

~~For~~
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BINOCULARS MICRO
SCOPY LOGGING
NOTES

5000-5020'

~~fxn~~ fxdn,

~~microdiabase~~; mottled med. greenish-gray, med.-dk. grayish-green, and dk. grayish-olive to ~~dk~~ olive black

uniform apparent grain size 0.2-0.7mm
some larger ds (phenos) up to 1 x 0.5 mm

wk-mod chltzn. of mafics

local tr. hematite after magnetite

may contain olivine

5% andesite & andesite ^{tuffite} tuff ~~tr~~ (poss from the same tuff breccia)

variegated lt. grayish-red to ~~purplish~~ grayish-purple
punky sometimes w/ whitish speckles

*mod. hematite staining of matrix
in chltzn. of mafics
wk. ep. after matrix

0.1 ep diss, apparently all in the hematitic andesite

80A-28 11/11/02

5020-40': 3% andesite, ^{lithic} tuff & tubx, AA
97% diabase, fxlh, AA, but
w/ wk, scattd. hem, staining
& w stronger chltzn.
M chltzn of mafic
w hem. staining
0.3% # diss hem

overall
alt'n
W-M

5040-50-60'

40 ~~50~~% fxlh ^w mod alt diabase, AA

1% obvious VVF

3% # amygdules & ^{2nd-mmnl} chips of
unknown
or ign
(either mts
or amygdules)

EP: 3
ACI 0.3
QTZ - 1
(2nd)

53%

^{vign} andesite lithic tuff & andesite
probably derived from an andesite
tuff

15
TUFT

38
amyg
andes.

see next
5mpt

ALTN: mod./

chl/matrix S
chl/gmen-wk.

a few chips are bx w/ the diabase as
matrix andesite tuff

andesitic 5 component contains

amygdules ~~part~~ mostly completely filled
w/ in decreasing order of abundance:
EP, QTZ, ACT, PR, SER, CHL

JH Notes

GM 88A-28 11/11/02

5060-5080

15% drabase AA

2% andesite lithic tuff AA

82 amygdaloidal andesite

matte,
mottled, lt-med reddish-gray,
grayish-red, & grayish-purple
& lt. greenish-gray (latter minor)

5% amygdules

QTZ

EP, ~~QTZ~~ SER, CHL, ACT, poss.
prehnite

overall

4 EP

1 QTZ

2 SER

0.2 ACT

2 CHL

5080-5100':

45 diabase AA

1 andesite lithic tuff

④ ~~4~~ vesicles, v. ventlets & their
amygdale fragment

52 amygdaloidal andesite AA

2 EP

4 QTZ

0.2 AC

1 chl

1 ser. prehnite?

5100-20 ③0 db's AA, w/ a few chl. amygdules 2 EP

③ vesicles/VVF 0.5 QTZ

⑥7 amyg. andesite AA 0.8 chl

1 ser
prehnite?

5120-40' 25

100% db's AA, a few chl. amygdules.

~~100%~~ amygdules

no S

8 chl

2 EP

1 AC

0.5 QTZ

75% amyg. andesite w/ v. 10% amygs

is 80% of the andesite ~~has~~ is v. lt. matrix
buffy to greenish-gray (M-S altn.)
w/ monomineralic chlorite
amygdules.

GM 88A-28 11/12/02

5140-60'

(OSF)

- 4 EP
- 3 CHL
- 1 QTZ
- 0.5 ac
- 0.3 unkn. white

3 hem-clay tuff

7% amydules filled, in decr. abundance, with EP, CHL, QTZ, unkn, porcell. white substance.

100 amygdaloidal
 98% andorite, variegated
 dull st. reddish, purplish,
 and greenish-grey
 n granular appearance
 @ 8X

plag. fresh / mafes chlted ± tr actinolite
overall alt, wk - mod

Aug 2nd minerals mostly vesicle fill

5160-80'

(2CV)

- yel-brn EP (spn?) 1
- grn-yel EP & 2
- 0.5
- AC.
- 1
- QTZ - 1
- ehl. 5

amyg. and. HA,
exc. coarser-grained.
avg. 0.05-1

GM 88A-22

5180-5200-

10/12/02
JBH Notes

same AA

5200-5220'

alt n (M)

12cm
1 evr

amyg. andesite, same texture AA, but bleached appearing, prob weakly sericitized.

