

57-189

RIO TINTO FIELD WORK

MACKINTOSH QUADRANGLE 44

Table of Contents Vol I

**Pieman 40 Chains 1956 on Mackintosh
Statement – Mackintosh 30 Chains 1947**

RUNS 1A – 4

001

MACINTOSH 30 chains 1953

447002
Project Sheet

57-189

RUN No	PHOTO NO	OVERLAYS		FIELD NOTES			COMPILATION	
		FINISHED	CHECKED	PRINTED	TYPED	CHECKED	PRELIMINARY	CONTR MAP
VOL I 1A	46500	✓	✓	—	✓			
	03							
	04U/A							
	05U/A							
	08	✓	✓	—	—			
2	46399	✓	✓	—	✓			
	46400	✓	✓	—	✓			
	01U/A							
	02	✓	✓	—	✓			
	03U/A							
	04U/A							
	06	✓	✓	—	✓			
	07	✓	✓	—	✓			
	08	✓	✓	—	—			
	46410U/A				✓			
3	464630/A							
	64	✓	✓	—	✓			
	66	✓	✓	—	✓			
	67	✓	✓	—	✓			
	68	✓	✓	—	✓			
	69	✓	✓	—	✓			
	46470	✓	✓	—	✓			
	71	✓	✓	—	✓			
	72	✓	✓	—	✓			
4	46547	✓	✓	✓	—			
	48	✓	✓	✓	—			
	49	✓	✓	✓	—			
	46550	✓	✓	—	✓			
	51	✓	✓	—	✓			
	52	✓	✓	—	✓			
	53	✓	✓	—	✓			

002

MARCINOSKI

30 chains 1953

Progress Schedule

447003

VOL II	RUN NO	PHOTO NO	OVERLAYS		FIELD NOTES			COMPLETIONS	
			FINISHED	CHECKED	PRINTED	TYPED	CHECKED	PRELIMINARY	CONTOUR MAP
VOL II	5	46579	✓	✓	—	✓			
		46581	✓	✓	—	✓			
		83	✓	✓	✓	—			
		86	✓	✓	—	✓			
		87	✓	✓	—	✓			
		88	✓	✓	—	✓			
6		46596	✓	✓	—	✓			
		97	✓	✓	—	✓			
		98	✓	✓	—	✓			
		99	✓	✓	✓	—			
		46600	✓	✓	—	✓			
		01	✓	✓	—	✓			
		02	✓	✓	✓	—			
		04	✓	✓	—	—			
7		46628	✓	✓	✓	—			
		29	✓	✓	—	—			
		30	✓	✓	—	✓			
		31	✓	✓	—	—			
		34	✓	✓	—	✓			
		35	✓	✓	—	✓			
		36	✓	✓	—	✓			
8		48142	✓	✓	—	✓			
		45	✓	✓	✓	✓			
		46	✓	✓	—	✓			
		49	✓	✓	—	✓			

000

PEMAN 40 CHAINS 1956 ON MACKINOSH

Program Schedule

447004

RUN NO	T-NO	PHOTO NO	TRANSFERRED TO	OVERLAYS	FIELD NOTES	FIELD			
			PHOTOS FIELD POINTS	COMPLETE & CHECKED	COMPLETE	NOTES CHECKED			
2	T320	65							
		69							
		70							
3	T320	15							
		16							
		18							
		19							
		19							
		20							
		21							
4	T319	110							
		111							
		112							
5	T319	65							
		68							
		69							
		69							
		69							
6	T319	34							
		34							
		35							
		35							
		37							
		39							
6	T319	33							
7	T318	119							
		119							
		116							

MICROFILMED

MICROFILMED

003

Statement

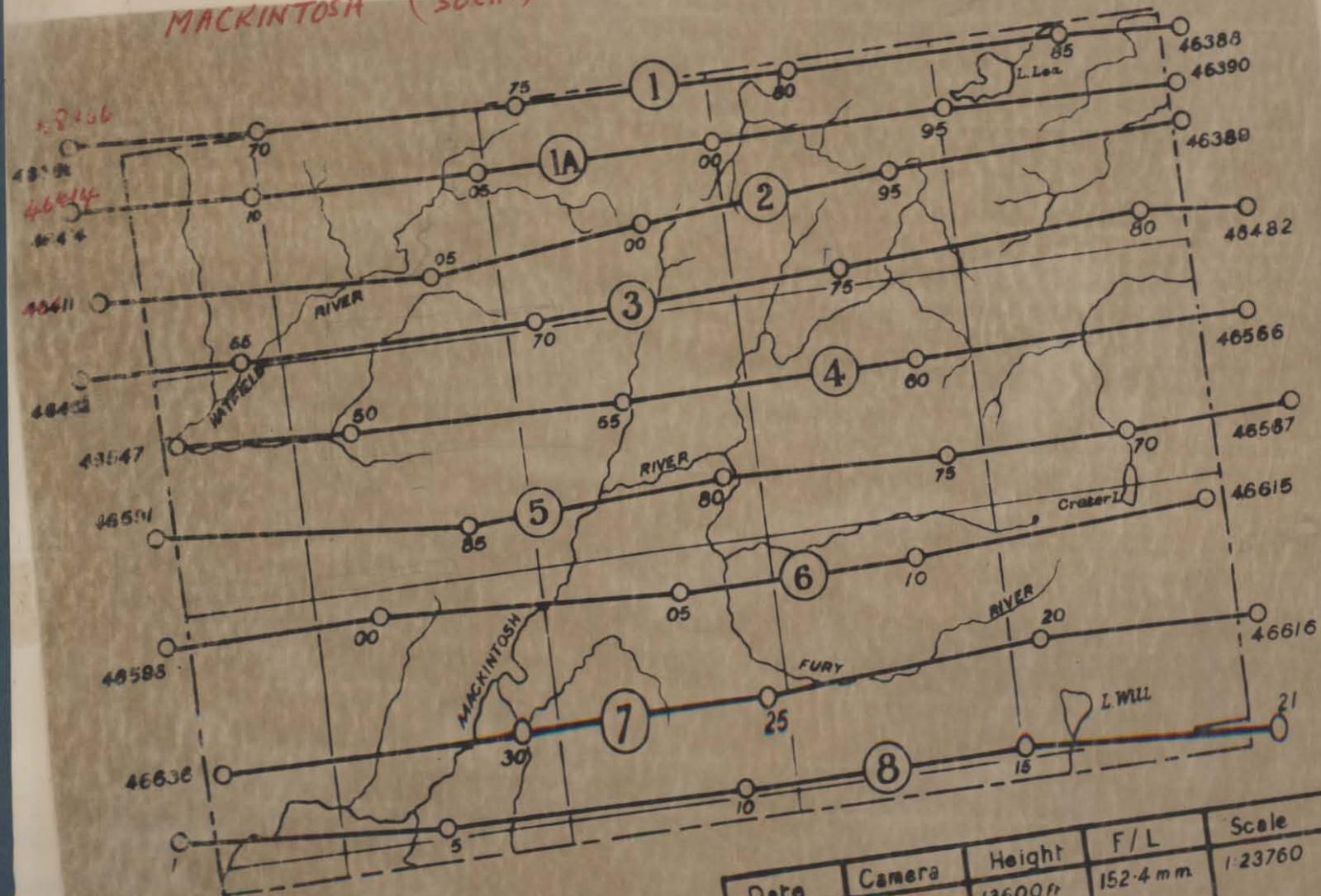
MVAUNTOJH

30 days 1947

447005

RVN NO	RIO'S TOTAL	TAKEN FOR TRAINING	NO	REMARKS
1	46366 - 46388	—	0	
1A	46490 - 46513	46500, 3, 4, 5, 8	5	
2	46389 - 46411	46399 46400, 1, 2, 3, 4, 6, 7, 8 46410	10	
3	46482 - 46462	46463, 4, 6, 7, 8, 9 46470, 1, 2	9	
4	46566 - 46548	46547, 8, 9 46550, 1, 2, 3	7	
5	46567 - 46591	46579 46581, 3, 6, 7, 8	6	
6	46615 - 46596	46596, 7, 8, 9 46600, 1, 2, 4	8	
7	46616 - 46633	46628, 9 46630, 1, 4, 5, 6	7	
8	48140 - 48161	48142, 5, 6, 9	4	

MACKINTOSH (30CHS)



Date	Camera	Height	F/L	Scale
1953		13600 ft	152.4 mm	1:23760

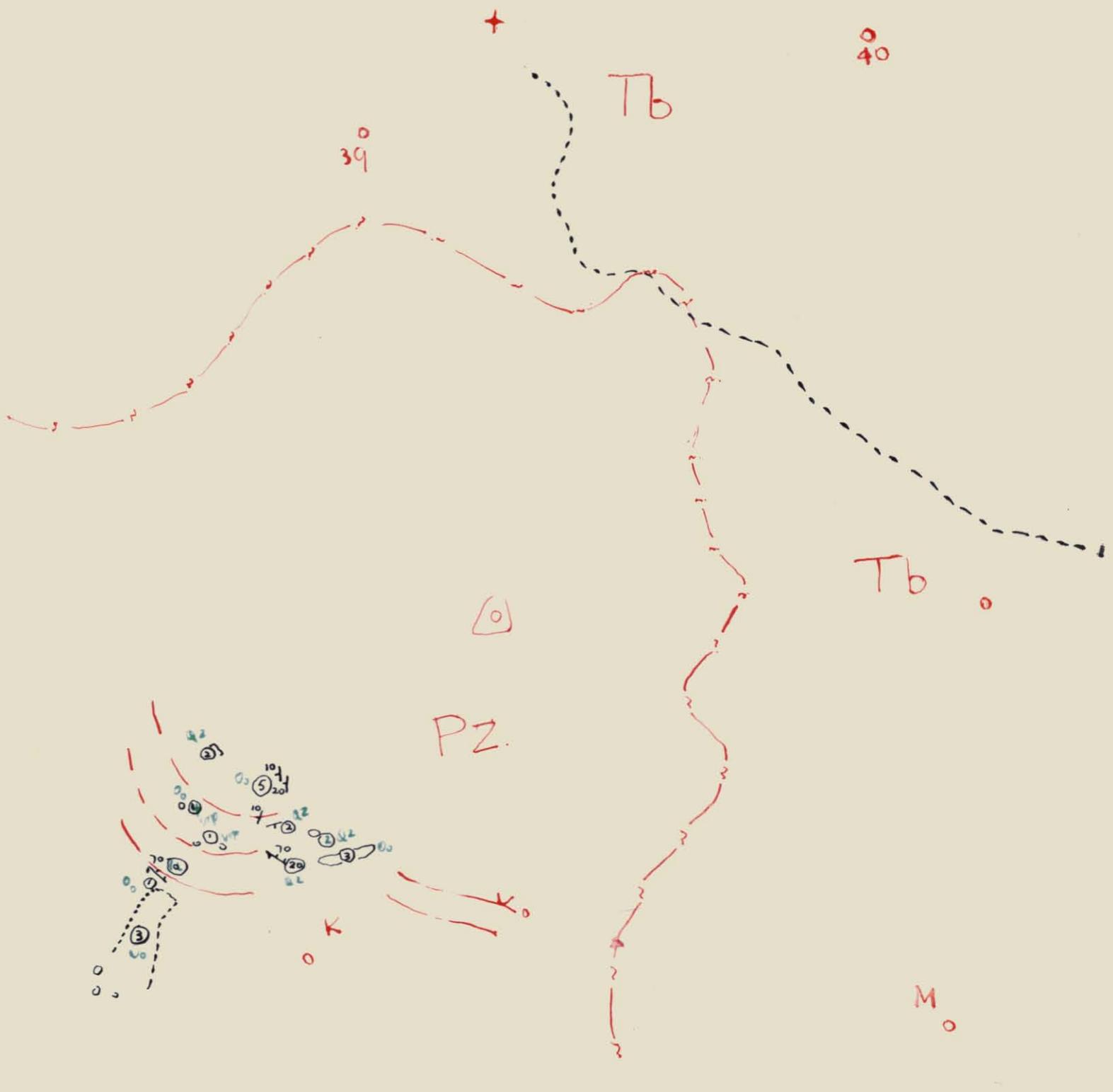
MACKINTOSHRun No. ^{1A}~~88~~Photo No. 46500DMcK Feb 59

- (1) Outcrop white sheared quartz porphyry in dirty white felsitic (fine-grained) ground mass.
- (2) Brick-red coloured quartzite-identical with previously seen examples of Upper Owen facies. Outcrops well and is intruded by numerous narrow quartz veins.
- (2a) Specimen of (2). Has strong secondary lineation, bedding destroyed.
- (3) Linear ridge of Owen Conglomerate boulders - no outcrop observed, but ridge believed to be in place.
- (4) Boulders of white grits - Owen facies.
- (5) Three attitudes obtained on Owen - pebble-conglomerate containing red quartzite bands.

Mackintosh 1A - 46500

447007

RUN NO 38
MACKINTOSH

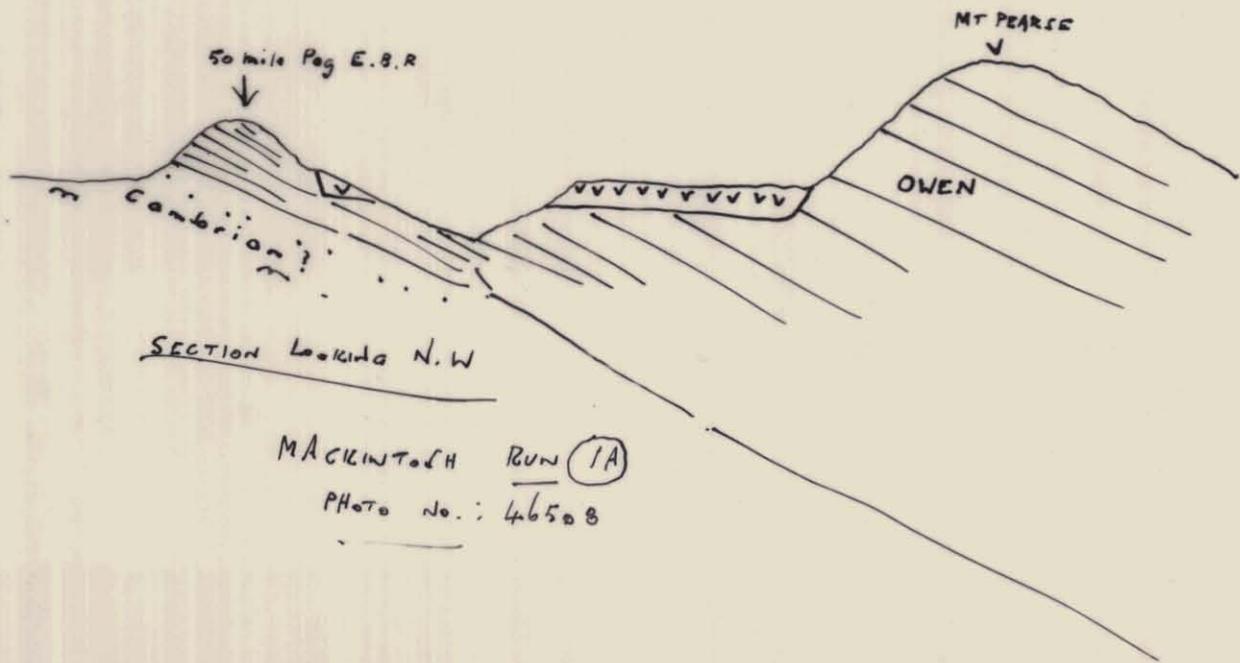


5 cm

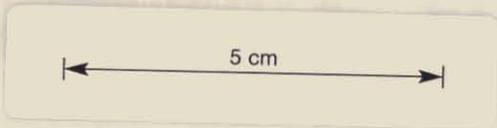
004

1A - 46500 Tb

1A - 46500



Section of Mt. Pearce
on IA-46508



007

Mackintosh Run 2 - 46399

447010



008

MACINTOSH 2-46399
Grom: KLB

MACKINTOSHRun No. 2Photo No. 46399DMcK - Feb 59

- (1) Earthy - weathered fragmental rock, possibly greywacke grit or coarse tuff.
- (2) Tan coloured shales (no attitude)
- (3) Definite green tuff (pin head size particles), felspathic. Specimen coarser, up to 2mm.
- (4) Green fragmental rock--possible tuff
- (5) Crystalline aggregate of pink feldspar and green mineral--resembles some Chester-Pinnacles -Boco porphyries
- (6) Prominent narrow ridge of Owen-type conglomerate. Pebbles size $\frac{1}{2}$ " with pink quartzite bands, presumably upper Owen-type conglomerate. No definite outcrops for attitude seen on ridges, but ridge quite distinct. These could represent glacial moraines. Evidence equally divided between moraines and in situ Owen.-slightly in favour of the second.
- (7) Weathered vesicular basalt outcrop and scree. and scree of olivine basalt.
- (8) Narrow ridge composed of brick-red quartzite and fine ($\frac{1}{2}$ ") pebble conglomerate (Owen)
- (9) Owen conglomerate--no dip determinable--pebble size from $\frac{1}{2}$ "-4" Average 2".

Comments : (KLB) : Ridge at 6 vertical.

If in situ, means an anticline in Owen with core of porphyry (some shales further west on 2/46400) ; or less likely, N. limb is a E syncline.

If moraine, position not vastly different. Pass outcrop of N limb is odd.

~~MACKENZIE~~ INTOSH

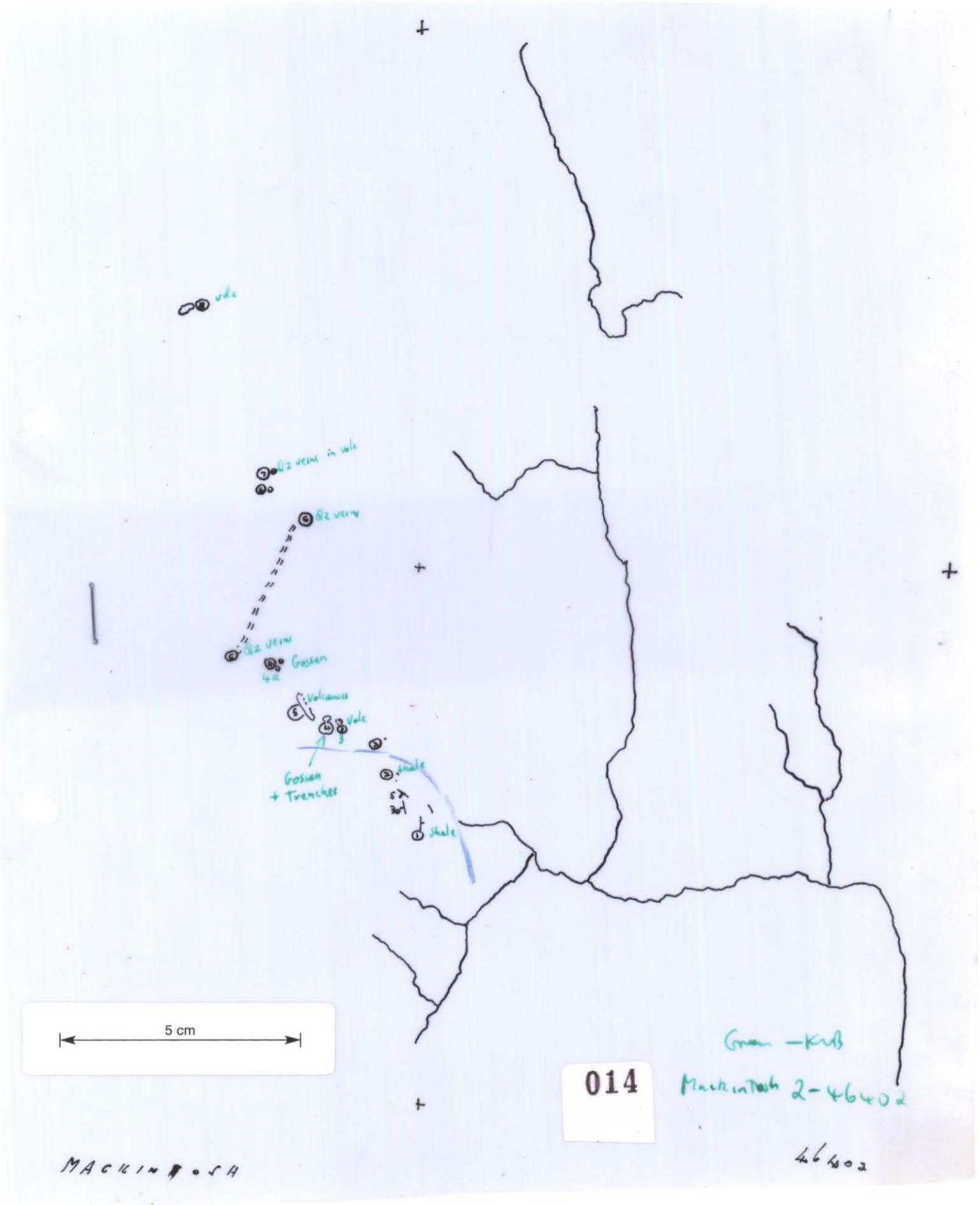
Run No. 2

Photo No. 46400

DMcK - Feb 59

- (1) Green, well bedded shales.
- (2) Quartz porphyry - phenocrysts up to 3 mm, in pale pink dense felsitic ground mass.
- (3) Pale-greenish-white felsitic.
- (4) Complex alternations of dark-green impure qtz. or lava, coarse green tuffs, and porphyry, similar to associations near Fidlers Hut at Bulgobac - this whole zone is like that at Bulgobac East timber track.
- (5) Bands of green impure shales, quartzites and fine tuff, attitude unknown.
- (6) Dense, fine-grained flesh-pink or green felsite - weathers yellow, an occasional ^{eu}enohedral feldspar.
- (7) Feldspar porphyry with ground mass of felsite, either pale pink or green of rock type (6) above, strong, constant lineation 350°^T, (dip 70-80° E, jointing).
- (9) Feldspar-porphyry interbedded with dark green shales.
- (10) O/crop of vesicular acid lava on bank, vesicles infilled with hematite - similar to lava on Que Rvr. upper reaches, sections containing pyritic geochemically anomalous copper.
- (11) Well-bedded blue shales, cleavage 320°.
- (12) Vesicular basalt.

Mackintosh Run 2 - 46402 447016



5 cm

014

Gran - Krb
Mackintosh 2-46402

46402

MACKINTOSH

016

447018

MACKINTOSH

Run No. 2

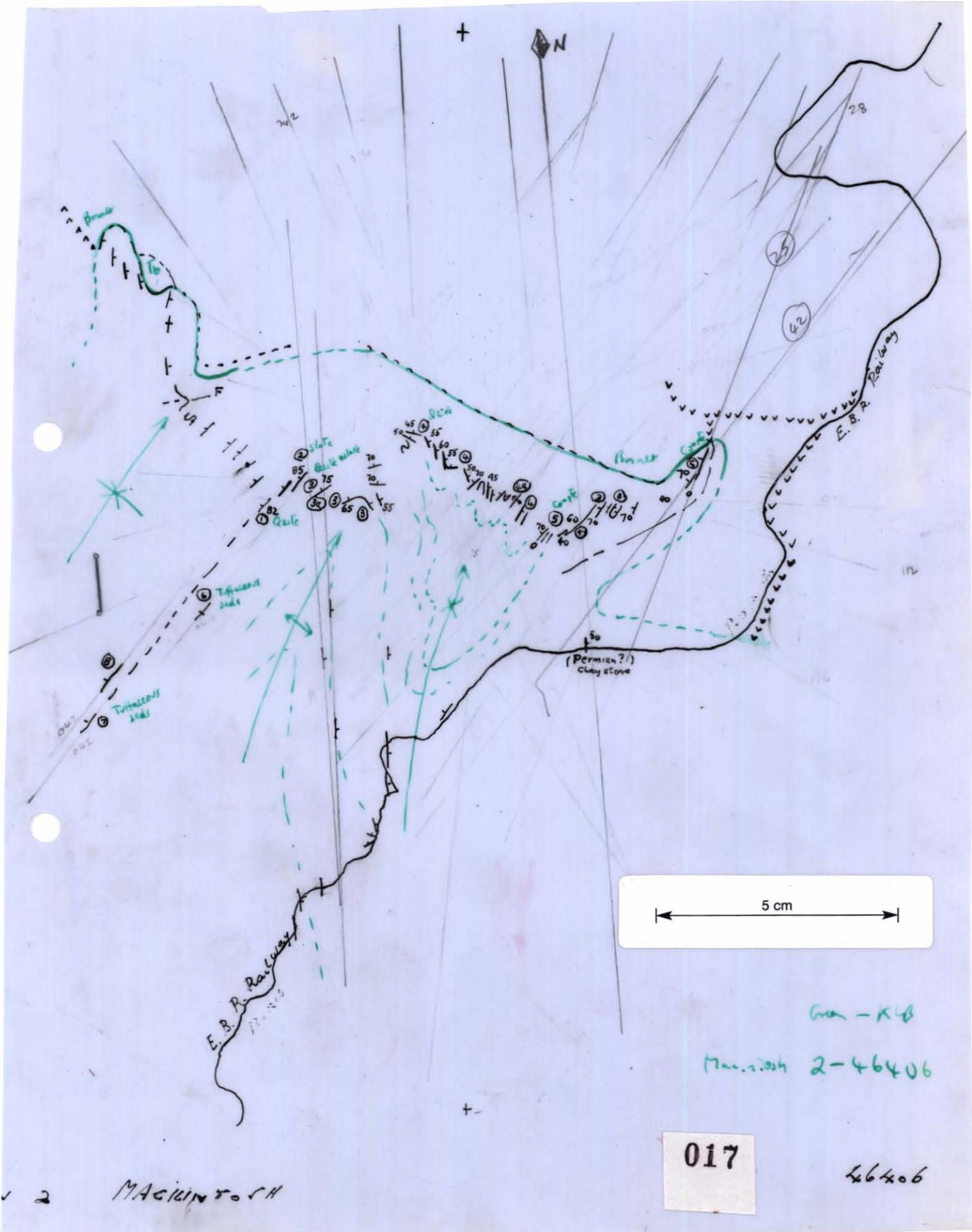
Photo No. 46402

DMcK, April 59

- (1) Poorly bedded black shale.
- (2) Massive black shale.
- (3) Green fine grained tuff of lava - contains elliptical phenocrysts(?) of black mineral.
- (4) Poor gossan rubble over 200', traces of two old, shallow trenches.
- (5) Grey-green impure (tufaceous) and micaceous quartzite, or more probably, Rhyolite or other f/g lava.
- (4a) Gossan in place in creek bed - 15' x 20'
- (6) Quartz veining in (5) - veins numerous and average $\frac{1}{8}$ " wide - preferred direction of veining - 100, d. 80 N.
- (7) Quartz veining in fine grained, green rhyolitic rock.
- (8) Quartz porphyry, pheno 2 mm in pale green felsitic weathered ground mass.

