RB 42/12

DEPARTMENT OF MINES
SOUTH AUSTRALIA

REPORT ON COMPLETION OF DIAMOND DRILLING AT THE MOUNT HOWDEN (BIMBA) COBALT MINE.

BY

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DEPARTMENT OF MINES
SOUTH AUSTRALIA.

REPORT ON COMPLETION OF DIAMOND DRILLING AT THE MOUNT HOWDEN (BIMBA) COBALT MINE.

SUMMARY

Two diamond drill holes designed to test at depths from 70 to 100 feet the most favorable outcrops of cobalt-nickel mineralization failed to intersect extensions of lode. Secondary erythrite mineralization found along bedding seams, joints, and thin fractures are sporadic in distribution and too small in volume to encourage additional exploration.

INTRODUCTION.

A favorable report (Bibliography No. 3) from the Chief Registrar of Mines, L.C.E. Gee, in 1915, stated:

> "Rich cobalt ores in considerable variety were found, considerable shallow shaft and costeaning work has been done, but lack of capital has blocked the way of systematic exploration and mining. This is the more to be deplored as in one of the workings the cap of what may possibly prove a large and rich body of silver-lead ore has been exposed."

Sir Douglas Mawson (Bibliography No. 5) records an interesting account of the geology and the mineralization in this area. He states:

> "Some hundredweights of magnificent specimen erythrite were taken from the outcrop. Development has rather disproved the extension of the cobalt ore in depth."

Active work was carried out on the property from 1897 to 1945 and Mining Claims were registered from December 1900 to August 1938. Workings were confined to surface trenches, shallow shafts with some stoping, and small pits; mainly a surface gouging of high grade material.

Dr. K.R. Miles recommended (Bibliography No. 7) that the Bimba Mining area which includes the Mt. Howden Cobalt field should be mapped in detail as it may reveal some structural or stratigraphic control of mineralization not obvious in a reconnaissance inspection. The present report does not include the larger Bimba Mining area.

No detailed mapping of the Mt. Howden outcrop can be found in former studies therefore this report includes a detailed geological map of the active mining area.

PLANS.

General Locality Plan S 1123

Locality Plan of Mt. Howden Mine 55 - 367

Mt. Howden Cross Sections of Diamond Drill Holes 55 - 368

Mt. Howden Geological Plan and Section 55 - 112.

GEOLOGY.

The Mt. Howden Cobalt Mine is located in a folded and eroded sequence of Archean sediments, on the west slope of a small rise (30 feet vertically). These sediments trend N.E. - S.W., and are intruded by large granitic areas to the southeast. Dykes of later pegmatitic rocks which contain black tourmaline and intruded quartz reefs or blows are common in the map area. The sediments are composed of epidote-quartzites and hornfels, chiastolite and mica schists, and slates.

The cobalt-nickel zone favors a thin flaggy and somewhat blocky limestone member the flexures of which are highly dragged and contorted. This bed outcrops on the eastern limb of an elongated local anticline. (See Plan 55-112). A strong development of epidote forms the exposed crest of the anticline. The secondary mineral erythrite ($Co_3 As_2 O_8 . 8H_2O$) occurs along seams in the bedding, around block joints and block fracture joints. Cobalt bloom (pink staining) is noted at the intersection of bedding and fracture joints (co-ord. 760N : 860E) where the best grade accumulation was stoped.

The highest ridge is composed of foliated chiastolite schist and is intruded by pegmatite dykes rich in quartz and tourmaline. The west end of the area is covered by alluvium and is the beginning of the level plains to the north. (Bibliography No. 6)

MINERALOGY.

Cobalt minerals reported (Bibliography No. 3 and 5) are erythrite, smaltite, cobaltite, and earthy cobalt. Other interesting minerals found are chiastolites, beryl, agate, aventurine, and ceruline. All dumps, costeans, and shallow accessible pits were checked at night with a fluorescent lamp for the possibility of finding scheelite. No scheelite was found and only secondary erythrite of the reported cobalt minerals.

A study of Dana's Mineralogy suggested it to be possible that the pyrite may be of the cobaltian variety and could contain 14 per cent cobalt in solid solution. A selected sample sent to the Department of Mines Laboratories (Sample No. A 276/55) contained no cobalt.

DIAMOND DRILLING.

Three boreholes were designed to test at depths of 70 to 100 feet the most favorable outcrops of cobalt mineralization.

Hole No. 1 (co-ordinates 716N : 962E) directed to test under the stoped area intersected fair pyrite mineralization from 94 to 115, but analysis proved no cobalt or nickel values.