0.5F
7 chl
4 EP
2 Qtz
0.15
prehn

Rx is matrix lt. greenish gray mottled w/ med. - dlc. grayish green (chl) & greenish-yellow (EP)

→ rarely pinkish to buffy white

no epidote
11% amygdules
chloritic var.
& ep-qtz-mch var
plaq. seemingly altered partly to sericite

5220-40'

2 evr

6 chl
3 EP
1 Qtz
Tr unkn. white
Tr. Prehnite

Amg. Andesite AA
~40% bleached AA
60% rel. fresh
w) conspicuous fresh plaq. microlites

10% amygdules

GMF 88A-28

11/12/02

TBA Notes

5240-60':

Tr cv

0.5F

3 chl

2 EP

Tr QTz

0.3 AC Tr. py

99 Andesite, sparsely vesicular (2-3%)
only in 5% "bleached"

1 VVF EP >> AC >>> py (tr)

med. sl, grnsh. gray

5260-80':

1.5 EP

Tr AC

0.5 py

2.5 chl.

1 VVF (AA)

99 andesite (AA)

slightly more altered.

5280-5300

6 cv

hem-clay
altd. fuff

1 VVF AA

99 andesite AA, sl. more
coarsely xln.

1 AC

1 EP

2 chl.

5300-20'

Walth

Tr VVF

100 andesite A/A

5 cvd

0.5F
1 chl.

JAH Notes

GM 88A-28

11/13/02

nearly fresh

5400-20'

7 CV
HM-CLAY
TUFP

Tr. rhy
100% ppytic basaltic (?)
andesite, AA
local chert, altm VVW

6 CV 5420-40'
AA

1 MINOR

97% bsitic (?) andesite
AA.
3% microdiorite
med-lt. transl. gray, w/
5% glassy & greenish-brn
transl. mafics & 0.05-0.1 mm
↑
XENOLITHS ?

5440-60'
5 CV AA

OSP

EP 2%

1% microdiorite AA
3% amyg. ppytic andesite
lt. variegated lt.-med
grayish-red, purplish-gray,
& yellowish-white
& lt. grayish-gray
96% fresh bsitic (?) andesite AA
~~exc.~~ exc. w/ ? ep-filled
amygdules.

5440-80'
7 CV
AA/2 EP

AA exc. no rd, 4% and.

5400-5500':

6SF
1. ep
Tr Act
0.39%

17% sparsely porphyritic (fsp-phyric) rhyolite, mostly grayish-white but at where altered, also med. trans. gray (silicification), to greenish-yellow (ep.)

many chips cut by ^{rand. oriented} stockwork of quartz veins.

some chips dominantly to entirely silicified ± epidote

a few chips w/ irregular <0.5 mm vugs lined w/ <50x ^{white xls} trans. gray to white (qtz + ?)

3% nodular AA

3% amyg. andesite AA

77% sparsely amyg. basic andesite AA, but more finely xln, & sl. purplish-gray, still v. fresh

5500-20'
7/1 (tr)
9 end

3% andiorite AA strongly
phyll.
7% rhy AA sil ph
5 amyg. and. AA
85 andesite AA fresh

5520-40'
20 end

100% ^① rhy AA

0.5% chl.
2 EP
Tr ACT
Tr. unkn.
white

1/2 minor

99 amyg. and. - varrondy
st. greenish to yellowish-gray,
sl. purplish-gray, rarely 'v. et'
~~buff~~ gray-buff

624-60'



② VVF

⑨ andesite

mostly H.
med. grist gray
obvius pils taxitic texture

3% obs covered frags (hem-clay altd. tuff)

most of the andesite is med alt. overall, but with intense chiten of mafes & v 2% diss epidote : plag. frest

3 EP
1 AC
Tr. py
Tr. cpy

v 3% of the andesite is bleached - appearing v. lt. grist gray to buffy-white, more intensely veined.

veins 3 types : ① EP ± CHL

② CHL ③ ACT ± CHL

↳ ≤ 1 mm wide
even in fragments

JEH Notes

GM 88A-28 11/10/02
11/11/02

6260-6285

0.3 AC 2 chl
2 EP tr. py

3% obvious
caved
fragments

99 and 1 VVF
AA

exc. no real
"bleached"
pc.

