

Aug. 10 1970

671364

Jean
J.W.

Air Cam

Beaver has a foreign body in his hand and the area is infected.

Dave and Terry are working the missing shift on the drill:— Terry tonight and tomorrow night, Dave until Beaver gets back is on 14th. Bob and whoever is not on the ~~shift~~ drill will soil sample off 56N B/L. Soil sampling off 28N B/L is complete. I can now split and log since Bob is onto the second hole as of today.

I pulled off V-1 reluctantly. We are still in altered diorite in that hole (and zones of alteration that look favourable). Best evidence of mineral there is a ^{qtz-}dolomite (?) ^{qtz}-magnesite (?) siderite - ilmenite (?) - chalcocite! - pyrite - molybdenite bearing breccia zone 393'-395' (mineralization ^{sulphide} in last 8"). Otherwise only the occasional qtz - py - oxy - mos_2 - bearing fracture.

I pulled off because -

(1) hoisting cable really straining with 400' of rods

(2) brake band busted and using jummy bar rammed into vane in cast brake-drum as brake - very risky!

(3) machine generally falling apart (leak in hydraulic tank, and now a broken bearing in their swivel).

Thought should try to get a look at something going the other way. In any case I had Floyd leave the casing in and it should be a snack to set up on same hole should you wish.

At this fine J-2 is a 160' +. The hole began as did J-1 with 20+ feet disseminated sulphides (1% Cu) and then only occasional fracture with sulphides till 36'. Thence 22' disseminated py & cov (1%+ Cu) in highly saccharine diorite. This zone cuts core $\approx 60^\circ$.

Core Summary QD4 J-1

Box 14 contd.

322-323

mod. altered diorite (green-grey
323-323'6" but green intensely altered
followed by 6" of moderately (?) altered rock (with
easily distinguished kaolinized (?) feldspar euhedra) and
which is in contact (25° to core) with saussuritized
green diorite (anhedral to subhedral green feldspar)

325-327'6" fairly fresh grey to grey-green diorite
with fresh-looking black shiny maff - rock magnetic

327'6"-328" mag. alteration ⇒

328-330'7" dyke of buff to greenish-pink rock
with evidence of feldspar euhedra (rock looks silicified)
and contact at 330'7" is notable for increase in pink feldspar
and angle of contact; -45° to core.

330'7"-343' generally fresh (magnetic) diorite [with
some moderately altered].

Box 15

343-369'6"

343'0"-349'9" rel. fresh diorite

349'9"-350'3" altered section w. py. in intersecting
fractures with angles to core of; 50°, 20°, 70°

350'3"-355'6" as for 349-343

355'6"-356'6" pink aplite dyke 15° to core

356'6"-358'0" rel. fresh diorite

358'-361'0" intensely altered and pyritized section with
calcite and unidentified soft grey mineral (graphite?...) on
fractures ⇒ does not mark paper

361'-365' altered, pyritized gfp

365-368 pink feldspar gfp "pegm.-aplite" dyke-vein with
py

368-369 gfp + altered gfp with py 369-369'6" " "

Core Summary

DDH J-1

P. 6.

Box 16

389'6" - 391'10"

389'6" to 375' aplite dyke w. epidote on fractures and sometimes pink dolomite(?) or magnesite(?) with siderite (brown-orange) with qtz & unidentified grey mineral.

375' to 375'6" kaolinized feldspar euhedra in diorite

375'6" - 381'0" saussuritized & pink feldspar altered diorite with pyrite and moly.

381'0" to 381'6" more intensely altered diorite with blk-grey stringers & serpentinized(?) mafic (euhedral) altered

381'6" - 384'00 pink feldspar^{altered} & saussuritized diorite with py & minor cpy

384'0" - 391'10" intensely altered, (serpentinized mafics), Sheared (sheared plane 30° to core) with

py-MoS₂-cpy in fractures with feldspar qtz stringers which intersect (formed ^{25°} 30°, latter ^{20 to core} 25-30°, all in different planes) and calcite(?)

