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GEOPEKO LIMITED

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GEOLOGICAL REVIEW - DOLPHIN OREBODY

OCTOBER, 1975.

by

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LIST OF PLANS

Proposed drill drive and DDH cuddy locations -150 m R.L.
 Proposed drill drive and DDH cuddy locations -250 m R.L.
 Ore Resource Table (30-9-75)

In attached folder:

Geological Cross Section	220	000	E
"	"	"	220 040 E
"	"	"	220 080 E
"	"	"	220 120 E
"	"	"	220 160 E
"	"	"	220 200 E
"	"	"	220 220 E
"	"	"	220 240 E
"	"	"	220 280 E
"	"	"	220 320 E
"	"	"	220 360 E
"	"	"	220 400 E
Geological Long Section	564	000	N
"	"	"	564 020 N
"	"	"	564 040 N
"	"	"	564 060 N
"	"	"	564 080 N
"	"	"	564 100 N
"	"	"	564 120 N
"	"	"	564 140 N
"	"	"	564 160 N
"	"	"	564 180 N
"	"	"	564 200 N
"	"	"	564 220 N
Geological Level Plans			-75 m R.L.
"	"	"	-130 m R.L.
"	"	"	-150 m R.L.

INTRODUCTION

The Dolphin mine has been in operation since June, 1973. Mine openings have now been developed to a depth of -137 metres below sea level and ore production has expanded to 13,500 tonnes per period. The initial C lens oreblocking program on sections spaced at 40 metre intervals has been completed and 3.2 million tonnes of C lens ore has been proved above the -200 m R.L.

This report reviews the progress since the preceding review report (Danielson, September 1974) in so far as it affects the geology and makes recommendations for the continuation of the oreblocking program.

SUMMARY

The underground oreblocking program is continuing and to date 72 holes have been completed for 5,934 metres. Of this figure, 17 holes totalling 628 metres were used in B lens definition and the remainder in C lens oreblocking. Diamond drilling approved to the end of 1974-75 was 5,356 metres of which 5,194 metres was completed. Drilling approved for the present year is 1,273 metres of which 740 metres has been completed.

The present underground drilling program has proved 3,287,500 tonnes at 1.13% WO_3 . The total Proven and Probable ore resource of Dolphin is 6,397,400 tonnes at 1.07% WO_3 . A further 1,000,000 tonnes is classified as Possible.

There has been a reduction of approximately 300,000 tonnes of C lens Probable ore, about 220 160 E - 220 200 E south of the Central Fault, since the September 1974 calculation. This reduction has been due to the negative result of D 160/5 and a narrower than anticipated ore intersection in D 200/11.

The underground oreblocking program has proved C lens ore east of 220 000 E to the -200 m R.L. It is considered that on the 40 metre cuddy spacings presently in use, the geological correlation of the ore horizons is not adequate for accurate correlation between sections in the C Central and C Central South areas. There is a 'haziness' to the outlines between sections up to 5 - 10 metres, particularly in the footwall where the contact is a grade % WO_3 boundary. 800 metres of diamond drilling is budgeted in 1976-77 for additional definition between the -100 m and -150 m R.L.'s downdip from the C Pit stopes. This drilling will require the establishment of drill sections at 220 020 E and 220 060 E i.e. providing 20 metre drill spacings between 220 000 E and 220 080 E.

Future oreblocking programs for C lens will require drill drives at the -150 m R.L. and the -250 m R.L. If the present 40 metre cuddy spacing is maintained approximately 4,800 metres (50 holes) will be required. This metreage is not inclusive of the 800 metres allocated between 220 000 E and 220 080 E to provide 20 metre spaced definition in C Central South.

B lens definition at 20 metre intervals is in its preliminary stages and the lack of continuity in the mineralisation is apparent. An ore resource of 688,000 tonnes at 0.83% WO_3 is classified as Probable.

Stratigraphic contacts, ore outlines and major structural features exposed in mine openings have been as predicted from the oreblocking with very minor exceptions.

The Computer Section has confirmed at the -130 m R.L., east of 220 160 E that there is insufficient grade data available from the present 40 metre spaced oreblocking program for accurate resource grade estimation in the variably mineralised Lower C lens. At the present time there are not sufficient mine openings available in the Upper C lens east of 220 160 E to permit a meaningful comparison of predicted and actual grades.

The structure south of the Central Fault about 220 160 E to 220 200 E has been reinterpreted using a two fault hypothesis to explain the negative result of D 160/5. One fault (unnamed) is considered to be a sliver fault off the Central Fault and is completely inferred while the other fault, 'Q' Fault, may have been intersected in the main decline at the -83 m R.L. where a previously unexplained fault is intersected in the appropriate position. The interpretation is liable to alteration as more evidence becomes available.

Mining operations in the C lens Wedge area were terminated at a maximum elevation of -60 m R.L.

Total production ex Dolphin Mine from the commencement of mining operations to September 30, 1975 is 170,500 tonnes at 0.93% WO_3 .

CONCLUSIONS

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1. The 40 metre spacing presently in use to oreblock C lens is considered inadequate between 220 000 E and 220 160 E for accurate definition of ore outlines.
2. It is suspected that more drilling information will be required east of 220 160 E to provide sufficient grade data for resource estimation.
3. The irregular nature of the B lens mineralisation will necessitate the continuation of the close spaced drilling program (20 metres) to provide adequate definition for mining purposes.
4. The basic structure of the Dolphin mine series is that of an anticlinal nose plunging southeast at 30° cut by three major faults - the Central, Wedge and 'Q' Faults. The Central and Wedge Faults have been well defined by mine openings and diamond drilling but the 'Q' Fault is largely interpretative at present.
5. The Decline Fault appears as a major fault in mine openings but diamond drilling on section 220 280 E indicates that it has little or no relative movement.
6. The Northern Boundary Fault has a breccia 4 metres wide as indicated by six holes over a strike length of 120 metres. Diamond drillers reported no significant change in water pressure in the breccia zone.
7. The nature of the Wedge Fault remains unclear. North of the No. 3 Fault it appears as a major reverse fault and south of this point as a normal fault with small offset.
8. Oreblocking C lens on section 220 360 E from the -250 m R.L. is not as ideal as oreblocking from the -200 m R.L. as originally planned, unless sufficient development is provided within C lens to give a wide distribution of grade information.