Meckintosh R-n 2-46406

447019



5 cm

Geo - KLB

Meckintosh 2-46406

017

46406

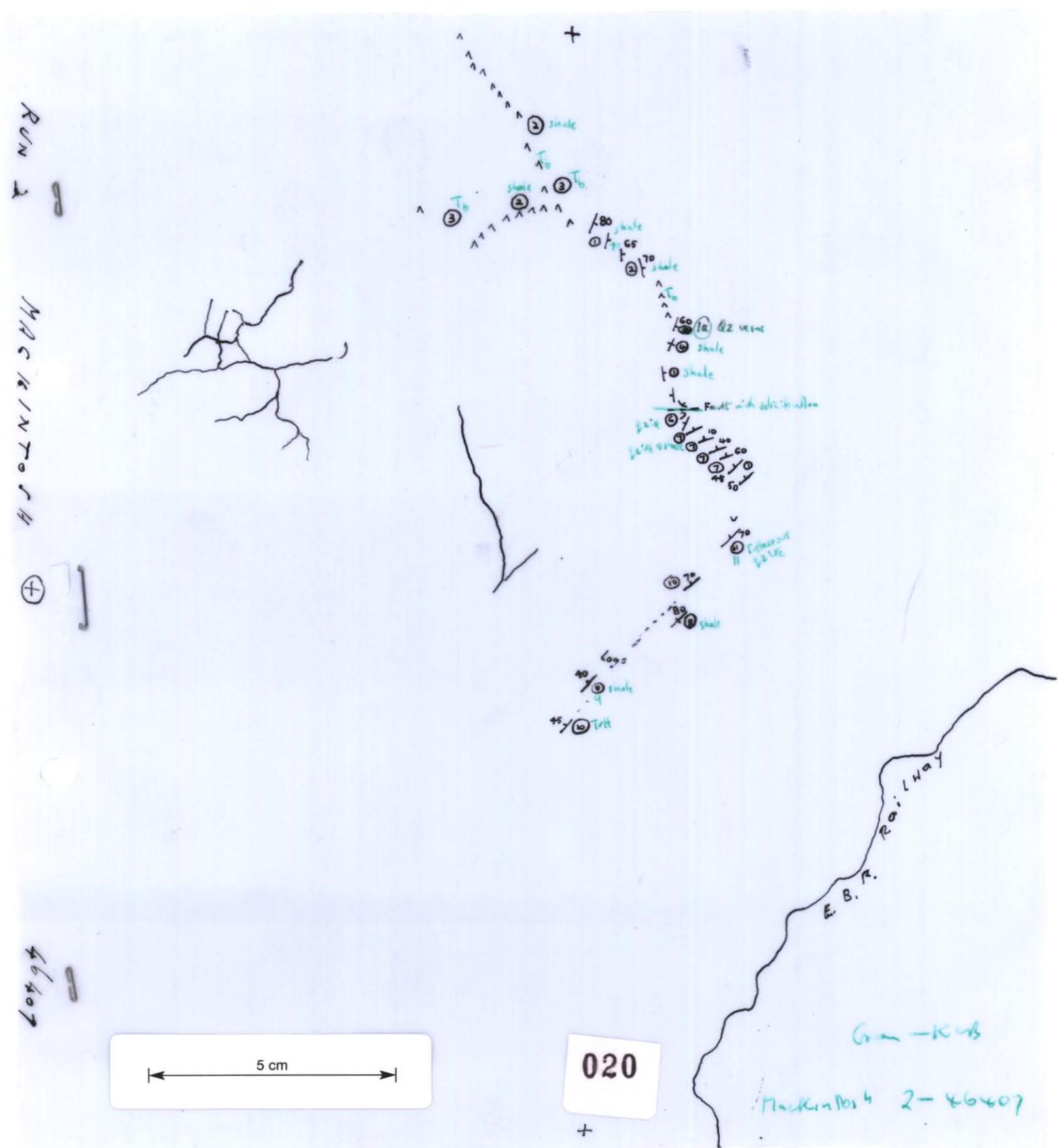
MECKINTOSH

019

MACKINTOSHRun No. 2Photo No. 46406DMcK, Feb 59

- (1) Grey, tuffaceous quartzite.
- (2) Blue slates (similar to railway section).
- (3) Well bedded blue grey quartzite with subordinate blue slate layers-
NB Saw tooth drag-folding at 3(a)
- (4) White dense quartzite, generally flagging and bedding quite plain.
- (5) Owen type conglomerate (pebbles cobble size of quartz or quartzite
in silicious matrix) interbedded with (4) & (3).
- (6) Tuffaceous, fine-grained granular green.
- (7) " , two specimens showing chert frags. in tuffy groundmass
& grading into finer tuff.

Mackintosh Run 2 - 46407



5 cm

020

Gran - KUB
Mackintosh 2 - 46407

Run 2

Mackintosh

46407

E.B.R. Railway

shale
T0
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
T14
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T46
T47
T48
T49
T50

Fault with slicken slip

Logs
shale
Tuff

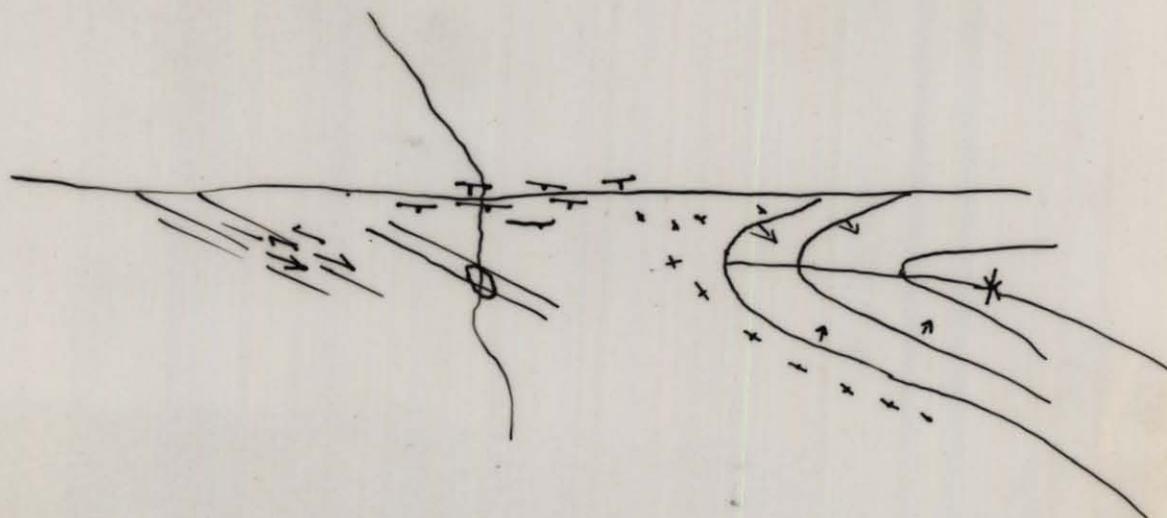
shale
Tuff

MACKINTOSHRun No. 2Photo No. 46407DMcK Feb. 59

- (1) Pale green micaceous shales with occasional bands of green micaceous quartzite.
- (2) Blue well laminated shales with occasional green micaceous bands.
- (3) Blue black fine-grained basalt.
- (1a) Quartz veins along bedding planes of (1)
- (4) Micaceous AMBER shales.
- (6) Hard, green, micaceous quartzite, drag folded and faulted, shales upstream from here are silicated and bedding destroyed - fault zone.
- (7) Green, micaceous quartzite & micaceous green shales.
- (8) Blue slates.
- (9) Green laminated shales.
- (10) Grey tuff and agglomerate-particles of angular quartz and minor amber and black shale.
- (11) Tuffaceous (grey) quartzite in cliff face.

Mackintosh Run 2 46408

447025



MACKINTOSH

RUN No. (2)

PHOTO No: 46408

Diagram on back.
McKenney's sketch map of structure same as here.

023

5 cm

Mackintosh 2-46408

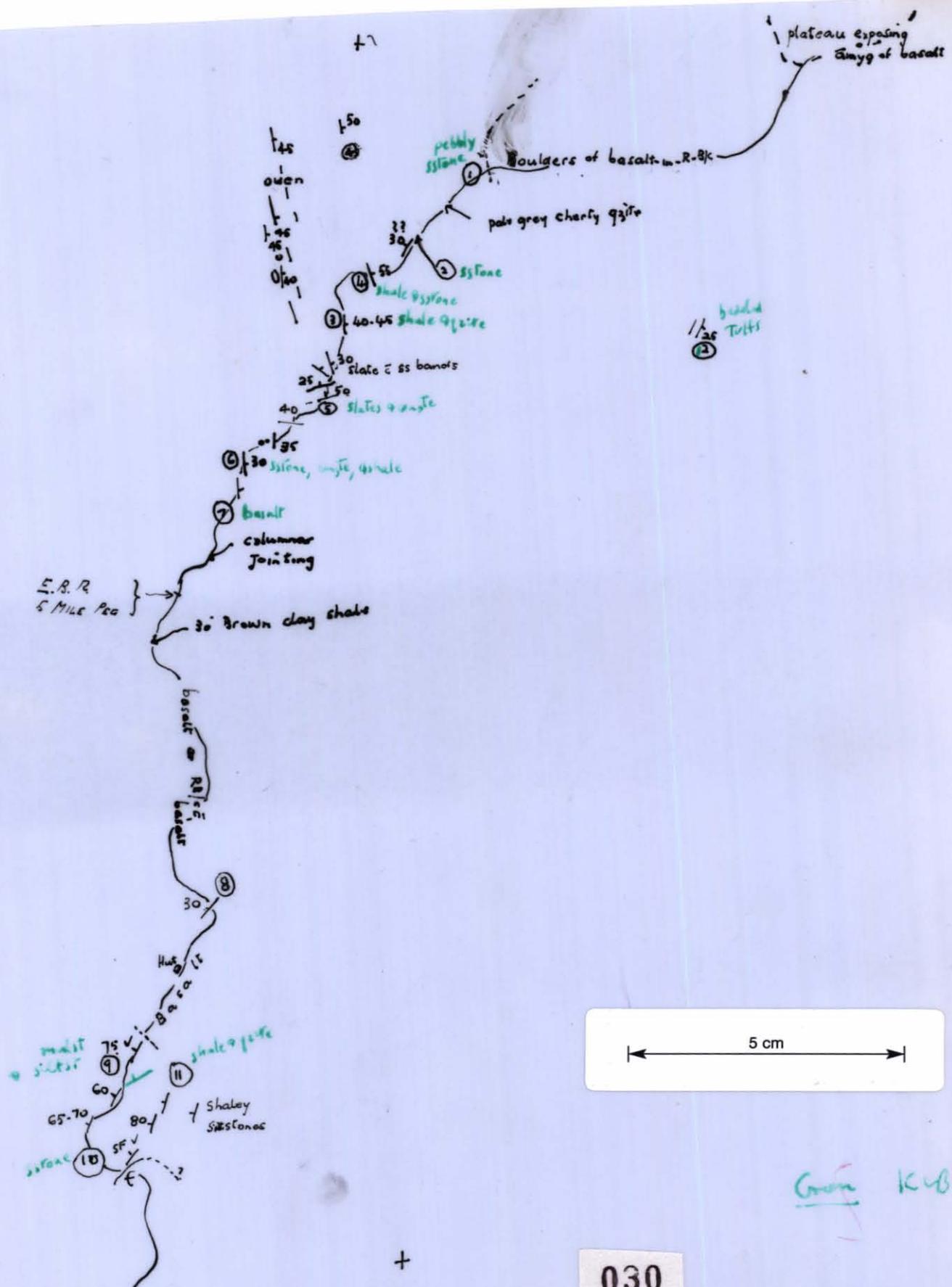
- (1) Coarse grained greywacke agglomerate interbedded with hard blue quartzite and coarse tuff.
- (2) Green Dundas tuffs,
- (3) Well laminated plae green shales.
- (4) " " green and grey shales.
- (5) " " " " "
- (6) Felspathic greywacke or coarse tuff.
- (7) Oven type conglomerate - pebbles egg size of silica in siliceous matrix, ridge approx. 50' wide followed 200' southwards, but in creek to North, conglom. does not outcrop, boulders at present sitting on rock type (3) above.
- (8) Coarse, felspathic tuff and greywacke conglomerate- pebbles of shales, slates and silica.



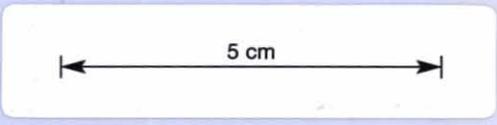
027

Mackintosh Run 3-46467

447030



bedded
Tuffs



Green KLB

030

3-46467

MACKINTOSH

MACKINTOSHRun No. 3Photo No. 46467DMcK 2/59

- (1) Pale grey sugary sandstone, some quartz pebbles in bands.
- (2) White sandstone-quartzite with coarser grains chert-quartz.
- (3) Dark grey very thinly bedded slaty shales with bands up to 6' of grey quartzite.
- (4) For 100' E & W, alternating shale and sandstone.
- (5) Underlying slates and alternating beds; coarse white siliceous conglomerate, variable % matrix, pebbles fairly well rounded, similar to Owen Conglomerate,
- ~~(6) YB/sandy siltstones or mudstones, thinly bedded, often with sedimentary disturbances on top of bedding units.~~
- (6) YB/ medium grained rather impure sandstone overlying 20' coarse conglomerate overlying grey shales with SS bands.
- (7) Clay with boulders amygdaloidal (calcite & zeolite) basalt.
- (8) Base basalt flow, overlying purplish (baked) clay shales overlying grey shales.
- (9) YB/sandy siltstones or mudstones, thinly bedded, often with sedimentary disturbances on top of bedding units.
- (10) Massive YB rather impure medium grained sandstone.
- (11) YB/sandy shales with thin quartzite bands,
- (12) Sandy laminated and weathered gritty tuffs - STR 25 T, D 25 E.

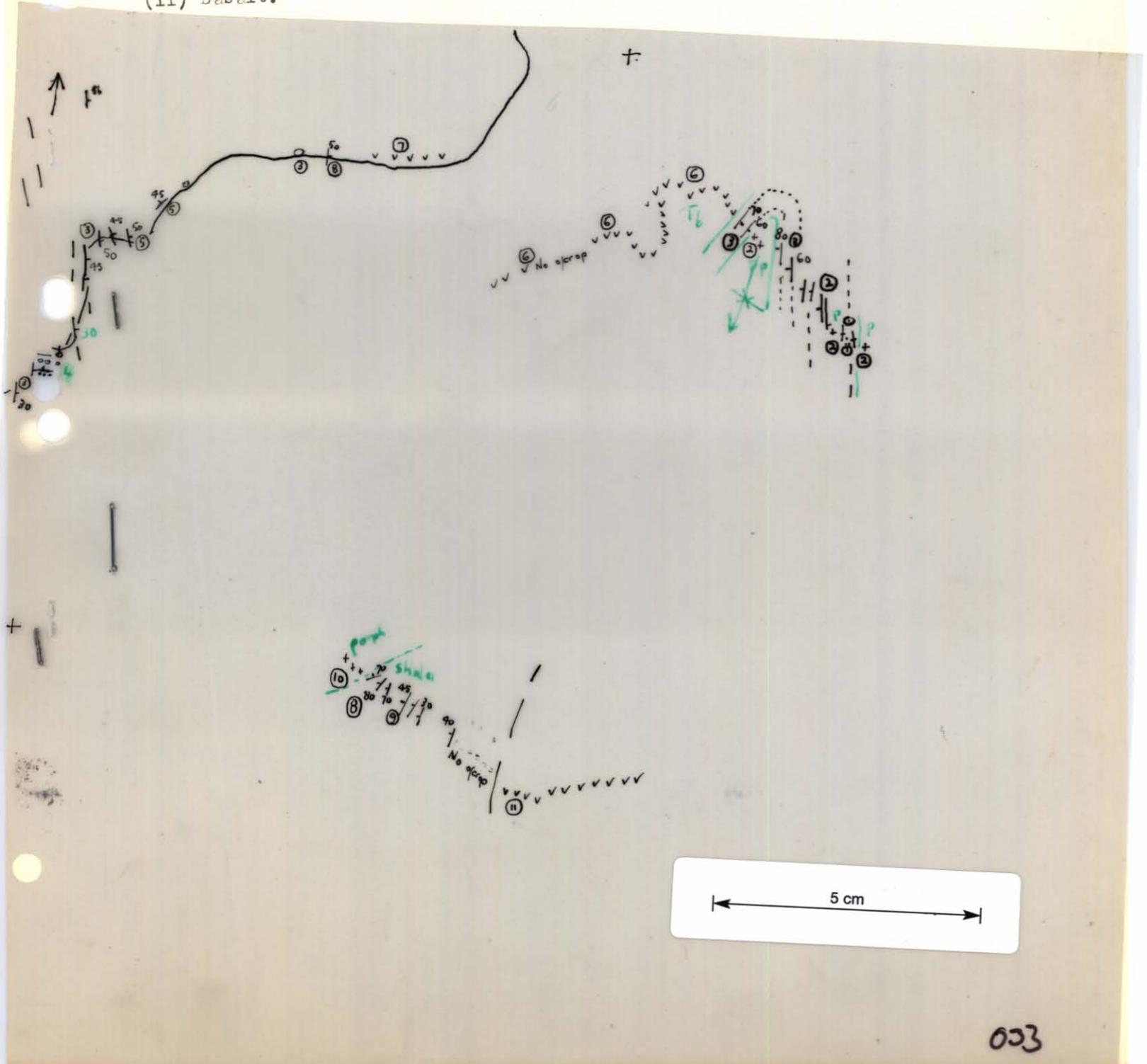
MACKINTOSH

Run No. 3

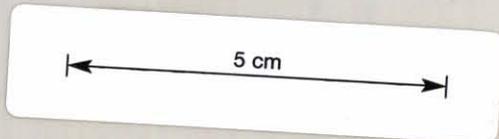
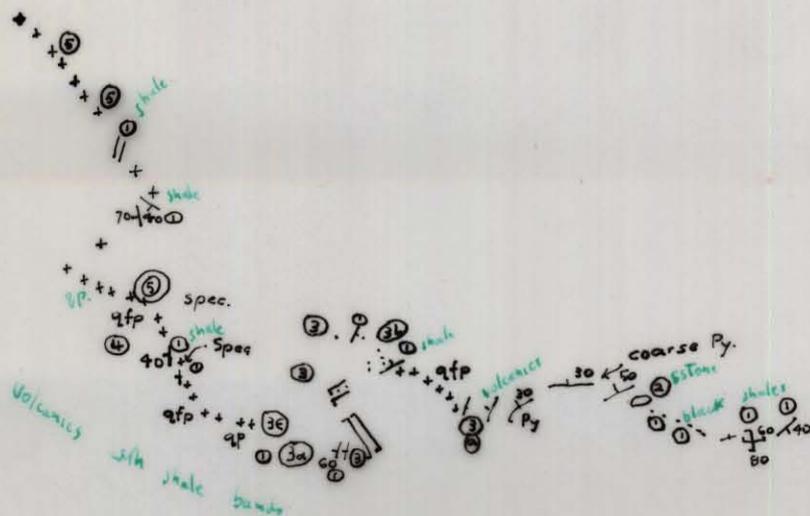
Photo No. 46468

DMcK 1/59

- (1) Black, well bedded slate and shale.
- (2) Quartz porphyry - pale green matrix.
- (3) Alternating green quartzite and sandstones, well bedded and in part micaceous and blue well bedded slates and shales.
- (4) Bands of Owen type conglom. (pebbles average egg size) apparently inter bedding with (3).
- (5) Siltstones and shales (white).
- (6) Olivine basalt.
- (7) " " rubble.
- (8) Pale green laminated shales.
- (9) Dominantly black, thinly bedded shales containing subordinate bands of green shale
- (10) Coarse quartz fclsp. porphyry-quartz phenocrysts up to 5 mm.
- (11) Basalt.



- (1) Poorly bedded black shales,- micaceous in part.
- (2) Yellow sandy micaceous sandstone.
- (3) Fragmental, coarsely feldspathic green ground mass. The rock contains occasional blackslate fragments and occasionally resembles a feldspathic slate. One section is felspathised and other sections have a dense, cherty groundmass. Occasional unorientd bands of black slate occur within the zone. Suspect this whole zone represents volcanic ejectmenta containing scattered slate zones.
- (4) Quartz felspar porphyry.
- (5) Quartz porphyry - dense pale green matrix.



Green KLB

036

MACKINTOSHRun No. 3Photo No. 46470DMcK 1/59

- (1) An assemblage of dense, black, generally poorly bedded slates, shales, apparently crumpled and presumably in the axis of a major fold. Fracture cleavage varies between 320 - 350. The slate rarely pyritic but syngenetic py occurs at locality (3).
- (2) Amygdaloidal and porphyroidal lava - apparently narrow band in slate. Resembles Zeehan melaphyre in nature
- (2a) Unknown rock type (perhaps lava) heavily impregnated with pyrite
- (3) Syngenetic pyrite in black well-bedded slates
- (4) Quartz-porphry--suspect not in places--specimen taken--could be rafted down creek.



MACKINTOSHRun No. (3)Photo No. 46471DMcK April 59

- (1) Rubble (in place) of well-bedded tuffaceous quartzite on ridge.
- (2) Black slate and shale.
- (3) Green siliceous attitude query 310°/dip 60°N
- (4) Massive outcrops of coarse felspathic tuffs - generally weathered gritty, yellow, part of massive volcanic kindred.
- (4a) Vague rock type from massive volcs. crystal tuff or porphyry.
- (2a) Distorted and possibly sheared massive black slate - attitude indefinite - outcrops over 300' creek length.
- (5) Tuffaceous quartzite.
- (6) Dense green-black quartzite in tree roots.
- (7) Rubble only in creek of black shales and vein quartz - no outcrops in or near flanks of clearing.
- (8) Moderately well-bedded shales, overlain by pale flesh-pink felsitic rock (similar to that seen in MP zone to NE)
- (9) Slate rubble on bank of creek.
- (10) From this point to ((9), creek load consists of boulders of Basalt (weathered) frags. of vein quartz.

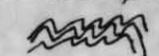


- (1) Owen conglomerates - pebbles $\frac{1}{2}$ " to 1" size, felspathic and siliceous ground mass.
- (2) " " - pebbles range from $\frac{1}{2}$ " to 2" - quartzose ground mass.
- (3) Water worn creek pavement of Owen conglom.
- (4) Clastic rock - weathered - greywacke grit - coarse muscovite is a feature - grit particles up to $\frac{1}{8}$ ".
- (5) Coarse felspathic tuff.
- (6) Weathered felspathic tuff or greywacke - yellow residual clay in completely weathered examples.
- (7) Felspathic tuff in weathered pale-green shales - no attitude seen - shales weathered yellow.
- (8) Hard band of felspathic grit or tuff (specimen).
- (9) Boulders of basalt.



