Rept.Bk.No. 29-8
D.M. 846/49

DEPARTMENT OF MINES

SOUTH AUSTRALIA .

LUXEMBURG GOLD MINES

Situation = about 14 miles by road, East of Olary.

Introduction.

The Luxomburg of Lux gold and copper mines, comprising four main reefs - Bayes, Bismarck, John Brown and Queen Bee, were surveyed by the writers during the period Oct.26 - 30, 1949.

Plans. L 50-59

Plans on a scale of 40 feet to an inch, were prepared from a chain and compass survey of the field.

(1) Surface plan.

(2) Plan of 100' level on Queen Bee reef.

(3) Section of Queen Bee reef.

(4) Plan of 56' level on Bismarck reef.

Previous Reports.

Month & Year	Review	Page	Name of Mines, etc.
June, 1906	5	18	New Luxemburg 3 tons 11 cwts. Ore treated 12 cwts. 1 qr. 6 lbs. copper obtained, value £44.
June, 1907	6	20	Queen Bee 12 tons Ore mined 10% to 12% copper obtained, value £136.
June, 1908	8	20	Queen Bee.
June, 1908	9	28	Queen Bee, Lux.
June, 1909	10	8	Lux.
June, 1909	10	23	Lux mine.
June, 1909	10	27	Lux Mine.
June, 1909	10	27	Queen Bee.
June, 1910	12	8	Lux.
Dec. 1910	13	8	Lux.
June 1911	14	8	"
June 1911	14	33	"
June 1912	16	7	Lux.
Dec. 1913	19	6	Lux and Queen Bee.
Dec. 1914	21	6	" " " "
Dec. 1914	21	27	" " " "
June 1915	22	12	Lux gold and copper mines, formerly known as John Brown, Queen Bee and Lux Mines, Also reference to Bayes shaft (Lux lease).
Dec. 1915	23	8	Queen Bee, report referring to erection of mill Wilfley concentrators etc.
Dec. 1915	23	9	Lux and Queen Bee gold and copper mines also report on East Lux and Queen Bee.
June, 1916	24	11	Lux and Queen Bee gold and copper mines.
Dec. 1916	25	8	Lux and Queen Bee gold and copper mines.
Dec. 1916	25	82	" " " " " " referring to Lux, Queen Bee, John Brown and Bismarck.
June 1917	26	81	Lux and Queen Bee properties.
June 1934	60	59	New Luxemburg.
Dec. 1938	69	63,65	Lux and Queen Bee
Record of Mine 1908		123	Queen Bee
" "		237	Lux Mine.

General Topography and Geology.

The area surveyed covers the slopes of a low range of hills rising about 70 feet above the surrounding plains. Country rocks in the area consist of metamorphosed sediments, injection gneisses and granite.

A few small quartzite outcrops, in which bedding was still retained, were observed. Gneisses, more or less foliated and often migmatitic in character are intruded by medium grained granite; these are the principal rock types.

Amphibolite outcrops in the broad valley to the west of the hill surveyed. Its contact with the granite and gneisses is sharp, and there is evidence of movement along the contact prior to the introduction of the quartz reefs. At the contact the rock is a schistose micaceous amphibolite but at some distance away it is a coarse grained rock composed of coarse interlocking tablets of greenish-black amphibole. In the immediate vicinity it is difficult to determine the relative ages of this altered basic intrusive and the granite but elsewhere in the Olary district it is reported that the amphibolite has intruded the granite.

Shearing stress in the metamorphic and intrusive rocks has opened up fissures, on a very distinct fracture pattern, which have been filled by quartz reefs carrying gold and copper ores. Ten distinct continuous reefs outcrop on the area under review. These have an East-West trend but are convergent to a focal point lying at some distance east of the area mapped. Widths of the reefs vary from less than 1 foot to 20 feet and several outcrop for about 1,000 feet in length.

History of the Field.

Gold was first discovered in 1887 at the Bismarck (or Prospecting) reef where rich specimens were obtained at the surface in gossan and quartz, and later in quartz at the John Brown and in gossan at the Queen Bee. The production table herein shows the production of the field from 1887 to 1937.