Hole No. 2 (co-ordinates 710N : 966E) was directed to test the cobalt bearing bed near the deepest vertical shaft where large amounts of pyrite were found in the dump. Fair pyrite mineralization was found in the core interval from 87 to 114 feet but the core contained no cobalt or nickel values.

Hole No. 3 (co-ordinates 338N : 916E) was planned to test at a depth of 50 feet secondary copper mineralization exposed in a surface pit. This exploration was considered unfavorable after holes No. 1 and No. 2 did not intersect favorable mineralization and the remaining proposed drilling was cancelled.

CONCLUSIONS.

Meticulous sorting of high grade pockets by the discoverers and later operators may account for the small shipments of high grade ore (14 per cent cobalt and 1% nickel). The unfavorable drilling results together with the narrow joints and stringers of mineral do not form any reserves and cannot be recommended for additional exploitation.

W.R. Peterson

W.R. PETERSON.

U.S.A.E.C.

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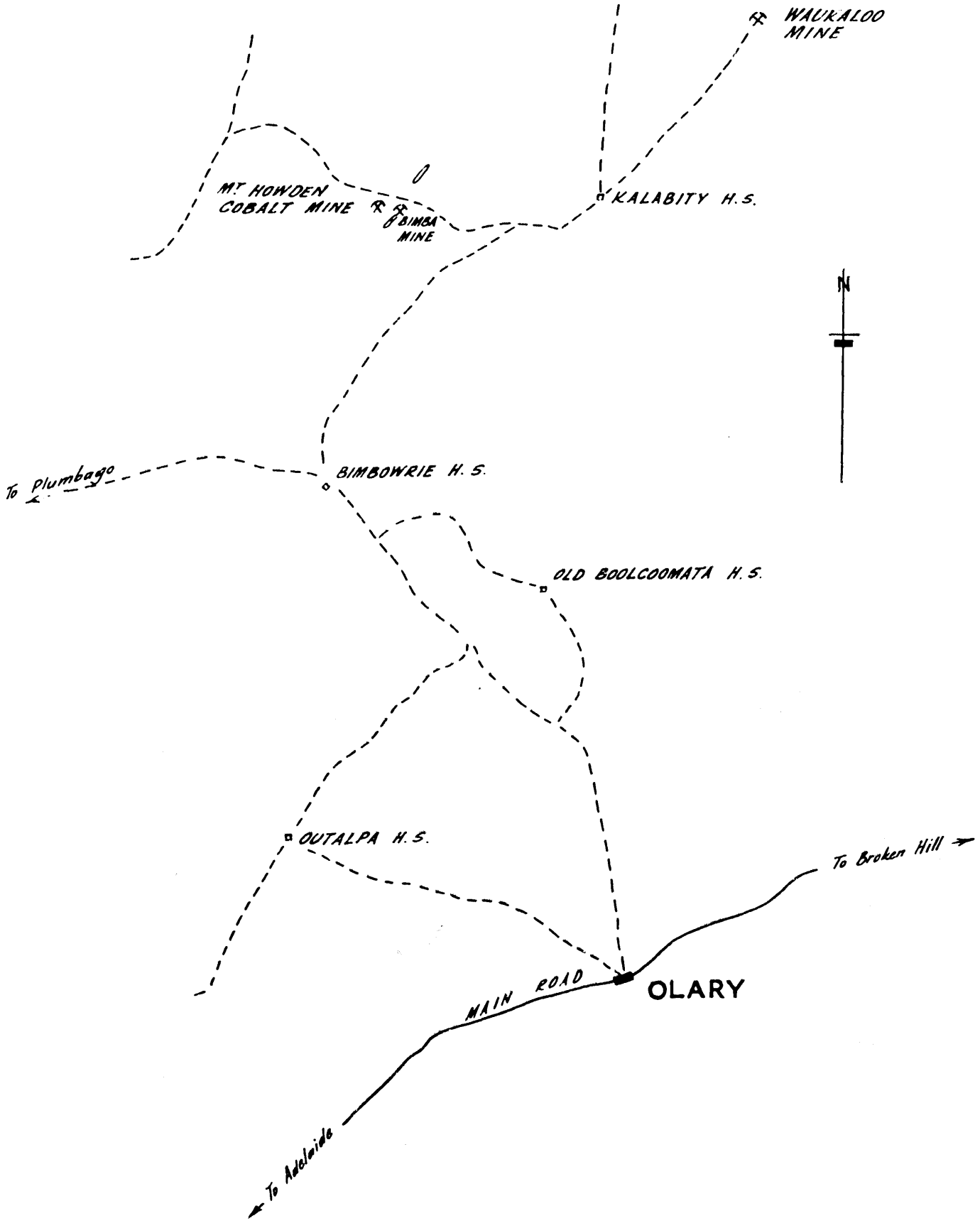