447044

Dunk. Jan. '59.

- ① Brilliant yellow and sometimes orange-colored fine-grained clayey arenite - poorly bedded and contorted and drag folded - sub-conchoidal fracture.
- ② do. above - massive.
- ③ Dirty white sandy buffaceous? quartzite.
- ④ Pale olive-green and brown massive shales.
- ⑤ Intensely sheared and crenulated shales or slates. Silicification is present and some calcification bedding thus  (Saw-tooth pattern in hand specimen)
- ⑥ Intensely crenulated and silicified pale green and yellow shales.
- ⑦ Definite Dundas amber shales & arenite-like ③ above - unsilicified.
- ⑧ Grey white Crystalline dolomite.
- ⑨ Black and grey finely banded slates.
- ⑩ Well-bedded light or dark grey slate containing Crystalline pyrite along bedding planes.
- ⑪ Brown to orange coloured tuffs - particle size 3mm.
- ⑫ alternating ⑪ and amber shales. ⑫a Graywacke conglomerate - particles up to 1/4"
- ⑬ Similar to ⑫ but tuffs & shales are micaceous
- ⑭ Pale green tuffs & alternating amber shales - Some blue quartzite at East end of section.
- ⑮ Dominantly pale green micaceous tuffs, with minor blue quartzite and amber slate bands.
- ⑯ Huckisson - Intensely sheared black and tan slates and tuffs - Bedding destroyed - Strong fault zone.
 Close spaced unmarked shear planes - minor py. present. Contrast with undisturbed Dundas in Q. see to East.
- ⑰ Banded black and reddish-tan Dundas slate. An occasional nodule of pyrite is present
- ⑱ Blue massive quartzite.
- ⑲ Interbedded grey quartzite and thinly laminated black slates (Slates below to East)
- ⑳ Intensely sheared laminated black slates, crenulated & drag folded. Strong fault zone attitude uncertain
- ㉑ Intense crumpling in blue laminated shales.
- ㉒ Hatfield River - Black schisted carbonaceous slate

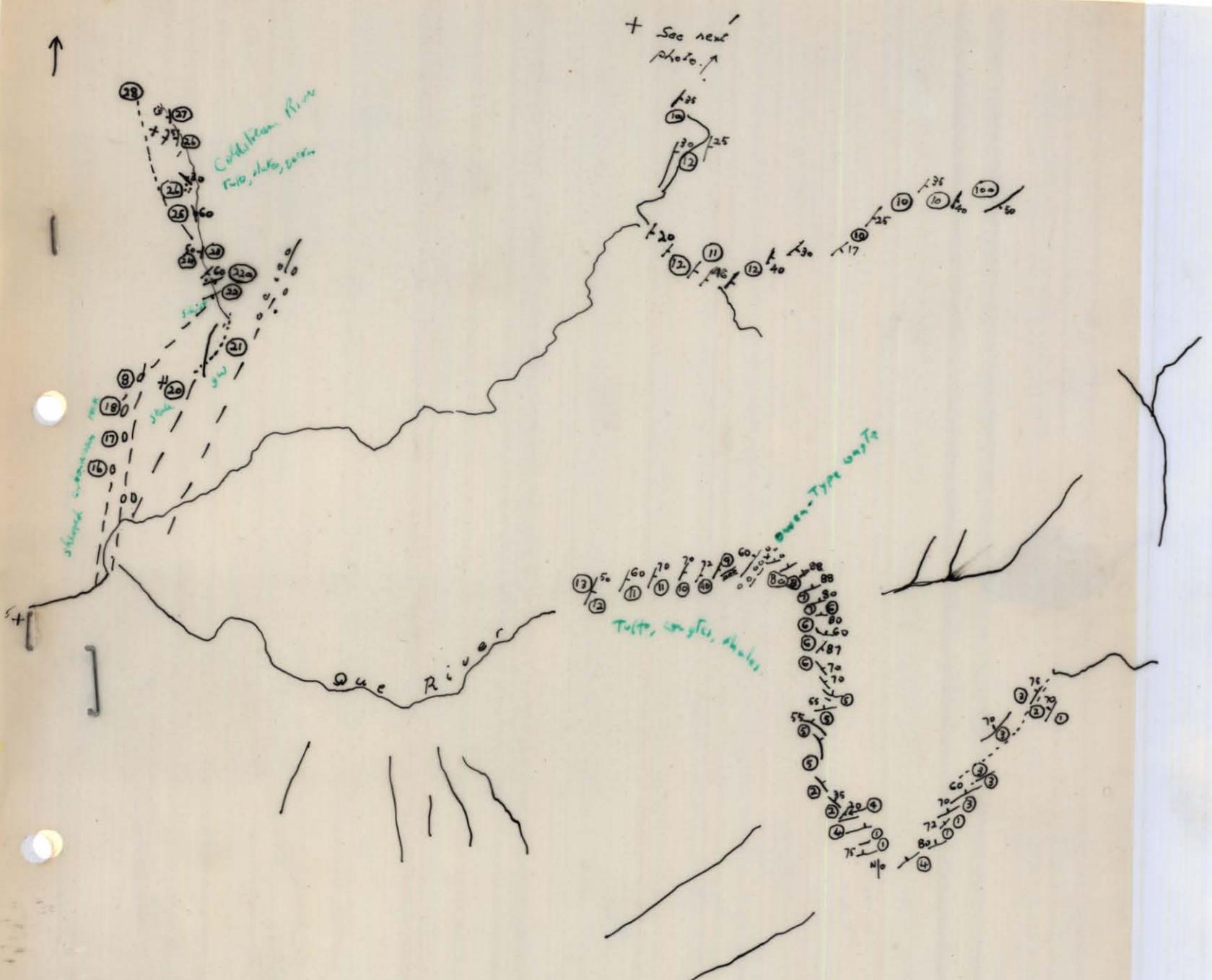
MAINTOSH
7

Riv 4

46547

049

049



5 cm

050

RUN 4

MACKINTOSH

4-46548

447040

Northam. Jan. '59

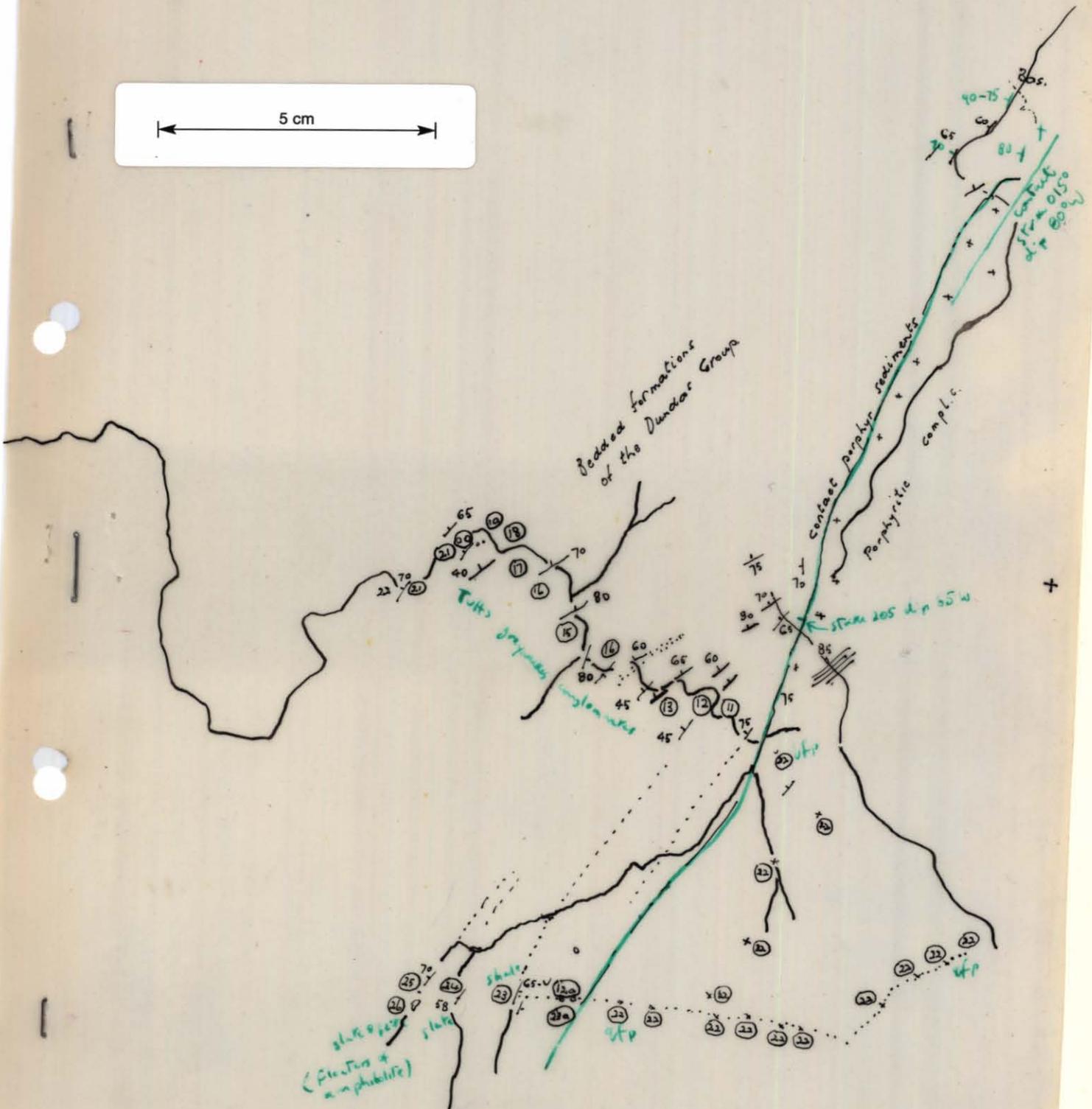
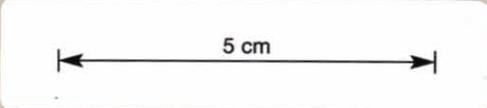
- ① Well laminated green and grey slates.
- ② " " dark green quartzites and slates.
- ③ Green buffaceous quartzites containing subordinate green poorly bedded shales - tuff bands present, but rare.
- ④ Dominantly graywacke conglomerate containing minor slate and fine-grained tuffs and blue quartzite.
- ⑤ Dense blue quartzite with occasional graywacke agglomerate members and occasional shale beds.
- ⑥ Green-blue, well-bedded shales and slates.
- ⑦ Buffaceous quartzite.
- ⑧ At this point, the river is choked with boulders of Owen Conglom. (middle facies), some are in place high on the river bank. At creek level, black and blue coloured Dundas slates and quartzites under the conglomerate - an actual contact cannot be observed.
- ⑨ Tuffaceous quartzite, similar to ③ above.
- ⑩ Graywacke aggl. + blue etc.
- Owen Cong type underneath grey quartzites and interbedded with them. (Pebbles + matrix Si_2 , pebble size average $2\frac{1}{2}$.)
- ⑪ Blue-black slates and quartzites.
- ⑫ Blue quartzite and amber coloured (Dundas) micaceous slates.
- ⑬ Variegated well-bedded blue-green, tan shales - micaceous
- ⑭ Shales with occasional tuff bands.
- ⑮ Alternating tuffs, finger-nail size agglomerate, buffaceous quartzite + brown mudstones: all fine-grained + all micaceous
- ⑯ Hatfield River - micaceous tuff and buffaceous quartzite.
- ⑰ COLDSTREAM RIVER. Durt. April '59.
Graphitic schist - Dip 010° T, d. 80° W. at S. end outcrop
and highly deformed black slates and blue etc. at N. end, Str. 360° T, d. steep W, - disseminated pyrite common.
- ⑱ W. bank - detail could not be seen due to flood waters.
- ⑲ Mildly sheared dark blue poorly bedded etc. - W. bank - Str. steeply 020° T, dip V - 70° W.
minor direction 330° + Vert.
- ⑳ Dark blue etc. + graphitic schist + minor V.P. (across up to $2\frac{1}{2}$ "), schisting 020° T, d. 75° E. - slickensiding, crush zones in schist
- ㉑ Graph. sch. + massive blue etc. Sch. Str. 015° , d. 80° W.
- ㉒ Brown-amber coloured DUNDAS shales or argillite - relatively undisturbed, poorly bedded, bedding 360° , dip Vert.
- ㉓ Coarse DUNDAS graywacke - brown matrix, partially amber shale + tuff up to egg size - as $\frac{1}{2}$ " - Red sheet etc. particles similar to sandstone
- ㉔ Sheared graphitic sch. zone 40' wide Str. 040° , d. steep cutting off blue hard etc. to North (Str. 060° , dip 60° N) - Some banded black slate in etc. + schist
- ㉕ Blue + white massive etc. - Str. 60° , 30° , dip consistently 40° - 60° E.
- ㉖ Blue-black well-bedded shales + slates - Str. 040° , d. 50° E
- ㉗ Change of attitude, black shale Str. 010° , dip 50° W. - seen over 400' river length.
- ㉘ Blue etc. - pyritic Str. 330° , d. "E.
- ㉙ Fine amber coloured tuffs and shales. } characterized by poor bedding.
- ㉚ Pale green-blue argillite.

051

Marintosh Run + 46548

051

BIG AUSTRALIAN EXPLORATION P.L.



052

Green - K 43

MACKINTOSH

4 - 46549

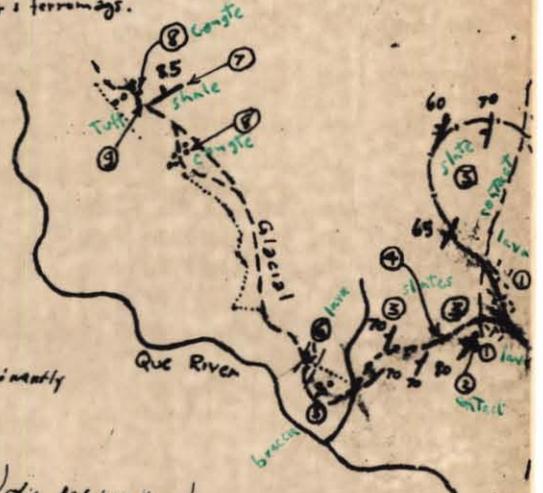
TRAVERSE EBR. SLEEPER LOG TRACK. (D.K.)

Novemb

- ① Cream fg. lava, quartz phenox.
- ② Change from lava to well bedded shales, slates. Thin layer of lava within slates near base.
- ③ Dark grey siliceous slates, with some thin bands of grey tuff-agglomerate of Dundas type. General Strike 40° E of N, dip W 70°-80°
- ④ Interesting mineralised level near base of slates, pyritic fissure fillings in black slate and pyritic replacement blebs in tuff.
- ⑤ Medium to coarse breccia-conglomerate of Dundas type, rich in quartz (distinctive), feldspar & ferromags. In places fragmentary feldspar rock resembling lava as at ^{White} Grey Spur, S. of Williamsford.
- ⑥ Dense fine grained lava, variable & patchy in appearance & composition.
- ⑦ Laminated shales. 60° E of N, Dip N. 85°.
- ⑧ Medium to coarse breccia-conglow, feldspathic fragments & ferromag. rich groundmass
- ⑨ Gray tuff-agglom.

QUE RIVER SECTION (B.C., D.K.)

- ⑩ Coarse grits, angular fragments (conc. tuffs?) at the X Que Riv. - Bulg. Creek
- ⑪ Well bedded siliceous quartzitic layers, striking 20°, followed by alternating cherty beds, blue slates and tuffs. Strike 40°, dip 50° west. Then predominantly well laminated slates.



- ⑫ Laminated blue-grey slates, disposition quite constant (strike 50-60°) dip W 45-65°.
- ⑬ Massive sandy tuffs, alternating with pale-blue cherty layers.
- ⑭ Alternating greywacke-type tuffs (fragment of feldspar, mica, quartz, slates) & small pebbles at intervals, grey or dark, and bluish slates. Tuff beds up to 2 feet thick. Also cherty layers.
- ⑮ Well laminated slates, interbedded with ⑬. Strike 30°, west dip 70°.
- ⑯ Fin-grained greywacke and siltstones; pink feldspar fragments; some coarser layers.
- ⑰ Laminated slates and blue fin-grained greywacke rocks, thin in rather massive layers. Strike 50°
- ⑱ Bands of coarse greywacke, cherts and fine-grained breccia. Strike 30°, dip 65-70° west.
- ⑲ ~~Thin~~ bands of conglomerate of the order of 30' in thickness. Pebbles up to the size of an egg, well rounded
- ⑳ Slates

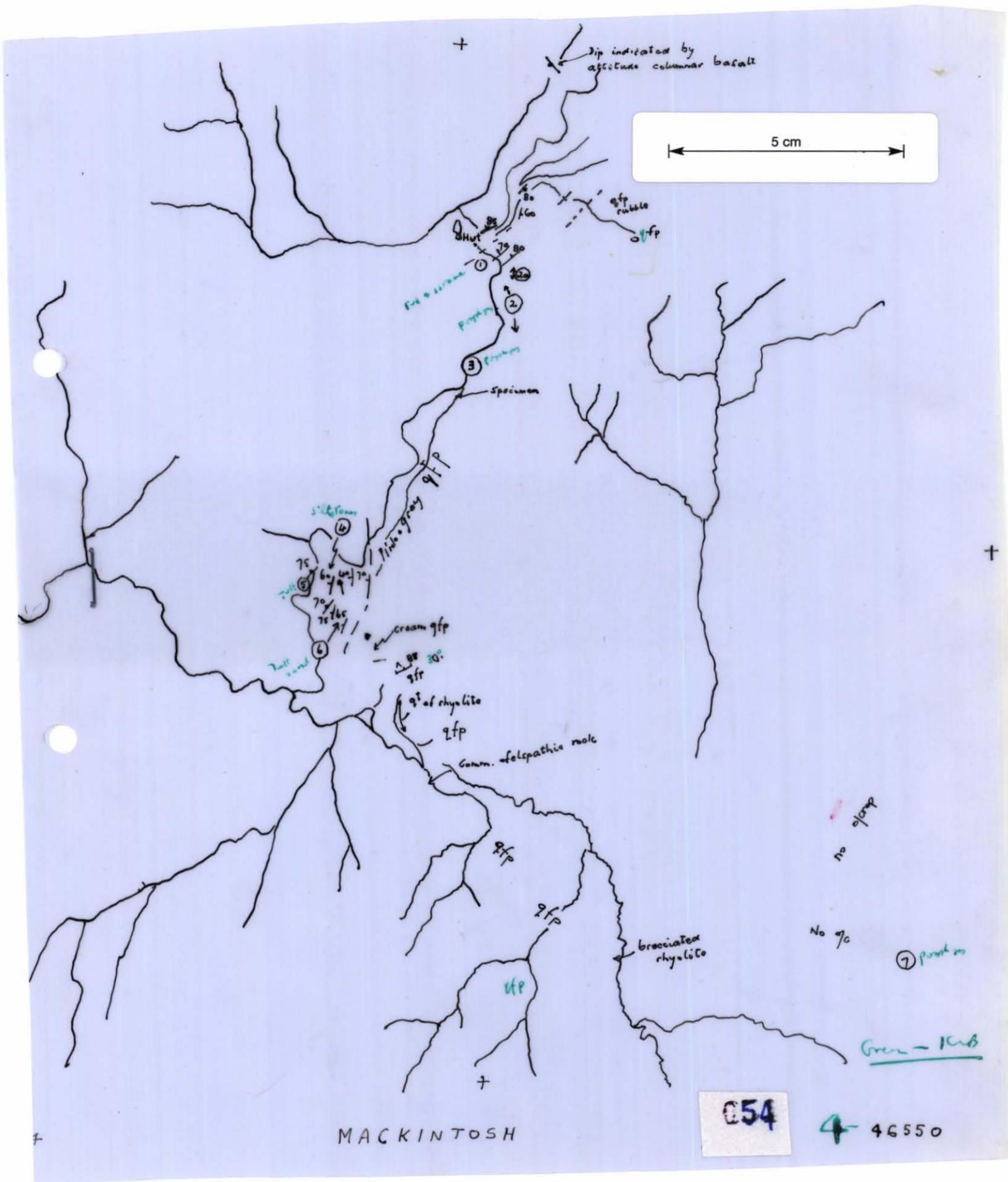
TRAVERSE WEST ALONG CUT LINE FROM BULGOBAC. - D.K. - Dec. 1959.

- 21 Quartz feldspar porphyry - antwote
- 22 " " " " - Rubble in tree roots - believed to be in place.
- 23 Well bedded black slate shale - no cleavage unless parallel in dip and strike to bedding. Str. 007
- 23a " " " " - occurring as scattered rubble on in tree roots.
- 24 Grey + blue slates + fine grained buffaceous quartzite bands, Str. 008 M/d. 58°
- 25 Blue shales - laminated 200' downstream from crossing.
- 26 Dense quartzite 200' upstream from crossing. River boulders are quartzite, conglomerate & pyritic amphibolite.

Maintosh Run 4 46549

Mackintosh Run 4-46550

447049



MACKINTOSHRun No. 4Photo No. 46550M. Solomon

- (1) Cutting in sandstone - tuff with felspar frags., quartz crystals and on east end qfp & fp alternating with sheared shaley beds dipping west. Apparently faulted off at west end cutting.
- (2) Pink qfp, one patch pyritic, massive, qtz. crystals up to $\frac{1}{8}$ mm diameter.
- M. K...
(2a) qfp with inclusions of black and amber slates.
- Solomon
(3) Grey-white qfp.
- (4) Grey shaley silstones with locally fine mica?, regular fine banding, very thinly bedded. Minor faults; drag folds indicate NNW pitch 40° and anticline to East, strike 25/50 - 60W
- (5) Greenish quartz felspar tuff's on east bank, mainly grey finely banded shales on west bank. 45/75W.
- (6) Red weathered tuff interbedded with grey shales 40/65W.
- (7) Pale, grey felspar porphyry, no quartz phenocrysts.
- M. K...
(8) Highle sheared qfp - glacial till overlying these rocks in cutting - suspect occasional fine grained tuff beds in qfp.

058

447052

MACKINTOSH

Run No. 4

Photo No. 46551

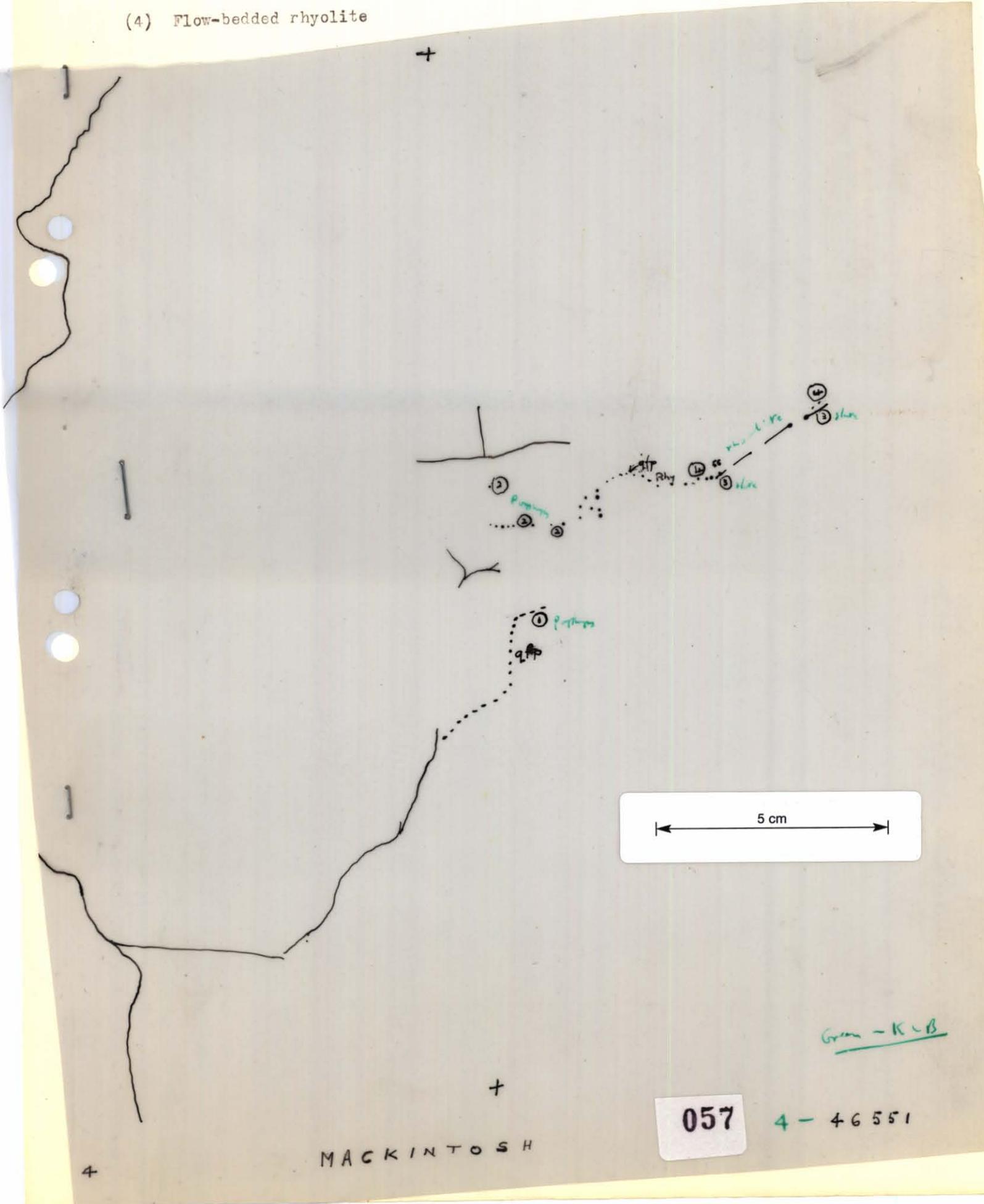
~~D. McK 4/3/59~~

M. Solomon

- (1) Massive grey and pink qfp, quartz phenocrysts largest and up to 7.5mm; most show at least one crystal face.