- magnesite(?) & or dolomite(?) stringers cut cores at 30°; one py-cpy-MoS₂ veinlet at 10°

Box 17

391'10" - 408'

391'10" - 393'4" intensely altered light green diorite with qtz, dolomite veins & py-cpy-bearing fractures with less moly, together w. unidentified grey mineral

393'4" - 395'2" breccia with blk. thin frags + py-cpy-MoS₂ & siderite dolomite
395'2" - 396'6" green serpentinized diorite

Core Summary

DIDH

P. 7.
J-1

Box 17 cont'd.

396'6" 408'0" same as 396'6" to fresh diorite
with sometimes pyrite and
end of hole.

General features of DDH J-1.

Rock: Diorite ^(a) when fresh-looking; is ^{grey,} med.-grained
hypidiomorphic to poanidiomorphic with;

no visible qtz

30-40% mafic minerals (hornblende ^(?) after
pyroxene with
some black shiny biotite ₁₃)

35-40% white, euhedral pliq. feldspar

20-30% grey, grey-pink feldspar (usually
anhedral
sometimes
subhedral)

1% sphene

and some magnetite

(b) When saussuritized the

anhedral crystals are much less evident
and the texture is allotropic to hypid. . .

The rock is less magnetite with increasing
saussurization (magnetite \rightarrow hematite) and
the sphene goes to a silvery-grey, submetallic -
lustered mineral. Sphene, ~~to~~ contrary to
previous words, seems to be constant, i.e. no
decrease with depth.

Sulphides; 10-29' disseminated in
saussuritized diorite. Otherwise in fractures
usually making low angle with core (20-30°) and

often associated with Pt-qtz - pink feldspar veins.
less CPY with increase in depth;
qtz veins with pink feldspar - py - FeS_2 .

Throughout hole zones of alteration from
1" to 20-30' with varying and gradational
intensity.

DPH J-1
Core Summary.

Box 1. 10' - 33'10"

Rock: partially saussuritized medium grained diorite.
(called diorite because of lack of quartz, plaq. feldspar dominant,
colour index 30-40) contains ~ 1% sphere (earthy, ^{brown buff} subhedral)

Sulphides: 5% to as much as 10% from 10' - 29'.
ratio of PY:CPY; 1:1 going to 3:1 by 29'. MoS₂ less
obvious this section but is present (prob < 1%) (disseminated)

Rock: 29-33'10" Much evidence of pink feldspar alteration
with pink feldspar + quartz veins which contain appreciable
CPY MoS₂ PY

Sulphides: no dissemination - all in pl^hsp - qtz veins

Estimated grades:

10' - 20'	Cu 0.6% - 0.8%	Mo 0.05%
20' - 30'	Cu 0.5% - 0.7%	Mo 0.05-0.8%
30' - 33'10"	Cu 0.2% - 0.3%	Mo 0.03% - 0.05%

Box 2. 33'10" - ~~52'0"~~ 57'0"

34'0" - 34'6"

34'6" - 35'8"

35'8" - 54'0"

1st 2" of box qtz vein with 20-30% PY + 10% MoS₂

qtz veins with 40% MoS₂

grey feldspar porphyry

pink ~~granite~~ diorite; milky white feldspar (euhedral) 35-40%
pink feldspar (anhedral grains) 30%
altered hornblende (?) 35-40%
(chloritized)

54'0" - ~~57'0"~~ saussuritized of the above(?) with less pink feldspar
sphere (earthy, subhedral) 1%

and less defined euhedra in white-green feldspar (still 1% sphere)

Sulphides: occasional fractures with qtz-py-cpy-mo

Core Summary: - DDH J-1

P. 2.

Box 2. (Contd)

Grade:	Interval	Cu	Mo
	33'10" 33'10" - 34'6"	0.5%	>> 0.1%
	33'10" - 40'0"	0.1%	< 0.05%
	40 - 50	"	"
	50 - 57 (60)	0.0% - 0.2%	< 0.05%

(note: mineralized fractures \approx 20-25° to core)

Box 3: 57' - 80'6"

This box contains a relatively fresh diorite (med. grained, grey-pink) made up as follows:

- 30-40% green-black hornblende(?) with minor biotite(?)
- ab. 40% white feldspar (plag.) euhedral
- 20% pink + clear-grey feldspar
- 1% sphene (epidote up to 1%)

Grade:	Interval	Cu	Mo
	60' - 70'	0.1-0.2%	< 0.05%
	70' - 80'	"	"

Box 4: 80'6" - 108" Rock generally as for the above but locally saussuritized and in other parts looks even fresher than previous (exhibits shiny black biotite ~~at~~ 5% of rock).

