

PROJECT VBG

NOTES ON DIAMOND DRILL LOGS

by

H. G. Rushton

(1) Holes 1-8, drilled by Bracemac Mines Limited during 1959, have been re-logged, using the same nomenclature as in the later Ventures drilling.

(2) Holes 9-34 were drilled by Ventures Limited during 1960. These holes traced the succession dacite-tuffite-rhyolite along its south-easterly strike for a distance of 7,000 feet. The formations dip south-west at 40-50°. Cutting these are gabbro~~s~~, with a somewhat shallower dip, also to the south-west. Other intrusives recorded appear to be of a rather minor nature.

(3) On all the logs, orientation angles are taken with respect to the core normal (CN).

QUEBEC DEPARTMENT OF MINES

19 MAY 1960

MINERAL DEPOSITS BRANCH

No G M- 9963

PROJECT V. B. G.

ROCK DESCRIPTION : ANDESITES

Dark green (not quite so dark as in the gabbroes). Fine to medium grained. Highly chloritised. Relatively non-magnetic. Slightly "speckled" appearance due to altered feldspars in the groundmass. Most varieties show the odd coarse chlorite lath, a feature not found in the gabbroes.

The andesites may be massive, amygdaloidal or pillowled. The amygdules are generally carbonate-filled. The pillows are marked by chlorite and occasional epidote development.

Occasionally a TUFF, with apparently the same composition as the andesite appears. It is similar in colour, fine grained, and the chlorite laths are smaller and more numerous. These laths appear to be arranged in a bedded manner.

ROCK DESCRIPTION: PILLOWED AMYGDALOID DACITE. (Kd)

Light greyish green. Fine to medium grained. Mainly feldspar (mostly altered) with some quartz and dark minerals. May have massive sections, but generally displays coarse pillow selvages every few feet. These are markedly chloritic and also contain carbonate and quartz with occasional epidote. Usually the amygdale are concentrated near the pillow selvages. Their filling appears to be quartz carbonate.

Any sulphide present is generally concentrated on or near the selvages.

Occasional sections may display vague flow banding. No contacts or other evidence of separate flows are apparent in the core.

The dacite is non-magnetic and only moderately hard.

ROCK DESCRIPTION: MASSIVE DACITE (Kd)

Exactly the same material composition as for the pillowed amygdaloidal variety but lacking the pillows and the amygdular sections.

ROCK DESCRIPTION: TUFFITE (Kt)

Fine grained, well banded. Bands vary from pale grey to dark green, and from 1mm. to 1cm. in width. Heavy replacement of these bands by pyrite with minor sphalerite and occasional chalco-pyrite, is common.

Tuffite (K_t) is only found lying on the contact between the dacite (Kd) and the underlying rhyolite (Q.M.R.)

The upper contact is generally conformable, while the lower may be irregular. The latter is often marked by chloritization, which spreads downwards into the rhyolite.

PROJECT V.B.G.

ROCK DESCRIPTION: QUARTZ META RHYOLITE (Q.M.R.)

This is rather a variable rock, but it invariably exhibits its most important distinguishing feature - quartz eyes. These "eyes" are small, individual, clear crystals of quartz. They are very bright, and normally have the same colour as the surrounding groundmass. Their content varies from scattered to about 10% of the rock.

Fresh Q.M.R. is dark grey to almost black. Besides the quartz eyes, numerous laths of white feldspar are present. The groundmass is extremely hard, quartzose and fine grained. The rock is almost massive.

Q.M.R. shows all stages in bleaching from dark grey through bluish grey, yellowish grey to yellowish white. As bleaching proceeds the feldspar phenocrysts & (or crystoblasts ?) become less prominent. The bleached and fresh varieties are usually closely intermingled with gradational zones throughout.

The Q.M.R. exhibits very few structures within it. It is generally massive. Some questionable variolitic textures have been seen. Also a few inches of opalescent quartz blebs have been seen in places. The latter could possibly be amygdules, although they could also be due to alteration.

The Q.M.R. is almost invariably extremely hard, except in small chloritized zones near the TUFFITE horizon. Near the contacts with some of the gabbros, it may become coarser and pink in colour probably due to slight feldspathization.

PROJECT V. B. G.

ROCK DESCRIPTION : TUFFITES (Kc)

Similar in every respect to Tuffite (Kt). However, the tuffites in this group are, in general, more chloritised. They tend to occur on the edges of gabbro dikes or sills. There is frequently no definite contact between the tuffite and the gabbro.

These tuffites appear to have no regular place in the stratigraphic sequence, and occur both below and above the marker tuffite(Kt). They do not appear to be continuous along strike.

PROJECT V: B. G.

ROCK DESCRIPTION : ACID DIKES

Many siliceous dikes of various types are present.

(A) FINE GREY DIKES

Very fine grained. Light to dark grey. Quite hard.
Massive.

(B) SPOTTED DIKES

Groundmass is very similar to that for A above. Scattered through this are variable quantities of dark grey chlorite flecks.

(C) APLITES

Light grey, fine to medium grained. Hard. Somewhat opalescent in finer portions. May become coarser towards centre of dike. Chlorite filled fractures are common near the contacts.

The above types appear to be derived from the same type of magma, and are probably very closely related. The larger dikes occasionally display a chilled edge similar to "A", and a centre showing a general aplitic composition - "C", with some sections having a spotted appearance - "B".

PROJECT V. B. G.

ROCK DESCRIPTION : Quartz - FELDSPAR PORPHYRY

Fine grained greyish green groundmass, with abundant white feldspar phenocrysts (sub-idiomorphic). Some quartz phenocrysts also. None of phenocrysts is more than $\frac{1}{4}$ " in length.

PROJECT V. B. G.

ROCK DESCRIPTION : SYENITE ?

Greyish-pink-greenish. Medium grained. Very well developed laths of amphibole throughout. Pink feldspar, allotriomorphic with some sub idiomorphic laths. Massive.

PROJECT V. B. G.

ROCK DESCRIPTION : DIORITE

Grey to greyish green. Fine chilled contacts are generally more green than the medium grained body of the dikes. The feldspar is grey in colour with dark minerals and occasional quartz. Massive, dioritic texture.

ROCK DESCRIPTION: SPHERULITIC RHYOLITE

Light grey, medium grained, granular, massive. Composed of closely packed rounded spherules (?) of greyish semi-translucent quartz with varying amounts of felspar and chlorite.

This rock may be intercalated with the rhyolite or it may occur as slightly discordant sills within it. No undoubted contacts have, as yet, been distinguished.

ROCK DESCRIPTION: GABBR (G)

Fine to medium grained. Dark green to greenish grey.
~~Kxxixxx~~ Massive.

Usually exhibits fine chilled contacts.

Carbonate flecks are common & throughout.

Slightly to strongly magnetic.

Some small sections have leucoxene spots throughout
although this is not common.

Scattered pyrite is found in some isolated places.

PROJECT V.B.G.

ROCK DESCRIPTION: POLKA DOT GABBRO (P.D.G.)

Groundmass as for the gabbro. Variable content of coarse grained sub-idiomorphic feldspars. These vary in colour from white to a light yellowish green, probably due to epidotization.

The gabbro and polka dot gabbro do not normally exhibit clear cut contacts between each other. The feldspar s gradually become more well developed and more numerous as the polka dot gabbro is approached.

PROJECT V. B., G.

ROCK DESCRIPTION : OLD BASIC DIKE

Pine grained, mid green. Abundant quartz - carbonate stringers. These stringers are absent in the fine grained later gabbro dikes, which are otherwise very similar to the old basic dikes.

PROJECT V.B.G.

PLACE: MAC-D.D.H. 1 (1959)

Location: Section 2480E, 1710N.

Azimuth: 200°

Logged by: H.G. Rushton

Inclination:

0 - 62.0 CASING

62.0 - 475.0 GABBRO

Typical, somewhat magnetic.

475.0 - 479.1 SHEARED GABBRO

Exactly similar to Tuffite in hole #11. No sulphides.
Sheared at 35 to 45 to CN.

479.1 - 566.0 GABBRO

Typical. Somewhat magnetic.

566.0 - 581.7 FINE GABBRO DIKE

As above but fine chilled contacts at 45 to CN. Moderately
sheared also.

581.7 - 586.5 GABBRO

As for 479.1 - 566.0

586.5 - 589.5 FINE GABBRO DIKE

As for 566.0 - 581.7. Contacts at 55 to CN.

589.5 - 602.0 GABBRO

As for 479.1 - 566.0

602.0 END OF HOLE

DIP TESTS XX 65°.....48°
 300°.....46½°
 450°.....47°
 600°.....46°

PROJECT V.B.D.

BR. CEMAC D.D.H. 2 (1959)

Location: Section 2195E, 1040N

Azimuth: 015°

Logged by: H.G. Rushton

0 - 32.0 CASING

32.0 - 156.7 QUARTZ META RHYOLITE

Mostly dark grey, some small bleached sections. Some large rounded carbonate blebs - scattered.

156.7 - 175.3 GABBRO

Typical. Fine chilled contact at ? angle, becoming medium grained down hole. Somewhat magnetic.

175.3 - 180.4 SPOTTED GREY ACID DIKE

Contacts at 20 to CN. As for dikes in D.D.H. 20. Chilled against gabbro.

180.4 - 359.9 GABBRO

As for 156.7 - 175.3. Bleached and slightly sheared (at 45) section from 323 - 331.

359.9 - 372.6 SPOTTED GREY ACID ? DIKE

As for 175.3 - 180.4, more massive central portion. Contacts at 20 to CN.

372.6 - 440.8 GABBRO

As for 156.7 - 157.3. Contacts at 45 to CN.

440.8 - 478.0 QUARTZ META RHYOLITE

As for 32.0 - 156.7. Pinkish alteration in upper 2 - 3' as in D.D.H. 16

478.0 - 566.0 GABBRO

Typical. Upper contact at 45 to CN.

566.0 E.D. OF HOLE

DIP TESTS ~~xx~~ 50'.....44°
 100'.....50°
 300'.....47°

PROJECT V.S.G.

BH LOC MAC D.D.H. #3 (1959)

Location: Section 3970E, 2370N.

Azimuth: 025°

Logged by: H.C. Rushton

0 - 35.0 CASING

35.0 - 78.2 INTERMEDIATE FLOW OR INTRUSIVE ??

Fine grained, massive, dark green. Very chloritized.
Amphibole rich. Chlorite spots developed. Could be
altered Peridotite ?? Minor CHALCOPYRITE at 65.5.

78.2 - 85.5 ACID DIKE (GREEN-GREY)

Light greyish green, medium grained massive. Dark flecks
throughout. May be spotted dike? Contacts at 30 to CN.

85.5 - 96.9 INTERMEDIATE FLOW OR INTRUSIVE ??

As for 35.0 - 78.2

96.9 - 411.7 FOLK A-DOT GABRO

Chilled upper contact at 10° to CN. Lower contact
chilled and irregular at 10° to CN.

411.7 - 527.0 INTERMEDIATE FLOW OR INTRUSIVE ??

As for 35.0 - 78.2. Few elliptical amygdules around
429 - 430. This rock's main characteristic is elongated
chlorite blebs throughout set in a fine chlorite
amphibole matrix. Could be a basic Tuff.

527.0 END OF HOLE

DIP TESTS: 50°.....41°
200°.....39°
400°.....39°

BRACE AC D.D.H. 4 (1959)

Location: Section 4258E, 1650N

R Azimuth: 034°

Logged by: H.G. Rushton

Inclination:

0 - 47.0 C SING

47

47.0 - 241.7 QUARTZ META RHYOLITE

Some chloritized and slightly bleached sections. Small sections typical. Others (minor) with carbonate ringed quartz eyes.

241.7 - 250.0 ALTERED LAMPROPHYRE ??

Greenish grey, medium grained. Massive. Sheated at 15 to CN. Contacts obscured. Consists of altered feldspar and chlorite.

250.0 - 256.0 QUARTZ META RHYOLITE

As for 47 - 241.7

256.0 264.0 GABBRO

Few polka dotted sections. Upper contact obscured. Lower ? parallel to CN.

264.0-337.5 QUARTZ META RHYOLITE

As for 47 - 241.7.

337.5 - 390.6 INTERMEDIATE FLOW OR INTRUSIVE ??

As for material in hole #3. Upper contact vague owing to chloritization: 390.0 - 390.6 Gabbro dike.

391.0 - 399.2 ALTERED LAMPROPHYRE

Medium grained. feldspar and chlorite. Lower contact at 70 to CN.

399.2 - 403.0 INTERMEDIATE FLOW OR INTRUSIVE

As for 337.5 - 390.6

403.0 - 412.5 ACID DIKE

Light grey medium grained. slightly spotted with chlorite.

412.5 - 435.5 INTERMEDIATE FLOW

As for 337.5 - 390.6

435.5 - 442.4 QUARTZ FELDSPAR PORPHYRY

Feldspar & (buff) phenocrysts up to 1/8". Considerable quartz in fine grined grey groundmass. Contacts not chilled

442.4 - 456.5 INTERBEDDED FLOW

As for 337.5 - 390.6. Chlorite flecks.

456.5 - 468.7 GABBRO

Typical gabbro, chilled contacts ~~xx~~, upper at 25 to CN. Sharp change in magnetism at contact. Gabbro - strong, intermediate flow - weak to nil.

468.7 - 485.5 INTERMEDIATE FLOW
As for 337.5 - 390.6.

485.5 - 499.6 QUARZ FELDSPAR PORPHYRY
As for 435.5 - 442.4.

499.6 - 612.0 INTERMEDIATE FLOW OR ETRUSIVE ??
As for 337.5 - 390.6 but somewhat more chloritized.
Chlorite flecks. Slightly magnetic. (Could be gabbro)

600.0 - 612.0 FAULT ZONE
Sheared at 60 to 70 to CN.

612.0 - 615.0 ALKA DOT GAB-EO
Contact in rubble. Shear in HDG. at 45 to CN.

615.0 END OF HOLE

DIP TESTS 200'..... 35°
450'..... 34°

PROJECT V.B.G.

BLACEMAC N.D.L. 5 (1959)

Location: Section 3352E, 470N.

Azimuth: 220°

Logged by: R.N. Saukko

0 - 26.0 CASING

26.0 - 28.0 POLKA DOT GABBRO

Coarse feldspar phenocrysts in gabbro groundmass.

28.0 - 33.0 LEUCOXENE GABBRO

Dark green, medium grained gabbro with numerous leucoxene flecks throughout.

33.0 - 295.5 GABBRO

Dark green medium grained, massive. typical gabbro.
Occasional small leucoxene phases. Fairly magnetic.

295.5 - 297.0 FINE GABBRO DIKE

Very fine grained, medium green, high percent of chlorite.
Not as magnetic as gabbro above. Numerous quartz carbonate stringers throughout. Contacts irregular but trend 70 to CN.

297.0 - 301.6 GABBRO

As for 33.0 - 295.5

301.6 - 302.7 FINE GABBRO DIKE

As for ~~xxxxxx~~ 295.5 - 297.0

302.7 - 303.3 GABBRO

As for 297.0 - 301.6

303.3 - 318.0 FINE GABBRO DIKE

As for 295.5 - 297.0. Somewhat coarser in middle section.

318.0 - 319.5 GABBRO

As for 297.0 301.6

319.5 - 321.8 FINE GABBRO DIKE

As before.

321.8 - 323.1 GABBRO

As before

323.1 - 325.1 FINE GABBRO DIKE

As before

325.1 - 430.0 GABBRO

As before

463.0 - 466.0 SYENITE ? DIKE

Pinkish grey green, medium grained, massive. Essentially feldspar with amphibole laths up to 1" long. Cont cts upper at 30 to CN. Lower, irregular.

466.0 - 579.4 GABBRO

As for 33.0 - 295.5.

- 579.4 - 590.8 FINE GABBRO DIKE
As for 295.5 - 297.0.
- 590.8 - 592.9 QUARTZ-META-RHYOLITE
Fine grained, grey, slightly bleached. 5 to 10% pyrite.
- 592.9 - 600.3 GREY SPOTTED ACID DIKE
Light grey, fine grained, massive, with chlorite spots.
Upper contact 50 to CN. Lower irregular trending 70 to CN.
- 600.3 - 622.7 QUARTZ-META-RHYOLITE
As for 590.8 - 592.9: - 612.0 - 615.5 Zone in which chlorite and pyrite have replaced some of the quartz eyes.
5 to 10% pyrite throughout.
- 622.7 - 633.3 COARSE SPHERULITIC RHYOLITE
Medium grey, spherules up to $\frac{1}{8}$ " not as closely packed as Ks.
Upper contact approx. 45 to CN. not well defined. Spherules are quartz in some places replaced by pyrite. 5 to 10% pyrite throughout.
- 633.3 - 643.0 QUARTZ-META-RHYOLITE
Typical except for vague spherulitic patches.
- 643.0 - 648.6 TUFFITE (NOT Kt)
Light to dark greyish green, bands varying in width and colour, very fine and thin to $\frac{1}{2}$ " in width. Banding at 70 to CN. Pyrite and minor sphalerite replacing some bands.
Overall 3% sulphides. Not Tuffite Kt as it does not occur at dacite - rhyolite contact.
- 648.6 - 663.8 GABBRO
As for 33.0 - 295.5: 651.5 - 652.3 Lamprophyre ? at 50 to CN.
- 663.8 - 664.7 SPOTTED GREY ACID DIKE
As for 512.4 - 600.3.
- 664.7 - 711.0 GABBRO
As for 33.0 - 295.5. Magnetic in places.
- 701.0 723.0 LATE GABBRO DIKE
Lighter green than gabbro above, broad chill zones at either contact, rounded carbonate blebs in some places, Otz.
carbonate veinings. Upper contact at 50 to CN.
- 723.0 - 762.0 GABBRO
Medium grained typical gabbro, slightly magnetic in places.
- 762.0 END OF HOLE

DIP TESTS	250°.....33°
	500°.....28°
	750°.....26½°

PROJECT V.B.G.