6280-6300

3 obr. cv
(red tuff)

3 VVF

97 and

AA exc. 22
< 0.5 mm
amygdules
filled w/ ϕ -EP
(\pm prehnite?)

2 act

2 ep
1 Qtz
1 chl
Tr. py

2nd space
open
fill
minerals

3 act

6305
2

4 VVF

96 and

1 Qtz
0.2 ep
Tr. py

1/2 half is mod.
altd. - more
chl. more
bleached - appearing

3 obvious
cave

act VF up to 3 mm. wide

6320-40'

7 obvious
caved
frags
hem-clay
altd. tuff

2 cm

1 AC

2 EP

Tr. py

2% VEX

& frags ≤ 1 mm, andesite
to non-descript aphanitic
clasts, embedded in
with silica matrix

5% Flinty to sl. sugary,
dense, sometimes porcella-
neous aphanitic fragments
commonly silicified
could be fawn. rhyolite
but def. strongly alter

1 VVF

92 andesite AA, exc.
w 25% blech, more
chloritic than
rest

11/13/02

GM 88A-28

VBAH Notes

5320-40'

100% and. HA

1 CV

Tri py

0.5F

0.2 EP
1 chd.

5340-60'

3% partially - ^{near} completely
silicified rhyolite

1% CV

various buff-white, ^{lt.} med gray & lt.
grnsh. gray - a few pes brecciated.
a few pes. spongy & "moth-eaten"

0.5F

0.3 qtz
0.5 ep

97% andesite, very fresh-looking,
slightly more arsy x/n than
above Atn WK

0.5% diss. pyrite ^{chlted. mafes}
(some fresh?)

³
5360-80

3 CV. ^{0.5F}

0.1 EP
Tr act

1 rhy HA (cid? Tr diss. py
0.3 diss
99. andesite, darker & more ep.
coarsely x/n still pass.
basaltic andesite

alt n
WW

5400 -
no sample.

11/12/02 6M 85A-28

6340-6360'

5 obvious
caved frags.
hem-clay
altd. tuff

~~10% v/v~~

15% v/v

angular frags. ≤ 1 mm
in dia. andesite (AA)
& rhyolite (RB) embedded
in v/v silica matrix
matrix is med-dk. transl-
opaque matte gray
(note - some v/v has
chlorite-ser-actinolite
matrix)

20% v/v, ~~frag~~ v/v (≤ 0.05 mm), ranging from
white through greenish white to
lt. greenish-gray. porcellaneous
to (microscopically) sugary texture
 $\leq 1\%$ ~~sanidine~~ feldspar phenos
 ≤ 1.5 mm (no 0.5 mm) stubby laths.
wkly - moderately silicified ⊙

~~10%~~ 10% andesite - dm

15% ~~v/v~~ v/v. \neq frags. AA, of chlted,
sericitized (?) and actinolite-
altered andesite in a matrix of
med gray-green actinolite w/ minor
chl, Qtz, epidote, and protoph
unknown white and minerals (ser?)

11/19/02

GM 89A-28

6340-60, continued

5% "Vein frags" - Actinolite for
most part could be breccia
cement

45% Andesite AA, alteration:

u half is ^{totally} altd. to a mottled
white to light-med gray-green
aggregate of chlorite, sericite,
and actinolite ± epidote

u half is med. alt. w/ chl/mfic trace
but plag. fresh & u 2% diss,
epidote

Actinolite - 10%

Chl - 7%

Ep. - 3%

Py - (11)

JBH Notes

GM 83A-28 11/12/02

chips much smaller $\leq 2\text{mm}$
avg $\approx 0.5\text{mm}$

6360-6380'

4%
carbon
with
hem
clay
and
tuff

17% mod. altd. andesite AA

7% andesite dom, act - cmtd. nbx AA

10% "vern frags", loose, $\leq 1\text{mm}$, mostly
actinolite

2% silica nbx AA

6% strongly chl-ser-act altered
andesite

6380-6400'

6%
carb
with
hem
clay
and
tuff

2% silica nbx AA

1.2% rhy AA

10% andesite / act-cmtd nbx AA

15% mod. altd. andesite AA

7% "VF" AA - dominantly
~~andesite~~
actinolite

6.5% strongly chl-ser-act -
altd. andesite
AA

3%
cement

11/12/02

EM 88A-28

JAD notes

6400-6420'

3 1/2" rust

flakes

up to
13x8x2 mm

4 CVD

✓
increase
??

