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81-1521

DEPT. OF MINES	A.G.	CO	DEPT. OF MINES	D.S.M.E.
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PROGRESS REPORT
 QUEEN HILL JOINT VENTURE
 E.L. 47/71 TASMANIA
 NOVEMBER 17, 1980

81-1521.

MICROFILMED

This report covers the
 Aberfoyle quarter
 (periods 10 - 12)
 ending November 17, 1980.

C.H. Young,
 District Manager.

December 1980.

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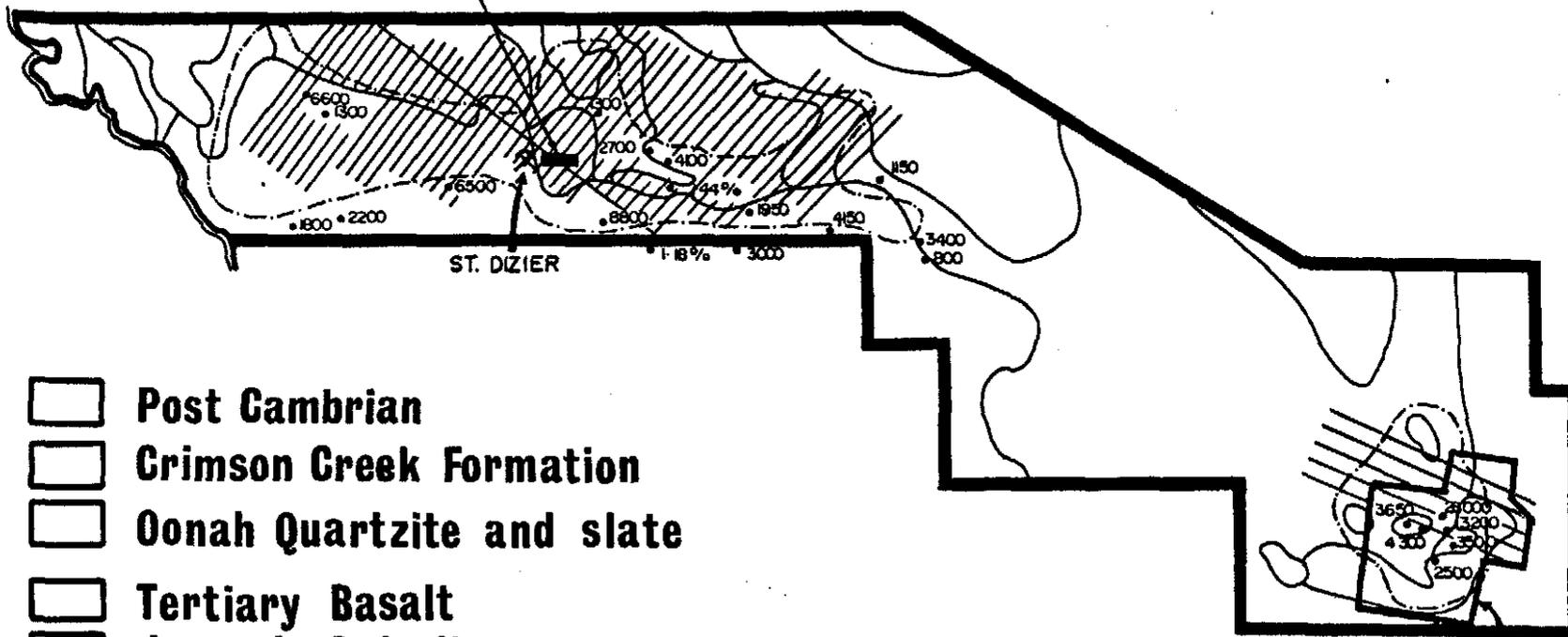
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St. Dizier 43	Bedrock Geochemistry Pb	1:2,500
St. Dizier 43	Bedrock Geochemistry Zn	1:2,500
St. Dizier 43	Bedrock Geochemistry As	1:2,500

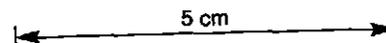
E.L. 47/71 QUEEN HILL Location Plan

Location of ST. Dizier Grid



-  Post Cambrian
-  Crimson Creek Formation
-  Oonah Quartzite and slate
-  Tertiary Basalt
-  Jurassic Dolerite
-  Devonian Granite

-  Sn contour > 100 ppm
-  Stream sediment anomaly
-  DIGHEM flight lines



QUEEN HILL
MINERAL LEASES

PLATE No. QH 148
Scale 1:125,000
Date: January, 1980

005004

80/521

INTRODUCTION

This report summarises work completed in the Aberfoyle quarter periods 10 - 12 ending November 17, 1980 and includes preparation and drafting through to December 15, 1980. Reported expenditure is for the Aberfoyle quarter ending November 17, 1980.

During the quarter, the exploration drilling programme continued and five holes were completed for 1255.2 m. These holes were G66 at Queen Hill, G65 and G69 at Severn, G67 at Montana and G68 at the Golf Course lode. On completion of G68 the programme was reduced from two to one drill rig. Exploration hole G70 at Severn is in progress at 138 m.

A total of 17 holes were collared during the year for 4842.7 m.

Detailed assessment of bedrock geochemical data of the St. Dizier - Big H skarn horizon was completed and contoured geochemical plans for Sn, WO_3 , Cu, Pb, Zn and As are presented in this report.

Excavation of the Queen Hill bench area to provide a bulk sample for the Matte Fuming Pilot Plant at Kalgoorlie was completed. A larger sample was required and excavation of the Stormsdown open pit area was commenced.

QUEEN HILL AREA EXPLORATION DRILLING PROGRAMME

Queen Hill

Exploration hole G66, designed to test beneath the G46 intersection, was completed at 344.0 m in volcanics. The only significant mineralisation noted was a 60 cm pyrite 40% vein below 306.2 m. Assay data is not yet available for this interval. Due to the poor result of this hole the exploration hole proposed to test the area immediately to the north of G46 was not commenced.

Interpretation of the Queen Hill lode zone for ore reserve estimation was commenced, it appears the extent of fracture vein sulphide distribution may define a larger tonnage lower grade ore zone. Accordingly, further assaying of previously rejected low grade zones is required before the ore reserve assessment can be completed.

Severn

Exploration hole G65, designed to test for structurally controlled mineralisation adjacent to G39 was completed at 292.5 m. The majority of the assay data is now available and two zones of cassiterite-sulphide lode and fracture vein mineralisation are defined:

1. An upper zone of 0.27% Sn over 28 m below 150.5 m.
2. The "Severn Zone" of 0.51% Sn over 65.7 m below 202.05 m. This zone includes a 30 cm quartz-cassiterite vein which assays 20.3% Sn and a separate, 4.6 m semi-massive pyrrhotite vein which assays 2.76% Sn. The 20.3% Sn value was cut to 5% for the overall grade estimate. There is a continuance of weak sulphide veining down to 272.5 m and the Severn zone may be extended when further assay data is available.

All data from the Severn area was completely reassessed with the following result:

1. The Severn zone of mineralisation is spatially related to the contact between the Proterozoic Quartzite and Slate sequence and the Cambrian Crimson Creek Formation.
2. Drill results to date suggest the mineralisation has a relatively short strike length, perhaps no greater than 150 m, but with a true width probably greater than 50 m. These dimensions fit the shape of the Severn Magnetic Anomaly. (Plate Qh 65).

3. The increase in both grade and width of mineralisation with depth is encouraging and suggests a deeply buried source, perhaps a cupola.
4. The distribution and style of the mineralisation is apparently related to a fracture zone developed above an "ascending point-source", such as a cupola. The Proterozoic-Cambrian contact appears to provide a distinctly anisotropic environment and thus the fracture zone symmetry expected above a cupola is distorted.

Exploration hole G69, designed to test for structurally controlled mineralisation on section 2970 at 75 RL, was completed at 208.5 m in quartzite. Two intervals of weak sulphide fracture veining were intersected but neither appear to correlate with the Severn zone in G65.

In G41, core grinding data indicates a 20 m zone assaying 0.25% Sn below 222.0 m. This interval will be sawn and assayed.

As a further check for low grade Sn mineralisation, intervals of sulphide veining in the old Severn holes G40 and G42 will be sawn and assayed. These intervals are: 211 - 216 m and 244 - 257 m in G40 and 140 - 195 m in G42.

To determine potential for a large zone of mineralisation further drilling is proposed.

Montana

Exploration hole G67, designed to test for structurally controlled mineralisation below G20 was completed at 223.5 m in interbedded cream and light grey mudstones of the Proterozoic Quartzite and Slate sequence. Near the contact between rocks of the Cambrian Crimson Creek Formation and the Quartzite and Slate sequence a pyrite 60-80% lode with a siderite, quartz gangue was intersected over 8.0 m below 192.3 m, this lode assays 3.34% Sn. Further drilling will be proposed.

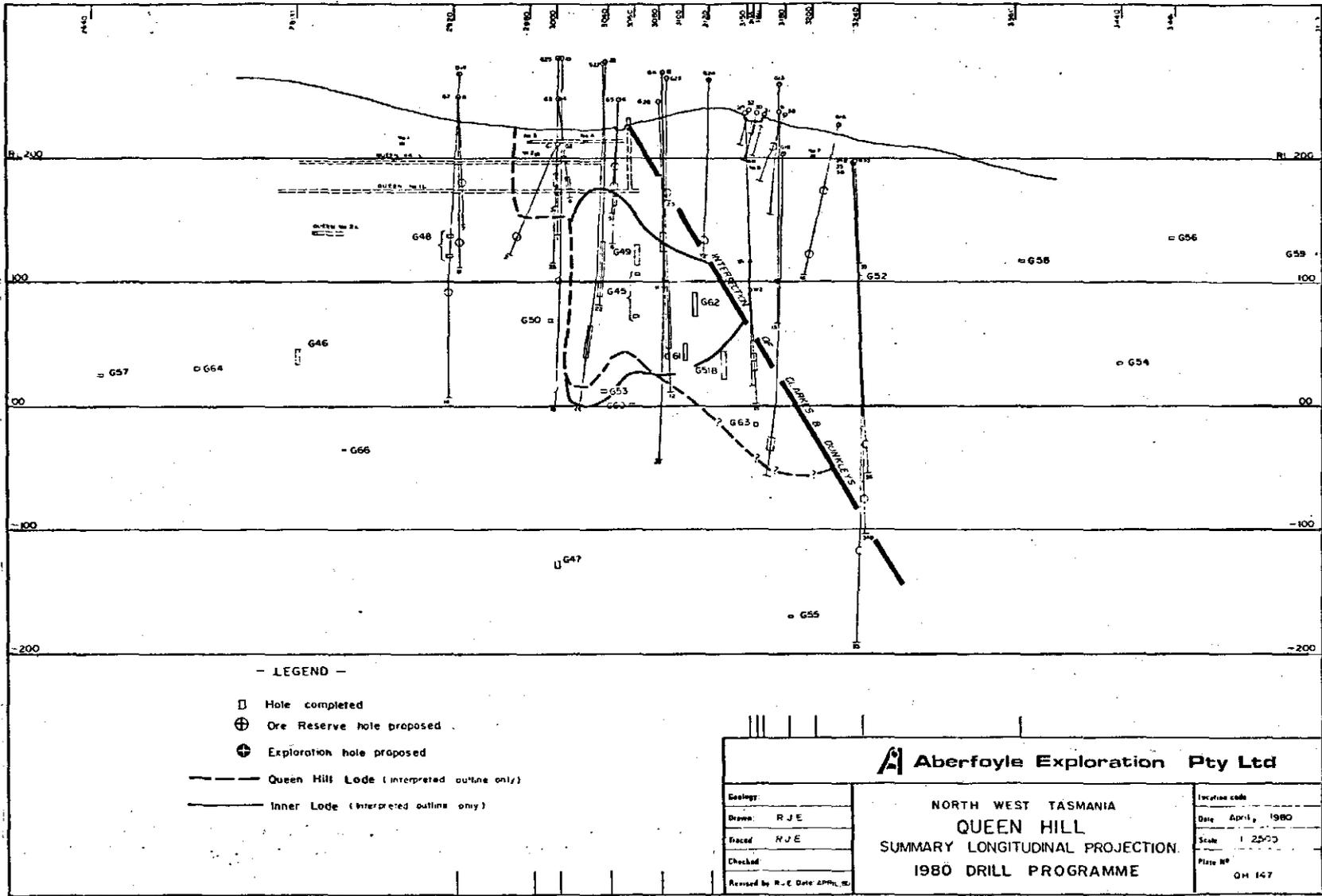
QUEEN HILL — Diamond Drilling Summary

D.H. No.	Co-ordinates		Elevation	Mag Brg	Angle	Commence	Complete	Depth m	Cumulative metres	Section	GEOLOGY/MINERALISATION	RL of Intersection	Intersection
	North	East											
G63	1779.75	922.69	218.24	286.25	-55.25	20.5.80	24.7.80	352.5	1225.4	3150	286.25 - 289.4 m Queen Hill lode position. 40-50% Pyrite as disseminations veins and a vein network.	-11	286.25 - 289.4 m 2.39% Sn.
G64	1460.9	660.75	230.9	281.0	-62.75	27.5.80	29.7.80	343.5	1568.9	2720	184.5 - 185.4 m, 50% pyrite quartz lode. 224.2 - 225.35m, 60% pyrite, siderite, quartz lode. 237.2 - 239.61m, 60% pyrite, siderite lode.	50 32 18	184.5 - 185.4 m (0.9m) 0.29% Sn. 224.2 - 225.35 m (1.15m) 0.28% Sn. 237.2 - 239.61 m (2.41m) 0.14% Sn.
G65	1581.5	1138.0	182.0	239.1	-60.1	5.8.80	3.9.80	292.5	1861.4	3055	150.5 - 178.5 m zone of pyrite/pyrrhotite stringer veins. 202.05 - 267.75 m zone of pyrite/pyrrhotite stringer veins includes 222.5 - 222.8m quartz-cassiterite vein and 257.5 - 262.1 m, 40-70% pyrrhotite/pyrite vein. 267.75 - 272.5 m pyrite stringer veins.	40 -40	150.5 - 178.5 m (28.0m) 0.27% Sn. 202.05-267.75 m (65.7m) 0.51% Sn. Includes 222.5 - 222.8 m (0.3m) at 20.3% Sn and 257.5 to 262.1 m (4.6m) 2.76% Sn. (Note: the 0.3 m of 20.3% Sn was cut to 5% Sn for the overall grade estimation) Assay data not yet available.
G66	1534.03	779.3	213.84	280.4	-59.8	9.8.80	16.9.80	344.0	2205.4	2840	306.2 - 306.8 m, 40% pyrite vein.	-40	Assay data not yet available.
G67	2073.7	1219.4	181.2	289.3	-64.3	8.9.80	30.9.80	223.5	2428.9	3520	192.3 - 200.3 m vein pyrite 60-80%, siderite, quartz gangue.	10	192.3 - 200.3 m (8.0 m) 3.34% Sn.

