

57-192

RIO TINTO FIELD WORK
Table of Contents
LYELL QUADRANGLE 58
20 CHAIN PHOTOS 1957
RUNS 1, 2, 3, 5, 6

001

LYELL 20 chains 1947
MICROFILMED

Progress Schedule

444002

OVERLAY FIELD NOTES

COMPILATION

RUN NO	PHOTO NO	OVERLAY			FIELD NOTES		COMPILATION	
		FINISHED	CHECKED	PRINTED	TYPED	CHECKED	PRELIMINARY	CONTOUR MAP
1	696.	✓			✓			✓
	97.	✓			✓			✓
	98.	✓	✓	✓	✓	✓		✓
	99.	✓			✓			✓
	700.	✓			✓			✓
	01.	✓			✓			✓
2	769.	✓			✓			✓
	771.	✓			✓			✓
	72.	✓			✓			✓
	74.	✓			✓			✓
	76.	✓	✓	✓	✓	✓		✓
	77.	✓			✓			✓
	78.	✓	✓	✓	✓	✓		✓
	79.	✓	✓	✓	✓	✓		✓
	781.	✓	✓	✓	✓	✓		✓
	82.	✓			✓			✓
	84.	✓			✓			✓
3	3247.	✓			✓			✓
	48.	✓			✓			✓
	49.	✓			✓			✓
	3250.	✓			✓			✓
	52.	✓			✓			✓
	53.	✓			✓			✓
	54.	✓	✓	✓	✓	✓		✓
	55.	✓	✓	✓	✓	✓		✓
	56.	✓			✓			✓
	58.	✓			✓			✓
	3260.	✓			✓			✓
610/A								
5	3359.	✓			✓			✓
	3360.	✓			✓			✓
6	3383.	✓			✓			✓

Identifying of GeologistsLYELL20 chem 1947.

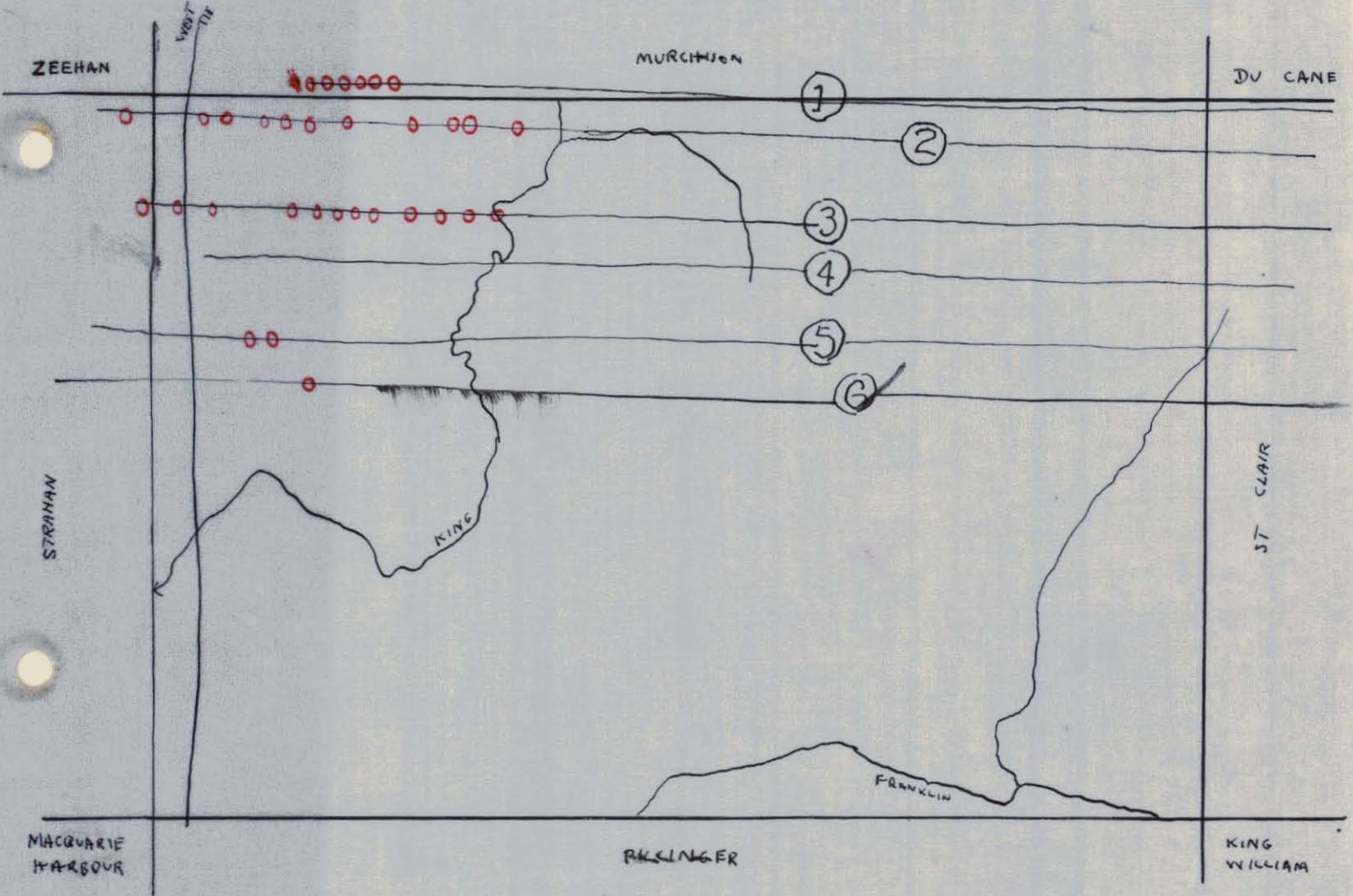
- R. J. F. — Rowan Ford
J. W. S. — J. Shields?
— E. Mucenickas
— D. King
— M. Shepherd w M. Sheppard
— W. J. Atkinson
— M. Solomon

LYELL20 chains 1947

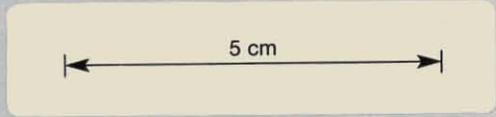
Run No	Run into Total	Taken & Timing	No	Remarks
1	696 - 734	696, 7, 8, 9 700, 1.	6	
2	735 - 785	769 771, 2, 4, 6, 7, 8, 9 781, 2, 4.	11	
3	3208 - 3261	3247, 8, 9 3250, 2, 3, 4, 5, 6, 8 3260, 1.	12	
4	All mining			Mining from Zechen
5	3309 - 3367	3359 3360	2	
6	3375 - 3432	3383	1	
7	3434 - 3494	—	0	
8	2452 - 2395	—	0	
8A	2506 - 2529	—	0	
9	2453 - 2505	—	0	
10	2540 - 2591	—	0	
11	2598 - 2657	—	0	
12	2761 - 2811	—	0	
13	2812 - 2871	—	0	
14	2881 - 2928	—	0	
East Tie	3221 - 3253	—	0	
Center Tie	2965 - 3001	—	0	
West Tie	2929 - 2961	—	0	