BRACEMAC D.D.H. 6 (1959)

Location: Section 3880 E, 1550S.

Azimuth: 205°

Logged by: H.G. Rushton

Inclination:

0 - 95.0 CASING

95.0 - 207.0 GABBRO

Fine grained, dark green, massive, apart from numerous quartz carbonate stringers at variable angles between 127 - 160°. Carbonated throughout. Stringers average 20 to CN. Magnetic throughout.

207.0 - 210.0 LAMPROPHYRE ?

Dark greenish grey pinkish flecks. Chlorite and feldspar. Could be just part of gabbro. Contacts at 45 to CN.

210.0 - 508.0 GABBRO

As for 95.0 207.0. Grey silicified patches (dikes?) from 355.5 - 357.0 and from 364.0 - 365.0.

508.0 - 508.5 SHEARED GABBRO

Well banded. Pyrite 10%. Dark green fine grained. Banding at 45 to CN.

508.5 - 510.5 GABBRO

As for 210.0 - 508.0

510.5 - 515.0 SHEARED GABBRO ?

As for 508.0 - 508.5 At 45 to CN.

515.0 - 526.0 GABBRO

As for 210.0 - 508.0

526.0 - 528.4 QUARTZ CARBONATE VEIN

At 20 to CN.

528.4 - 559.0 GABBRO

Many weakly sheared sections. Otherwise massive fine grained dark green.

559.0 - 601.4 BASIC TUFF ??

Bedded in places, not so well in others. fine grained, chloritic. Magnetic. Colour banded.

601.4 - 613.0 BASIC FLOW ??

Dark grey medium grained. Vague flow orientation at 45 to CN.

613.0 - 623.0 BASIC FLOW ?

More massive than above, fine contacts, medium grained massive centre.

623.0 - 655.0 BASIC FLOW OR FLOWS

Massive, could be intrusive. Vague pillows ? Magnetic.

655.0 - 663.0 SPOTTED GREY CHLORITIC DIKE

663.0 END OF HOLE

DIP TEST 100'..... 34°
300'..... 31½°
500'..... 28°

PROJECT V. B. G.

BRACEMAC D. D. H. 7 (1959)

Location : Off Grid, at approx. 2900E; 3200S.

Azimuth : 013.

Logged by : H. G. Rushton

10 - 115 CASING

115 - 128.5 PILLOWED, AMYGDALOIDAL ANDESITE

Dark green, fine to medium grained. Highly chloritised.
Numerous carbonated amygdules. Some pillow selvages, marked
by chlorite/quartz/carb development.

128.5 - 131.3 SPOTTED GREY ACID DIKE.

Much carbonate developed. Chlorite spots throughout. Contacts at 30 to CN.

131.3 - 232.0 PILLOWED AMYGDALOIDAL ANDESITE

As for 115 - 128.5. Pillow selvages oriented at from 30 to 50 to CN.

232.0 - 262.0 PILLOWED ANDESITE.

As for 115 - 128.5, but lacks the amygdules.

262.0 - 301.8 AMYGDALOIDAL ANDESITE

As for 115 - 128.5, but no pillows.

301.8 - 304.0 WHITE QUARTZ - CARBONATE VEIN

Contacts parallel to CN.

304.0 - 307.5 AMYGDALOIDAL ANDESITE

As for 262.0 - 301.8.

307.5 - 405.3 PILLOWED AMYGDALOIDAL ANDESITE

As for 115 - 128.5.

405.3 - 409.5 SPOTTED GREY ACID DIKE

As for 128.5 - 131.3. Contacts obscured.

409.5 - 457.3 PILLOWED AMYGDALOIDAL ANDESITE

As for 115 - 128.5.

457.3 - 473.0 APLITE DIKE

Light greyish white. Medium grained. Quartz and feldspar.
Upper contact at 45 to CN. Lower at 15 to CN. Feldspar
somewhat porphyritic - may be PORPHYRY.

- 473.0 - 481.9 PILLOWED AMYGDALOIDAL ANDESITE
As for 115 - 128.5.
- 481.9 - 488.6 APLITE DIKE
As for 457.3 - 473.0. Contacts at 20 to CN.
- 488.6 - 506.4 PILLOWED AMYGDALOIDAL ANDESITE
As for 115 - 128.5.
- 506.4 - 525.5 GREY ACID DIKE
Fine grained, mid grey. Massive. Contacts at 30 to CN.
- 525.5 - 551.0 PILLOWED AMYGDALOIDAL ANDESITE.
As for 115 - 128.5.
- 551.0 - 553.2 GREY ACID DIKE
As for 506.4 - 525.5. Contacts at 20 to CN.
- 553.2 - 554.0 PILLOWED AMYGDALOIDAL ANDESITE
As for 115 - 128.5.
- 554.0 - 557.8 GREY ACID DIKE
As for 506.4 - 525.5, but some chlorite spots developed.
Contacts at 45 to CN.
- 557.8 - 579.0 PILLOWED AMYGDALOIDAL ANDESITE
As for 115 - 128.5.
- 579.0 - 597.3 SHEAR ZONE (in Andesite)
Shearing at 49 to CN. Much lost core.
- 597.3 - 603.6 AMYGDALOIDAL ANDESITE
As for 304.0 - 307.5.
- 603.6 - 607.0 SILICIFIED ANDESITE or AGGLOMERATE ? *ALTERED PDG.*
Mid grey. Coarse grained. Mainly large bluish siliceous
chlorite zones or altered fragments ? cemented by dark
mineral background. Contacts appear to be gradational.
Quite massive.
- 607.0 - 608.1 ANDESITE or INTERMEDIATE TUFF ?
Fine grained. Greyish green, quite dark. Small chlorite
flecks abundant. Faint bedding ??? parallel to CN.
- 608.1 - 610.6 SILICIFIED ANDESITE or AGGLOMERATE ? *ALTERED PDG.*
As for 603.6 - 607.0.
- 610.6 - 611.9 ANDESITE or INTERMEDIATE TUFF ?
As for 607.0 - 608.1.

611.9 - 626.0 SILICIFIED ANDESITE or AGGLOMERATE ?
As for 603.6 - 607.0

626.0 - 629.0 FINE ANDESITE
As for 607.0 - 608.1, but lacks the slight bedding ? of
the suspected tuff.

629.0 End of Hole

DIP TESTS : 300' 40

500' 34

PROJECT V.H.G.

BRACE AC D.D.H. 8 (1959)

Location: Section 400^o, 2300S (approx.) Azimuth: 020^o

Logged by: R.N.Saukko

0 - 96.0 CASING

96.0 - 97.0 GABBRO

Dark green fine grained, typical gabbro, contact obscured.

97.0 - 100.0 QUARTZ FELDSPAR PORPHYRY

Light grey, medium grained, white feldspar phenocrysts
Lighter in colour but similar to quartz feldspar porphyry
in D.D.H. 4. Contacts obscured.

100.0 - 105.3 SLOTTED GREY ACID DIKE ?

Dark grey, chlorite spots, altered, relatively soft. Both
contacts obscured.

105.3 - 134.4 GABBRO

Dark green fine to medium grained, massive, occasional
epidotized feldspar phenocrysts.

134.4 - 138.6 DARK GREY ACID DIKE

Very fine grained, dark grey, massive, 2 small inclusions
of gabbro. Some fine amphibole laths; possibly related
to syenite dike of D.D.H. 7. All contacts at 70 to CN.

138.6 - 154.5 GABBRO

As for 105.3 - 134.4. Somewhat coarser grained, more
epidotized feldspars. Carbonate flecks, non-magnetic.
Lower contact irregular, but chilled.

154.5 - 158.0 BASIC FLOW (ANDESITE)

Dark green fine grained, chloritic. Pillows ? Brecciated
selvage ? at 156.0. Chlorite specks lineated at 40 to CN.

158.0 - 185.0 GABBRO

As for 105.3 - 134.4. Epidote blebs. Neither upper or lower
contact defined.

185.0 - 190.1 BASIC FLOW (ANDESITE)

As for 154.5 - 158.0 . Lined chlorite streaks.

190.1 - 211.7 FLOW TOP BY CCIA ? WITH INTERCALATED BASIC TUFF ??

Breccia: fragmental, from 1" epidotized feldspar fragments
down, flowage indicated by fine grained dark green bands
rending 50 to CN., other fragments include pink carbonate,
epidotized rock fragments, quartz blebs, and chlorite.
Some fragments brecciated in place, epidotized fragments
often with chlorite centres.

Basic Tuff: dark green to brown green to light grey wavy
bands at 40 to CN. Some of the material resembles basic
flows.

211.4 - 214.4 BASIC TUFF ?

Same as tuff material described for 190.1 - 211.7

214.1 - 215.4 GABBRO

As for 105.3 - 134.4. Upper contact obscured by grind.

215.4 - 231.5 DIABASE

Medium grey, mediumgrained, massive granular, some patches with fairly good diabasic texture. Contacts, broad chill zones obscured by chloritization; otherwise relatively fresh looking, no carbonate.

231.5 - 279.5 GABBRO

As before but very massive, fine to medium grained. Lower Contact at 30 to CN. good chill.

279.5 - 282.0 BASIC TUFF ? OR SHEAR

As for 211.4 - 214.4. Colour banded, bands more distinct than section above.

282.0 - 300.5 GABBRO

As before. Amygdular patch from 284.5 - 286.0.

300.5 - 321.3 GREY SPOTTED ACID DIKE (ALTERED FELDSPAR PORPHYRY ??)

Dark grey, fine grained groundmass, chlorite spots and feldspar phenocrysts to 1/8" Broad fine grained highly ~~ext~~ chloritized, chilled contacts . Upper at 45 to CN.

321.3 - 334.1 GABBRO

As before, Mediumgrained , some small strongly epidotized patches. Fairly magnetic

334.1 - 346.7 BASIC FLOW (ANDESITE)

Dark green, quite similar to gabro except weakly magnetic and has poorly lineated chlorite flecks. Last foot basic tuff or shear.

346.7 - 420.9 GABBRO

As before but quite strongly magnetic.

420.9 - 422.6 BASIC FLOW ??(ANDE ITE

As before.

422.6 - 430.0 GREY ACID DIKE

Mediumgrey fine grained. Contacts obscured.

430.0 - 455.0 BASIC FLOWS WITH INTERCALXXATED TUFF ? OR SHEARS ?

Flows: dark green, fine grained with carbonate rimmed quartz amygdules, massive.

Tuff or Shears: As for 211.4 - 214.4 Banding parallel to CN

~~XXXXX~~ -

455.0 - 456.5 GREY ACID DIKE

As for 422.6 - 430.0

456.5 - 467.8 BASIC FLOW

As for 430.0 - 455.0 . Numerous quartz carbonate stringers

- 467.8 - 472.0 SHEAR ZONE (Some parts parallel)
Shearing at about 30 to CN. Good slickensides on most of core. Highly altered with bleached patches. Rock originally a basic flow/?? Tuffs from 430.0 - 455.0 probably shears related to this zone. Several quartz veins
- 479.0 - 499.0 BASIC TUFF OR SHEAR ??
As for tuff portioin of 430.0 - 455.0. Numerous small quartz carbonate stringers.
- 499.0 - 561.1 GABBRO (POSSIBLY MASSIVE BASIC FLOW)
As for 346.7 & 420.9. Chlorite specks in some ~~pp~~ places quite strongly magnetic. No definite ~~xxxxxx~~ upper contact. Some small sections resemble basic flows.
- 561.1 - 565.2 SPOTTED GREY ACID DIKE
As before . Chloritic.
- 565.2 - 584.0 GABBRO
As before . Magnetic.
- 584.0 - 613.0 POLKA DOT GABBRO
Coarse epidotized feldspar phenocrysts in gabbro groundmass. Gradual silicification to 613. Groundmass more chloritic.
- 613.0 - 625.0 SHEARED POLKA DOT GABBRO
Shearing sub-parallel to CN. 617.5 to 621.5 Strongly sheared zone with stretched epidotized feldspar relicts. Grondmass chlorite. Considerable quartz carbonate veining.
- 625.0 - 673.0 GABBRO
As before, but slightly sheared to about 630, elongated chlorite specks. Weakly magnetic.
- 673.0 END OF HOLE

DIP TESTS 200'.....40½°

PROJECT V.B.G.

D.D.H. 9

Location: Section 32E, OON.

Inclination: Vertical

Commenced: January 10, 1960.

Completed: January 20, 1960

Logged by: H.G. Rushton.

0 - 28.0 CASING

28.0 - 34.7 QUARTZ META RHYOLITE

Dark bluish grey medium grained to fine grained. Very hard.
Numerous quartz eyes. Scattered white feldspar flecks.
Scattered pyrite.

34.7 - 35.2 SILICEOUS DIKELET

Pale grey very fine grained, massive. Upper contact at or
near parallel to CN. Lower confused by apophysis.

35.2 - 36.2 QUARTZ META RHYOLITE

As for 28.0 - 34.7

36.2 - 37.8 SILICEOUS DIKELET

As for 34.7 - 35.2. Contacts at 20 to CN

37.8 - 39.0 BLACK ACIDIC DIKE ??

Very dense almost black, extremely fine grained. May be very
fine quartz meta rhyolite.

39.0 - 55.7 VARIOLITIC QUARTZ RHYOLITE ??

Very fine grained. hard, quartzose, grey - black. Patchy
variolitic textures throughout, in no regular orientation.
Some chlorite, some scattered pyrite. Very occasional
quartz eyes. Lower contact at 45 to CN. Minor chalcopyrite.

55.7 - 94.2 QUARTZ META RHYOLITE

As for 28.0 - 34.7. Some small bleached sections and some
patches more variolitic as 39.0 - 55.7. Scattered pyrite
chalcopyrite sphalerite. (Sample)

94.2 - 95.2 GABBRO DIKE

Dark green fine grained, chloritic, massive. Contacts at 45
to CN.

95.2 - 98.7 GREY SILICEOUS DIKE

Medium grey, very fine grained. Massive apart from slight
shearing on bottom contact. (45 to CN) Some vague lighter
grey patches.

98.7 - 117.3 QUARTZ META RHYOLITE

As for 55.7 - 94.2. Sheared from 108 - 112 with SPHALERITE
minor CHALCOPYRITE. Shearing at 45 to CN. (Samples)

117.3 - 126.5 SPHERULITIC RHYOLITE

Similar groundmass to QMR., but coarse spherules of greyish
quartz instead of quartz eyes. Contacts rather vague.

126.5 - 132.5 QUARTZ META RHYOLITE

As for 55.7 - 94.2

- 132.5 - 162.9 GABBRO
Dark green fine chilled contacts, more medium grained away from contacts. Quite massive Upper contacts at 70 to CN. Lower contacts at 45 to CN.
- 162.9 - 166.0 QUARTZ METARHYOLITE
Bleached otherwise as for 55.7 - 94.2.
- 166.0 - 168.1 GABBRO
As for 132.5 - 162.9
- 168.1 - 208.0 QUARTZ META RHYOLITE
Sheared from 168.5 - 169.5 otherwise as for 55.7 - 94.2.
- 208.0 ~~xxxx~~ - 213.7 OLD BASIC DIKE
Mid green, medium grained. Many quartz carbonate stringers at variable angles to core. Chilled contacts at 45 to CN.
- 213.7 - 270.5 QUARTZ META RHYOLITE
As for 55.7 - 94.2. Shear at 45 to CN from 217 - 218. filled with quartz carbonate chlorite. Sample 3% PYRITE.
- 270.5 - 274.0 ALTERED LAMPROPHYRE ? OR OLD BASIC DIKE
Light greyish green, medium grained. Consists of nothing but chlorite and altered (sericitized) feldspar. Contacts at 60 to CN.
- 274.0 - 326.8 QUARTZ META RHYOLITE
As for 55.7 - 94.2.
- 326.8 - 342.5 GABBRO
Dark green massive, fine to medium grained. Chilled upper ~~xxx~~ contact at 35 to CN. Slightly carbonated in places.
- 342.5 - 368.0 POLKA DOT GABBRO
Groundmass as for gabbro above but numerous coarse blotches of felspar.
- 368.0 - 402.0 GABBRO
As for 326.8 - 342.5
- 402.0 - 421.0 POLKA DOT GABBRO
As for 342.5 - 368.0
- 421.0 - 430.0 SILICEOUS DIKE
Mid grey very fine grained. Hard . massive. Upper contact at 45 to CN. Lower obscured.
- 430.0 - 448.0 GABBRO
As for 326.8 - 342.5.
- 448.0 - 492.0 POLKA DOT GABBRO
As for 342.5 - 368.0
- 492.0 - 498.4 GABBRO
As for 326.8 - 342.5. Lower contact at 30 to CN

498.4 - 521.2 QUARTZ META RHYOLITE
As for 55.7 - 94.2

521.2 - 712.2 GABBRO
As for 326.8 - 342.5. Upper contact at 60 to CN. Magnetic in
finer grained parts.

