NGER

201 - 265

DG1 - 58

PCM 1969

(1) (AMED)

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PRINCE CHARLES MOUNTAINS SURVEY
PRELIMINARY REPORT ON LAND,
AUSTRALIAN ANTARCTIC TERRITORY

Tuesday 14th Jan 1969

Rubeli Bluff.

DG 1 see p8

(201) At △ stn approx 200x (600m) east from western edge of plateau. Frost-shattered boulders of biotite - ? hornblende - qtz - feldspar gneiss. Very approx. trend of 330°. Gneiss med gr. sugary texture of the qtzo-feld. Dark minerals make up about 30-40% of rock. Some biotite-rich bands and also qtzo. feldsp. gneiss bands among the frost shattered rocks.

At △ stn. hummocky ground - depressions have smaller aged fragments than humps (large pen size → 15cm) Humps → ½ m. above depressions

△ stn is small dark coloured rise about 4m. above surrounding area. Similar dark rises elsewhere on plateau. Intervening ground is light-coloured moraine. Patterned ground - polygons about 2m diameter with larger polygons ~~erode~~ bounded by cracks up to ½ m. deep, 25m. diam. Erratics of garnet bi-gn, qtz. qtz. feld gn., banded gneiss, a few boulders of gn. granite as at Landing Bluff.

2

Looking S from D'st.

Rubello Bluff flat-topped plateau about 100 m above glacier. Steep-sided.

Δstn. Approx 200 m south of Δstn (steep) wide shallow E–W depression

On helicopter flight along west side of Bluff cliffs of banded gneiss dipping Swards at about 60°. Appears to be alternate light and dark coloured bands several metres wide.

<u>Wednesday 15th Jan</u>

(202) 150 m west from Δstn. leucocratic gn. in s.he light coloured bi° hb Q F. gn. dark minerals only 20% Rather granular texture. A band of pink gneiss 5–10 cm wide ∥ foliation. This band v. leucocratic but of dark minerals bi = hb.

foliation 340 / 75   lineation (mineralogical) 60 / 305

60° in direction 305.

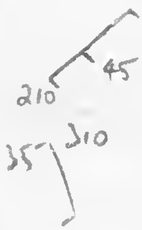
Grain size about 2→3 mm. Some coarser lenses 5→10 mm. and are slightly cross cutting.

The whole rock has a granitic aspect.

(203) On face of cliff west from △ stn.
Leucocratic grey-brown coloured gneiss
343 Qtz feld gneiss with minor dark mineral ? biotite. Gneissosity imparted by flattened qtz but rock has a general granular texture.

Also finer grained darker coloured gneiss with more dark minerals. A few thin qtz veinlets 1cm thick ll^l foliation.

Joints



Darker coloured gneiss v similar to DG1 at △ stn.

(204) 50m South along cliff good exposure of qtz feldspar gneiss with minor dark minerals as at 203. V similar except that more bi eg on foliation planes. Rock blocky

Sample (DG 2) of Q.F gn.

[illegible] 72° [illegible]

Also bands 2-3 m. thick of coarser grained ? hb - bt - qtz gneiss and bt - hb qtz gneiss. Some thin qtz ± peg veins conformable with foliation.

[Rock face visible 100 m. south along west face of cliffs - not accessible but shows large scale banding. Rock mostly a grey-brown colour but there are bands ∧ creamy coloured rock (and what may be veins of). Also darker bands. Some ? large phyngmatic folds Rock face presents a heterogeneous aspect. Bands appear to strike and dip similar to the measured outcrops]

from 204

(205) Appx 80 m south along cliff edge from 204. Rock face shows alternating bands of light coloured qtz-feldspar gneiss = DG 2 and darker more ferromg. rich gneiss. Bands up to 3 m thick. Some thin (→ 50 cm. thick) qtz ± qtz-feld. veinlets.

DG 3 Sample of darker gneiss.

Lat 70° 29' Long 72° 25'

(..6 foot of slope)

(206) On southern side of large E-W depression south of △stn garnet (pale pink) qtz feld. gneiss. Minor biotite and ? hb or py. Rock has streaky appearance due to fine banding of dark garnet + ferromag minerals alternating with qtz feld-rich layers. Bands usually only few mm thick. Med grained rock

Foliation 340/60 Rather wavy foliation trend

Well devel. vert jointing at 260°. **DG 4** lat 70°30' long 72°26'

The valley has same trend as the rocks. Valley is broad U-shaped

Variations as traverse up slope are coarser-grained garnet-qtz feld-gneiss. Little or no black minerals. Up to 10m. thick. Also thin bands → 10 cm of gt rich gneiss

Up slope 10m band of qtz feldspar gneiss with minor pale pink gts. Also band 1-2 m thick of gt-bi-Q-F gneiss f-m grained.

Up slope band up to 10m thick of gt ?py qtz feld. gneiss

Continue up slope across gt-rich bands and dark gt bi-rich bands.

Followed by 2 m. band of porphyroblastic gt bi qtz feld gneiss. Feld. porphs up to 2.5 cm. Porphs are orthoclase.

Gt. gneiss various up slope.

(207) Half way to top of "headland" gt qtzo-feldspathic gneiss grade into coarse grained brown coloured speckled rock. Porphyroblastic bi-(? Hb or Py)-qtz feldspar gneiss. Feld (orthoclase) porphs up to 2.5 cms. – greeny brown. Sample **DG 5** Lat 70°30'30" Long 72°26'

Foliation 335 / 55 Joints 250 } augen gneiss

(208) Continue up hill to head of large cirque ~~cove~~
Similar gneiss to DG5 but not so porphyroblastic
Sample **DG 6.** 70°31'00" Long 72°26'

Fol 340 / 65

On face of cirque ~~corrie~~ to N appears to be similar rock as DG6 but inaccessible. Has similar strike & dip. Some light coloured veins cross-cut foliation.

Appear to be some shear zone

Striking approx 240° dipping at about 70° to 330°.

At △stn. (location 201.) Sample
DG 1 Brown coloured medium grained
Bi - ? Py, qtz feld gneiss. in situ
Similar to DG 6.
Lat 70° 29' long 72° 27'

Summary of geology of Rubble Bluff
Banded gneiss (bi - ? pyroxene (in 46)
qtz feldspar gneiss and varieties of
garnet gneiss strike 340° and dip
50 - 75° in direction 250° The strike direction
is fairly constant.
Large scale banding is present in the
gneisses in the form of more qtz feldspathic
bands and more ~~[illegible]~~ ferromag rich bands
Pegs & qtz veins are minor.
The garnet gneisses occupy the S
side of the wide V. shaped valley S of
△stn. (the N side of valley is moraine
covered)
S of the valley gneisses similar

k at the △ stn outcrop. The main diff is the presence of porphyroblastic gneiss of similar composition to the rocks near △ stn.

At the △ stn and possibly at the other dark coloured crags visible the rocks are mostly in situ or have merely been displaced by frost action. The absence of moraine from the △ stn suggests that this area was free from ice at the last glacial max.

Patterned moraine is present on the surrounding plateaus. Mounds of coarse moraine separated by depressions and ribbons of fine material – lam. and loess.

Younger moraine at foot of cliffs and cirque.

