF ORE RESOURCE

The terms "probable ore" and "possible ore" are used according to the definitions set out by the A.I.M.M. and Australian Mining Industry Council. (Report by committee on ore reserves, April, 1972).

"Probable ore (resource) cover extensions near at hand to proved ore where the conditions are such that ore will probably be found but where the extent and limiting conditions cannot be so precisely defined as for proved ore. Probable ore reserves may also include ore that has been cut by drill holes too widely spaced to assure continuity."

"Possible ore (resource) is that for which the relation of the land to adjacent ore bodies and the geologic structures warrant some presumption that ore will be found, but where the lack of exploration and development data precludes it being classed as probable."

These definitions are broader than the previously used "indicated ore reserve" and "inferred ore" (as defined by the United States Bureau of Mines and the United States Geological Survey - B.M.R. Circular No. 1) and are considered more appropriate considering the uncertainty in spatial positions of both the ore and unsurveyed diamond drill holes.

TABLE 3.

DOLPHIN OREBODY ORE RESOURCE - JULY, 1973

SUMMARY OF ORE RESOURCE

PROBABLE ORE

LENS	TONNES	MEAN GRADE % WO_3
A	1,500	0.62
B	792,100	1.12
C	6,043,700	0.98
TOTAL	6,837,300	1.00

POSSIBLE ORE

LENS	TONNES
B	176,000
C	1,117,300
TOTAL	1,293,300

TABLE 4

DOLPHIN OREBODY ORE RESOURCE - JULY, 1973

COMPARISON TABLE

LENS	APRIL, 1970		SEPTEMBER, 1970		SEPTEMBER, 1971		APRIL, 1972		*JULY, 1973	
	TONNES	GRADE	TONNES	GRADE	TONNES	GRADE	TONNES	GRADE	TONNES	GRADE
A			12,900	0.622	1,500	0.621	1,500	0.621	1,500	0.62
B			599,800	0.893	596,100	0.907	652,000	1.127	792,100	1.12
C			2,837,800	1.018	3,352,000	1.131	4,801,800	1.131	6,043,700	0.98
TOTAL	1,558,300	1.06	3,450,500	0.995	3,949,600	1.097	5,455,300	1.130	6,837,300	1.00

NOTE. Figures prior to April, 1972 have been converted from Long Ton Units to Metric Tons where necessary and corrected for the change in Specific Gravity.

*Includes all ore east of section 6 and outside the final design of the Open Cut.

DIAMOND DRILLING PROPOSALS

SURFACE DRILLING Two DDHs are proposed to test the possibility of down faulted blocks of mine series rocks within quartzites north of the Northern Fault.

The details of the proposed drilling are as follows :-

DDH 1	564150N) 220350E)	co-ords.
	Total depth	250-300m
DDH 2	564220N) 220330E)	co-ords.
	Total depth	250-300m

Total drilling estimated at :- 500 - 600m

Total cost estimated at:- $13,500 - $16,200
(if the cost of drilling is $27/metre).

DDH 1 should be drilled first, and on the subsequent results consideration should be given to the drilling of DDH 2. The depth of these holes may be considerably less depending upon whether quartzites are intersected or not.

UNDERGROUND OREBLOCKING Although many DDHs from the surface have been drilled over the Dolphin Orebody area, the lack of drill holes survey information has resulted in only very approximate positions for the ore bearing horizons. Therefore it is considered essential that a detailed underground oreblocking program be conducted to define the ore sufficiently for mining purposes.

Diamond drilling could successfully define C lens in its upper parts (above the -150m RL.) from cuddies cut in the proposed decline drive or from adjoining Level drives.

The geological cross sections (I.S.G.) presented show the designed layout of the drill holes. (Sheet No.'s 15 - 22).

It is considered that good correlation can be maintained if the distance between adjacent holes in a fan, on any particular section, is 30 - 40m.

It is proposed that drilling be carried out on 40 metre section spacings with the option to close up to 20 metres if more detail is required.

From a statistical point of view (P. Johnston, Computer division, Geopeko, pers. comm.) the best overall spacing would be 40m, with some areas requiring additional "fill-in" drilling.

The drill rig would have to be able to drill holes of up to 120m in length between the horizontal position and vertically down.

It is just possible for an E500 air powered machine using AQ equipment to manage this depth of hole, however, a slightly larger rig such as the E1500 would be an advantage. This rig could adequately handle 200m BQ drilling.

BQ core would be preferable to AQ. EX core would be unsuitable since the largest core size will give a more accurate grade determination.

The following cost estimates are based on current rates assuming the drilling is being contracted out and a E1500 machine is being used with B wireline equipment.

> Drilling from cuddies in the Decline spaced 40m apart (I.S.G. sections E - W) between 220000E and 220300E.
>
> 3,400 metres at $18.00/metre = $61,200
>
> This will define approximately 40% of the total C lens Probable ore resource.