712.2 - 871.5 QUARTZ META RHYOLITE
As for 55.7 - 94.2

871.5 - 874.8 SILICEOUS DIKE
As for 421.0 - 430.0

874.8 - 896.2 QUARTZ META RHYOLITE
As for 55.7 - 94.2

896.2 - 898.2 GABBRO
Fine grained. As for 326.8 - 342.5.

898.2-932.3 QUARTZ META RHYOLITE
As for 55.7 - 94.2

932.3 - 932.6 GABBRO
Fine grained. As for 326.8 - 342.5. Contacts at 60 to CN.

932.6 - 938.9 QUARTZ META RHYOLITE
Somewhat chloritized but otherwise as for 55.7 - 94.2.

938.9-951.0 GABBRO
As for 326.8 - 342.5. Contact at 30 to CN

951.0 END OF HOLE

DIP TESTS: 200'..... -90
400'..... -88
600'..... -88 30
800'..... -87
950'..... - 90

CASING LEFT IN HOLE

<u>ASSAYS:</u>	<u>AU%</u>	<u>CU</u>	<u>ZN</u>	<u>FOOTAGE</u>
63.2 - 67.0	.005	.05%	.65%	3.8
100.9 - 108.5	.005	.08%	.34%	7.6
108.5 - 111.0	.015	.18%	1.32%	2.5
111.0 - 112.2	.005	.05%	2.33%	1.2
264.0 - 269.8	.010	Tr.	.03%	5.8

PROJECT V. B. G.

D. B. H. 10

Location : Section 00 ; 100S.

Inclination : Vertical

Commenced : January 13, 1960.

Completed : January 20, 1960.

Logged by : H. G. Rushton

6 - 86 CASING

86 - 112.8 WEATHERED GABBRO

Much weathered down to 95'. Fine grained green groundmass. Mainly chloritic, with altered feldspar. Much carbonate throughout. Lower contact runs parallel to core for 8". Non-magnetic.

112.8 - 120.2 PILLOWED AMYGDALOIDAL DACITE

Greyish green, fine to medium grained. Cut by many qtz-carb veinlets at variable angles. Small qtz-carb filled amygdules throughout. Occasional questionable epidotised pillow selvages. Lower contact at 40' to CN.

120.2 - 133.0 ~~AKKXXX~~ GABBRO

As for fresh portion of 86 - 112.8.

133.0 - 138.9 AFLITE

Very light buff-coloured. Medium grained apart from fine grained contacts. Contacts at 30 to CN. 2% fine pyrite throughout. Aplitic texture. Consists of qtz. and feldspar.

138.9 - 330.6 GABBRO.

As for 86 - 112.8. Coarser and finer phases come and go without any contacts between them. Cut by narrow veins of qtz - carbonate - epidote down to 226.5'. These veins are coarse, pegmatitic; carry minor amounts of sphalerite and occasional chalcopyrite. The veins run almost parallel to the core. They occur as follows:

203.0 - 206.0

209.5 - 210.5

214.3 - 216.0

222.5 - 226.5

330.6 - 349.8 QUARTZ METARHYOLITE

Very dark grey, very hard. Fine to medium grained. Many quartz eyes. Some white feldspar laths in less bleached sections. About 2% pyrite. Lower contact obscured by broken core.

349.8 - 354.0 FINE GABBRO BIKE

As for 120.2 - 133.0, but finer grained. Contacts obscured.

- 354.0 - 381.8 QUARTZ META RHYOLITE
As for 330.6 - 349.8. Lower contact at 45 to CN.
- 381.8 - 384.1 ALTERED Q. M. RHYOLITE
Dark green, with reddish tinge throughout. Quartz eyes still present. Chloritised. Reddish tinge due to alteration of feldspars.
509.9
- 384.1 - ~~386.6~~ QUARTZ META RHYOLITE
As for 330.6 - 349.8. More bleached in places.
- 509.9 - 512.2 GABBRO DIKE
More greyish in colour than 349.8 - 354.0. Otherwise similar. Contacts chilled. Upper at 60 to CN; lower at 45.
- 512.2 - 528.7 QUARTZ META RHYOLITE
As for 330.6 - 349.8.
- 528.7 - 533.6 GABBRO DIKE
As for 509.9 - 512.2. Upper contact occupied by carb. vein at 70 to CN. Lower at or near right angles to CN.
- 533.6 - 546.0 QUARTZ META RHYOLITE
As for 330.6 - 349.8.
- 546.0 - 546.4 GABBRO DIKE
As for 509.9 - 512.2. Irregular.
563.0
- 546.4 - ~~564.4~~ QUARTZ META RHYOLITE
As for 330.6 - 349.8.
- 563.0 - 564.1 GABBRO DIKE
As for 349.8 - 354.0. Contacts at 20 to CN.
- 564.1 - 564.7 QUARTZ META RHYOLITE
As for 330.6 - 349.8.
- 564.7 - 576.0 GABBRO
As for 120.2 - 133.0. Contact at or almost parallel to CN.
576.0 End of Hole

DIP TESTS : 200' -88 Casing left in hole.
400' -86
570' -85

ASSAY : 133.0' - 138.9' ; Cu ... NIL
Zn ... TRACE
Au010 oz/ton
Ag02 oz/ton

PROJECT V. B. G.

D. D. H. 11

Location: Section 32E; 400's

Inclination: Vertical

Commenced: January 21, 1960.

Completed: January 24, 1960.

Logged by: H. G. Rushton

666

0 - 33 CASING

33 - 52.2 Quartz META RHYOLITE

Rather dark grey, fine to medium grained, quite uniform and massive. Much qtz, both in groundmass and as abundant quartz eyes. Occasional whitish feldspars. No orientation obvious. Very hard. No sulphides.

52.2 - 53.6 ACID LAVA or DIKE (May be fine QTZ. M. RHYOLITE)

Very quartzose. Very hard. Fine grained. Dark greyish with brown tinge. Colour is due to fine SPHALERITE. Traces of CHALCOPYRITE also.

Zn est. 1%
Cu " Trace

53.6 - 63.8 COARSE ACID LAVA ?

Dark grey, fine grained groundmass, over 50% obscured by whitish grey quartzose clots throughout. Very occasional pyrite. Contacts vague. Clots show vague orientation at 45 to CN.

63.8 - 82.0 QUARTZ META RHYOLITE

As for 33-52.2, except for small banded sections at 71.3' and 76'. Bands are at 45 to CN. Ground core at 82.0', hence lower contact obscured. Occasional scattered pyrite.

82.0 - 84.0 TUFFITE

Dark green to almost black, some lighter bands. Well banded at 45 to CN. Fine pyrite and some occasional CHALCOPYRITE?

84.0 - 85.0 Lost Core

85.0 - 87.5 TUFFITE

As for 82.0-84.0, but light bands are more pronounced. 20% coarse PYRITE from 85.5-86.0, with minor CHALCOPYRITE.

87.5 - 88.0 Lost Core

88.0 - 92.1 TUFFITE

As for 82.0-84.0. CHALCOPYRITE at 89.2', also may be finely disseminated throughout. 35% coarse PYRITE from 90.5-91.8. Lower contact at ? 45 to CN.

92.1 - 95.2 BASIC DIKE

Dark green, fine grained, massive. Chloritic, some carbonate. Looks like tuffite minus the banding. Lower contact at 60 to CN.

95.2 - 98.6 QUARTZ META RHYOLITE

As for 33-52.2.

98.6 - 355.5 Gabbro

As for 92.1-95.2. Upper contact at 20 to CN. Becomes somewhat coarser. Some calcite. Groundmass very chloritic. Massive. Some feldspar blebs. Scattered pyrite. MAGNETIC in places. Very fine qtz. stringer with sphalerite almost parallel to core at 294'. Chilled lower contact, at variable angle.

355.5 - 362.7 BASIC FLOW or INTRUSIVE ?

Medium grained, greyish green. Abundant chlorite. Leucoxene spots throughout. Massive. Lower contact at 45 to CN.

362.7 - 380.9 ALTERED BASIC DIKE

Fine grained andesitic appearance. Greyish green. Frequent qtz. stringers, generally at 45 to core. Scattered pyrite. Much chlorite. Lower contact chilled??? at 45 to CN.

380.9 - 405.0 POLKA DOT GABBRO

Coarse grained. Green and white. Large blotchy feldspars in gabbroic groundmass. Scattered pyrite. Appears to be non-magnetic.

405.0 END OF HOLE

DIP TESTS: 200'-87 30'

CASING LEFT IN HOLE

400'-87 30'

Hole making water.

Assays Au Ag Cu Zn

52.0 - 53.6 .005 .03 .03 .08

88.0 - 92.1 .020 .11 .15 1.77 Tuffite

PROJECT V. B. G.

D. D. H. 12

Location: Section 4E ; 200'S

Inclination: Vertical

Commenced: January 21, 1960

Completed: January 26, 1960

Logged by: H. G. Rushton

0 - 58 CASING

58 - 64.8 TUFFITE

Fine grained, well banded material. Green, grey and whitish bands. Bands vary in thickness from very fine up to about $\frac{1}{2}$ " in places. Some white quartz veins. Banding is wavy, but generally at 45 to CN. Much replacement in places by SULPHIDES. Sulphides are mostly of the massive, very dense and fine grained variety.

Estimates: PYRITE 20%

SPHALERITE, near small qtz. veins, 2-5%
CHALCOPYRITE Trace.

Lower contact at 45 to CN.

64.8 - 67.5 ALTERED RHYOLITE PORPHYRY ?

Dark grey, medium grained. Abundant coarse qtz eyes (SPHERULES?) Set in qtzose groundmass. Many qtz-carbonate-chlorite veins, running at near right angles to CN., and carrying pyrite with minor amounts of sphalerite. Lower contact obscured by veining.

67.5 - 78.8 QUARTZ META RHYOLITE

Dark grey, becoming lighter grey in last $2\frac{1}{2}$ '. Medium grained. Very hard. Abundant qtz eyes. Qtzose groundmass. Small qtz veins, some showing slightly wavy, banded, pinkish chalcedonic sections. These veins carry about 10% fine dense PYRITE and PYRRHOTITE? Some sphalerite and minor chalcopyrite also in the veins. Main rock carries scattered pyrite.

78.8 - 89.3 ACID DIKE

Light grey, greenish in places. Scattered qtz eyes. 5% disseminated pyrite. Occasional whitish feldspar in places.

89.3 - 90.0 QUARTZ VEIN

At 45 to CN. Much chlorite and chalcedonic patches also. About 40% massive PYRITE/PYRRHOTITE. Some sphalerite and minor chalcopyrite also.

90.0 - 146.0 QUARTZ META RHYOLITE

As for 67.5-78.8. About 3% pyrite. Gradually becomes even-grained, with whitish feldspar flecks throughout. Carbonated in places. More bleached from 131.5-138.2.

146.0 - 150.3 ACID TUFF ?

Similar to the quartz-meta-rhyolite, but has a more fragmental appearance. Greenish grey, with bluish grey patches. Much qtz.

Disseminated pyrite 5%. Contacts vague.

150.3 - 170.0 QUARTZ META RHYOLITE

As for 90.0-146.0. Some very minor sphalerite near small qtz. veins.

170.0 - 176.4 RHYOLITE PURPHRY ?

Light greenish grey, much qtz in phenocrysts. Medium grained. Massive, except for qtz-carb-chlorite veins at 45 to CN. Upper contact at one of these veins. Lower contact at 45 to CN.

176.4 - 183.8 FINE SPHERULITIC RHYOLITE ?

Fine to medium grained. Massive, apart from occasional qtz. stringers at 60 to CN. Vague banding at 60 to CN also. Greyish colour. Abundant quartz, in spherules ?. Lower contact obscured

183.8 - 187.8 QUARTZ META RHYOLITE

Some bleached sections, but similar to 90.0-146.0.

187.8 - 188.6 ACID DIKE

Similar to 78.8-84.3, Upper contact obscured. Lower at 45 to CN

188.6 - 214.5 QUARTZ META RHYOLITE

As for 183.8-187.8. Some whitish clots of feldspar from 199-203.5.

214.5 - 218.5 ACID DIKE

As for 187.8-188.6. Upper contact chilled at 45 to CN. Lower obscured by white qtz vein for 6".

218.5 - 228.0 QUARTZ META RHYOLITE

As for 183.8-187.8.

228.0 - 230.7 GREY ACID DIKE or FINE SPHERULITIC RHYOLITE???

Fairly dark grey, moderately fine grained. Massive. Much qtz, fine and granular. May be spherules. Upper contact at 20 to CN. Lower contact at 20 to CN. also.

230.7 - 252.2 QUARTZ META RHYOLITE

As for 183.8-187.8

252.2 - 259.0 FINE GABBRO

Dark green. Fine grained. Massive. Chilled contact at 45 to CN.

259.0 - 272.0 POLKA DOT GABBRO

Coarse grained, green and white. Large blotchy feldspars.

272.0 - 287.5 GABBRO

As for 252.2-259.0, but slightly coarser grained. All this gabbro section appears to be relatively non-magnetic. Lower contact appears to be gradational over about 3".

287.5 - 297.2 QUARTZ META RHYOLITE
As for 183.8-187.8

297.2 - 309.0 ACID TUFF ?

Very quartzose, medium grained, fragmental appearance. Greenish grey. Some epidotised clots maybe altered fragments. Some black chloritic flecks. Scattered pyrite and pyrrhotite? Contacts vague.

309.0 - 344.3 QUARTZ META RHYOLITE
As for 183.8-187.8

344.3 - 399.0 GABBRO

As for 272.0-287.5.

399.0 End of hole

DIP TESTS: 200' -88

CASING LEFT IN HOLE

399' -90

Hole reported to be making large quantity of water.

Assays Au Ag Cu Zn
58.0 - 69.8 .010 .09 .08 1.10 Tuffite

PROJECT V. B. G.

D. D. H. 13

Location: Section 28E; 400S.

Inclination: Vertical

Commenced: January 25, 1960.

Completed: January 27, 1960.

Logged by: H. G. Rushton

0 - 14 CASING

14 - 33.0 QUARTZ META RHYOLITE

Light to dark grey, very hard, medium to fine grained. Many qtz. eyes, some feldspar flecks. Some cherty, banded fragments from 27-31'. Also chlorite-carbonated shear from 29.6-30.0', with about 25% pyrite. Shear at 45 to CN.

33.0 - 126.8 SILICIC DIKE (AFLITE ?)

Light gray, very massive. No qtz eyes. Hard. Granular. Upper contact at 65 to CN. Some chloritic ? dark streaks and stringers.

126.8 - 129.3 WHITE QUARTZ VEIN

Non-mineralised. Contacts parallel to CN.

129.3 - 171.7 SILICIC DIKE (AFLITE ?)

As for 33.0-126.8. Lower contact at 60 to CN.

171.7 - 176.0 QUARTZ META RHYOLITE

As for 14.0-33.0.

176.0 - 186.0 SILICIC DIKE (AFLITE ?)

As for 33.0-126.8. Upper contact at 45 to CN. Lower contact obscured by ground and broken core.

186.0 - 266.9 QUARTZ META RHYOLITE

As for 14.0-33.0, although the white feldspar flecks are somewhat more abundant in this section.

266.9 - 282.7 GABBROIC DIKE

Fine grained, becoming somewhat coarser away from the contact. Dark greenish grey. Massive. Few qtz-carbonate stringers, near the contacts. Upper contact parallel to CN. Lower obscured.

282.7 - 288.0 QUARTZ META RHYOLITE

As for 14.0-33.0, but somewhat chloritised and hence softer. Still contains abundant qtz eyes.

288.0 - 313.0 GABBRO

As for 266.9-282.7, becoming coarser gradually, with increasing number of feldspar blotches. These patches come and go without any apparent contacts, alternating with finer grained portions throughout this section.

313.0 - 338.0 POLKA DOT GABBRO

Coarse grained, blotchy whitish feldspars set in a green matrix

313.0-338.0 (continued)
of dark minerals.

338.0 End of Hole.

DIP TEST: 338° -89 30° CASING LEFT IN HOLE.

Hole making moderate amount of
water.

PROJECT V. B. G.

D. D. H. 14

Location: Section 8E; 400S

Inclination: Vertical

Logged by: H. G. Rushton

Commenced: January 27, 1960.

Completed: January 30, 1960.

Ø - 68 CASING

68 - 216.4 DACITE ?

Light grey, faint greenish tinge. Fine grained. Massive. Some medium grained patches. Some scattered quartz clusters. Occasional fine qtz stringers. Few scattered flecks of chlorite. Lower contact at 45° to CN.