D. McK 4/3/59

- (2) Do. above
- (3) Black-blue, well bedded slates
- (4) Flow-bedded rhyolite



5 cm

Green - KLB

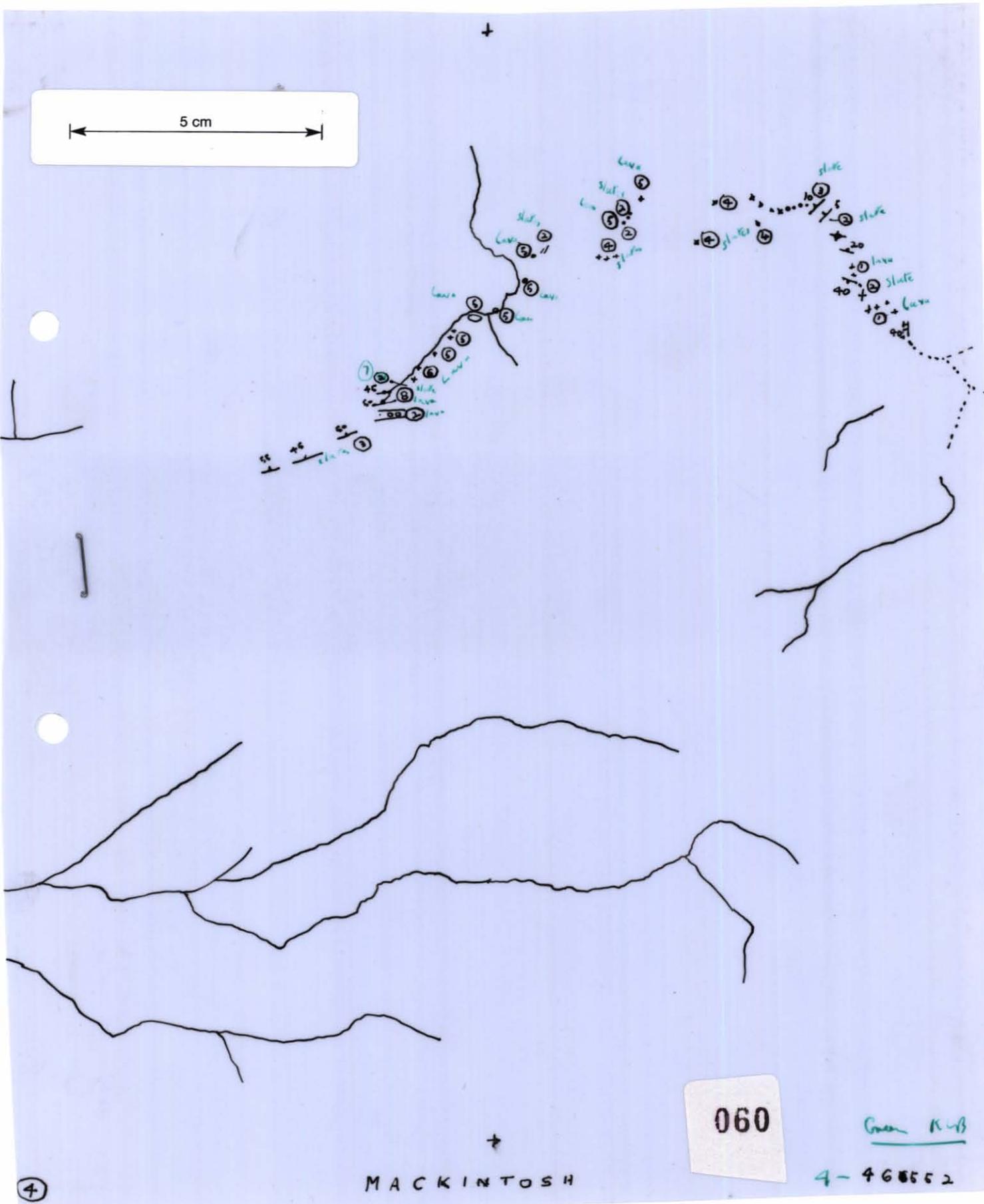
057

4-46551

MACKINTOSH

4

Mackintosh Run 4 - 46552



④

MACKINTOSH

060

Green K-13

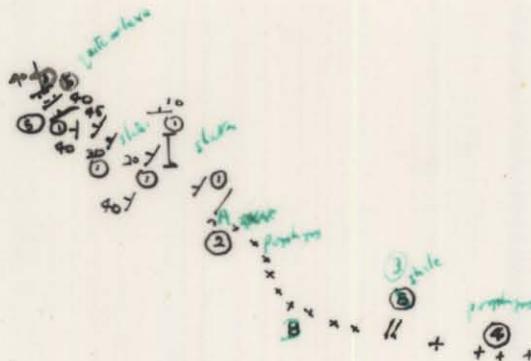
4-46552

- (1) This is the same as photo 46553 - suspect pink rhyolitic lava.
- (2) Dense, poorly bedded black slates - in part micaceous.
- (3) Well-bedded, harder, (quartzitic) black and dark blue slates.
- (4) Blue-green quartzitic rock denser & pyritic - probably same as (1) above.
- (5) Felspar porphyry - blue-black matrix, white euhedra felspar similar to those in cutting at South Bulgobac timber tram hut.
- (4a) Coarse quartz-felspar porphyry - phens. quartz up to $\frac{1}{4}$ " in blue quartzitic matrix. (at times resembles (4))
- (5) Blue coloured felsite-occasionally contains felspar phenocrysts, fine pyrite present.
- (6) Fine grained green dense felsitic lava.
- (7) Green siliceous thinly bedded shales or quartzites.
- (8) Assemblage of rhyolitic lavas showing excellent flow-banding and interbedded granular qfp - specimen of each of these two rock types has been collected.

064

MACKINTOSHRun No. 4Photo No. 46553DMcK 4/3/59

- (1) Cleaved black shale and slate - micaceous in part and can be correlated with those of upper Que River to immediate north. Poorly bedded - but observations indicate 20°T, dip flat west (90% outcrop)
- (2) Yellow decomp. rock, could be tuffaceous or less likely a felsparish rock.
- (A-B) Poor outcrop, this section consists of yellow weathered gritty rocks (felspar porphyry) and occasional fresh outcrops of felspar porphyry in a fine grained felsitic matrix, numerous tuffaceous bands are present.
- (3) Few weathered small outcrops of green shale - presumably within the main porphyry zone.
- (4) This whole zone is essentially a felspar porphyry - felspathic tuff association - no differentiation can be made due to sparsity of outcrop.
- (5) Pinkish white rhyolitic lava or quartzite.
- (6) Dense green lava or quartzite (similar to questionable rock on E. end of Bulgobac S. timber track)



5 cm

RUN ④

MACKINTOSH

063

4 - 46553

447059

57-189

RIO TINTO FIELD WORK
MACKINTOSH QUADRANGLE 44

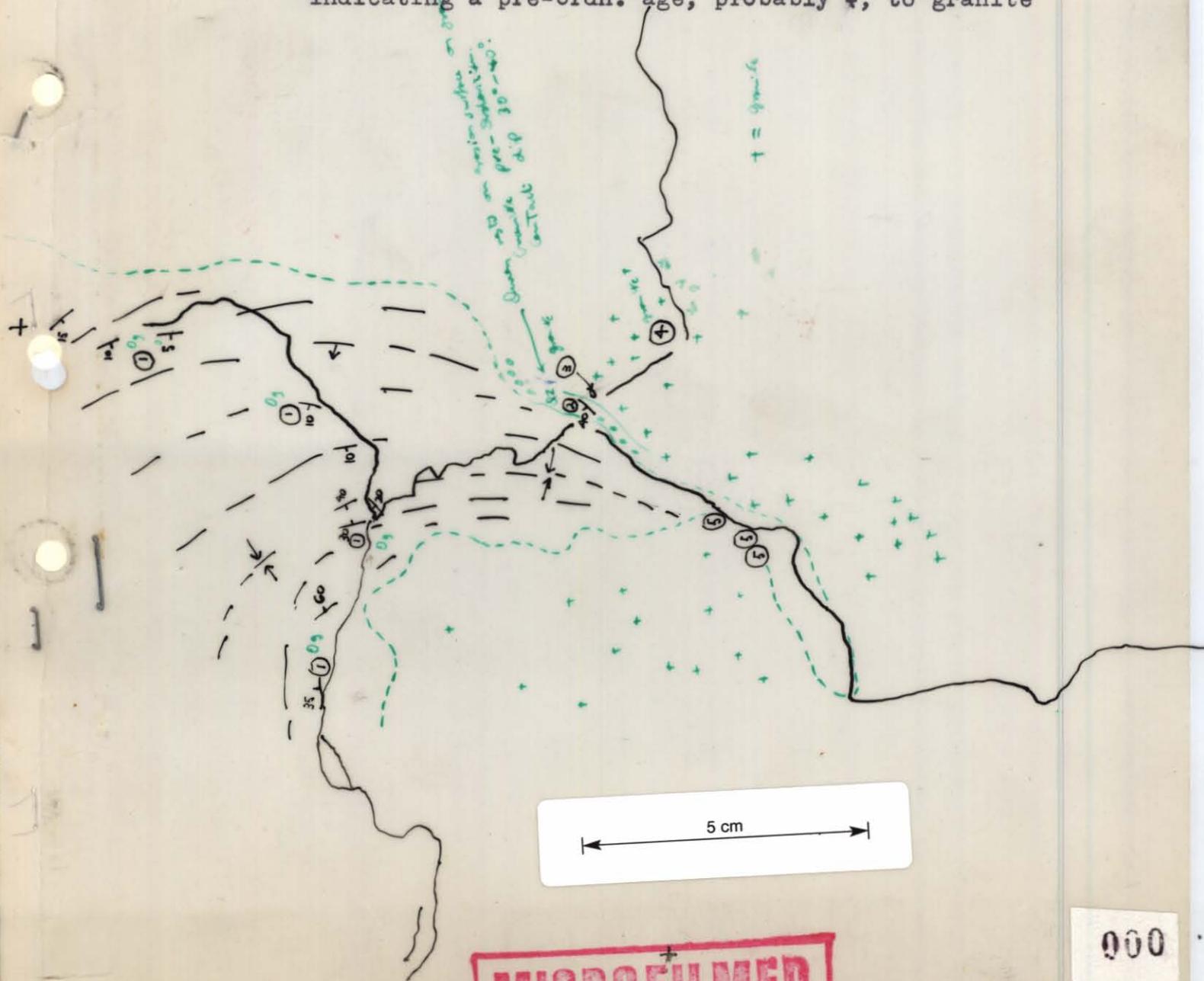
Table of Contents VOL II

Runs 5 - 8

VOL II	RUN NO	PHOTO NO	OVERLAYS		FIELD NOTES			COMPARISONS	
			FINISHED	CHECKED	PRINTED	TYPED	CHECKED	PRELIMINARY	CONTRAST
5		46579.	✓	✓	—	✓			
		46581.	✓	✓	—	✓			
		83.	✓	✓	✓	—			
		86.	✓	✓	—	✓			
		87.	✓	✓	—	✓			
		88.	✓	✓	—	✓			
6		46596.	✓	✓	—	✓			
		97.	✓	✓	—	✓			
		98.	✓	✓	—	✓			
		99.	✓	✓	✓	—			
		46600.	✓	✓	—	✓			
		01.	✓	✓	—	✓			
		02.	✓	✓	✓	—			
		04.	✓	✓	—	—			
7		46628.	✓	✓	✓	—			
		29.	✓	✓	—	—			
		30.	✓	✓	—	✓			
		31.	✓	✓	—	—			
		34.	✓	✓	—	✓			
		35.	✓	✓	—	✓			
		36.	✓	✓	—	✓			
8		48142.	✓	✓	—	✓			
		45.	✓	✓	✓	✓			
		460/A	✓	✓	—	✓			
		49.	✓	✓	—	✓			

- (1) Fine grained, dark-grey limestone. Locally somewhat shaley, bedding variable, often indistinct. Poorly fossiliferous some bryozoa. Appears as a broad assymetric synclinal structure on the eastern limb the bed's (2° - 10° dip) outcrop as cliffs up to 150' in height. Gordon Limestone. Genrally however the the G.L'stone occurs as flat, eroded old flood plains.
- (2) Massive, white f.gr. quartzite ($25^{\circ}/40^{\circ}$ E) passing at base into 2 ft. of m.gr "Owen Type" Conglomerate, i.e. highly siliceous, l.pink, pebbles $\frac{1}{2}$ " - 1"D of quartz, jasper in fine, light yellow pink quartz matrix. Underlies Gordon Limestone. Correlated as "Upper Owen" a generally widespread, thinner deposit, compared with "graben in-filling", conformable with Gordon L'stone in area.
- (3) C. gr. dark-red (varying shades grey and D.green locally) porphyritic - granite. Phenox predominantly qtz. and pink (potash) felspar, with lesser amounts, biotite and ferromags (weathered) - qtz. subhedral 3-5 mm D. fels. euhedral 5-10 mm D. Matrix f.gr. appears inter. in compn. Small(lft.) aphanite basic intrusive in granite (late intrusive phase).
- (4) D. Green variation of (3)

(2) Note Owen Cong. rests at 30° - 40° on erosion surface granite indicating a pre-Ordn. age, probably 4, to granite



001

447063

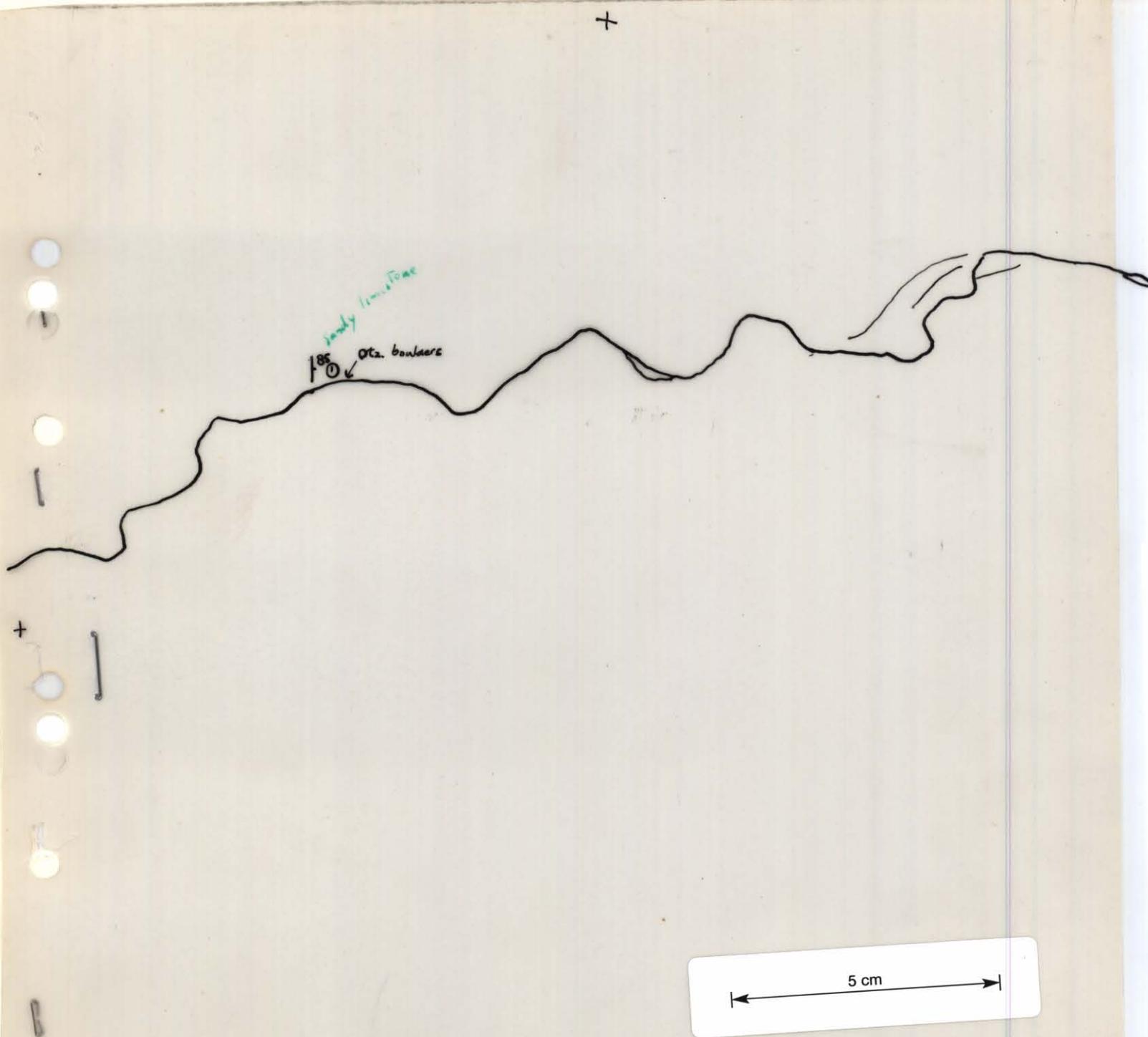
MACKINTOSH

Run No.5

Photo No. 46581

WJA/LH 2/59?

(1) Well-bedded sandy limestone.

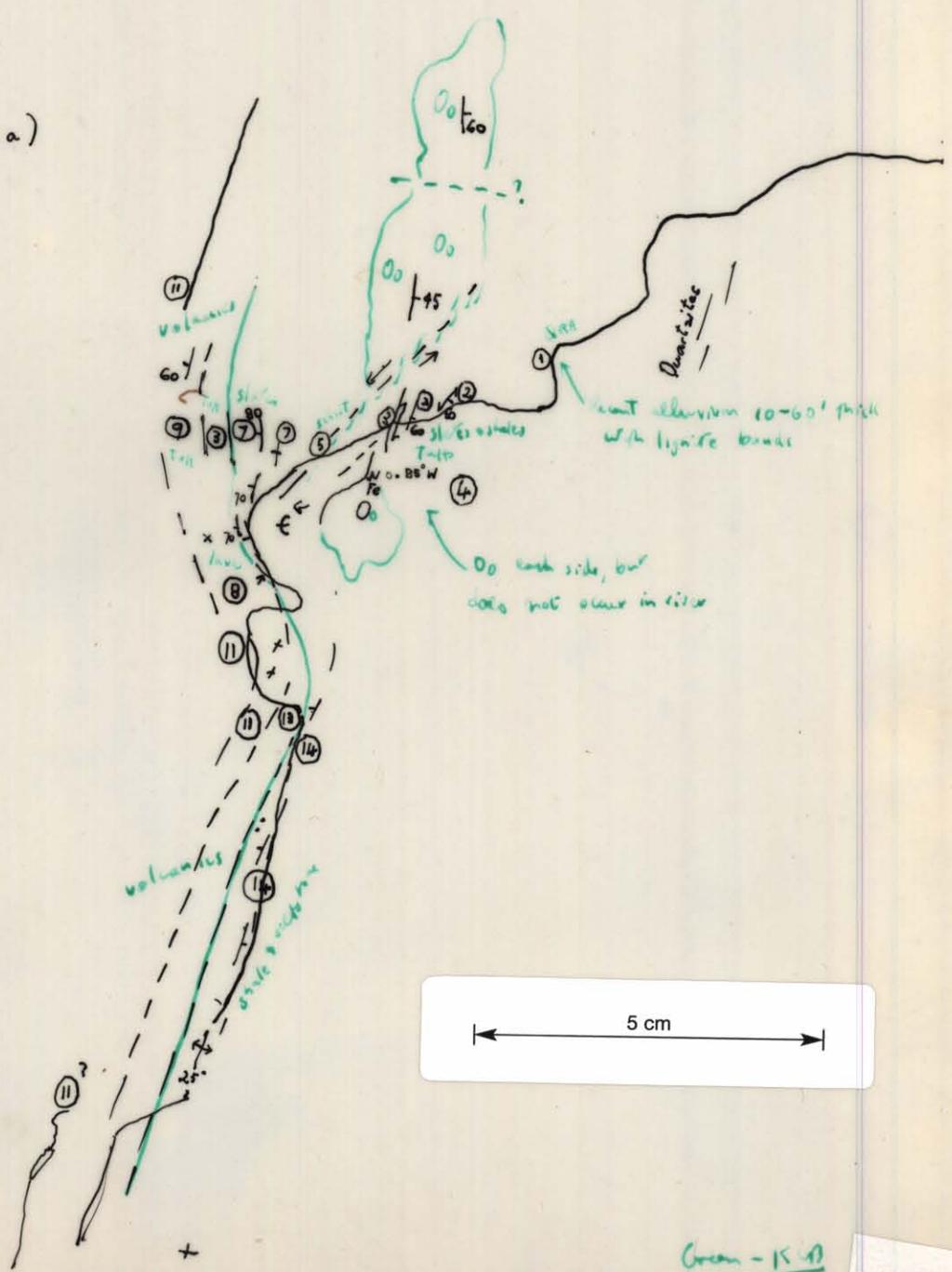


RUN ⑤

MACKINTOSH

Green KUP 0
5-46581

(12) (11) (11a)