In 1915 a plant was erected for crushing ore and for the recovery of gold and copper, but lack of water for the treatment plant was a serious handicap to the operations.

The mines were visited in 1939 by A.T. Armstrong, Inspector of Mines, who sampled the Queen Bee reef on the 100' level.

GOLD BEARING REEFS.

The field was originally divided into four s quare claims the NE. quadrant being John Brown, S.E. Bismarck, S.W. Queen Bee and N.W. Lux.

Later all four were taken up under the name of Lux Gold and Copper Mines. Subsequently a claim was taken out under the name of the Lux & Queen Gold & Copper Mines.

The deepest shaft on the field is known as the Queen Bee which is reported to be 270 ft. deep.

Old records refer to Bayes Shaft, the Bismarck Reef and John Brown reef as being part of the Lux (claim presumably).

Available records are so incomplete and confused that it is impossible to identify the various reefs other than the Queen Bee with any certainty. There is also similar confusion with recorded production figures. While records show the Lux as being the major producer, underground workings suggest that the greatest quantity of ore has been mined from the Queen Bee.

QUEEN BEE.

This reef outcrops over a distance of about 800 feet; width varies from about 1 foot to 8 feet and the reef dips northerly at 80° - 90°. The quartz of the lode is white and massive, though often cellular along the centre.

There are three main shafts sunk on the eastern end of this reef near the amphibolite-granite contace. The main ladder and haulage shaft was sunk on a 3 feet lode which carried bunches of copper carbonate and free gold. Records show that one sample assayed in bulk, yielded 1 oz.10 dwts. of

of gold per ton, 9 ozs. silver and 32½% copper. Copper occurs as carbonates, chalcoite, and bornite.

Underground Workings.

The accompanying paln and sections show the amoung of stoping that has been carried out on the reef above water level. Workings in the lower levels were inacessible.

The main shaft is 270 feet deep on the almost vertical underlie of the lode. There are working levels at 100', 160 and 200' - it is reported that the bulk of ore was won from the 160' level.

An 86' shaft connects with the 100' level at the amphibolite contact. The 63' windlass shaft connects with a stope above this level. An enlargement, which accompanies the plan of this level, illustrates how, on this reef at least, fractures did not persist into the amphibilite which during the shearing, acted as a competent bed. Quartz stringers up to 18 inches wide feather out along the cleavage planes of the schisted amphibolite so that their shape in plan is not due to faulting - the quartz is not fractured and in places quartz veins are enveloped by contorted schists at the granite amphibolite contact. The lode here consists of quartz, tenorite, cuprite and chalcopyrite.

Small shallow potholes and a 39' shaft have been sunk elsewhere along the Queen Bee reef. In a 9' shaft at the eastern end of the reef the country rock is granitic and encloses small patches of amphibolite. Near the walls of the lode the fractured granite is somewhat gneissose and has been schisted where caught up in the lode channel itself.

Sampling carried out in 88' drive at the 100' level in 1939 by A.T. Armstrong yielded the following results.

		Width lode	Gold(Dwts)	Silver	Copper
No. 1	4' from shaft	3' quartz	1.5	nil	nil
2	14' " "	3'9" "	4	"	"
3	24' " "	5' "	1	"	"
4	34' " "	3'3" "	1.5	"	"
5	44' " "	3'9" "	2	"	"
6	54' " "	2' " & pyrites	"	"	"
7	64' " "	4' "	nil	"	"
8	74' " "	3'9" "	"	"	"
9	84' " "	3'9" "	"	"	Tr.

A large proportion of the stone won from this mine is still lying at grass.

REEFS SOUTH OF QUEEN BEE.

There are three barren quartz reefs south of the Queen Bee in the area mapped - two of these have been opened up by means of shallow shafts and potholes. All are about 3-4' wide, strike E.N.E. and dip northerly at 70 - 80°. The longest can be traced for a length of 600 ft. None of these veins warrants further development.

JOHN BROWN.

The John Brown line of reef outcrops for over 1,000 ft. in length, its maximum width being 4 ft. The quartz reef strikes E.S.E. and dips N.N.E. at angles between 50° and vertical. It has been opened up by means of an adit, shallow shafts and trenches at intervals over its entire length. Most of the outcrop is barren or almost barren quartz.