QUEEN HILL - Diamond Drilling Summary

D.H. No.	Co-ordinates		Elevation	Mag Brg	Angle	Commence	Complete	Depth m	Cumulative metres	Section	GEOLOGY/MINERALISATION	RL of Intersection	Intersection
	North	East											
G68	1374.2	734.1	212.6	209.5	-41.0	2.10.80	21.10.80	186.7	2615.6	Golf Course Lode	No significant sulphide mineralisation noted.	-	-
G69	1588.8	1022.7	183.5	270.9	-53.5	23.10.80	6.11.80	208.5	2824.1	2970	89.5 - 102.5 Pyrite/pyrrhotite veins, 3-5% with quartz veining.	104	Assay data not yet available.
											165.0 - 170.1 Pyrite 5% locally 70% as veins.	45	
G70	1594.6	959.0	185.6	294.0	-48.0	10.11.80	In progress at 138 m.			2970			

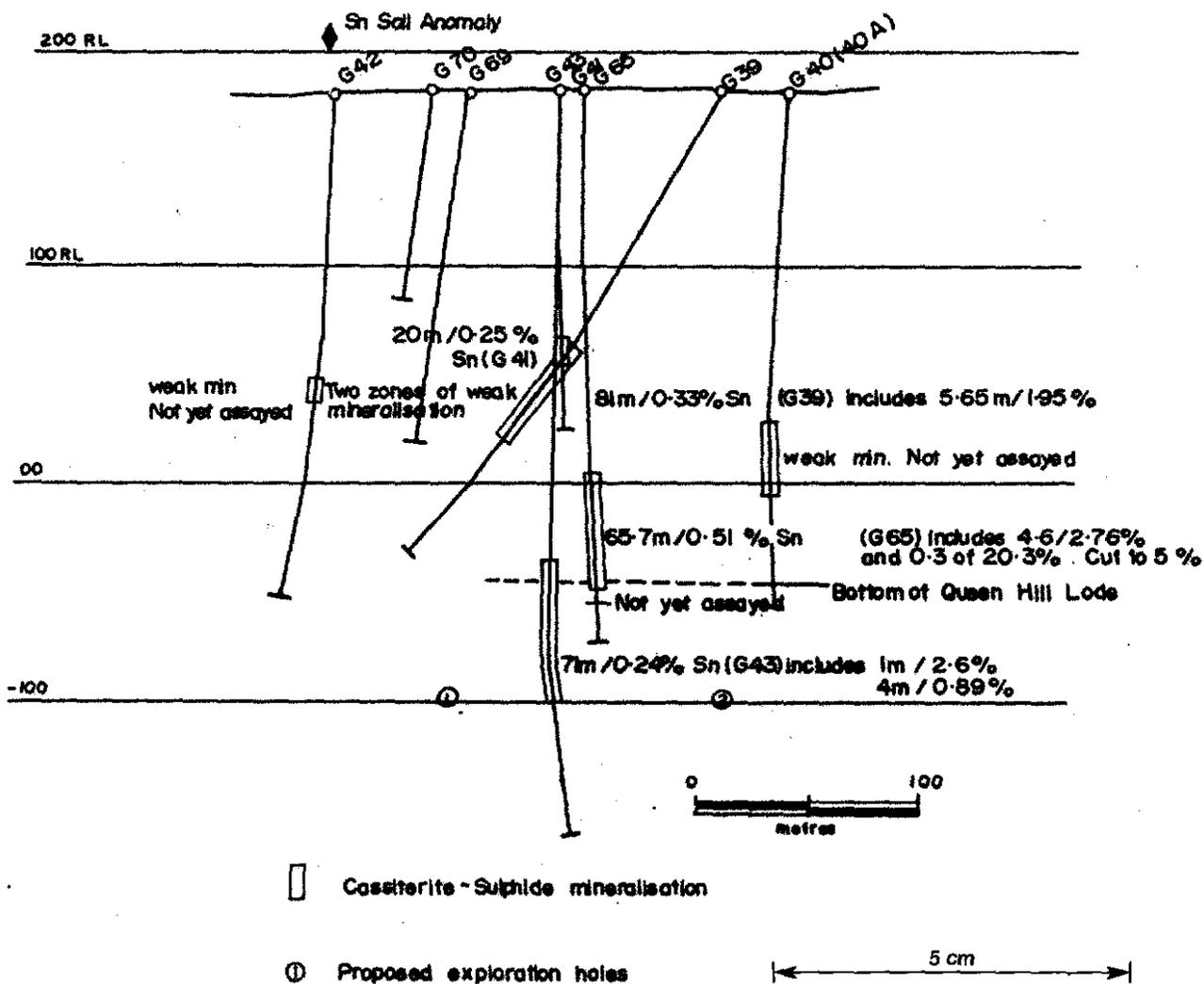
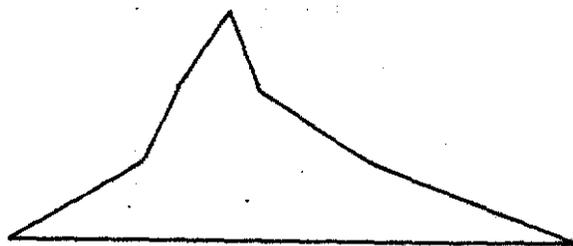
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5 cm

005010

MAGNETIC ANOMALY

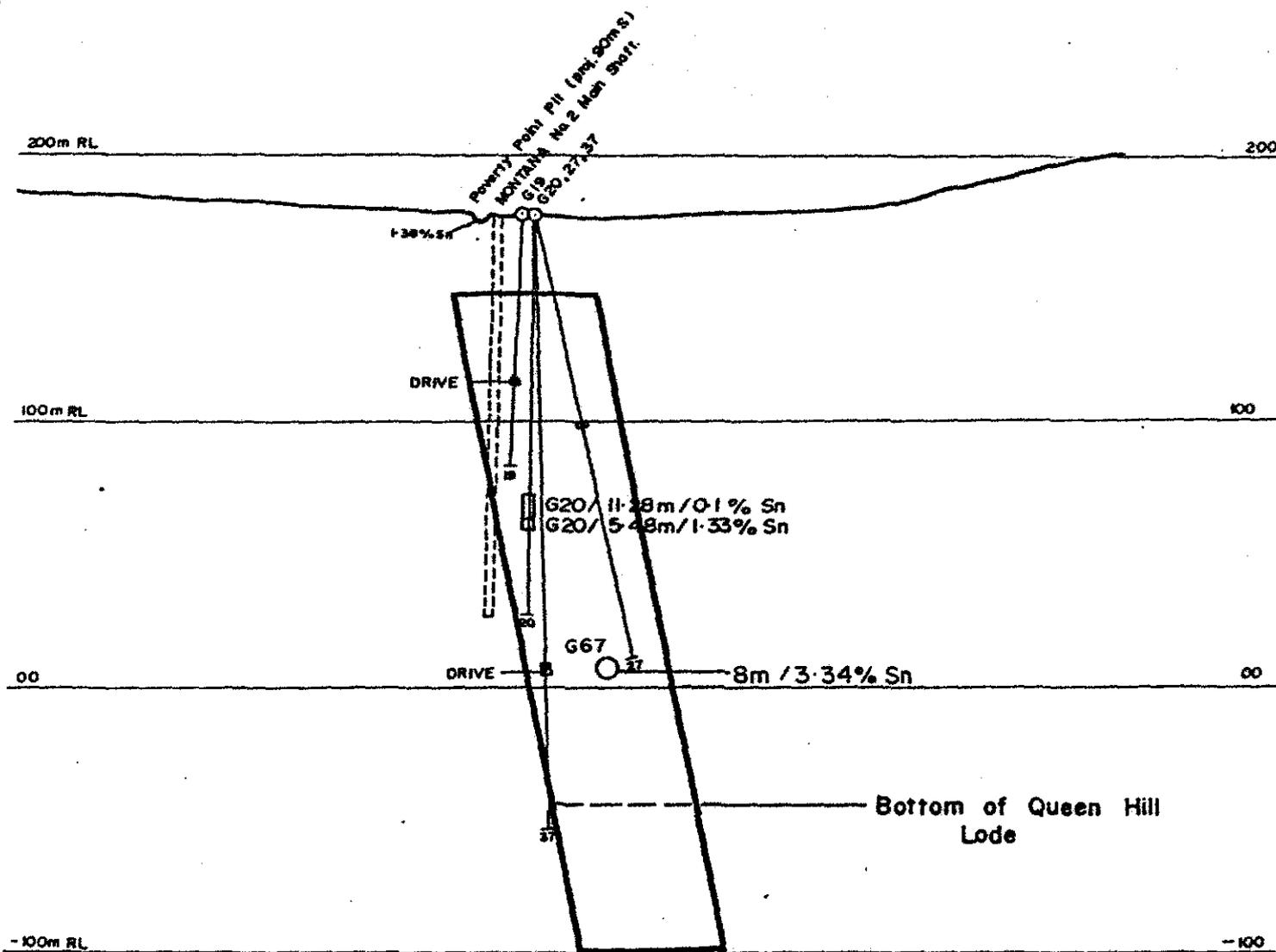


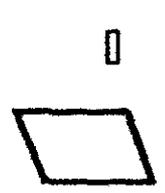
 **Aberfoyle Exploration Pty Ltd**

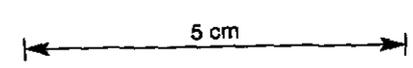
Drawn:	NORTH WEST TASMANIA QUEEN HILL LICENCE E.L47/71 SEVERN SUMMARY LONGITUDINAL PROJECTION	Location code:
Traced: J.L.R.		Date: Dec 1980
Checked:		Scale: As shown
Revised by: Date:		Plate No: QH 164

MONTANA

Summary Longitudinal Projection




 Cassiterite - Subhite bearing fissure lode strikes of 070° mag. ie at 60° to this projection.
 Potential for 500,000 Tonnes at >1% Sn, strike length 100m, width 5m, depth 250 m



Golf Course Lode

Exploration hole G68, designed to determine potential for significant tonnage cassiterite-sulphide mineralisation beneath the Golf Course Lode and G21 was completed at 186.7 m. No sulphide mineralisation was intersected although the hole passed well beneath G21. It is possible the lode position was displaced by faulting. Re-interpretation is in progress.

A summary of the drilling programme is included together with summary longitudinal projections. The drill logs are appended together with drill hole assay data. Cross sections at 1:500 scale are attached.

ST. DIZIER SKARN HORIZON

Bedrock geochemical assay data for Sn, WO₃, Cu, Pb, An and As was contoured with individual threshold values determined by inspection (Plates St. Diz. 43; Sn, WO₃, Cu, Pb, Zn and As). All elements are anomalous above the skarn horizon however both Sn and As show the most limited dispersion and appear to clearly define anomalies within the skarn. The Sn anomalies are discontinuous but strong with peak values to 1200 - 1400 ppm. Low order As values (20 ppm) appear to define the skarn horizon with peak values to 1000 - 1200 ppm.

Pickands Mather drill hole No. H102 tests beneath one of the strongest Sn anomalies but no tin is reported in the hole, current interpretation of structure suggests H102 was drilled down dip. The other Pickands Mather holes do not test beneath significant Sn anomalies.

It should be noted that drill hole No. H101 intersected 4 feet of 0.45% Sn, demonstrating the presence of Sn mineralisation within the skarn. Peak Sn bedrock geochemical values are expected to define the underlying Sn rich skarn zones.

A number of anomalies were not closed off by the initial bedrock sampling programme, due to the requirement to complete the work within a set period.

Further bedrock sampling to close off the anomalies is proposed when the GEOPEKO drill rig is once again available.

QUEEN HILL BENCH SAMPLE

Excavation of the Queen Hill bench area was completed on October 31, 1980. An estimated 1,800 tonnes of cassiterite-sulphide ore was transported to Burnie for crushing and then shipment to Kalgoorlie.

A larger sample was required and excavation of the Stormsdown open pit area commenced on November 4, 1980. To date, 200 tonnes has been produced and it is estimated a further 1,000 tonnes will be obtained.

WORK PLANNED

- . Ore reserve estimation of the Queen Hill lodes.
- . Exploration drilling at Severn and Montana.
- . Follow-up DIGHEM anomalies.

EXPENDITURE

The joint venture statement of expenditure for the Aberfoyle quarter periods 10-12 (ending November 17, 1980) is split into two parts. One pertains to expenditure incurred on the Queen Hill mineral leases and the other expenditure incurred on the exploration licence.

Queen Hill Mineral Leases

Salaries and Wages	14,466
Contract Drilling	86,367
Assay	2,839
Materials	6,945
Accommodation	3,330
Vehicles	3,407
Communication	678
Tenure	554
Sundries	760
Overhead at 15%	<u>17,901</u>
	<u>136,247</u>

Queen Hill Exploration Licence

Salaries and Wages	582
Materials	9
Accommodation	401
Vehicles	116
Overhead at 15%	<u>116</u>
	<u>1,274</u>

Special expenditure charged to the Matte Fuming project and not included in the Joint Venture Statement above:

Mining	65,881
Crushing and Screening	4,199
Geology and Supervision	12,735
Analytical	<u>360</u>
<u>TOTAL</u>	<u>83,175</u>

REFERENCE

Young, C.H. (1980) Progress Report, Queen Hill Joint Venture E.L. 47/71, Quarter to August 25, 1980.

SIGNED: *C.H. Young*

C.H. Young,
District Manager.

APPENDIX 1

Drill Logs and Assay Data for:

G65	Severn
G66	Queen Hill
G67	Montana
G68	Golf Course Code
G69	Severn



DRILL HOLE RECORD

005018

Location SEVERN

Property QUEEN HILL

District ZEEHAN

Bearing (M) 293.1°

Hole No G65

Commenced 5/8/80

Completed 3/9/80

% Recovery 83.4%

Grid bearing (M) -11.25°

Date 8th OCT. '80

Objective

Core size HW - 3m HQ - 1.57m NQ - 2.92.5m

Logged S. RICHARDSON

Co-ordinates 5361581.5 N 361138.0 E

Dip 60.1°

Alt./R.L. 182.021

SURVEY DATA				GRAPH DERIVED DATA			CALCULATED CO-ORDINATES			REMARKS
DEPTH	DIP	BEARING(M)	INSTRUMENT TYPE	DEPTH	DIP	BEARING(M)	NORTHING	EASTING	ALTITUDE	
14.7M	61.75	283.5	EASTMAN	0 M	60.1°	293.1°	5361581.504	361138.013	182.021	
17.5M	60.5	299°	"	25	60.5	293				VERY BRAKEN & PUCCY GROUND TO
20.8M	59.5	293°	"	50	60.75	293.2				APPROX 150M. NO DRILLING PROBLEMS
24.5M	58°	293°	"	75	61.0	293.4				NO CASING LOST.
270.5	56.75	291.5	"	100	61.5	293.3				
291.5	55.5	295	"	125	62.0	293.6				
189.5M	60.25	291	"	150	61.75	293.8				
162.5M	61.5	281.5	"	175	60.75	294				
69.5	61°	180.05	"	200	59.5	294.6				
EOH	292.5M			225	58.75	295.1				
				250	57.5	295.7				
				275	56.5	296.3				
				300	54.75	297.2				

Feature

Bedding



Shearing



Foliation



Fault



Fragment size & shape



Vein



c carbonate
q quartz

Mineralization

Trace

1-5%

Common

5-15%

Abundant

15-60%

Massive

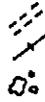
> 60%

000019

CORE RECD.	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	0.0	No core - non coring bit used.						
	3.2	<u>med grey shale</u> - gen. a massive rock bedding only indicated by rare lighter grey tuffaceous shale interbeds. So at $\approx 5m$ is $0-10^\circ$ to c.A. Rck has good bedding plane fissility. Core v. badly broken.					4	Py rare
	6.1	<u>lt. grey green feldspathic volcanic arenite</u> A massive to well bedded tuffaceous rock. Gen. puggy. f.g. to m.g. tuffaceous material. So where evident a low \angle c.A. eg $8m - 0^\circ$ c.A.						
	7.7	<u>med. grey to black shale</u> massive to bedded interval, bedding gen. at v. low angle to c.A. $15-0^\circ$. Good bedding plane fissility. Minor beds of cream grey tuffaceous material to 1.2m. Core is very broken and locally puggy.					10	
	13.2	<u>lt. grey to black tuffaceous shales</u> The colour of the rock reflects the % of volcanically derived material. The lighter the colour the more tuffaceous the rock. Bulk of the interval consists of a very well bedded tuffaceous shale but intervals of volcanic arenite w. rafted fragments of black shale up to 1m thick occur. The beds of black carbonaceous shale occur. All combinations between the above and members occur with gradational or sharp boundaries. So is between $20 \approx 40^\circ$ to c.A. Core is very broken & locally puggy.					13.6	5mm Py 30 siderite 25° to c.A.
	20						20	Py rare.
	22.4	<u>cream grey to dk. grey shale.</u> A very well bedded interval, So $15-30^\circ$ to c.A. Core very broken & locally puggy.					25	

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



c carbonate
q quartz

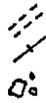
Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

005022

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		Lithology - as above -							
5	76.3	med grey feldspathic volc. arenite w. clasts of black shale. massive buffaceous matrix							
1.6	77.7	w. angular clasts 1mm to > 5mm. P.O. => bedding 20° c.a.							
		Lt. grey to med. grey mudstone & shale.							
1.5		A sequence of monotonous grey pelitic rocks. Bedding is often obscured by their uniform coloration but where evident the friability of the bulk of the interval is to bedding.						80	
2.3		The only portion of the interval which does not have a friability are the pug intervals where the rock is expressing weathering. Core is broken or puggy over the entire interval.							
1.5		This c. vein < 5mm w/ 1-2mm are locally common; these are at a low angle to c.A. (10-20°). Bedding measurements are:							
1.0	85	82m - 50° c.A. 89m - 40° 94m - 10°						85	
1.4									
1.0									
3.0	90							90	
1.1									
1.3									
	95							95	
2.0									
5									
5									
	98.8								
1.5		Lt. grey to dk. grey mudstone to buffaceous shale, siltstone & volc. arenite.							