② rhy. AA

③ silica nbx AA

⑦ act-entd and-rich
nbx AA

⑦ "VVF" AA

⑫ mod.-alt. and AA

69 intensely altd.
andesite AA

poss. tr. ~~tr~~ garnet

6420-40'

⑫ silica nbx AA

③ rhy AA

⑩ mod. altd. andesite AA

⑤ act-entd. BX AA

④ VVF mostly AC

⑤ dk. grnsh. gray - dense,
hard, v. textured looking
andesite scattered frond.
greenish-brown xls
which could be garnet.

⑬ intensely altered
andesite AA

6440-60'

5 km-clay tuff
carved

- ③ silica vbx AA
 - ⑤ act. - crtd andesite vbx AA
 - ③ VVF (act ± chl) AA
 - ⑤ dk. gray rexted. and.
HNFLS? AA
 - ②③ intensely altd. andesite AA
 - ⑤ mod. altd. andesite AA
 - ⑤⑥ rhy AA but a few
et more than half
is sugary - textured
with avg. xl. size 0.07-
0.1 mm
- some pes. flow
banded.

6460-80'

⑦ CVD
2

- ②③ ^{wkly-} mod-altd. andesite AA
"30% of this rock is much
less pilotaxiticly - textured
more "subdrabasic" &
intrusive-looking
- ②⑥ intensely altd andesite AA
- ⑦⑧ dk. grnsh-gray, rexted-
looking andesite.
- ⑤⑨ vbx, act-chl, crtd, andesite, clasts, AA
- ②③ silica vbx AA
- ④③ rhy as immed. above

6480-6500
extremely
fine cuttings
avg. \approx 0.5 mm

1 cvd (hem tuft)

(2) mod. altd. and. AA

(5) intensely altd.
andesite AA

(1) act-chl. VVF

(1) "metam." dk. and. AA

(92) rhy, white to v.

lt. gray & lt. grnsh-gray
(latter two var. pretty wkly
translucent)

mostly aphanitic, flinty,
but some \approx sugary

6500-6520

1 caved

(20) rhy aa

(17) int. altd. andesite AA

(5) wkly - mod. altd. andesite AA

(2) ACT VVF

(1) "met" dk. and. AA

(55) ^{silica} ~~no~~ same AA, except
matrix commonly grayish-red
due to hem. stain

0.2 py

3 AC

1 EP

CM 88A-78
11/12/02
JAH Notes

6520-40

same as above

6540-60

4 ACT

- ②5 rhy AA
- ①5 intensely altd. andesite AA
- ② VWF act
- ① "met" and - dlc AA
- ⑤6 rhy AA, but ~~so~~ varying proportions of "rock flour" & silica in the hem-stnd. matrix

6560-80

6 ACT
0.3 py
2 EP

- ①5 wkly - mod - dlt. andesite, AA
- ②0 intensely altered andesite AA
chl + ser - act ≠ Qtz
various combinations.

④ VWF (Act)

②0 vbx; same as imm. above, but with less hem in silica and rock-flour matrix - a few fragm quartz phenos.

③1 rhy - AA commonly silicified also commonly w/ Qtz ^{randomly} _{or} units

6500-6600'

40% cvd

tot clay-hem altd
andesite tuff

1 AC
2 EP
0.5 py

⑦ andesite ~~little tuff~~ vbx
to irreg. clasts of med.
sl. purplish-gray
andesite embedded
in more altered & sl.
coarser xln andesite
matrix that is lt-med.
grayish-green.

② rhy AA

① ~~the~~ "sil." vbx AA

⑩ altd. andesite, lt.-med. grayish
green / matte
strongly altd.

not pilotaxitic

chl-(ser?) ≠ minor
actinolite