Taken as a whole the rocks have possible charnockitic affinities

Thursday 16th Jan

(209) North for 250m. along cliff edge from △ Stn.
Dark coloured speckled gneiss (moderately foliated) slabby outcrop ? pyroxene-qtz-feldspar gneiss. On fresh surfaces quartz blue or black. Medium grained even textured granular rock. Py-feld. granulite. Rock breaks into slabs but in hand spec is not well foliated. [Sample box] 61220213
Foliation 280 (approx)
lat 70°28'30" long 72°26
Some thin (2 cm) aplitic veinlets [illegible]

On cliff face to south several light coloured concordant bands several metres wide can be seen. Similar but thicker bands are present on cliff face to north.
[illegible]

(210) Light coloured bands on cliff face south from 209. 100m. Quartz feld gneiss [illegible] ? pyroxene. Some garnetiferous [illegible]. Gneiss coarser grained than at 209.

quartz impregnated by flattened blue grey qtz. Feldspar cream coloured and granular. Unable to obtain fresh rock | Lat 70°38' Long 72°26'

Foliation. $65 \backslash^{350}$ | Sample DG 8

Rock generally a yellow-brown colour
Alternating light and dark bands for 50 m+

From observation of cliff face to S, light coloured bands make up 30-40% of face

(211) Traverse N along cliff edge for 200 m+ crossing dark pyroxene qtz feldspar gneiss and light coloured qtz feldspar gneiss. Near northern side of fairly large E-W valley banded garnet-biotite pyroxene qtz feldspar gneiss. Banding of the order of a few cms. Pale pink garnets, some qtz dark coloured, feldspar greeny-brown. Greenish tinge due to biotite and flattened qtz lenticles – otherwise granular texture.

Foliation $45 \backslash^{345}$ $70 /^{56}$ close spaced joints

Sample DG 9 | Lat 70°36' 15 Long 70°30'

Banding due to varying amounts of mafics
Similar to DG 1 but coarser grain

at foot of cliff thick Fe stained horizon.

(212) On S. valley edge 50 m N from 211 pyroxene gneiss similar to at 209 but possibly more py. Large scale banding and also some finer banding within the darker horizon due to variation in dark minerals. Major bands not as thick as at location 209-210. FSI, strikes & dips as at 211

N side of valley inaccessible but formed by dip slope of banded gneisses. A light coloured horizon forms most of valley side.

(213) On hill top on N side of our valley porphyroblastic garnet-biotite-pyroxene qtz feld gneiss ? in situ. Large feldspar grains brn → 2-3 cms Some large garnets → 15 cm Similar to DG5 at location 207 but at 213 garnet bearing.

(214) Cliff face NW. of 213 gt. bi py qtz feld. gneiss Rock yellow-brown colour in outcrop and banded by variation in bi- and py. Bands of few cms wide.

Rock as at 211. A few thin qtz veinlets
Foliation 45/10 1-2 cms thick concord.

(215) Approx ½ mile (? E lum) north along cliffs
from 214. hanging crossdoves moraine. Alternating
bands of dark coloured pyroxene qtz feld gneiss as at
209 (speckled rock) and light coloured
concor pegmat? qtz feldspar gneiss with minor px & garnet
as at 213. Bands several meters wide
Foliation 45/310 Min. lineation ← 270 35

Bearing to Spagd Is. = 304°
Bearing to Jennings Prom. 78°
" " Moraine Rk = 297° mag 227° true

There appears to be no more exposures
until N. tip of Russell Bluff.
Cliffs low and moraine slopes
down to ice.

At 215 light coloured garnet-feldspar band
seem dominant.
Little moraine. Surface much of frost
shattered rocks appear in situ

p.m.

Traverse on bearing of 30 mag from △ stn to prominent hill on skyline. Approx 2 km.

After crossing wide valley traverse up slope over boulders of gt. gneiss (various)

(216) followed by QF gn various until on hilltop speckled ("pepper and salt") rock as at △ stn and 210 209 (locality) (but some more bi-rich bands)

Bearing from hill top to △ stn = 310° mag

" " " " - Jennys Poon = 73° mag.

Speckled rock is bi-py-qtz-feld. gneiss medium grained rather granular.

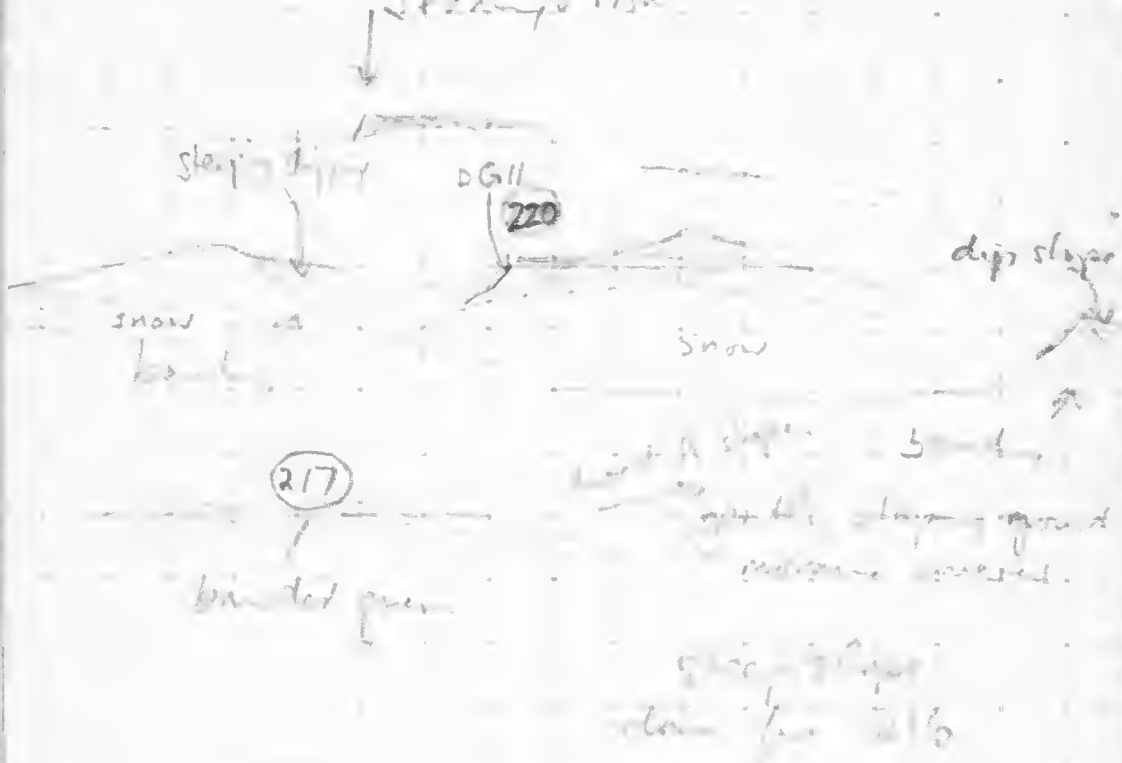
Foliation 340 45 — 250 — well-developed.

Outcrop has rather flaggy appearance but some more massive bands 2-3 m thick. Numerous qtz feld. peg veins concordant >10 cm thick.

Small hillocks to N show alternating light and dark bands observed on rocks at locality 209 + 210. Light bands have variable amounts of dark minerals. Minor concordant graphic QF veins and Bi-gt-peg.

Ground falls away steeply to north

From 216 Look N



Look E from 216

then flattens out for about 1 km. Three large isolated hills at N extremity of Russell Bluff can be observed to be banded on large scale but from locality 216 banding does not appear to be consistent from one hill to another.