Feature
 Bedding
 Foliation
 Fragment
 size & shape



Shearing
 Fault
 Vein



c carbonate
 q quartz

Mineralization

Trace 1-5%
 Common 5-15%
 Abundant 15-60%
 Massive > 60%

005023

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	MINERALIZATION		
				TRACE	COMMON	ABUNDANT
1-7	105	A gen. well bedded interval of interbedded contrasting rock types in beds av. 1- cm. Bedding is constant in orientation at 25-30° to c.A. local development of med. grey buffaceous arenite w. angular black mudstone fragments. Core is very broken to puggy				
1-4	105					
1-4						
1-8						
1-5	110	<u>Lt. grey to dk. grey mudstone shale</u> & siltstone w. rare lt. grey volc. arenite. Core is very broken & puggy.				
1-5	110	Interval does not have a major volc. arenite component. Rock is dominantly a med. grey to dk. grey weakly to strongly bedded mudstone to siltstone which tends toward a shale locally where a weak to strong layer parallel cleavage is present. Bedding where recognizable is at a low angle to c.A.				
1-7	115	120 m - 20° to c.A. 125 m - 30° 128 m - 30° 130 m - 25° 135 m - 15° 140 m - 35°				
1-4						
1-9						
1-5	120					
1-4						
1-2						
1-7						
1-11	125					

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

005024

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		Lithology - as above - lt. grey to dk. grey mudstone to siltstone & shale w. rare lt. grey volc. arenite.							
5									
5									
6									
4	130							130	Py rare
4									
1.0	135							135	
7									
8									
1.0								138.3	Py < 1% v.f.g. to rare blebs & oxidized veinlets
1.2	140							140	
1.6								140.8	Py 3-5 v.f.g. dissem. & thin siderite veinlets.
1.6								142.3	
1.0									Py < 1 f.g. to c.g. & thin sid veinlets.
1.2	144.6	GROUND NO LONGER PEGGY BUT STILL BROKEN							
1.2	145	Pink to cream siderite veining & local carbonate alteration becomes common. Discontinuous veins & blebs of siderite w. local patches of next. carb within the shale.						145	Py as above.
1.7	146.3							146.3	
HQ								147.1	Py 20-30 veins w/ 5-10cm (stockwork) & f.g. dis. & aggr.
NQ		2cm sid vein 300 c.a.							
1.3		From 146.4 pyrite replaces siderite as the vein material. Lithology as above. minor siderite still present.						148.7	
3.0	150							150	Py rare

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



c carbonate
q quartz

Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

005028

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	3.0	A tuffaceous interval of altered locally weakly replaced & veined rock. Intense sericitic, carbonate & minor chlorite? alteration.							Pyo as above < 1 (2-3) Py rare
	226.7	Dk. gray to black bedded mudstone. Bedding 0-10° to c.A.						226.7 226.9	Py 20-30 vein assoc w. qtz. Cassit. 1-2 Fg. Py 1-2 veins 20° to c.A.
	3.0	Fg. to c.g. carbonate alteration locally shows resist features such as bedding. Bedding where present varies between 30 & 45° to c.A. Fg. pyrenothite locally weakly replaces the buff. Also py or pyo. veins assoc. w. qtz. (locally forming a stockwork)						227.7 230	Py 3-5 (10) Fg. diss (assoc. w. pyo.) Pyo 5-15 (20) c.g. diss & veinlets & blebs (assoc.) w. qtz.
	3.0	230.4 FAULT - c healed breccia 60° c.A.						230.4 235.2 237.6	Py 20 veins assoc. w. qtz. Tr Fg. cassit. assoc. w. qtz. Py 5-10 c.g. veinlets & veins Tr pyo. Py 1-3 (7) Fg. & minor veinlet 0-45°
	3.0	orange highly altered volc. arenite - intense carbonate alteration (puggy sheared near fault).						234.5 235	Py & Pyo. v. rare.
	3.0	FAULT ZONE 20cm c. healed fault breccia. 45° to c.A. Replaced & veined volc. arenite. - c.g. py. to 30% as masses & veins.						237.1 237.35 237.45 238.2	Py 5 replacing buff. Gray. in breccia. Py 10 vein Py 60-80 c.g. (anhedral) & blebs replacing buff.
	3.0	Lithology - buff as above.						238.2 239.5	Py 1 (3) Fg. & rare veinlet
	3.0	Dk. grey to black mudstone w. interbeds of grey green v. f.g. volc. arenite. Interval shows (intense) s. sed def. such as slumping. Mudstone is well bedded but contorted. bedding 0-60° (av. 45°) to c.A. No cleavage.						240 242.9 243.5	Py 5 (10) veinlets assoc. w. qtz. gen low Δ to c.A. (stockwork). Also dissem. 242.6 - 10 cm cassit 2-5% rep? buff locally assoc. w. py. blebs. Py 15 veinlet 0-25° to c.A. & blebs. (silicification).
	3.0	Grey green sericitic & sideritic gen. massive Fg. buff locally veined & weakly replaced by pyrite & pyrenothite Gen. massive (bedded) Fg. tuffaceous fragments brown						245 246.5 248.75	Py 5-10 (20) c.g. to c.g. anhedral to anhedral grains & veins (assoc.) w. cream siderite. Veins to 1cm. gen 30° 35° to c.A. Py 1 Fg. diss & rare vein Py 2-5 Fg. diss. & aggreg. Fg 2-5 Fg. to c.g. diss. & aggreg.
	3.0							248.75 250.0	

Feature **Bedding** **Shearing** **Mineralization**

Foliation Fault Trace Common Abundant Massive

Fragment size & shape Vein c carbonate q quartz

005029

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON MASSIVE	DEPTH m	MINERALIZATION
	250.95	bedded mudstone (.5-4cm long). 249.2-249.6 mottled cream to olive green sideritic? alteration assoc. w. div. pyrrhotite.			250.95	Py & Pgo trace f.g.
3.0	253.4	Interbedded dk. green to lt. grey green massive buff & slumped & det. bedded buff to tuffaceous shale weakly to extensively veined & replaced by Py & Pgo. (tourmalinized)? Tuffaceous interval showing more sed. influence than previous. Bedded material shows slumping & fracturing. Rounded to angular frag. of brown bedded mudstone etc. more continuous but still localized. Patchy but extensive silicification.			251.1 251.45 252.0	P5 f.g. dissem. P10 in veins assoc. w. qtz. 40% c.a. Py & Pgo trace. P4 30 f.g. to c.g. dis. aggreg. & locally replacing tourmalinized rock. Tr. f.g. cream. local. P10-20 f.g. to c.g. dissem. anhedral grains. rare. veins < 1cm = 45% c.a. Tr. Pgo. P50 f.g. to c.g. dis. aggreg. of anhedral grains. replacing tourmalinized rock. Pgo 10 as f.g. in Pgo. rich intervals up to 10 cm wide. P10-20 f.g. sulphide. Tr. violanite assoc. w. cavities. 252.6-10cm 5% cas. - rare other.
3.0	254.5	cream brown to dk. grey interbedded mudstone grading down words to slumped & broken mudstone locally w. a grey green f.g. tuff matrix. 50-40% c.a. No silicification.			253.7	P4 trace Pgo. (trace) f.g.
	255.0	lt. grey green massive tuff (or lava?)			255.0	
	255.5	lt. grey to black variably silicified interbedded (slumped) mudstone w. rare v.f.g. tuffaceous beds veined & locally weakly replaced by Py. Bedded mudstone interval showing s. sed. slumping & (soft) silicification is patchy but intense to highly silicified at base. Bedding (50) 35% to c.a. Replacement min. increases w. silicification & base.			255.2	P4 15-25 (50) v.f.g. to c.g. anhedral dis. Blobs & masses replacing green tourmalinized sed.; & rare thin veinlets as 45% c.a. 2-4cm ga. assoc. w. qtz. Pgo. trace.
3.0	257.5	Pyrite - qtz - tourmaline? rock. A massive featureless rock 75% anhedral Py (1mm to 1cm, ad. 1.5mm) assoc. w. 10% qtz. patches veiled & spines > 10% w. green tourmaline? as for qtz. > 5% anhedral as Py (1mm to 1cm, ad. 2mm). Finest carbonate locally observable.			257.5	P4 75 anhedral f.g. to c.g. masses. As Py 5 anhedral f.g. to c.g. aggreg.
	258.5	Pyrrhotite - qtz - Py rock. A massive to locally banded rock. Pyrrhotite (10%) rapidly becomes the dominant sulphide etc. as intergrain masses w. qtz. 10-20 (40) as inclusions in 2-3mm patches & blebs. P10 occurs as aggreg. of anhedral c.g. Tr. cream siderite as blebs w. 2-3mm. 259.9-10cm 50% to green tourmaline? w. 10% f.g. Pgo. & 10% c.g. Py.			258.65	Tr. v.f.g. cassiterite as aggreg. disst. Tr. violanite or pyrrhotite. P40 70 as a featureless inter connected mass. P4 5 (20) as aggreg. of anh. c.g.
	259.95	qtz - pyrite - sil. rock. A massive rock. qtz 70% as white to grey crystalline silica w. py. dis. aggreg. & 10% blebs & blebs of wrong siderite. upper boundary 50% c.a. gradational lower. Rare qtz veins < 1cm 40% c.a.			259.6 259.95 260.0	P40 40 as a fine interconnected matrix. P4 20 as anhedral f.g. to c.g. aggreg. P4 15 as anhedral f.g. to c.g. dis. with small aggreg. Tr. AsPy assoc. w. P4 20 Pgo. 70 as fine interconnected matrix.
3.0	260.65	Pyrrhotite - qtz rock. A fine complexly intergrown matrix of Pgo. 70% containing circular to irregular inclusions of blebs of qtz. 2-30% locally on a macro scale and rock has a pronounced banding due to the P.O. of the qtz & Pgo. patches.			260.65	
	261.5	Extensively replaced tourmalinized mudstone? Fg. Py & fine interbedded Pgo matrix w. det. patches of green tourmaline? massive rock. only white may be boundary of figure beds representing wall rock.			261.5	P4 40 f.g. to c.g. dis. anhedral. P40 20-25 granular intermasses. Cassiterite 1-2%? as v.f.g. dis. & aggreg.
	262.1	lt. grey to med grey massive to (bedded) mudstone			262.1	P4 15-20 (40) f.g. to c.g. & blebs & veinlets assoc. w. qtz. Tr. Fluorite.
3.0	264.15	Interval shows common s. sed. slumping & fracturing. Rock is highly silicified to 263.1 where silic. becomes patchy local weak replacement by Py.			263.05	P4 7-10 f.g. to c.g. & blebs & less common veinlets 35% c.a. Tr. Fluorite
	264.45	cream to grey to black bedded (cong.) mudstone			264.45	
	265	Highly s. sed. deformed bedded to massive to cong. interval. Clasts of mudstone & a grey unidentifiable silicified & pyritized rock from 1mm to > 3mm form up to 15% of the rock. Younging from bedding at 265.3m => up hole.			265	P4 2-3 (5) f.g. to c.g. & rare veins to < 1cm.
2.9	266.95	FAULT ZONE Pres. healed breccia w. frag. of both rock types.			266.95	P4 10-15 vein assoc. w. qtz & (fluorite)
	267.4	local fluorite veins			267.4	
	267.75	lt. grey highly silicified well bedded to massive mudstone to siltstone bedding 40-60% to c.a.			267.75	P4 rare P4 25-30 f.g. to c.g. rep.?
5		Description - see below.			268.1 268.05	P4 2-3 (10) f.g. to c.g. w. local veinlets 45% to c.a. P4 20-40 c.g. replacement?
1.5	269.7	lt. grey well bedded to massive siltstone to f.g. micaceous quartzite.			269.3 269.7 270	P4 < 1 as f.g.
1.0	270	Only very local silicification in this interval. Basically a homogeneous interval with a weak layer parallel cleavage. Bedding 276.5 - 30% c.a. 279.5 - 60% c.a.			271.0 271.4 272.2 272.5	P4 5-10 veins & blebs. P4 15-20 f.g. to c.g. blebs & veins 45-50% to c.a. P4 2-3 vein stockwork assoc. w. sil.
3.0	273.5	FAULT ZONE f.g. & broken core. ? to c.a.			273.5	P4 < 1 (2-3) f.g. & veinlets
	274.0				274.0	

RECEIVED

12 NOV 1986

Ans'd.....

M. W. A. T. E.

005033

Note: Intervals not analysed should be recorded such that a complete hole is itemised.
For any section not analysed, a value -5.00 should be entered in the relevant assay columns.
It is not necessary to record a zero.

PAGE 1 OF 2

9/12/80

HOLE IDENT.	DISTANCE FROM COLLAR TO BOTTOM OF SAMPLE (metres)	PROGRAMMER								DATE		SAMPLE No.
		ASSAY ppm SNT	ASSAY ppm % STANNITE	ASSAY ppm COPPER	ASSAY ppm ZINC	ASSAY ppm LEAD	ASSAY ppm TUNGSTEN	grammes per Tonne SILVER	SG	% S		
665	175.30	-5.00										
	175.50	850	0.02	300	100	200			<10	3.30	8.0	233775
	176.50	1000	0.01	100	200	100			<10	3.06	1.8	233776
	177.50	2000	0.01	100	200	300			10	3.22	8.4	233777
	178.50	2100	0.02	100	400	17000			40	3.32	10.4	233778
	179.50	300	0.02	<100	200	100			<10	3.06	1.4	233779
	180.50	650	0.02	100	200	300			<10	3.19	7.0	233780
	181.50	1100	0.02	100	700	200			<10	3.14	5.8	233781
	182.50	750	0.02	100	200	<100			<10	3.37	10.1	233782
	183.50	750	0.02	100	100	<100			<10	3.23	7.3	233783
	184.50	320	0.02	100	200	<100			<10	3.04	2.4	233784
	185.50	340	0.02	<100	200	<100			<10	3.07	2.2	233785
	186.50	180	0.02	<100	200	100			<10	3.08	3.0	233786
	187.50	1400	0.02	100	300	200			<10	3.52	17.2	233787
	188.50	120	0.01	<100	200	<100			<10	3.12	4.5	233788
	189.50	140	0.01	<100	200	100			<10	3.20	4.1	233789
	190.50	240	0.01	100	200	100			<10	3.38	8.5	233790
	191.50	460	0.02	100	200	6400			<10	3.14	3.5	233791
	192.50	480	0.02	<100	200	<100			<10	3.30	7.3	233792
	193.50	320	0.02	<100	500	300			<10	3.10	6.2	233793

CTNL

005034

Intervals not analysed should be recorded such that a complete hole is itemised.
 For any section not analysed, a value -5.00 should be entered in the relevant assay columns.
 It is not necessary to record a zero.

AM															PROGRAMMER															DATE 9/12/60																																												
E T.	DISTANCE FROM COLLAR TO BOTTOM OF SAMPLE (metres)					ASSAY ppm					ASSAY ppm %					ASSAY ppm					ASSAY ppm					grammes per Tonne SILVER					SG					% S					SAMPLE No.																																	
	SNT					STANNITE					COPPER					ZINC					LEAD					TUNGSTEN					S.D.																																											
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
665	194	50								1.20						0.02						<100						1300						1000													<10							2.98							0.7							233794						
	195	50								1.800						0.02						100						800						200													<10							3.22							5.2							233795						
	196	50								4.20						0.02						200						300						700													<10							3.09							2.1							233796						
	197	50								4.40						0.02						100						200						<100													<10							3.05							2.2							233797						
	198	50								200						0.02						100						500						5100													<10							3.00							0.8							233798						
	199	50								3.80						0.02						100						200						200													<10							3.05							1.5							233799						
	200	50								4.20						0.02						<100						200						1600													<10							3.11							4.5							233800						
	201	50								6.00						0.02						<100						300						<100													<10							2.96							1.1							238472						

CTNL

005037

Intervals not analysed should be recorded such that a complete hole is itemised.
 For any section not analysed, a value -5.00 should be entered in the relevant assay columns.
 It is not necessary to record a zero.

PROGRAM										PROGRAMMER										DATE 9/12/80																		
HOLE IDENT.	DISTANCE FROM COLLAR TO BOTTOM OF SAMPLE (metres)	ASSAY										grammes per Tonne SILVER	SG	%S	SAMPLE No.																							
		ppm SNT	ppm % STANNITE	ppm COPPER	ppm ZINC	ppm LEAD	ppm TUNGSTEN																															
665	217.50	-5.00																																				
	217.80	380	0.02	200	100	<100					<10	7.90	1.3	233940																								
	218.50	950	0.02	100	<100	100					<10	3.04	4.2	233941																								
	219.50	2600	0.02	500	<100	100					<10	3.13	8.4	233942																								
	220.50	3200	0.02	400	100	<100					<10	3.80	2.8	233943																								
	221.50	2900	0.02	600	<100	<100					10	3.02	9.2	233944																								
	221.80	7200	0.02	300	200	100					<10	3.12	6.3	233945																								
	222.50	15300	0.02	300	<100	100					<10	3.30	11.8	233946																								
	222.80	20300	0.02	100	<100	<100					<10	3.63	4.4	233947																								
	223.50	3400	0.02	300	<100	<100					<10	3.06	4.0	233948																								
	224.50	3200	0.02	200	<100	<100					<10	3.54	19.5	233949																								
	225.50	700	0.02	<100	<100	<100					<10	2.98	0.89	233950																								
	226.50	400	0.02	<100	<100	<100					<10	2.98	0.30	233751																								
	226.70	460	0.02	100	200	300					<10	3.04	1.0	233752																								
	226.90	17500	0.04	1400	300	100					10	3.78	20.1	233753																								
	227.50	420	0.01	300	200	<100					<10	3.22	4.3	233754																								
	228.50	4200	0.02	500	200	<100					<10	3.27	9.1	233755																								
	229.50	5300	0.02	600	100	<100					<10	3.33	10.5	233756																								
	230.50	6100	0.04	700	200	<100					<10	3.40	9.4	233757																								
	231.50	10300	0.02	600	200	200					<10	3.50	7.8																									

ETNL



DRILL HOLE RECORD

005041

Location QUEEN HILL

Property QUEEN HILL

District ZEEHAN

Bearing (M) 280.4

Hole No G66

Commenced 9/8/80

Completed 17/9/80

% Recovery 95%

Grid bearing (M) -11.25

Date 11th DEC. '80

Objective STRUCTURALLY CONTROLLED MINERALIZATION BELOW 946. SECTION 2840 RL-35.