The proposed drilling will define C lens north of 564000N except the northern portion of the Wedge Area. Further oreblocking will be required to cover this area and the lower levels of the orebody.

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DISCUSSION

The present geological interpretation assumes that all 34 unsurveyed diamond drill holes did not deviate from the collared bearing of 323° (I.S.G.). Previous interpretations assumed that the holes deviated 20° to the west. It is equally unlikely that all the holes have deviated to the west by this amount as it is that none have deviated.

As in previous interpretations some of the drill holes could not be correlated with adjacent holes and so were excluded from the general interpretation. At present two holes (DDH 203A on section 5N, and the lower half of DDH 403 on section 7N) cannot be correlated. These discrepances are approximately 10 - 15 metres and may be caused by minor faults or folds. DDH 183 intersected a normal C lens sequence but B lens was not present. The absence of B lens can be adequately explained by movement along the Central Fault which is interpreted to have been intersected by DDH 183.

Faulting will influence both the path of the decline and extraction of the ore. Rocks adjacent to and under the influence of the major faults can be expected to be incompetent. The stability of the rocks generally decrease as the Grassy River Fault and the Northern Fault are approached. As a rule, faults can be expected to become more numerous as the Grassy River Fault is approached.

Faulting is more frequent and complex at the eastern end of the Open Cut than the western end. This can possibly be attributed to the proximity of at least two major faults (No. 3 and Central Fault). Consequently the area around DDH's 424, 425 and 405 can be expected to be poor ground.

With the limited geological information available, it is difficult to determine which fault of a converging pair of faults intersects the other. This applies particularly to the Wedge Fault - Central Fault, the No. 3 Fault - Central Fault and the Northern Fault - Wedge Fault. No. 3 Fault may terminate against the Central Fault and similarly for the Wedge Fault.

Not a great deal is known about the orebody in each of its areas of termination. Faulting terminates mineralization in the north (No. 3 Fault) and to the north-east (the Wedge Fault and the Northern Fault forming a wedge of mine series rocks) but the exact position of these faults is not known. This applies particularly to the Northern Fault south east of the wedge area. In the east it is anticipated that the ore horizons will continue their present attitude and terminate against the Grassy River Fault and/or the Grassy Granite.

Potential for increased possible ore resource appears highest in the east and southeast. The grade of the ore distinctly increases as the Grassy River Fault is approached ie. along section 6N (Table 5).

TABLE 5

TUNGSTEN & MOLYBDENUM GRADES ALONG SECTION 6N

DDH	LENGTH OF INTERSECTION	% WO_3	% Mo	DISTANCE FROM GRASSY RIVER FAULT
192	37.4m	0.87%	0.04	370m
201	34.7m	0.62%	0.03	320m
400	57.0m	1.32%	0.02	145m
409	39.0m	1.75%	0.07	80m

This increase in grade may be due to the influence of the Grassy River Fault and/or the Grassy Granite. The former is favoured since barren marbles (DDHs 407 and 408) have been intersected close to the granite on the southern margin of the orebody. On the other hand the Grassy River Fault may be post? mineralization and both factors may not apply. Endoskarns can be expected at the contact between the Grassy Granite and sediments, particularly lime rich sediments. However the tonnage is probably limited.

To the south and south - west, the orebody is still open. However, both grades and ore intersections are decreasing with corresponding increases in thickness of barren marbles.

The geology along sections 1N and 2N is not well known. The poor correlation between drill holes along these sections is attributed to the large spacings between holes and wide spacings between section lines. Areas of ore on these sections, for purposes of tonnage and grade calculations are considered to be approximate. Underground oreblocking will help to clarify the situation.

GEOPEKO LTD.

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GEOLOGIST.

SUPERVISED .... M.C. ROGERS
SENIOR GEOLOGIST.