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RECOMMENDATIONS

If it becomes apparent, as mining operations are continued into the Wedge area, that grade information derived from the oreblocking program combined with the mine grade control assay values is insufficient to allow the Computer Section to predict ore resource grades with a high degree of confidence, then it is recommended that occasional probe holes be drilled in the doubtful areas to supplement the assay information already available.

The C lens oreblocking program be closed up to 20 metre intervals between 220 000 E and 220 160 E at the direction of the Mining Department if more detailed ore boundary definition is required. A total of 800 metres has been allocated for 1976-77 by the Mining Department to better define the 220 000 E - 220 080 E area at 20 metre spacings.

No specific development be considered to provide sites for B lens oreblocking. Oreblocking should be continued at 20 metre intervals from the C lens hangingwall mining stopes as sites become available.

No hangingwall development proceed at the -250 m R.L. until the level is adequately defined by diamond drilling.

The proposed diamond drilling program from cuddy sites on the -150 m R.L. be carried out so as completion will coincide with the main decline reaching the -250 m R.L. - as has been scheduled in the October Technical Submission 1975.

ACTION SHEET

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GEOLOGY REVIEW

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Main Decline

The main decline has now been advanced to the -137 m R.L.

In the period under review the decline advanced approximately 215 metres from B lens hangingwall biotite hornfels down the stratigraphic column and is at present in basal banded biotite actinolite hornfels.

The geology in the decline was as expected with the exception that no significant B lens intersection was made. Weakly mineralised B lens skarns were encountered at the point of the decline collapse, i.e. -113 m R.L. but the decline then progressed through the collapse zone and continued in a sheared biotite hornfels adjacent to the Northern Boundary Fault. B lens was interpreted as lying immediately to the southwest of the main decline between -113 m and -115 m R.L.'s.

The M5 rig was used to locate the Northern Boundary Fault 1.5 metres northwest of the main decline at the -115 m R.L. This major fault was interpreted as running subparallel immediately adjacent to the northern wall of the main decline between -113 m and -120 m R.L.'s.

The decline collapse was interpreted as being due to the intersection of the Northern Boundary Fault and another major fault - named the Decline Fault, which has also been intersected in the R15 development at the -98 m R.L. The strike of the Decline Fault would indicate that it should have intersected the main decline again at approximately the -99 m R.L. Steel sets were used as support in this area but no significant fault or breccia zone was observed.

There were no 'cover' diamond drill holes drilled ahead of the development.

The decline passed through the entire C lens sequence between the -123 m and the -131 m R.L.'s and approximately 5,000 tonnes of ore were mined.

Surface diamond drill hole D 192 was intersected at the -130 m R.L. making very minor quantities of water.

B lens

Development in the B lens sequence has been at the -75 m R.L. and the -98 m R.L. The sequence has consisted of a variety of banded biotite pyroxene hornfels, barren marbles and variably mineralised grossular and andradite garnet skarns. Ground conditions have been generally good although the footwall contact at the -75 m R.L. P15 raise site and at the -98 m R.L. Q13 development has required extensive rock bolting. A total of 3,114 tonnes at an average grade of 0.33% WO_3 (grab samples) has been mined.

The mine openings in B lens have clearly illustrated the irregular nature of the mineralisation in this horizon.

C lens - Pit Section

Ore production was continued in this area by means of benching to the -77 m R.L. in some stopes and stripping the backs in the footwall stope to an elevation of -64 m R.L. A further 27,926 tonnes at 0.46% WO_3 (grab samples) were mined in the period being reviewed to give a total ore production from this source of 41,057 tonnes at 0.52% WO_3 .

Mining operations ceased in April 1975 to maintain stability in the Open Pit adjacent to the portal.

Several minor faults were intersected in the mine openings and a low angle fault striking northwest in P12 is tentatively interpreted as the No. 2 Fault in the Open Pit.

Surface DDH D 172 was encountered making minor quantities of water.

C lens Central

Ore production continued in this high grade stope by benching to the -77 m R.L. and stripping the backs to a maximum elevation of -65 m R.L.

Ground conditions in the hangingwall deteriorated due to a combination of jointing and change in dip of the ore horizon as it steepened against a footwall fault. Several small collapses occurred and mining operations were abandoned in July 1975.

Ore production in the period under review was 15,954 tonnes at 1.44% WO_3 (grab samples) giving a total ore production from this source of 27,742 tonnes at 1.52% WO_3 .

Diamond drill hole information on 220 080 E indicates ore to -50 m R.L.

C lens - Wedge area above -75 m R.L.

C lens ore had been indicated in this area by surface DDH's 412 and 415 but its presence was confirmed and its potential illustrated by D 160/6 (55 metres at 1.60% WO₃) drilled horizontally from the -75 m R.L. B lens (P16) development.

Ore production commenced in November 1974 and total production to date is 63,615 tonnes at 1.06% WO₃ (grab samples). The area was benched to -77 m R.L. and three lifts took the back to a maximum elevation of -50 m R.L.

Ground conditions were uniformly good although sets of northwest and northeast trending joints in the Upper C lens and bedding in the Lower C lens caused some slabbing on the pillars.

The Wedge Fault was exposed on a number of occasions between -75 m R.L. and -60 m R.L. Some fretting took place adjacent to the fault and steel sets were used as support in the K10 access drive at the -75 m R.L. No water inflow was associated with the fault but minor water entered the stopes as the 'wet' quartzites were exposed.

The Northern Boundary Fault was exposed on two occasions to a maximum elevation of -62 m R.L. No water inflows were associated with the fault and ground conditions were moderate, requiring only a shotcrete application.

C lens - Wedge area -98 m R.L.

A total of 2,770 tonnes of development ore at 0.55% WO₃ (grab samples) was mined in the Q13 development which links the footwall decline and main decline.

The Wedge Fault was exposed at this R.L. and steel sets were required to reduce fretting about the fault.

C lens - Wedge area -130 m R.L.

The main decline entered this area in May 1975 and to date 26,764 tonnes at 0.80% WO₃ (grab samples) has been mined. This tonnage includes the 5,000 tonnes of development ore from the main decline.