Core size HQ to 117m NQ to 343.0 (EOH)

Co-ordinates 5361534.03N 360779.3E Dip 59.8

Logged S. RICHARDSON

Alt./R.L. 213.842

SURVEY DATA				GRAPH DERIVED DATA			CALCULATED CO-ORDINATES			REMARKS
DEPTH	DIP	BEARING(M)	INSTRUMENT TYPE	DEPTH	DIP	BEARING(M)	NORTHING	EASTING	ALTITUDE	
26M	60°	278.5	EASTMAN	0M	59.8	280.4	5361534.029	360779.298	213.842	
50M	59°	290.5	"	25	60.0	283.3				
80M	58.25	282.5	"	50	59.0	286				No DRILLING PROBLEMS.
116M	56.75	285	"	75	58.25	287.3				
148M	56	282.5	"	100	57.25	288.1				
175.3	54.5	283	"	125	56.5	288.5				
230M	53.75	282.5	"	150	56.0	288.75				
274M	51°	281.5	"	175	54.5	288.4				
307	48.25	281	"	200	54.0	288.25				
337	47	280.5	"	225	54.0	288				
EOH	344M			250	53.0	287.6				
				275	51.0	287.25				
				300	48.75	287.25				
				325	47.5	287				
				350	46.75	286.6				

Feature

Bedding
Foliation
Fragment
size B shape



Shearing
Fault
Vein



Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

005042

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
HQ	0	<p>Lt. grey massive to bedded fine to medium grained siltstone & shale w. thin interbeds of fg (micaceous) quartzite.</p> <p>Bulk of interval is massive homogeneous siltstone & local shale; (S₁ gen 45-50° to c.A.). Qtzite interbeds to 50cm are gen. bedded & homogeneous. S₀ 45-50° to c.A.</p> <p>Core is very broken.</p>							
	2.0							5	
	7.6	← Puggy ground to here							
	3.0							10	Py case.
	2.5								
	2.5							15	
	16.4	<p>Lt. grey fg. (micaceous) quartzite</p> <p>Well bedded interval, bedding defined by wisps & thin interbeds of lt. grey shale. S₀/S₁ 50-60° to c.A.</p>							
	2.5							20	
	3.0							21.3	
	23.2	<p>Interbedded lt. grey fg micaceous quartzite & lt. grey shale.</p> <p>Interbeds & lenses of quartzite assoc. w. shale wisps to interbeds lt. grey quartzite & S.</p>						25	

Feature Bedding Shearing
 Foliation Fault
 Fragment size & shape Vein
 c carbonate
 q quartz

Mineralization Trace 1-5%
 Common 5-15%
 Abundant 15-60%
 Massive >60%

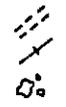
005047

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.0	125.4	Lithology - as above - dk. grey to black (carbonaceous) shale w. interbeds rfts and fragment of lt. grey f.g. quartzite.						125.4	Py 2-3 f.g. dissem + 1-2 (L) veins + blebs.
	127.0	<u>FAULT ZONE</u> Broken core, pug, qtz-py veining. Angle to c.A. appears to be 30-40°.						127.4	Py 10-15 f.g. to c.g. aggreg. assoc. w. vein quartz.
3.0	127.9							127.9	
	130							130	Py rare
	130.6	<u>FAULT</u> - 20° to c.A. - pug.						130.6	
3.0	130.9	<u>FAULT</u> - pug - 50° to c.A.						130.9	
	132.7	<u>FAULT</u> - pug 50° to c.A.						132.7	
	133.0	<u>FAULT</u> - pug - 20° to c.A.						133.0	
	133.5	<u>FAULT</u> - pug - 45° to c.A.						133.5	
	134.5	<u>FAULT ZONE</u> Pug and broken core. Unknown angle to c.A.						135	
2.6	135							135	
	137							137	
	137.0	<u>FAULT</u> - pug 7° to c.A.						137.0	
3.0	137.0							137.0	
	139.9							139.9	2 cm py vein 30° to c.A.
	140.0							140.0	Py 5 veinlet.
3.0	140.3							140.3	Py 1-2 veinlet
	142.5							142.5	Py rare.
	143.4	<u>FAULT</u> - pug - 90° to c.A.						143.4	
	143.55							143.55	10cm Py 60 Sm 3-5 vein 70° to c.A.
3.0	143.7	lt. grey f.g. quartzite. Thicker interbed of massive f.g. quartzite in QS.						143.7	Py 2-3 veinlet (stockwork). vein assoc. w. siderite.
	144.5	<u>FAULT</u> - pug 70° to c.A.						144.5	
	145							145	
3.0	145							145	
	147.5	<u>FAULT</u> - pug - 45° to c.A.						147.5	
	148.3	<u>FAULT</u> - pug - 30° to c.A.						148.3	
3.0	148.4	lt. grey f.g. quartzite. Thick interbed of massive locally sed. brecciated quartzite.						148.4	
	150	<u>FAULT ZONE</u> - Broken core = POC. 148.8-151.0 ?° to c.A.						150	

005050

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



c carbonate
a quartz

Mineralization

466
Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON ABUNDANT MASSIVE	DEPTH m	MINERALIZATION
25	200.6	Lithology - as above - dk. grey to black (carbonaceous) shale w. frag. rafts & interbeds of lt. grey f.g. (micaceous) quartzite (slumped & contorted).				
25	203.6	<u>FAULT ZONE</u> Broken core & pug, kernels of solid core in pug. Apparent angle to C.A. is 35-40°.			205	Py rare
15	208.6					
2.8	210				210	
	216.5	<u>FAULT ZONE</u> Broken core, pug and qtz-py-sid veins. A complex zone of broken rock and veining. Indications of angle to C.A. are 20-30°.			211.2 211.7	Py 40-50 c.g. in qtz vein. 45°? to C.A. Py 2-5 (10) c.g. to f.g. assoc. w vein qtz & qtz-sid veins. gen 10-20° to C.A.
2.9					214.2	
	215				215	
2.3						Py rare (1-2) vein
3						
	219.8				219.4	Py 10 f.g. in qtz vein 40° to C.A.
2.0	220				220	
					220.5	2 in py 90 sid vein 30° to C.A.
3.0					222.3 222.5	1 in py 80 qtz vein 25° C.A. 3 in py 90 qtz-sid vein 30° C.A.
3.0	223.9 224.1	<u>FAULT ZONE</u> - Pug 30° to C.A. 1 in sid vein 15° to C.A.			224.9 225	

Feature

- Bedding
 - Foliation
 - Fragment size & shape
 - Shearing
 - Fault
 - Vein
- c carbonate
q quartz

Mineralization

- Trace 1-5%
- Common 5-15%
- Abundant 15-60%
- Massive > 60%

005051

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		Lithology - as above - dk. grey to black (carbonaceous) shale w. frag. rafts & interbeds of lt. grey f.g. (micaceous) quartzite.	[Visual Log Column]						
	3.0	2280 Cream mg. to coarse crystalline siderite rock. Rest. sed. carbonate. Dusky calc. material around Xals.						2280	
		229.6							
		dk. grey to black (carbonaceous) shale w. frag. rafts & interbeds of lt. grey f.g. (micaceous) quartzite.						230	Py rare.
	30	230							
		Description as for 107.0 - 143.7m.							
		FAULT - Broken core 7° to c.A.						233.2	
		FAULT - Dip 20° to c.A.						233.6	
	30	234.0						234.0	
		FAULT - Dip 45° to c.A.							
		235						235	
		235.2						235.2	
		235.6						235.6	Py 7-10 (25) f.g. vein.
		FAULT ZONE - Broken core & Py veins 70° to c.A.						235.4	
		236.4						236.4	
	2.9	lt. grey f.g. micaceous quartzite w. thin interbeds of lt. grey shale & lt. grey siltstone						237.8	Py rare
		A very well bedded interval of qtz rich rock. Bedding at a very low angle to c.A. 0-15°. Only minor s. sed deformation						239.1	1cm Py 90 c vein 50° to c.A.
		239.6						239.6	1cm Py 80 c vein 65° to c.A.
	30	240						240	
									Py 1 veins assoc w sid 20-90° to c.A.
		242.4						242.4	
		244.6						244.6	
		245						245	Py rare.
		dk. grey to black shale w. fragments to sum of lt. grey f.g. quartzite.							
	3.0	245.9						245.9	
		cong. QS.							
		lt. grey f.g. quartzite. Lge interbed in QS.							
		246.5						246.5	
		dk. grey to black shale w. frag. rafts & minor interbeds of lt. grey f.g. (micaceous) quartzite.							
		QS as for 107.0 - 143.7m.							
		248.6						248.6	15cm Py 80 and qtz vein 45° to c.A.
	3.0	249.3						249.3	
		rare Py shale.							
		med grey siltstone uniform bedded rock 30° to c.A. with v. weak layers // cleavage.							
		250						250	

Feature	Bedding		Shearing		Mineralization	Trace	1-5%
	Foliation		Fault			Common	5-15%
	Fragment size & shape		Vein			Abundant	15-60%
						Massive	> 60%

005053

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	3.0	<p>Interbedded lt. grey to black (conglomeratic) siltstone to shale gen. slumped & contorted.</p> <p>Typical QS now makes up only a fraction of this complex interbedded & slumped interval.</p> <p>The interval is well bedded in general commonly 20-40° to c.A.</p>						277.2 277.7 278.05	<p>Py rare</p> <p>2m Py 80 sid, ser. vein. 25° to c.A.</p> <p>Py 10-15 vein stockwork.</p> <p>Py rare</p> <p>10m py 15 vein stockwork</p>
	3.0							279.7 280 280.1	<p>Py rare</p> <p>10m Py 30 Py bedded.</p> <p>3m Py 30 sid vein 25° to c.A.</p>
	3.0							285	
	3.0							286.45 288.05	
	3.0	<p>Dr. grey bedded dolomite. A very uniform rock. Bedding is undeformed and 35° to c.A. Common white c veins to .5cm occur at low to c.A.</p>						289.5 290	<p>1cm py 60 sid vein 45° to c.A.</p>
	3.0	<p>Black carbonaceous shale. A very uniform almost featureless rock. No definite bedding is observed. Rare sed? py clasts occur to low. Cleavage at 35-40° to c.A.</p>						291.7	
	3.0	<p>Interbedded conglomeratic grey mudstone, cong. brown pyritic mudstone & grey dolomite.</p> <p>A complexly interbedded interval of the above rock types. Conglomeratic portions of the interval contain clasts to 70cm of grey massive dolomite. which can form the majority of the rock. Py. mud? clasts are common also.</p>						295 297.1	<p>Py 10-15 v.f.g. bedded as py. mudstone.</p>
	3.0							297.5 297.8 298.1	<p>Py 30 Py, 10c.g. & vein assoc w gfs & sid.</p>
	3.0	<p>FAULT - broken core 30° to c.A.</p> <p>FAULT ZONE broken core, pug and py vein. Appears to bed 40° to c.A.</p> <p>FAULT - 25° to c.A. - pug.</p> <p>Cream sideritic dolomite</p>						298.7	<p>Py rare.</p>



DRILL HOLE RECORD

005056

Location MONTANA

Property QUEEN HILL

District ZEEHAN

Bearing (M) 289.83°

Hole No G.67

Commenced 8/9/80

Completed 30/9/80

% Recovery 89%

Grid bearing (M) -11.25°

Date 18th Nov. '80

Objective Plunging lens R200; Section 3570

Core size Hw to 3m, HQ to 69m, NQ to 223.5m

Logged S. RICHARDSON

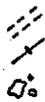
Co-ordinates 5362073.72N 361219.43E Dip 64.30°

Alt./R.L. 181.24

SURVEY DATA				GRAPH DERIVED DATA			CALCULATED CO-ORDINATES			REMARKS
DEPTH	DIP	BEARING(M)	INSTRUMENT TYPE	DEPTH	DIP	BEARING(M)	NORTHING	EASTING	ALTITUDE	
52M	63	285	EASTMAN	0M	64.3	289.83	5362073.72	361219.43	181.24	Ground around intersection is very broken with considerable cote loss.
91M	62	286	"	25	63.75	291.8				
127M	60	292.5	"	50	63.0	292.9				
157M	59	290.5	"	75	62.5	294				
190M	57	290.75	"	100	61.5	296.1				
EOH	2235M			125	60.25	297.7				
				150	59.25	298.8				
				175	57.75	299.4				
				200	56	299				
				225	54.25	299.3				

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



carbonate
quartz

Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

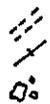
005057

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		No core - HW through tailings pile & swamp.							
	3.0	<u>Black carbonaceous shale.</u> A homogeneous rock with a locally well developed cleavage; gen // to c.A. No definite bedding is observed. Core very broken.						5	P ₄ rare
	7.5	<u>Lt. to med grey cong. tuffaceous greywacke.</u> A bedded highly tuffaceous rock w. oblate black shale clasts // to bedding forming to 15% of rock. Core very broken.						10	
	10.5	<u>Lt. grey to dk. grey shale.</u> A gen. homogeneous interval. cleavage is weak & parallel to weak bedding where present. Rock is locally cong. w. oblate black shale clast forming a minor component. Core is very broken. Bedding 30° to c.A.?						15	
	17.5	<u>Med. grey cong. tuffaceous greywacke</u> Description as for 7.5 - 10.5 m. Bedding 0 - 20° to c.A.						20	
	18.9	<u>Lt. grey green f.g. tuff.</u> Transitional contact over 20cm. w. unit above.							
	20	A gen. massive to locally bedded rock. Highly sericitic rock w. minor flakes of dk. green chlorite. Texture is gen. homogeneous f.g. to m.g. volc. material. Local bedding is in finer material's is 45° to c.A. Irregular fracture surfaces low to mod. angle to c.A. show mi p.o. location low angle to c.A. Core is badly broken. 20.0 2m c vein 30° c.A.							

HW
HQ

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



carbonate
quartz

Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

650500

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
1.5		Lithology - as above - interbedded well laminated mudstones.						1.5	
1.5								1.5	
1.7								1.7	
1.2	55							1.2	55
3.0								3.0	
3.0	60						60	Py rare	
1.9									
1.3									
2.0	65-65.25	lt. grey to dk. grey lithic arenite - massive dominantly tuffaceous rock.						65	
1.0	66.2	lt. grey green massive to bedded volcanic arenite. A tuffaceous rock. bedding 25° to c.A.						66.2	
1.3	67-68	Interbedded med to dk grey mudstone & lt. grey green volc. arenite.						67	
1.5	70	Gen well bedded mudstones containing oblate clasts of black mudstone av. 1cm x 2mm // to bedding. Bedding is consistently low angle to c.A. (0-20°)						70	
2.0		Interbeds of volc arenite (ie tuffaceous graywacke) (50%) to 60cm. Boundaries are gen. conformable to bedding & may show sed. brecciation of the tuff & local slumping.							
3.0	74.8							75	

HQ
NQ

Feature

Bedding



Shearing



Foliation



Fault



Fragment
size & shape



Vein



c carbonate
q quartz

Mineralization

Trace 1-5%

Common 5-15%

Abundant 15-60%

Massive > 60%

005001

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	101.2	Interbedded cream to lt. grey to black mudstone to siltstone and cream to lt. grey f.g. to m.g. volcanic arenite; slumped & contorted.							
	3.0	A thick interval of gen. well bedded mudstone to siltstone associated w. thin to thick (1mm to 2m) interbeds of massive tuffaceous greywacke. Slumping & rafting and s. sed. faulting are common features. This mudstone beds may be very contorted.						105	
	3.0	Bedding is gen. constant through the interval at low to mod. angles to c.a.							
	3.0	102 m - 40° 106 m - 45° 110 m - 15° 115 - 30° 120 - 45° 125 - 45° 130 - 10° 135 - 30° 140 - 35°						110	
	3.0								P ₄ rare
	3.0							115	
	3.0							120	
	3.0							123.5	

2m core 20° c.a.