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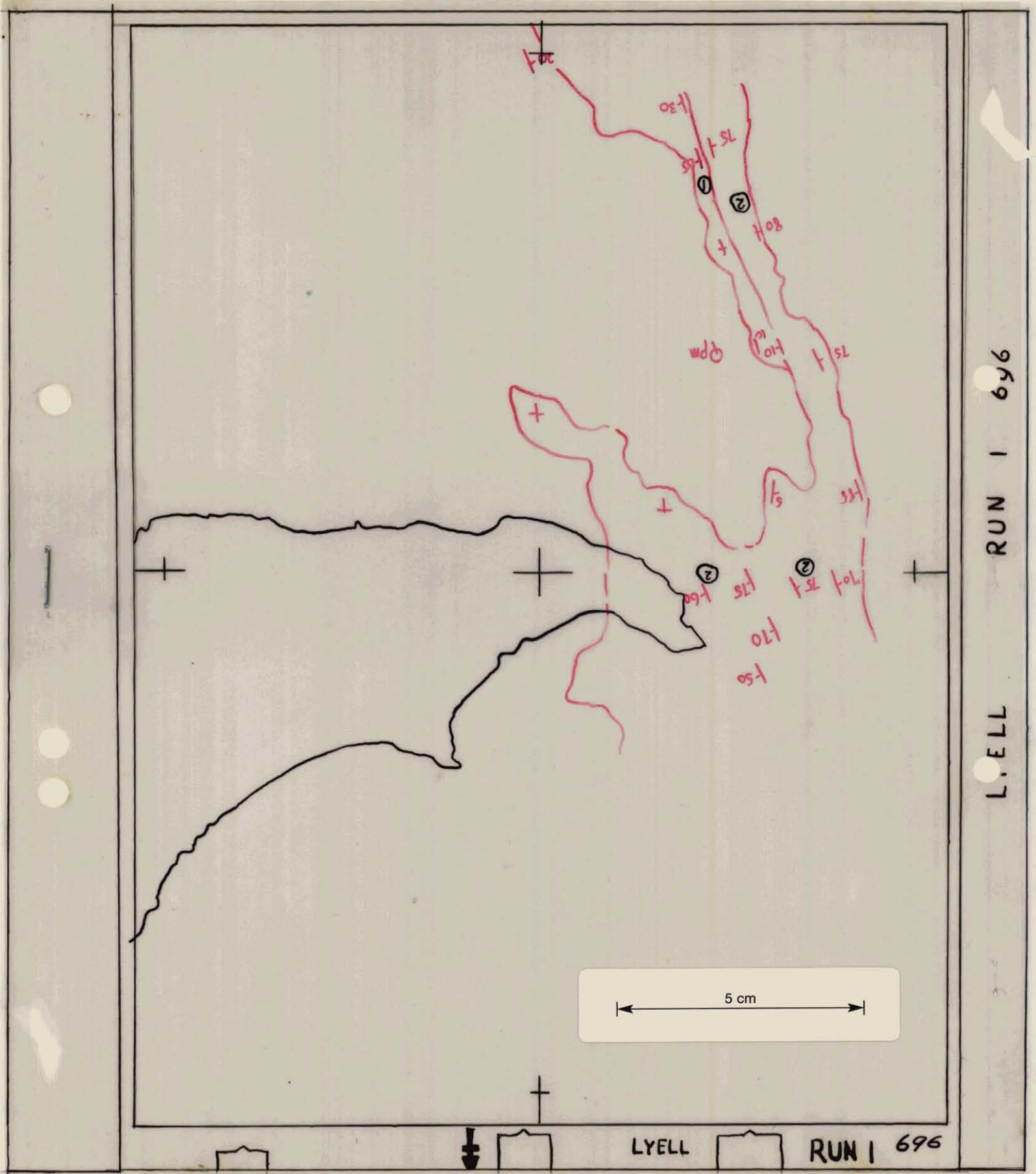
LYELL 58



o 20 chain (1947) photos

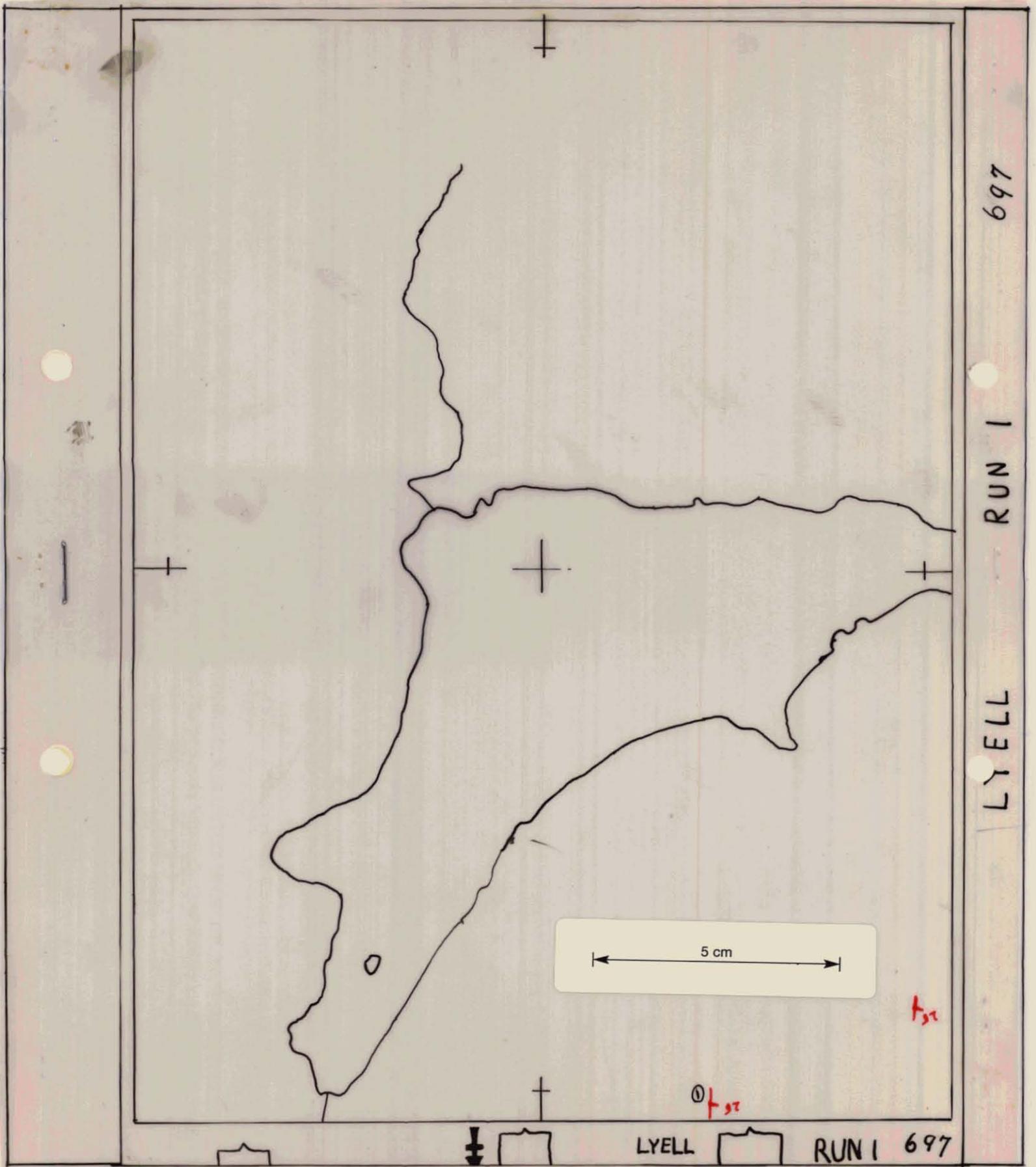


MICROFILMED



-Lyell Run 1 NO 696.

- (1). Medium grained pale conglomerate and red sandstone.
- (2). Course lower Owen conglomerate with grey and pink sandstone lenses.