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APPENDIX

SUMMARY OF DIAMOND DRILL HOLE RESULTS

No.	DDH No.	I.S.G. COORDINATES		REDUCED LEVEL	BEARING (Magnetic)	INCLINATION	DEPTH	MINERALISATION			BOTTOMED IN GRANITE	SURVEYED	DATE DRILLED	REMARKS
		NORTHINGS	EASTINGS					A LENS	B LENS	C LENS				
1	165	564119.6	220084.5	+ 4.29		V	65.14		x				Aug. 1957	Terminated too early
2	168	564142.2	220124.2	+ 4.01	315	60	69.49						?	
3	169	564077.2	220199.6	+ 3.99	315	60	186.54		x	x			?	
4	173	564096.2	220118.5	+ 4.40	350	60	98.45		x				?	
5	176	564139.3	220161.0	+ 3.98	315	60	78.03		x				?	
6	177	564187.5	220124.5	+ 5.75		V	20.12						?	
7	178	564225.9	220181.2	+ 3.60	315	60	74.07		x				?	
8	179	564178.7	220209.0	+ 3.55	315	60	150.57		x	x			?	
9	180	564255.8	220233.1	+ 4.16	315	60	42.06						Jun. 1966	
10	181	564223.8	220247.0	+ 4.34		V	48.77						"	
11	183	564045.6	220178.5	+ 3.33	295	60	190.20			x			Aug. 1966	
12	184	564012.2	220226.4	+ 3.07	315	60	219.46			x			?	
13	185	564227.8	220210.9	+ 4.14	315	60	70.71						?	
14	186	564161.5	220180.9	+ 3.65	315	60	57.30						?	
15	187	564119.2	220213.8	+ 3.64	315	60	87.48	x	x				Dec. 1966	Terminated too early
16	188	564108.4	220180.4	+ 4.18	315	60	119.48		x				Jan. 1967	