005064

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



c carbonate
q quartz

Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
								175.3	See Gn 2-3, Sp 2-3 sid vein 65% loc. A.
30	178.4	Lithology - as above - Dk. gray to black (carbonaceous) massive to bedded mudstone & shale.							
26	180	Lt. gray well bedded siltstone to mudstone. A very uniform well laminated rock. Bedding is constant at 60-70° throughout the interval. A very weak layer parallel cleavage is present.						180	
30	181.3	Lt. gray brecciated weakly to extensively silicified dolomite. Weak brecciation grades rapidly at 182.2 to extensive brecciation. Subrounded to angular moderately silicified dol. frag. 1mm to 2cm (local) are pervaded by a highly siliceous matrix. Tectonic breccia?						185	Py rare
30	185.85	Cream sideritic dolomite breccia. 185.85 m marks the rapid gradational incoming of intense siderite alteration of the dolomite breccia lithology above. The alteration overprints the fragments but may leave the siliceous to silty intra fragment material unaltered. This sideritic alteration is assoc. with minor amounts of resinous sphalerite & f.g. galena & possible covellite?? which occur as f.g. diss. & rare veins. 186.3-186.7 - 10% soln cavities						185.85	Sp 1-2 (5) f.g. diss. & aggreg. Gn 1-2 (5) " " both also assoc. w. rare qtz. veinlets. Py rare
6	190	186.3-186.7 - 10% soln cavities						190	
6	192.3	Py-siderite-qtz lode. A gen massive lode though a local weak layering on cm scale defined by py & sid rich beds may occur; 50-60° to c.A. Consists of py 20-80% av. 60% as f.g. to m.g. aggreg. & often bladed xtals → mineralization in a stressed env. Cream siderite 5-70% gen 20% occurs as irreg. f.g. aggreg. to anhedral e.g. white qtz. 5-20% as irreg. blocks & wisps & rare irreg. & discont. veins (brecciating py.) Ground is broken with only 70 core recovery. 194.3 FAULT - pug 20 to c.A.						191.6	
6	192.3							192.1	Py 25 f.g. aggreg. assoc. w. qtz & siderite.
17	195							192.3	Py 70 f.g. assoc. w. sid 20 w qtz 10 Tr. Gn. f.g. to m.g.
8	195							192.7	Py 80 (20-60) f.g. to m.g. aggreg. & also assoc. w. sid. & lesser qtz. Tr. Gn f.g. to m.g. diss.
								193	
								195	
								196.1	Py as above. Gn 2-3 f.g. to m.g. aggreg & veins. 25% to c.A.
								196.7	Py as above.
								197.7	Py 70 Py. to m.g. aggreg. assoc. w. qtz & sid.

005066

Note: Intervals not analysed should be recorded such that a complete hole is itemised.
 For any section not analysed, a value -5.00 should be entered in the relevant assay columns.
 It is not necessary to record a zero.

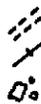
PAGE 1 OF 1

PROGRAM										PROGRAMMER										DATE									
HOLE IDENT.	DISTANCE FROM COLLAR TO BOTTOM OF SAMPLE (metres)					ASSAY ppm	ASSAY ppm %	ASSAY ppm	ASSAY ppm	ASSAY ppm	ASSAY ppm	ASSAY ppm	ASSAY ppm	grammes per Tonne	S.G.	% S.	SAMPLE No.												
	SNT	STANNITE	COPPER	ZINC	LEAD	TUNGSTEN	SILVER																						
E67	185	30																											
	185	85	1200	0.04	20	280	420						110	2.83	0.17	233851													
	186	30	280	0.01	<20	3900	1300						110	3.30	0.19	233852													
	187	30	180	0.02	<20	3400	950						110	3.13	0.05	233853													
	188	30	1100	0.01	20	8200	3200						110	3.51	0.81	233854													
	189	30	220	0.01	<20	5000	2400						110	3.28	0.47	233855													
	190	30	340	0.01	20	9200	6100						20	3.48	0.65	233856													
	191	30	440	0.02	20	7200	5800						10	3.58	1.01	233857													
	192	30	1700	0.02	20	13000	1300						10	3.52	1.28	233858													
	192	70	1900	0.02	500	18500	89000						190	3.38	11.20	233859													
	193	30	43900	0.02	200	1000	11000						90	4.24	26.40	233860													
	194	30	14600	0.03	1000	2000	5200						35	4.22	26.10	233861													
	195	30	92100	0.02	200	800	2300						20	4.14	12.10	233862													
	196	30	38000	0.02	300	7400	69000						140	4.13	18.70	233863													
	197	30	45400	0.04	900	27000	70000						255	3.90	14.40	233864													
	198	30	29700	0.02	300	3500	6500						35	4.10	24.00	233865													
	199	30	14800	0.01	200	1200	1500						15	4.01	25.50	233866													
	200	00	22500	0.02	100	3300	1300						10	3.87	18.40	233867													
	200	30	10300	0.01	100	8100	900						10	3.70	6.69	233868													
	201	30	1500	0.01	20	5200	2400						10	3.68	0.85	233869													

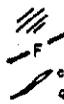
CINL

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



c carbonate
q quartz

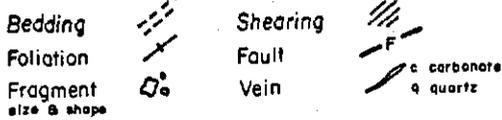
Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

690600

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	3.0	<p>Lt. grey f.g. micaceous quartzite w rare thin micaceous siltstone & quartz grit interbeds</p> <p>A gen massive to locally well bedded interval.</p> <p>Silty interbeds (to lt. grey shale) & grit intervals to 20 cm and 1-2 cm. w rare.</p> <p>Cleavage is poorly developed in the quartzose intervals defined by p.o. of micas.</p> <p>Lab is weakly to locally extensively veined by stockwork of qtz veins to 2cm.</p>							
	3.0							30	
	3.0							35	Py rare
	3.0							40	
	3.0							45	
	3.0							48.1	
	3.0	<p>Lt. grey to dk. grey shale w. frag. rafts & thin interbeds of lt. grey f.g. quartzite.</p> <p>Slumping & rafting common in this interval.</p>						5	

Feature



Mineralization

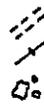
Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

005070

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	MINERALIZATION			DEPTH m	MINERALIZATION
				TRACE	COMMON	ABUNDANT		
	50.1	Lithology - as above.						
	51.6	FAULT ZONE - Broken core & pug. Zone 10-40° to c.A.						
2.0	53.0	Lt. gray massive to locally bedded siltstone to shale w. rare thin quartzite interbeds & qtz. grit beds to 30cm. ungraded grits 20° to c.A. Bedding 20-35° c.A. massive siltstones gen have poor cleavage but good layer // cleavage in bedded rock.				55		
3.0	56.8	Lt. grey massive quartzite. Highly siliceous massive rock. qtz veins to 3cm 10° to c.A. over printed by cream sid veins 40-50° to c.A. Description as for 10.5-16.5				60	Py rare	
6	60.7	FAULT ZONE Broken core & pug. Unknown angle to c.A.						
4		3cm qtz ?° to c.A.				62.7		
3	63.0							
6								
2.1	65.0					65		
7	65.1	FAULT ZONE Broken core & pug 45° to c.A.						
3.0	66.4	Interbedded lt. grey f.g. (micaceous) quartzite & lt. grey shale. A well bedded (slumped) interval with a good gen. layer // cleavage. So varies from 0-90° to c.A. Si gen 65-70° to c.A. Interbedding is on cm. scale. Quartzite is often lenticular beds. FAULT - 80° to c.A. - Pug				70 70.3 70.7 70.8 71.2	Py 1-2 f.g. & veinlet. no. P.O. 2cm cm thin 50° to c.A. Py 5-7 veinlet (stockwork)	
3.0	70							
5	72.7	FAULT ZONE - Broken core pug & sheared shale. Probably 80° to c.A.				72.7 72.9 74.5	10cm Py 70 qtz vein 70° to c.A. Py 5 veinlet. Py rare 3cm Py 20 qtz 10 qtz, sid vein.	

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



c carbonate
q quartz

Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

005071

HQ
NQ

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	0.9	<u>FAULT ZONE</u> as above - less intense shearing at base of zone.							
	2.0	Dark grey to black shale w. fragments							
	0.5	rafts & interbeds of lt. grey f.g. (micaceous) quartzite.							
	0.5	Dark (carbonaceous) shale matrix w. contorted grey f.g. siltstone fragments to interbeds.							
	0.5	Siltstone beds are usually fractured & deformed by mainly s. sed. def. & local tectonism.						80	
	0.9	Rocks moderately to extensively veined by white qtz veins which are also deformed.							
	81.6							81.9	
	1.9	FAULT - Pug 70° to c.A.						82.3	
	82.8	FAULT - Pug 80° to c.A.							
	83.3	<u>FAULT ZONE</u> Broken core & pug 60° to c.A.							Pg rare
HQ	0.3								
NQ	0.7	FAULT - Pug 65° to c.A.						84.4	
	0.3							85	
	1.2	FAULT - Pug 30° to c.A.						85.6	
	1.2	FAULT - Pug 40° to c.A.						86.2	
	1.2								
	87.6	<u>FAULT ZONE</u> Broken core & minor pug.							
	0.6	50-60° to c.A.							
	89.0							89.4	
	1.2	FAULT - Pug 75° to c.A.						90	
	3.0	Cleavage is gen parallel to bedding.							
	3.2							95	
	3.1							96.9	
	100	FAULT - Pug 50° to c.A.						100	

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



carbonate
quartz

Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

005073

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON ABUNDANT MASSIVE	DEPTH m	MINERALIZATION
1-5	126.8	FAULT ZONE as above.				
2-8	130	Lithology - as above - dk. grey to black. (carbonaceous) shale w. rafts frag. & interbeds of lt. grey f.g. (micaceous) quartzite. FAULT - Broken core 7° to c.A. FAULT - Broken core & pug 20° c.A.			127.1 129.7 130	
2-8	135	FAULT - pug 30° to c.A. FAULT - pug 35° to c.A.			131.8 132.2	Py rare
3-0	136.0	FAULT - Broken core 7° to c.A.			135 135.4	
3-0	136.9	lt. grey f.g. quartzite Massive to weakly bedded 30° to c.A. Interbedded (slumped) med. grey to black shales. Bedding gen. good 10-40° to c.A. Sluiping (intense) Interbedding on scale of mm's and cm's Interval locally conglomeratic 137.4 - 1cm qtz - sil vein 45° c.A.			137.4 140	
3-0	145	FAULT - Broken core 7° c.A. FAULT - Broken core 40° to c.A.			144.5 145.5	Py rare
2-8	146.6	FAULT ZONE Broken core & pug. probably 20° to c.A.				
1-1	148.0					
	149.1					
	150				150	

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

005075

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON ABUNDANT MASSIVE	DEPTH m	MINERALIZATION
3.1	175.1 175.4	Lithology - as above.			175.1 175.4	Py 2-3 f.g. & f.g. bedded. Py rare.
2.4	177.1 177.5 178.3 178.9	FAULT - Broken core 25° to c.A. FAULT - Pug 20° to c.A. FAULT - Pug 35° to c.A.			177.1 177.5 178.3 178.9	Py 10-12 f.g. & veinlet. Tr An. vein. both assoc. w. sid. Py 1-2 f.g. & f.g. bedded. + assoc. w. vein sid.
3.2	180 180.9				180 180.9	1 cm An. vein sid vein 35° to c.A.
3.2	181.5	Lt. grey gen massive mudstone to siltstone w. local intraformational conglomerate in black shale matrix upper 50 cm is black conglomeratic shale w clasts of massive mudstone & lt. grey quartzite. to 5cm. Bulk of interval is massive mudstone.			181.5	Py rare veinlet assoc w sid. Py rare.
3.2	185 186.7	w. black cong. shale bed 184.5 (50cm) w mudstone & quartzite clasts & rafts. Bedding 10° to c.A. in gen. FAULT - 60° to c.A. Pug. FAULT - 60° to c.A. Pug. END OF HOLE			185 186.7	
	190 195 200				190 195 200	



DRILL HOLE RECORD

005076

Location SEVERN
Commenced 23/10/80

Property QUEEN HILL
Completed 6/11/80

District ZEEHAN

Bearing (M) 270.94

Hole No 669

% Recovery 95%

Grid bearing (M)

Date 14th DEC '80

Objective STRUCTURALLY CONTROLLED SEVERN
MINERALIZATION RL 50

Core size HQ to 96m, NQ to 208.5 (ECH)

Logged S. RICHARDSON

Co-ordinates 5361588.81 N 361022.70 E Dip 53.52

Alt./R.L. 183.48

SURVEY DATA				GRAPH DERIVED DATA			CALCULATED CO-ORDINATES			REMARKS
DEPTH	DIP	BEARING(M)	INSTRUMENT TYPE	DEPTH	DIP	BEARING(M)	NORTHING	EASTING	ALTITUDE	
34M	55°	266	EASTMAN	0M	53.5	270.94	5361588.81	361022.70	183.48	
67M	55.25	265	"	25M	54.75	269.8				DRILLING MUD USED.
93M	55.5	265.75	"	50	55.25	268.4				
127M	55	267	"	75	55.5	268.2				NO DRILLING PROBLEMS.
157M	52.75	269.5	"	100	55.5	268.9				
190M	46.75	271	"	125	55.25	270.2				NO CASING LOST.
ECH	208.5M			150	53.5	272.1				
				175	50	274.2				
				200	44.25	276.7				
				225	38	278.7				

8205000

Feature Bedding  Shearing 
 Foliation  Fault 
 Fragment  Vein 
 size & shape

Mineralization Trace 1-5%
 Common 5-15%
 Abundant 15-60%
 Massive > 60%

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
1-2		Lithology - as above - cream to grey green f.g. volc arenite w frag. rafts & interbeds of dk. grey mudstone to shale.							
1-3									
1-7	29m	----- <u>APPROX BASE OF OXIDATION.</u> -----							
1-2	30.7	Dk. grey to dk. grey green (cong.) mudstone. v.f.g. probably tuffaceous mudstone. no cleavage. Bedding 20-25° to c.a. Clasts to 3cm. of black mudstone.						30.4 30.6 30.9	Pf 15 of vein stockwork. a 35° c.a. 15cm pf 80 sid ven 55° to c.a.
1-4	32.2								
1-0		Bedded to massive lt. grey green f.g. volc. arenite w fragments rafts & thin (contorted & slumped) interbeds of lt. grey green to dk. grey mudstone.							
1-0	35	A very thick unit of tuffaceous sediment. Soft sed. def. is locally intense causing rafting and slumping.							
3-0		bulk of interval is lt. grey green f.g. volc. arenite gen massive but locally w. clasts of mudstone to 5cm.							
3-0		Bedding varies locally between 20 to 60° to c.a.							
2-6	42.8	----- <u>FAULT ZONE</u> -----							
8		Broken core or pug.							
1-0	45	Angle to c.a. is obscure but probably ≈ 30° to c.a.						45	
9									
8									
2-0	47.7	-----							

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



c carbonate
q quartz

Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

005080

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		FAULT - broken core & pug 25° to c.A.						75.7	
2.5		Lithology - as above - Bedded to massive lt. grey green f.g. volc. arenite w. fragments, rafts, & thin & thin (contorted & slumped) interbeds of lt.							Py rare
1.0		FAULT - pug & broken core. 30° to c.A.						78.5	
	80							80	
	80.3	FAULT - pug 65° to c.A.						80.3	
3.0		FAULT - pug 45° to c.A.						80.7	
	82.5								
3.0		FAULT ZONE Broken core, pug & c. healed breccia at v. low angle to c.A. (0-10°) Contact between lithology above & below is fault.							
	84.3								
	85	dk. grey to black (tuffaceous) shale w. rafts frag. & very numerous interbeds of lt. grey green volc. arenite.						85	
	85.9							85.9	
	86.7	FAULT - Broken core 20° to c.A.						86.7	
3.0		Thin wisps and interbeds of tuffaceous sed. are very common. S. sed. det., slumping etc locally intense.							
	88.3	FAULT - Broken core 80° to c.A.						88.3	
	88.9							88.9	
	89.8	FAULT - Broken core 20° to c.A.						89.8	
3.0		have py. fragments.							
	90							90	
	91.2							91.2	Py 1-2 (10) vein assoc. w. qtz.
	91.9							91.9	3cm py 60 qtz, sil vein 50° to c.A.
	92.3							92.3	Py 40 sil vein w. rock frag. 30° to c.A.
3.0		lt. grey green f.g. volc arenite grading to lt. grey green tuffaceous mudstone grading to dk. grey green tuffaceous shale.							
	92.8							92.8	
	93.1							93.1	
	93.3							93.3	
	95	A tuffaceous interval showing evidence of quiescence with lt. grey green massive to weakly bedded mudstone & sed. activity with the slumped & rafted tuffaceous shales & locally cong. volcanic arenite.							
1.7								95	
	95.6							95.6	
	95.8							95.8	1 cm py 90 c vein. 25° to c.A.
	97.3							97.3	
	97.7							97.7	2cm con 25 sil vein 45° to c.A.
	97.9							97.9	2cm py 70 c vein 45° to c.A.
	98.7							98.7	
	99.1							99.1	3cm py 90 c vein 30° to c.A.
	99.65							99.65	
	99.8							99.8	Py 25-25 f.g. to c.A. & vein stockwork, above w. sil. & Tr. U. caps. f.g.
	99.9							99.9	Py 10-15 sil w. qtz, sil. concs. (f.g.).
	99.95							99.95	
	99.98							99.98	
	100							100	

HQ
Nq

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



carbonate
quartz

Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive >60%

005082

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		FAULT ZONE - As above.							Py rare.
1.6	126.4	Lithology - as above.						127.2 127.5 128.0 128.3	2cm py 90 sid ven 11 c.A. Py 5 F.g. & veinlet 11 c.A. 2cm py 90 sid ven 11 c.A.
3.0	130							130	Py rare
3.0	131.2							131.2 132.1 132.4	5cm py 30 sid ven 30° to c.A. Py 2-3 F.g. & vein assoc. w. sid. & qtz Py 15-17 F.g. diss & aggrg // bedding Py 1-2 veinlet
3.0	135	FAULT - Pug 50° to c.A.						134.5 134.7 135.0 135.5	3cm py 90 c vein 65° to c.A. Py 10 F.g. to c.g. & veinlet. Py rare
1.5	136.5	Cream to lt. grey green buffaceous mudstone. Massive buffaceous sediment. Mottled alteration between cream and green rel. to F.2.						136.3 136.4	Py 50 vein assoc. w. sid. 50° c.A.
1.0	137.8	FAULT ZONE Broken core pug & Py veining 40° to c.A.						137.7	Py 15 vein (stockwork) & F.g.
2.0	140.9	FAULT - Pug & c vein 30° to c.A. FAULT - ?° to c.A. Broken core.						139.7 140 140.1 140.8 141.3 142.0	10cm py 99 q. vein ?° to c.A. Py 1 veinlet.
2.1	143.0	FAULT ZONE - pug & breccia 40°? to c.A.							
1.4	145	Interbedded dk. grey to black shale & lt. grey siltstone to F.g. quartzite						145	
3.0	148.0	Extremely well bedded interval of finely interlaminated arenaceous and pelitic rocks. on the mm & cm scale. Stumping is present but not common. Rock has a good layer // cleavage. S/s 144 - 50° c.A.						148.0	1cm py 95 c vein 15° c.A.