697

RUN I

LYELL

LYELL

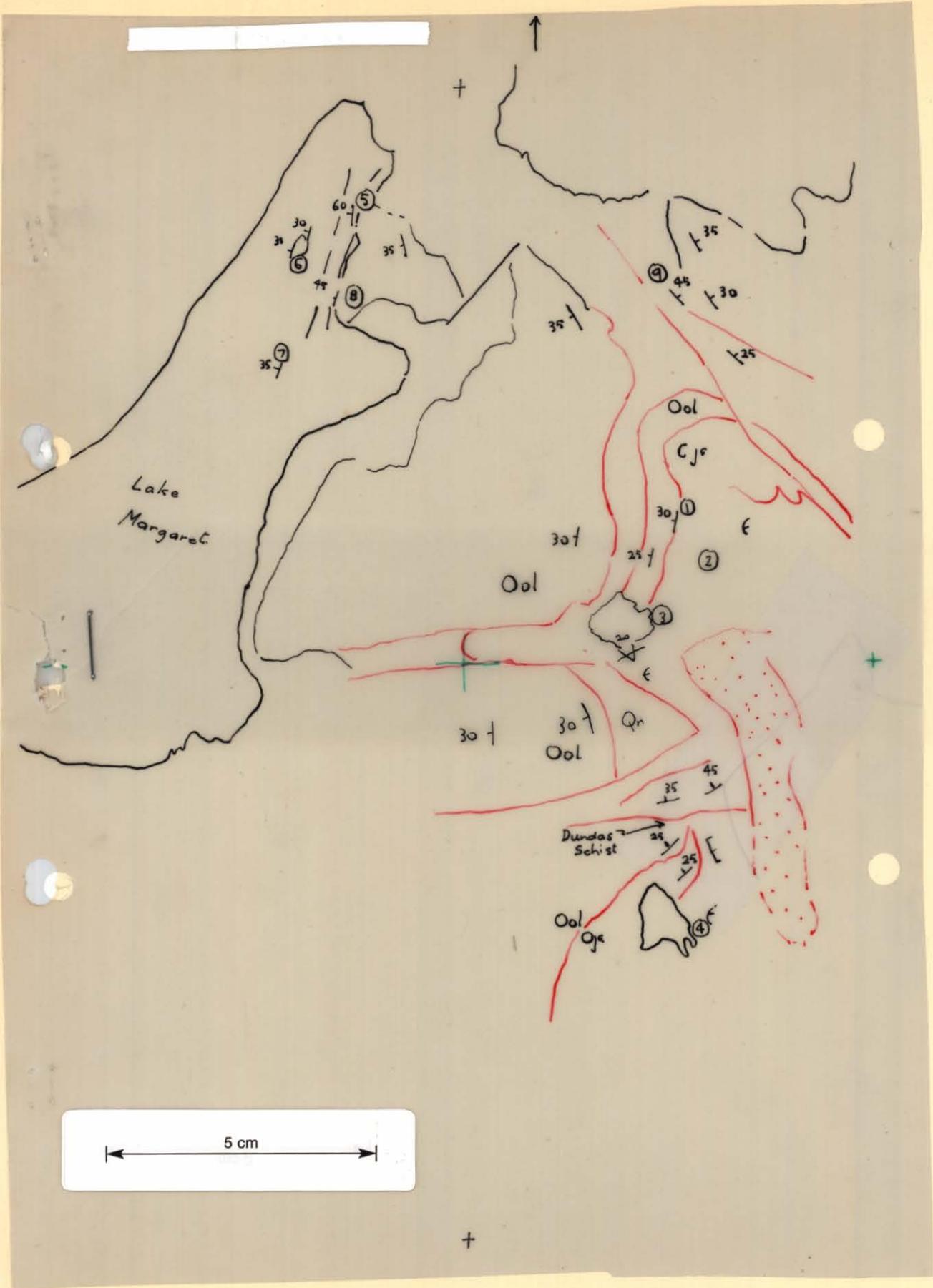
RUN I 697

007

444009

Lyell Run 1 NO 697

(1). Grey mica sandstones, dipping N-E, Owen.



①



Purple shaley beds at base of Owen.

Succession conformable.

Tubes becomes coarser with depth & at base is a boulder conglomerate. c. 200' thick.

Lower Owen c. 250' thick.

② Sheared sericitised, purplish rock.

③ Purplish schist, cleavages 155 & 130, f's par veins. No Tubes & Owen appears unconformable on Dundas.

④ Boulder beds, mainly gfp. Permian tillite or Dundas breccia?

⑤ Flaggy quartzites & medium g. conglomerate "Upper Owen"?

⑥ Island in Lake Margaret:-

Very approx. succession:

30': grey calcareous shale, cleaved; alternating grey limestone & cleaved shale.

20': Sandy shaley limestone, shaley limestone & calcareous sandstone, alternating in 6" or 3" beds.

Near base: shaley bed 2' thick. Locally with a basal hematitic band.

cleavage 160/80W, bedding 15-25/30-35W.

⑦ Small island: 20' sandy limestone, well bedded.

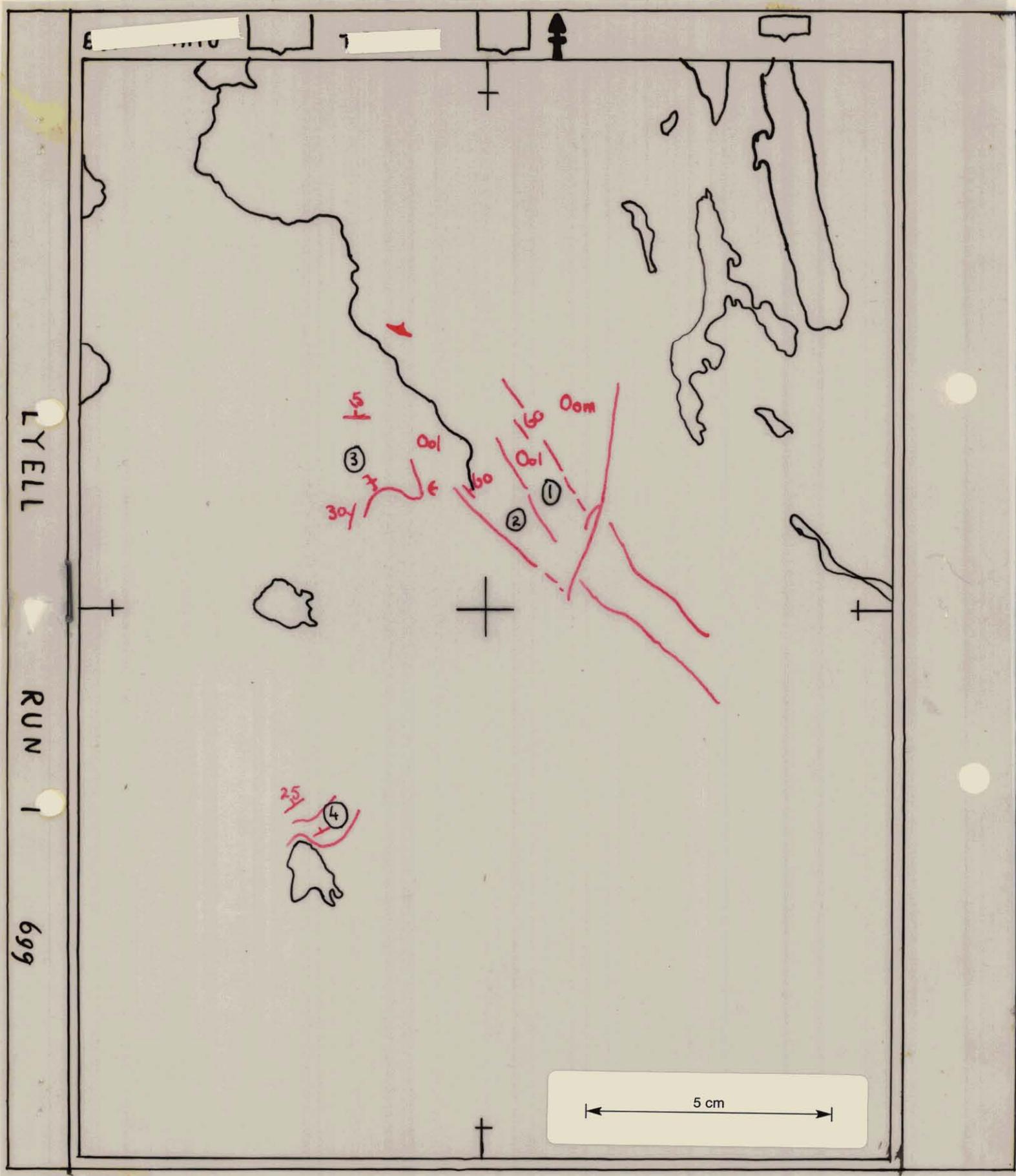
⑧ Med. g. conglom. & pink sandstone.

⑨ Well jointed purplish shaley sandstone or finely banded shaley sandstone with thin sandstone bands.