MACKINTOSH

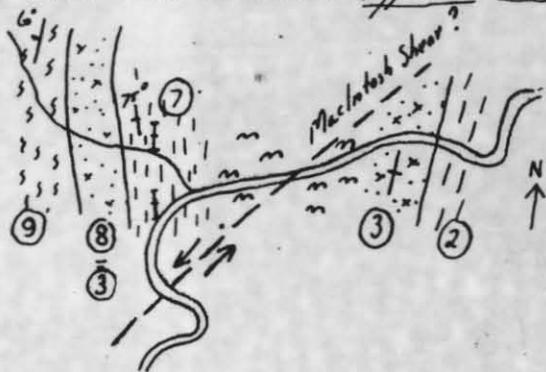
Green - 15.11
5-46583

006

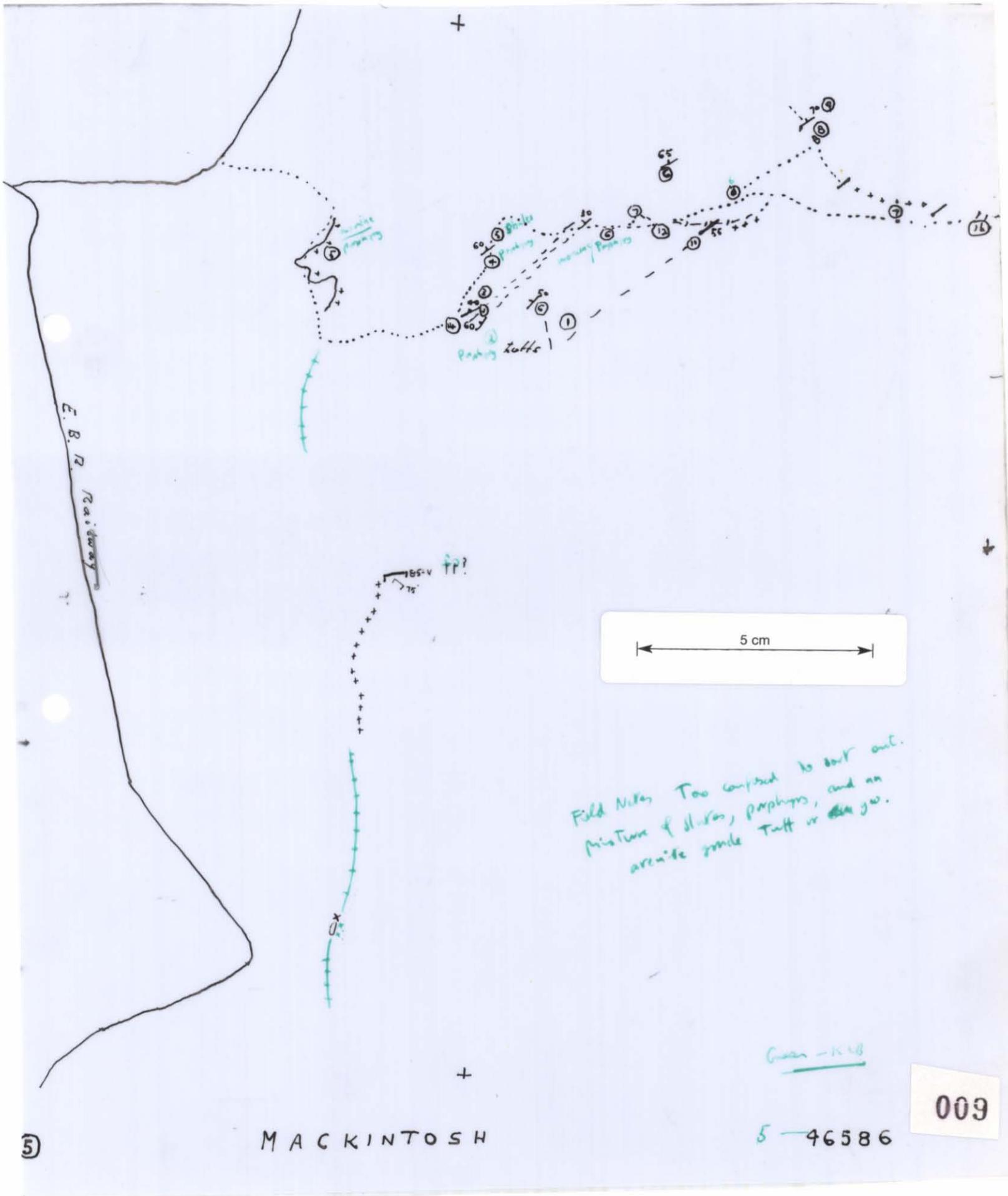
- ① Recent alluvium. Coarse partly consolidated conglomerate with fine clays and lignitic bands indicating periods of quiet lacustrine sedimentation. 10-60 ft. thick.
- ② C.f. ⑦-6/46602. A sequence of f. gr. clastic sediments, partially altered. Predominately slates and shales with siliceous gneiss and schist bands. Bedding obscure but generally east. Locally pyritized in gneisses.
- ③ Quartzite boulders. Possibly in situ. ④ Dundas elastic and pyroclastic sediments, dipping vertically or west. C. gr. greywacke, tuffs, slates, gtz-schists passing upwards into predominately slaty sequence. c.f. ⑨-⑩ 6/46602. Possibly some f. gr. lavas showing brecciation and gtz. veining with minor Fe & Cu sulphide min³⁰ and haematite. ⑤ Qtz-mica schist. ⑥ Slates and shales.
- River does not intersect O. Cong. although boulders occur + Owen outcrops as mts. on either side of valley
- ⑦ Black-d. grey cleaved, highly fissile slates (some members laminated l.d. bands) Bedding well defined 330°/70°-80° N. Cleavage almost vertical, at 30° E of bedding.
- ⑧ A varied sequence of f.-m. gr., green, siliceous lavas, fine tuffs and indeterminate siliceous rocks. Minor Qtz. veining and pyritization. Correlated with ③, displacement due to faulting (MacIntosh Shear?).
- ⑨ F. gr., d. green-grey granular rock with v. faintly defined schistosity. Siliceous with much secondary dark mica. Hesitantly defined as "micaceous-tuff" 10°/60° W.
- ⑩ F.-m. gr., massive siliceous green lava. Minor interbedded tuff bands and some porphyritic patches.
- ⑪ A gradational change from ⑩ to ⑪ in which the lavas assume a more intermediate and porphyroidal character. Massive, no bedding, some shearing effects, generally shades of green. Phenox generally altered felspar. "Assimilated" xenoliths visible on weathered surfaces. Typical M.P.
- ⑫ Glacial material appears on ridges. ⑬ Quartzite. L. grey.
- ⑭ D. grey shales and siltstones, + quartzites, interbedded, beds 6"-1ft.

Facing W. (O'turned dry fld. assuming major syndinal struc.)

Mac. Run 5
46583



Mackintosh Run 5- 46586



5

MACKINTOSH

5-46586

009

MACKINTOSHRun No. 5Photo No. 46586

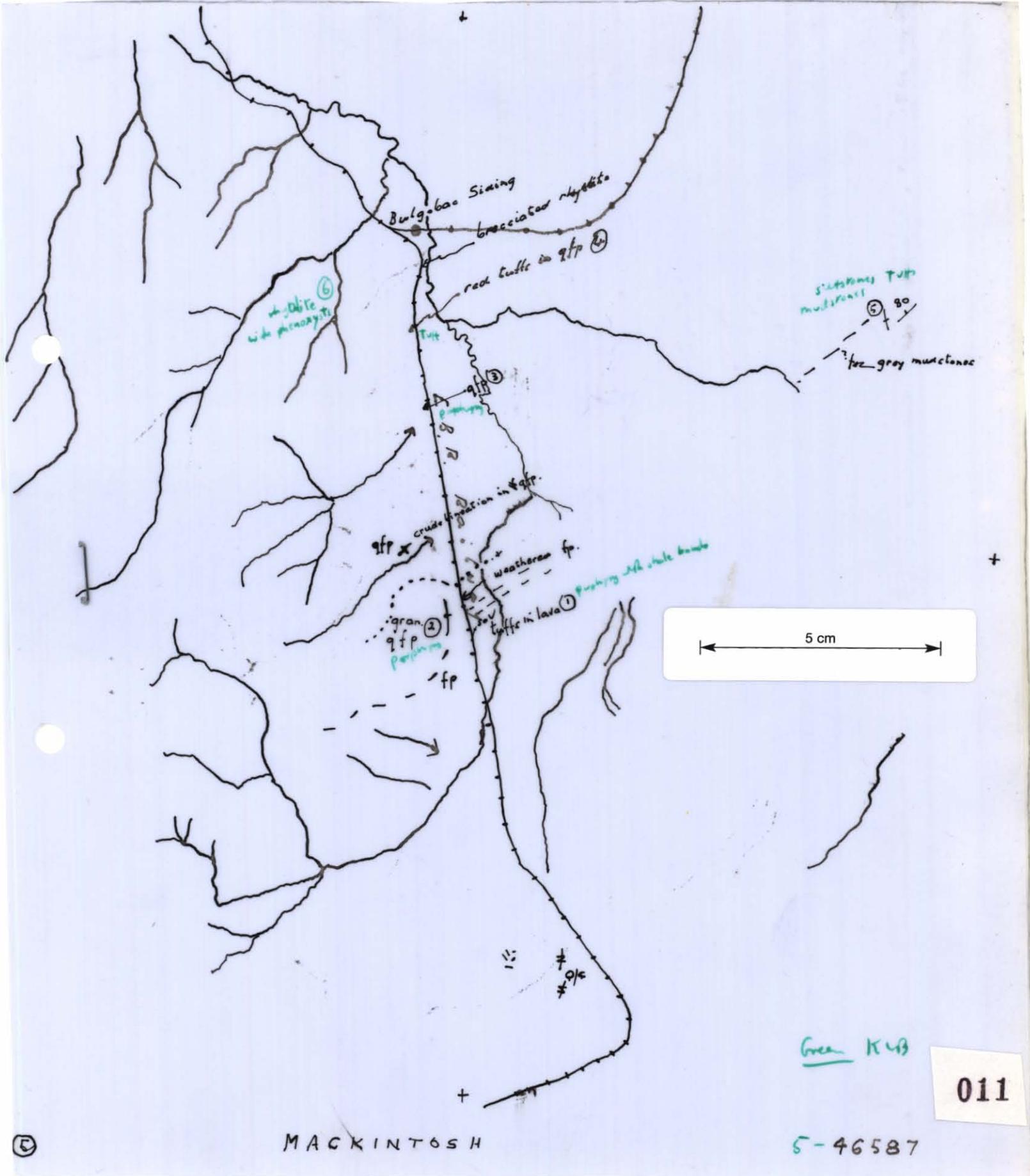
Solomon/

- (1) Near, and at, top of haulage; massive blue-grey quartzitic silstone (?). No bedding. Has a somewhat igneous-like appearance.
- (2) Pink felspar porphyry, approx. equigranular. Mainly pink and grey felspars

DMcK.

- (3) Light-coloured shales, sandy shales, white fine-grained sandstones.
- (4) Decomp. felspar porphyries (?).
- (5) Felspar porphyry.
- (6) " " covered with glacial moraine.
- (1) Black-blue f/g y/m containing anhedral of chlorite and kaolin - band approx. 30" wide in sed.
- (2) Rubble of poorly bedded sandy shales - pale pink and cream.
- (3) Shales - unusual colours of pastel pinks, tans, creams and occasional black.
- (4) Black and pale grey slates and dense quartzites - bedding poor.
- (5) Massive grey and cream shales.
- (6) Rubble of white shales and silts.
- (7) Rubble of (1)
- (8) Grey-green coloured massive quartzite or lava in creek bed (o/crop)
- (9) Well-bedded black slate - a specimen of banded tuffaceous rubble from here.
- ((7)) Rubble of felspar porphyry.
- (11) Black well-bedded slate and sandy tuff.
- (12) Dense, blue-green f/g rock. Either a lava or qtz. (micro deterrn. required) with occasional porphyry.

Mackintosh Run 5- 46587



©

MACKINTOSH

Green KLB

011

5-46587

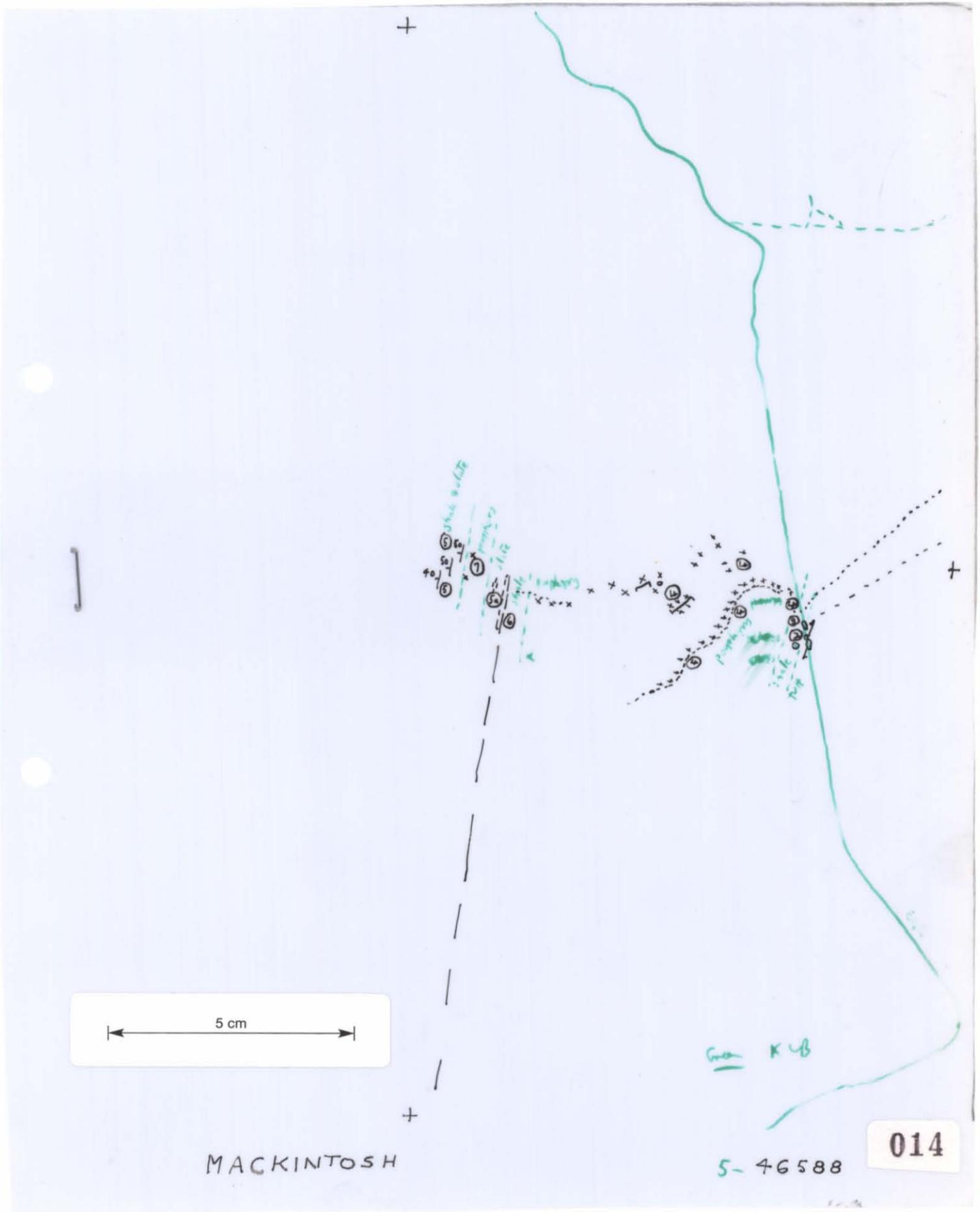
MACKINTOSHRun No 5Photo No. 46587

MS (?)

- (1) Pale grey fp with many amygdales lined with dark chlorite and filled with quartz (opaline). Parallelism of amygdales roughly horizontal. Interbedded with grey shales and coarse tuffs striking 20° /st either way. 50° N to shales with cleavage $40/80$ SE and steep bedding of similar strike.
- (2) West of (1), hills are composed of green to white qfp, massive and generally featurless but locally with wispy chlorite banding. Quartz phenocrysts up to 5 mm, larger than feldspars, some rounded, others with xl. faces. Minor quartz veining.
- (3) Qfp with albitisation.
- (4) Reddish tuff bed about 20' thick in qfp, tuff shows fine lapilli and shards green devitrified glass or chilled lava. 25° /~~st~~ Between here and Bulgobac, qfp often creamy and white, typically rhyolite, variable quartz content, locally brecciated with fine rhyolite frags. in coarser matrix/
- (5) Grey silstones, cherty mudstones, tuffaceous sandstones poorly bedded.
- (6) Fine grained, chert -like, rhyolite with quartz phenocrysts.

Mackintosh Run 5 - 46588

447073



5 cm

MACKINTOSH

KLB

5-46588

014

MACKINTOSHRun No.5Photo No. 46588DMcK March 59

- (1) Assorted felspathic tuffs and amygdaloidal lavas in railway cutting - attitude uncertain.
- (2) Assemblage of well laminated weathered silstones and shales. Intensely contorted - general strike only possible at $20^{\circ}T$. Prominent cleavage and strike of disturbance at $25^{\circ}T$ - ((2)) & ((3)) together total 220' wide. Both (1) & (2) are part of Bulgobac E.wood line bedded series- as exposed near hut at timber loading stand.
- (3) Black, poorly bedded shale of the same bedded zone.
- (4) Qfp pale apple green matrix- quartz phenocrysts often up to 5 mm.
- (5) Black and green well laminated shales and slates. 12 strikes are $15^{\circ}t$, variables dip to west.
- (5a) Rubble of black slate on bank of swampy creek.
- (6) Green shale rubble on prominent ridge - some is outcropping, but attitudes could not be measured. This shale resembles that within the porphyry zone in a small creek immediately North of Pinnacles E-W Track.
- (7) Composite specimen of qfp and shale showing conformable relationship.

MACKINTOSH

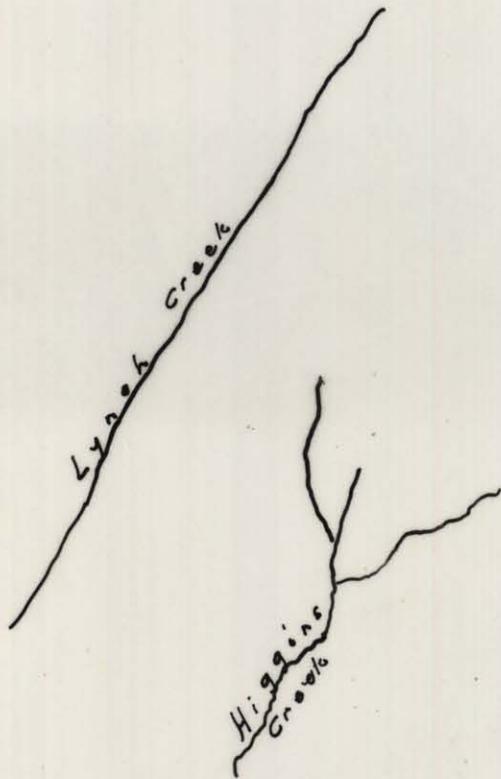
Run No. 6

Photo No. 46596

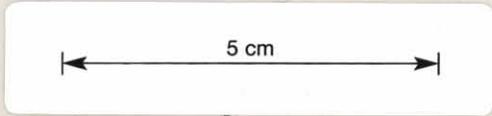
Solomon. (?)

(1) Ridge of quartz felspar rock, irregular texture, massive.

+



+



+

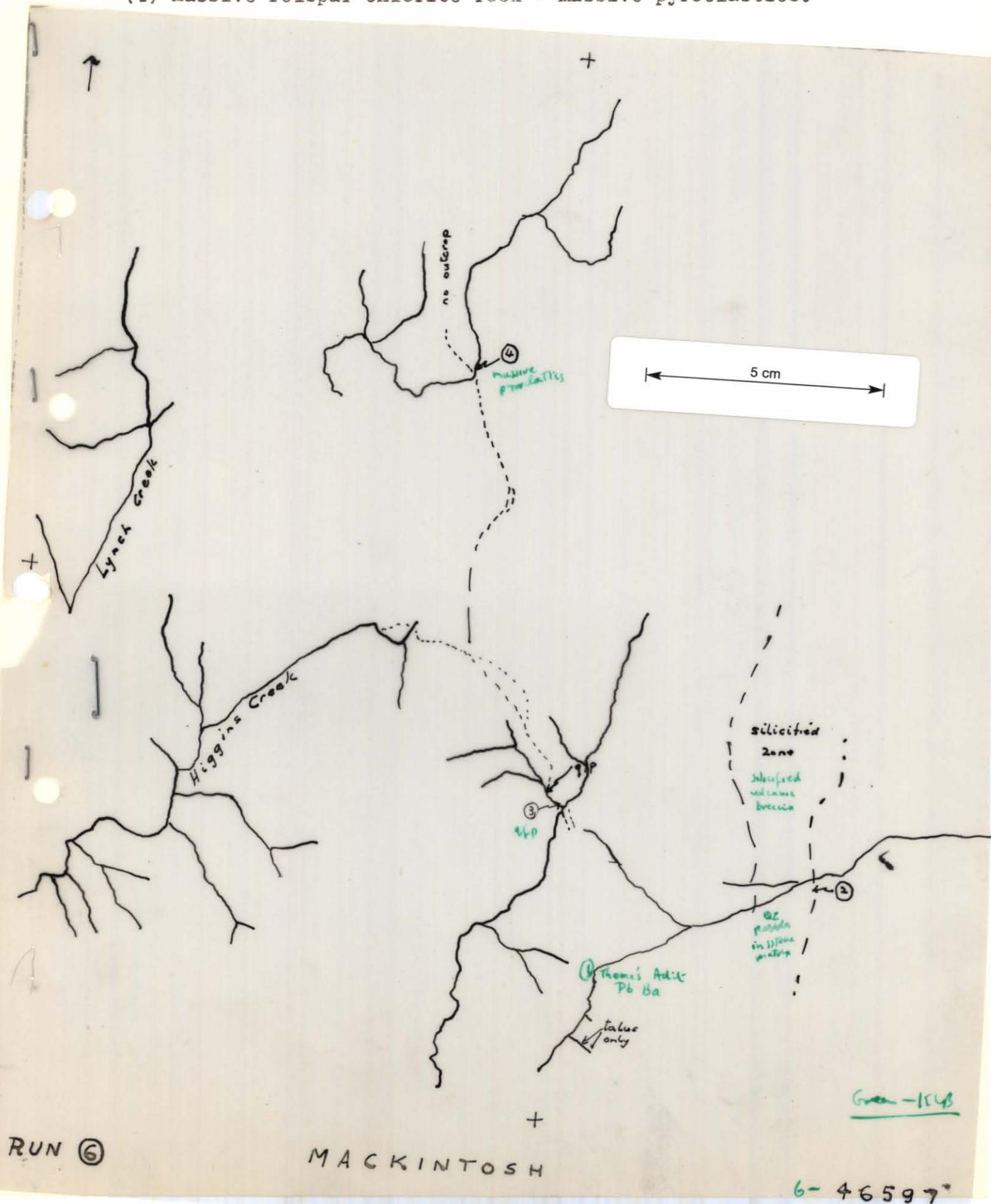
MACKINTOSH

6-46596

017

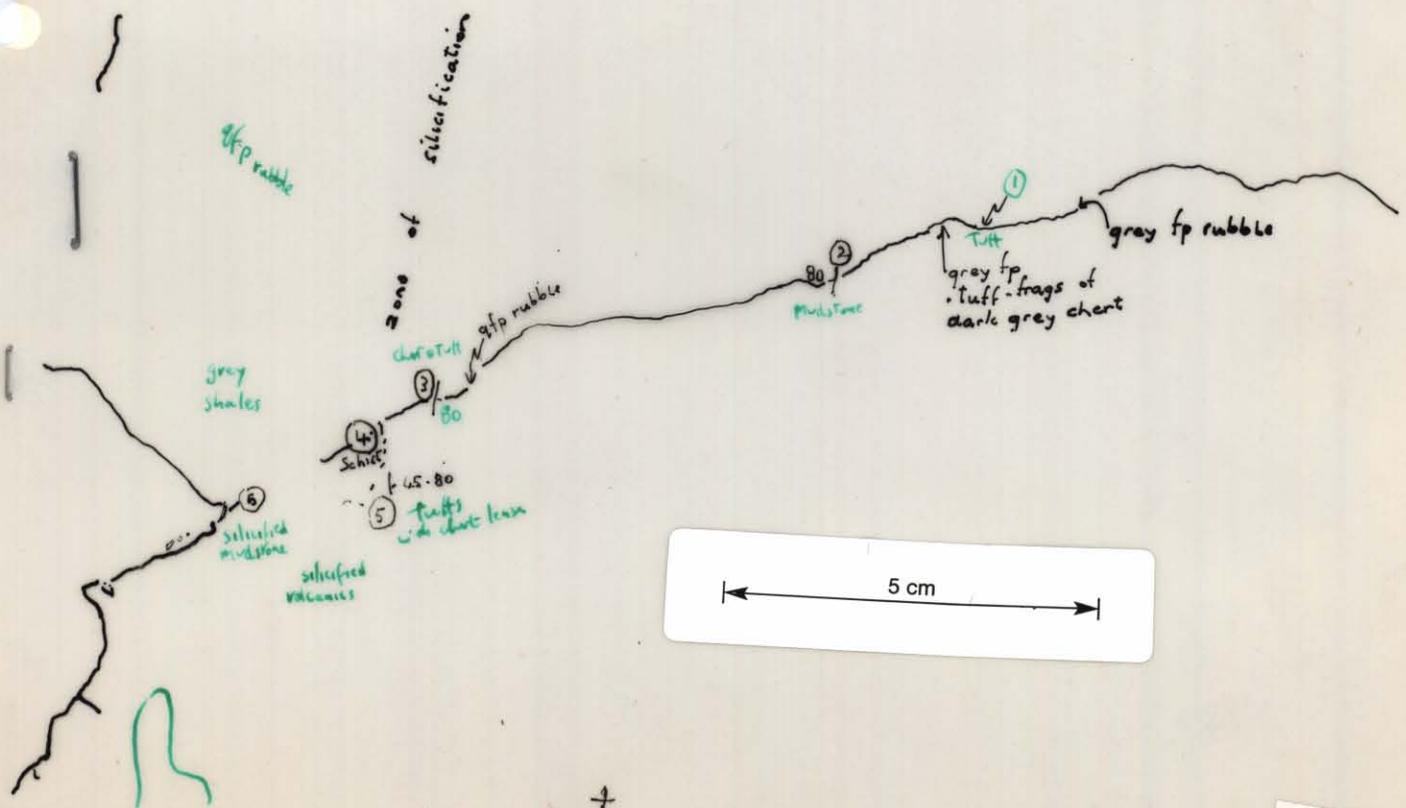
MACKINTOSHRun No. 6Photo No. 46597Solomon ?

- (1) Dump, Thomas' adit. Galena in quartz - sericite/barytes schist; some pyrite. Host rocks creamy qtz - sericite(?), schist.
- (2) Silicified volcanics, massive, brecciated appearance. In part a clear conglomerate breccia with rounded frags of quartz in a quartzose matrix (silicified volcanic breccia)
- (3) Marionoak Creek exposes massive medium grained quartz felspar rock; further upstream north west in tributary creek, qfp exposed.
- (4) Massive felspar chlorite rock - massive pyroclastics.



MACKINTOSHRun No. 6Photo No. 46598Solomon (?)