LUX MINE - BISMARCK REEF.

This reef strikes approximately East - West and dips north at 45° - 85°. Width of the vein varies from 1 ft. to 20 ft.

On the western end near the contact with the amphibolite the reef splits into at least three veins which have been opened up by means of an underlie shaft and a level at a depth of 56 feet. Workings below this level are inaccessible. The most southerly branch has been worked by means of an adit and winzes which connect through to the 56 ft. level. It has been stoped out for a length of 30 feet from the 56' level to the adit.

The main reef east of these workings has been tested by means of potholes and one 50 ft. shaft. Production from this reef is recorded under Lux.

BAYES ? REEF.

The Bayes reef which appears to be a branch of the Bismarck has been opened up by means of two underlie shafts, 43 ft. and 58 ft. deep, respectively, and an open stope 80 ft. long and 30 ft. deep for a width of 7 ft. The reef strikes E.N.E. and dips northerly at 50° - 60°. Production from this reef is probably recorded under Lux.

Production.

Year	Name of Mine	Ore Recovered Tons.	Cwt.	Qr.	Gold Bullion Recov. Oz.	Dwt.	Gr.	Value £.	S.	d
1898	Queen Bee	7	14	0	3	6	9	13.	18.	
1934	Queen Bee	3	4	0	2	5	12	9.	2.	2
1935	Queen Bee	2	14	0	1	2	15	3.	16.	4
	Total	13	12	0	6	14	12	26.	17.	3
1902	Lux	28	9	0	7	18	14	22.	11.	11
1905	Lux	6	3	0	3	5	9	9.	18.	7
1906	Lux	10	10	0	5	7	4	16.	16.	4
1908	Lux	5	7	0	1	9	22	4.	16.	1
1909	Lux	139	7	0	104	13	4	376.	12.	9
1910	Lux	69	17	0	30	10	4	108.	0.	8
	Total	259	13	0	153	4	9	538.	16.	4
1904	New Luxemburg	5	0	0	1	18	4	4.	4.	11

Production Cont'd.

Year	Name of Mine	Ore Recovered Tons.	Cwt.	Qr.	Gold Bullion Recov. Oz.	Dwt.	Gr.	Value £.	s.	d.
1909	John Brown	5	15	0	3	0	11	9.	10.	8
1937	John Brown	6	6	0	2	2	3	7.	10.	4
1937	Come Back (Jn.Br)	13	7	0	4	7	19	15.	13.	10
	Total	25	8	0	9	10	9	32.	14.	10
					PRIVATE BATTERY					
1915	Queen Bee (Review 23 P15)	67	0	0	25	2	0	90.	7.	2
	Also 9 ton 2 cwt. copper concentrates.									
1916	Lux and Queen Bee	23 tons of chalcocite sent to Pt. Kembla smelting works 8 oz. 1 dwt. of gold 2.63 tons copper.								

Summary & Conclusions.

Queen Bee - This is the most developed reef on the field. Although the recorded production is only 13 tons for 6¾ oz gold it is highly probable that some of the ore recorded under the name of Lux came from these workings.

John Brown - This long line of reef is practically barren over the greater part of its length. Where opened up it has yielded a recorded tonnage of 25 tons for 9½ oz. of gold. A considerable amount of stone won from this reef is still lying at grass.

Bismarck - This reed has been opened up by means of an underlie shaft near the amphibolite-granite contace and also within the amphibolite. Workings were accessible to the 56 ft. leve, above which, the mœ t southerly branch of this reef has been mined almost to the surface over a length of 30 ft.

Bayes reef - This is probably a branch of the Bismarck. An open stope 80 ft. long and 30 ft. deep around two old

underlie shafts has opened up a reef 7 ft. wide. The production from this reef is probably recorded under Lux.

From an examination of the surface and those parts of the workings now accessible it is obvious that the ore forwarded from these workings probably represented hand picked stone from small richer patches within long almost barren reefs.

The most worked portions are along the granite-amphibolite contact and probably the major portion of the gold won came from these parts of the reefs.