Lyell, 1, 698

- 1) Purple shaley beds at base of Owen. Succession conformable (up into coarse lower Owen with thin R/ss bands--KLB) Jukes becomes coarser ~~xxxxxx~~ with depth and at base is a boulder congte. (Jukes) about 200 feet thick, Lower Owen about 250 feet thick.
- 2) Sheared sericitised purplish rock
- 3) Purplish "schist", cleavages 155 and 130, felspar veins.
No Jukes & Owen appears unconformable on Dundas.
- 4) Boulder beds, mainly qfp. Permian tillite or Dundas breccia?
- 5) Flaggy quartzites and medium grained congte. Wpper Owen?
- 6) Island in Lake Margaret:-
very approx. succession--
30 feet: grey calcareous shale, cleaved; alternating grey limestone and cleaved shale
20 feet: sandy shaley limestone, shaley limestone and calcareous sandstone, alternating in 6" or 3" bands
Near base shaley bed 2' thick, locally with a basal haematitic band
Cleavage 160/80W, bedding 15-25/30-35W
- 7) Small island: 20 feet sandy limestone, well bedded
- 8) Medium grained conglomerate and pink sandstone
- 9) Well jointed purplish shaley sandstone or finely banded shaley sandstone with thin sandstone bands.

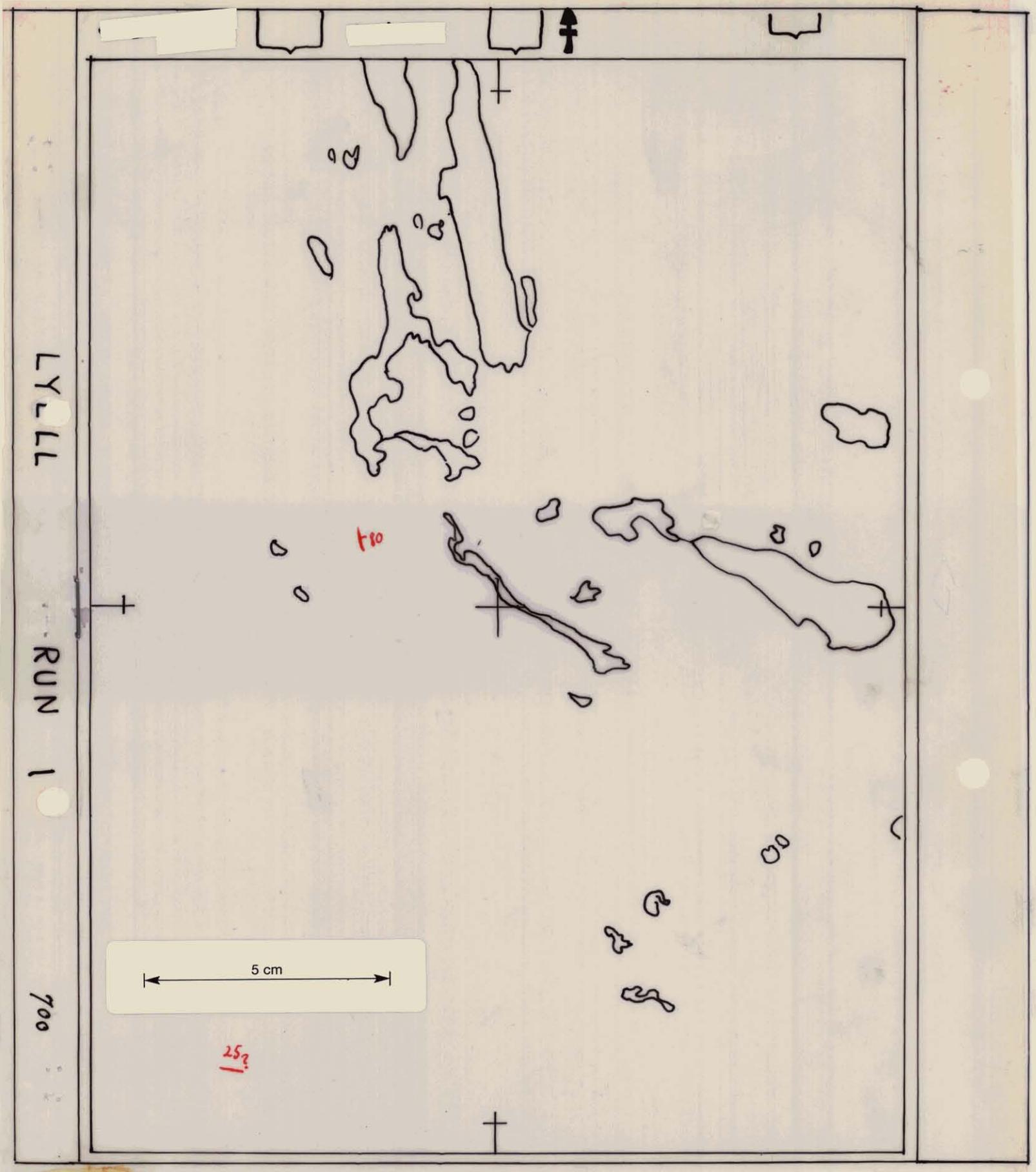
With drawing referring to (1)



Lyell Run 1 NO 699

- (1). Typical Ool with ss bands.
- (2). Alternation pink-grey quartzite and conglomerate. Overlies more typical Ool which in turn overlies Jukes Conglomerate (O_{1c})
- (3). Jukes Conglomerate; poorly sorted pink grey rock, pebbles sub-angular, up to 1' diameter except at base up to 2'. Pebbles mainly porphyry some cherty siltstone. Jukes thins to west and is locally absent to east, where Owen rests an sheared sericitic lava(?).
- (4). Purplish sheared Jukes conformable under Ool. Jukes c. 100' thick and lies on Dundas f p.