Sulphides: occasional veinlets and mineralized fractures with P_4 , CP_4 , MoS_2 and epidote

Grade:	Interval	Cu	Mo	Notes
	at 97' Qtz - k-spar peg. vein	1%		105'6" bleached & porphyry dykes 6" widths
	80' - 90'	0.1%	< 0.05%	
	90' - 100'	0.1-0.2%	< 0.05%	
	100 - 108 (110')	0.2 - 0.3%	< 0.05%	(get HF sod. cobalt nitrate)

Box 5 108' - 132'9"

108' - 112' as for Box 4

112 - 115' light green highly altered of above rock

115 - 119' moderately saussuritized grey-pink green diorite

(about as for Box 4)

119 - 121'8" fresh-looking diorite (40 CI) black-green

fresh looking (l'ble) (occasional $\frac{1}{3}$ -hematite vein.)

121'8" - 132'9" grey-pink moderately saussuritized diorite

Grade of box $\approx 0.1\%$ (-) ≈ 0 ?Box 6 132'9" - 156'0"moderately fresh med. grained ^{hypidic} ~~submicrophic~~
 grey-(green, pink) diorite l'bl. 35-40%

plaq. f'spar (euhedral to subhedral) 35-40%

anhedral grey f'spar 30%

sphen 1%

occasional sulphide bearing fracture (hem = $\frac{1}{3}$ -P4, CP4)
calcite(?) also find no. epidote fractures.Box 7 156'0" - 176'6"

156' - 167' rel. fresh diorite as above

167 - 171'2" pervasively altered green diorite

171'2" - 176' grey feldspar porphyry dyke

many fractures bearing epidote

50° 20-35°

Box 8 176'6" - 201'0"

moderately to extensively pink feldspar altered diorite with qtz-pink feldspar Cr, Py MoS₂ veins
 esp. 190'-200' where est. grade 0.1-0.2% Cu
 0.03-0.05% Mo

Box 9 201'6" - 223'2"

moderately altered diorite (grey to grey green) med. grained, becoming more altered (pink feldspar towards 223. MoS₂ increases concomitantly.

Box 10 223'2" - 247'0"

progressively more extensively altered diorite (spectacular increase in pink feldspar) with minor increase Cu & progressive increase MoS₂
 Start of g.f.p dyke at 246'6"

Box 11 247'0" -

grey feldspar porphyry dyke with very minor (megascopically, anyway) sulfides
 dyke continues thru' to Box 14 322'

Box 14 322' altered green to grey-green hydromorphic granular diorite

Core Summary DOK J-2 P.1.

Box 1

10-35' 8"

10-25' ~~8"~~ disseminated sulphides (CPY > PY)
in bleached (?) diorite which is notable for its local
mafic enrichment (partic. 10'-15') (areas of mafic enrichment
^{adjoin areas of mafic deficiency}).
(rock is not at all magnetic to 25' ~~8"~~ but immed.
after shows obvious magnetite)

at 22' 5" evidence for phase change (?) \Rightarrow sharp
increase in pk. f'spar (anhedral, in g'mess) with associated
increased definition of plag. euhedra - or phase boundary
with gradual decrease in pink e'spar after 22' 5"
to grey k-t'spar (?) in fresh-looking "diorite" which
continues to end of box.

fracture @ 31' with qtz-py-cpy-hem @ 25 or 30' ^{to core}
other fractures nearby healed with hem-calcite || with
core

32' 6" 30' ^{to core} py-cpy on fracture


33' @ 50' ^{to core}

\approx 1% sphene

Box ② 35'8" - 58'10"

35'8" to 52' for generally massive, fresh looking diorite with leucising grey colour and variable clarity of feldspar embayments

pink f'spar - qtz veins at low angles to core 20-30 and sometimes intersected by CPY-PY-qtz bearing fractures @ 50° to core

 where there and other alteration of veinous nature seems to be magnetic

after 52' rock is well saussuritized to moderately s. to end of box

59'6" py + limonite on fracture 30° to core
 + (54'3" CPY-PY. qtz + [calcite(?) - dolomite(?)] 2 fractures @ 35° to core
 58'6" CPY-PY in fractures, veinlets 40° to core
 > Calcite + limonite on fracture @ 35° to core with all grains

Box 3

58'10" - 87'4"

generally fresh grey med. grained hypid to panidiomorphic diorite with locally saussuritized (vein-alteration) sections.