- (1) Grey-buff sandstone tuff, faint banding.
- (2) Pale grey finely banded mudstones (not Miners Slates), banding shown by colour changes, To East; mixture of mudstones, very felspathic tuffs, felspar porphyry (?) 20/80W.
- (3) Alternation grey chert, sandy tuff, fine banding (10/st-v) To East; weathered white qfp.
- (4) Massive, grey-buff altered igneous rock; development sericite. Some pyrite. To West; sericite schist and lenses chert and mudstone. Near belt of trees spot mineralisation of pyrite - quartz in some schist; pyrite largely leached to give rock a vesicular appearance.
- (5) Siliceous (silicified) mudstone of obscure bedding.



MACKINTOSH

6-46598

023

447083

- ① Massive albite-chlorite rock, brecciated appearance, fragments finer grained than matrix
 ② Isolated hill of gray-brown quartz schist or altered sandstone, heavy quartz veining. Shearing irregular but generally about 20° strike, otherwise featureless.

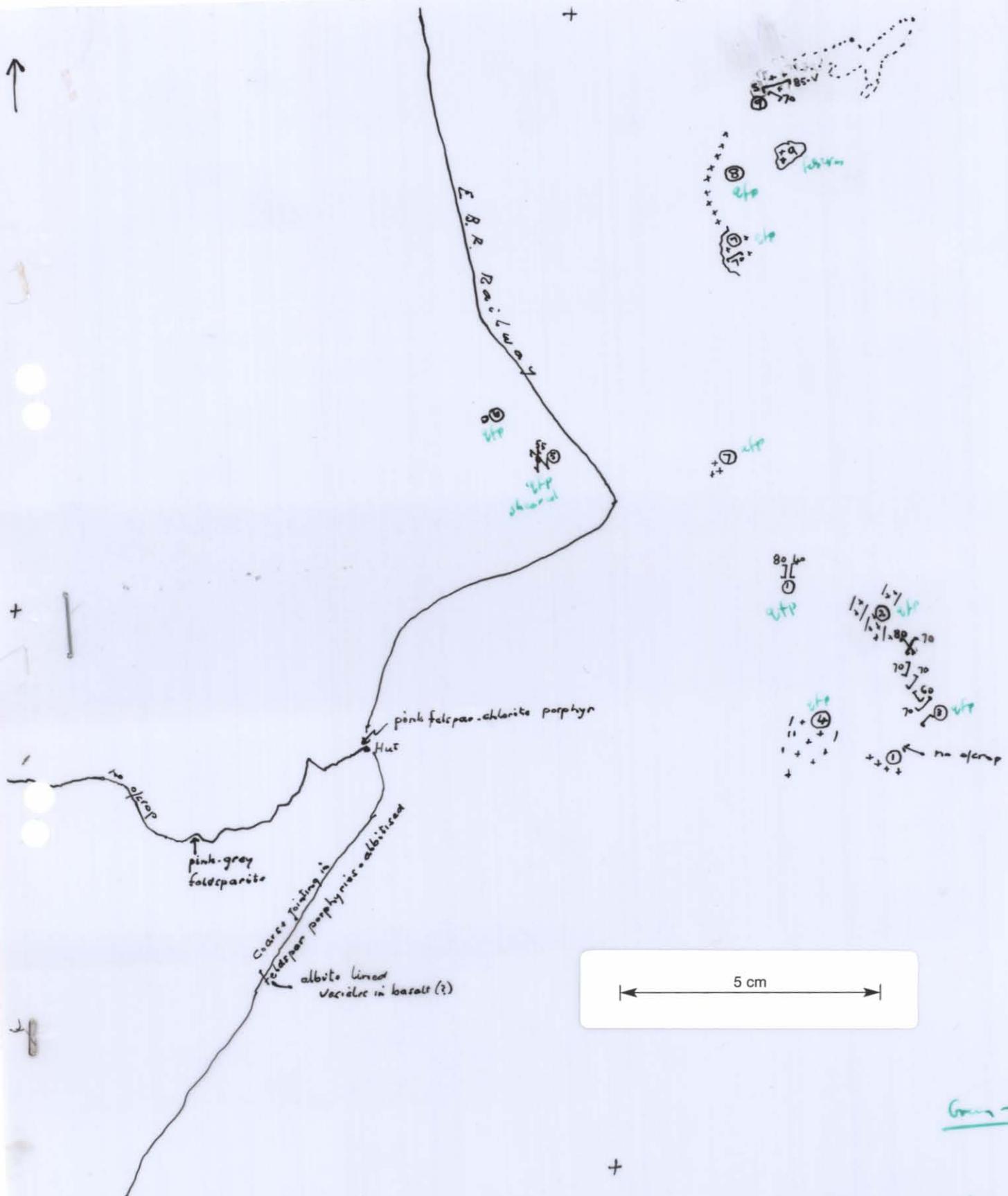
③ Massive albite-chlorite rock, as in ①.

Dusk. March '59

- ④ Alternating fine grained laminated blue-green quartzitic shales & fine grained laminated green tuffs, rhyolitic lavas or volcanic dust.
 ⑤ Black & green siliceous shales & pale green quartzites, well laminated & containing tuff bands. (specimen)
 ⑥ Well laminated black & green shales - friable - (Str. 040° T dip 60° W.)
 ⑦ Milk-white porphyry & coarse elastic, ^{basalt} felspathic & containing rounded quartz particles & pebbles up to 1" of chert suspect graywacke agglomerate (specimen)
 ⑧ Black, well-laminated slate.
 ⑨ Same as ⑧ & containing pyrite (specimen)
 ⑩ Laminated fragmental rock, medium grained tuff or felspar porphyry.
 ⑪ Blue, silty sandstone, poorly bedded and containing tuff bands
 ⑫ Green tuffs and green shales - latter well laminated for 200', then blue, black & green shales & quartzites
 ⑬ Mainly tuffs, but a spec. of tuffaceous conglomerate, ^{contains} silica pebbles (up to 10") in a tuffaceous ground mass.
 ⑭ Pale green, cherty, thinly laminated shales & fine tuffs (similar to ④ above)
 ⑮ Medium grained (2mm.) sometimes - weathered tuffs.
 ⑯ Coarse fragmental graywacke (quartz porphyry) - similar to ⑦ above - (specimen) containing pebbles of felspar
 ⑰ Pale pink-green rhyolitic lava showing flow lineation (specimen)
 ⑱ Quartz porphyry (specimen).
 ⑲ Micaceous, gritty laminated tuff
 ⑳ Pink-green, fine grained rhyolitic lava. Str. 000°, d. 45° E - also questionable porphyry type containing felspar phenocrysts
 Specimen taken of most abundant type
 ㉑ Coarse quartz-felspar porphyry (Quartz phenocrysts up to 2mm. diam.)
 ㉒ Laminated green shales within and apparently concordant with quartz felspar porphyry.
 ㉓ Rubble of weathered shales and fine-grained sandy tuffs - belongs within "bedded" sequence

Mac. 6/46599

027



RUN 6

MACKINTOSH

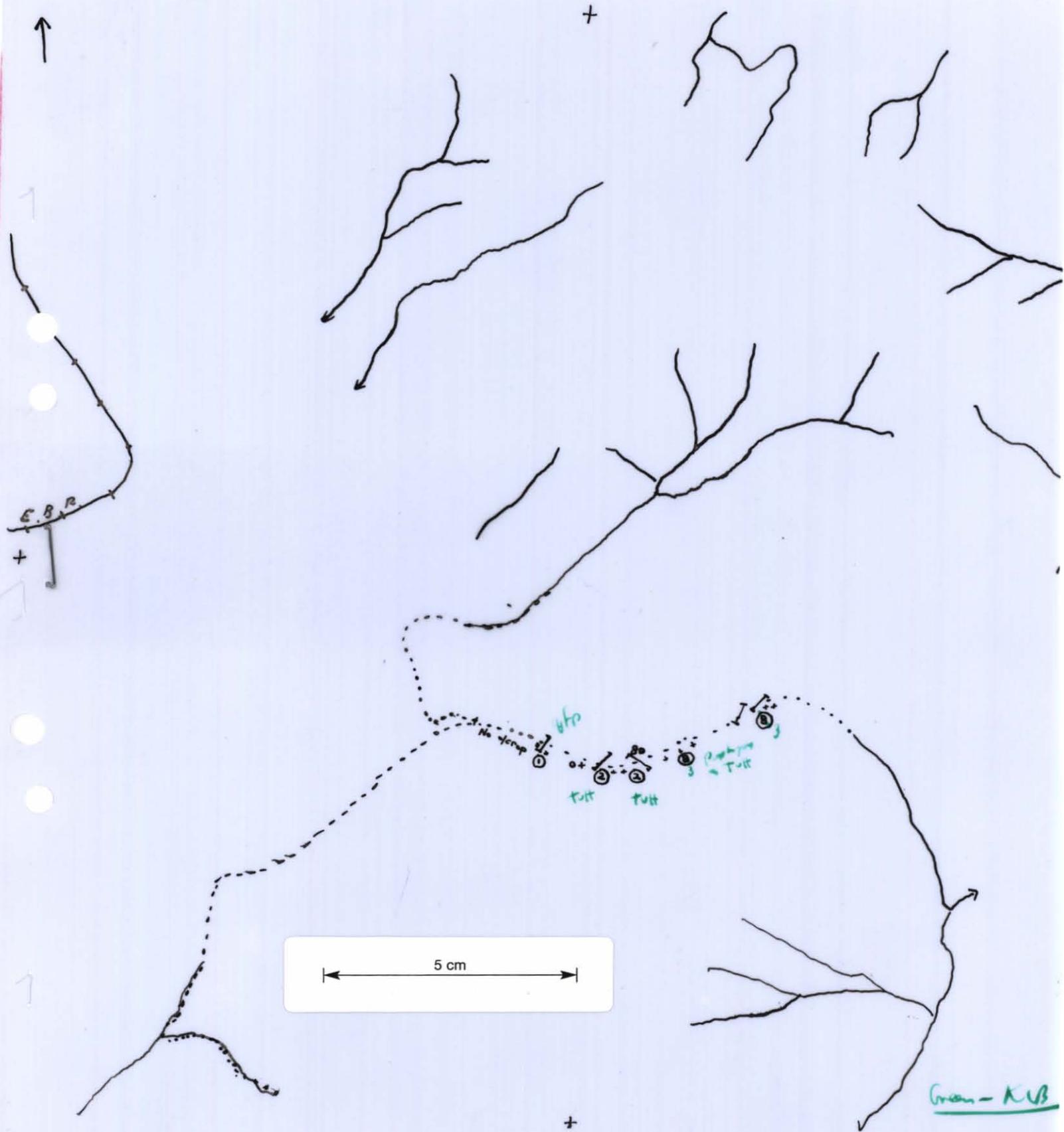
Green-K.B.

6-46600

MACKINTOSHRun No. 6Photo No. 46800DMcK March 59

- (1) Felspar quartz porphyry in green-blue matrix - two lineations both Str. 5°T, dip 40°East and 80°West.
- (2) Do. above - when phenocrysts absent, rock resembles a green-blue dense quartzite (similar to Bulgobac E timber track) also bedded tuffs seen in rubble between ridges of o/crop.
- (3) Dense apple green and pale-blue cherty quartzite or chilled lava - extremely fine grained, no bedding, therefore assume lava.
- (4) Felspar quartz porphyry in pale green/^{flg}matrix-some examples contain small flecks of chlorite in felsparite rock - possibly a more basic segregation.
- (5) Schisted-sheared siliceous lava or porphyry-schistosity quite strong-possibly a fault zone.
- (6) Weathered pale-green porphyry.
- (7) Pale green felsitic lava type (resembles a quartzite) with occasional small(1 mm) quartz phenocrysts.
- (8) Rubble of (7) & (9).
- (9) Flesh-pink (felsparite)? containing green chlorite phenocrysts and pale green felsites - one merging into the other.

Mackintosh Run 6 - 46601



RUN 6

MACKINTOSH

6-46601

Green - KVB

MACKINTOSHRun No. 6Photo No. 46601DMcK March 59

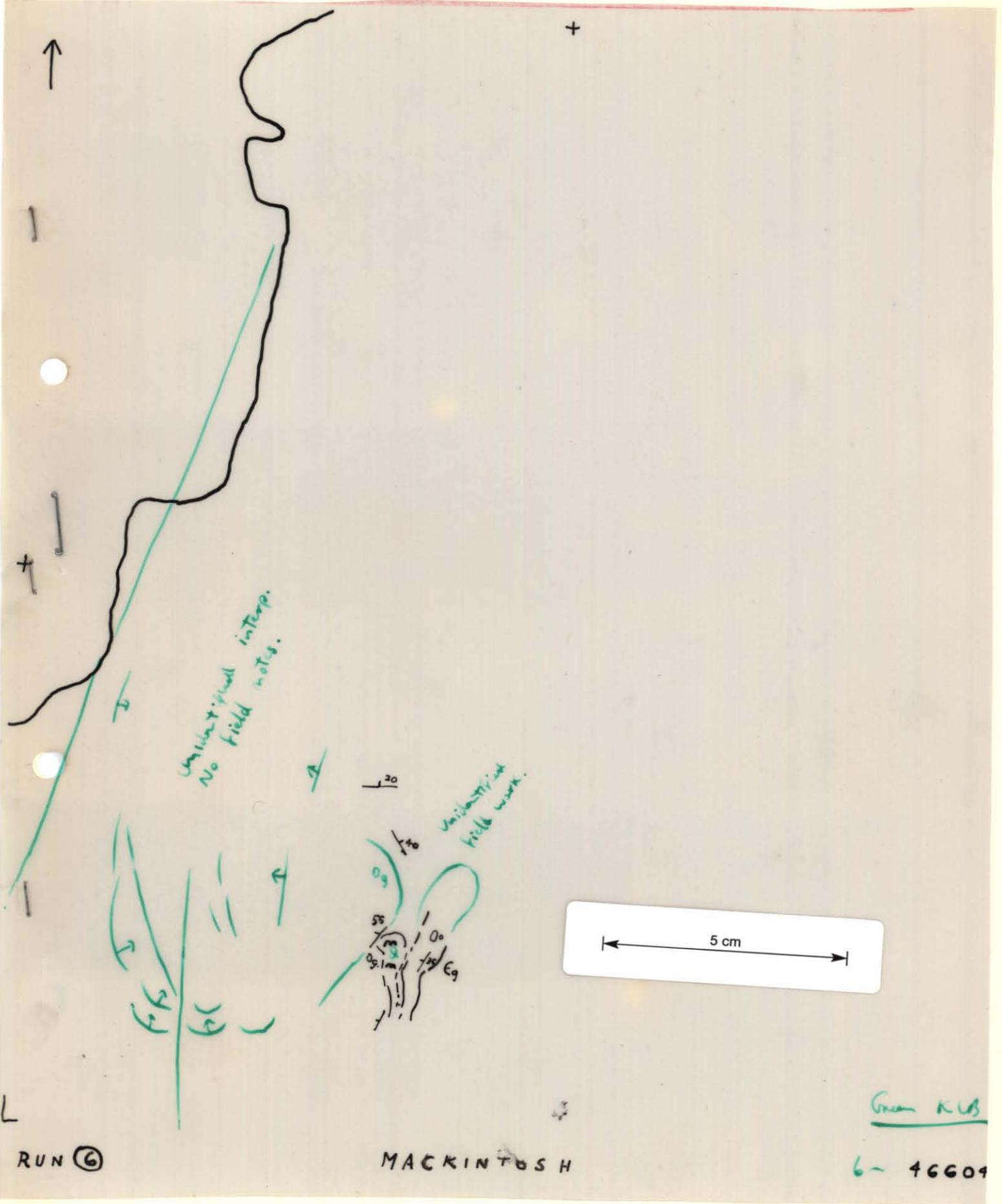
- (1) Felspar quartz porphyry - pale blue matrix.
- (2) Dense, apple green quartzitic lava or ash stone.
- (3) Felspar porphyry in green blue fine-grained quartzitic matrix.

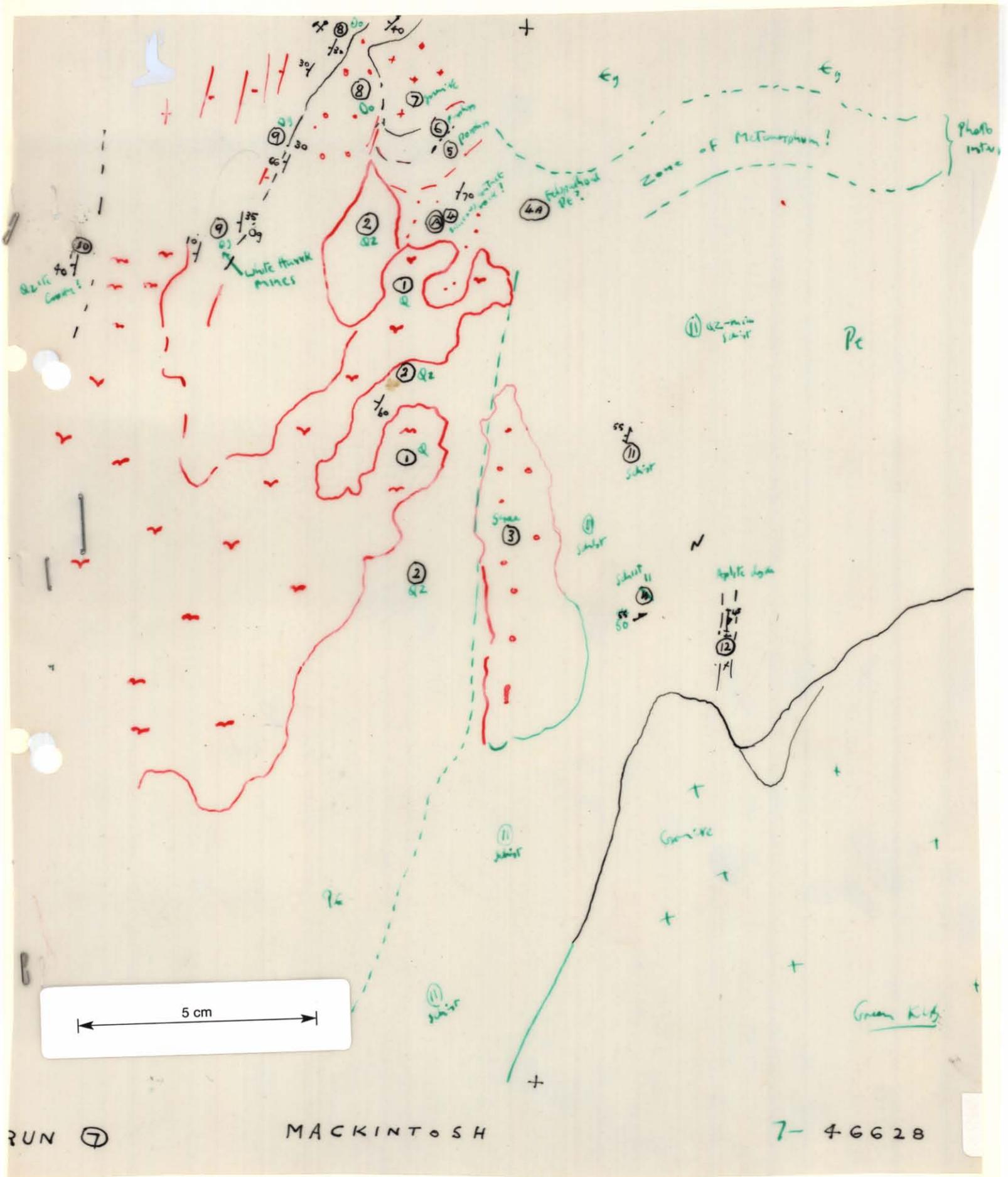
447091

- ① Blue-green, schistose qtz-fels-porph. Qtz. phenocrysts 2-5 mm. Weathers red. Typical acid Dundas "porphyroid".
- ② Somewhat finer, more felspathic variation of ①.
- ③ Generally more massive, l. grey-green felspar-porphyr. Form erosion resistant ridge. Minor local variations in gr. size and amount of shearing. Fels > Qtz. Apparent fmg. content weathered out leaving iron-stained voids.
- ④ Massive, f. gr. l. grey quartzite. Impregnated w/ qtz veins. Bedding almost absent. Varies in width (100' @ A - 20' @ B). Forms prominent strike-ridge. ~~Forms~~ ^{forms} prominent strike-ridge. ~~Forms~~ ^{forms} prominent strike-ridge. ⑤ Ora. Alluvial terraces and flats of "old" MacIntosh R. Rejuvenation - approx 20' uplift. ⑥ Scree.
- ⑦ D. grey, slightly pyritic slates interbedded with minor grey quartzite beds. Highly cleaved except where rare sandy types occur. To east grades into completely slaty ^{shale} sequence. Facing east. (current bedding.) Where bedding visible finely laminated. Not graphitic generally l. shades of grey. Dips vertical, possible isoclinal folding. ~~Forms~~ ^{Amber St.?} ⑧ Weathered, schistose qtz-fels-porph.
- ⑨ l. grey sericitic slates passing downstream into a highly weathered and altered sequence of f. and c. gr. felspathic and quartzose tuffs and interbedded ashstones? Cleaved and contorted.
- ⑩ Grey slates (ashstones?), qtz-chlorite-schists, qtz-schists, greywacke-tuffs, sheared, c. gr. agglomerates etc. generally narrow and interbedded. i.e. A dynamically metamorphosed interbedded sequence of sediments of pyroclastic origin, eg. tuffs, ashstones → schists, slates. ↑ 7:1:59 H.I.A. & L.H. ↑
- ⑪ Massive fels-porph. d. green. Phenox fels. pink 1-3 mm. in green aphanitic g.m. Minor amt. epidote, qtz. and chloritized fmg. Dundas.
- ⑫ Friable, grey, f. gr. impure qtz. sst. ⑬ l. green typical M.P. An altered, f. gr. inter lava, massive. ⑭ Pierces Reward Cu. Minor CuFeS₂ min² of quartz veins in coun. rock of ^{qtz} quartz-sericite-schists. Some minor oxidized min² of schist. Lode 30°/75° W. Min² close to boundary i M.P. ⑮ Dundas sed. A sequence of grey slates, quartz-schists, green chromiferous schist. Moving E pass into dominantly slaty sequence. Slates well exp. along river. Approx thickness 400 ft. Pyritic.
- ⑯ Somewhat sheared d. green qtz-fels-porph. ⑰ Quartzite boulders, possibly in situ. ⑱ Qtz-mica-schist. ⑲ M.P. Generally green med. grained inter. and basic felspathic porphyroids. Phenocrysts 1-3 mm. N.B. Revise. 15a. Green-chromiferous schist for 200 ft. E of Pierces Reward. (15b) Grey-black slates along river = Farrel Slates?