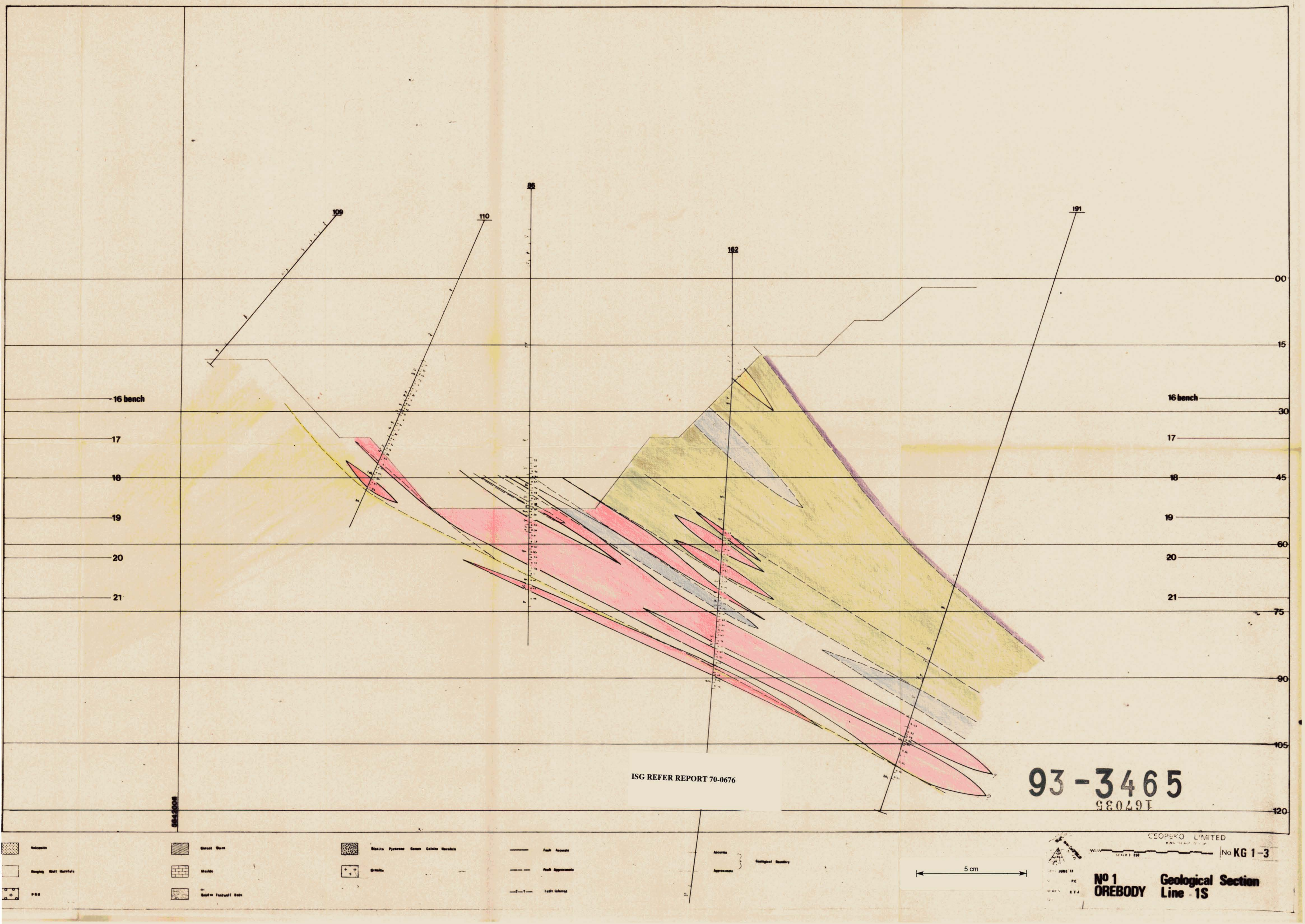
.../2

17	189	564103.4	220224.8	+ 3.33	315	75	158.04		x	x			Feb. 1967	
18	192	564166.0	220218.6	+ 3.90	315	75	159.72		x	x			Mar. 1967	
19	194	564095.7	220158.6	+ 4.16	315	60	148.13	x	x	x			Apr. 1967	
20	196	563992.2	220158.5	+14.74	315	60	229.51		x	x			May 1967	
21	197	564056.5	220187.6	+ 3.77	315	70	191.72			x			May 1967	
22	198	564053.8	220221.6	+ 4.41	315	70	171.60		x	x			May 1967	
23	199	564016.4	220218.4	+ 4.25	315	75	215.49		x	x			Jun. 1967	
24	200	564096.0	220231.5	+ 3.61		V	176.48	x	x	x			Jun. 1967	Poor recovery in upper part
25	201	564160.8	220223.9	+ 3.61		V	176.48		x	x			"	of C lens
26	202	564181.2	220245.2	+ 4.97		V	172.21		x	x			Aug. 1967	
27	203	564014.8	220285.7	+ 1.84	315	75	64.01						"	Abandoned
28	203A	564016.7	220285.6	+ 1.84	315	75	199.19			x			Sep. 1967	
29	208	564061.6	220215.2	+ 2.79	315	65	223.27		x	x		T	Nov. 1967	
30	209	564031.0	220238.9	+ 4.34	315	75	210.01		x	x		T	?	
31	210	564024.4	220284.1	+ 1.10		V	217.63			x		T	?	
32	211	564077.2	220172.6	+ 3.44	315	65	180.14		x	x		T	?	
33	212	564292.4	220313.7	+ 3.33		V	36.58						?	
34	215	564330.0	220360.5	+ ?		V	272.80					T	May 1968	Brecciated core. Near Grassy
35	232	564216.9	220098.8	+ 6.34		V	211.23						Nov. 1968	River Fault
36	235	564196.5	220082.9	+ 6.34		V	185.85						Nov. 1968	
37	258	564216.1	220222.7	+ 4.71		V	176.48						Feb. 1969	
38	259	564174.0	220287.8	+ 4.74		V	41.00						Feb. 1969	Abandoned
39	260	564209.3	220262.4	+ 4.97		V	77.04						Apr. 1969	Abandoned
40	400	564017.7	220331.3	+ 4.85		V	312.4		x	x	+	C	Nov. 1970	
41	401	563994.5	220294.8	+ 5.03			289.56			x	+	C	Mar. 1971	

42	402	564046.4	220348.0	+ 4.68		V	297.5		x	x	+	C	Mar. 1971	
43	403	564110.7	220320.5	+ 2.48		V	249.78		x	x		C	Oct. 1971	
44	404	563961.3	220200.1	+13.67		V	274.4		x	x		C	Jan. 1972	
45	405	564119.9	220082.8	+ 8.49		V	152.65		x	x		C	Nov. 1971	
46	406	563960.0	220100.0	+13.56		V	277.37		x	x	+	C	Oct. 1972	
47	407	563879.1	220199.1	+12.85		V	281.33		x	x	+	C	Sep. 1972	
48	408	563919.2	220279.8	+12.43		V	299.31		x	x	+	C	Jan. 1973	
49	409	563964.1	220361.8	+ 5.93		V	313.03			x	+	C	Feb. 1973	C lens hangingwall rock conditions poor
50	410	564255.1	220230.0	+ 4.66		V	46.33						Sep. 1972	Vent shaft test hole. Bad ground
51	411	564148.5	219946.3	-36.00	60°	22°30'	245.36			x		C	Dec. 1972	
52	412	564243.8	220144.7	+ 6.34		V	108.05		x	x		C	Dec. 1972	
53	413	564268.5	220101.5	+ 8.33		V	20.42						Dec. 1972	
54	414	564184.1	220131.4	+ 5.42	55	60	157.6		x	x			Feb. 1973	
55	415	564225.6	220106.1	+ 7.64	55	60	111.56			x		C	Feb. 1973	
56	416	564139.5	219938.8	-52.16	106	9°30'	295.50		x	x		C	Jun. 1973	
57	424	564133.8	220024.3	+ 5.25	315	72	75.59					C	Nov. 1971	
58	425	564121.4	220022.1	+ 5.29		V	147.02		x	x		C	Nov. 1971	