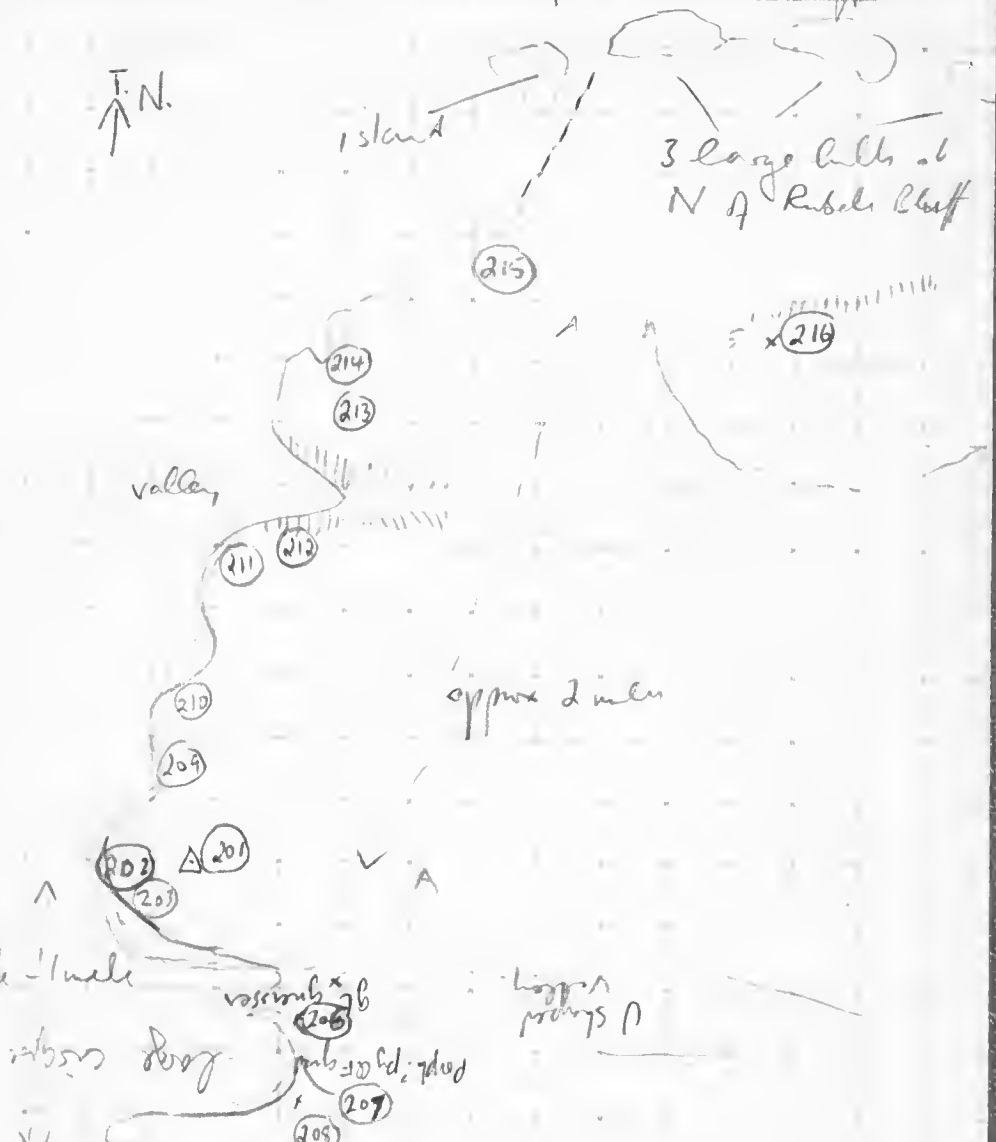
Locality 216 is at the ... from [illegible] ... which extends ... (160°) and ends in prominent headland. Across the wide valley south of the headland are ... of ... small hills running EW.

The headland is also ... [illegible] ... 216

(217) At about 300 m north from 216 ... with varieties of garnet gneiss, very similar to locality 206. Large garnets and QF gneiss. Some ... by blue qtz and blue qtz-... rock up to ... Rocks not in ... but suggest ... [illegible]

(218) ... west ... continuation of 217 ridge. outcrop of garnet qtz feld gneiss ... ... and v. minor ... Hornblende ...

Sketch plan of W side of Rubeli Bluff



med to coarse grained Qtz blue and often lenticular - Similar to coarser qtz feld gneiss of 206

Garnets up to 1cm. diam.

A few isolated pods up to 30 cms diameter of fine - med grained dark coloured speckled granular biotite ? pyroxene qtz feld. rock. Brown feldspar and dark coloured qtz enhance dark appearance of rock and diff to estimate % ferromag. minerals. Sharp contact with garnet rock

Foliation 320 / 45   35 ← 275 Lineation mineralogical due to flattened qtz [illegible]

Joints 250 vert

17th Jan. (219) Isolated pointed hill inland from S end of Rubeli Bluff. Porphyroblastic granite gneiss similar to (207) + (208)

Some inclusions of fine grained speckled rock ~~Rock~~ Porph rock breaks into large slabs

Foliation 290 v. steep   Joints. Strong 200 vert

Appears that southern end of Bluff similar to 219. Sample DG 10

(220) NW N end of cliff in middle of the three large bulbs

Migmatitic Qtz feld gneiss with minor dark minerals veined with qtz + peg veins → 1 in. thick. Irregular fine banding in gneiss due to concentration of biotite and the peg-qtz veins.

Cliff free many leucocratic veins visible.

Sample DG II 2 photographs

Foliation trends. 290-300 / 35

Steeply dipping banded gneiss + cliff to south.

DG 11 Lat. 70°26' Long. 72°30'

DG 12 ≡ 6928021S

Ent Biotite gneiss K feldspar porphyritic
minor alteration of garnet

All samples from New Years Nunatak

Lat 71° 05' S.

Long 71° 32' E

MANNING NTKS

NEW YEAR NTK 18th JAN 1969

Scree and frost shattered boulders of migmatite porphyritic rocks on △ stn. hill Also float of dolerite

(221) Near SW extremity of ntk exposures of garnet-biotite-qtz-feldspar gneiss. DG 12
It is a leucocratic finely banded rock composed mainly of qtz and feldspar and showing thin streaks (usually less than 1 cm thick) of biotite. Garnet tends to be associated with the biotite streaks. Medium grained except for more feldspar porphyroblasts.
Foliation 300/40 Joints strong 50/15

Foliation generally coincident with banding in places M.Q.F. pegmatite veins → ½ m. are discordant and concordant. Peg. pods along the foliation planes are fairly common. The peg pods and pegmatite veinlets are bounded by biotite-rich streaks.
The weathered rock is a red-brown colour.

18

DG 13 ≡ 69280216

Two pyroxene granulite.

Pyroxenes altered to biotite
Trace Qtz - Hbl 10-15%

Conformable within the garnet bi gneiss are bands up to 2-3m thick of very biotite rich equigranular rock. Very dark coloured medium grained Sample DG13 has little or no foliation. ? Pyroxene. Granulite. At Locality 221 makes up 10-15%. ? enclave.

Locality 221 has a migmatite suite of rocks.

SUNDAY 19th JAN

(222) At extreme SW promontory of New Year Nth Similar suite of rocks as at 221 but rock type DG13 not so abundant — Isolated pods Foliation 302/60 and lenses of bi-rich rock.

Pegmatite veins are mostly concordant. Comprise microcline ± garnet qtz plagioclase feldspar ± some biotite. Some pegs zoned with a qtz core or with qtz-feld mosaic at margins and ? core feld core.

(223) About 50m N. from 221 a shift edge streaky gneiss as DG12 but little to no garnet. Bands 1cm thick or less. Bi-rich

bands separate qtz feld granular layers
Lenses and pods of peg. along foliation planes
Foliation 295 / 35 Well jointed blocky outcrop
0° vert 80 / 245°

Rubble-filled gully 0.6m wide sides of which strike 245° and dip 80° in direction 330° may be minor fault. Appears to be displacement of about 0.5m across gully. South magnetic? side down.