Ore production has been restricted mainly to the Lower C lens at present and a breakdown of ore mined is:

Upper C lens	6,157 tonnes at 1.32% WO ₃
Lower C lens	20,607 tonnes at 0.64% WO ₃

Ore outlines have been very close to those predicted from the underground oreblocking program. Approximately 2,000 tonnes of ore has been mined in the footwall additional to that anticipated due to a local flattening of the dip (W76 west) and several footwall stringers proving sufficiently continuous to represent a mining width (W24).

The Wedge Fault has been intersected in two stopes with no poor ground conditions associated.

Cemented oreblocking diamond drill holes D 200/6, D 200/8, D 200/9 and D 200/10 have been intersected.

A number of steeply dipping faults trending northwest and west-northwest have been intersected. Where it has been possible to measure fault movements they have been less than 1 metre.

Minor ground stability problems have occurred due to chlorite coated joints in the biotite hornfels beds in the marble marker. Rock bolts have been sufficient support.

Quartzite development

Mine openings developed in quartzites have been the Footwall decline and the -75 m Ventilation cross cut.

In each instance the quartzites have been shown to be very strongly jointed, often with abundant pyrite on the joint surfaces. Some joints act as water channelways and are noticeably more water bearing than the mine series rocks. It is apparent that the majority of the water bearing joints in the -75 m Ventilation cross cut have dried out within several months of being exposed.

A number of steeply dipping faults striking northwest have been encountered resulting in local stability problems occasionally requiring steel sets for support. One such fault which intersected the ventilation raise site at the -75 m R.L. is interpreted as the Wedge Fault. This fault is considered to have a faulted quartzite i.e. quartzite defined between the No. 3 and Wedge Faults, to stratigraphic quartzite relationship.

DIAMOND DRILLING

The underground oreblocking program has continued and a total of 72 holes for 5,934 metres have been completed since oreblocking commenced in December 1973.

A reconciliation of the scheduled and actual diamond drilling to the end of 1974-75 is set out below.

	<u>Schedule</u>	<u>Actual</u>
C lens oreblocking at 40 m spacing.	4,461	4,566
C lens oreblocking above the -75 m R.L.	210	-
B lens oreblocking	685	628

Diamond drilling for the present year is as follows:

	<u>Schedule</u>	<u>Actual</u>
C lens oreblocking on the 220 280 E section	715	740 Drilling on this section is complete.
B lens oreblocking on the 220 140 E and 220 180 E sections	303	Not commenced.
Skew drilling	250	Nil.
Total	<u>1,273</u>	<u>740</u>

The major part of the drilling has been carried out by two F30 rigs with an E500 machine employed for the up hole drilling as part of B lens definition.

The M5 machine has been used in two holes for 16 metres to provide structural information and is not intended for use in the oreblocking program.

As part of standard procedures all F30 holes are drilled in BQ size core, all E500 holes in A17 size core, all holes are surveyed by a multishot camera and all down holes are cemented on completion.

DISCUSSION OF RESULTSStructure

Mine openings and the continuation of the oreblocking program has further confirmed the basic anticlinal structure and indicated the possibility of three more major faults.

Mine openings in the Wedge area at the -75 m and -130 m R.L.'s have definitely established a northerly strike (approximately 012° I.S.G.) in the Wedge area representing the easterly limb of the anticlinal structure. The southern limb is formed by C Central and C Central South where an east northeast strike of 070° I.S.G. has been shown at the -75 m R.L. Evidence from the B lens drive indicates that the change in strike began to occur westward of the Wedge Fault and does not appear to be entirely due to some rotation on the Wedge Fault.

Diamond drilling on sections 220 160 E and 220 200 E has indicated the possibility of two major faults south of the Central Fault. The negative result of D 160/5 suggests the presence of a fault approximately 20 metres south of the Central Fault with a movement of 40 - 50 metres south block down. In plan view this fault (unnamed) is interpreted as a sliver fault off the main Central Fault. A fault zone was logged in the core at the appropriate depth.

D 160/5 also indicated another fault with movement south block up, as the hole appeared to pass out of hangingwall biotite hornfels into banded footwall beds with no C lens intersection being made. The presence of such a fault was enforced with the result of D 200/11 which indicated the need for a fault of similar movement to explain the anomalous relationship between D 200/11 and DDH 404. This fault has been named 'Q' Fault and coincides with a fault mapped in the main decline at the -83 m R.L. The strike of 'Q' Fault is subparallel to the Wedge Fault.

A third major fault of unknown movement was designated as the Decline Fault. A fault striking 030° I.S.G. was intersected in the main decline at the point of collapse and again at the -98 m R.L. in the R15 development. Little was seen of the fault in the main decline due to the collapse but at the -98 m R.L. the fault is shown to have a significant breccia and gouge zone up to 15 centimetres wide. Poor ground conditions were associated about the fault in the R15 development and successive coatings of shotcrete were required as support. The strike of the fault requires that it should have intersected the main decline at the -99 m R.L. but it was not observed. Movement on the Decline Fault is unknown. The fault clearly intersects drill section 220 280 E probably subparallel to D 280/4 and D 280/5 but the continuation of ore outlines and stratigraphic units through this zone appears undisturbed. On present evidence the Decline Fault is interpreted as having no significant movement.

No further information is available regarding the nature of movement of the Wedge Fault to that reported in September 1974.

On section 220 120 E, D 120/10 was drilled to the south to test for a suspected fault striking subparallel to the Central Fault with relative movement south block down in the area about 220 080 E - 220 120 E. Such a fault was suspected to account for the change in relative level of stratigraphic units between D 080/7 and surface DDH 404. From the results of D 120/10 it would appear that no such fault exists and anomalies in relative level can best be explained by a steepening in dip to 35° - 40° to the south.

Limiting faults remain as previously reported (Danielson, 1974). The No. 3 Fault was intersected by the footwall decline at the -75 m R.L. and some local fretting required a shotcrete application. The only drill hole intersection made with the No. 3 Fault was a short (7.63 metres) hole drilled by the M5 machine to locate the fault adjacent to the C Pit mine workings. A pronounced swing in the strike of the fault from west southwest to northeast was indicated as shown on the -75 m R.L. geological level plan.