013



LYELL

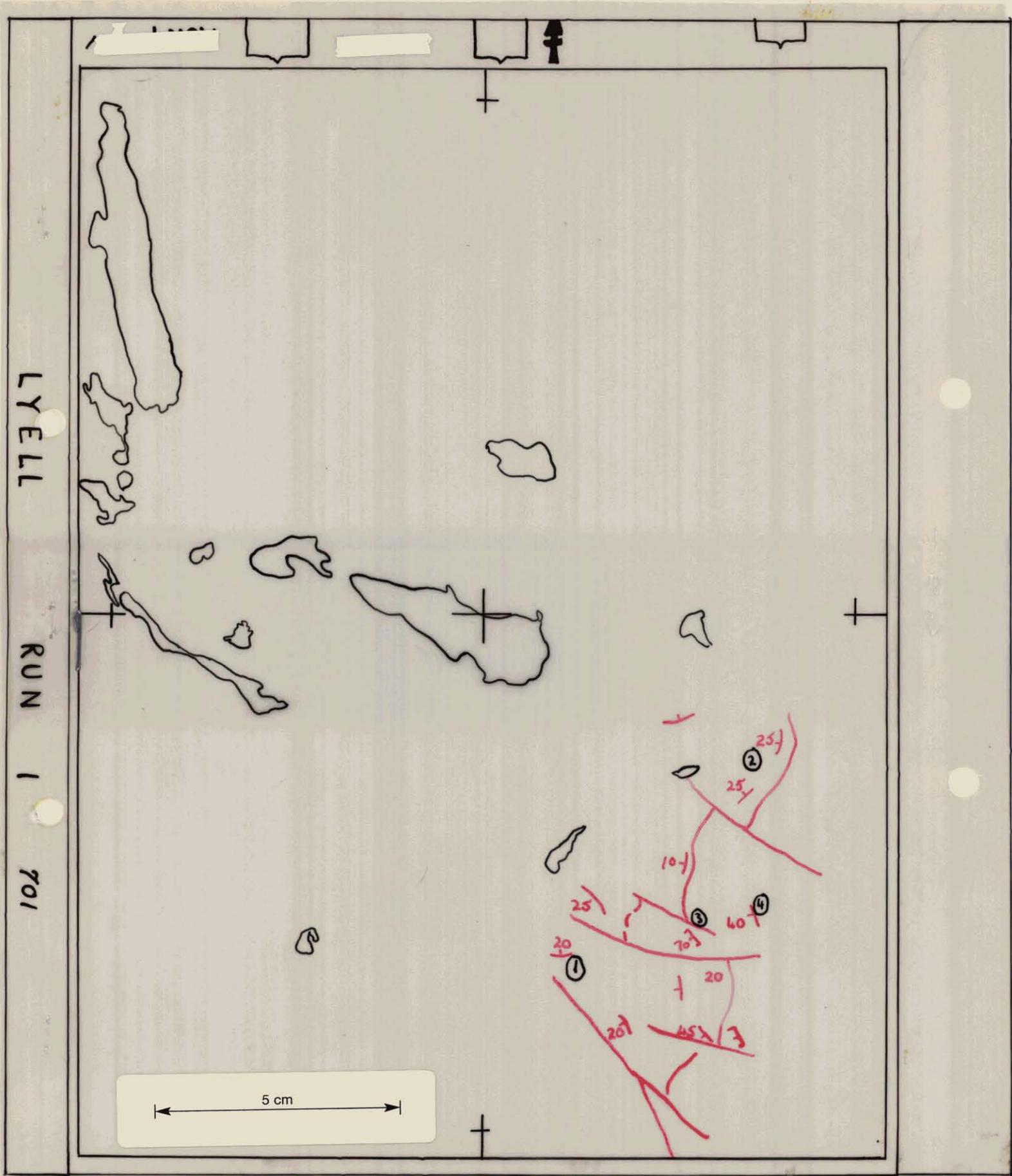
RUN 1

700

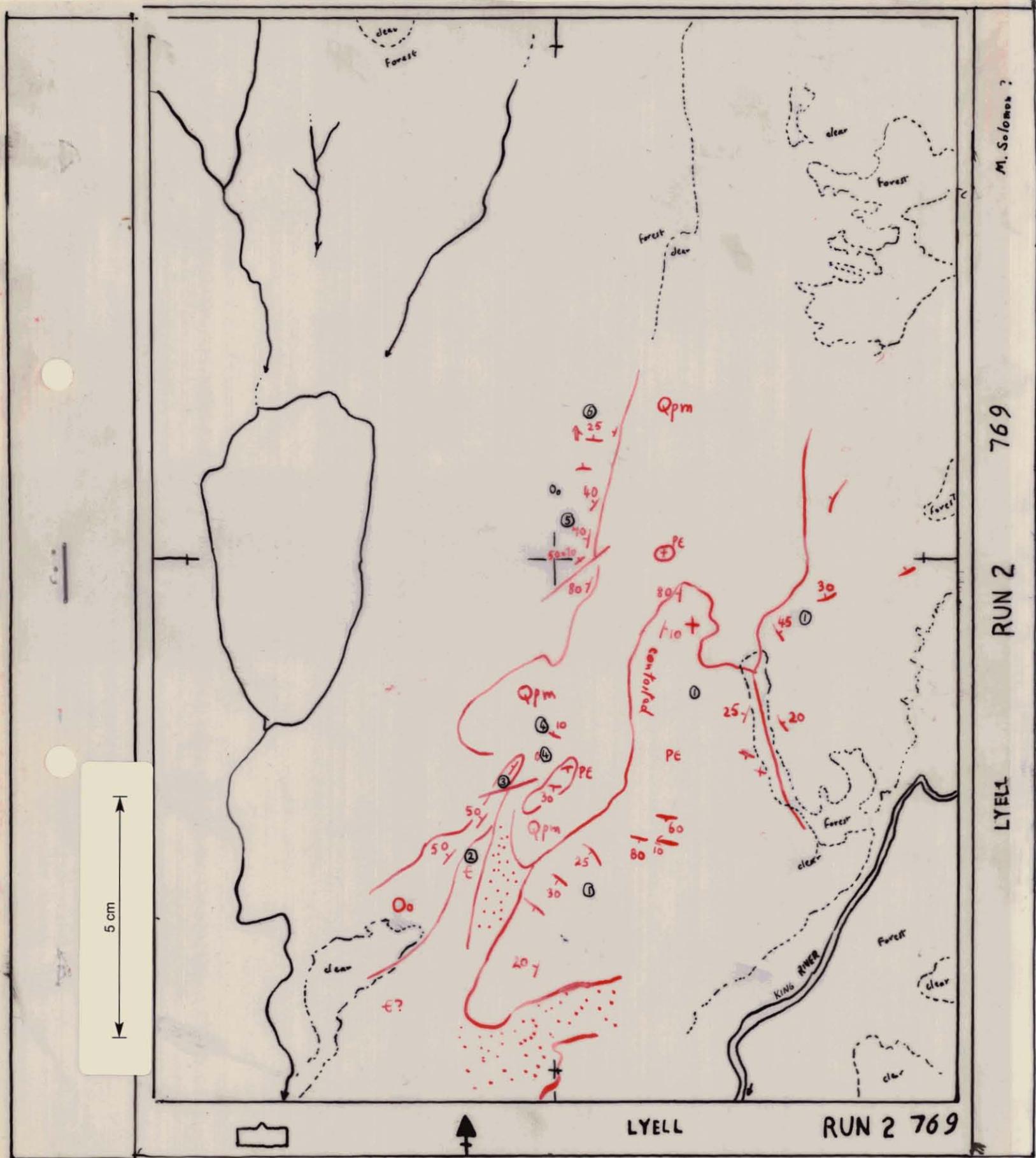
5 cm

tro

25?



- (1). Gravelly quartzite, fine conglomerate, and sandstone.
- (2). Alternations white and pink fine conglomerate and sandstone resting conformably upon Jukes.
- (3). Grey greywacke Jukes conglomerate; fair % FC pebbles, also purple (hematized), quartz felspar porphyry as near Sedwick peak. Cleavage 150/st W.
- (4). Jukes with sandy lenses.



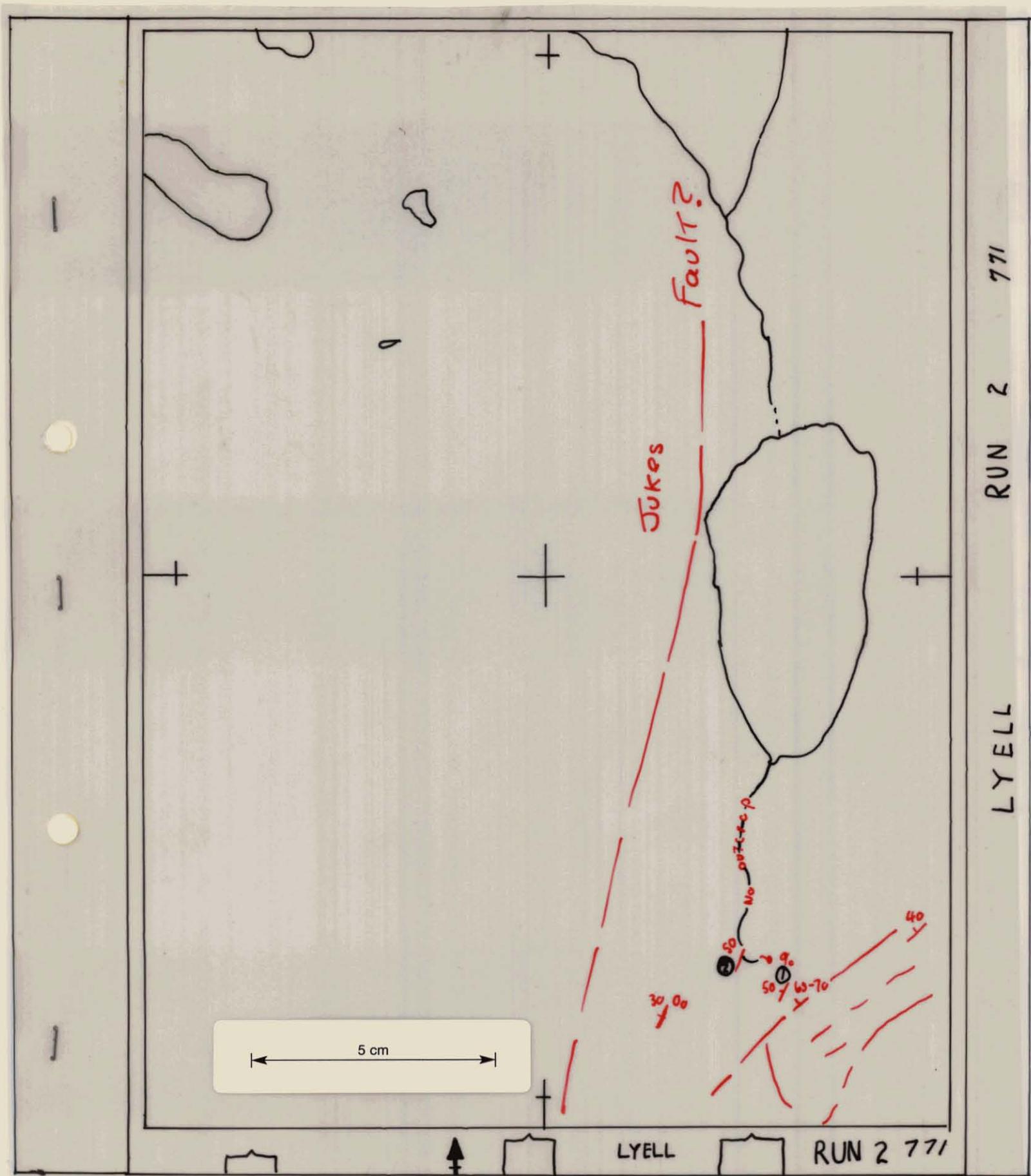
1) Precambrian meta-quartzites, fairly well bedded, fluted and striated, local brecciation along minor faults. White or pale grey in colour. Crossbedding indicates right way up.