85'5" - 87'4" notable loss of clarity in f'spar embayments - at this footage (5-10%) sulphides py + CPY with large conspicuous blob of magnetite with py at 86'; rock otherwise non-magnetic
 at 71' to 71'4" diss sulphides CPY, PY
 forbesite; qtz @ 30° epidote 70, 80 30, 40
 77-78' peg. vein @ 20°

Box 4

~~87'4"~~ 87'4" - 111'4"

87'4" to 98'6" pervasively sauniritized diorite
 [(green-creamy) with very altered mafic - brown-green]

- which contains arsenic, pyroclastic with lesser MoS_2

at 91'2" 8" of serpentinized (?) plug

98" 8" " " "

98 to 99' rock grades into fresh-looking, magnetic
 diorite (with shiny blk mafic) biotite (10%)

~~101'6"~~ 101'6" - 103'3" serpentinized section

103'6" - 108'2" fresh-looking hypid to porid
 granular g diorite.

108'2" - 109'5" andesitic xenolith (porphyritic)

109'5" - 111'10" fresh diorite.

Box 5:

111'4" - 136'3"

111'4" to ~~112'8"~~ ^{111'10"} 112'8" fresh grey diorite

~~111'10"~~ ~~112'8"~~ green grey altered diorite serpentinized (?)

~~112'8"~~ ^{112'8"} - 114' green & pink diorite with some white
 feldspar euhedra

114 - 115 altered diorite - grey-green, pink with no
 conspicuous white feldspar euhedra

115 - 119 slightly fresher variation of the above

~~119~~ - 119 - 121'6" as for (112'8" - 114') above

121'6" - 124'6" rel. fresh grey hypid-gran. diorite
 with black shiny mafic - biotite

Core Summary

P. 4

Box 5 (contd.)

124'0" - 126' altered diorite: Alteration of varying intensity grading from moderate saussuritization to serpentinization of flag. (centre to outside leaving flag rim of white with jade-green centre)

much conspicuous hematite (after magnetite)

126-127 med. ~~fresh~~^{altered} diorite

127-133'6" as for 124-126 but with greater amount of bleached(?) light green saussuritized rock with conspicuous hematite (after magnetite)

133'6" to 134 dolomite(?) - magnesite(?) - qtz vein-work

134 - 135'4" as for 127-133'6"

135'4" - 136'3" rel. fresh, magnetic diorite.

hematite, dolomite, qtz on fracture $40^\circ \approx \parallel$ to core.
shakesides on 50° fracture 45° or 50° fracture plane

Box 6

136'3" rel. fresh, magnetic, diorite

-155'

155'-160' "argillite-altered" (?) (kaolinized f-spars) - alteration is fairly uniform and intense - rock is not magnetic (+ veined with carbonates)

and contains red earthy hematite (dissim. after magnetite)

160-160'8" rel. fresh, magnetic diorite

- Box 7. — 160' 0" — 163' rel. fresh magnetic diorite
- 163 — 164' 8" intensely kaolinized rock; which section has low angle to core (20°-30°)
- 164' 8" — 168' rel. fresh becoming gradually altered but magnetic still and maintains euhedra —
- 168 — 172 abruptly more altered light green section which shows muscovite (after biotite) and some ^{minor CPY, PY (see's?)} serpentinized feldspars (light jade-green)... alteration of mafics;... sometimes to limonite.... (contains dissemin. sulphide) increasing veining by [qtz-carbonates].
- prehnite! {
- about 172 suspect contact with feldspar porphyry dyke as " much carbonate veins and assoc. PY-CPY
- 172-175 rock is feldspar porphyry with decreasing (?) alteration going from green to ~~to~~ green-buff — colour; contains some dissemin. sulphide and exhibits some serpentinized f'spa phenocrysts
- 175 — 179 grey, magnetic (less than fresh diorite) feldspar porphyry: ends at contact with diorite $\approx 20^\circ$ to core
- 175-181 ^{blends:} biotite diorite with some pink feldspar but magnetic
- 181 + 182' 8" ? begins pink feldspar section (intermediate(?)) has pink g'nass with creamy feldspar euhedra and sulphide bearing (dissemin. + in fractures) low CI — similar to rock in latter part of Box 1 J-1
- last 6" is kaolinized diorite with [qtz-carbonate-CPY-PY] vein