The Northern Boundary Fault was intersected in oreblocking holes D 240/6, D 240/7 and D 280/2 and shown to be approximately 8 metres further south in this area than indicated by surface drilling. All drill holes indicated a breccia zone at the fault up to 4 metres wide but no associated water inflows. The Northern Boundary Fault was exposed on two occasions above the -75 m R.L. to a maximum elevation of -62 m R.L. There were no water problems and only very minor local stability problems.

There has been no oreblocking within 110 metres of the anticipated position of the Grassy River Fault.

In general confidence is high in the correlation of stratigraphy, structural features and ore outlines between drill sections with the following exceptions:

1. the 20 metre change in relative level of the C lens ore south of the Central Fault between 220 000 E and 220 040 E.
2. the occurrence of quartzites at the -80 m R.L. between the No. 3 and Central Faults on 220 040 E.
3. the rapid increase in the thickness of ore horizons.
 - (a) in the Central C lens area east of 220 040 E
 - (b) east of 220 120 E south of the Central and Wedge Faults.
4. the two fault hypothesis south of the Central Fault about 220 160 E - 220 200 E to explain the negative result of D 160/5 and the anomalous relationship between D 200/11 and DDH 404.

Points 1, 2 and 3 above were reported previously (Danielson, 1974) and closer spaced definition by diamond drilling was recommended between 220 000 E and 220 160 E.

The fault hypothesis (point 4) may be confirmed by the continuation of the oreblocking program from the hangingwall drive at the -150 m R.L. If it does not, then closer spaced definition by drilling on section 220 180 E will be recommended.

Stratigraphy

The continuation of the oreblocking program and the development of mine openings has so far confirmed the stratigraphy detailed by previous workers. e.g. (Bujtor, 1973)

Stratigraphic units have been as previously encountered in mine openings, drill holes or the Open Pit with the exception of the wide variation in thickness of the marble marker unit over relatively short strike distances. Diamond drilling on section 220 200 E indicated variations in thickness of marble marker from less than 0.5 metre to 10 metres over a strike distance of 30 metres and this feature has been confirmed at the -130 m R.L.

Basal quartzites have not been intersected in any oreblocking holes but it is thought that they were encountered at the northern end of the -75 m R.L. Ventilation cross cut. A fault cutting through the raise site was interpreted as the Wedge Fault and as the fault showed a quartzite to quartzite relationship the quartzites to the north of the fault should be stratigraphic.

The granite basement has not been intersected in the oreblocking program.

Mineralisation

The significant points additional to those reported previously (Danielson, 1974) to arise from the oreblocking program so far are:

1. the lack of continuity in B lens mineralisation. e.g. Section 220 200 E. D 200/12 drilled 25 metres along strike from D 200/14 (20 metres at 0.56% WO_3) encountered no significant mineralisation in a barren grey marble.
2. grade information east of 220 160 E in the Wedge area is too sparse to allow the computer to construct meaningful grade contours in the variably mineralised Lower C lens. This has been clearly illustrated at the -130 m R.L. Mine openings in the high grade Upper C lens are not sufficiently advanced to permit a comparison of actual and computer grades.

It was previously suspected (Danielson, 1974) that the drill fans on 40 metre spacings would be too wide for adequate grade prediction and the recommendation was made that the Computer Section determine whether sufficient grade information was available from the 40 metre spaced sections.

Ore Resource

In September 1974, the total C lens Proven and Probable ore resource was reported at 6,270,000 tonnes at 1.02% WO_3 . This figure has been corrected for the increase of 5.75% in the specific gravity. The total C lens Proven and Probable resource is now reported at 5,710,000 tonnes at 1.10% WO_3 representing a reduction in tonnage of 560,000 tonnes but an increase in grade of 0.08% WO_3 . Ore mined in this period has been 137,000 tonnes at 0.92% WO_3 and 22,000 tonnes has been removed from the resource as representing ore locked up in pillars in the C Pit and C Wedge areas above the -75 m R.L. There has therefore been a shortfall in resource of 401,000 tonnes.

The principal cause of the tonnage reduction is the negative result of D 160/5 and the narrower than anticipated ore intersection in D 200/11. It is estimated that approximately 300,000 tonnes of resource was 'lost' about 220 160 E - 220 200 E as a result of these two drill holes.

Lesser tonnages were 'lost' on sections 220 200 E, 220 240 E and 220 280 E due to:

- (a) the ore horizons thinning to the north against the Northern Boundary Fault.
- (b) the Northern Boundary Fault being 8 metres further south than indicated by surface drilling, and
- (c) the marble marker being thicker than anticipated on section 220 280 E.

The increase in grade of the Proven and Probable resource was due to the consistently high grade (+1.3% WO_3) intersections made in Upper C lens.

The B lens Probable ore resource was reduced from 836,600 tonnes at 1.12% WO_3 (3-9-74) to 688,000 tonnes at 0.83% WO_3 .

The cause of the reduction in tonnage is due to the lack of continuity of mineralisation which has been clearly shown by the closer spaced drilling, e.g. Section 220 120 E. D 120/12 drilled 17 metres downdip from DDH 173 (8.2 metres at 0.81% WO_3) encountered no significant mineralisation. The reduction in grade is due to the necessity to bulk several small intersections into one larger lower grade intersection in an attempt to provide some continuity of mineralisation, e.g. DDH 187. Two intersections of 2.4 metres at 0.92% WO_3 and 3.3 metres at 1.12% WO_3 separated by 2.2 metres of waste was all bulked to give one intersection of 7.9 metres at 0.82% WO_3 .

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COMPUTER

All diamond drill hole information from the oreblocking program is encoded for computerisation and forwarded to Sydney office in telex tape form.

Grade contour plans have now been produced for the -104 m, -107 m, -110 m, -113 m, -116 m, -119 m, -122 m, -125 m and -130 m R.L.'s.

The computer is apparently having difficulty correlating grade information in the Lower C lens due to the variable nature of the mineralisation and the sparsity of the information due to the wide spaced (40 metres) drill sections. The contouring method may also be too rigorous as areas indicated as waste on the computer contour plan have been shown from mine openings to be mineable ore in the grade range 0.4 - 0.7% WO_3 (W26 stope -130 m R.L.). A less rigorous contouring method of the line printout information may be more useful.

Mine grade control assay values for the ore mined at the -130 m R.L. will be encoded for computerisation. These values together with the oreblocking diamond drilling information should provide a substantial base for the accurate prediction of ore grades for subsequent lifts above the -130 m R.L. The computerisation of all mine grade control assay values will be a continuing process.