Peg. vein 10cm thick having coarse QF margin and med. gr. bi-rich core 50 / 160 appears to cross cut a 1.5m thick internally irregular (i.e. no readily observable zoning) bi gt QF peg. Books of mica → 3cms. 70 / 120
? dilation by vein

AL (224) 50m. N. from 223 even textured granular gt bi QF rock - similar to DG12 but v little banding. Loose boulders only, on cliff face. Veined with peg.
Has appearance of [illegible] fault in ground [illegible]

(225) 100m N along cliffs having traversed over loose boulders of migmatitic gneiss.
Similar to locality 221 but in general rocks less streaky and banded.
Sample **DG 14** is typical of 225 – coarse grained garnet-biotite-qtz-feldspar rock with poorly defined foliation. Isolated lenses of bi + gt are separated by a mosaic of qtz + feldspar largely.
The outcrop is veined with gt bi Q.F pegs which are mainly concordant but several are vertical striking approx 270° up to 1m wide.
There are pods and lenses of Bi rich rock as DG13.
Gneiss as DG 12 is also present but in general the outcrop is composed of DG 14
Foliation 270 / 15

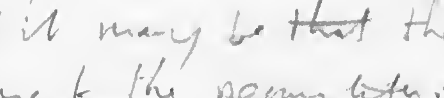
The cliff face to the S. consists of leucocratic rock well jointed and with blocky outcrop which is interrupted by bands of darker rock ? Bi and peg veins. The banding is locally contorted. Irregular [illegible] [illegible]

(220) On headland!! Migmatitic gneiss Sample

DG 15 Slightly porphyroblastic coarse grained biotite qtz feld. gneiss. Minor garnet especially in more bi. rich ~~layers~~ layers separating the granular bi-QF rock of the hand specimen. Some porphyroblasts of feldspar esp. seen in outcrop. (Brownish colour)

The outcrop is formed of migmatitic gneiss as DG 15 ± garnet, weakly foliated garnet-bi rock as DG 14 and garnet-bi gneiss as DG 12. The poor exposure make an estimate of the proportions of the rock types impossible. Considerable veining impossible to discern from [illegible]

A feature of the outcrop is the presence of light coloured outcrops of all above ~~rock~~ rock types bands striking 180° and up to 5 m. wide. They strike in the direction of prominent joints some of which are occupied by pegmatite and it may be ~~that~~ the bleaching effect is due to the pegmatite. They stand out from the red brown weathered surfaces of the remainder of the outcrop. There are two main light coloured zones.



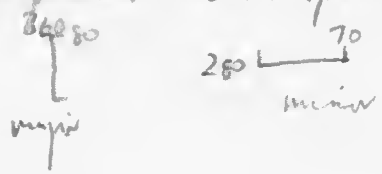
More probably due to leaching of Fe - along joints

(227) Outcrop ~6ft on south side of large valley which trends approx. E → W.

Migmatitic biotite gneiss as LG12 but garnet absent from some. Large peg. pods, lenses and veins concordant and small number of x-cutting veins observed.

Well foliated rock 275/15 Biotite-rich streaks and bands separated by lenses of qtz-felspar. Individual bands usually 1cm or less thick. Foliation regular and only rarely contorted.

Well jointed close spaced. 1-2 m.



A few peg veins 5-10cm wide strike at about 90° west and [illegible].

Between (227) and large headland to NW no outcrop. Moraine and big boulders.

Rusty brown qtz feld gneiss to north of valley.

Photographs 1 of cliff

Cliff section trending EW. at northern end of nunatak. (Observed from [illegible] as DG 12 [illegible] E)

Migmatitic biotite gneiss, with lenses and irregular bands of dark rock (? DG 13)

What appears to be a composite coarse grained porphyritic "granite" dyke ? 2 m thick cross cuts the gneisses dyke 310 / 45

Peg. veins and irregular pods and lenses concordant and x-cutting

Near top of cliff porphyritic "granite" in part has a linear contact with the mig gneiss elsewhere irregular & gneiss contorted

Variable dip and strike of gneisses along cliff but observation suggests the gneisses have been overfolded with fold axis trending 275 / 30 The upper limb dips to the W and lower limb to the E

General strike direction is along the cliff and north dips prevalent.

(228) On cliff top near observation point "Granite". Sample DG 16 is of the contact between irregularly banded migmatitic bi gneiss and the "granite" The granite side of the contact is a mosaic of f-m gr

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q.tz feldspar and minor bi about 3cms – 5cm thick. This is followed by coarse grained and pegmatitic granite. Contact dip steeply to S. The contact between gneiss and granite is quite sharp. Apophyses of qtz and feldspar penetrate between foliation planes of the gneiss.

Sample DG 17 is of m – coarse grained bi granite

Sample DG 18 is of very coarse to pegmatitic granite. Even coarser pegmatitic varieties are present.

The outcrop is a mixture of the various types of granite intimately mixed and veined with pegmatite and buck quartz. There does not appear to be a preferred orientation with the peg and qtz veins.

Joints 

also flat lying joints

blocky outcrop

AV about 35m inland from cliffs boulders of granite give way to boulders and float of migmatitic bi gneiss. This suggests that the

St295 $\frac{295}{510}$ [illegible]

Granite is a dyke   MON 20th JAN 1969

(229) At 20m. E along cliff edge, contact of granite & gneiss well exposed. Sharp contact except where veinlets of granite penetrate along foliation planes of gneiss.
Contact 330° / 60 — Strike is along cliff edge

Gneiss at contact 250 / 20 well foliated not migmatitic gneiss. No qts observed.

On inland side of granite from approx 20m W of 228 to about 30m. E of 229 graphic [illegible] granite. No outcrop but continuous line of boulders. Approx 5m wide
[Sample DG19]

(230) At indentation in cliffs corner to E. Granite has disappeared and its place taken by graphic granite as DG19 [illegible] dyke about 8m wide strike 350°.
Shows up as light coloured [illegible] [illegible]
Extends inland for about 60m as boulders.

(231) At cliff edge v. well developed migmatite. Bi gneiss veined with granite and pegmatite veins Feldspar porphs developed.

migmatite · not [illegible]

the bi gneiss. Regular banded. Some Hb + granite veins. Veins several cms wide.

Sample [DG 20] shows a bi gneiss band with a few feldspar porphs and small Fe stained laths and voids. The sample is veined with porphyritic bi Hb granite.

Some peg. + granite veins up to 1m thick

Zone approx 15m wide. Inland these are varieties of DG15. Often rusty brown colour

Foliation of mig zone and gneisses 330/30

(2 photos of banded migmatites)

(232) Headland ± W of large cleft in cliffs is composed of a variety biotite gneisses of migmatitic aspect. Gneisses as DG 12 and DG15 both without garnet are common.

These gneisses are interbanded on a large scale — Several porphyritic granite veins several meters wide cross-cut the gneiss.