S.A. DEPARTMENT OF MINES					
Approved	Passed	Drn.	MT HOWDEN COBALT MINE LOCALITY PLAN	D.M.	Scale 4 m. to 1 in.
	N.S.V.	Tcd.		Req.	S 1123
		Ckd.			Fl.
Director		Exd.			Date 29.8.55

T. N.

1½ Miles to Kalabity Homestead

Boundary Fence

Well

Toramingo Dam (Old)

Kalabity, Main Road

TO Bimbowrie Homestead

Track

Fair

Line of Copper Mineralization

Ridge

Track

Gate

Poor

Fence

Line of Cobalt Mineralization

Ridge

BIMBA COPPER MINE

MT HOWDEN COBALT MINE

Vide Detail Plan No. 55-112

Boundary Fence

Bimbowrie

To Kookia ironstone outcrop

LEGEND

Archean Outcrops

Roads

Dry Creek Beds

Fences

To accompany report by W.R. Peterson.

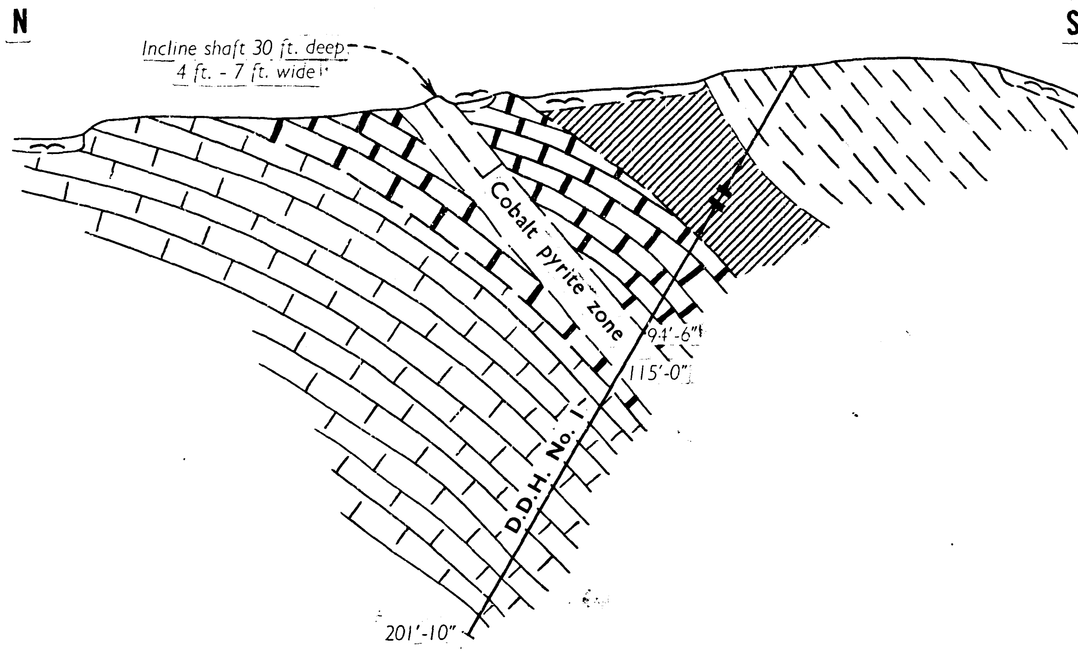
S.A. DEPARTMENT OF MINES

No.	Amendment	Exd.	Date

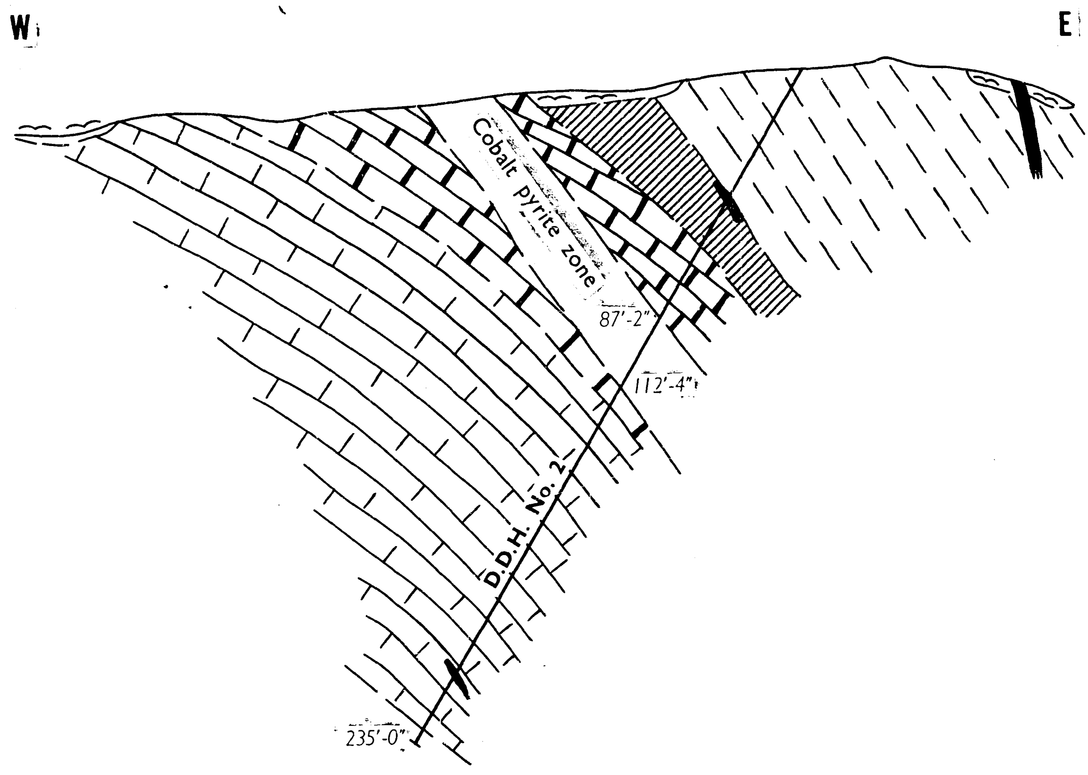