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FUTURE OREBLOCKING PROGRAMS

Underground oreblocking planned for the remainder of 1975-76 is as follows:

Continue oreblocking B lens (20 metre cuddy spacings)
at 220 140 E and 220 180 E.
308 metres (9 holes)

Skew holes to test any part of the orebody where more accurate definition may be required.
250 metres

Total 558 metres.

On completion of drilling planned for the current year three oreblocking programs remain to be implemented.

1. To more adequately define the down dip extension of the C Pit ore horizons between the -100 m and -150 m R.L.'s. It is anticipated that additional holes will be required on drilling sections 220 000 E and 220 040 E with some fill in drilling on section 220 020 E and possibly on section 220 060 E. A total of 800 metres has been allowed for this purpose.

It was recommended by Danielson (1974) that some drilling be carried out in this area to explain the anomalous change in the relative level of the ore horizons between 220 000 E and 220 040 E.

This program is scheduled for periods 1 to 4 inclusive in 1976-77.

2. To complete the oreblocking of C lens south and east to the Grassy River Fault. Drill sites are planned at the -150 m R.L. and the -250 m R.L.

If the program is continued at 40 metre spacings a further 4,800 metres (58 holes) will be required.

This program is scheduled for commencement in period 8, 1976-77 and completion in period 1, 1978-79.

The original oreblocking plan (Danielson, 1974) was to develop hangingwall drives at the -150 m, -200 m and -250 m R.L.'s and 3,550 metres of drilling in 40 holes was estimated. In the present program drilling will continue on the -150 m R.L. as originally proposed but due to mining considerations the -200 m R.L. hangingwall drive has been deleted. Drilling of targets designed from this drive will now be covered from sites on the -250 m R.L. in the footwall on sections 220 280 E and 220 320 E and from within C lens on section 220 360 E. Drilling from the hangingwall on section 220 400 E is as originally planned.

The revised program which deletes the -200 m R.L. hangingwall drill drive is not considered as suitable for oreblocking due to the necessity to oreblock section 220 360 E from within C lens. Oreblocking in circular drill fans requires the least amount of development but unfortunately gives poor ore boundary definition due to the acute angle between drill hole and ore contact and also the grade information derived from such drilling is inadequate as a result of the majority of assays being clustered around the drill site. Consideration must be given to overcoming both these problems by developing the drill drive the full strike length of C lens in the Wedge area - in ore - and then drilling one vertical up hole and down hole at regular (say 20 metre) intervals.

Because drilling from the -150 m R.L. hangingwall drive will not adequately define the Wedge area hangingwall geology at the -250 m R.L. the initial phase of the oreblocking program at the -250 m R.L. will be to drill a horizontal fan of 6 holes totalling approximately 1,100 metres to broadly define the geology on the level before any hangingwall development can proceed. It is this horizontal drill fan of 1,100 metres which accounts for the significant increase in drilling metreage in the revised program (4,800 metres) as compared to the original program of 3,550 metres. However the increase in drilling metreage is offset by deletion of the -200 m R.L. hangingwall drive which would have required approximately 250 metres of additional development.

3. Continue oreblocking B lens at 20 metre intervals.

On present indications the potential in B lens would not seem to warrant the establishment of specific drill drives and it is anticipated that in future many drill sites for B lens drilling will be found within the C lens hangingwall mining stopes. This is considered as a low priority program and will be continued as the mine develops and drill sites become available.

Continuation of the program at 20 metre intervals to 220 360 E would require approximately 2,500 metres.

ORE RESOURCE CALCULATION

The ore resource of both B and C lenses has been recalculated as at September 30, 1975. A grade cut off of 0.25% WO_3 was applied and all +4% assays were written down to 4%. Volume was calculated using the truncated cone formula and a specific gravity of 3.49 (Phippen, 1975) was applied. This specific gravity represents a 5.75% increase on the specific gravity used in ore resource calculations up to and including the September 3, 1974 calculation.

Tonnages in C lens were derived from both I.S.G. drill sections and geological level plans. Due to the predominantly easterly strike of the mineral horizons south of the No. 3 and Wedge Faults tonnages could be calculated from cross sections between the arbitrarily selected relative levels as shown in the Ore Resource Table. However in the Wedge area the northerly strike and easterly dip of 30° presented difficulties to the tonnage calculation from sections, particularly in the 25 metre intervals to the -150 m R.L. Ore outlines on one section between particular levels frequently truncated to zero on the neighbouring section between the same levels and it was considered that tonnages would be more accurately calculated from geological level plans to the -150 m R.L. Below this relative level geological level plans are not well defined, due to the progress of the oreblocking program, and because the level subdivisions were increased to 50 metre tonnages were again calculated from cross sections.

Tonnages were corrected for tonnes mined and that part of the resource that is now locked up in pillars in the C Pit area and the Wedge area above the -75 m R.L. No correction has yet been applied for ore in pillars at the -130 m R.L.

Proven ore grades were calculated separately for Upper and Lower C lens and were determined between sections regardless of any arbitrary relative level subdivision. Lines were constructed such as to bisect the angles formed by the diamond drill holes on section so that each intersection could be assigned an area of influence which extended half way to adjacent drill holes. The area of influence of any diamond drill hole was given the mean arithmetic grade of the appropriate ore intersection. The grade of each lens between adjacent sections was determined using a simple proportional area method.

Where tonnages were calculated between geological level plans grades were transferred from sections to the appropriate plans. The grade of Upper and Lower C lens between sections was applied in plan view and if the area of any lens extended beyond two sections then a weighted average grade dependent on area on the level was determined.

The grade of C lens probable ore was determined from any oreblocking or surface diamond drill hole in a similar manner.

The ore resource of B lens was recalculated from the I.S.G. sections. The previous calculation (Bujtor, 1973) was defined between the surface drilling sections 1N, 2N, 3N etc. To enable this recalculation all surface diamond drill hole B lens ore intersections were transposed to the I.S.G. sections to supplement the oreblocking results gained so far and then tonnage and grade was calculated between sections in the usual manner. The resource was not subdivided between relative levels and no allowance was made for the 6,806 tonnes of development ore mined at 0.42% WO_3 (grab samples).