Occasional [illegible] peg veins ≥ 1m strike [illegible]

On W. slope of headland gneisses as DG15 have garnets. Some feldspar porphs 310/20

(DG 21)

.55

DG 23 ≡ 69280217 Olivine Basalt
Strike 045° True

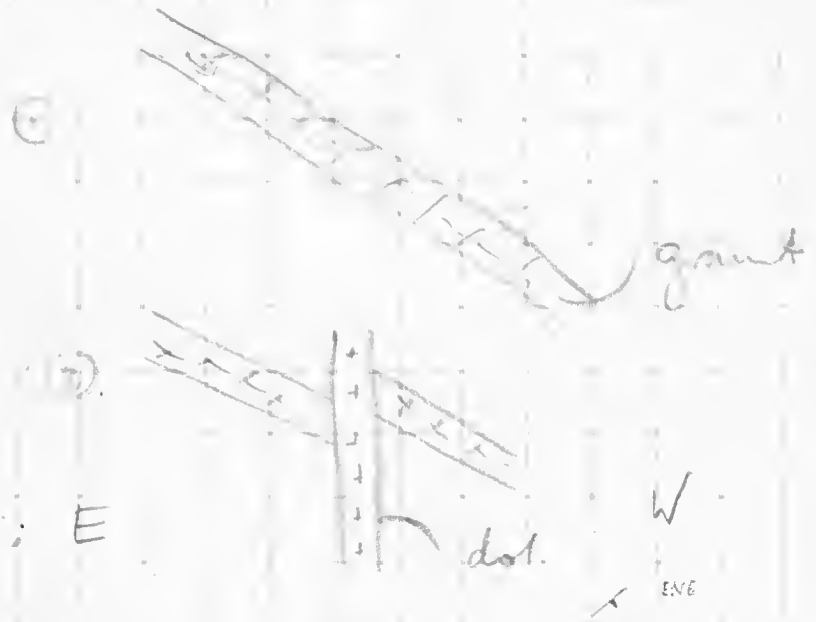
A float cobble of ~~porphyritic~~ vesicular dolerite. Laths and ~~felsic~~ [illegible] phenos. Thin DG 23 shows banding and a fragment 1 cm diameter of qtz and pink feldspar mosaic. Vesicles v small

sort drawn +

(233) These gneisses pass followed by more sheared, migmatised gneisses such as DG 9. (but lacking garnet) DG 22. Some contorted ~~foliation~~ layering and general foliation varies from 250 to 310 with steep dips to E. In part porphyroblastic and with crinkled appearance of dark bands as DG 13 (D1 + K3?)

(234) On W side of cleft migmatised gneisses as above and as on west side of [illegible]. Some variation in strike & dips of foliation but approx 290/45. Major jointing 55 — 190

(235) Cleft strike 115°. Gully forming cleft is about 3m wide and is occupied with rubble of porphyritic dolerite. DG ~~22~~ 23
Similar rock is found as boulders near △ stn which is along strike from 234.
Sample is blue/grey with a very fine grained matrix in which are randomly distributed laths and unbanded crystals of a dark shining mineral.
Cutting across gully is composite granite dyke similar to at 228


E
W
dol.
ENE
SSE

There is possibly the granite seen also on the cliff face from near 226

Vein about 8 cm thick on W side of gully tapering off to E dies out near cliff top

$\overset{20}{\top}$ 120 Contact sharp

(dips [illegible])

There appears to be a slight displacement of the dyke across the gully but only about 2m. Not certain. The migmatitic gneisses adjacent to the gully are more contorted than elsewhere nearby and this may also indicate movement. However, it seems more probable that the dolerite dyke was probably extended and its width (approx that of the gully (about 3m) could be the cause of the displacement across the gneiss (E side down). (see diagram above)

gneiss veined by amphib.

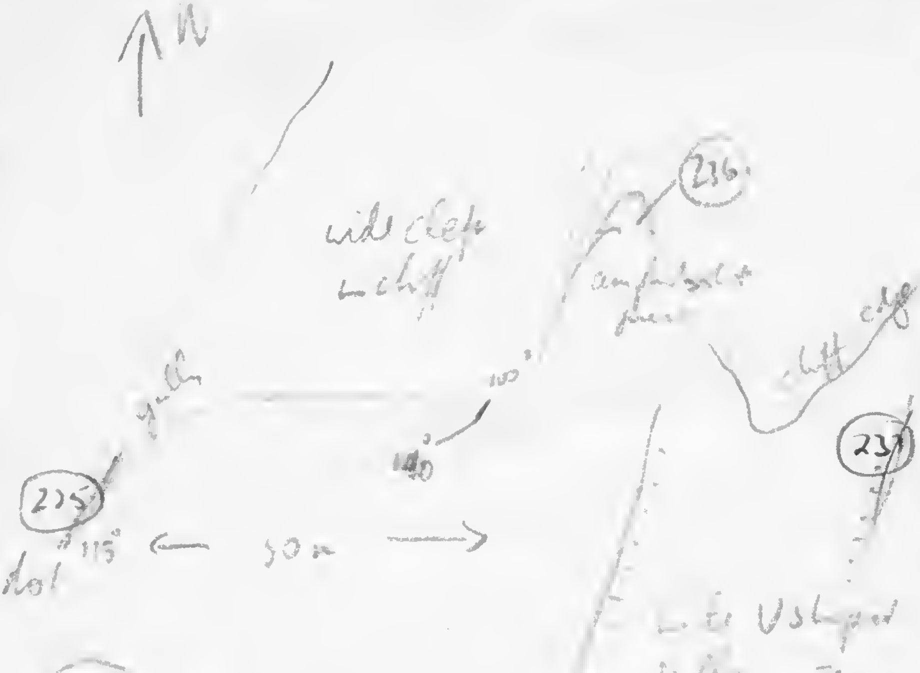
A second dol. dyke ½ m thick 30 m E along cliff. Curved outcrop (see diagram overleaf)

Dol. same as DG23

The gully at 225 opens out to the large cleft in the cliff face. See sketch on and photos.

DG 25 ≡ 69280218.

2 pyroxene granulite.
Pyroxenes slightly altered to biotite



(236) On promontory
W of V shaped gully
~~[illegible]~~ pyroxene in layers in bx gneisses 3-4 m
thick   90 / 2   [DG 24]

(237) West side of gulley all gneiss. On E side
banded Bi gneiss [DG 25] Dark biotite bands mafic 2-3 cm
separated by narrow QF bands 1 cm. Higher proportion
of dark minerals than has been noted previously.
(Except similar banded gneiss in area
234 - 237) Foliation 290 / 20 . 290 ← 75 , 190
Some peg present ?

DG 26 ≡ 69280102 - See p. 35

NB DG 26 [illegible]

Gully strikes about 090° . . .
fault direction. Width of gully approx. 25 m.
Possibility that more dol. dykes intruded
here but masked by scree & rubble.
The gully is straight sided and cuts into
the ridge along a cliff into the [illegible]
[illegible] plain to the south. The gully is
a prominent feature on the N. skyline.

East [illegible] ("DI") [illegible] boulder
strewn ridge. Boulders reflect underlying
geology.
At least one dolerite dyke trending
approx 110°.
Varieties of gneisses such as DG25, DG
15. - granite gneiss [illegible] approx 290/45
and DG 21. [illegible] yellow granite
DG26 gneiss friable - variety of DG15.) and
[illegible] [illegible] + garnet in DG22 ([illegible])
(235) [illegible] these varieties
gneiss found in [illegible] (238) [illegible]
280/40 [illegible] variety
Few [illegible] found [illegible] variety

DG15 = 22.

The red-brown [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] hill (238)

(239) Eastwards from hill 238 to hill 239. Similar pattern of alternating gneisses as above but with a major biotite rich unit at the west end of hill 239. Leucocratic granular qtz felds rock. A dolerite sill about ½ meter wide intrudes this unit. Sharp contact unaltered.

Foliation on hill 239 $\frac{280}{20\text{-}25}$

Peg. dyke 1 m. thick 80/ (11° diff [illegible])

Summit of 239 formed of unganulated bi. gneiss similar to DG 22 with rose garnet and minor hb in some specimens.

Remainder of ridge to end of cliff in a similar alternation of gneisses — [illegible] again $\frac{280}{30\text{-}40}$ Dips variable. Units up to 25 m wide

Cr.. boss . [illegible] along ridge on the side. At [illegible] Bi-Hb

(240) gneiss as DG24 common, plus may be gneiss as DG 22, qt be qtz feld granular rock, and friable qtz-feldspar granite gneiss as (brown colour) DG 26 Foliation approx $\frac{275}{30}$

(241) Westwards along ridge to hill 241 which composed almost entirely of friable brown qtz feldspar granite gneiss. Boulders outcrop.