Feature Bedding  Shearing 
 Foliation  Fault 
 Fragment size & shape  Vein 
 c carbonate
 q quartz

Mineralization Trace 1-5%
 Common 5-15%
 Abundant 15-60%
 Massive > 60%

580300

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON ABUNDANT MASSIVE	DEPTH m	MINERALIZATION
	30	Lithology - as above - Interbedded dk. grey to black shale & lt. grey siltstone to f.g. quartzite. 5/50 150 - 50° c.A. 155 - 60° 160 - 50°			150.8	1 cm py 50 sid vein 35° to c.A.
	30				155	
	30	qs as above but much more finely interbedded			156.3	2 cm py 60 sid vein 40° to c.A. py 1-2 (5) v.f.g. diss & bedded in qtzite. & blab & rare veinlet.
	30				158.6	6 cm py 90 sid vein 35° to c.A.
	30	← x bedding → younger			160	
	30				161.8	2 cm py 20 veinlets. 30° to c.A. py rare
	30				163.7	py 1 veinlet no p.o.
	30	FAULT - pug - 40° to c.A. FAULT - pug 35° to c.A.			165.5	py 40 vein stockwork 45° c.A. 165.2 - 2 cm Stn 50 massive. py rare py 10 veinlets assoc w sid. py rare (2-3) veinlets.
	30				167.3	2 cm py 60 sid vein 35° to c.A.
	30				168.0	6 cm py 90 qtz vein 40° to c.A.
	30				168.8	py 80 qtz sid vein w. lithic inclusion 50° to c.A.
	30				170	py rare
	30				171.85	1 cm py 50 sid vein 50° c.A.
	30				172.1	2 cm py 90 sid vein 40° c.A.
	30	dk. grey shale w. wisps & interbeds of lt. grey green rufaceous mudstone & rare f.g. quartzite. - Stumped			173.4	
	30				1740	

Feature

Bedding
Foliation
Fragment
size & shape



Shearing
Fault
Vein



c carbonate
q quartz

Mineralization

Trace 1-5%
Common 5-15%
Abundant 15-60%
Massive > 60%

580900

CORE RECD	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3-1		Lithology - as above.							
3-1	202.8 205	Lt. grey f.g. (micaceous) quartzite w. occasional interbeds of lt. grey shale. Quartzite gen. massive & saccharoidal in texture. shale interbeds to 5cm give bedded nature 50-60° to C.A.						205	
3-0	208.5	END OF HOLE							
	210 215 220							210 215 220	

APPENDIX 2

Petrological Descriptions as follows:-

<u>Sample No.</u>	<u>Hole No.</u>	<u>Depth</u>
233824	G45	46.0m
233808	G65	249.2m
233809	G65	252.4m
233810	G65	257.8m
233811	G65	261.3m
233812	G65	261.8m
233819	G65	234.9m
233820	G67	20.0m
233822	G67	190.0m
233823	G67	221.4m

233 808 (T.S. 34140)

This specimen is representative of a fine- to medium-grained phlogopite-quartz rock with disseminated to semi-massive, fine-grained pyrrhotite. The rock exhibits a lenticular, somewhat contorted, sub- to millimetric scale banding and is of altered sedimentary character. Nature of the original sediment is obscure, but, in the absence of relict clastic features, it may have been an impure carbonate facies or calc-pelite. Minor traces of relict carbonaceous matter tend to confirm the altered sediment interpretation.

The bulk of the rock comprises extensively chloritised, fine-grained, random to semi-orientated pale brown phlogopite with subordinate, closely intergrown, phlogopite-stained, granular to subhedral quartz. Relatively massive quartz lenses occur sporadically and represent conformable, discontinuous veins, at least in part. These features are paralleled by spongy, discontinuous lenses of ankeritic carbonate. Accessories include irregular patches and euhedral disseminations of cloudy apatite, traces of extremely fine, acicular, pale brown tourmaline and conspicuous, very fine, virtually opaque rutile.

Sulphides occur as fine-grained disseminations and films throughout the phlogopite-quartz aggregates. These "grade" into semi-massive, fine-grained spongy lenses with intergranular phlogopite and minor quartz. These zones comprise mainly granular, mosaic-textured pyrrhotite aggregates including sparse single to clustered pyrite (to 1.5 mm, generally $< 100 \mu$) and arsenopyrite euhedra. Irregular blebs and crude lenses of chalcopyrite and stannite (to 200 μ) are disseminated throughout. Cassiterite was observed only as extremely rare microscopic grains (max. 25 μ , typically $< 15 \mu$) embedded in stannite.

Pyrrhotite, in this rock, is incipiently altered along sparse late microfractures, to marcasite.

233 809 (T.S. 34141)

This rock appears related to 233808, but reflects a late phase of siderite-pyrite alteration. It can be classified mineralogically as a siderite-pyrite rock.

Gross textural features are similar to the previous specimen and comprise essentially a crude lenticular sulphide/carbonate banding disrupted by crosscutting, discontinuous films of sulphide. Carbonate zones consist of coarse poikilitic anhedral, semi-lustre-mottled siderite, weakly but pervasively stained with microscopic talc

inclusions (?retrograde after phlogopite). Interspersed sulphide lenses and films consist of fine to ultrafine pyrite (secondary after pyrrhotite), enclosing sporadic patches of paler (ankeritic) carbonate at the cores with minor, closely intergrown fluorite. Accessories include traces of quartz and rare films of sellaite, typically associated with the ankerite-fluorite clots. Cassiterite is sparsely present as cloudy, microscopic particles (mean 5-15 μ) and spongy, microcrystalline clots (to 125 μ , typically < 75 μ), generally included in carbonate, occasionally enclosed in pyrite and concentrated locally into the sellaite lenses. Cassiterite exhibits a semi-banded distribution and predates the latesiderite-pyrite alteration phase.

Polished section examination reveals rare pyrite euhedra of primary character, embedded in the finely granular to ultrafinely spongy secondary pyrite, and thinly disseminated microscopic blebs of chalcopyrite.

233 810

(T.S. 34142)

This is a quartz-pyrite-siderite rock and, in common with 233809, reflects a siderite-pyrite alteration phase.

The areas sectioned consist essentially of granular, semi-to near-massive pyrite aggregates with subordinate, closely associated, porcellanous to lustre-mottled siderite and granular to subhedral quartz. Quartz grains (mean 1 mm), included in the sulphide(-carbonate) aggregates are typically relatively euhedral, with characteristic sector (growth-) twinning. In areas of relatively massive quartz, sulphides adopt an intergranular habit. These features are typical of quartz-pyrrhotite rocks and, by analogy, this rock was primarily a medium-grained pyrrhotite-quartz rock (?vein), with the pyrrhotite now replaced by pyrite and siderite.

Accessories include sporadic films of ankeritic carbonate with minor associated fluorite in part outlining former pyrrhotite grain boundaries. Minor traces of ultrafine acicular tourmaline occur included in quartz. Cassiterite is sparsely present as single to clustered, equant, twinned grains (30-125 μ , mean 60-70 μ , clusters to 500 μ) included in quartz or, elsewhere, embedded in the secondary pyrite aggregates. Minor stannite occurs as irregular blebs (max. 200 μ , typically < 75 μ) throughout the pyrite aggregates, generally associated with fine-grained spongy aggregates, discontinuous films and microscopic blebs of chalcopyrite.

233 811 (T.S., P.S. 34143)

This is a quartz-pyrrhotite rock, texturally similar to the pyritised/sideritised specimen 233810, but finer-grained (quartz, total approx. 60 %, mean 150 μ) and with a distinct fine, millimetric-scale, lenticular banding suggestive of an altered (silicified, sulphidised) sediment mode of origin.

Banding is enhanced by the distribution of conspicuous cassiterite and accessory gangue components comprising discontinuous films of ankeritic carbonate, disseminated blebs and crude lenses of sellaite and of pale green hydromuscovite (after ?phlogopite). These are disrupted, locally, by sparse crosscutting veinlets of pyrrhotite and quartz.

Cassiterite is concentrated in the relatively massive sulphide zones which range up to 5 mm in width. Cassiterite comprises less than 5 % to around 25 % of these zones, typically as evenly sized (mean 50-60 μ , range 20-200 μ), discrete to clustered equant grains of pyrrhotite-intergranular habit. Subordinate to minor amounts of finer-grained cassiterite (mean 5-10 μ) occur included in quartz or locally embedded in mica aggregates. Rarely cassiterite is included in carbonate and sellaite.

Pyrrhotite, in this rock, is incipiently microfractured, but unaltered. Accessory opaques comprise thinly disseminated, single to clustered arsenopyrite euhedra (mean 75 μ), sparse primary pyrite euhedra, and rare blebs of chalcopyrite.

233 812 (T.S., P.S. 34144)

This is a partly pyritised and sideritised quartz-pyrrhotite rock with close affinities to 233810 and 233811. The main contrast is textural, with quartz occurring as mildly stressed and carbonate-healed, microfractured, sub- to euhedral (prismatic with "pyramidal" terminations) grains with a mean diameter about 350 μ and clouded with ultrafine inclusions (carbonate, sericite, vacuoles). Sulphides comprise around 15-50 % of the areas sectioned and are of crudely banded distribution and distinctly quartz-intergranular habit (typical of relatively siliceous ores of this type). Accessory gangue components comprise sellaite blebs with included ultrafine acicular tourmaline, films and crude lenses of ankeritic carbonate with minor associated fluorite and rare carbonated mica (?phlogopite) flakes.

Cassiterite is conspicuous and of crudely banded distribution. Sizing is in the 20-175 μ range with a mode about 50-70 μ . The bulk occurs as granular clusters of crudely lenticular shape, embedded in semi-lustre-mottled ankerite. Minor intergranular sulphide is associated. Subordinate, similarly sized cassiterite occurs embedded in siderite or loosely locked in secondary pyrite. Accessory amounts with a slightly finer sizing are included in quartz.

Polished section examination reveals the secondary pyrite, which is typically accompanied by cloudy sideritic carbonate, to be partly recrystallized to granular aggregates and, locally, fine sub- to euhedral crystals (evidently in response to the late stress phase). Sparse poikilitic primary pyrite euhedra are present. In addition to relict pyrrhotite, accessory opaques comprise marcasite (also after pyrrhotite) and minor traces of chalcopyrite.

233 819

(T.S. 34146)

This is a thoroughly chloritised tuffaceous greywacke in discordant (tectonic) contact with a sericitic cherty argillite.

The psammite is poorly sorted in the silt to medium sand range and bedded only in respect of a dimensional preferred orientation of clastic particles. The bulk of these are chloritised beyond specific recognition, although clearly microcrystalline intermediate lava clasts and splintery to cusped, angular, mildly abraded shard fragments were major framework components. The medium-sand-sized particles, comprising 5-10 % of the total and more or less evenly disseminated throughout, comprise quartz grains, felsitic intermediate-acid lava clasts, chert fragments and sparse sericitic alkali feldspar grains. The rock thus has a definite polymict character enhanced by slight relative rounding of the coarser particles.

Accessories include thinly disseminated degraded (chloritised) biotite flakes and conspicuous clastic leucoxenic semi-opaques. The matrix is chloritic and poorly resolved against the chloritised framework. Cloudy ankeritic carbonate is an accessory alteration phase. This sediment has a very incipient tectonic fabric, essentially parallel to bedding, and reflecting no more than load- or burial metamorphic conditions (i.e. sub-greenschist).

The argillite comprises mainly sericite with subordinate, closely intergrown ultrafine quartz and minor pale phlogopite. This rock is massive to faintly laminated and is pervasively microfractured and penetrated by discontinuous films of quartz, ankeritic carbonate and

phlogopite. Pervasive leucoxenic staining suggests a certain pelitic ash component is present, but there is no microtextural evidence to support this. Contact with the psammite is defined by a thin zone of relatively marked microfracturing and localised brecciation.

233 820 (T.S. 34147)

This is a relatively thoroughly chloritised and carbonated tuffaceous greywacke with affinities to 233819. In comparison, this rock appears relatively homogeneous in terms of clastic components, although finer details have been obliterated.

The relict framework is poorly sorted in the silt to medium sand range, modally slightly coarser than in 233819. Bedding is defined by a dimensional orientation of elongate particles, and the sediment is incipiently graded, although generally essentially massive. Lithic clasts predominate and are pervasively leucoxene-stained, chloritised and variably stained with cloudy microcrystalline ankeritic carbonate. Such relict microtextures that do persist are typically basic to intermediate in character ("basaltic, andesitic"). Minor accessory clastic quartz is present, and there are sporadic sericitic felsite clasts of acid volcanic character, but of insignificant proportions in comparison to 233819.

Poorly defined chloritised shard fragments are ubiquitous. Possibly minor ferromag (?pyroxene) grains were present, but there are no relics to confirm this. Lithic clasts are subangular to subround and, although the rock is strongly volcanomict (reworked tuffaceous), no close spatial relationship to the source is inferred.

This rock has a relatively marked, but still rather incipient, slaty cleavage essentially parallel to bedding.

233 822 (T.S. 34149)

This rock can be interpreted as an extensively sideritised and weakly mineralised pelite. It consists largely of microcrystalline to coarser-grained, granular to subhedral and semi-lustre-mottled sideritic carbonate dispersed in irregular, spongy to massive aggregates, impregnations and discontinuous films. Interspersed are relict zones of sericitic pelite of millimetric proportions, consisting of extremely fine to sericitic muscovite (clastic in part), microcrystalline quartz and disseminated to frequent, silt to fine sand-sized, angular to rounded relict detrital quartz grains. Rare overgrown, fine silt-sized detrital tourmaline is present. Accessory trace-s of carbonaceous matter are concentrated into irregular discontinuous microstylolitic films. Sericite is locally pseudomorphous after clastic feldspar grains.

Faint relict bedding traces are variably contorted, indicating sideritisation postdated a phase of semi-plastic deformation. The Fe-carbonate appears to be pseudomorphous in part, after fine-grained diagenetic carbonate (?dolomite) rhombs. Relatively massive siderite aggregates include disseminated discrete to clustered, an- to subhedral grains of red (moderate Fe-) sphalerite, sparse pyrite euhedra, and disseminated films of pyrite and galena. Possibly traces of chalcopyrite are present. Alteration/mineralisation is of "Zeehan-type" character. The assemblage includes rare blebs and discontinuous veinlets of quartz, fluorite and sellaite.

233 823 (T.S. 34150)

This rock is a finely laminated, dolomitic, carbonaceous, weakly pyritic pelite with a complex deformational history.

The rock consists largely of semi-porcellanous to microcrystalline dolomitic carbonate with relict sub- to millimetric scale bedding laminations defined by the distribution of accessory semi-sericitic white mica, carbonaceous matter and enhanced by the distribution of minor, fine to ultrafine "syngenetic" pyrite. These features are consistent with a diagenetically dolomitised argillaceous (pelitic) sediment inferred as a slightly silty (quartz, muscovite) laminated shale.

A weak primary slaty cleavage is evident in a sericitic preferred orientation and parallels bedding. This is intersected at a low angle by a second slaty cleavage defined by a dimensional preferred orientation in the fine-grained carbonate. This fabric is in turn incipiently displaced and veined by irregular to straight-walled veins of ankeritic carbonate (white in hand specimen). These latter features are stressed, with sporadic discontinuous microfractures healed with remobilised carbonate (+ quartz) and locally microscopic films of carbonaceous matter.