Core Summary

DDH #2 p. 6.

Box 8. $\approx 183'-183'6''$ 1st 6" kaolitized diorite (biotite as mafic)
 $183'6''-190'$ rel. fresh magnetic diorite veined once by
carbonate $\approx 9/16$ ($\frac{1}{4}$ " width) and rock altered in vicinity,
then of

190-191 light green progressively altered rock with some
sandsunitized-serpentinized fleg. enclaves, also some
kaolization

191-199 generally moderately altered diorite with fresh
section $\approx 193'-193'6''$ this section contains Pt-Cu fractures

199 begins pink feldspar vein 15° to core

199-204 ~~variously~~ variably altered (serpentinized,
sandsunitized kaolitized) rock with occasional
sulphides

end of hole

204'

NBC Syndicate
CAN GROUP 52W 03N 25/55°
Overall Recovery 98%
Core Summary DUH J-2 P. 1.

Box 1

10 - 35' 8"

10 - 25' disseminated sulphides (CPY > PY)
in bleached (?) diorite which is unstable for its local
mefic environment (partic. 10' - 15')
(rock is not at all magnetic to 25' but immed.
after shows obvious magnetic)

at 22' 5" evidence for phase change (?) ⇒ sharp
increase in pl. f'spar (ambled, in g'mass) with associated
increased definition of plag. embayments - or phase boundary
with gradual decrease in pink e'spar after 22' 5"
to grey k-t'spar (?) in fresh-looking diorite which
continues to end of box.

fracture @ 31' with qtz-py-cpy-hem @ 25 - 30' to core
other fractures near base with hem-calc. to 11' to core

32' 6" 30' 4" core py-cpy on fracture

33' @ 50' 4" to core

≈ 1% sphene

Box 2 55'8" - 58'10"

35'8" to 52' generally massive, fresh-looking diorite with lessening grey colour and variable clarity of feldspar embdms

pink f'spar - qtz veins at low angles to core 20-30 and sometimes - intersected by CPY-PY - H_2O bearing fractures @ 50° to core

where there and other alteration of veins ~~is~~ occurs \Rightarrow no magnetite.

after 52' rock is well saussuritized to ~~moderately~~ saussuritized to end of box

54'6" py + limonite on fracture 30° to core

56'3" CPY-PY, qtz [calcite(?) - dolomite(?) - crocinite(?)] 2 fractures @ 35° to core

58'6" CPY-PY in fracture-veinlets @ 40° to core

Calcite + limonite on fracture @ 35° to core 
limonite

Box 3

58'10" - 87'4"

generally fresh grey med. grained hypid to ~~panidiomorphic~~ panidiomorphic diorite with locally saussuritized (vein-alteration) sections

85'5" - 87'4" notable loss of clarity in f'spar embdms - at this footage 5-10% sulphides py + CPY with large conspicuous blebs of magnetite with Pt at 86'; rock otherwise non-magnetic

fractures; qtz @ 30° epidote @ 70, 80, 30, 40
77-78' pyq. vein @ 20° disseminated sulphides (CPY, PY)

Box 4

~~87' 4"~~ 87' 4" - 111' 4"

87' 4" to 98' 0" pervasively serpenitized diorite
 [green-creamy (green-creamy) with very altered mafic - brown-green]
 - which contains disseminated pyrox with lesser $MgSi_2$

at 91' 1/2, 8' of serpentinized (?) plag

98' 0" " " "

98 to 99' rock grades to fresh-looking magnetic

monzo-diorite(?) with shiny blk mafic & biotite

~~101' 6"~~ 101' 6" - 103' 3" serpentinized section

103' 6" - 108' 2" fresh-looking hypid. to paroid.

granular ^{monzo}diorite(?)