2) Massive outcrops dark grey slaty rocks, highly sheared and contorted; overlain by 150-200 ft. of Owen coarse grits and quartzites, often micaceous, fairly well bedded. No evidence to give facing. Heavy quartz veining at base of Owen.

3) Poorly sorted coarse conglomerate with a plentiful sandy matrix.

4) Isolated outcrops of fine micaceous conglomerate.

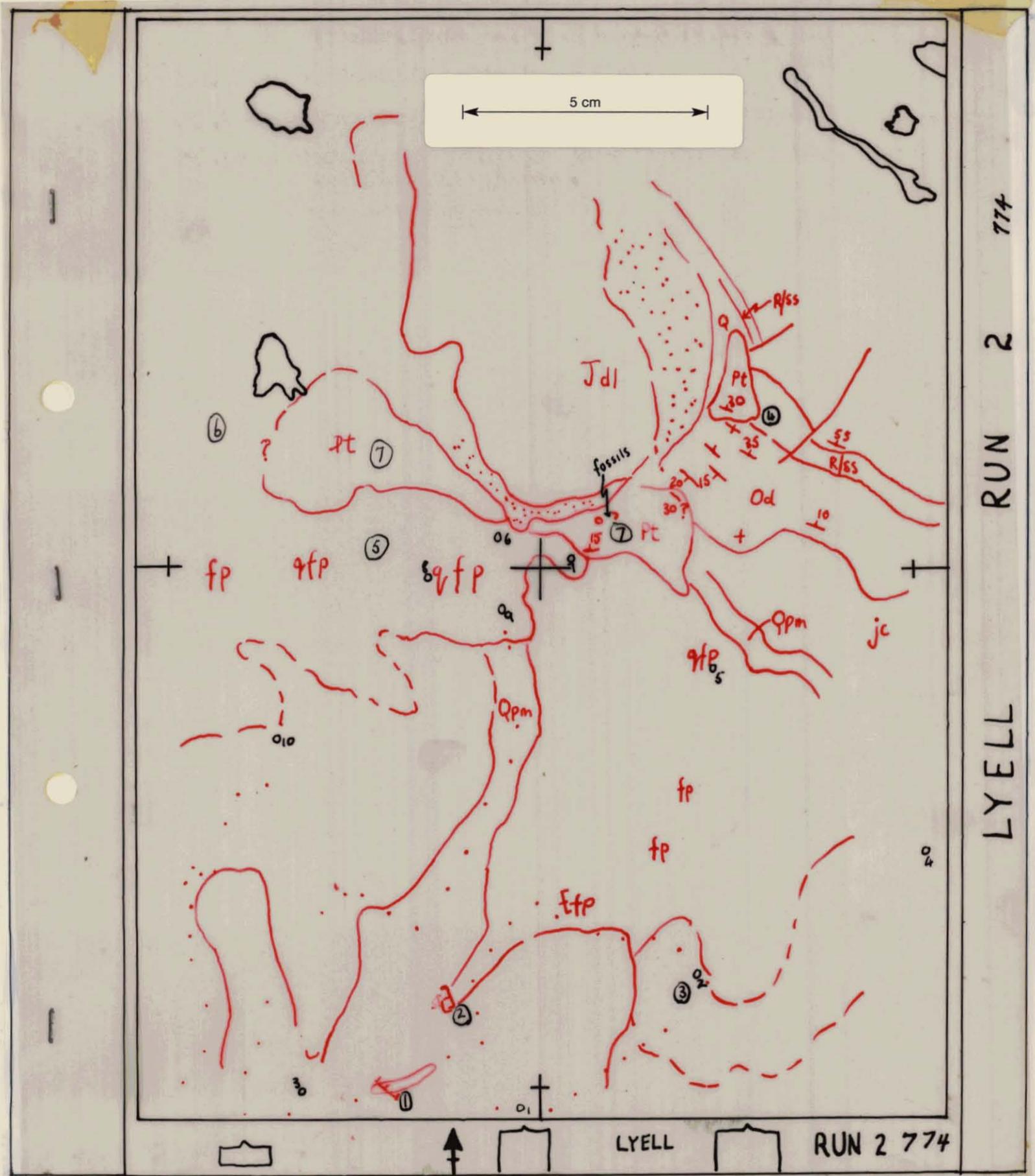
5) Grey cross-bedded sandstones and quartzites, face up.



Lyell Run 2 No 771

- (1). Finely banded phyllitic (micaceous) shales with thin sandstone-quartzite bands.
- (2). Thinly bedded grey quartzites, coarse sandstone and some shale. One bed coarse siliceous conglomerate. Several boulders calcareous shale in creek.

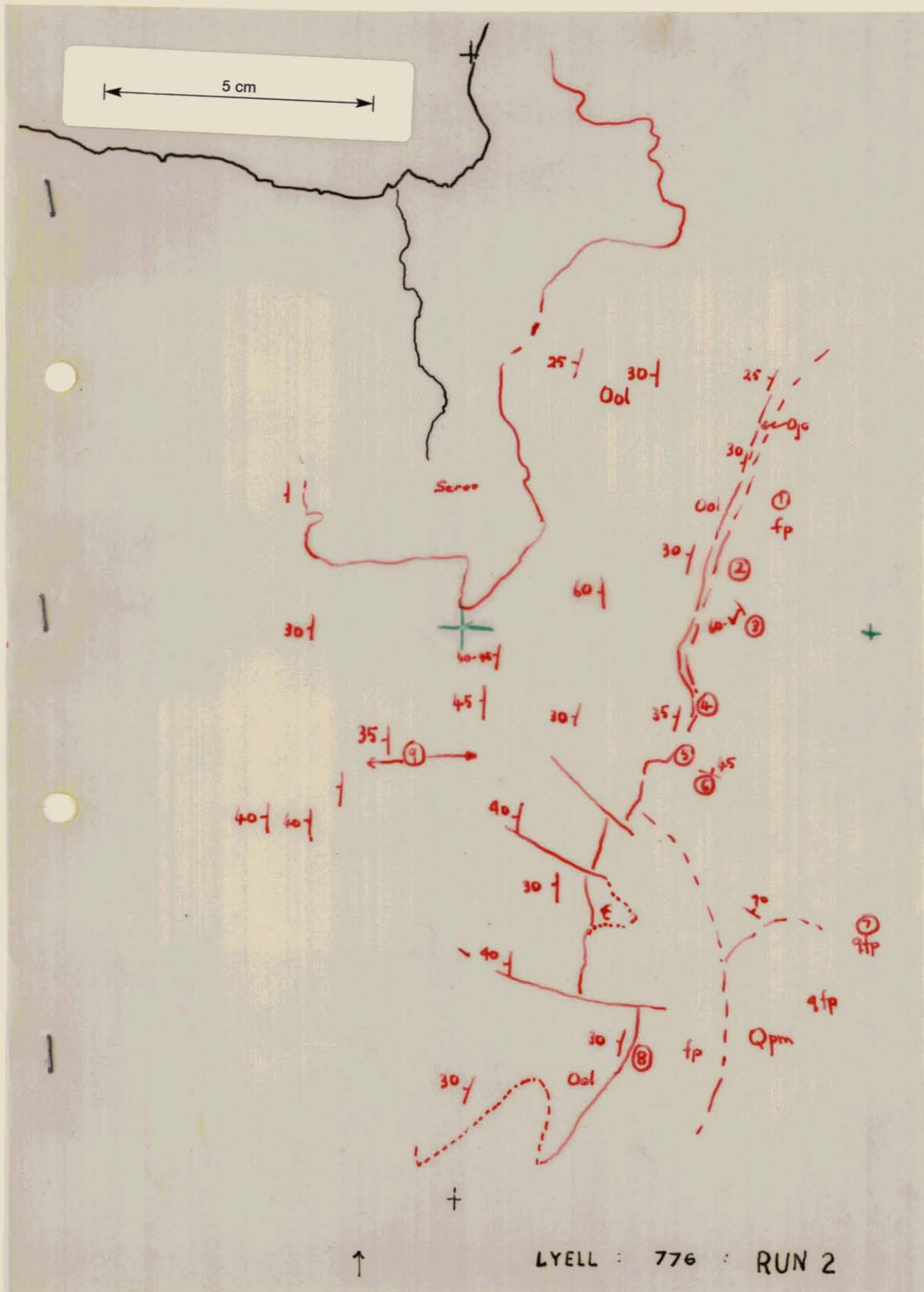
- (1). Pink quartzites, gravels, fine conglomerate on Jukes showing some bedding. Conformity. Jukes gravelly at top, Coarser below.
- (2). Pink and cream closely fractured felsite. Crude porphyritic texture with fenocrysts, feldspar and a few smaller quartz. Mainly an aphanitic mass. Quartz veining and locally intense hematization (with magnetite) in ramifications and in veins up to 18" wide. Identical with Darwin felsite.
- (3). Jukes conformable under lower Owen.
- (4). Pleistocene moraine, mainly large boulders. Permian tillite.
- (5). Lower Owen: coarse conglomerate with thin ss bands 3-400' thick and thinning eastward.