GEOPEKO LIMITED



M. J. Danielson
MINE GEOLOGIST.

REFERENCES

- Bujtor, G. J., August 1973. Diamond drill hole reappraisal of Dolphin Orebody.
- Danielson, M. J., September, 1974. Geological Review - Dolphin Orebody, September, 1974.
- Phippen, A. J., February, 1975. Report on Reassessment of Specific Gravities of the rocks of the Dolphin Orebody.

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APPENDIX 1

SUMMARY OF DIAMOND DRILLING RESULTS
FOR HOLES COMPLETED SINCE SEPT. 1974

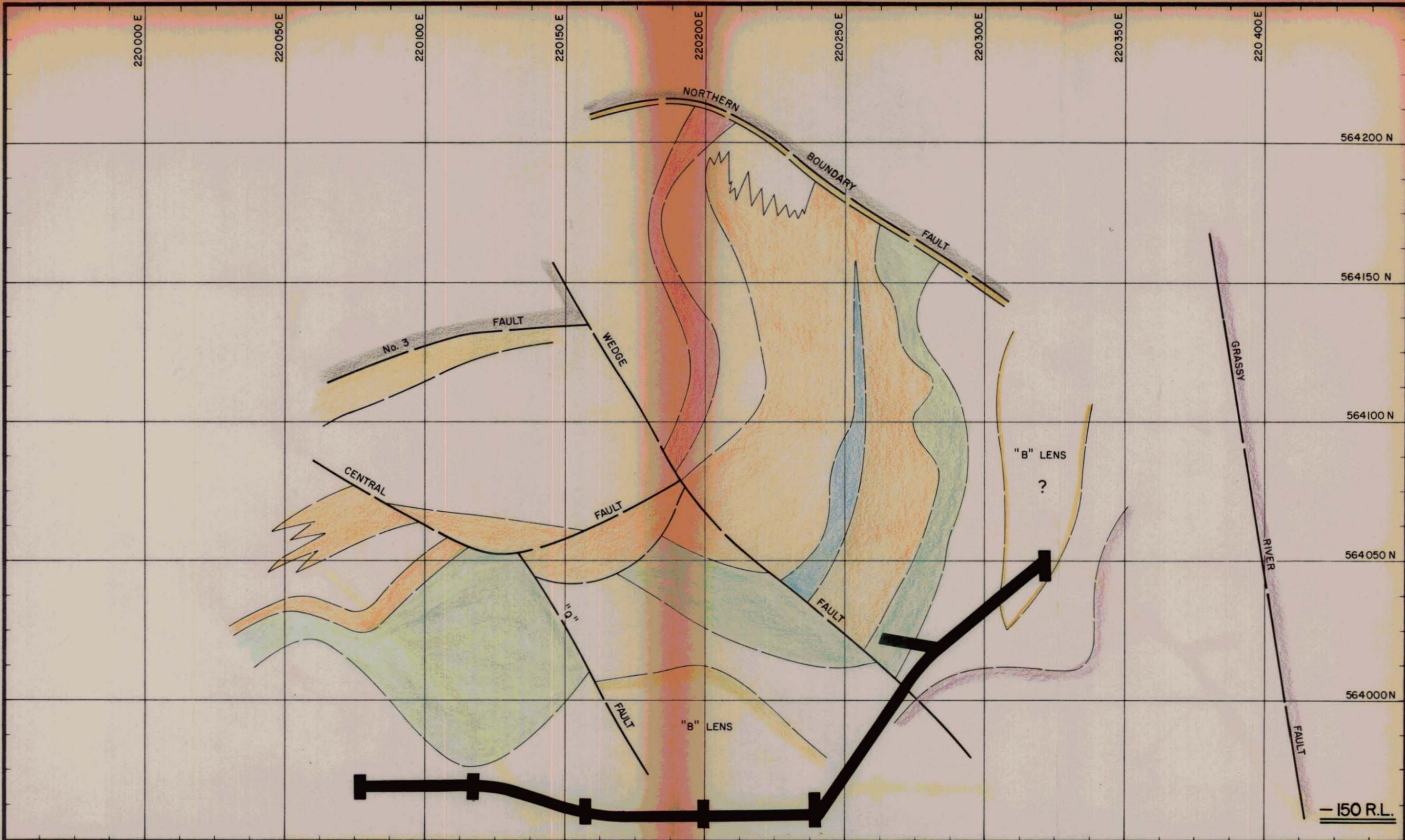
<u>DRILLING SECTION</u>	<u>HOLE No.</u>	<u>BEARING I.S.G. (°)</u>	<u>INCLINATION (°)</u>	<u>TOTAL DEPTH (m)</u>	<u>MINERALISATION (WO₃)</u>	<u>REMARKS</u>
220 080 E	D 080/7	180	-60	123.80	C lens: 78-86m, 8m @ 1.90% 89-103m, 14m @ 0.80%	
220 120 E	D 120/9	360	-90	68.88	C lens: 13-17m, 4m @ 4.82% 21-33m, 17m @ 1.80% 43-49m, 6m @ 0.88% 53-55m, 2m @ 0.36%	
	D 120/10	180	-59	155.90	C lens: 74-85m, 11m @ 0.83% 100-103m, 3m @ 0.42%	
	D 120/11	180	+45	28.04	Nil.	No significant B lens mineralisation.
	D 120/12	360	+75	41.45	B lens: 23-25m, 2m @ 0.37%	
220 160 E	D 160/5	180	-49	178.00	Nil.	No significant B or C lenses intersection. Central Fault at 31.5m.
	D 160/8	360	+90	31.49	B lens: 8-12m, 4m @ 1.04%	