Mac. 6/46602

035





RUN ⑦

MACKINTOSH

7-46628

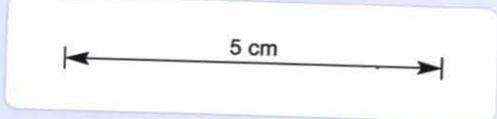
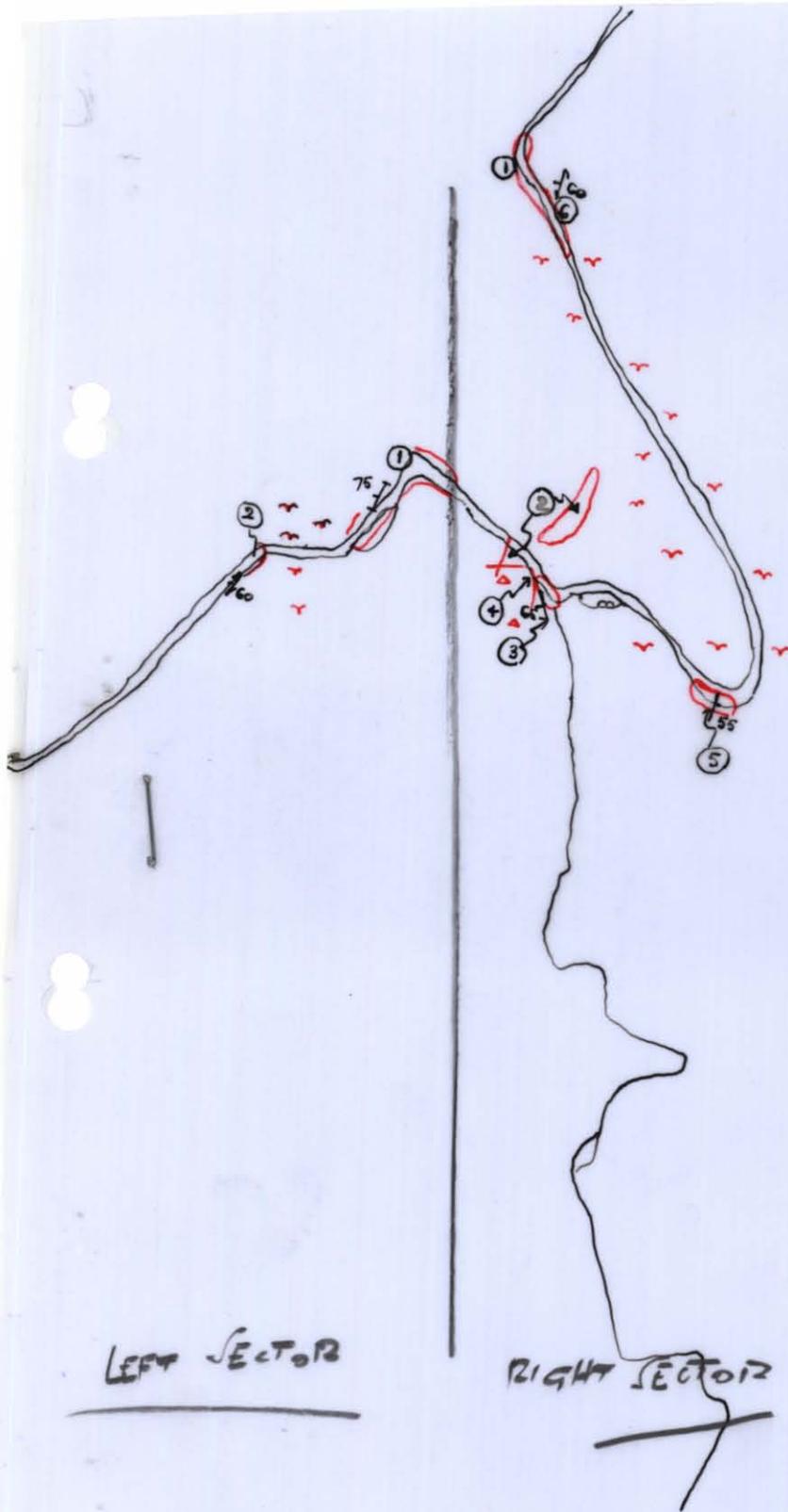
- ① Recent, moraine?, peat and alluvial cover. ② h. grey-white quartzites, some iron staining. Bedding ill-defined. Minor micaceous members generally schistose. Pre-Cambrian, Carbone? Group. ③ Scree.
- ④ Green, somewhat granular siliceous rock, possibly some mica. Much pyrite present as disseminated grains and aggregates throughout the mass. Weathers to fine l. yellow-grey cherty looking material. (A) Believed to be a contact metamorphosed quartzitic rock or fine gr. silica. Altered (+ FeS₂ mineralization by the granite ⑦). P.E.
- ⑤ Green qtz-porphry, ground mass felspathic (Qtz. 5-10 mm. Pyritized in patches) (B) A porphyritic border member (7)
- ⑥ More felspathic, non-pyritized var. of ⑤. Contacts between ⑤, ⑥ & ⑦ are gradational. Contact of ⑤ & ⑥ is irregular with possibly some assimilation?
- ⑦ Qtz-fels-chlorite porphyritic - granite, bordered by porphyry types ⑤ & ⑥ and identical with the Fury River granite of probable age, also correlated with Mercurion R. granite. Pyrite confined to border members and contact aureole. (C)
- ⑧ Generally well bedded white yel. quartzites with basal grits & fine conglomerates of Owen type overlying the granite. 45°/40°N. Conformable with Gordon limestone. Believed to be transgressive Uppermost Owen.
- ⑨ Gordon limestone. Basally a soft, shaly well bedded imp. limestone with the upper members a more massive, grey limestone, v. poorly fossiliferous. Host rock for White Hawk mines at bend of river. Small, rich PbS-FeS₂ (Trace Cu) replacement bodies. One caved shaft visible.
- ⑩ White-yell well bedded quartzite. Sil²?
- ⑪A Rock appears more felspathic moving upstream, pyrite still present but less abundant. (Moving away from contact. -- May be an altered lava but appears more like contact felspathization? of quartzitic material?)
- ⑪ Qtz-mica-schist. P.E. ⑫ Approaching Dy. contact, P.E. quartzites & schists show development of large ~~2-3 mm muscovite crystals. Away from contact only mica developed and possibly biotite.~~
- ⑫ Acid, aplite? dyke. Qtz, muscovite, tourmaline, feldspar?

Mac. 7/46628.



Mackintosh Run 7 - 46630

447096



LEFT SECTOR

RIGHT SECTOR

040

MACKINTOSH
PART PHOTO NO. 46630
RUN NO: 7
(FROM RIO TINTO PHOTO
T319-66

MACKINTOSH

Run. No. (7)
 Insert/Photo No. 46630
 (From Rio Tinto No. T319+ 65)

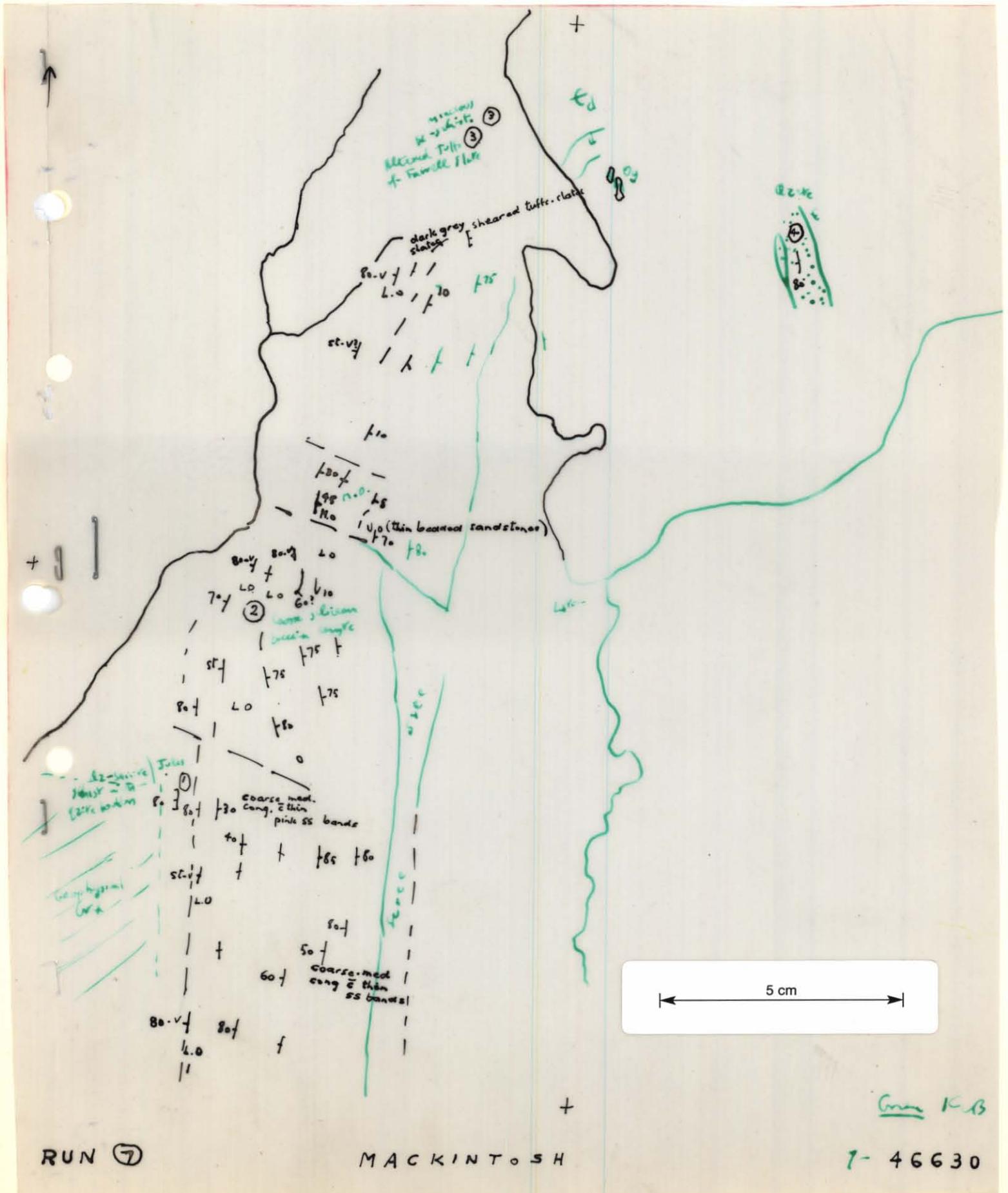
LEFT SECTOR;

- (1) D. grey slates with f.gr. sheared tuff bands. Farrell slates.
- (2) M.P. l.green agglom. or sheared porphyroid. Contains fragmental chert material. Basic.

RIGHT SECTOR;

- (1) D. grey cleaved slates, with some minor sandy bands forming schist. Locally contain small pebbles in slatey matrix. Farrell slates. Contact (1) & (2) shows interbedding of sl. and porph.
- (2) Sheared, green felspar-porph. Phenocrysts dominantly fels. 2 mm in f.gr. qtz-fels. g/mass. Minor pyritizn.
- (3) Black and d.grey slightly cleaved shales (calcerous) interbedded with f.gr. sandy layers. Gordon L'stone.
- (4) Jukes Horizon. in contact with (3), apparently conformable. A greenish purple qtz.-fels. fragmental grit. (3) (4) conformable with (2)
- (5) Fossiliferous Gordon Limestone (Favositids & Stomatoporoids). Well bedded d.grey limestone with sandy-impure interbeds 3"-9" thick. 12°/55°E facing E. (current bedding)
- ? Minor galena minzn. of calcite vein. Coarse crystalline aggregates $\frac{1}{4}$ "- $\frac{1}{2}$ " diam.
- (6) F.gr. qtz.ser-schist. Tuff hor. of Farrell Slates.

- (1) Quartz (sercite) schist showing pebbles and fragments of quartz and quartzite. Equivalent of Jukes.
- (2) All this fault block - coarse / very coarse siliceous breccia - conglomerate.
- (3) Micaceous qtz - schist. Altered tuffs of Farrell Slate.
- (4) L. grey massive Dundas quartzite.



Meckintosh Run 7 - 46634

447102

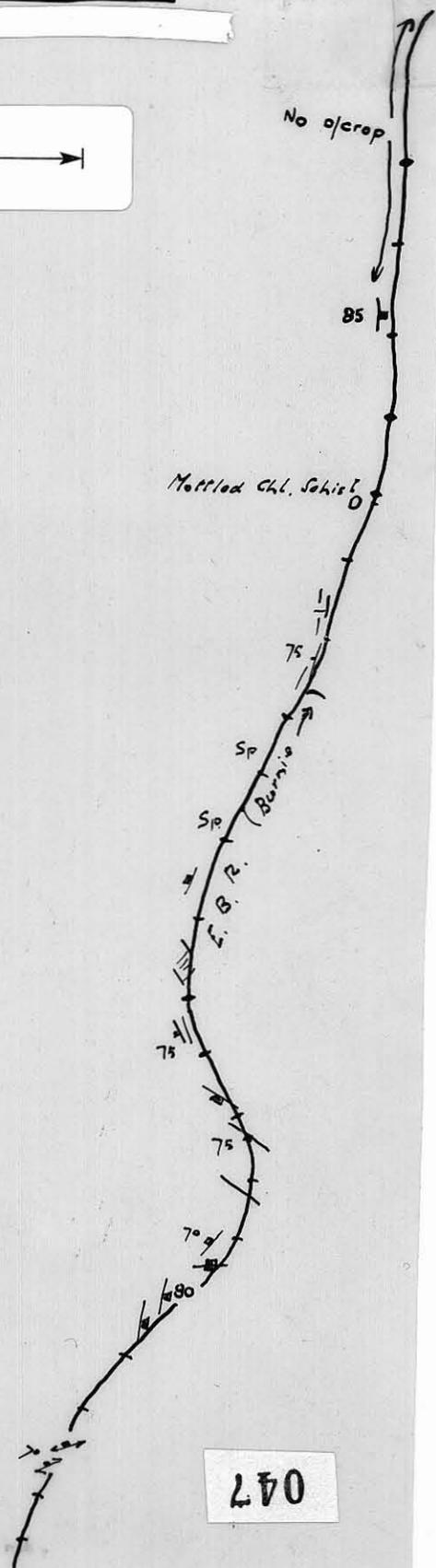
5 cm

No crop

85

Mottled Chl. Schist

047



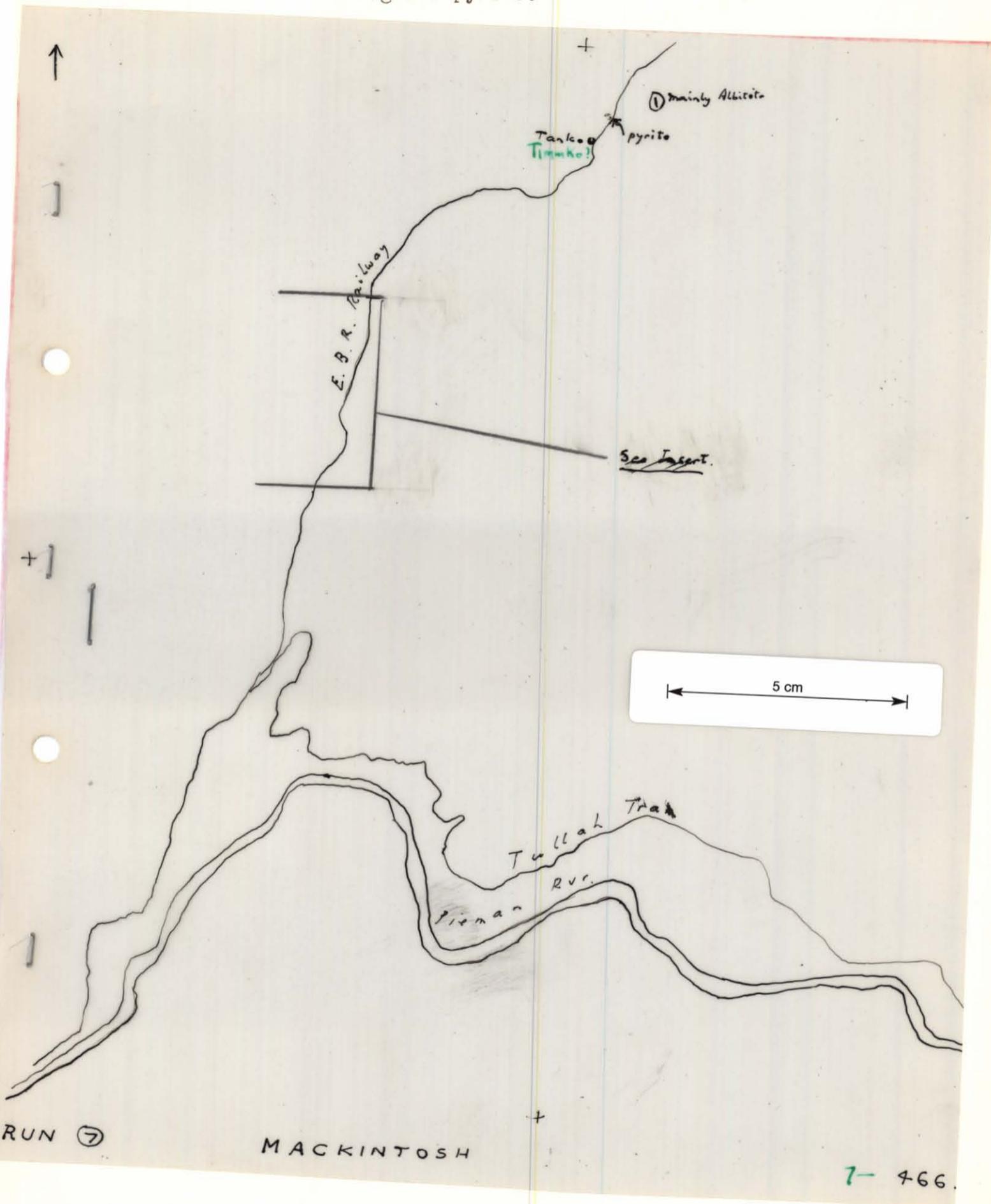
MACKINTOSH

Run No. 7

Photo No. 46634

Solomon ?

(1) Small area of cutting face (10' x 10') in albitite showing irregular pyrite.



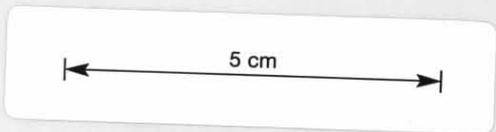
RUN ⑦

MACKINTOSH

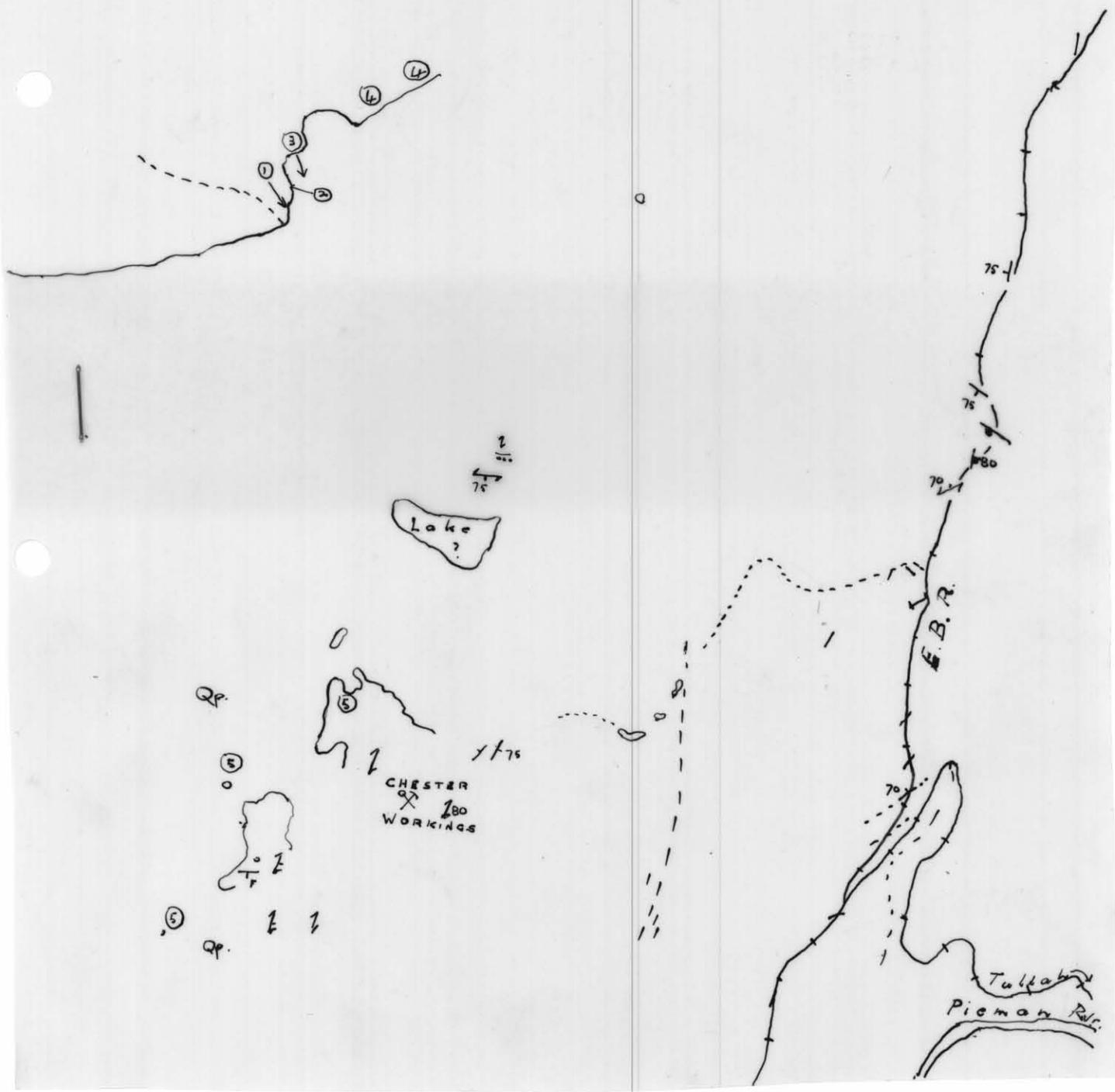
7- 466

Mackintosh Run 7- 46635

051



MACKINTOSH
PART PHOTO No.: 46635
RUN No.: 7
(FROM RIO TINTO
PHOTO No. T319-69)



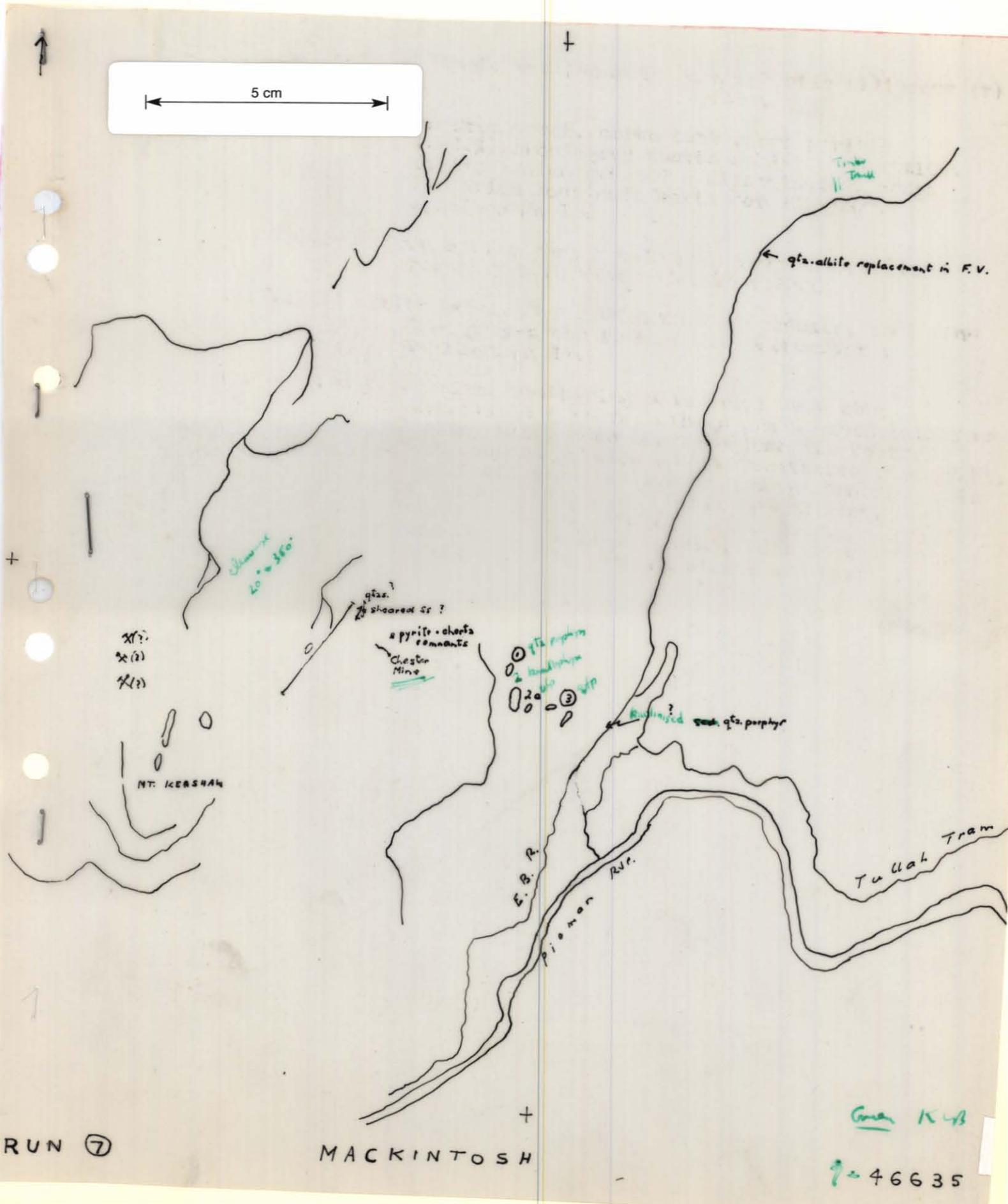
MACKINTOSH

Run No. (7)
Insert / Photo No. 466345
(From/ Rio Tinto " T 319-69)

?

- (1) 50^x east of track, massive pale fawn aphanitic siliceous (?) rock.
- (2) 150^x upstream from track, north bank shows pyritic (5-10%) steel-grey quartz schist & quartzite. Pyrite medium grained & disseminated. Rough lination continues north for 100-150^x. Specimen MK 18.
- (3) Upstream from pyrite zone ; pale grey felspar-chlorite porphyry with fine chlorite veins,
- (4) Mainly albite beratophyres with dark groundmass, some fine dark grey-green fp with few phenocrysts. Specimen MK 17.
- (5) Altered porphyries, weathering pale grey; some show porphyritic texture, others are a dense siliceous looking mass; some show conglomerate texture with rounded pebbles up to 4" scattered throughout, others are breccia-like with chips and fragments of porphyr in a porphyritic ground mass. (autobrecciated lava). Nearer Chester mine, rock becomes schistose and passes to weathered quartz sericite with FE stains and pyrite.