216.4 - 224.5 AMYGDALOIDAL DACITIC FLOW ?

Similar to 68-216.4 above, but numerous qtz-carb-filled amygdules? Some carbonate in the groundmass also. Occasional fine qtz-carb stringers also.

224.5 - 227.3 SILICIC DIKE ?

Very quartzose, fine grained. Variable colour. Some of this material looks cherty, and there are some stringers of chlorite also. PYRITE 50% in the upper 6". Upper contact at 45 to CN; could be a flow top?

227.3 - 232.3 GABBRO

Fine grained, dark green. Contacts chilled. Upper at 20 to CN?; lower at 45 to CN. Massive, chloritic. Few qtz-carb stringers.

232.3 - 263.8 QUARTZ META-RHYOLITE

Dark to light grey. Very hard. Abundant qtz eyes. Variable proportion of whitish feldspathic laths and blebs. Some sections more bleached, but no obvious changes except for lighter colour, and no contacts. Scattered pyrite, some very minor and occasional chalcopyrite.

263.8 - 264.0 GABBRO DIKE

Contacts at 30 to CN. As for 227.3-232.3.

264.0 - 269.5 QUARTZ META-RHYOLITE

As for 232.3-263.8.

269.5 - 269.8 GABBRO DIKE

As for 227.3-232.3. Contacts at 30 to CN. Abundant cubes of coarse pyrite.

269.8 - 309.9 QUARTZ META RHYOLITE
As for 232.3-263.8.

309.9 - 323.0 GABBRO

Dark green, fine grained chilled contact. Becomes gradually coarser. The dark minerals appear first as phenocrysts, gradually giving way to feldspathic phenocrysts. Some cubes of pyrite throughout. Upper contact at 45 to CN.

323.0 End of Hole

DIP TEST: 323 feet - 86

Casing left in hole

PROJECT V.B.G.

D.D.H. 15

Location: Section 28E; 400S.

Inclination: Vertical

Commenced: January 28, 1960

Completed: February 4, 1960.

Logged by: R.N.Saukko

0 - 97 CASING

97.0 - 186.0 DACITE MASSIVE

Pale green grey, fine grained, irregular narrow quartz carbonate stringers.

186.0 - 189.0 DACITE MASSIVE

Somewhat coarser grained than above, with patches of chlorite

189.0 - 206.2 DACITE MASSIVE

As for 97 to 186

206.2 - 207.6 BRECCIATED FLOW TOP

Includes 2" quartz carbonate ribboned at 80 to CN, minor sulphides

207.6 - 236.7 DACITE MASSIVE

Pale green as before. Sulphides with narrow quartz carbonate stringers.

236.7 - 254.6 ACID DIKE (APLITE ?)

Silicous, grey, medium grained. Sharp upper contact at 60 to C
Minor shears at 60 to CN.

254.6 - 256.0 CORE GROUND

256.0 - 285.2 ACID DIKE

As 236 - 254. Variations in grain size from medium to fairly coarse. Some more silicious sections. Many irregular chlorite filled fractures. About 1% scattered pyrite. Lower contact at 45 to CN.

277.5 - 278.2 Inclusion of quartz metarhyolite

285.2 - 286.4 QUARTZ META RHYOLITE

Dark bluish grey, very hard, fine grained, numerous quartz eyes, white feldspar flecks, scattered pyrite.

286.4 - 287.0 BASIC DIKE

Dark green fine grained, massive. Upper contact irregular, lower sharp at 45 to CN. 3-4% pyrite and carbonate veins.

287.0 - 287.6 QUARTZ META RHYOLITE

as 285.2 - 286.4

287.6 - 288.2 BASIC DIKE

AS 286.4 - 287.0

288.2 - 290.7 QUARTZ META RHYOLITE

As 285.2 - 286.4

290.7 - 293.4 SPHERULITIC RHYOLITE (?) (Ks?)

Medium grey, medium grained, granular, quite similar to quartz meta rhyolite but more quartz eyes which are well rounded (spherules?).

293.4 - 294.6 SILICIC DIKE

As 256.0 - 285.2

29

294.6 - 297.5 SILICIC DIKE

Light grey medium grained granular; not as highly fractured or chloritized as 256.0 - 285.2

297.5 - 298.0 SHEARED ZONE

Shear with ribboned quartz carbonate epidote chlorite at 35 to CN

298.0 - 318.0 SILICIC DIKE

As 294.6 - 297.5

318.0 - 330.3 ALTERED QUARTZ META RHYOLITE (??)

Highly chloritized slightly sheared zone; quartz eyes rare though present. Several quartz carbonate veins occasional epidote. Trend of shearing 45 to CN. Very fine pyrite and sphalerite (?)

xx 329.4 - 330 Core ground

330.3 - 380.0 QUARTZ META RHYOLITE

Some sections blue grey fine grained typical QMR. Most of section irregularly bleached to a pale grey green. Pyrite throughout, about 1 - 2%. Last 10' could be dike-like but no definite contact
355.3 Zoned quartz carbonate vein 65 to CN.

380.0 END OF HOLE

DIPTEST 380' 83°

CASING LEFT IN HOLE

PROJECT V. B. G.

66D.H. 16

Location: Section 12E; 400S.

Inclination: Vertical

Commenced: January 31, 1960.

Completed: February 3, 1960

Logged by: H. G. Rushton

0 - 94 CASING

94.0 - 185.4 DACITIC FLOWS PILLOWED AND AMYGDALOIDAL
Greenish grey, fine grained, granular appearance. Scattered quartz - carb filled amygdules frequent in places. No obvious contacts. Pillow selvages every 3-4 ft., marked by chlorite carbonate development. Oriented at 45 to CN. Quartz clusters. Scattered pyrite mainly on pillow selvages. Selvages may indicate tops towards surface. Small quartz stringers at 10 to CN.

185.4 - 187.4 TUFFITE

Dark green, finely banded, fine grained chloritic. Bands at 45 to CN. Abundant pyrite 20%, both in cubes and fine massive sulphide. Scattered sphalerite. Upper contact at 45 to CN. Lower at 70 to CN.

187.4 - 198.2 QUARTZ META RHYOLITE

Dark to light grey. Abundant quartz eyes. Very hard. Some bleached sections. Somewhat chloritized near upper contact.

198.2 - 199.0 GABBRO DIKE

Dark green fine grained, chloritic, massive. Contacts at 60 to CN(?).

199.0 - 200.9 SPHERULITIC RHYOLITE

Medium grey, medium grained, granular. Abundant rounded qtz eyes (spherules ?) Both contacts obscured.

200.9 - 214.7 QUARTZ META RHYOLITE

As for 187.4-198.2

214.7 - 215.5 GABBRO DIKE

As for 198.2-199.0. At 60 to CN.

215.5 - 216.8 QUARTZ META RHYOLITE

As for 187.4-198.2.

216.8 - 219.0 GABBRO DIKE

As for 198.2-199.0. Contacts at 20 to CN.

219.0- 243.3 QUARTZ META RHYOLITE

Similar to 187.4-198.2, but some rather coarser sections and some chloritised sections

- 243.3 - 243.5 GABBRO DIKE
As for 198.2-199.0. At 20 to CN.
- 243.5 - 245.3 QUARTZ META RHYOLITE
As for 219.0-243.3
- 245.3 - 245.8 GABBRO DIKE
As for 198.2-199.0. Contacts at 20 to CN.
- 245.8 - 247.2 QUARTZ META RHYOLITE
As for 187.4-198.2. Somewhat chloritised.
- 247.2 - 249.2 GABBRO
As for 198.2-199.0.
- 249.2 - 256.2 CHLORITISED, ALTERED, QTZ. RHYOLITE ?
Hard, qtzose, dark reddish and greenish material.
Medium grained. Occasional qtz eyes. PYRITE 3%. The
gabbro is chilled against this material. May be the
remnants of a xenolith of Q.M.Rhyolite.
- 256.2 - 294.9 GABBRO
As f r 198.2-199.0, but gradually becoming coarser.
- 294.9 - 309.0 CHLORITISED, ALTERED, QTZ. RHYOLITE ?
As for 249.2-256.2.
- 309.0 - 316.5 GABBRO
As for 256.2-294.9.
- 316.5 - 338.0 POLKA DOT GABBRO
Groundmass as for the gabbro above, but large green-
ish white feldspars in blotches become very frequent.
- 338.0 - 351.0 GABBRO
As for 256.2-294.9.
- 351.0 End of Hole

DIP TEST: 351.0 -90°

CASING left in hole.

V. B. G. PROJECT

D.D.H. 17

Location ; 16E, 800S.

Inclination: Vertical

Commenced: February 4, 1960

Completed: February 9.

Logged by: HGR. & RNS.

0 - 104 CASING

104.0 - 109.0 DACITE MASSIVE

Dark green grey , fine grained , granular, massive; amygdules at 115. Rock somewhat schistose on fracture surface . Minor pyrite.

109.0 - 111.5 BASIC DIKE

Dark grey finegrained , intrusive upper contact at 60 to CN.

111.5 - 113.5 BASIC DIKE AND DACITE

Basic dike runs parallel to core. Dike as 109.0 - 111.5 .
Dacite as 104.0 - 109.0.

113.5 - 117.3 DACITE MASSIVE

As 104.0 - 109.0

117.3 - 200.0 HIGHLY ALTERED DACITE

Pale grey green fine grained. Some fragments less highly altered recognizable as 113.5 - 117.3. Numerous leached vugs probably amygdules. Alteration ? No carbonate. Limonite stains on fracture planes and lining vugs. Core mass of fracture fragments . Weak slickensides.

165.7 - 167.7 No core

168.3 - 170.5 Rock altered to earthy brown bauxite - like material.

173.0 - 174.5 No core

177.1 - 180.0 No core

185.6 - 186.3 No core

191.5 - 193.9 No core

194.0 - 196.0 No core

198.0 - 200.0 No core

200.0 - 202.2 ALTERED AMYGDULAR DACITE

As above but with amygdules not leached.

202.2 - 227.0 ALTERED BASIC INTRUSIVE (?) (GABBRO).

Pale grey green medium grained equigranular intrusive texture not magnetic.

227.0 - 473.0 DACITE FILLED AND AMYGDULAR

Grey green fine grained soft, occasional pillows , occasional amygdules, minor scattered pyrite.

From 265 pillows more frequent, considerably more pyrite at selvages.

277.8 Massive sphalerite , some pyrite for 1".

327 - 353 About 5 - 10% sulphides , mainly pyrite, some sphalerite essentially on selvages.

Massive fine grained , no pillows or amygdules from about 40 to obvious contacts.

473.0 - 473.5 TUFFITE (??)

Randed pyrite and chlorite. May be altered tuffite. At 50 to CN
Pyrite 70% of total.

473.5 - 487.8 QUARTZ META RHYOLITE

Dark grey fine grained hard. Many quartz eyes. Scattered
white feldspar flecks. Some small chloritized sections,
carrying abundant pyrite. Some slightly more bluish grey
patches.

487.8 - 491.3 BASIC DIKE (GABBRO)

Dark green chloritic fine grained . Massive . Upper and
lower contacts at 70 to CN.

491.3 - 492.1 QUARTZ META RHYOLITE

As for 473.5 - 487.8

492.1-492.8 BASIC DIKE (GABBRO)

As for 487.8 - 491.3 At 70 to CN

492.8 - 500.3 CHLORITIZED QUARTZ META RHYOLITE

Greenish grey fine grained . Many quartz eyes. few scattered
feldspar flecks. Much chlorite scatterd pyrite.

500.3 - 503.4 BRECCIATED INTERMEDIATE FLOW

Dark green medium to coarse grained. Some sections of 3" or
so of flow breccia. Much chlorite. Lower contact at 60 to CN.

503.4 - 508.2 QUARTZ META RHYOLITE

Mostly bleached otherwise as for 473.5 - 487.8

508.2 - 540.0 GABBRO

Dark green fina grained gradually becoming coarser. Some
minor inclusions of QMR.in first 5 '. Masive thereafter.

540.0 - 541.4 APLITE DIKE

Greenish white massive fine grained. Quartz and feldspar, no
other minerals. Contacts at 45toCN.

541.4 - 542.1 GABBRO

As for 508.2 - 540.0

542.1 - 542.4 APLITEDIKE

As for 540.0 - 541.4

542.4 - 543.5 GABBRO

Asfor 508.2 - 540.0

543.5 - 580.0 POLKA DOT GABBRO

Coarse grained greyisngreen and white. Large clots of feldspar
varying somewhat in density throughout section.

END OF HOLE 580.0

DIP TEST 266° - 90°

(Hole caved at this point

PROJECT V. B. G.

D. D. H. 18

Location : Section 24E; 800S

Inclination: Vertical

Commenced: February 5, 1960.

Completed; February 10, 1960.

Logged by: H. G. Rushton and R. N. Saukko

$\emptyset \frac{3}{4}$ 62.0 CASING

62.0 - 265.0 PILLOWED DACITE

Fine grained, grey-green, granular. Pillow selvages somewhat coarser grained, with development of quartz, carbonate and chlorite. Qtz-carb filled amygdules at 73' and 78'. Minor pyrite throughout (about 1%). Sulphides mostly concentrated at or near the pillow selvages. The selvages are at about 30 to CN.

From 179' down, the pillows are coarser, with selvages every 4 to 5 feet. The selvages are brecciated--perhaps brecciated flow tops? Rock in this section is somewhat coarser. From 200' down, less well pillowed, but more amygdular. No obvious contacts or composition changes between these sections. Coarse amygdules in the last 2 feet.

265.0 - 265.6 TUFFITE

Fine grained, well bedded material. Siliceous in part, elsewhere chloritised. Much replacement of the bands by PYRITE about 10%. Banding at 45 to CN. Lower contact at 45 to CN.

265.6 - 274.0 ALTERED QUARTZ META RHYOLITE

Siliceous. Very hard. Generally fine to medium grained. Some quartz eyes. Some sections bleached, others somewhat chloritised. Abundant PYRITE (20 %) from 266.2 - 266.8, in chloritised section. Possible altered fragments ? throughout, with well defined edges, very dense, ultra fine grained material. Greenish siliceous material. Patches of irregular shape, with narrow re-action rims of chlorite.

274.0 - 295.2 QUARTZ META RHYOLITE

Dark grey, frequent quartz eyes. Very hard, apart from small, isolated chloritic patches. Occasional whitish feldspar flecks. Groundmass fine grained. Scattered pyrite throughout. Occasional minor qtz stringers at variable angles to core axis. Some more bleached sections.

295.2 - 295.5 GABBRO ? DIKE

Dark green, highly chloritised, very fine grained. Contacts at 10 to CN.

295.5 - 317.0 QUARTZ META RHYOLITE

As for 274.0-295.2

317.0 - 324.5 ALTERED Q. M. RHYOLITE

As for 274.0-295.2, but some sections bleached almost white, and heavily stained with limonite. Qtz eyes still visible.

324.5 - 326.1 LAMPROPHYRE OR BASIC DIKE ?

Dark grey, chloritic. Fine grained. Chilled contacts, with limonite, at 20 to CN. Upper 2" has small feldspathic blebs, resembling amygdules. Otherwise massive.

326.1 - 348.2 ALTERED Q. M. RHYOLITE

As for 317.0-324.5. Much ground core. LOST CORE - 346-348'.

348.2 - 349.3 SPHERULITIC RHYOLITE

Light grey with greenish tinge. Medium grained. Abundant spherules of grey quartz, some feldspar. Contacts at 60 to CN.

349.3 - 350.0 QUARTZ META RHYOLITE

As for 274.0-295.2

350.0 - 350.7 CHLORITE - QUARTZ VEIN

Much chlorite, some white quartz. Heavy sulphide. PYRITE - 30%. At 40 to CN.

350.7 - 352.7 QUARTZ META RHYOLITE

As for 274.0-295.2

352.7 - 353.5 CHLORITE - QUARTZ VEIN

As for 350.0-350.7. PYRITE 25%. At 45 to CN.

353.5 - 354.2 QUARTZ META RHYOLITE

As for 274.0-295.2.

354.2 - 355.7 TUFFITE ? or SHEARED DIKE ?

Very chloritic. Fine grained. WAVY banding, as in tuffite. Dark green. Many of the bands replaced by Pyrite - 30%. Some SPHALERITE. ? Banded at 45 to CN.

355.7 - 358.9 QUARTZ META RHYOLITE

As for 274.0-295.2.

358.9 - 362.0 TUFFITE ?

Dark green, fine grained. Well banded at 45 to CN. Bands much replaced by PYRITE with some SPHALERITE. Pyrite - 30%. Last foot is more massive material. Lower contact occupied by a quartz vein.

362.0 - 392.2 QUARTZ META RHYOLITE

As for 274.0 - 295.2,

392.2 - 486.0 GABBRO

Dark grey with greenish tinge. Fine grained near the contact, becoming more medium grained gradually. Abundant whitish carbonate flecks throughout. Quite massive apart from the very isolated quartz stringers.

DIP TEST 486' 89 30'

Casing left in hole.

PROJECT V.B.G.

D.D.H. 19

Location: Section 20E, 600S.