DRILLING SECTION	HOLE No.	BEARING I.S.G. (°)	INCLIN -ATION (°)	TOTAL DEPTH (m)	MINERALISATION (WO ₃)	REMARKS
220 160 E	D 160/9	180	+30	32.61	B lens: 7-9m, 2m @ 0.67% 12-15m, 3m @ 3.96%	Central Fault (?) at 15.0m.
	D 160/10	360	+40	33.22	Nil.	No significant B lens intersection.
	D 160/11	360	-35	51.03	C lens: 1-23m, 22m @ 1.69% 27-38m, 11m @ 0.69%	Northern Bound- ary Fault at 48.10m.
220 200 E	D 200/4	180	-83	106.88	C lens: 25-35m, 10m @ 1.14% 39-61m, 22m @ 1.02%	
	D 200/5A	360	-67	91.97	C lens: 22-26m, 4m @ 3.09% 36-48m, 12m @ 1.24% 62-73m, 11m @ 0.86%	
	D 200/6	360	-49	153.31	C lens: 35-41m, 6m @ 1.39% 44-55m, 11m @ 2.36% 66-93m, 32m @ 1.10%	Northern Bound- ary Fault at 149.90m.
	D 200/7	360	-59	56.69	C lens: 34-48m, 14m @ 1.49%	Northern Bound- ary Fault at 50.0m.
	D 200/8	360	-78	94.49	C lens: 26-52m, 26m @ 0.99% 64-66m, 2m @ 0.40%	No significant lower C lens.
	D 200/9	180	-87	71.37	C lens: 32-71m, 39m @ 0.74%	

DRILLING SECTION	HOLE No.	BEARING I.S.G. (°)	INCLINATION (°)	TOTAL DEPTH (m)	MINERALISATION (WO ₃)	REMARKS
220 200 E	D 200/10	180	-67	65.84	C lens: 32-46m, 14m @ 2.11% 53-65m, 12m @ 0.64%	
	D 200/11	180	-60	158.21	B lens: 14-16m, 2m @ 2.06% 29-44m, 15m @ 0.81% C lens: 103-131m, 28m @ 0.55%	
	D 200/12	360	+90	45.11	B lens: 0-3m, 3m @ 0.94% 8-14m, 6m @ 0.73%	
	D 200/13	180	+30	54.56	B lens: 10-19m, 9m @ 1.07% 30-33m, 3m @ 1.24%	
	D 200/14	360	+63	54.56	B lens: 7-15m, 8m @ 0.46% 26-32m, 6m @ 0.90% 35-46m, 11m @ 0.51%	
220 220 E	D 220/1	086	0	44.81	B lens: 18-38m, 20m @ 1.01%	
	D 220/2	118	0	39.62	B lens: 19-24m, 5m @ 2.47%	
	D 220/3	127	0	30.78	B lens: 0-13m, 13m @ 1.02%	
	D 220/4	360	+90	22.86	B lens: 10-16m, 6m @ 0.82%	

DRILLING SECTION	HOLE No.	BEARING I.S.G. (°)	INCLIN- -ATION (°)	TOTAL DEPTH (m)	MINERALISATION (WO ₃)	REMARKS
220 220 E	D 220/5	360	+90	28.45	Nil.	No significant B lens intersection.
	D 220/6	360	-32	36.12	B lens: 9-14m, 5m @ 0.45% 18-24m, 6m @ 0.33%	
	D 220/7	360	-90	28.35	B lens: 3-14m, 11m @ 0.53%	
220 240 E	D 240/6	360	-65	80.16	B lens: 10-12m, 2m @ 0.89% C lens: 39-65m, 26m @ 0.86%	
	D 240/7	360	-48	77.49	B lens: 11-14m, 3m @ 0.37% C lens: 48-60m, 12m @ 1.55% 67-72m, 5m @ 1.48%	Northern Bound- ary Fault at 74.0m.
	D 240/8	360	+45	52.53	B lens: 1-22m, 21m @ 0.89%	
	D 240/9	180	+45	23.47	B lens: 2-3m, 1m @ 1.10%	
220 280 E	D 280/1	360	-80	97.23	C lens: 62-68m, 6m @ 2.14% 73-87m, 14m @ 0.53%	
	D 280/2	360	-65	96.60	B lens: 3-5m, 2m @ 0.63% C lens: 71-85m, 14m @ 1.25%	Northern Bound- ary Fault at 92.5m.

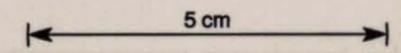
DRILLING SECTION	HOLE No.	BEARING I.S.G. (°)	INCLINATION (°)	TOTAL DEPTH (m)	MINERALISATION (WO ₃)	REMARKS
220 280 E	D 280/3	180	-84	112.00	B lens: 3-5m, 2m @ 0.47% 18-21m, 3m @ 0.51% C lens: 50-66m, 16m @ 2.15% 68-91m, 23m @ 0.76%	
	D 280/4	180	-68	140.30	B lens: 26-33m, 7m @ 1.11% C lens: 65-84m, 19m @ 1.97% 88-110m, 22m @ 1.55%	
	D 280/5	180	-55	160.50	C lens: 61-91m, 30m @ 1.51% 109-125m, 16m @ 0.32%	
	D 280/6	180	-45	133.80	Not available	



LEGEND

v Upper metovolcanics	gh Garnet hornfels
bh/ph Banded hornfels	lv Lower metovolcanics
ch Marble	q Quartzite
pgh Pyroxene garnet hornfels	gr Granodiorite