NOTES

Survey:
T = tropari
C = multishot camera



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Garnet Skarn
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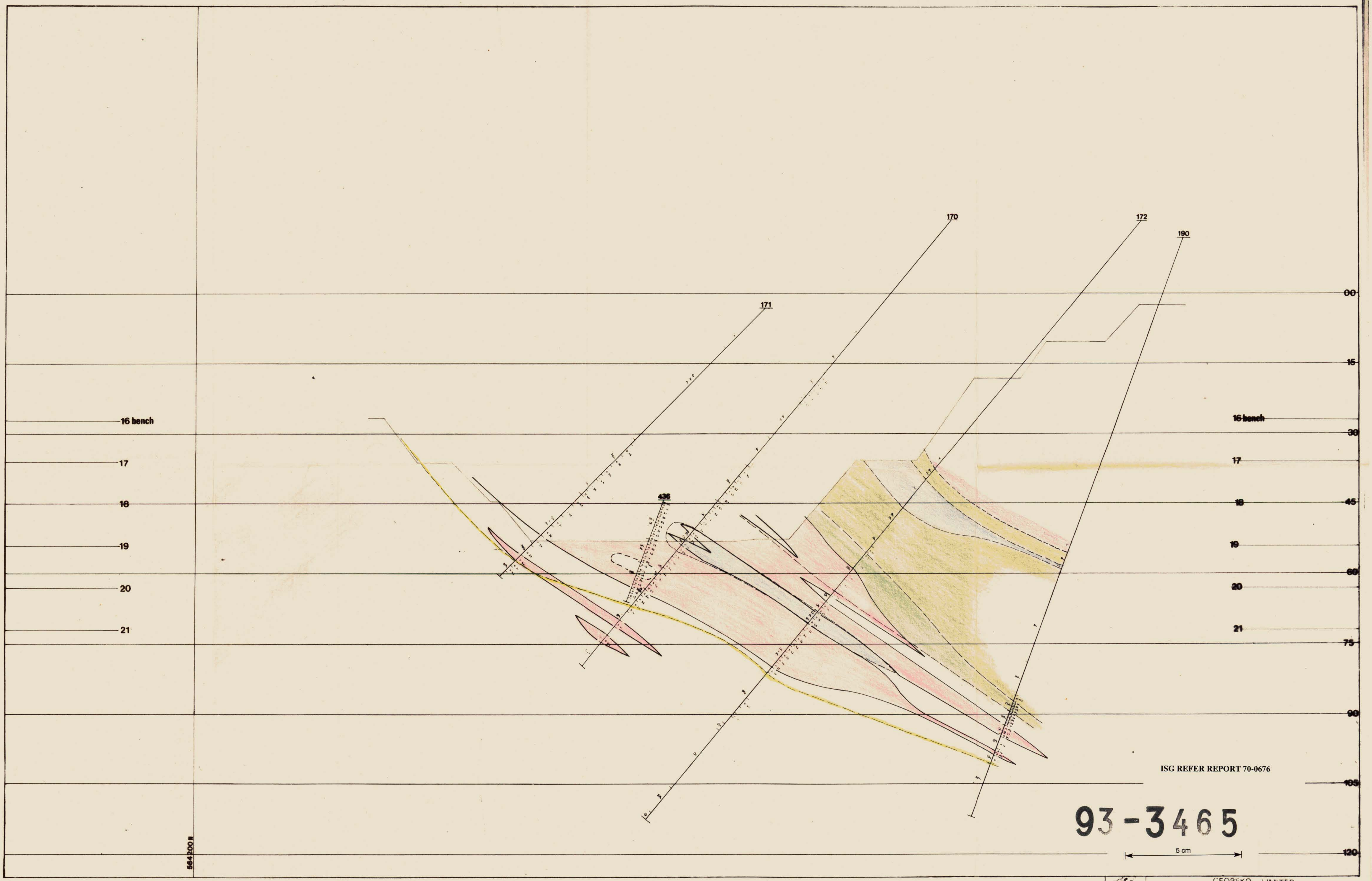

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Volcanics	Garnet Skarn	Biotite Pyroxene Garnet Calcite Hornfels
Hanging Wall Hornfels	Marble	Granite
PGH	Bladie Footwall Beds	

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Fault Approximate
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KING ISLAND GROUP