Hill 241 along strike from hill 239 on W side of valley. The marked difference in lithology across the valley suggests that there is an E-W fault along which the valley has been eroded

WEDDELL ... [illegible]

(242) At Δstn flout of porphyritic dolerite. Phenocrysts have weathered out on surface → pitting. Pits Fe stained.
At about 50 m. E from Δstn. more float of similar dolerite .. Possibly along plateau from U-shaped valley through N. cliff 285°

(242A) Eastward from Δstn across to east side of [illegible] lower [illegible] outcrops. No cliffs on east side. Rubble and boulders slope down to glacier.
Boulders of 2 main rock types. The main type is yellow brown coloured [illegible] granular or fine, or [illegible] granite [illegible] DG 26 often [illegible] porphyroblastic. Medium grained.
The other rock type is migmatite to gneiss often very contorted and [illegible] and minor irregular granite veins.
As DG 22. also porphyroblastic [illegible] gneiss
DG 27 Porphs → 2 cm. Well banded 34

(243) Boulder outcrop on side of valley NE from Δstn

DG 29 ≡ 69280219

2 pyroxene Granulite

DG 26 ≡ 69280102.

Opx - Qtz - kf - Plag gneiss

Minor replacement of Opx with Biotite

Large boulders

granite gneiss as DG26 [DG 29]

Some irregular streaks & few cm thick and up to a metre long, of biotite-rich [illegible] [illegible], [illegible] irregular patches of peg.

~~Corn Hill~~ Russian Ridge

At foot of W slope float of [illegible] [illegible] as d (242)

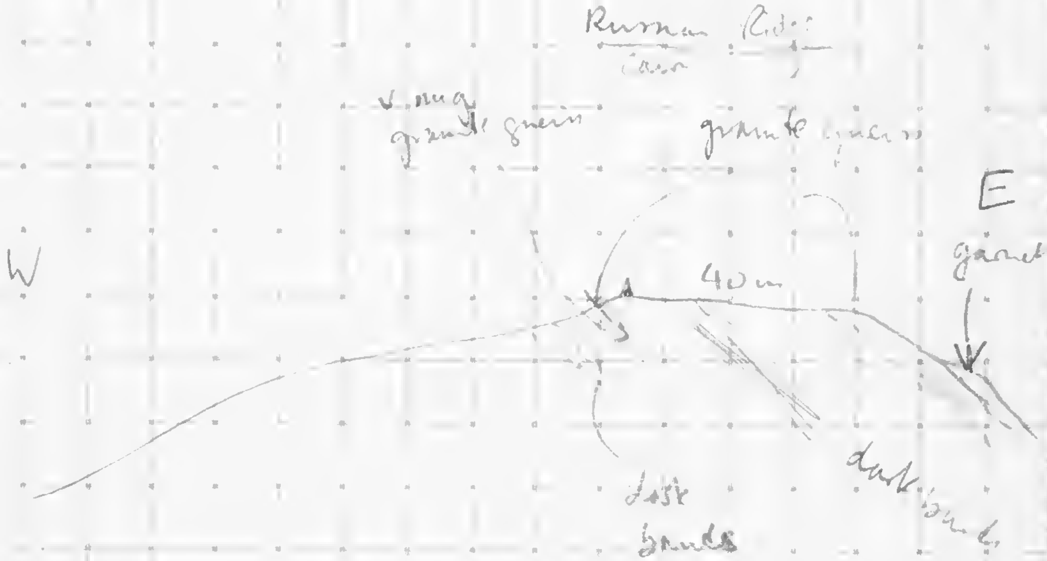
Up slope to crest across rubble and boulders of yellow-brown granite of DG26 and blue-grey porphyroblastic migmatite to gneiss, the latter often contorted and deformed with pegmatite & granite. (sample of DG22 and also DG27)

At crest turn up slope boulders of dark banded gneiss as DG25 from band [illegible] [illegible] wide across ridge.

Followed up [illegible] in migmatite [illegible] contorted banding. Some amphibolite [illegible] few [illegible] [illegible]. Similar to DG25. Some [illegible] veins of pegmatite → [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

pegmatite [illegible] [illegible] [illegible] [illegible]


v. mig
granite gneiss
granite gneiss
E
W
40m
garnet
dark bands
dark bands

the pegs [illegible] the [illegible] [illegible] Fe stained → brown colour! Also observed that the yellow brown granite [illegible] grades [illegible] [illegible] the migmatitic biotite gneiss. These may be variants of each other differing mainly in colour and degree of migmatization.

To summit of hill red brown gneiss similar to the granite gneiss and [illegible] bands of amphibolite [illegible] go ct.

Foliation [illegible] 295 / 40–60 (at summit joints 20 / 20)

Dark bands often contorted. Minor extent of banded light coloured bi migmatite gneiss porphyroblastic [illegible] similar to DG 27?

Some evidence here [illegible] of porphyroblastic granite gneiss cross cutting the migmatite gneiss bands.

243A At summit a band [illegible] thick of highly migmatised [illegible] gneiss coarse grained [illegible] Roughly [illegible]. Sample DG 28

To east of summit yellow brown [illegible] granite [illegible] [illegible] 2[illegible] 5 [illegible] [illegible] rock. [illegible] for about 40 m

Foliation 285 / 35

(244) Fine [illegible] Augen [illegible] from cases [illegible] of garnetiferous biotite gneiss. Variations due to differing proportion of dark minerals and variations in grain size. Gneiss similar to on Rubble Bluff.

Foliation $\frac{295}{25}$

WED. 22nd JULY [illegible]

DG 30

(242) 6 age determination samples taken from dolerite float at △ stn.

Float forms marked band 1-2 m wide striking [illegible]-295 ie. the bearing of the two dykes in the northern cliff where dolerite also found.

The samples were taken at irregular intervals from about 10 m S of the △ to 50 m N.

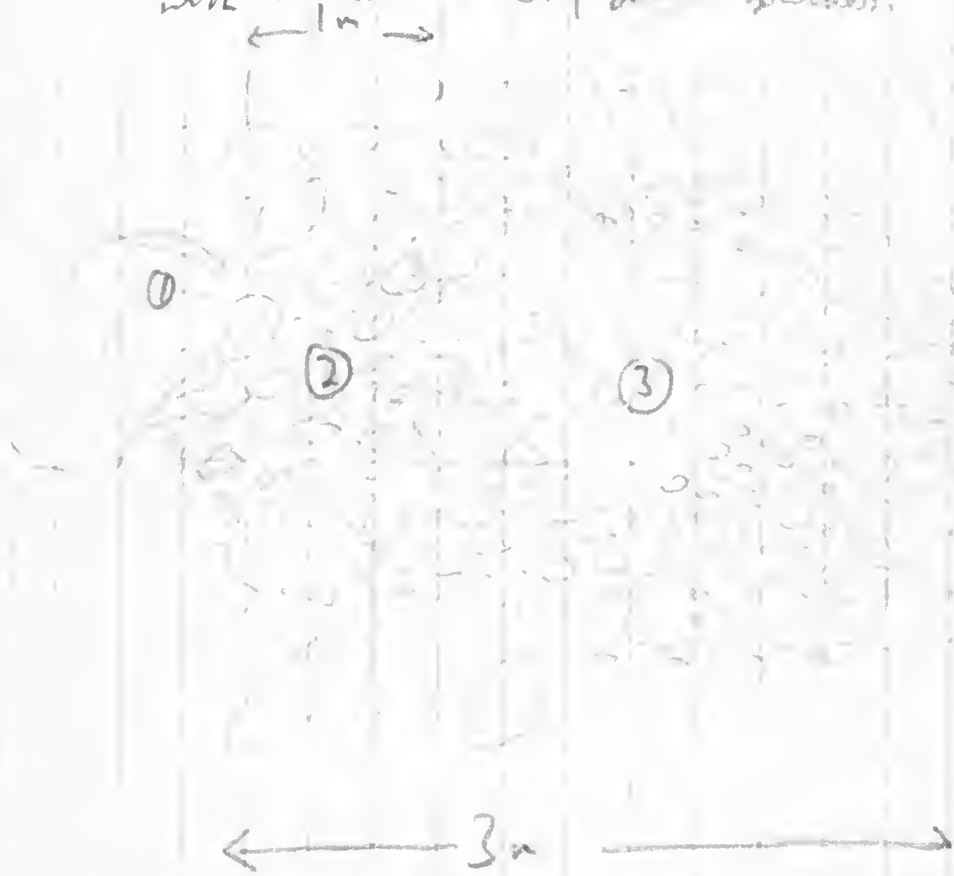
The samples are fresh internally, but have a thin surface weathering patina. Some of the porphyritic minerals have weathered out on the surface → Fe stained pits