- (1). Weathered clayey q.f.p.
- (2). Massive q.f.p.
- (3). Pink brown f.p, feldspar partly chloritised. Darwin felsite.
- (4). Crumpling in grey ss.
- (5). Pale grey and pink q.f.p, massive featureless. Quartz phenocrysts up to 7 mm diam. Local agglomerate and tuff phases.
- (6). Variable tuff with fragments of lava, albite porphyry, fp, etc.
- (7). Permian tillite; mainly coarse poorly sorted and composed largely of Owen boulders in a grey shaley matrix. Sandstone beds, locally fossiliferous. Tillite occurs in a depression within the massive q.f.p., depression has steep walls. To west of Sedwick white fragments spread over a large area; they contain no Owen, being several hundred yards from Owen outcrops. Max thickness of tillite is south of Sedwick: c. 250'

1,3,4,5,6. Geochemical anomaly low.

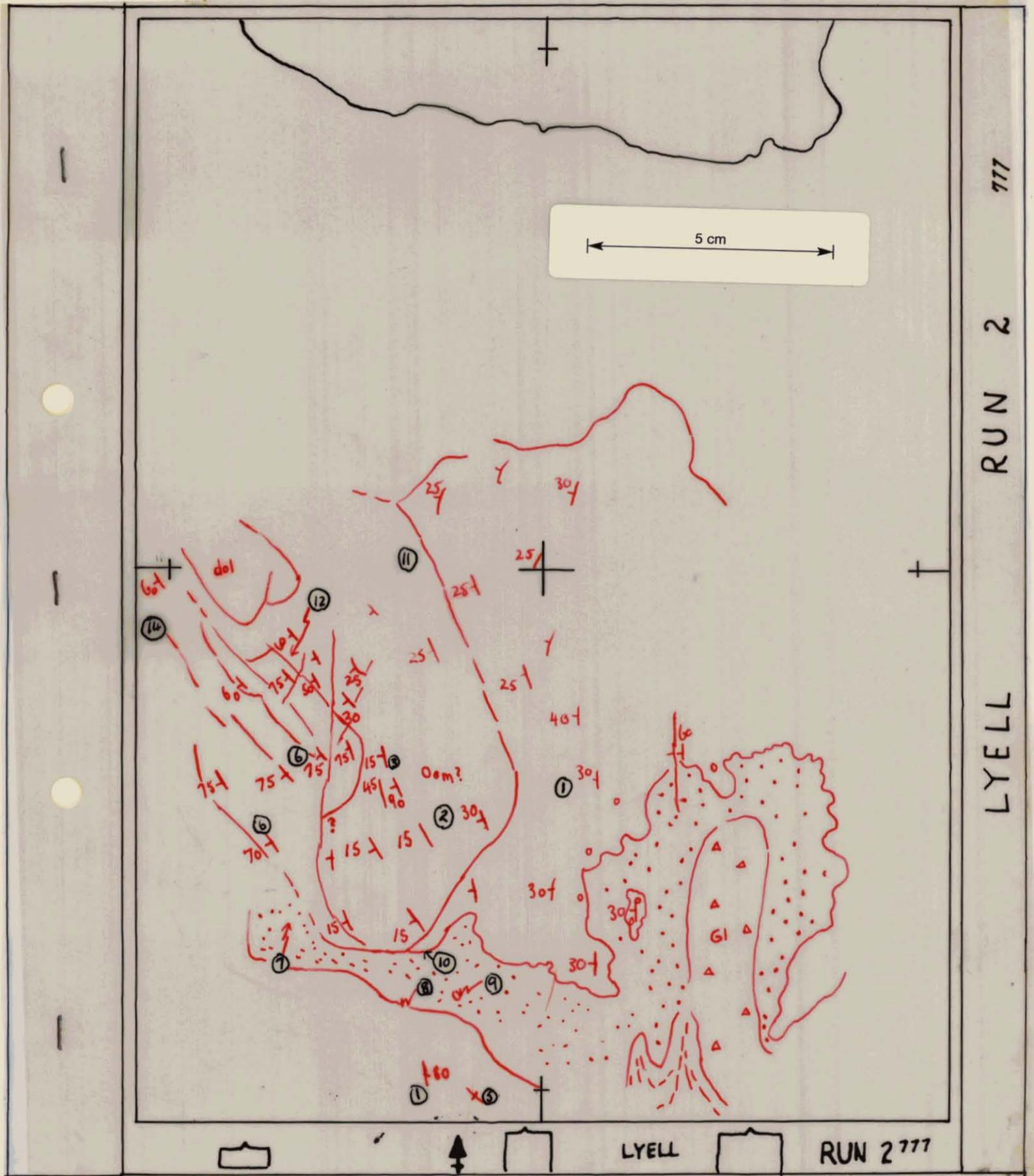
2,7,8,9,10. Geochemical anomaly medium.