Inclination: Vertical

Commenced: February 10, 1960

Completed: February 13, 1960.

Logged by: H.G.Rushton

6 - 67 CASING

67.0 - 71.3 DIORITE

Bleached yellowish grey white. (Unweathered.) Medium grained. Massive. Lower contact at 45 to CN. Quartz feldspar and some dark minerals.

71.3 - 75.5 QUARTZ META RHYOLITE

First two ft. dark grey, bleached thereafter. Fine grained from numerous clear quartz eyes. Some epidotized feldspar flecks, some carbonated.

75.5 - 102.1 DIORITE

Small sections as for 67 - 71.3. The remainder is unweathered. Medium grained, medium grey massive. Upper contact obscured. Lower at 55 to CN.

102.1 - 103.6 CHLORITIZED ACID DIKE ?

Bark grey finegrained. Very hard. Massive. Lower contact at 80 to CN.

103.6 - 121.3 GABBRO

Dark green very fine to medium grained, Massive. Chloritic. Lower contact at 45 to CN. ?

121.3 - 122.7 DIORITE

As for 75.5 - 102.1. Lower contact at 55 to CN.

122.7 - 133.5 GABBRO

As for 103.6 - 121.3. Pyrite 3% in last 4 ft. Minor CHALCOPYRITE on contct. Lower contact at 45 to CN.

133.5 - 136.0 AMYGDALOIDAL KXX. INT. (DACITIC) FLOW

Dark green fine grained, with amygdules of quartz carbonate. Vague flow banding towards bottom. Scattered pyrite. Chloritic

136.0 - 137.3 ACID DIKE OR PILLOW SELVAGE?

Grey, fine grained, massive. Contacts at 80 to CN, but much confused by narrow stringers leading off into surrounding rocks. Dike has pyrite 3%. Could be pillow selvage.

137.3 - 148.0 AMYGDALOIDAL PILLOWED DACITE ?

As for 133.5 - 136.0 not quite so chloritic. Also pillow selvages throughout with PYRITE 2% of total. Chlorite quartz developed.

148.0 - 150.3 PILLOW SELVAGE ?

Elliptical blue quartz grains about $\frac{1}{2}$ " x $\frac{1}{4}$ " wide, set in a groundmass of fine grey quartz. Groundmass carries PYRITE 4% of total. Quite a sharp upper contact at 45 to CN, but lower one confused as for 136.0 - 137.3. Vague orientation throughout at 45 to CN.

- 150.3 - 172.3 AMYGDALOIDAL PILLOWED DACITE ?
As for 133.5 - 136.0. Pyrite concentrated around pillow selvages . About 2% of total.
- 172.3 - 174.8 ACID DIKE ?
Light grey massive. Fine grained. Somewhat chloritic .
Moderate shearing at 45 to CN. Flecks of chlorite throughout.
Lower contact at 70 to CN. Upper contact obscured.
- 174.8 - 178.3 QUARTZ META RHYOLITE
Light grey, medium grained, with abundant quartz eyes, and fine groundmass of quartz. Pyrite throughout about 3%.
- 178.3 - 180.1 ACID DIKE ?
As for 172.3 - 174.8. although not quite so chloritized. Upper contact at 40 to CN. Lower appears to be gradational.
- 180.1 - 230.5 QUARTZ META RHYOLITE
Mostly similar to 174.8 - 178.3. Some dark grey sections, again with abundant quartz eyes. Pyrite throughout - 3%.
- 230.5 - 236.2 GABBRO
Dark green, fine grained, massive, chloritic. Pyrite throughout - 4%. Upper contact obscured by broken core. Lower at 50 to CN.
- 236.2 - 238.3 QUARTZ META RHYOLITE HEAVILY PYRITIZED
As for 180.1 - 230.5 but some chlorite developed. PYRITE 25%.
- 238.3 - 242.8 QUARTZ META RHYOLITE
As for 180.1 - 230.5.
- 242.8 - 243.8 OLD BASIC DIKE ?
Light green finegrained massive apart from quartz carbonate stringers. Contacts at 70 to CN.
- 243.8 - 246.8 ACID DIKE
Similar to 178.3 - 180.1. Contacts at 45 to CN.
- 246.8 - 262.3 QUARTZ META RHYOLITE
As for 180.1 - 230.5. Chloritized patches with 10% PYRITE throughout. PYRITE 4% of total.
- 262.3 - 263.7 ACID DIKE
Light buff coloured, finegrained, massive. Scattered pyrite 1% throughout. Contacts at 45 to CN.
- 263.7 - 283.5 QUARTZ META RHYOLITE
As for 180.1 - 230.5. Large carbonate patches isolated developed from 269.0 283.5. Slightly sheared with quartz carbonate stringers at generally 45 to CN, in last 2 ft.
- 283.5 - 287.8 ACID DIKE
As for 172.3 - 174.8. Upper contact at 45 to CN, lower at 30 to CN.
- 287.8 - 327.0 QUARTZ META RHYOLITE
As for ~~172.3 - 174.8~~ 263.7 - 283.5. Bleached sections less prominent
- 327.0 - 330.6 TUFFITE OR SHEARED BASIC SILL??
Dark green, fine grained. Banded, with bands much replaced

by PYRITE and some PYRPHOTITE. Bands very regular about 1/16" wide. Sulphide content - 15%. Banding dies out in last foot. Highly chloritic. Banding from 55 to 70 to CN. Upper contact has 2" of quartz at 55 to CN. Lower contact #? 55 to CN.

330.6 - 403.0 GABBRO (HIGHLY MAGNETIC)

Dark green fine to medium grained. Very magnetic. Patch of MAGNETITE from 332 - 332.3 banded at 55 to CN/ Otherwise quite massive . Some whitish carbonate throughout. Fine dikelet of for 2" at 401'.

403.0 END OF HOLE

DIP TEST 400'.....(90°

CASING LEFT IN HOLE.

P.D.H. 20Location: Section 32E, 800S.Inclination: VerticalCommenced: February 11, 1960Completed: February 17Logged by: R.N.Saukko

0 - 89.0 CASING

89.0 - 108.5 INTERMEDIATE INTRUSIVE (DIORITE)

Grey green, medium fine grained, equigranular, very massive.
Very minor pink pyrrhotite. Lower contact at 45 to CN.

108.5 - 121.7 ACID DIKE

Light grey medium to fine grained, massive dots of chlorite
throughout. Lower contact 75 to CN.

121.7 - 128.5 INTERMEDIATE INTRUSIVE (DIORITE)

Similar to 89.0 - 108.5 but slightly lighter in colour.
Salt and pepper texture.

128.5 - 137.0 GABBRO

Dark grey green, fine to medium grained equigranular massive.
Upper contact obscured at end of run. Lower irregular,
approx. 80 to CN.

138.0 - 138.0 AMYGDAULAR DACITE

Grey green, fine grained. Lower portion poorly banded at
60 to CN (may be Tuffite). Upper part amygdular. Minor crystals
of pyrite. Lower contact at 60 to CN.

138.0 - 157.0 QUARTZ META RHYOLITE

Blue grey, medium grained numerous quartz eyes, white feldspar
flecks. Minor pyrite. Typical QMR, but somewhat coarser
grained in top 12 ft. Bleached sections.

157.0 - 157.1 BASIC DIKE

Dark grey very fine grained. Black very basic rims. Both
contacts at 30 to CN. Vague banding parallel to contacts.

157.1 - 157.2 QUARTZ META RHYOLITE

As for 138.0 - 157.0.

157.6 - 160.2 BASIC DIKE

As for 157.0 - 157.1. Vague banding parallel to contacts.
Central part massive. Well developed reaction rims. Upper
contact irregular, lower at 75 to CN.

160.2 - 182.2 QUARTZ META RHYOLITE

As for 138.0 - 157.0 with more bleached sections and minor
pyrite. Quartz veining regular at 10 to CN.

182.2 - 182.7 BASIC DIKE

As for 157.0 - 157.1. Upper contact at 80 to CN.

182.7 - 271.2 QUARTZ META RHYOLITE

- 182.7 - 271.2 QUARTZ META-RHYOLITE
As for 138.0 - 157.0. Irregular bleached sections. Minor pyrite.
- 271.2 - 287.7 INTERMEDIATE INTRUSIVE DIORITE
Light grey green, fine to medium grained, massive. Chilled contacts at 60 to CN. Central portion exhibits good dioritic texture. Quartz carbonate veining at contacts. Hite mineral in core essentially carbonate.
- 287.7 - 399.6 QUARTZ META-RHYOLITE
As for 138.0 - 157.0: 341.0 - 356.0 QMR somewhat finer grained and more highly bleached: 351.2 "qtz. vein at 10 to CN. Considerable sphalerite at upper contact.
356 - 397 Typical QMR with severe bleaching proceeding from fractures: 37.3 - 399.6 Silicified. QMR.
- 399.6 - 403.9 SHEARED GABBRO (CALLED TUFFITE Kc IN LOG OF D.D.H 11)
Dark green with poorly defined light green bands at 45 to CN. Colour banding developed by shearing.
- 403.9 - 511.6 GABBRO
Dark grey, fine grained, massive except for occasional irregular quartz carbonate stringers. Quite strongly magnetic throughout. Considerable carbonate as flecks.
170 - 500 Gabbro more greenish and coarser grained.
- 511.6 - 512.0 MAGNETITE LEI SE
Fine grained massive magnetite. Lower contact at 30 to CN
- 512.0 - 537.0 POLKA DOT GABBRO
Fine grained at contact (?) grading to coarse epidotized feldspars in groundmass similar to 403.9 - 511.6. Considerably less magnetic than fine grained gabbro from 403.9 - 511.6. May be a separate intrusive rather than coarse grained centre of above gabbro.
- 537.0 - 539.6 LEUCOXENE GABBRO
Grey equigranular massive with numerous flecks of buff leucoxene. Distinct and fairly sharp contacts with PDG.
- 539.6 - 588.6 POLKA DOT GABBRO
As for 511.0 - 537.0 but greater percent of feldspar phenocrysts and some bleached sections. Occasional small patches of leucoxene gabbro
- 588.6 - 601.0 DIORITE
Fine grained. Colour change from grey at top to greyish green at bottom. Vague white flecks at top disappear down hole. Some quartz eyes at top contact. Carbonate throughout. Both contacts at 30 to CN.
- 601.0 - 604.0 LEUCOXENE GABBRO
As for 537.0 - 539.6.
- 604.0 END OF HOLE

PROJECT V. B. G.

D. D. H. 21

Location: Section 32E; 1200S

Inclination: Vertical

Commenced: February 14, 1960

Completed: February 19, 1960.

Logged by: H. G. Rushton

0 - 117 CASING

117 - 120.0 GABBRO (probably a boulder)

120.0 - 232.1 FILLOWED, AMYGDALOIDAL DACITE

Fine grained, light greyish green. Chlorite/carbonate selvages every 3 to 4 feet. Some small massive sections (centres of pillows?). Many qtz-carb-sulphide filled amygdules. Some pyrite, some pyrrhotite. 2% of total.

232.1 - 254.0 DIORITE

Medium to fine grained. Massive. Greyish green. Granular. Both contacts well chilled. Occasional qtz-carb stringers. At variable angles to core. Off-white flecks of feldspar? in central portion. Upper contact at 45 to CN. Lower at 45? to CN. Very slightly magnetic.

254.0 - 254.3 FILLOWED, AMYGDALOIDAL DACITE

As for 120.0-232.1.

254.3 - 254.5 FINE DIORITE

As for chilled portions at contacts of 232.1-254.0. At 45 to CN.

254.5 - 337.7 FILLOWED, AMYGDALOIDAL DACITE

As for 120.0 - 232.1, Slight flow banding at 45 to CN, at 305.5-305.8.

337.7 - 339.7 GREY ACID DIKE

Mid-grey, fine grained. Massive. Quite soft - may be sericitised feldspar. Contacts at 70 to CN.

339.7 - 418.3 FILLOWED, AMYGDALOIDAL DACITE

As for 120.0-232.1.

418.3 - 418.8 SHEARED DACITE ?

Colour as for 120.0-232.1, but shows some qtz-carb filled shears at 45 to CN.

418.8 - 423.4 GREY-GREEN DIKE (? Altered Q-F PORPHYRY ?)

Light grey-green, fine to medium grained. Granular. Massive. Chlorite flecks common throughout, often accompanying semi-altered feldspar phenocrysts. Some quartz phenocrysts, dull grey, also. Contacts at 45 to CN.

- 423.4 - 427.5 SHEARED DACITE
As for 418.3-418.8. Shearing at 45 to CN.
- 427.5 - 437.0 DIORITE
Grey, slight greenish tinge. Fine to medium grained. Consists of feldspar, dark minerals, some quartz. Massive. Upper contact chilled at 30 ?? to CN. Lower at 40 to CN.
- 437.0 - 439.5 SHEAR (DIORITE ?)
Fine grained, sheared, mylonitic material. probably is sheared diorite . At 40 to CN.
- 439.5 - 473.2 FINE DIORITE
As for 427.5-437.0. Lower contact well chilled at 50 to CN. Contact is quite irregular, but this is average angle.
- 473.2 - 553.8 MASSIVE DACITE
Greyish green, medium grained. Massive. Granular.
498.8-499.0 Fine chilled diorite dikelet. At 40 to CN.
Some small amygdules and slight flow banding appear in the last few feet near the lower contact. Rock becomes finer also. Contact at 45 to CN.
- 553.8 - 604.3 FILLOWED, AMYGDAL IDAL DACTS
As for 120.0-232.1.
- 604.3 - 605.6 TUFFITE (NOT MARKER, Kt)
well banded, fine grained, somewhat chloritised . Upper contact at 90 or very near, to CN. Lower at 70 to CN. The banding is at 70 to CN. Moderate replacement of bands by sulphides - pyrite 10%.
- 605.6 - 626.9 FILLOWED, AMYGDALOIDAL DACTE.
As for 120.0-232.1.
- 626.9 - 630.2 TUFFITE (Kt)
Light grey to green. Fine grained. Cherty in last few inches. Well banded at 50 to CN. Pyrite and minor sphalerite replacement - 5%. Upper contact at 55 to CN. Lower at 20 to CN.
- 630.2 - 653.5 QUARTZ META RHYOLITE
Abundant qtz eyes. No feldspars. Slightly bleached and chloritised throughout. Scattered pyrite - 1%
- 653.5 - 672.0 FELDSPAR PORPHYRY DIKE ?
Light grey, medium to ~~xxxxxx~~ coarse grained. Great number of poorly developed feldspar phenocrysts. Upper contact sheared at 45 to CN.
- 672.0 End of Hole

PROJ OF V.B.G.

D.D.H. 22

Location: Section; 40E, 1100S.

Inclination: Vertical

Commenced: February 17, 1960.

Completed: February 21.

Logged by: R.N.Saukko

0 - 55.0 CASING

55.0 - 106.5 DACITE AMYGDULAR AND PILLOWED

Light grey green, pillows, quartz centre carbonate rim amygdules up to $\frac{1}{2}$ ". Otherwise fine grained. Very minor sulphides, pyrite and sphalerite at selvages or as amygdule centre.

106.5 - 188.0 ACID DIKE (AFLITE)

Light green grey, fine grained, massive except for quartz carbonate stringers. Upper contact at 45 to CN, wavy light and dark grey bands at contact. Chlorite along some fractures. Some phases similar to what has been called a SPOTTED GREY ACID DIKE though above dike is one intrusive (no contacts between spotted and unspotted phases). Lower contact at 70 to CN.
117.3 - 118.3.

188.0 - 225.0 DACITE AMYGDULAR AND PILLOWED

As for 55.0 - 106.5. pillows 2 - 4'.

225.0 - 280.0 DACITE MASSIVE AMYGDULAR

Medium grey green, medium grained, quartz carbonate amygdules to $\frac{1}{2}$ ", massive, very rare pillows, Carbonate flecks throughout as well.

280.0 - 332.5 DACITE MASSIVE

As above but no amygdules and very massive, slightly coarser grained. A few amygdules at lower contact. Lower contact chilled at 30 to CN. against tuffite.

332.5 - 333.6 TUFFITE (Kt)

Dark green to grey green to light green, bands varying from very thin to $1\frac{1}{2}$ " (brown chert band) in width. Grain size varies from very fine cherty to medium. Some pyrite (3%) mainly on the contacts of the brown chert band. Banding at 40 to CN.

333.6 - 362.5 QUARTZ META RHYOLITE

Medium grey medium grained massive, typical QMR. Some slightly bleached ~~x~~ sections. Minor pyrite. Cherty quartz vein at upper contact.

362.5 - 363.4 G BBRO

Fine grained dark green, weakly magnetic. Contacts wavy irregular trend 70 to CN.

363.4 - 368.3 QUARTZ META RHYOLITE

AS for 333.6 - 362.5

368.3 - 398.5 GABRO

Fine chilled upper contact, irregular. Carbonate flecks throughout. Quite strongly magnetic.

398.5 END OF HOLE

DIP TEST 398' 87

CASING LEFT IN HOLE

PROJECT V.P.G.

D.P.H. 23

Location: Section 36E, 1000S.