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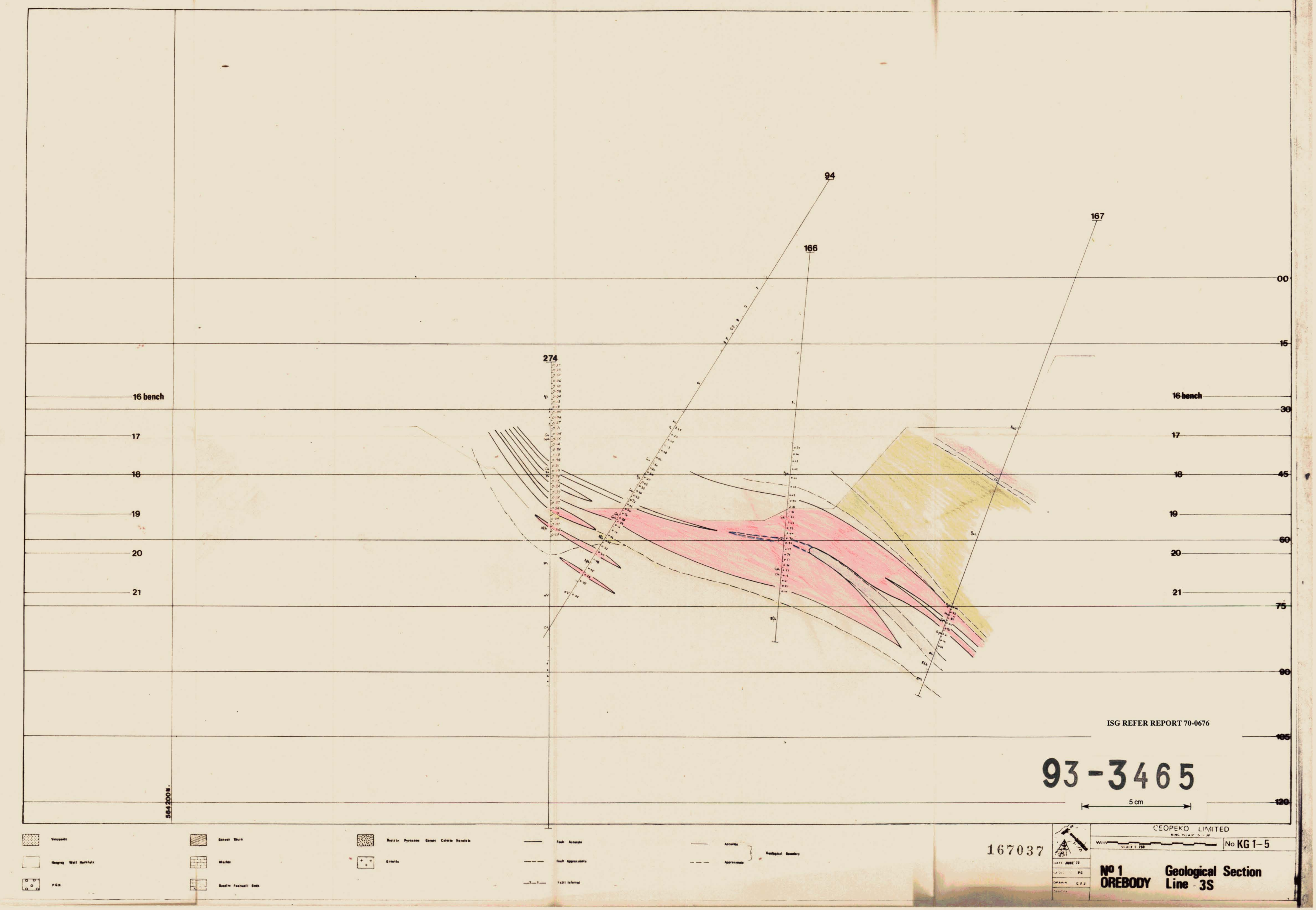
DRAWN CFJ

Nº 1 OREBODY

Geological Section Line - 2S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OREBODY
Geological Section
Line - 3S

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KING ISLAND

Ore Resource Table Dolphin Orebody - B and C Lens

(25-6-73)