MOUNT HOWDEN COBALT MINE
LOCALITY PLAN
FROM AERIAL PHOTO A-6779, RUN 5 KALABITY

Approved	Passed		Scale: 1"=1400' Appr.
		Drn.	
		Tcd. R.G.C	55-367
		Ckd.	
Director		Exd.	Date 23-11-55

51.



NORTH TO SOUTH SECTION ALONG STRIKE OF D.D.H. No. 1



WEST TO EAST SECTION ALONG STRIKE OF D.D.H. No. 2

SCALE IN FEET

40 0 40 80 120 160 200

LEGEND

Chiastolite schist

Thin bedded slates

Thin bedded blocky marble

Secondary vughy marble

Pegmatite

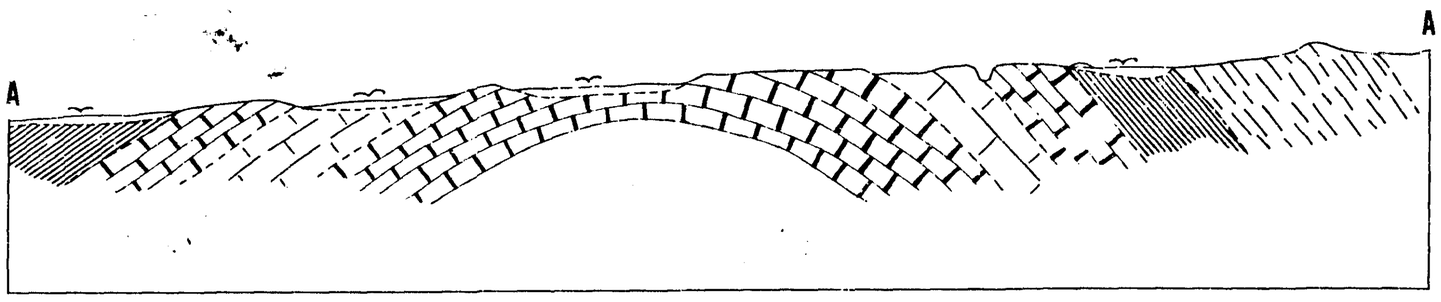
Alluvium

55-368

Geology by W. R. Peterson

S.A. Dept. of Mines

Reduce to 2¾ inches



SECTION A-A

LEGEND

- Alluvium and Talus
- Chiastolite Schist
- Slates, exposed in pits
- Flaggy and blocky limestone
- Secondary and porous limestone exposed in pits
- Quartz
- Pegmatite
- Pits, with depth in feet — 10 ft.