Inclination: Vertical

Commenced: February 20, 1960

Completed: February 22.

Logged by: H.G. Rushton

0 - 56.0 CASING

56.0 - 201.7 DACITE PILLOWED AND AMYGDALOIDAL

Greenish grey, fine to medium grained. Abundant quartz carbonate filled amygdules. Pillow selvages every 3 - 4 ft. marked by chlorite carb. qut. development. Selvages generally at 50° to CN.

201.7 - 202.1 TUFFITE (FRAGMENT?)

Finely banded, grey to green. 5% of bands replaced by pyrit Contacts at 70° to CN.

202.1 - 207.1 DACITE PILLOWED AND AMYGDALOIDAL

As for 56.0 - 201.7

207.1 - 208.7 TUFFITE (Kt)

Fine grained. Well banded. Highly silicified. PYRITE in ~~xxx~~ bands - 25%. Bands at 55° to CN. Upper contact at 55° to CN. Lower at 55°.

208.7 - 210.0 SILICIFIED ZONE

Grey dark and light. Very irregular grain size - coarse to ultra fine. Some cherty sections, coarse greyish quartz and some chlorite. Minor pyrite. May be silicified TUFFITE.

210.0 - 210.8 TUFFITE (Kt)

As for 207.1 - 208.7. Banding again at 55°. PYRITE 35%.

210.8 - 220.5 QUARTZ META-RHYOLITE

Light to dark grey, fine to medium grained. Abundant qtz. eyes. Somewhat bleached and chloritized. No white feldspar

220.5 - 221.5 CHLORITE QUARTZ ZONE

QMR. highly chloritized for 2" each side of cryptocrystalline cherty quartz zone. Much pyrite around qtz. cont ct - irregular. PYRITE - 20%. Gradational contacts with QMR.

221.5 - 224.3 QUARTZ META-RHYOLITE

As for 210.8 - 220.5.

224.3 - 225.5 CHLORITE QUARTZ ZONE

As for 220.5 - 21.5. but less siliceous, more chloritic. Irregular, gradational contacts. PYRITE x - 15%.

225.5 - 226.0 QUARTZ META-RHYOLITE

As for 210.8 - 220.5.

226.0 - 227.0 CHLORITE QUARTZ ZONE

As for 220.5 - 21.5. PYRITE - 10%.

227.0 - 300.0 QUARTZ META RHYOLITE

As for 210.8 - 220.5. Some feldspar laths in less
bleached sections. Scattered pyrite, especially near
small chlorite zones.

300.0 END OF HOLE

DIP TEST 300'..... 85°

CASING LEFT IN HOLE

PROJECT V.B.G.

D.D.H. 24

Location: Section 48E, 1400S.

Inclination: Vertical

Commenced: February 21, 1960

Completed: February 28.

Logged by: R.N.Saukko

0 - 102.0 CASING

102.0 - 108.3 DACE AMYGDALE

Medium grey green, fine to medium grained, a few poorly developed pillows, occasional amygdules, quartz carb.

108.3 - 109.0 DUE TO SHEAR?

Dark green fine grained, essentially chlorite and pyrite. Very poorly banded at about 6° to CN. Shearing at 60 to CN. as well.

109.0 - 156.3 DACE AMYGDALE

As for 102.0 - 108.3. Some leached amygdules. Much broken and ground core.

132.7 - 138.7 No core

141.9 - 142.9 No core

148.6 - 149.9 No core

151.1 - 152.4 No core

155.0 - 156.0 No core

156.3 - 185.5 DIORITE

Dark grey, fine to medium grained, granular. Occasional patches with poor dioritic texture. Contacts irregular, from parallel to core to 50 to 60 to CN. Considerable carbonate throughout. Small inclusions of dacite from 157.7 - 158.3; 177.5 - 179.5.

185.5 - 190.8 DACE AMYGDALE

As before.

190.8 - 194.9 DIORITE

As for 156.3 - 185.5. Somewhat finer grained. Upper contact at 70 to CN. Lower at 20.

194.9 - 215.5 DACE MASSIVE

Grey green, medium fine grained, equigranular, very massive. Minor disseminated pyrite and pyrrhotite. Quartz veins. Lower contact well chilled at 75 to CN.

215.5 - 322.2 DACE PILLOWED AND AMYGDALIC

Light grey green, fine grained, pillow selvages every 3 - 4 ft. Minor pyrite. Some quartz carb. amygdules. Contacts of selvages irregular.

322.2 - 324.9 PICRITE

As for 156.3 - 185.5. Contacts sharp, upper at 50 to CN. Lower 60.

324.9 - 407.5 DACE PILLOWED AND AMYGDALIC

As for 215.5 - 322.2. Minor pyrite and pyrrhotite.

407.5 - 422.5 DACITE AMYGDULAR
As before.

422.5 - 429.4 DACITE MASSIVE
Medium grey, medium fine grained. May be an intrusive /?
Chlorite spots at upper lower contacts at 30 to CN.
A few amygdules at 425.5.

429.4 - 468.0 DACITE PILLOWED AND AMYGDULAR
As before.

468.0 - 484.0 DACITE AND AMYLITE
As for 109.0 - 156.3. Two x small diorite dikes at 60 to
70 to CN. from 411.3 - 482.1

484.0 - 497.8 DACITE MASSIVE
As for 422.5 - 429.4. May be an intrusive (diorite ?)
but no contacts defined. Numerous irregular quartz carb.
throughout.

497.8 - 499.8 SHEAR AND QUARTZ CARB. VEINS
Massive dacite sheared at 70 to CN. Quartz carb. vein
sheared and brecciated.

524.5 - ~~524.5~~ DACITE MASSIVE
As for 484.0 - ~~524.5~~ 497.8. Not as many Qtz. carb. veins.

524.5 - 524.2 SILICIFIED TUFFITE ?
Essentially quartz carbonate pyrite poorly banded
at 40 to 50 to CN. A small section 1" at 54.9 resembles
tuffite and is not as highly silicified. Very minor
sphalerite.

525.2 - 597.0 QUARTZ META PHYOLITE
Dark to medium grey, medium to fine grained,
slightly bleached. Numerous Qtz. eyes. Minor pyrite 1%
Several fractured patches and broken core. From
590.3 - 597.0 approx 5% sulphides some sphalerite.

597.0 END OF HOLE

DIF TEST 595..... 84°

CASIN LEFT IN HOLE

PROJECT V. B. G.

D. D. H. 25

Location : Section 44E ; 1100S.

Inclination : Vertical

Commenced : February 24, 1960.

Completed : February 27, 1960.

Logged by : H. G. Rushton

0 - 38 CASING

38 - 143.5 PILLOWED, AMYGDALOIDAL DACITE

Greyish green. Fine grained, some medium grained patches. Qtz - carb filled amygdules common. Pillow selvages marked by coarse chlorite/carb/Qtz or by fine epidote, every 2 - 3 feet. Scattered pyrite.

143.5 - 213.2 MASSIVE DACITE

Greyish green, fine to medium grained. Massive. Few Qtz - filled amygdules near top contact. Upper contact at 50° to CN. Scattered pyrrhotite throughout. Lower contact well chilled at 70° to CN.

213.2 - 313.9 PILLOWED, AMYGDALOIDAL DACITE

As for 38 - 143.5. Lower contact obscured. Scattered coarse pyrite in last 8 feet.

313.9 - 315.3 SILICIFIED TUFFITE ? (Kt)

Mid-grey. Fine to medium grained. Irregular texture. Some remnants of banding?? Almost entirely composed of quartz with bands of pyrite - 5%. Bands at 55 to CN. Lower contact at 70° to CN.

315.3 - 405.5 QUARTZ META RHYOLITE

Light grey to dark grey. Abundant quartz eyes. Medium to fine grained. Very hard. Massive, apart from small, silicified patches. Scattered pyrite and pyrrhotite. Bleached through the first 60 feet, thereafter less so, with some white feldspar laths and flecks.

405.5 End of Hole

DIP TEST : 400' -88 30'

CASING LEFT IN HOLE

D.D.H. 26Location: Section 32E, 1600S.Inclination: VerticalCommenced: February 28, 1960.Completed: March 12.Logged by: R.N. Saukko

0 - 40.0 CASING

40.0 - 49.0 BASIC FLOW (ANDESITES) ??

Dark green to black, fine grained, possible pillow contact at 46.0, otherwise massive. Some epidote and quartz, Many fine irregular quartz carb. veins. Lower contact ?? at 60 to CN. Not exactly similar to andesites logged in Br acemac holes.

49.0 - 189.5 GABBRO (SOME SECTIONS MAY BE BASIC FLOW AS ABOVE)

Dark green massive, carb. flecks. Typical gabbro from 72' downhole. Above 72 may be basic flow. Some quartz carb. stringers. Leucoxene flecks. Erratic magnetism - weak to medium.

189.5 - 194.0 SHEARED GABBRO

As above but sheared, patches of material of same grain size as above between shears.

194.0 - 206.5 GABBRO

As for 49.0 - 189.5. Very weak to nil magnetism.

206.5 - 213.5 DIORITE

Light grey green, granular massive, medium grained, chilled against gabbro. Upper - 45, Lower - 60. Chilled contacts look like grey spotted acid dike material.

213.5 - 365.5 GABBRO OR BASIC FLOWS ??

As before, somewhat finer grained, fair amount of quartz carb veining. 270.0 - 284.0 Slightly sheared gabbro or possibly sheared fine gabbro dike.

312.3 - 314.7 Fine gabbro dike, upper contact chilled, spots of pyrite and pyrrhotite throughout, non-magnetic.

365.5 - 372.5 DIORITE ??

More greyish in colour than gabbro, fine grained. Upper ~~xx~~ contact at 60 to CN. Highly chloritized.

400.0

372.5 - ~~483.5~~ GABBRO OR BASIC FLOWS ??

As before, Considerable quartz carb. veining

400.0 - 483.5 GABBRO

Definite gabbro more massive, somewhat coarser grained than above, Quartz carb. veining not as prominent. Non-magnetic. Some hematitized slips.

483.5 - 484.8 CHLORITIZED ACID DIKE

Fine grained, greyish green, granular, contacts chilled at 50 to CN.

- 484.8 - 487.6 GABBRO
As for 400.0 - 483.5.
- 487.6 - 490.6 CHLORITIZED ACID DIKE
Highly chloritized, finer grained than 483.5 - 484.8
Upper contact at 50 to CN. Possible diorite.
- 490.6 - 493.0 GABBRO
As for 400.0 - 483.5.
- 493.0 - 494.3 CHLORITIZED ACID DIKE
As for 487.6 - 490.6
- 494.3 - 530.5 GABBRO
As for 400.0 - 483.5. Massive.
- 530.5 - 537.5 BASIC FLOW (ANDESITE) OR FINE GABBRO
Dark green, highly chloritic, sheared, pyrite along fractures. Possible pillow selvage at 533.0 Carb. flecks possible amygdalules from 533.5 - 535.0.
- 537.5 - 542.0 DACITE PILLOWED AND AMYGDULAR
Medium grey green, typical.
- 542.0 - 546.3 GABBRO
Altered, somewhat lighter green than gabbros above.
- 546.3 - 559.4 DACITE PILLOWED AND AMYGDULAR
Typical, poor pillows sparse amygdaluses. Pyrite 5%.
- 559.4 - 574.8 DIORITE
Medium grey green, medium grained, chilled contacts at 30 to CN. Typical. Good dioritic texture centre of dike.
- 574.8 - 645.0 DACITE PILLOWED AND AMYGDULAR
Poorly pillowed every 5-6 ft. Sparse amygdaluses. Pyrite about 10% with fair amount of carb. associated.
- 645.0 - 725.5 DACITE MASSIVE
Typical, massive except for qtz. carb. veins. Some amygdalites at upper contact. Variation in grain size from ~~xx~~ fine to medium. 720.3 - 721.3 shear with considerable carb.
- 725.5 - 732.6 DIORITE
As before, but finer grained, granular. Contacts at 60 - 70 to CN. Poor texture.
- 732.6 - 766.0 DACITE PILLOWED AND AMYGDULAR
As before 5% sulphides
- 766.0 - 808.2 DACITE MASSIVE
As for 645.0 - 725.5. Somewhat more chloritic, softer. Numerous quartz carb veins. Variation in grain size from fine to medium. Possibly altered diorite dike.
- 808.2 - 810.9 LAMPROPHYRE ??
Light grey, chloritized, very soft, granular. Could be altered porphyry dike.

- 810.9 - 835.4 DIABASE OR COARSE DACITE (MASSIVE)
 Medium green, medium grained, feldspar laths. Upper contact quartz vein at 30 to CN. Poorly chilled. Acid dikes chill against diabase?. Leucoxene flecks in some patches.
- 835.4 - 839.0 GREY ACID DIKE
 Medium grey, fine grained, chilled against diabase, at 65 Lower contact brecciated.
- 839.0 - 841.1 DIABASE OR COARSE DACITE
 As before.
- 841.1 - 855.2 GREY ACID DIKE ?
 As before. Core mass of fracture fragments
- 855 - 860 ~~DACITE~~
 Light green typical. Core mass of fracture fragments. Contacts /??.
- 860 - 880.1 ~~KKKIKM~~ GREY ACID DIKE
 Medium grey granular, Upper contact finely chilled. Somewhat Coarser grained than above dikes
- 880.1 - 901.0 DIABASE OR COARS DACITE
 Gradual decrease in grain size from 810. Diabasic texture still evident, lower contact well chilled.
- 901.0 - 1096.5 DACITE MASSIVE
 Pale grey green, granular massive except for irregular quartz carb. veins. Medium hard. Little or no sulphides.
 986.0 - 987.0 No core
 988.5 - 989.3 No core
 From 1000 numerous carb flecks throughout. Variations in grain size from fine to medium probably representing several massive flows. Highly carbonated throughout, chloritized
 1013.0 - 1017.0 Breccia and silicified zone, Flow top ??
- 1096.5 - 1097.5 TUFFITE
 Typical well banded at 45 to 50 to CN. Pyrite 30%.
- 1097.5 - 1098.5 QUARTZ META RHYOLITE
 Typical. Numerous quartz eyes.
- 1098.5 - 1098.9 TUFFITE
 As above. 15% sulphides. Bottom 1 $\frac{1}{2}$ " brown chert band.
- 1098.9 - 1161.0 QUARTZ META RHYOLITE
 Typical as above. Generally dark grey, a few feldspar flecks, numerous quartz eyes. Bleached sections at bottom of hole. Quartz veins parallel to CN. Several broken sections.
 1125.3 - 1126.3 No core
 1134.0 - 1134.5 No core
 1135.0 - 1136.0 No core
 1141.5 - 1142.0 No core
 1143.9 - 1145.0 No core
 1146.8 - 1147.7 No core
 1152.2 - 1153.0 No core

1161.0 END OF HOLE

Dip TEST 600'..... $84^{\circ}30'$ Casing left in hole
1160'..... Approx 90° Apoor test.

D.D.L. 27

Location: Section 52B, 1100S.

Inclination: Vertical

Commenced: February 29, 1960

Completed: ~~Mar.~~ Mar. 2

Logged by: R.N.Saukko

0 - 51.0 C SING

51.0 - 203.1 DACITE MASSIVE AMYGDLAR

Light grey green, fine grained, very massive, granular. Numerous small amygdules $\frac{1}{2}$? up to $1/16"$ diam. both chlorite and quartz filled. Some well rounded, well defined, others blotchy. Not typical massive or amygdular dacite. From 150 down rock becomes lighter in colour and somewhat more siliceous. Slightly chloritized at lower contact.

203.1 - 203.9 CHLORITIZED ZONE WITH QUARTZ VEINS

Chlorite with pyrrhotite. Upper contact of zone well defined at 50 to CN. Lower contact quartz vein at 30 to CN. May be altered tuffite, though no banding visible.

203.9 - 298.0 QUARTZ-META-RHYOLITE

Typical. At 204.3 quartz vein with rusty leached sulphides.

— 298.0 END OF HOLE

DIP TEST

CASING LEFT IN HOLE

D.D.H. 28Location: Section 56E, 1200S.Inclination: VerticalCommenced: March 3, 1960.Completed: March 5.Logged by: R.N. Saukko

0 - 85.0 CASING

85.0 - 100.0 DACTITE AMYGDULAR

Light grey, fine grained, medium hard sparse amygdules.
 Seems more siliceous than dacites of previous holes.
 Lighter in colour. Minor pyrrhotite and pyrite.

100.0 - 112.5 DACTITE PILLOWED AND AMYGDULAR

Light grey, poorly pillowed, some amygdules. Siliceous.
 Pyrrhotite main sulphide 4-5%. Some pyrite.

112.5 - 139.8 DACTITE MASSIVE

Light grey, granular. Similar to above but no pillows or
 amygdules. Fairly hard, not chloritic.

139.8 - 140.9 TUFFITE

Banding much distorted, considerable quartz introduced.
 Banding at lower contact 30 to CN. otherwise irregular.
 Pyrite 15%.

140.9 - 300.0 QUARTZ DACTA RHYOLITE

Typical, numerous quartz eyes. Some bleached sections.
 144.8 - 145.7 Chloritized zone with pyrite, quartz carb.
 May be ~~x~~ tuffite.