The total recorded production for the whole field amounts to 304 tons for 171 oz. gold bullion. This could not have covered cost of development.

It is the opinion of both of the writers that none of thesr reefs could be profitably worked even at the present high price of gold.

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GEOLOGIST

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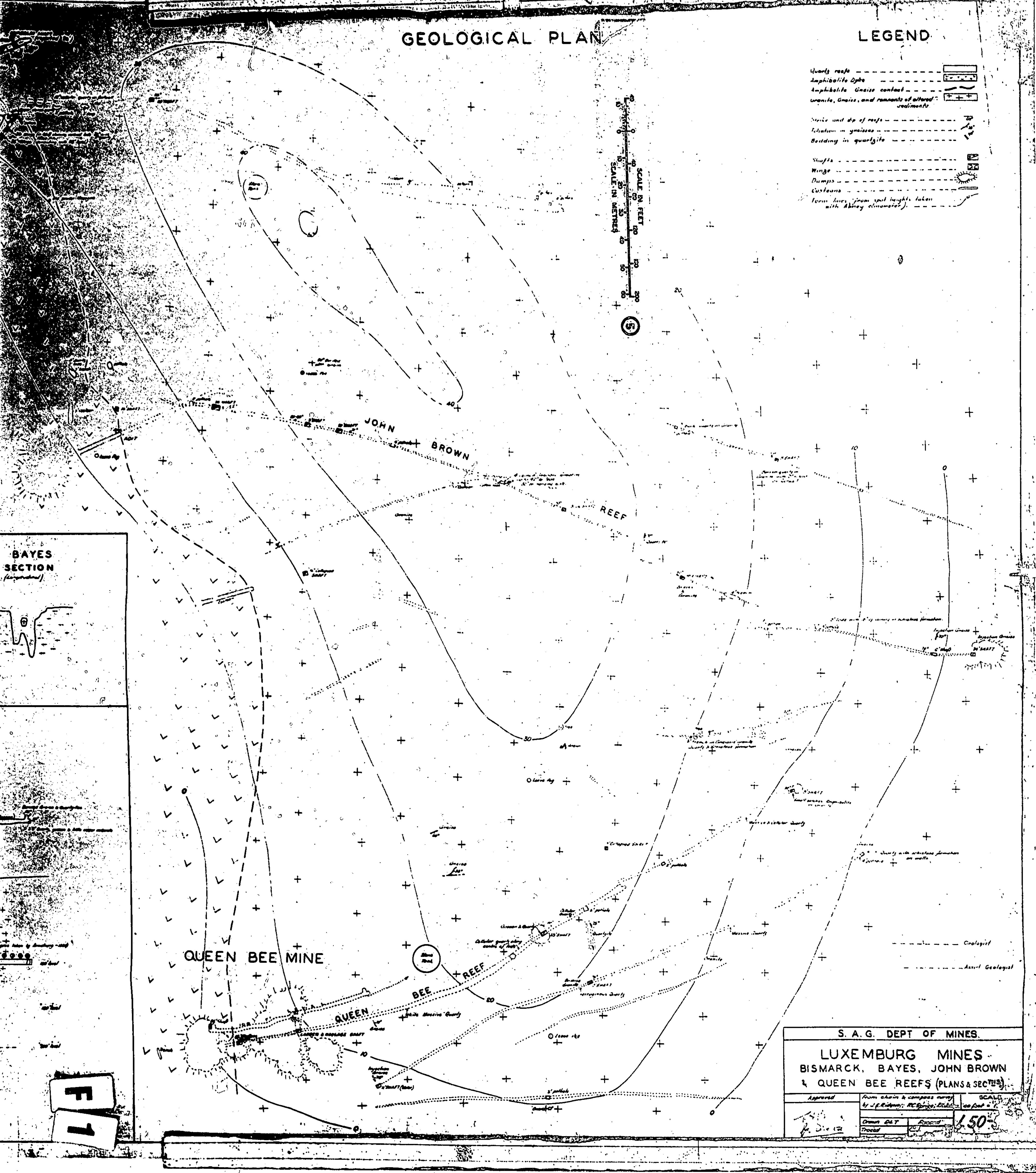
GEOLOGICAL PLAN
LEGEND
Quartz reefs
Amphibolite Dyke
Amphibolite Gneiss contact
Granite, Gneiss, and remnants of altered sediments
Strike and dip of reefs
Foliation in gneisses
Bedding in quartzite
Shafts
Winze
Dumps
Costeans
Form lines (from spot heights taken with Abney clinometer).
SCALE IN FEET
SCALE IN METRES
JOHN BROWN REEF
BAYES SECTION
QUEEN BEE MINE
QUEEN BEE REEF
Geologist
Asst. Geologist
S. A. G. DEPT OF MINES.
LUXEMBURG MINES
BISMARCK, BAYES, JOHN BROWN
& QUEEN BEE REEFS (PLANS & SECTNS)
Approved
From chain & compass survey
Drawn
Traced
SCALE
F1