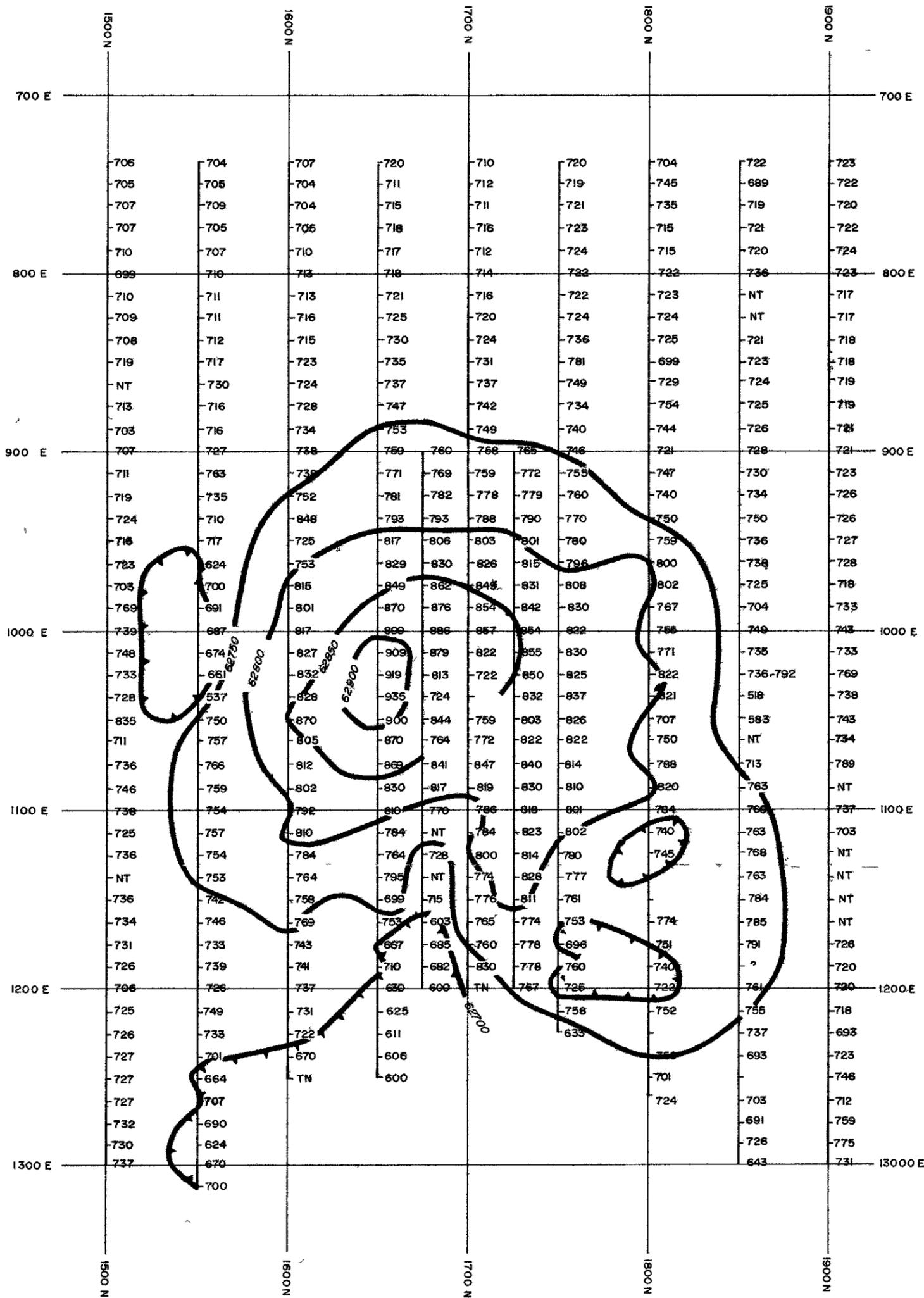
In comparison with 233 818, the tectonic fabric, although complexed by carbonate veining and late stress effects, is relatively quite homogeneous and penetrative and thus consistent with the isoclinally folded Precambrian pelites.

233 824 (T.S. 34151)

This is a deformed, carbonaceous pelite with affinities to 233818. Compositionally, the rock is relatively quartzose (silty) and is weakly, but variably dolomitic. Minor sericitised clastic feldspar appears in sparse argillaceous siltstone interbeds (to 1 cm) within a sub- to millimetric laminated, planar to lenticularly bedded alternation of silty and relatively slightly silty shale with sparse, essentially massive shaly partings. Carbonaceous matter is pervasive, and very minor traces of fine to ultrafine pyrite of syngenetic character are present.

Deformation is of semi-plastic, disharmonic style and closely analogous to that in 233818, although less marked. The relatively competent silty quartzose zones tend to be segmented and the rock is then soft-pebble conglomerate-like. Siltstone interbeds are boudinaged as are rare discontinuous quartz veins (to 1.75 mm) with accessory ankeritic carbonate and extremely rare microscopic blebs of pale sphalerite.

As in 233818, the semi-plastic deformation postdates a very incipient ("load metamorphic") slaty cleavage. Late, fine-grained disseminations and crude veinlets of sideritic carbonate penetrate a crude secondary cleavage.



Drawn	RSSW
Traced	RKY
Checked	
Revised	Date

ABMINCO N.L.

NORTH WEST TASMANIA

QUEEN HILL

Contours of total magnetic intensity
(Smoothed)

Location code

Scale: 1:2,500

Date: December 1976

Plate: QH 65

5 cm

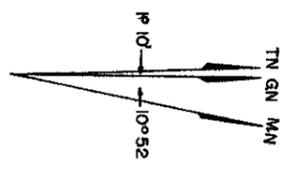
Contour interval 50 gammas (smoothed)

$I_0 = -72^\circ S$

$T_0 = 62700$ gammas

005093

81-1521



RL-00

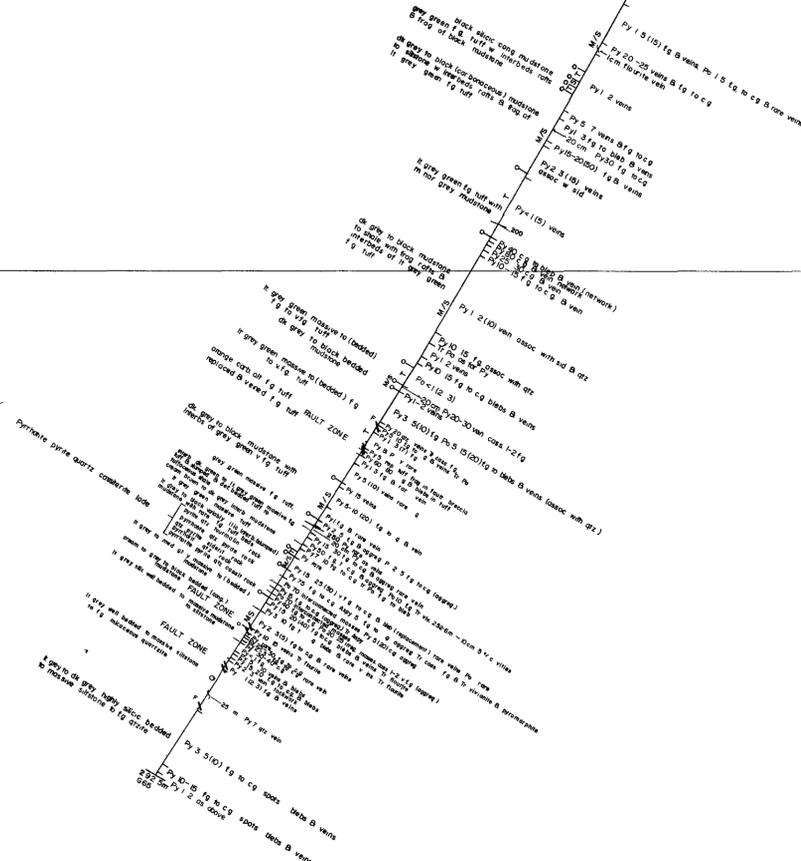
RL-00

RL-100

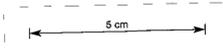
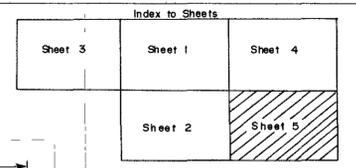
RL-100

RL-200

RL-200



005096

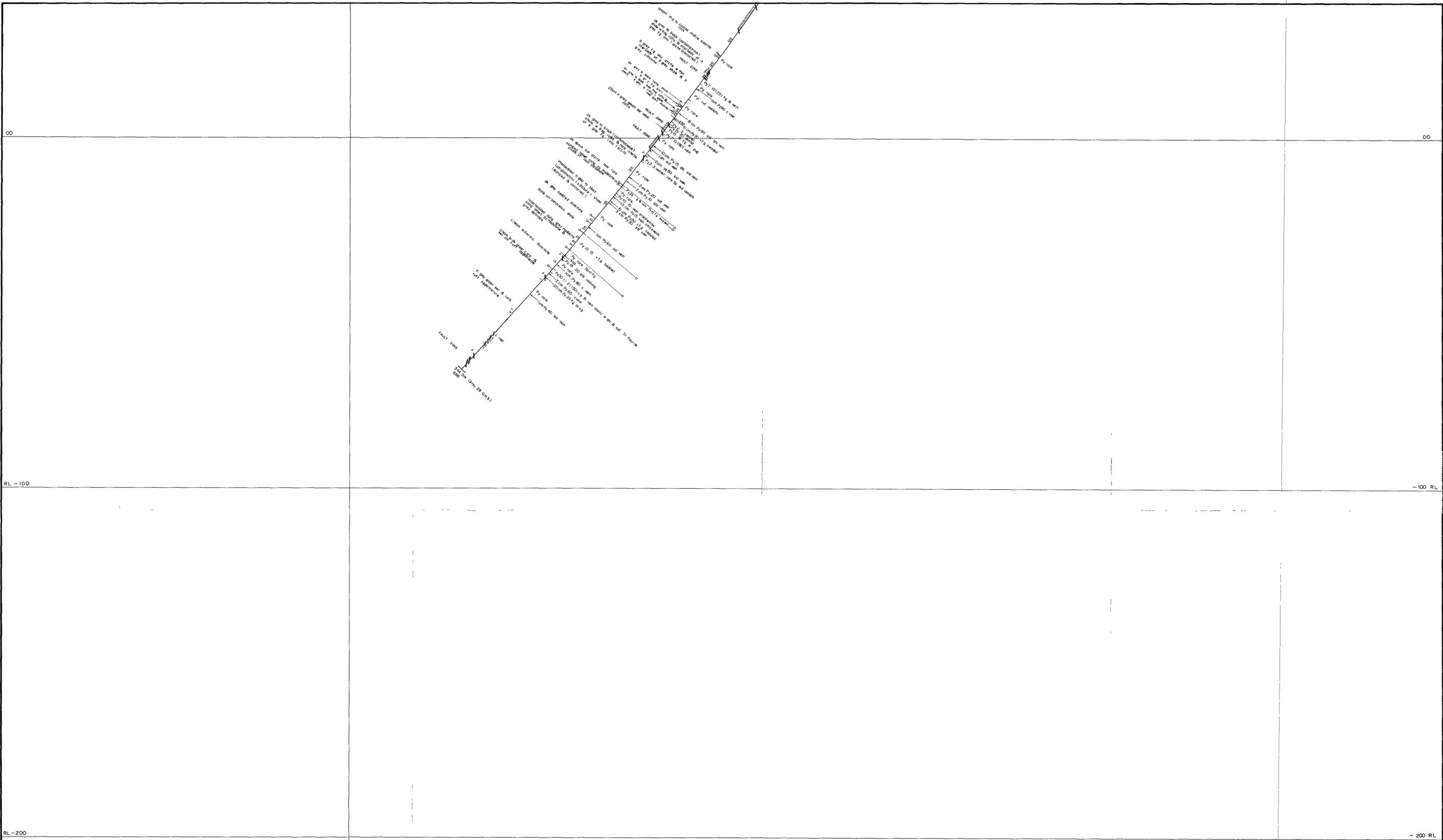


51-1521

Eastern Reference Plane (EORP)

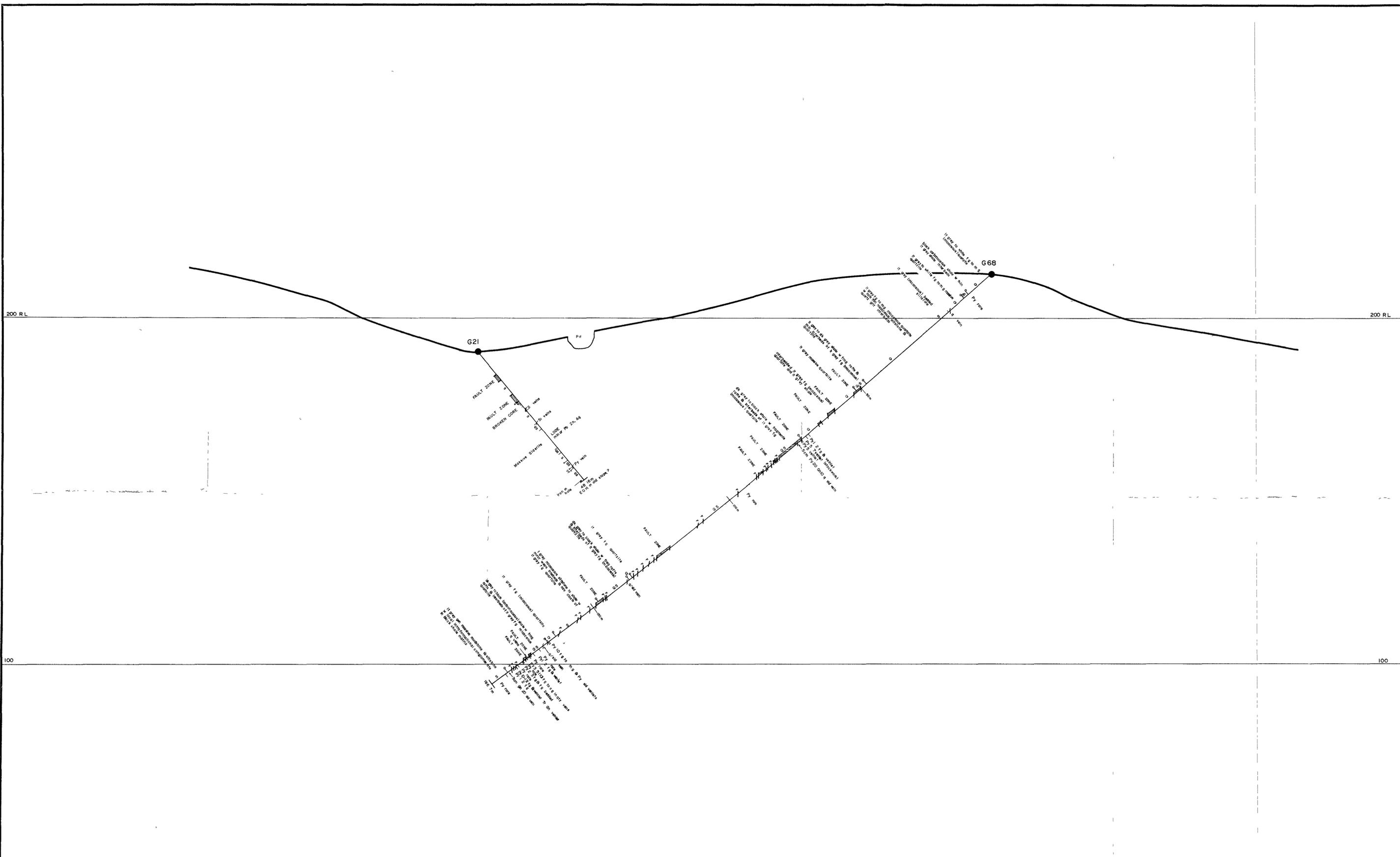
Aberfoyle Exploration Pty Ltd

Geology	C H Y	NORTH WEST TASMANIA QUEEN HILL EL 47/71 CROSS SECTION 3040	Location code	
Drawn	R J E		Date	Sept, 1980
Traced	R J E		Scale	1:500
Checked			Plate No	QH 129 / 3040
Revised by			Sheet	5