SCALE

Feet 0 40 80 120 160 200 240 Feet

200E 300E 400E 500E 600E 700E 800E 900E 1000E

1500N 1400N 1300N 1200N 1100N 1000N 900N 800N 700N 600N 500N 400N

Stone Ruin

D.D.H. No. 1

Bearing N 72 W

D.D.H. No. 2

Bearing N 20 W

Stone Ruin

Proposed D.D.H. No. 3

Geology by W. R. Peterson

DEPARTMENT OF MINES'

55-112

DEPARTMENT OF MINES, ADELAIDE

DIAMOND DRILL LOG

Project MT. HOWDEN COBALT PROSPECT — DM

Bore No. 1 — Bore Serial No. DD

Hundred — Section — Plan Reference

Co-ordinates 716 N; 962 E. — R. L. of Collar

Bearing N. 20°W. Depressed 60° — Driller A. Leschen

Date Drilling commenced — Date Drilling completed

LOG

Depth From Ft.	Depth From In.	Depth To Ft.	Depth To In.	Core Recovered Ft.	Core Recovered In.	
0'	0"	30'	0"			Chiastolite schist.
30'	0"	61'	0"			Thin bedded slates 44'8" to 45'6" pegmatite 48'0" to 49'2" pegmatite
61'	0"	115'	10"			Thin bedded marble 94'6" to 110'8" pyrite mineralization. 110'8" to 113'10" slight pyrite mineralization.
115'	10"	201'	10"			Epidote quartzite - limy, dense and hard 147' to 151' some fracturing.
						Total depth = 201'10"

Bore logged by W. R. PETERSON

Date Nov. 1955

40blks50—10.51 1470

DEPARTMENT OF MINES, ADELAIDE

ASSAYS OF DRILL CORE.

Project - Mt. Howden Cobalt Mine.

Bore No. 1

ASSAYS

Footage		Sample No.	Chemical Assay	
From Ft. Ins.	To Ft. Ins.		Nickel	Cobalt
94' 6"	96' 6"	A693/55	Nil	0.006%
96' 6"	99' 0"	A694/55	0.01%	0.027%
99' 0"	105' 10"	A695/55	Nil	0.085%
105' 10"	110' 8"	A696/55	0.005%	Nil
113' 10"	115' 0"	A697/57	0.01%	Nil

DEPARTMENT OF MINES, ADELAIDE

DIAMOND DRILL LOG

Project MT. HOWDEN COBALT PROSPECT — DM

Bore No. 2 — Bore Serial No. DD

Hundred — Section — Plan Reference

Co-ordinates 710 N.; 966E — R. L. of Collar

Bearing N.72°W. — Depressed 60° — Driller A. Leschen

Date Drilling commenced — Date Drilling completed

LOG

Depth From Ft.	Depth From In.	Depth To Ft.	Depth To In.	Core Recovered Ft.	Core Recovered In.	
0'	0"	45'	6"			Chiastolite schist - hematite stained foliation 70° at 45'
45'	6"	46'	0"			Quartz pegmatite
46'	0"	64'	4"			Thin bedded slates (bedding 55°)
64'	4"	112'	4"			Thin bedded marble (bedding 45°) 87'2" to 112' 4" pyrite mineralization zone - slight amount of chalcopyrite.
112'	4"	112'	10"			Porous zone filled with quartz and iron minerals.
112'	10"	202'	10"			Epidote quartzite - limy - well bedded 60° thin fractures filled with biotite and quartz.
202'	10"	203'	4"			Fill zone of biotite and quartz.
203'	4"	211'	5"			Thin bedded limestone.
211'	5"	212'	0"			Quartz.
212'	0"	220'	0"			Thin bedded limestone.
220'	0"	229'	6"			Brecciated zone in limestone filled with feldspar and epidote - slight amount of chalcopyrite.
229'	6"	235'	0"			Thin bedded blue slate. 230'3" to 233'2" epidote with pyrite filling fracture.

Bore logged by W. R. PETERSON

Date Nov. 1955

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DEPARTMENT OF MINES, ADELAIDE

ASSAYS OF DRILL CORE.

Project - Mt. Howden Cobalt Mine.

Bore No. 2.

ASSAYS.

Footage		Sample No.	Chemical Assay	
From Ft. Ins.	To Ft. Ins.		Nickel	Cobalt
87' 2"	94' 4"	A698/55	0.005%	0.050%
94' 4"	100' 4"	A699/55	0.005%	0.075%
100' 4"	106' 11"	A700/55	Nil	0.035%
106' 11"	110' 10"	A701/55	0.005%	Nil
110' 10"	114' 4"	A702/55	0.01%	Nil