[illegible]
except along the coast especially in the north and on the E-W ridges. Much of the higher ground other than the sharp E-W ridges is covered with frost shattered boulders which reflect the underlying geology. There has probably been very little movement of this material except due to gravity on the slopes.
Scree from ridges and rounded highland (eg. Ash Hill) is shed into the valleys and lowlying areas where it is completely mixed.
There appears to be very little true moraine in this area except for younger moraine at the foot of cliffs fronting the glaciers.
Poorly developed patterned ground is found on the higher boulder strewn ground but the general large size of the material makes sorting difficult. Patterned ground is best developed on the finer grained material in the valleys and on depressions on the flanks of the high

Polygonal ground in melt lake setting

(1) In outer zone between adjacent polygons boulders up to several meters diam.
Often water between polygons

(2) Intermediate zone pebbles in range 5cm to 1m with minor number of small boulders.



(3) In central zone Pebbles & sand range 1cm and less.
Frost heaving noticeable in central area.
Central zone usually wet

[illegible] [illegible] [illegible] [illegible] developed
where there is [illegible] water close to the
surface e.g. in the valley west from the
campsite north of Emu Hill.

DG32 ≡ GG280221

Bi Plag Qtz K feldsp gneiss.

DG31 ≡ GG280320.

Cpx - Hbl. - Plag K feldsp. granulite

Strongly banded - Hbl rims Cpx.

Samples DG31 Lat 71° 07', 30"

32 long. 71° 30

tibizzi/ name
Raymond Pk. Lutt NHz

Large EW Monolith south of boat house
Landed at W end

(245) Q cliffs [DG 31] Coarse grained dark
coloured granitic gneiss & poorly foliated
Brown coloured & large [illegible] (Rather
massive) Coarse grained.

Fol 310/43   Joints 235

Thin interbeds of fine grained [illegible] gneiss
Some pegmatitic material

The other major unit is a light
coloured - blue grey rock. Bi gneiss.
fine-med grained. Foliated. Rather
massive & [illegible]. Similar [illegible]
[illegible] Sample [DG 32]
Veined with pegmatitic and granitic
material [illegible]
and [illegible] V [illegible]
the foliation [illegible].

These two major units [illegible]

40

MP 4460 - 67

1320 - 70

Samples DG 33
34
35
36
} lat 71° 07'
long 71°-43'

Biotite [illegible]
Some more in amphibolite bands.

Appears ~~that~~ granite green as DG 29 is a variant of DG 31. Observed grading into each other.

— FOSTER NUNATAK

(246) Eastern of the two large rock nunataks east from the long [illegible] nunatak (245)

At foot of ridge contorted bi-gneiss often well garnet and garnet bi-gneiss.

Sample DG 33 of bi-gneiss contorted and having soft [illegible]

Variation in gneiss (epidote rich) due to varying amounts of dark mineral. Veined and irregular patches and layers of qtz + pegs

Interbanded on a narrow scale with [illegible] several cm thick. Some [illegible] of KM.

45 / 350

Considerable (limonite) Fe staining - some layers

At base of cliff fine qtz-feld gneiss DG 34 with varying amounts of bi. med. coarse

peg Honeycomb [illegible]
Malachite stain ½ metre down on cliff
face

Unit DG 34 approx 20-30 m thick Above
this appears to be more gt quartz very
light coloured and blue grey to green
All being v contorted and [illegible]
mineral veining esp. the bt greenies
Approx foliation $_{30}\lambda^{330}$

Faulted mineral belt to west from out appears similar
to large [illegible] mineral belt strike approx $_{20}\lambda^{150}$

DG 35 variant of DG 33. QF green
band and flinty. V. little to no
free mineral

Cobalt veining ~ 1 m of DG 33
Sample DG 36 Vein 5 cm thick
11° foliation

Samples DG 37, 38, 39, 40 } lat. 70°46
long 67°57'

Fox Ridge

High point west of Graves Lake on ridge of △ Stn NMS 148
lat 70°46' long 67°51' v little fence [illegible]

(247) At northern end of ridge tors [illegible] of porphyroblastic coarse grained granite gneiss [illegible] red-brown feldspars up to 4 cms in length. Blue qtz. Massive reddish brown rock forming tors **DG 37**
A vertical foliation strikes at 337°
- The foliation [illegible] to the orientation of the qtz and smaller feldspars. Most of the large feldspar porphs are not aligned with the foliation!
The principal joints are:

[illegible] the granite gneiss [illegible] of [illegible] porphyritic rock [illegible] remnant of the red [illegible] gneiss [illegible] near 247 [illegible] 310° and [illegible] edge is well foliated and [illegible] with [illegible] of qtz · feldspar - shear zone. The whole band is about 8m wide and the sheared zone about 3m. [illegible] qtz [illegible]

.. = more foliated sections ... which occur up in lower ground at the north-east.
The blue-grey rock appears to merge laterally into the normal red-brown granite gneiss.

(248) Midway between 247 and DStn
Zone of shearing, similar to the above, merging laterally northwards into the normal red-brown granite gneiss of ... boulders outcrop ... But southwards the rock type is brown coloured and consists in the main of loose (post shattered) small boulders and cobbles. DG 38
The zone of shearing strikes 330°. There is some peg. float.
The difference in outcrop is [illegible] marked across the shear zone. Joints  60 though closer jointing than at 247 → smaller boulders as a result of post shattering
Similar rock type as at 247 but (and more ferromag. [illegible] gr) ? more strongly foliated at about 330°.

rock [illegible]

At about 10m S [illegible] the [illegible] band of pink foliated [illegible] [illegible] g.g. feldspar rock – pink feldspar [illegible]

(248A) grey [illegible] [illegible] strikes 335° DG. 39

Southwards the same [illegible] pattern as near D site with [illegible] bands and irregular areas of several metres dimension of DG. 39 and also similar areas [illegible] of a darker coloured med. [illegible] variety of quartz feldspar [illegible] DG 40 striking [illegible]

Similar bands can be observed in the low ground to the north of the ridge. They dip steeply to N.

Sunday 26th Jan

Traverse down steep E side of [illegible] ridge.

At foot of slope tor-like boulder outcrops with wide gully striking 85° along bottom

(249) of ridge and through tors. Zone of silicified at least 6m. wide Creamy coloured chert

about 50 ... [illegible]

(250) Tor outcrops at foot of ridge. Pinkish porphyritic granite gneiss as DG 37. Large feldsp. porphs → 4mm. Only minor dark minerals. Foliated 340° vert. Possibly better foliated than DG 37

Some minor shear zones within the granite gneiss

Striking 320/70 and 250/70

Strong joints 225 / 245 also subhorizontal

Some rare small inclusions (2-3mm dia) of dark some

v. fine grained material

Some minor bleeds of ...