From 240 - increase in pyrite to about 2%.

230.3 - 231.0 No core

248.0 - 249.6 No core

250.0 - 250.8 No core

252.0 - 253.0 No core

256.6 - 257.0 No core

265.5 - 266.5 No core

300.0 END OF HOLE

DIF TEST 300'.....90°

CASING LEFT IN HOLE

PROJECT V.B.G.

D.D.H. 29

Location: Section 60E, 1400S.

Inclination: Vertical

Commenced: March 6, 1960.

Completed: March 11.

Logged by: R.N.Saukko

0 - 46.0 CASING

46.0 - 70.6 DACITE PILLOWED AND AMYGDULAR

Light grey green, fine grained, poorly pillowed every 4-5'. Sparse amygdules. Strongly magnetic pyrrhotite concentrated at pillow selvages (2-3% throughout). Minor chalco along slips.

70.6 - 119.9 DACITE AMYGDULAR

Fine grained light grey, same as above but not pillowled. Pyrrhotite 1% as amygdule centres.

119.9 - 122.5 LAMPROPHYRE OR DIORITE ??

Medium brownish grey, medium fine grained, considerable carbonate, fine chilled upper contact at 60 to CN. Some slightly rounded carb. flecks. Some zoned feldspar flecks.

122.5 - 124.6 DACITE

As before.

124.6 - 135.1 DIORITE

Quite similar to lamprophyre above, carbonated, contacts not well chilled at 60 to VN. May be alamprophyre

135.1 - 291.2 DACITE PILLOWED AND AMYGDULAR

As for 46.0 - 70.6. 3-4% sulphides mainly pyrrhotite. Very minor light brown sphalerite ?? mainly along slips. Pyrrhotite strongly magnetic.

291.2 - 333.4 DACITE MASSIVE

Medium grey, fine grained, very massive, except for quartz veins. Little or no sulphides.

333.4 - 336.7 FELDSPAR PORPHYRY DIKE

White feldspar phenos up to 3/16" in diam., some euhedral others rounded and zoned, in medium fine grained light grey groundmass. Upper contact at 45 to CN.

336.7 - 346.4 DACITE MASSIVE

As for 291.2 - 333.4. Contacts with porphyry somewhat chloritic.

346.4 - 348.5 FELDSPAR PORPHYRY DIKE

As for 333.4 - 336.7. Contacts at 30 to CN.

348.5 - 370.4 DACITE MASSIVE

As for 291.2 - 333.4. From 360 carbonate flecks.

370.4 - 373.5 FELDSPAR PORPHYRY DIKE
As for 333.4 - 336.7.

373.5 - 385.0 DACITE MASSIVE
As for 348.5 - 370.4. With 1/16" carbonate flecks throughout.

385.0 - 388.8 TUFFITE
Dark to light green, fine grained, well and finely banded varying from 60 at upper contact to 40 - 45 for most of section.

388.8 - 388.9 QUARTZ META RHYOLITE
Forms half of core, may an inclusion. composed almost entirely of quartz eyes.

388.9 - 400.2 GABBRO
Dark green, medium fine grained, Upper contact obscured. May be at 388.6 in which case the QMR. would be an inclusion Lower contact banded and is similar to the tuffite. Gabbro may be intrusive within the tuffite. Weak to nil magnetism

400.2 - 412.5 QUARTZ META RHYOLITE
Typical with numerous quartz eyes and some bleached sections

412.5 - 421.9 GABBRO
As above, highly chloritic, very soft. Contacts lighter coloured, well chilled at 60 to 6N. Non magnetic.

421.9 - 490.1 QUARTZ META RHYOLITE
As before.

490.1 - 504.0 GABBRO
Massive, upper contact chilled at 75 to CN. Weak to nil magnetism.

504.0 END OF HOLE

DIP TEST 500'.....84°30'

CASING LEFT IN HOLE

D.D.H. 30

Location: Section 64E, 1600S

Inclination: -60N

Commenced: March 12, 1960

Completed: March 16.

Logged by: R.N.Saukko

0 - 71.0 CASING

7

71.0 - 88.8 DACITE PILLOWED AND AMYGDULAR

Typical, light grey green, good pillows, 2% pyrrhotite at selvages and occasionally as amygdaline centres.

88.8 - 93.0 DIORITE

Medium grey, fine grained, poor texture. Dike runs parallel to core. Lower contact at 85 to CN. Narrow chill zone at contacts.

93.0 - 147.0 DACITE PILLOWED AND AMYGDULAR

As for 71.0 - 88.8

147.0 - 161.0 DACITE MASSIVE

Light grey green, same as interseiving material above but no amygdules.

161.0 - 233.0 DACITE PILLOWED AND AMYGDULAR

As for 71.0 - 88.8. Pyrite and pyrrhotite 2%.

233.0 - 264.6 DACITE MASSIVE AMYGDULAR ?

Light grey green, fine grained, rounded chlorite spots, similar to material in ddh. 27.

236.5 - 238.5 Qtz. vein contacts at 70 to CN.

264.6 - 270.8 DIORITE

As for 88.8 - 93.0, some what coarser grained in centre. Contacts at 60 to CN. A few feldspar phenos.

270.8 - 274.0 DACITE

Sheared with carb. veins.

274.0 - 275.2 DIORITE

As for 264.6 - 270.8.

275.2 - 301.3 DACITE PILLOWED AND AMYGDULAR

As before but poorly pillow ed and sparse amygdalines. A few small gabbro dikes at lower contact.

301.3 - 314.0 GABBRO

Dark green medium to fine grained, massive typical. Upper contact at 30 to CN. Weak to medium magnetism.

314.0 - 324.8 FELDSPAR PORPHYRY

Zoned white feldspar phenocrysts up to 1/8" (about 15 % of rock) in a dark grey siliceous groundmass as in DDH. 27.

324.8 - 424.0 GABBRO

As above. A few fine gabbro dikes and fine grained patches fairly strong magnetism throughout. Lower sections

quite strong re-representing 10 - 15 % magnetic iron.

424.0 END OF HOLE

DIP TEST 420' & 56°

CASING LEFT IN HOLE
NO WATER

PROJECT V.B.G.

D.D.H. 31

Location: Section 32E, 2800S

Inclination: -60 N

Commenced: March 13, 1960

Completed: March 23.

Logged by: R.N.Saukko

0 - 68.0 CASING

68.0 - 104.0 BASIC FLOWS (PILLOWED ANDESITE ??)

Medium green medium fine to fine grained, some pillows ?
Moderately chloritized throughout, highly chloritized
around slips, slightly sheared. m

104.0 - 122.5 BASIC FLOW ANDESITE MASSIVE OR GABBRO

Medium green, medium grained, both contacts obscured
by block, lower somewhat chilled, slightly sheared.
Occasional carb. flecks. Non-magnetic.

122.5 - 150.4 BASIC TUFF

Medium green, fine to medium grained, * colour banded,
sheared. Some stretched fragments ? Some parts magnetic.
Several zones with spherules (stretched) ? about 1/32" in
diam.

128.5 - 130.0 Probably basic flow.

149.0 - 152.0 Zone with breccia fragments.

150.4 - 162.7 ANDESITE

Fine grained, dark green, lineated chlorite flecks.
Calcite blebs.

162.7 - 180.2 CALCITE FELDSPAR DIKE

Very dark grey to dark green, very hard, fine grained with
irregular shaped chlorite blobs throughout. Upper section
highly chloritized with calcite blebs. From 174 - 180
very fine decussate white feldspar laths. Lower contact
with gabbro not defined. Upper contact ? at block. Fairly
magnetic throughout. May be differentiate of gabbro.

180.2 - 203.0 GABBRO

Dark green massive, occasional epidotized phenocrysts.
Weakly magnetic.

203.0 - 212.5 ANDESITE

Fine grained, slightly sheared at 45, lineated chlorite
blebs, epidotized patches, very weak to nil magnetism.
May be fine sheared gabbro. Alteration rims around epidote
blebs.

212.5 - 224.2 GABBRO ?

As before.

224.2 - 241.3 ACID DIKE APLITIC AND PORPHYRITIC PHASES

Very light to medium grey. Upper contact at 50 to CN.

- 241.3 - 249.0 SPOTTED GREY ACID DIKE
Medium grey, Upper dike chilled against spotted grey dike.
- 249.0 - 251.7 ANDESITE
Similar to part 203.0 - 212.5.
- 251.7 - 281.0 GABBRO (POSSIBLY BASIC FLOW)
As before, occasional epidote blobs. At 262' rounded calcite blobs with epidote rims, amygdalites? Lower contact somewhat sheared at 45 to CN. Weak to nil magnetism.
- 281.0 - 283.7 ANDESITE SPHERULITIC
Dark green, fine grained. Narrow breccia zones. Spherules $\frac{1}{32}$ " in diam. Several magnetite with pyrite. Pillowed??
bands
- 283.7 - 346.8 GABBRO (POSSIBLY BASIC FLOW)
As for 251.7 - 281.0. Medium magnetism, strong in places. Upper and lower contacts not defined but a chill zone, slightly sheared.
- 346.8 - 355.0 ANDESITE SPHERULITIC & PATCHES
As for 281.0 - 283.7. Spherules and narrow microbreccia zones. Some of the material may be basic tuff.
- 355.0 - 359.0 ANDESITE (POSSIBLY GABBRO)
As before. Massive.
- 359.0 - 392.0 GABBRO
Sharp increase in magnetism at contact. A 'good' gabbro.
- 392.0 - 412.0 BASIC FLOW ANDESITE (POSSIBLY GABBRO)
Similar to 355.0 - 359.0. Erratic magnetism, medium to nil. Lineated carbonate blobs.
- 412.0 - 423.0 SHEAR IN GREY ACID DIKE ?
Highly altered, several quartz veins, much broken core, shearing at 45 to CN?
416.8 - 417.5 No core
418.4 - 421.0 No core
421.5 - 423.0 Qtz. vein
- 423.0 - 426.6 GREY ACID DIKE
Altered and sheared at 20 to CN.
- 426.6 - 437.8 GABBRO
Dark green, fine grained, fairly magnetic.
- 437.8 - 442.0 ALTERED POLKA DOT GABBRO
Similar to altered PDG. in ddh 8. Large bluish siliceous blobs. Sharp contacts with gabbro.
- 442.0 - 460.0 GABBRO
As for 426.6 - 437.8
- 460.0 - 484.1 ANDESITE (POSSIBLY GABBRO)
Medium green, slightly sheared, lighter in colour than gabbro above, sharp change at lower contact. Quite magnetic.
477.0 - 479.5 ~~xxx~~ Cherty quartz vein.

484.1 - 610.0 GABBRO

Chilled against above, highly epidotized, magnetic, very massive, epidotized feldspar phenos, Gradual increase to 610.

610.0 - 642.0 POLKA DOT GABBRO

Feldspar phenos 45% up to 3/8", non-magnetic.

642.0 - 652.0 BASIC TUFF

As before. Colour banded at 30 to CN. Some fragments?

652.0 - 697.1 ANDESITE (POSSIBLY GABBRO)

Dark green, lined chlorite specks, moderately magnetic. Lower contact very vague at 70 to CN. Some epidotized feldspar phenos.

697.1 - 709.0 GABBRO (POSSIBLY ANDESITE)

No definite contact with above, 30% quite magnetic, a few epidotized feldspar phenos.

709.0 - 727.6 POLKA DOT GABBRO

Sharp contact with above, 30% phenos, Gradual decrease in phenos from 725 to chilled contact, irregular parallel to CN. Non-magnetic.

727.6 - 730.7 SHEARED PORPHYRY OR AGGLOMERATE ??

Medium grey, some fragments? Sheared at 20 to CN.

730.7 - 739.9 ACID DIKE

Fine grained, medium grey, typical.

739.9 - 753.4 GABBRO

Typical. Upper two feet may be flow. Non-magnetic.

753.4 - 759.0 ALTERED POLKA DOT GABBRO

As for 437.8 - 442.0. No contact with above but sharp increase in phenos.

759.0 - 760.0 BASIC TUFF

As before, possibly sheared polka dot gabbro.

760.0 - 762.1 ACID DIKE

As for 730.7 - 739.9. Fine grained, brecciated patches.

762.1 - 765.3 BASIC TUFF

As before, some patches very well banded, Almost a tuffite.

765.3 - 832.1 ANDESITE

As before, quite magnetic, carb flecks throughout, some possible pillows, changes in grain size, numerous small quartz carbonate stringers.

832.1 - 844.2 BASIC TUFF

Colour banded, not as well bedded as 762.1 - 765.3.

Approx 15 to CN. Fair amount of qtz. carb veining.

Weakly magnetic.

844.2 - 883.0 ANDESITE

As for 765.3 - 832.1. Some what more chloritic.
Numerous quartz carb. veins.

883.0 - 889.5 DIORITE ??

Medium grey, poor texture, fine grained, rounded carb. flecks, may be a masive dacite. Lower contact vague.

889.5 - 910.2 GABBRO

Well chilled upper and lower contacts. Weakly magnetic.

910.2 - 912.5 BASIC TUFF

As before, some fine breccia zones. May be sheared fine contact of gabbro.

912.5 - 916.1 ANDESITE

As before, Carb. flecks, nonmagnetic.

916.1 - 1024.8 GABBRO

Typical, somewhat sheared at upper contact. Good contact (if it is the contact) at 20 to CN. Masive.

1019.5 - 1020.5 Carb. vein.

1024.8 - 1029.5 ACID DIKE

Brecciated in places. Contacts at 45 to CN. Chilled and banded. Light to dark grey, fine grained.

1029.5 - 1029.6 GABBRO ?

Good contact at 65 to N. May be a pillow contact.

1029.6 - 1033.3 ANDESITE

As before, Slightly sheared, upper contact pillow selvage??
Weakly magnetic.

1033.3 - 1037.2 GABBRO

As before, Good contact though poorly chilled. Weakly magnetic.

1037.2 - 1045.0 ACID DIKE APLITE

As before with some spotted phases and bleached patches.
Upper contact at 50 to 6N.

1045.0 - 1051.9 GABBRO

As for 1033.3 - 1037.2. Carb. flecks very weakly magnetic.

1051.9 - 1056.5 ACID DIKE

As above.

1056.5 - 1060.3 GABBRO

As before. Lower chill at 60 to CN.

1060.3 - 1078.3 ANDESITE OR GABBRO

Dark green, with epidotized patches, possibly pillows.

1078.3 - 1098.3 DIORITE ??

Medium grey, fine to medium grained, good chilled contacts, upper 40, lower 60, Some patches chloritized

1098.3 - 1158.2 GABBRO

Medium green, very massive, moderately magnetic, Good lower chill. May be amassive flow.

1158.2 - 1172.2 ANDESITE PILLOWED

Dark green, fine to medium fine grained, good pillows, a few amygdulæs. Minor sulphides. Bottom 20' pillows disappear.

1172.2 - 1180.1 TUFFITE (Jp)

Well and finely banded, dark green to white. Numerous cherty bands. At 1177 opalescent band. Bands from ultra fine to $\frac{1}{2}$ " at 30 - 45 to CN.

1180.1 - 1194.6 ANDESITE AMYGDULAR

AS before, a few amygdules.

1194.6 - 1197.5 DARK GREY ACID DIKE

As before

1197.5 - 1198.0 ANDESITE

As above.

1198.0 END FO HOLE

DIP TESTS 600'..... 46°
 1195'..... $37\frac{1}{2}^{\circ}$

CASING LEFT IN HOLE

PROJECT V.B.G.

D.D.H. 32

Location: Section 70 E, 1300S.

Inclination: -60°N

Commenced: March 17, 1960

Completed: March 24.

Logged by: R.N.Saukko

0 - 174.0 CASING

172.0 - 190.4 GABBRO

Some patches with feldspar laths and diabasic texture.
Weakly magnetic.

190.4 - 252.5 FELDSPAR PORPHYRY

Phenos to 1/8" pinkish felspar, 40% of rock.

252.5 - 257.2 ACID DIKE

Aplitic, typical. Chilled against porphyry about parallel
to CN.

257.2 - 281.5 FELDSPAR PORPHYRY

As above, lower contact 60 to CN.

281.5 - 313.0 GABBRO

As above, weakly magnetic

313.0 - 316.2 ACID DIKE

Light grey, fine grained. Upper contact 70. Feldpar flecks?

316.2 - 321.0 GABBRO

As above with diabasic texture. Weakly magnetic.

321.0 - 338.9 DIORITE ??

Medium grey, fine grained, poor dioritic texture. Good
chilled contacts at 70. Some rounded bleached patches or
may be amygdules 1/8" to 1/4" in diam.

338.9 - 412.1 GABBRO

As before, quite magnetic

412.1 - 438.9 DIORITE ??

As above, good chill against gabbro, massive fine grained,
Occasional bleached patches as above. Lower contact at 70.
Non-magnetic.

438.9 - 455.0 GABBRO

As above, quite magnetic.

455.0 END OF HOLE

DIP TEST 450'.....54°

CASING PULLED

PROJECT V.B.G.