RL	6–3S	3S–2S	2S–1S	1S–00	00–1N	1N–2N	2N–3N	3N–4N	4N–5N	5N–6N	6N–7N	7N–8N	8N–	TOTAL	CUMULATIVE TOTAL
00 RL to -75mRL					*9,000 2·82*	*53,600 1·70*	*73,400 0·99*	*30,300 1·04*	*41,200 1·49*	*55,700 0·88*	*52,200 1·33*	*30,200 1·84*	—	*345,600 1·32*	*345,600 1·32*
					—	—	—	—	—	—	—	—	—	—	—
	10,900 0·78	42,300 0·91	64,300 0·81	108,700 0·66	71,000 0·60	—	—	—	—	—	—	—	—	297,200 0·71	297,200 0·71
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
-75mRL to -100mRL	—	—	—	—	—	—	—	*18,600 0·92*	*36,900 0·99*	*30,800 0·55*	*38,000 1·15*	*26,600 1·78*	—	*150,900 1·07*	*496,500 1·24*
	—	—	—	—	—	—	—	—	—	—	—	—	*15,000*	*15,000*	*15,000*
	35,000 0·54	22,500 0·77	42,100 0·62	80,500 0·62	41,700 0·71	39,300 1·02	62,700 1·03	7,100 0·98	17,100 1·25	49,100 1·39	15,000 1·44	—	—	412,100 0·88	709,300 0·81
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
-100mRL to -125mRL	—	—	—	—	—	—	*2,200 — 1·26*	*10,600 0·86*	*8,100 0·63*	*25,400 0·36*	*36,300 0·72*	*26,100 1·01*	—	*108,700 0·72*	*605,200 1·15*
	—	—	—	—	—	—	—	—	—	—	—	—	*36,000*	*36,000*	*51,000*
	3,400 0·40		6,200 0·37	36,000 0·65	27,100 0·88	40,800 0·94	130,500 0·99	70,400 0·87	100,600 1·05	167,800 1·13	54,100 1·00	—	—	636,900 0·99	1,346,200 0·90
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
-125mRL to -150mRL	—	—	—	—	—	*600 — 0·39*	*4,600 — 0·33*	*4,000 0·30*	—	*19,300 1·10*	*34,500 0·96*	*26,600 0·94*	—	*89,600 0·92*	*694,800 1·12*
	—	—	—	—	—	—	—	—	—	—	—	—	*67,000*	*67,000*	*118,000*
	—	—	—	5,700 — 1·06	5,100 — 1·06	14,300 — 0·71	95,300 — 0·87	130,000 0·90	220,800 0·94	226,300 0·88	115,800 0·78	28,500 1·12	—	841,800 0·89	2,188,000 0·89
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
-150mRL to -200mRL	—	—	—	—	*1,400 0·44*	—	—	—	—	*29,500 1·47*	*39,100 1·03*	*27,300 0·94*	—	*97,300 1·13*	*792,100 1·12*
	—	—	—	—	—	—	—	—	—	—	—	—	*58,000*	*58,000*	*176,000*
	—	—	—	7,400 0·79	6,600 0·80	129,500 0·65	609,800 0·75	292,500 0·93	369,100 1·10	440,100 1·09	364,800 0·90	173,700 0·86	—	2,395,500 0·91	4,581,500 0·90
	—	—	—	—	—	6,800 —	7,900 —	4,000	18,000	7,000	—	—	357,000	400,700	400,700
below -200mRL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	*792,100 1·12*
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	*176,000*
	—	—	—	6,300 0·53	12,800 0·53	73,100 0·57	106,100 0·53	47,400 0·64	100,700 1·02	419,100 1·48	512,100 1·41	184,600 1·22	—	1,462,200 1·24	6,043,700 0·98
	—	—	—	—	1,000	29,300	34,300	19,000	45,000	59,000	95,000	63,000	371,000	716,600	1,117,300

B Lens Probable Ore Resource Tonnes at Grade % WO_3	*792,100*	*1·12*
B Lens Possible Ore Resource Tonnes	*176,000*	
C Lens Probable Ore Resource Tonnes at Grade % WO_3	6,043,700	0·98
C Lens Possible Ore Resource Tonnes	1,117,300	

DOLPHIN OREBODY SUMMARY

C LENS

PROBABLE ORE RESOURCE -- 6,043,700 TONNES at 0·98 ± 0·05% WO_3 (90%C.I.)

POSSIBLE ORE RESOURCE -- 1,117,300 TONNES

B LENS

PROBABLE ORE RESOURCE -- 792,100 TONNES at 1·12 ± 0·10% WO_3 (90% C.I.)

POSSIBLE ORE RESOURCE -- 176,000 TONNES

TOTAL PROBABLE ORE RESOURCE -- 6,835,800 TONNES at 1·00% WO_3

NOTE:

Method of grade calculation: modified polygonal method of weighted arithmetic means.
Method of tonnes calculation: truncated cone formula.

Dolphin orebody includes, ore east of section 6 and outside the final design of the open cut.

LEGEND:

current pit outline

final pit design

5 cm

SCALE: 1:1000
DATE: JUNE, 1973
COMPILED BY: M.J.D. / G.J.B.
DRAWN BY: R.F.
CHECKED BY: M.C.R.

93-3465

GEOPEKO LIMITED

KING ISLAND

Ore Resource Table Dolphin Orebody - B and C Lens

(25-6-73)