On slope to east zone of pink rock similar to DG39 strikes 330°. About 1m wide.

(251) At foot of slope gulley and sheared zone

(252) Eastward across valley to W side of small hill with tor outcrops. At foot of slope sheared zone ~ about 4-5m wide. Strike about 85°.

Samples DG 41 } lat 70° 46' 253
42 } 253A
43 } long. 68° 00' 254

[illegible]

from [illegible] of [illegible]
[illegible] side of most eastern hill [illegible]
4 minor silicified zones [illegible] a qtz
(rose pink qtz) blows elongated [illegible]
80° (dimensions 40m X 5m) also minor
graphic peg.

Also minor blue zone ~~[illegible]~~
striking approx ~~280~~° 310°. Appears to be a
zone silicified with blue qtz DG41
(Hill 253)

Near summit of hill shallow pit
trending 80° has blue vein qtz and
silicified rock as DG41.

Blows of blue qtz [illegible] top of hill

On southern end of hill 253 several
[illegible] zones strike 335° [illegible]
DG38 Zones crossed [illegible]

(253A) On S [illegible] of hill DG42 [illegible]
dyke rock with [illegible] of creamy pink qtz?
and creamy [illegible] pink feldspar
2m wide. [illegible] green [illegible]

Strike [illegible]

Trace of colourless garnets. Fragments of coarse fine granite gneiss within dolerite. Outcrop of dyke stepped and somewhat irregular. A dyke screen along top of ridge. At least 4 dykes strike 85°.

Granite gneiss DG 37 near north tip
Str 310° Joints 330° → 70.

(254) On easternmost spur of hill 253 Bleached zone 3-4 m wide tapering eastwards and trending 310°. Merges laterally with normal purple granite gneiss. Appears to be secondarily bleached portion of the gneiss. Garnets stand out prominently.
DG 43

Several minor shears cut granite gneiss [illegible] [illegible] [illegible] containing fine grained granite, [illegible] and dark streaks

Samples DG 44) lat 70° 46' 30"
45
46) long 67° 57'

with . Same strike number . DG 43 . Also
similar to DG 39. Band strike [illegible]
20m to N another band with similar
strike composed of DG 41.

Monday 27th Jan

(256) At S end of [illegible] main rock
type is DG 44 . Dark hard siliceous grey
slightly purple micro-banded [illegible]
[illegible] strike 340 [illegible]
small nodular [illegible] on foliation
Irregular dark band [illegible]
DG 43 Also [illegible]
[illegible]
Band [illegible]
100m [illegible] similar to DG 45 Strike 330°

To the north [illegible]
[illegible] 325°

(257) At foot of slope of main ridge [illegible]

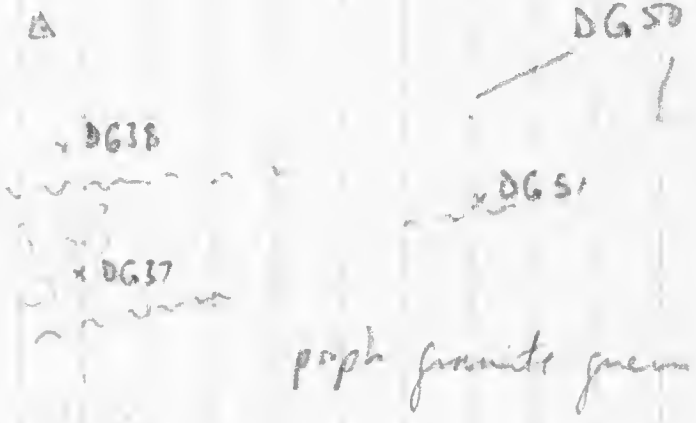
[illegible]
Followed [illegible] by [illegible]
DG 46.

(260) [illegible]
[illegible] med grained
granitic gneiss [illegible] appears [illegible] DG 47
[illegible] . Variants are
DG 38 and DG 39 [illegible] 40
lat 70° 46′ long 67° 57′

Age determination samples

(247) DG 48 6 samples marked DG 48
collected from [illegible] different localities
near 247. Porphyritic granite gneiss fresh.
DG 49 4 samples collected from
different localities at [illegible] 100 m [illegible]
from 247

lat 70° 46′
long 67° 57′



Samples DG 50 } lat 70° 46'
51
52 } long 67° 57'

(261) [illegible]

coarse grained garnet qtz-feldspar rock on S. side of boundary of coarse grained porphyroblastic granite gneiss irregular patches several 10's metres in area of DG50 — within general country rock of DG38 and variants. Some more gneissic ? sheared zone with DG50

Within same general locality and adjacent to porphyroblastic granite gneiss DG 51 gneissic qtz feldspar red gt minor dark [illegible] Stained with malachite. ? shear zone.

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(247) DG52 Sample of white crystalline material found staining rocks on Δ hill and especially beneath loose rocks

mixture of gypsum + thenardite

$CaSO_4 \cdot 2H_2O$. Na_2SO_4

[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] about 2 miles distance. [illegible]
lat

(262) DG 53 Metaquartzite fine-med grained dark coloured siliceous rock with light coloured [illegible] feldspar bands 1 cm to several cms thick. Frost shattered boulders – the [illegible] [illegible] strike approx 340° lat. 70°46'45" long 67°50'

Banding [illegible] [illegible] [illegible] on a larger scale with the second major rock type [illegible]

(263) DG 54 coarse grained leucocratic [illegible] feldspar ? sheared gneiss with ? bands of [illegible] ± garnet banded streaky [illegible] [illegible] (? pyroxene) [illegible] [illegible] coloured feldspars

Rock types DG 53 and DG 54 [illegible] [illegible] alternate on a large scale – individual bands [illegible] [illegible] [illegible] [illegible] wide. [illegible] [illegible] DG 53 is dominant

lat. 70°45'45" long 67°50'

(264) [illegible] [illegible] [illegible] [illegible] [illegible] alternation of dark and light coloured [illegible] [illegible] of DG 53, 54 DG 55 in a [illegible]
lat 70°47 long 67°49

54

great from medium-grained

Planar foliation in the outcrop $\not{}^{55}_{160}$ — 190

265) On domed hill (Whaleback) similar alternation of gneisses lighter & dark coloured.. lat 70°47' long 67°49'
On summit of hill dark fine and grained gneiss as DG 53 & DG 44 & minor DG 45 with pinkish lighter coloured gneiss
DG 56 coarse-grained slightly pink, ? feldspar? quartz feldspar gneiss dark streaks of ? biotite ? scattered garnet. Large scale banding at approx 340° Boulders on summit.
Streaky granite gneiss sheared?
On east flank of 265 banded gneiss as DG 44 and DG 53 in outcrop. Minor qtz feld bands
$\not{}^{55}_{140}$ Wavy foliation

On the east of ... pink outcrop of qtz feldspar gneiss coarse grained $\not{}^{50}_{190}$
Occurs below the dark speckled gneiss which forms most of the ... (including the band of qtz feld gneiss DG 56)

Samples DG57 lat 70° 46'
58 long 67° 57'

(247) [illegible]
[illegible]
shears. Rock has a glazed surface and
blue colours but the interior of the rock is
pink coloured - flesh coloured pink feldsp.
and clear or white qtz.

(248) DG 58 On east flank of ridge below
cairn zone of dark rock striking approx
320° and vert or dipping steeply to N.
Zone approx 2-3 m wide.
Rock schistose — contains rock and
eyes of pink feldspar porphyroclasts.

27 = 5·8 n.mls

1 n.m. 58)270 4.7

232

400

378

10 47

235