108' 2" - 109' 5" andesitic xenolith (porphyritic)

109' 5" - 111' 10" fresh diorite

Box 5:

111' 4" - 136' 3"

111' 4" to ~~112' 8"~~ ^{111' 10"} fresh grey diorite(?)~~111' 10"~~ ~~112' 8"~~ green grey altered diorite serpentinized (?)~~112' 8"~~ - 114' green-pink diorite with some white
felaspar inclusions114 - 115 altered diorite - grey, green, pink with no
conspicuous white f' spar inclusions

115 - 119 slightly fresher variation of the above

~~119~~ - 119 - 121' 6" as for (112' 8" - 114') above121' 6" - 124' 6" rel. fresh grey hypid-green diorite
with black shiny ~~→~~ → biotite (<5%)

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Core Summary

P. 4

Box 5 (contd.)

124'0" - 126' altered diorite: Alteration of varying intensity, grading from moderate saussurization to serpentinization of plag. (centre to outside leaving plag rims of white with jade-green centre)

much conspicuous hematite (after magnetite)

126 - 127 mod. ~~altered~~ ^{altered} fresh diorite

127 - 133'6" as for 124 - 126 but with greater amount of bleached (?) light green saussuritized rock with conspicuous hematite (after magnetite)

133'6" to 134 dolomite (?) - magnesite (?) - qtz.
vein-work

134 - 135'4" as for 127 - 133'6"

135'4" - 136'3" rel. fresh magnetic diorite.

hematite, dolomite, qtz. on fracture 45° & " to core
stickensides on 50° fracture 45° on 50° fracture plus
stickensides

Box 6

136'3" rel. fresh magnetic diorite

-155'

155' - 160' argillic-altered (?) (kaolinized) & spars - alteration is

fairly uniform and intense - rock is not magnetic

(+veined with carbonates)

and contains red earthy hematite/drossin (after magnetite)

160 - 160'8" rel. fresh magnetic diorite

- Box 7. — 160' 0" - 163' rel. fresh magnetic diorite
- 163 - 164' 0" intensely leached rock; which section has low angle to core (30-30°)
- 164' 0" - 168' rel. fresh, becoming gradually altered but magnetic still and maintains euhedra -
- 168 - 172 abruptly more altered light green section ^{micro-crystalline} which shows muscovite (after biotite) and some serpentinized feldspars (light jade-green)... alteration of mafics... sometimes to limonite... (contains disseminated sulphides) increasingly veined by (qtz-carbonates).
- about 172 suspect contact with feldspar porphyry dyke or much carbonate veins and assoc. **Px-Cpx**
- 172 - 175 rock is feldspar porphyry with decreasing alteration going from green to ~~the~~ green-buff - colour: contains some disseminated sulphide and exhibits some serpentinized f'spa phenocrysts
- 175 - 179 grey, magnetic (less than fresh diorite) feldspar porphyry; ends at contact with diorite $\approx 20^\circ$ to core
- 175 - 181 biotite diorite with some pink feldspar but magnetic
- 181 & RU begins pink feldspar section (intermediate?) has pink ground with creamy feldspar euhedra and sulphide veins (see previous) low CI - similar to rest of later part of Box J-1
- last 6" is leached diorite with (qtz-carbonate-cpx-ox) vein

Box 8. 113' = 183'6" 1st 6" kaolinized diorite (biotite as mafic)
 (after hbl.)
 183'6" - 190' rel. fresh magnetic diorite veined once by
 carbonate-qtz. ($\frac{1}{4}$ " width) and rock altered in vicinity
 thereof

190-191 light green pervasively altered rock with some
 saussuritized - serpentized plaq. euhedra, also some
 kaolinization

191-199 generally moderately altered diorite with fresh
 section ~ 193-193'6" this section contains PY-CPY fractures

199 begins pink feldspar vein 15° to core

199-204 ~~variable~~ variably altered (serpentized,
 saussuritized kaolinized) rock with occasional
 sulphides

204' hole abandoned (~~stop~~)

~~core was 204' length of hole~~
~~core was 204' length of hole~~

2-5