RL	6 – 3S	3S – 2S	2S – 1S	1S – 00	00 – 1N	1N – 2N	2N – 3N	3N – 4N	4N – 5N	5N – 6N	6N – 7N	7N – 8N	8N –	TOTAL	CUMULATIVE TOTAL	RL
00 RL					*9,000 2·82*	*53,600 1·70*	*73,400 0·99*	*30,300 1·04*	*41,200 1·49*	*55,700 0·88*	*52,200 1·33*	*30,200 1·84*	—	*345,600 1·32*	*345,600 1·32*	00 RL
					—	—	—	—	—	—	—	—	—	—	—	
	10,900 0·78	42,300 0·91	64,300 0·81	108,700 0·66	71,000 0·60	—	—	—	—	—	—	—	—	297,200 0·71	297,200 0·71	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
-75m RL	—	—	—	—	—	—	—	*18,600 0·92*	*36,900 0·99*	*30,800 0·55*	*38,000 1·15*	*26,600 1·78*	—	*150,900 1·07*	*496,500 1·24*	-75m RL
	—	—	—	—	—	—	—	—	—	—	—	—	*15,000*	*15,000*	*15,000*	
	35,000 0·54	22,500 0·77	42,100 0·62	80,500 0·62	41,700 0·71	39,300 1·02	62,700 1·03	7,100 0·98	17,100 1·25	49,100 1·39	15,000 1·44	—	—	412,100 0·88	709,300 0·81	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
-100m RL	—	—	—	—	—	—	*2,200 — 1·26*	*10,600 0·86*	*8,100 0·63*	*25,400 0·36*	*36,300 0·72*	*26,100 1·01*	—	*108,700 0·72*	*605,200 1·15*	-100m RL
	—	—	—	—	—	—	—	—	—	—	—	—	*36,000*	*36,000*	*51,000*	
	3,400 0·40		6,200 0·37	36,000 0·65	27,100 0·88	40,800 0·94	130,500 0·99	70,400 0·87	100,600 1·05	167,800 1·13	54,100 1·00	—	—	636,900 0·99	1,346,200 0·90	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
-125m RL	—	—	—	—	—	*600 — 0·39*	*4,600 — 0·33*	*4,000 0·30*	—	*19,300 1·10*	*34,500 0·96*	*26,600 0·94*	—	*89,600 0·92*	*694,800 1·12*	-125m RL
	—	—	—	—	—	—	—	—	—	—	—	—	*67,000*	*67,000*	*118,000*	
	—	—	—	5,700 — 1·06	5,100 — 1·06	14,300 — 0·71	95,300 — 0·87	130,000 0·90	220,800 0·94	226,300 0·88	115,800 0·78	28,500 1·12	—	841,800 0·89	2,188,000 0·89	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
-150m RL	—	—	—	—	*1,400 0·44*	—	—	—	—	*29,500 1·47*	*39,100 1·03*	*27,300 0·94*	—	*97,300 1·13*	*792,100 1·12*	-150m RL
	—	—	—	—	—	—	—	—	—	—	—	—	*58,000*	*58,000*	*176,000*	
	—	—	—	7,400 0·79	6,600 0·80	129,500 0·65	609,800 0·75	292,500 0·93	369,100 1·10	440,100 1·09	364,800 0·90	173,700 0·86	—	2,395,500 0·91	4,581,500 0·90	
	—	—	—	—	—	6,800 —	7,900 —	4,000	18,000	7,000	—	—	357,000	400,700	400,700	
-200m RL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	*792,100 1·12*	-200m RL
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	*176,000*	
below -200m RL	—	—	—	6,300 0·53	12,800 0·53	73,100 0·57	106,100 0·53	47,400 0·64	100,700 1·02	419,100 1·48	512,100 1·41	184,600 1·22	—	1,462,200 1·24	6,043,700 0·98	below -200m RL
	—	—	—	—	1,000	29,300	34,300	19,000	45,000	59,000	95,000	63,000	371,000	716,600	1,117,300	

B Lens Probable Ore Resource Tonnes at Grade % WO_3	*792,100*	*1·12*
B Lens Possible Ore Resource Tonnes	*176,000*	
C Lens Probable Ore Resource Tonnes at Grade % WO_3	6,043,700	0·98
C Lens Possible Ore Resource Tonnes	1,117,300	

DOLPHIN OREBODY SUMMARY

C LENS

PROBABLE ORE RESOURCE .... 6,043,700 TONNES at 0·98 ± 0·05% WO_3 (90%C.I.)

POSSIBLE ORE RESOURCE .... 1,117,300 TONNES

B LENS

PROBABLE ORE RESOURCE .... 792,100 TONNES at 1·12 ± 0·10 % WO_3 (90% C.I.)

POSSIBLE ORE RESOURCE .... 176,000 TONNES

TOTAL PROBABLE ORE RESOURCE .... 6,835,800 TONNES at 1·00 % WO_3

NOTE:

Method of grade calculation: modified polygonal method of weighted arithmetic means.
Method of tonnes calculation: truncated cone formula.

Dolphin orebody includes, ore east of section 6 and outside the final design of the open cut.

LEGEND:

current pit outline (blue line)
final pit design (red line)

5 cm

SCALE: 1:1000
DATE: JUNE, 1973
COMPILED BY: M.J.D. / G.J.B.
DRAWN BY: R.F.
CHECKED BY: M.C.R.

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