005100
81-1521

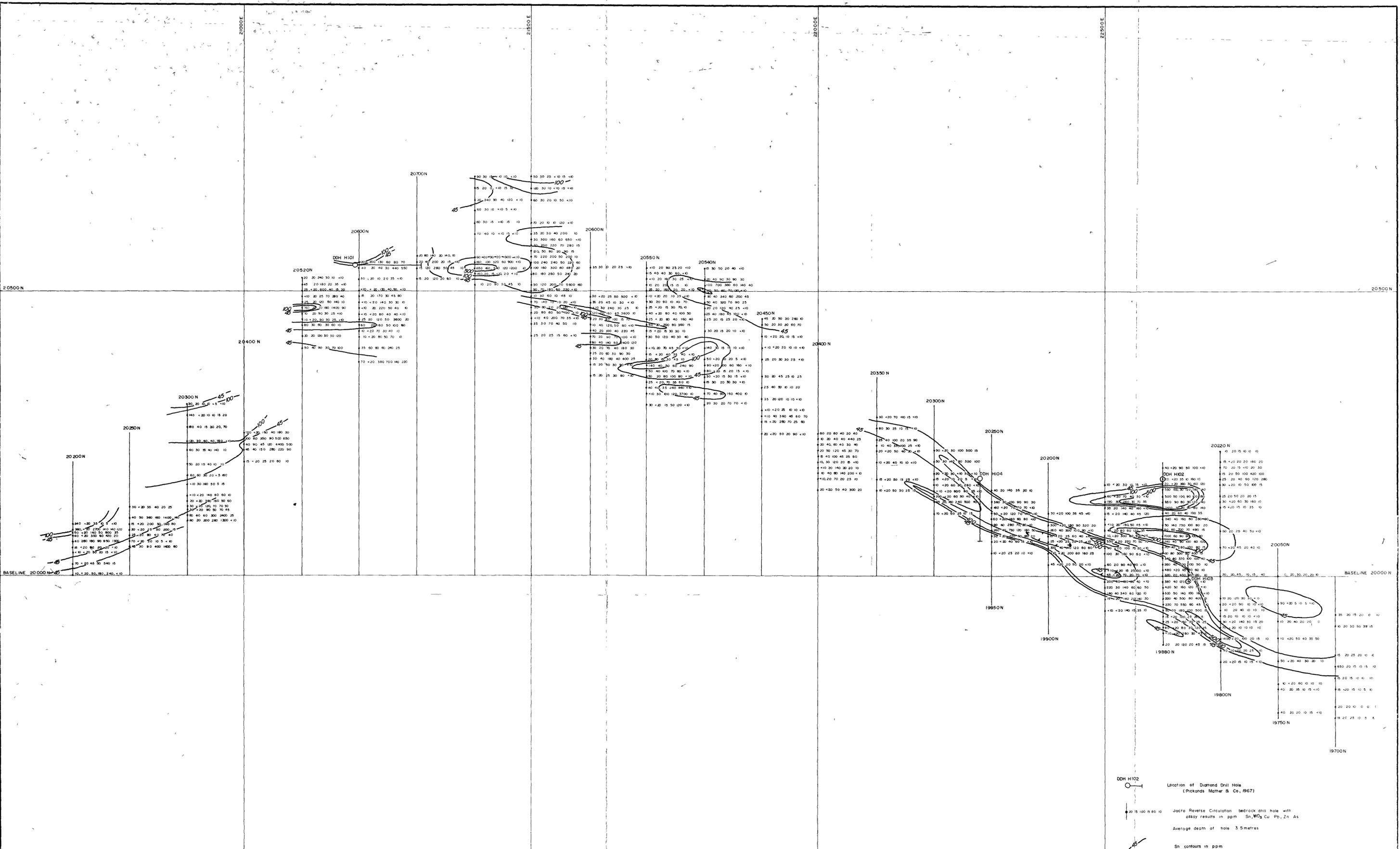
Aberfoyle Exploration Pty Ltd		
Geology	S M R	Location code
Drawn	R J E	Date
Traced		Scale
Checked		Plate No
Revised by	Date	
NORTH WEST TASMANIA QUEEN HILL E L 47/71 CROSS SECTION 2840		October, 1980 1 500 QH 129 / 2840



005101

81-1521

Aberfoyle Exploration Pty Ltd		
Geology	S M R	Location code
Drawn	R J E	Date
Traced		November 1980
Checked		Scale
Revised by:	Date	1:500
		Plate No
		QH 129/GCL
NORTH WEST TASMANIA GOLF COARSE LODE AREA CROSS SECTION G21, G68		

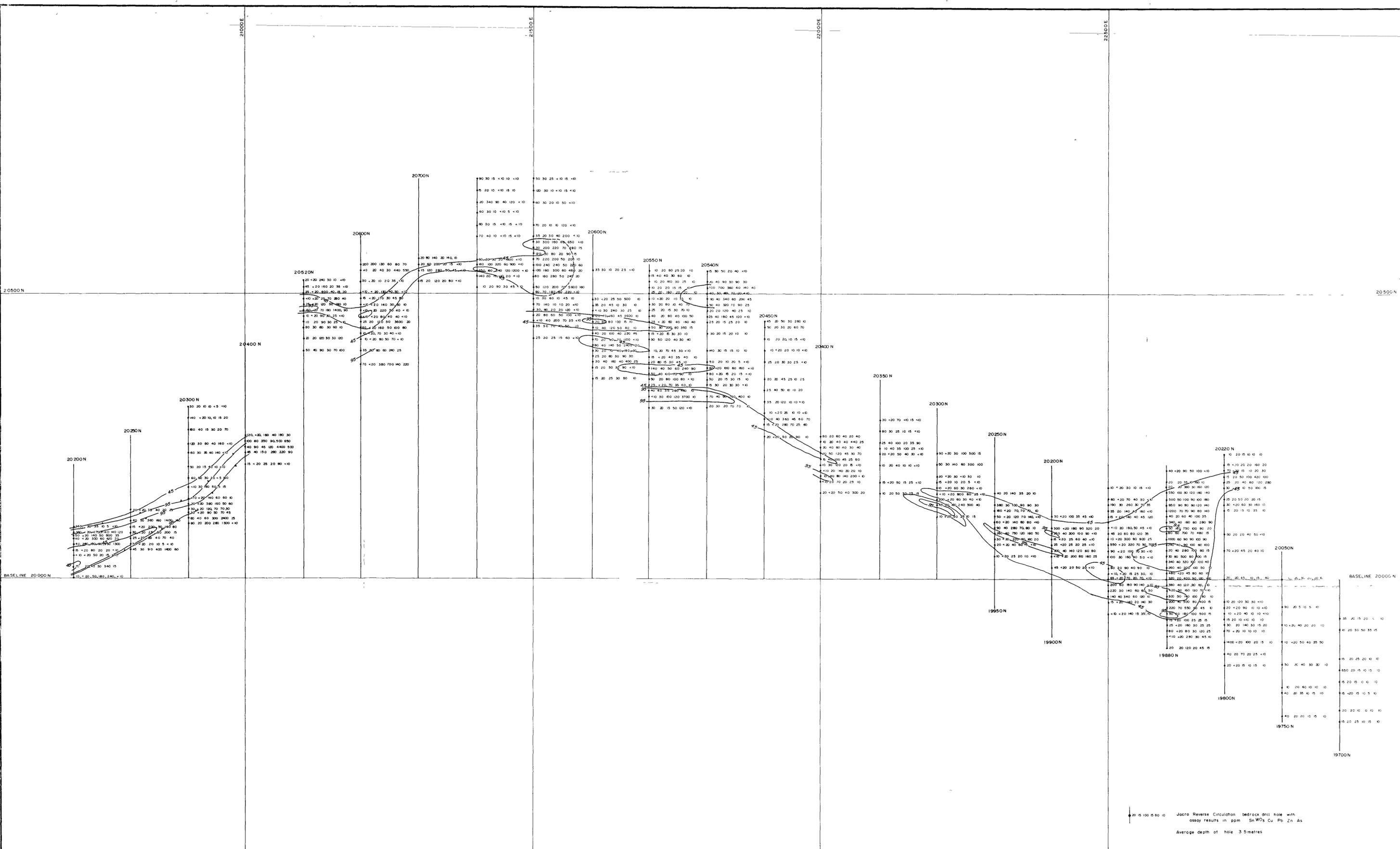


DH102 Location of Diamond Drill Hole (Pickands Mather & Co, 1967)
 Jacro Reverse Circulation bedrock drill hole with assay results in ppm Sn, W, Cu, Pb, Zn, As
 Average depth of hole 3.5 metres
 Sn contours in ppm



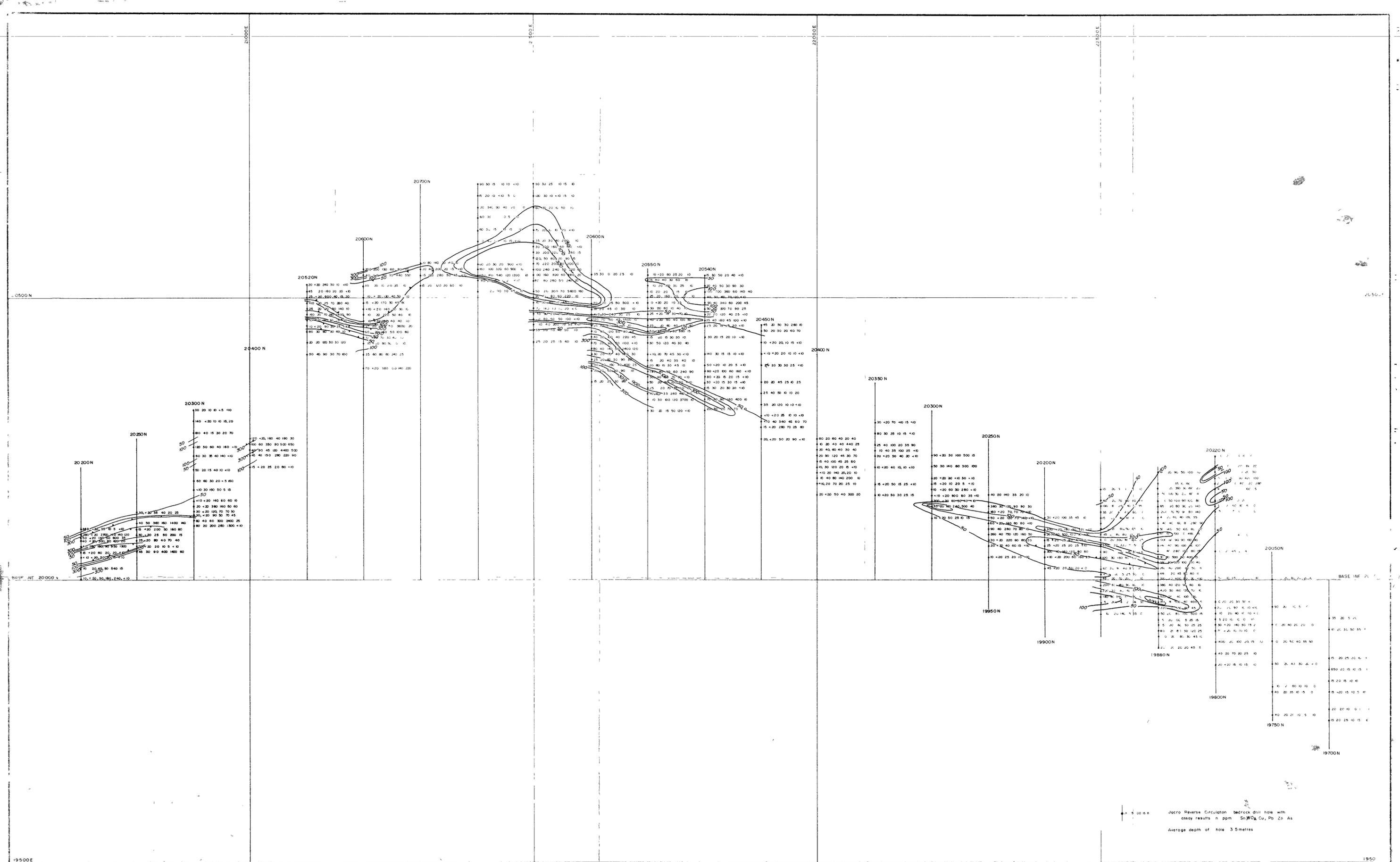
005102
81-1521

A Aberfoyle Exploration Pty Ltd		
Geology R M J	NORTH WEST TASMANIA	Scale on code
Drawn R J E	EXPLORATION LICENCE No 47/71	Date July 1986
Traced R J E	ST DIZIER GRID	Scale 1:25,000
Checked	Bedrock Geochemistry Sn in ppm	Plate No
Revised by Date		ST DIZ 43



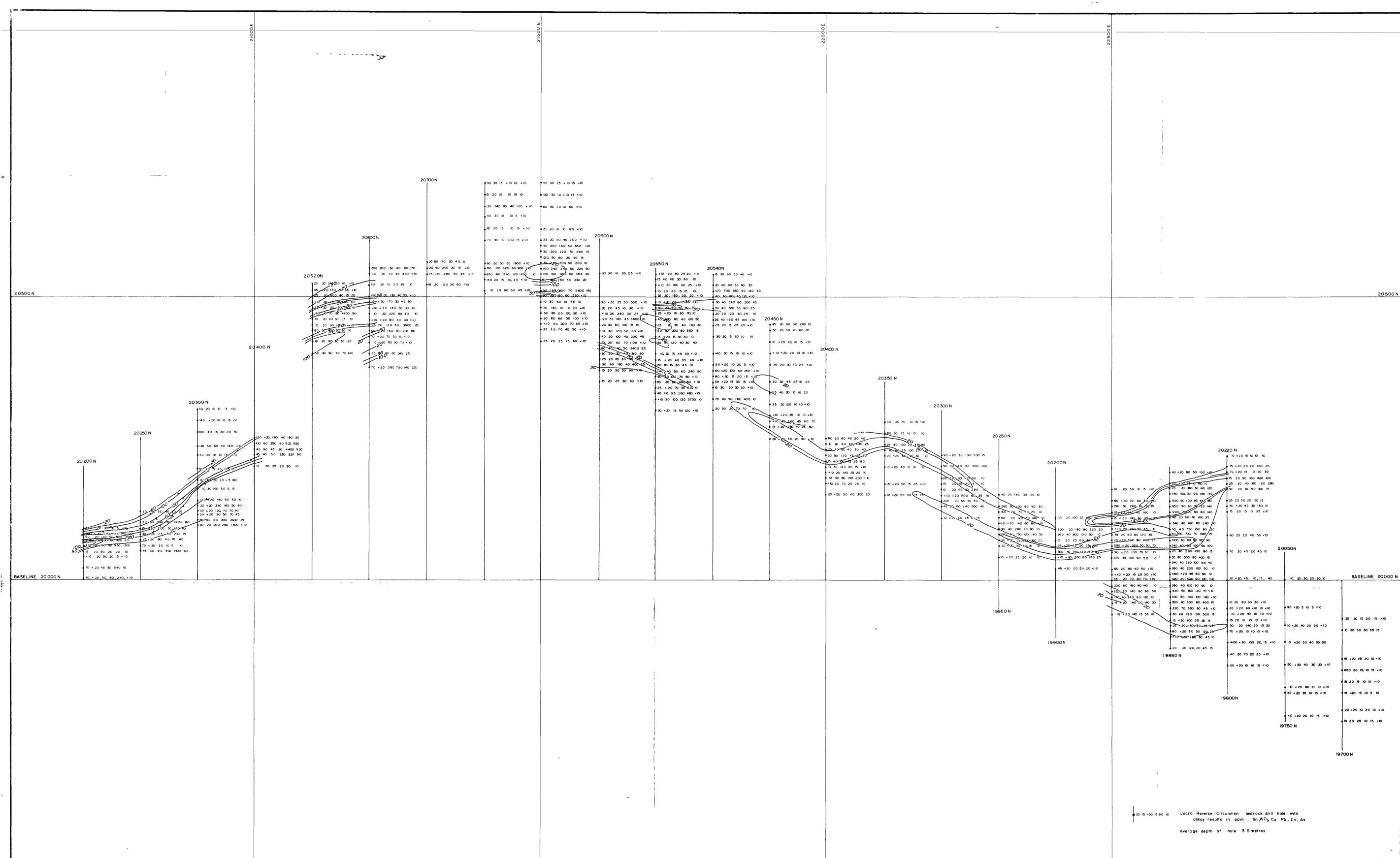
005105 81-1621

		NORTH WEST TASMANIA	
		EXPLORATION LICENCE No 47/71	
ST DIZIER GRID		Location code	
Bedrock Geochemistry Pb inppm		Date July 1980	
Drawn R J E Traced R J E Checked Revised by Date		Scale 1:2500 Plate No ST DZ 43	



005106 81-1521

Aberfoyle Exploration Pty Ltd		NORTH WEST TASMANIA EXPLORATION LICENCE No 47/71	Issue code
Drawn R J E	ST DIZIER GRID		Date July 1980
Checked R J E	Bedrock Geochemistry Zn in ppm		Scale 1:2500
Revised by	Date		Plate No ST DZ 43



20 15 100 15 80 10
 Jacro Reverse Circulation bedrock drill hole with
 assay results in ppm ; Sn, WO₃, Cu, Pb, Zn, As
 Average depth of hole 3.5 metres

000107 51-152

Aberfoyle Exploration Pty Ltd		NORTH WEST TASMANIA	
EXPLORATION LICENCE No 47/71		Date July, 1980	
ST DIZIER GRID		Scale 1:2,500	
Bedrock Geochemistry As in ppm		Plate No ST DIZ 43	