D.D.H. 33

Location: Section 52E, 2100S

Inclination: Vertical

Commenced: March 26, 1960

Completed: April

Logged by: R.N. Saukko

0 - 52.0 CASING

52.0 - 107.0 ANDESITE

Dark grey to dark greyish green, medium fine grained, calcite specks up to $1/16"$ throughout. Slightly sheared at 60 to CN. Minor pyrite, weakly magnetic.

53 - 65 May be basic tuff, colour banding appears to have developed from alteration along slips.

107.0 - 112.5 QUARTZ CARBONATE VEIN

112.5 - 210.6 ANDESITE

As above, some patches slightly coarser in grain, some patches with coarser carb. flecks up to $1/8"$, weakly magnetic.

210.6 - 245.4 GABBRO OR COARSE MASSIVE ANDESITE

Similar to above andesite, but more massive. No carb. specks, weakly to medium magnetism. Looks more like gabbro but no definite contact with above. Well chilled lower contact but not marked.

245.4 - 248.7 TUFFITE OR BASIC TUFF

Colour banded at 50 - 60 to CN, bands not as regular as other tuffites but better than basic tuffs. Possibly a shear.

248.7 - 255.8 ACID DIKE

Sheared at 60 to CN. Lower contact at 60, upper 45.

255.8 - 265.5 SHEARED GABBRO OR ANDESITE ??

265.5 - 301.0 GABBRO

As for 210.6 - 245.4.

301.0 - 355.8 DIORITE

Medium grey, fine grained, lower contact chilled parallel to CN, upper contact chilled as well. Some bleached and epidotized sections.

301.0 - ~~355.8~~ 307.0 Amygdular patches??

355.8 - 499.8 GABBRO

Dark green, medium fine grained, widely spread feldspar phenocrysts in top 40', very massive, quite magnetic but decreases downhole, a 'good' gabbro. Lower contact chilled at 60 to CN.

499.8 - 525.7 ANDESITE AMYGDULAR, POSSIBLY PILLOWED

Dark green, fine grained, carb. amygdulites, regular concentrations of pyrite and carbonate may represent pillow

pillow selvages. Pyrite 3%. Weak to nil magnetism.

525.7 - 683.0 GABBRO

Poor upper contact at 60 to CN. Upper 20' somewhat sheared, downhole a typical massive gabbro, fairly magnetic Lower contact chilled brecciated, almost entirely epidotized

683.0 - 683.7 FELDSPAR PORPHYRY

Zoned feldspar phenos to 1/8", 15% of rock, in dark grey groundmass.

683.7 - 685.0 EPIDOTIZED GABBRO CONTACT

As above

685.0 - 692.4 TUFFITE

Well and regularly banded at 45. Several cherty bands. May correlate with tuffite in DDH 31 from 1172 - 1180.

692.4 - 700.7 ANDESITE PILLOWED AMYGDULAR

Medium green, sparse amygdules, pillowd ?? 5% pyrite. May be chloritized dacite as no definite contact with lower dacite, gradational ??

~~688.0~~ -

700.7 - 701.8 FELDSPAR PORPHYRY

As above, contacts at 30 to CN.

701.8 - 720.0 DACITE PILLOWED AMYGDULAR

Typical, medium green changing to pale green downhole.

720.0 - 758.5 DACITE MASSIVE

Light grey green, massive rare amygdules

734.5 - 744.4 Might bean intrusive, somewhat darker green, weakly magnetic, lower chilled contact

758.5 - 768.0 DACITE PILLOWED AMYGDULAR

As above.

768.0 - 776.0 DACITE MASSIVE

As for 720.0 - 758.5.

776.0 - 792.1 DACITE PILLOWED AMYGDULAR

As above.

792.1 - 793.8 FELDSPAR PORPHYRY

As before. Phenocrysts 5%. Contacts at 45 to CN.

793.8 - 795.0 GREY ACID DIKE

Medium grained, medium grey, contacts not chilled, looks like rhyolite without quartz eyes; could be a massive dacite

795.0 - 802.5 FELDSPAR PORPHYRY

As above, phenocrysts 5 -10% of rock, chilled against grey acid dike.

802.5 - 807.8 GREY ACID DIKE

As above, medium grained, contacts not chilled, could be a maasive dacite.

- 807.8 - 828.7 GABBRO
Typical, weakly magnetic, upper contact 55 to CN. Lower contact broad chill zone.
- 828.7 - 833.3 QUARTZ VEIN
White milky quartz, no mineralization.
- 833.3 - 838.0 FELDSPAR PORPHYRY
As above, light brown alteration proceeding from slips.
- 838.0 - 851.5 GABBRO
As above, medium fine grained, lower contact vague, not chilled at 45 to 50 to CN.
- 851.5 - 854.9 DACITE MASSIVE ??
Could be a diorite though contacts not chilled.
- 854.9 - 857.6 ALTERED ACID DIKE
Somewhat sheared and recrystallized ?? Contacts at 45.
- 857.6 - 865.6 DACITE MASSIVE
Medium grey, fairly coarse grained, somewhat sheared and recrys. ??
- 865.6 - 876.7 GABBRO
Fairly coarse grained, somewhat sheared. Contacts at 45 to CN, not chilled.
- 876.7 - 883.8 DACITE MASIVE
As for 857.6 - 865.6.
- 883.8 - 888.6 GABBRO
As for 865.6 - 876.7.
- 888.6 - 892.7 SPOTTED GREY ACID DIKE
Dark grey, chlorite spots, not altered or sheared, contacts at 70.
- 892.7 - 899.3 GABBRO
Typical, as for 807.8 - 828.7.
- 899.3 - 900.7 GREY ACID DIKE
Medium grey, no chlorite spots, contacts at 80 to CN.
- 899x3 -
- 900.7 - 904.0 GABBRO
As for 892.7 & 899.3
- 904.0 - 905.5 DACITE MASSIVE
Typical, not altered or sheared.
- 905.5 - 916.1 GREY ACID DIKE
As for 899.3 - 900.7.
- 916.1 - 925.0 DACITE PILLOWED AMYGDULAR & SHEARED
As for 925.0 - 1004.5, somewhat sheared at 60 to CN.
- 925.0 - 1004.5 DACITE PILLOWED AND AMYGDULAR
Typical, medium green, moderate number of amygdules, well pillowled. 936.5 - 937.3 Possible flow top ?

1004.5 - 1024.5 DACITE MASSIVE

Medium grey, medium grained, massive, poor upper chill.
A few amygdules ?? Lower section grades into pillowd
material with no defined contact

1024.5 - 1127.0 DACITE PILLOWED AMYGDULAR

As for 925.0 - 1004.5. Typical, pillows more widely spaced
downhole.

1127.0 - 1153.0 DACITE AMYGDULAR

Same as 1024.5 - 1127.0, not pillowd, fewer amygdules.

1153.0 - 1253.0 DACITE PILLOWED AMYGDULAR

As before. Bleaching accompanies some narrow quartz
stringers. Some small massive sections (5 - 6'). Pillow
somewhat wider spread in lower section. A few quartz
eyes in last 10 ft.

1253.0 - 1253.9 TUFFITE

Banding much distorted at 30 - 45 to CN. Essentially
banded chlorite carbonate and sulphides, pyrite, pyrrhotite
and minor chalco. Some leached portions.

1253.9 - 1319.0 QUARTZ META RHYOLITE

Typical, though not as hard as usual, numerous quartz eyes
Some small bleached sections. Lower part very hard.

1319.0 END OF HOLE

DIP TESTS

600'..... $79\frac{1}{2}^{\circ}$
1300'..... $79\frac{1}{2}^{\circ}$

CASING LEFT IN HOLE

D.D.H. 34Location: Section 12E, 1400SInclination: VerticalCommenced: March 24, 1960Completed: April 9.Logged by: R.N.Saukko

0 - 36.0 CASING

36.0 - 153.6 ANDESITE (POSSIBLY GABBRO)

Dark grey green, medium fine grained, relatively massive, from 65 - 100 epidotized patches at regular intervals, pillows ?? Quite magnetic, fairly hard, irregular chlorite blotches. Occasional slip contacts with grain size changes.

153.6 - 174.5 ANDESITE COARSE GRAINED

Green grey, increase in grain size from above with no obvious contact. Lighter in colour than above, might be gabbro, quite magnetic.

174.5 - 220.9 ANDESITE ?

As for 36.0 - 153.6. Quite magnetic, possible pillows.

220.9 - 221.7 ACIDIC DIKE

Aplitic, typical.

221.7 - 224.8 ANDESITE ?

As for 36.0 - 153.6

224.8 - 228.3 LAMPROPHYRE

Medium grey, medium grained, carbonate amygdules, some hornblende laths, biotite ?? Lower contact at 50 to CN. Could be a diorite or syenite.

228.3 - 230.5 ANDESITE ?

As above almost entirely epidotized.

230.5 - 231.4 FINE GABBRO DIKE

Contacts at 70, somewhat sheared.

231.4 - 232.4 ANDESITE ?

As before.

232.4 - 236.3 LAMPROPHYRE

Carbonate amygdules, zoned feldspar amygdules, hornblende laths, as for 224.8 - 228.4. Lower contact at 70. Possible diorite or syenite.

236.3 - 237.5 Andesite ?

As before.

237.5 - 242.0 LAMPROPHYRE

As before, pinkish tinge to rock, hematitized slips with carbonate. Upper contact at 70. All above lamprophyres moderately magnetic.

242.0 - 259.9 ANDESITE (POSSIBLY GABBRO)
As for 36.0 - 153.6

259.9 - 263.5 LAMPROPHYRE
As for 237.5 - 242.0. Moderately magnetic.

263.5 - 264.2 ANDESITE
As above.

264.2 - 273.0 FINE ANDESITE POSSIBLY PILLOWED
Very fine grained, chloritic, pillowed ?, some cherty quartz veining.

273.0 - 307.9 ANDESITE MASSIVE
As for 36.0 - 153.6.

307.9 - 309.9 LAMPROPHYRE
As for 237.5 - 242.0.

309.9 - 342.2 Andesite massive
As for 273.0 - 307.9, quite magnetic.

342.2 - 344.2 LAMPROPHYRE
As before, finer grained, contacts at 60 to CN.

344.2 - 346.1 GABBRO (POSSIBLY ANDESITE)
Similar to above andesites but more massive, even grained and regular. Could be an andesite.

346.1 - 348.0 LAMPROPHYRE
As before, contacts at 60 to CN.

348.0 - 382.3 GABBRO
Some what more chloritic than andesites, massive, lower contact ?? poor chill at 60 to CN.

382.3 - 453.2 ANDESITE ??
More greyish than gabbro, some patches with mottled texture
Minop sulphides, numerous quartz carbonate veins, rock varies in grain size, some patches seem less basic in comp.
Some parts could be gabbro. Chilled lower contact.
402 - 406 Amygdules ??

453.2 - 457.0 TUFFITE OR SHEAR ??
Some poorly developed colour banding. Occasional bands very regular and finely banded, very chloritic, quartz veining, pyrite 5 - 10 %.

457.0 - 460.0 SPOTTED GREY ACID DIKE
Chlorite spots, somewhat sheared, typical.

460.0 - 497.5 ANDESITE
As before but with carb flecks, numerous quartz carb. veins Amygdules??

497.5 - 514.4 LAMPROPHYRE
As before, carb amygdules, lower 10' more dioritic. Lower contact parallel to CN.

514.4 - 528.3 ANDESITE

As for 460.0 - 497.5.

528.3 - 531.5 LAMPROPHYRE

As before, contacts at 30 to CN.

531.5 - 577.0 ANDESITE MASSIVE

As for 460.0 - 497.5. Massive coarser grained zone at bottom of section.

577.0 - 604.6 DACITE MASSIVE OR BLEACHED ANDESITE

Some what lighter in colour than above andesite but not a typical dacite. Granular, massive.

604.6 - 616.0 SYENITE OR LAMPROPHYRE

Pinkish grey, medium grained, essentially feldspar and ~~xxx~~ basic mineral. Contacts chilled at 70 to CN., against grey acid dike.

616.0 - 617.6 GRAY ACID DIKE

As before.

617.6 - 702.8 ANDESITE

Dark grey, fine grained, some sections could be gabbro.

624.0 - 625.5 Amygdular patch

696.0 - 698.0 No core

702.8 - 703.4 DIORITE ??

Medium grey,

703.4 - 705.0 NO CORE

705.0 - 707.5 ANDESITE

As before, lineated chlorite specks, medium green. Lower contact at block.

707.5 - 795.9 GABBRO

Some parts may be flow. Upper 20' with considerable epidote veining trending 70 to CN. shearing at 70.

Massive, ~~xxxxxx~~ in lower sections. Lower contact ~~at~~ chilled at 55 to CN.

766 - 775 Zone with some epidotized feldspar phenocrysts

795.5 - 803.5 ANDESITE AMYGDULAR

Dark green limeated chlorite specks. Upper contact somewhat chilled. Lower contact in ground core.

803.5 - 804.5 NO CORE

804.5 - 807.5 FINE DIORITE ??

Medium gray, fine grained

807.5 - 915.5 GABBRO

Dark green, medium fine grained, fairly magnetic, carb specks throughout, massive

915.5 - 918.2 DIORITE

As before.

918.2 - 936.8 GABBRO

AS for 807.5 - 915.5. Lower chill at 40 to CN.

936.8 - 938.7 TUFFITE ??

Interbanded chert chlorite and pyrite at 35 to CN.

Centre section irregular chert and pyrite. Pyrite 15%

938.7 - 952.1 ANDESITE AMYGDULAR ??

Dark green to brownish grey, some carb amygdules ??

Numerous quartz carb veins. Lower section altered brownish grey colour

952.1 - 964.6 DIORITE ?? (POSSIBLY GREY ACID DIKE)

Medium grey, medium grained, poor texture. Brownish grey alteration proceeding from quartz veins and slips.

Upper chill at 60 Lower ??

964.6 - 985.5 TUFFITE JP WITH PATCHES OF BASIC TUFF

Tuffite well and finely banded at 55, numerous cherty bands (similar to tuffite in DDH 31). Some sections 1½' of vaguely banded chert. Minor pyrite. Basic tuff as in other holes, colour banded, chloritic. May also be some small patches of basic flow.

985.5 - 1031.1 ANDESITE AMYGDULAR

Dark grey to dark green, carb amygdules with chlorite rims

Medium magnetism. Amygdules fairly regularly spaced.

No defined lower contact but colour change and carb amygdules stop.

1031.1 - 1108.2 GABBRO

Medium fine grained, typical, quite magnetic at contact appears to decrease downhole

1108.2 - 1114.5 ANDESITE OR CHLORITIZED DACITE PILLOWED AMYGDULAR

Sparse amygdules, pillowved, no sharp distinct contact with underlying dacite. Chert and pyrite at selvages.

1114.5 - 1186.0 DACITE PILLOWED AMYGDULAR

Typical, very minor sulphides.

1186.0 - 1193.7 SPOTTED DIKE

Highly bleached in places with green spots. Numerous chlorite spots.

1190.5 Mud seam - gouge.

1193.7 - 1265.9 DACITE PILLOWED AMYGDULAR

As before, 2% pyrite pyrrhotite.

1265.9 - 1338.3 POLKA DOT GABBRO

Gradual increase in phenos from 5 - 10 % to 70% at contact to 70%. Nonmagnetic.

1338.3 - 1346.2 GABBRO

Sharp cutoff of phenos though no contact. Weakly magnetic.

- 1346.2 - 1347.8 BANDED CHERT AND PYRITE
Poorly and irregularly banded chert and pyrite at 20 to cn. Possibly tuffite.
- 1347.8 - 1368.5 DACITE AMYGDULAR
Medium grey green, fine to medium grained, carb amygdules.
- 1368.5 - 1375.5 DACITE PILLOWED AND AMYGDULAR
As before.
- 1375.5 - 1380.7 DIORITE
Medium grained, medium grey, contacts chilled at 45. Dioritic texture, calcite flecks.
- 1380.7 - 1421.5 DACITE PILLOWED AMYGDULAR
As before. 5 - 10% pyrite with cherty material from 1405 - 1417
- 1421.5 - 1423.5 ACID DIKE
Light grey, aplitic.
- 1423.5 - 1458.0 DACITE PILLOWED AMYGDULAR
As before, Some large quartz eye-like amygdules in last few feet.
- 1458.0 - 1458.2 SHEAR
Essentially carbonate at 70 to CN.
- 1458.2 - 1502.0 QUARTZ META RHYOLITE
Not typical, quartz eyes not as numerous, though present. Easily scratched, somewhat chloritic, massive. Upper contact seems to be chilled at 70 to CN. Possibly a quartz eye diorite.
- 1502.0 - 1516.0 Chloritized QUARTZ META RHYOLITE
Chloritized zone with some bleached patches, several ex cherty bands, minor sphalerite and chalco, 5 - 10% pyrite.
- 1516.0 - 1542.0 QUARTZ META RHYOLITE
Typical, very hard, numerous quartz eyes, feldspar flecks
- 1542.0 END OF HOLE

DIP TESTS 600'..... 86°
 1200'..... 82°

CASING LEFT IN HOLE