F2

GEOLOGICAL PLAN

BAYES REEF

BISMARCK REEF

LUX MINE

ADIT

JOHN BROWN

ADIT

JOHN BROWN REEF

QUEEN BEE MINE

QUEEN BEE REEF

30

20

10

0

BISMARCK
56' LEVEL PLAN

BAYES
SECTION
(Longitudinal)

ENLARGEMENT

QUEEN BEE
100' LEVEL PLAN AND
SECTION

Bayes Reef

Water

5ft.

UNDERLAY SHAFT 43ft.

UNDERLAY SHAFT 58ft.

(Reported 90ft.)

UNDERLAY SHAFT

To 56ft. level (water)

56ft. level

Trench 12ft.

Copper-stained

12in. cellular quartz on footwall 3 ft. deep

Bismarck

Pothole

Winze 38ft. in adit showing vertical lode 20in. wide 9in. quartz

Winze 26ft. connecting with 56ft. level

ADIT

Luxemberg Mine

Old Powder Magazine

85°

Shaft 50ft.

Reef

Stone tank

Costean

50°

Costean

Pothole 2ft.

Pothole 8ft.

18in. quartz 3ft. lode

Trench 7ft.

Pothole

Costean 3ft.

Shaft 16ft.

ADIT

John Brown Mine

7ft. deep

Pothole

Shaft 22ft.

John

85° 90° 70°

Shaft 9ft.

Shaft 20ft.

Pothole

Brown

Costean

Costean

Collapsed shaft 15ft.

4ft. veined gneissic formation up to 42in. of lode 30in. on hanging wall

80°

13 ft. u/l shaft

Reef

Pothole

Buck quartz in granite

70°

Shaft 8ft.

quartzite 70°

Barren quartz in granite with 2ft. schist on footwall

10ft. u/l shaft

Gneiss and granite

Trench 4ft.

Pothole 1ft.

70°

Pothole

5ft. lode with 18in. of veining in schistose formation.

80° Gneiss

90°

70°

5ft. trench in gneissic granite quartz and schistose formation

Gneiss

70°

70°

Injection gneiss

Shaft 6ft.

Shaft 24ft.

Collapsed shaft 7ft.

Massive and cellular quartz

Small patches amphibolite in granite

Queen Bee Mine

WINDLASS SHAFT 63ft.

100ft. level

LADDER AND HAULAGE SHAFT

Tank

Queen Bee Reef

Pothole 2ft.

Pothole

Shaft 39ft.

75°

White massive quartz

quartzite

Bi-mica granite

75°

Injection gneiss.

Shaft 11ft. Water

Ferruginous quartz

Shaft 7ft.

Pothole

Quartz with schistose formation on walls

80°

35°

LEGEND

Quartz Reefs

Amphibolite

Granite, gneiss and remnants of altered sediments

Amphibolite-gneiss contact

Strike and dip of Reefs

Strike and dip of bedding in quartzite

Foliation in gneisses

Shaft

Winze

Dump

Costean

Form lines (from spot heights taken with Abney clinometer)

Scale in Feet

40 0 40 80 120

N

DEPARTMENT OF MINES

Survey by J. E. Ridgway and R. C. Sprigg and R. K. Johns.

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