ISG REFER REPORT 70-0676



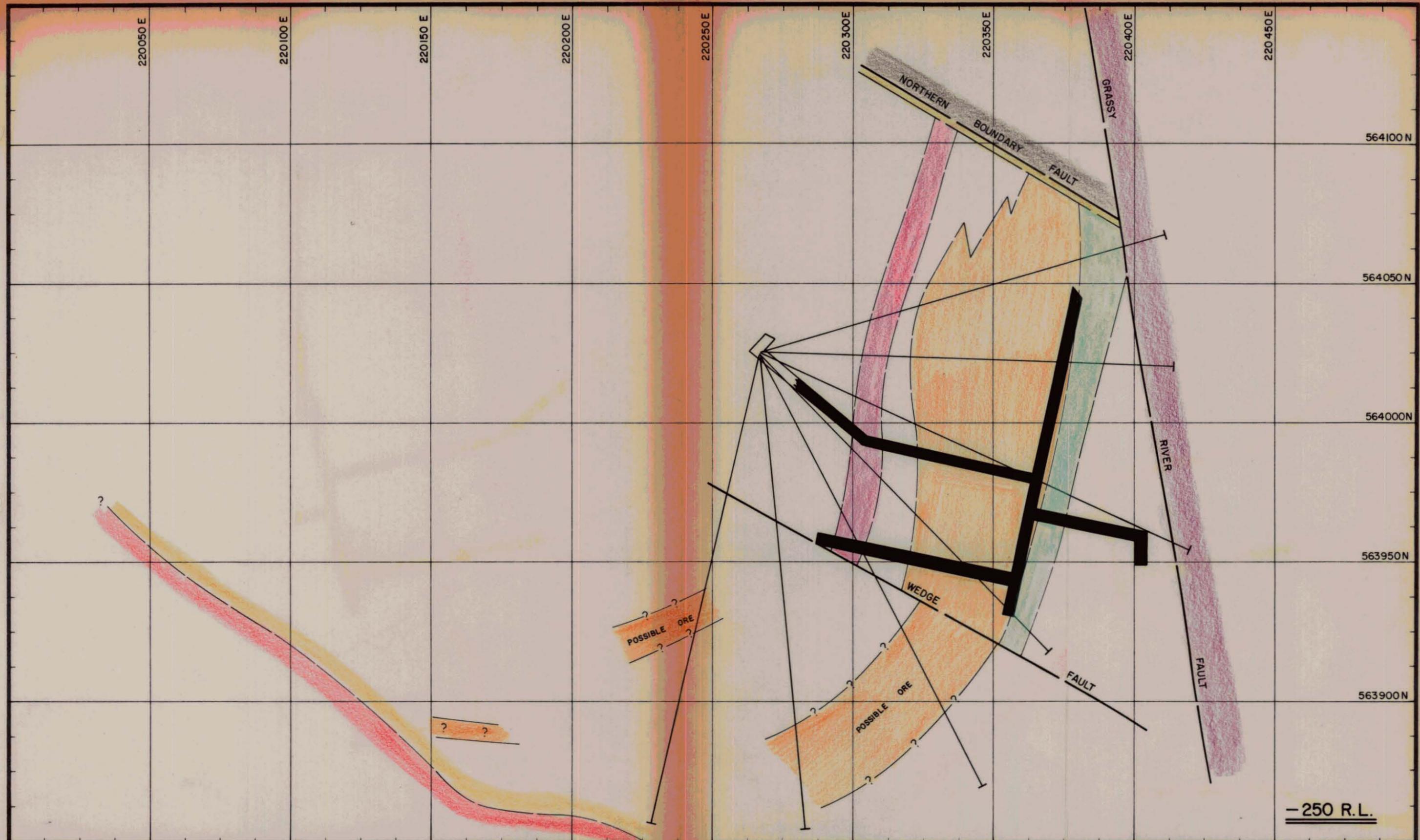
DATE OCT. 75
GEOL. M.J.D.
DWN. O.S.
CHKD. M.C.R.

GEOPEKO LIMITED
KING ISLAND

Scale 1:1250

No. K

DOLPHIN MINE
PROPOSED DRILL DRIVE
and D.D.H. CUDDY LOCATIONS



LEGEND

	Upper metavolcanics		Garnet hornfels	 Proposed D.D.H.
	Banded hornfels		Lower metavolcanics	
	Marble		Quartzite	
	Pyroxene garnet hornfels		Granodiorite	

ISG REFER REPORT 70-0676

5 cm

GEOPEKO LIMITED
KING ISLAND

Scale 1:1250 No K

DOLPHIN MINE
PROPOSED DRILL DRIVE
and D.D.H. CUDDY LOCATIONS

DATE OCT.75
GEOL M.J.D.
DWN O.S.
CHKD M.C.R.

-250 R.L.

165831

GEOPEKO LIMITED

KING ISLAND

Ore Resource Table Dolphin Orebody - 'C Lens'

(30-9-75)

	219880E	219920E	219960E	220000E	220040E	220080E	220120E	220160E	220200E	220240E	220280E	220320E	220360E	220400E	Grassy River Fault	TOTAL	CUMULATIVE TOTAL
00 m.R.L.				10,300 2-20	5,700 1-61	6,800 1-32	18,000 1-10									40,800 1-48	40,800 1-48
	237,000		0-65													237,000 0-65	237,000 0-65
-75 m.R.L.				10,900 0-83	24,300 1-25	33,300 1-47	250,400 1-22									318,900 1-23	359,700 1-26
	106,500		0-62													106,500 0-62	343,500 0-64
-100 m.R.L.				26,000 0-87	20,500 0-94	97,400 1-21	601,600 1-17									745,500 1-16	1,105,200 1-19
	26,400		0-59													26,400 0-59	369,900 0-64
-125 m.R.L.				20,500 0-78	43,600 1-05 10,000 1-00	51,700 0-98 2,000 1-00	114,000 1-00	646,000 1-10								875,800 1-07	1,981,000 1-14
																12,000 1-00	381,900 0-65
-150 m.R.L.					13,800 1-00	73,600 0-98	106,700 0-94	1,112,400					1-14			1,306,500 1-11	3,287,500 1-13
					10,000 0-80	25,000 0-65	69,000 0-65	408,000					0-83			512,000 0-80	893,900 0-74
-200 m.R.L.								300,000								300,000	300,000
below -200 m.R.L.							18,000 0-55	1,510,000 700,000								1,528,000 1-23	2,421,900 1-05
																700,000	1,000,000

C Lens Proven Ore Resource Tonnes at Grade %WO₃ 3,287,500 1-13
 C Lens Probable Ore Resource Tonnes at Grade %WO₃ 2,421,900 1-05
 C Lens Possible Ore Resource Tonnes 1,000,000

DOLPHIN OREBODY SUMMARY

PROVEN ORE RESOURCE:
 C LENS 3,287,500 TONNES at 1-13 % WO₃

PROBABLE ORE RESOURCE
 C LENS 2,421,900 TONNES at 1-05 % WO₃

POSSIBLE ORE RESOURCE
 C LENS 1,000,000 TONNES

TOTAL PROVEN AND PROBABLE ORE RESOURCE 5,709,400 TONNES at 1-10 %WO₃

NOTE:
 Method of grade calculation: modified polygonal method of weighted arithmetic means.
 Method of tonnes calculation: truncated cone formula, using drill sections in Central Area and geological floor plans in Wedge Area.

SCALE: 1:1000
 COMPILED BY: M.J.D.
 DRAWN BY: R.F.
 CHECKED BY: M.C.R.
 DATE: OCT., 1975

5 cm

93-3467

165032