- (1) Light grey coloured qtz. porphyry - spec..
- (2) Massive, igneous, intermediate intrusive (occurs as vertical cliff face in creek bed).
- (2a) " " inter. intrusive (contains more pink felspar?) and minor (Py).
- (3) Silicious porphyry.



057

447109

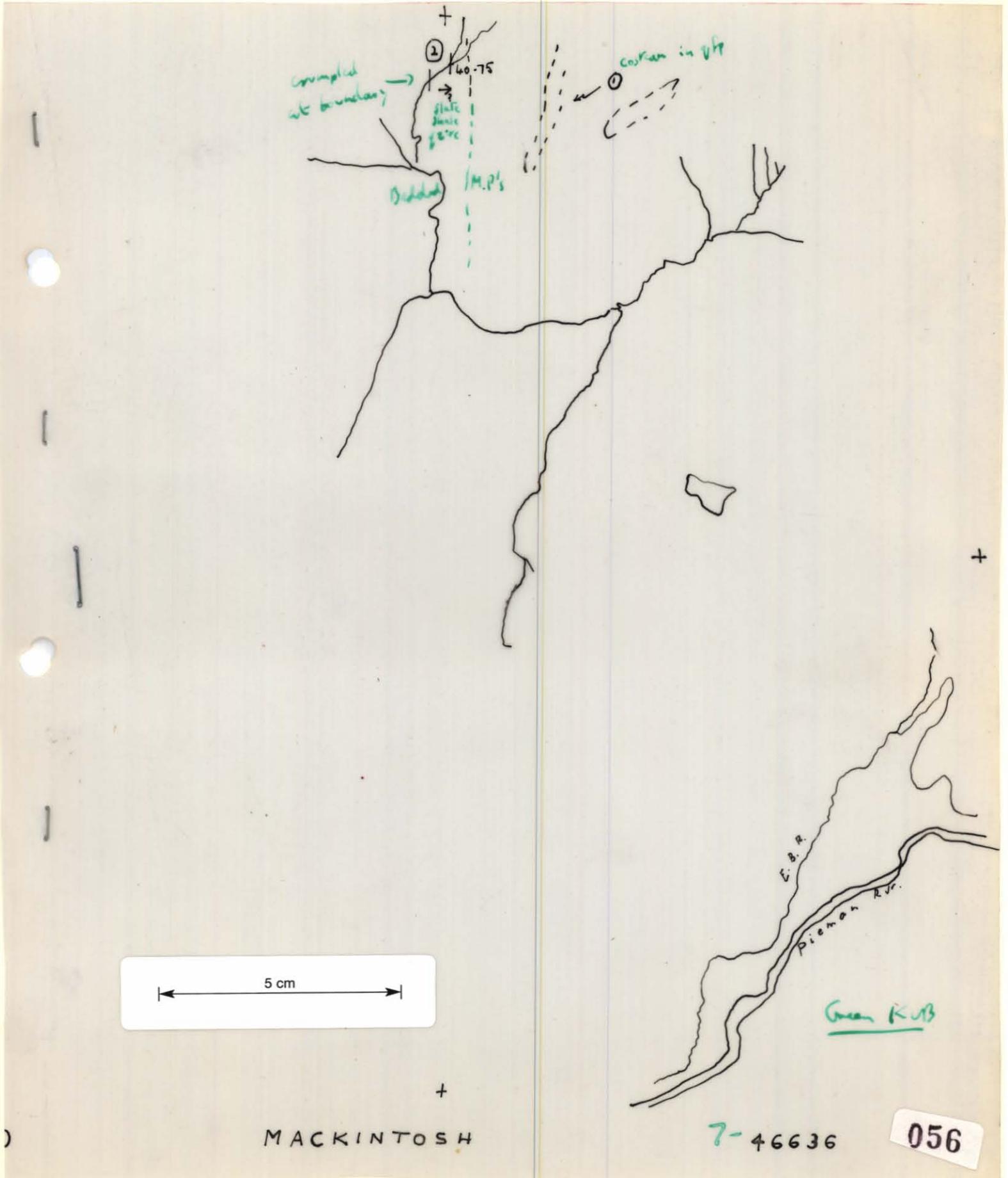
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Run No. 7

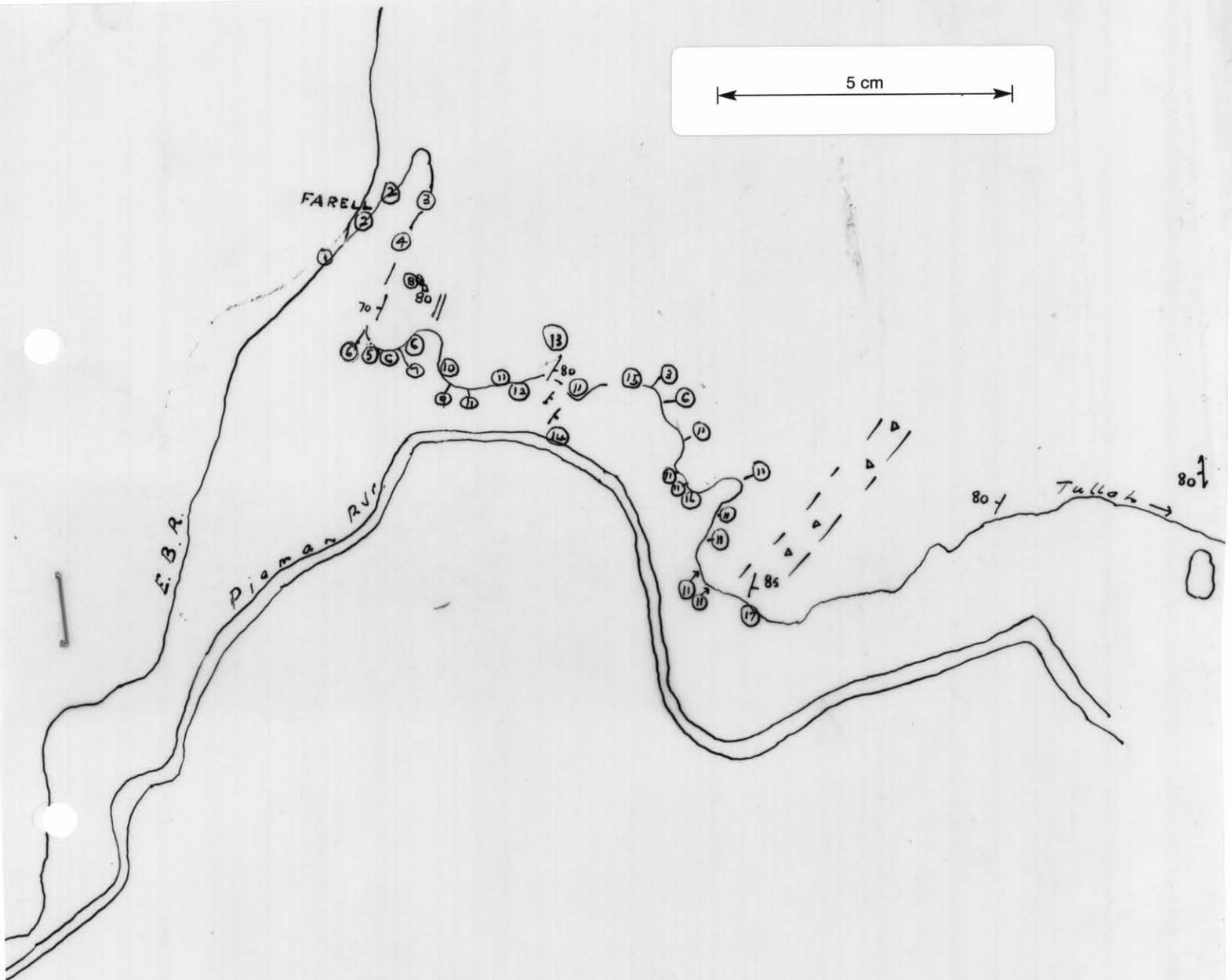
Photo No. 46636

Solomon ?

- (1) Costean in white barren quartz invading sheared felspathic rock.
- (2) East dipping rapidly alternating quartzites, sandy shales, dark grey slate etc. Crumpling near contact with MP



Mackintosh Run 8 - 48142



MACKINTOSH

PART PHOTO No.: 4812142

RUN No.: 8

(FROM RIO TINTO)
(PHOTO No. T319.35)

059

060

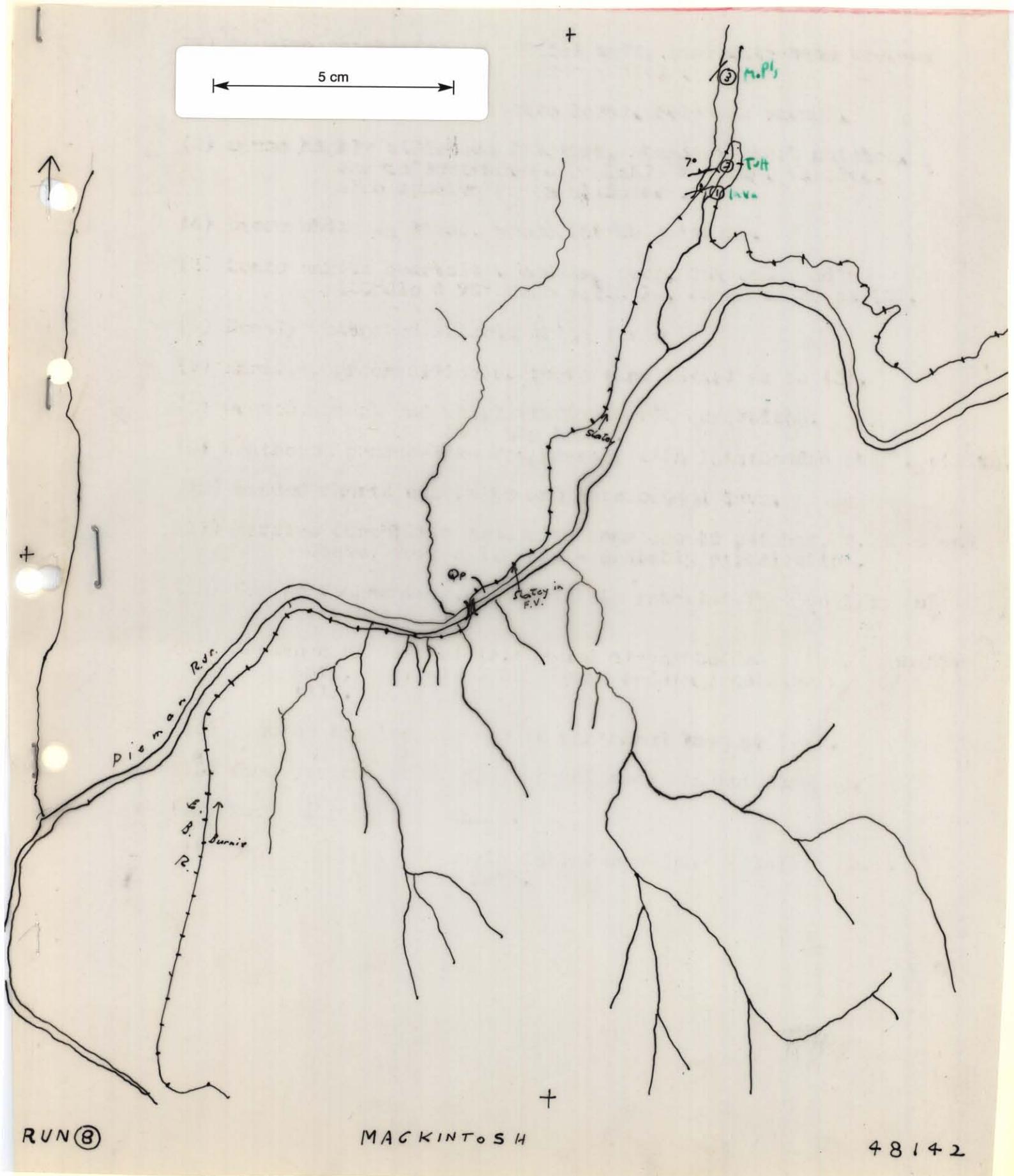
MACKINTOSH

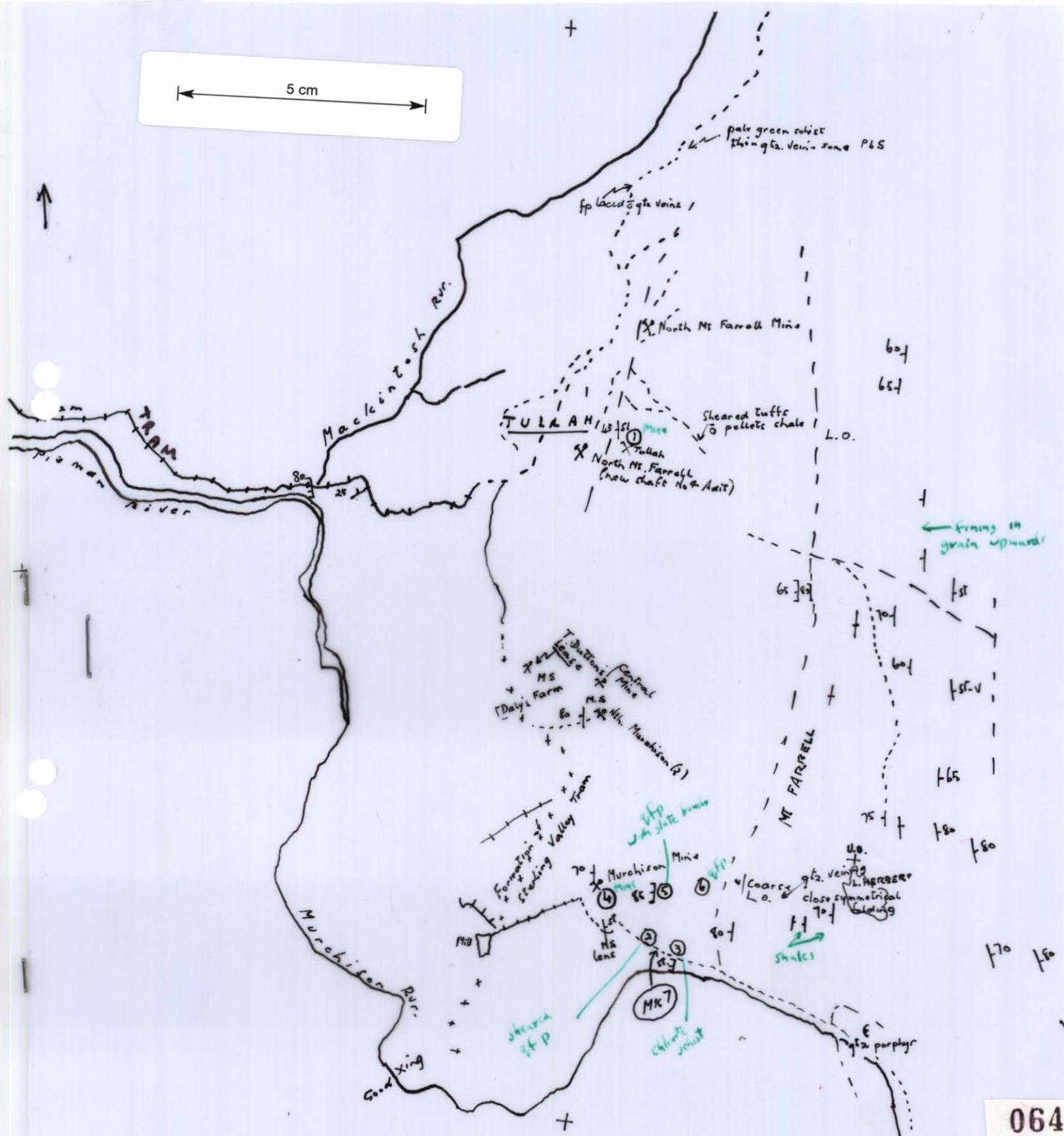
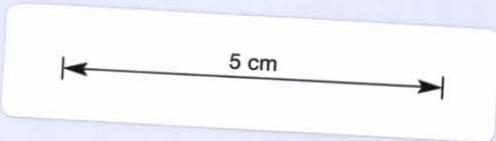
Insert Photo No. 48412/42
 Run. No. (8)
 (From Rio Tinto No. &319-35)

?

- (1) Massive porphyries or crystal tuff, quartzite band present but no attitude visible.
- (2) Continuous massive felsitic lavas. Feldspar phenos.
- (3) Dense highly siliceous felsites, abundant chert patches, and inclusions. No reliable bedding. Massive. Also massive green siliceous.
- (4) Dense white fg lavas, prominent EW jointing.
- (5) Dense chertz quartzite. Bedding poor, but one reading 330° dip W 70° seems reliable. Same strike as (3).
- (6) Deeply weathered friable white lavas
- (7) Massive, green siliceous rocks (and lavas) as at (3).
- (8) Bedded, chert and white (tuffaceous)? quartzites.
330° Dip W 80°.
- (9) Weathered pumice-like fragmentary with interbedded chertz qtzite.
- (10) Banded chertz quartzite and interbedded lava.
- (11) Massive porphritic lava with some chertz patches, v. hard and dense, very siliceous - probably pyroclastics.
- (12) Coarse fragmentary, all felsitic material (pumice like on weathering).
- (13) Sequence of fine siliceous and clayey bedded soils, probably tuff, 35°, dip E 80° (good bedding) passing upward to (11).
- (14) Flow or bedding strikes in weathered lava or tuff.
- (16) Dark crystal tuff, same as Bulgobac tractor landing.
- (15) Hard siliceous fg tuff?.
- (17) Coarse volcanic breccia interbedded hard felsitic tuff.
N-S dip 88°E.

- (1) Acid effusive (rhyolitic type). Round quartz phenocrysts in acid groundmass.
- (2) Bedded tuffs (cherty, laminated type).
- (3) Massive pyroclastics. Succession of massive non-bedded volcanics, fine grained, grey coloured, chloritic streaks, feldspar granular in massive microcrystalline (?) groundmass. (recrystallised tuffs)





064

RUN 8

MACKINTOSH

48145

MACKINTOSHRun No. 8Photo No. 48145Solomon ?

- (1) Shaft & adit, fault 150/60W in thin bedded dark grey slates, crumpled on H.W. Galena and some pyrite in thin quartz in fault and fault walls.
- (2) Sheared pale grey felspar rock with qtz stringers. Cleavage steep west.
- (3) Chlorite - sericite schist.
- (4) Murchison Mine - adits and open cut expose lode; 20/vert. Galena, pyrite, shalerite, chalco., & ? in veins and massive. Slatey in western wall, massive qtz. felspar porphyry to east.
- (5) Qfp east of Murchison lode contains some slate; passes east to quartz - sericite schist. Schistosity drops steep to west.
- (6) Line of massive purplish dense felspar-quartz (?) rock with quartz albite veins. Continues east to within 300' Owen Conglomerate. Locally sighted hematitic.

MACKINTOSH

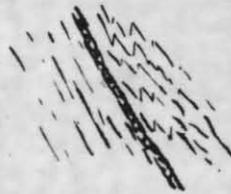
Ruin 8

48145

447117

① Shaft + adit, fault 150/60W in thin bedded dark grey slates, crumpled on E.W. Galena + some pyrite in thin quartz - fault + fault walls

looking S:



② Sheared pale grey felspar rock + qtz stringers. Cleavage steep west.

③ Chlorite-senecite schist

④ Murchison Mine - adits + open cut expose lode: 20/vert.

Galena, pyrite, sphalerite, chalc., + ? in veins + narrow. Slaty in western wall, massive qtz felspar porphyry to east.

⑤ Qfp east of Murchison lode contains some slate; passes east to quartz-senecite schist. Schistosity dips steep to west.

⑥ Line of massive purplish dense felspar-quartz (?) rock + quartz-albite veins. Continues east to within 300' of Owen Conglomerate. locally slightly hematitic.

Mackintosh 8

48145

RIO AUSTRALIA EXPLORATION PTY. LTD.

066

068

447118

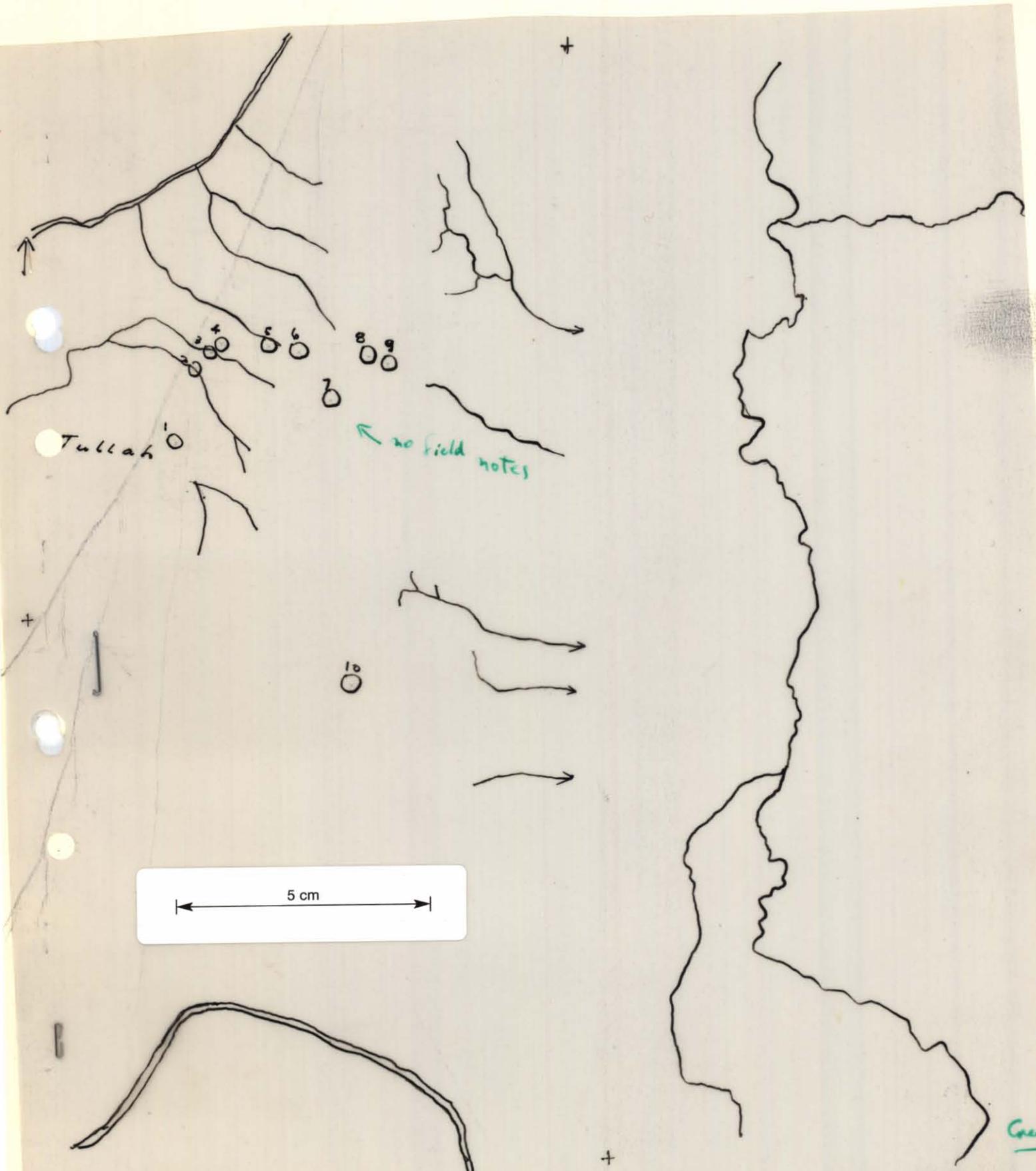
MACKINTOSH

Run No. 8

Photo No. 48149

?

"X" Position specimen for age determination (20lbs)



RUN No. ⑧

MACKINTOSH

8-48146

Green

070

447119

MACKINTOSH

Run No. 8

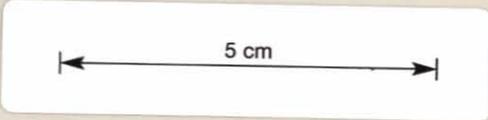
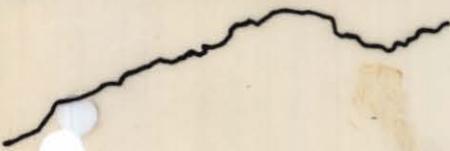
Photo No. 48149

?

"X" Position specimen for age determination (20lbs)

+

+ | |



(X) Position specimen (20lb) for age determination

Conc KLB

RUN NO (8)

MACKINTOSH

8-481