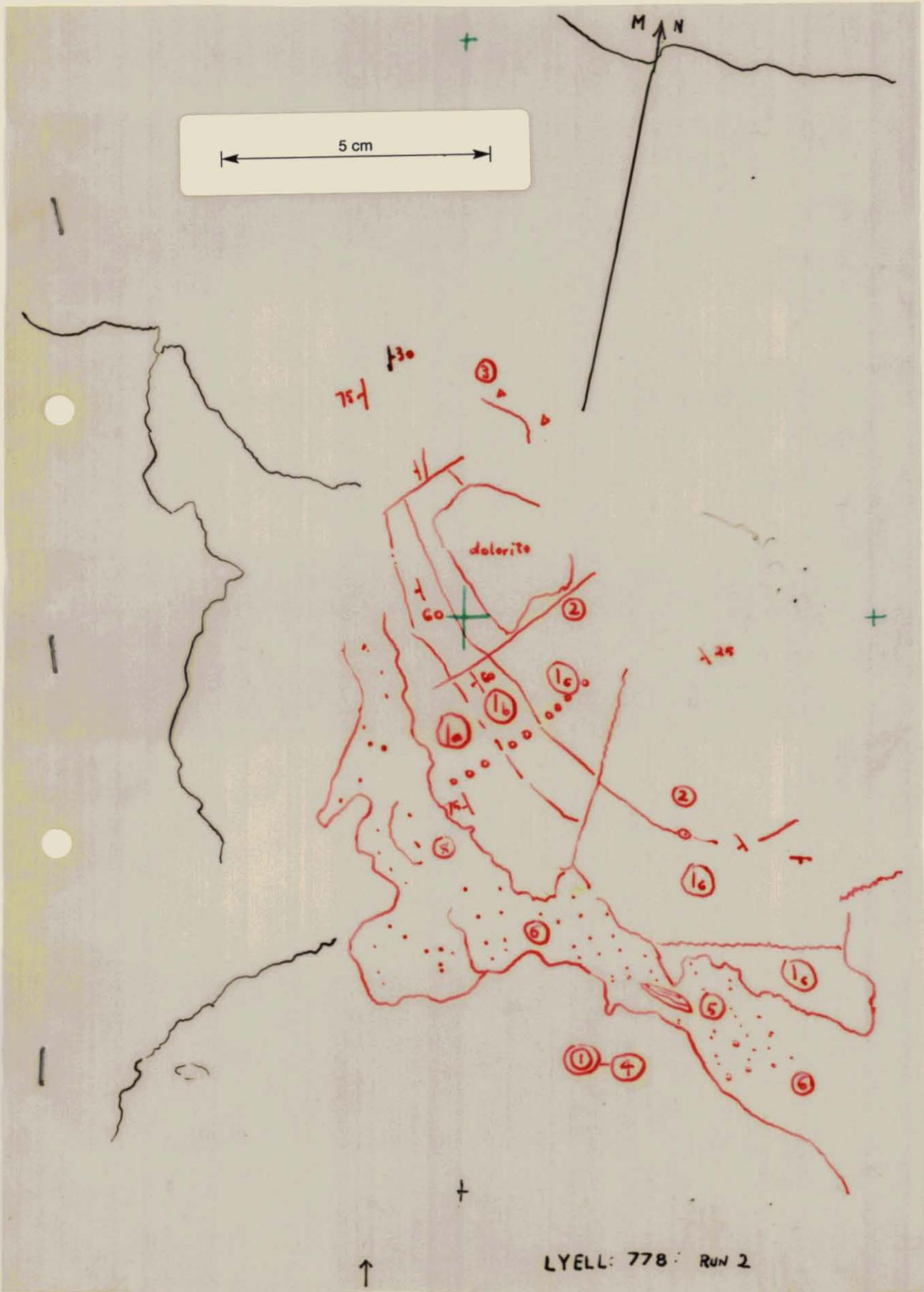
- 1) Grey fp, no quartz phenocrysts but rock acidic. Fine banding locally. Jukes conglomerate here ~~xxx~~ about 150 feet thick and purplish in colour. Conformable (with Ool?--KB). Pebbles average 1½ inches.
- 2) Ropy type lava with wisps, whorls, and banding showing weathered surfaces. Jukes 150 feet thick here.
- 3) Acid lava as in (2) interbedded with conglomeratic bands (pyroclastic) and cherty siltstone showing bedding and cylindrical objects like crinoid stems. Dominant strike NW/60-80SW.
- 4) Jukes 50ft thick, conformable. Contact looking south (drawing)

- 5) Jukes 6ft thick, gravelly with few pebbles. Base vague, consist of rhyolitic rock.
- 6) Grey and pale grey shaley beds underlying massive pale fp.
- 7) Qfp, quartz phenocrysts up to 1 cm.
- 8) Very coarse Lower Owen, one ½" haematite pebble. Rests on featureless, blocky fp.
- 9) Medium grained conglomerate, rather finer than beds to the east lower in the succession.

027



- (1). Medium grained conglomerate with some pink ss. locally coarser grained.
- (2). Pink to red quartzites and gravelly quartzites, well bedded.
- (3). grey and pink sandstones.
- (4). Banded quartz, albite, chlorite rock.
- (5). Med-grained poorly sorted conglomerate with sandy bands and lenses and interbedded with greenish shales. Pebbles in conglomerate consist mainly of porphyries, shales etc, but also a few quartzites and quartz. Like Jukes breccia.
- (6). Coarse grey siliceous conglomerate with grey green sandy shales and sandstone. Very coarse near Dundas rocks at foot of cliffs. Faulted against red sandstones.
- (7). Red weathered clayey Dundas rocks.
- (8). Greenish feldspathic sheared Dundas rocks.
- (9). Alternating quartzite and conglomerate-in situ.
- (10). Margin of sand stones recrystallised and bedding obscured typical of fault planes.
- (11). Typical Middle Owen: medium grained conglomerate with thin red and grey sandstone bands. Grades downward to Lower Owen,
- (12). Middle Owen show sharp synclinal contact with Lower Owen; syncline faulted out to south. Syncline probably marks axis of over turned syncline, facing east.
- (13). Dolerite on coarse basal-type Owen.
- (14). Lower Owen coarse grained. At foot of cliff, very coarse with one 6" pebble of quartz feldspar porphyry.



- ① Code "Owen" conglomerate, grey at the base = (1a) white = (1b) and reddish = (1c)
- ② Reddish, fine-grained, siliceous quartzite, well laminated, cross-bedded, with pebbly layers at interval. At its base: dark, gritty.
- ③ Boulder moraine.
- ④ "Felspathized breccia or agglomerate" with round or angular fragments (slates, etc) in a fine to medium grains felspathized groundmass. Pink feldspar as clots, veinlets or granular, clearly suggesting felspathization phenomena (see specimen ①). The rock is intersected in places by numerous veins, mostly quartzose and carrying heavy minerals (specimen ① with hematite veins). The formation is formed in places by very contorted, well bedded slates, which may or may not contain feldspar grains. When feldspar grains are present in slates, they are usually unstressed although the dark groundmass may be highly sheared. Xenoliths of slates in highly felspathized portion of the rock are surrounded by a pink halo up to 1 inch wide, almost entirely formed by feldspar grains. From field evidence, it would appear that this is a zone of felspathized coarse pyroclastic rocks (see further details in adjoining photograph): but it is to be noted that the overlying ¹⁰⁰ AUSTRALIA EXPLORATION, PTY. LTD. conglomerate is entirely free of metamorphic or injection phenomena or mineralization phenomena.
- ⑤ is an outcrop of little altered Cambrian (Dundas) slates, overlying the felspathized and mineralized formation described above. In this sense as everywhere in the Mt Murchison - Mt Tyndall - Lake Margaret area no felspathized or metamorphosed portions of Owen Conglomerate has so far been observed by R.T.A.E. parties.
- ⑥: debris (of Owen Conglomerate mainly).
- ⑦ Small outcrops feldspar porphyry occur in several

Lyell 2, 778.

- 1) Coarse Owen conglomerate, grey at base (la)
white (lb)
and reddish (lc)
 - 2) reddish, fine grained siliceous quartzite well laminated, cross-bedded, with pebbly layers at intervals. At its base: dark, gritty.
 - 3) Boulder moraine
 - 4) "Felspathised breccia or agglomerate" with round or angular fragments (slates, etc) in a fine to medium grained felspathised groundmass. Pink feldspar as clots or granular, clearly suggesting felspathisation phenomena (see specimen 1). The rock is intersected in places by numerous veins, mostly quartzose and carrying heavy minerals (specimen 1 with hematite veins). The formation is formed in places by very contorted, well bedded slates, which may or may not contain feldspar grains. When feldspar grains are present in slates, they are usually unstressed although the dark groundmass may be highly sheared. Xenoliths of slates in highly felspathised portion of the rock are surrounded by a pink halo up to 1 inch wide, almost entirely formed by feldspar grains. From field evidence, it would appear that this is a zone of felspathised coarse pyroclastic rocks (see further details in adjoining photograph): but ~~if~~ it is to be noted that the overlying Owen conglomerate is entirely free of metasomatic injection or mineralisation phenomena.
 - 5) is an outcrop of little altered Cambrian (Dundas) slates, overlying the felspathised and mineralised formation described above. In this zone, as everywhere in the Mt-Murchison--Tyndall--Lake Margaret area no felspathised or metasomatised portions of Owen conglomerate has so far been observed by R.T.A.E. parties.
 - 6) debris (of Owen conglomerate mainly)
- M. Solomon
7) Small outcrops feldspar porphyry occur in scree.

R.T.A.E.: -Rio Tinto (Australia) Exploration Pty Ltd

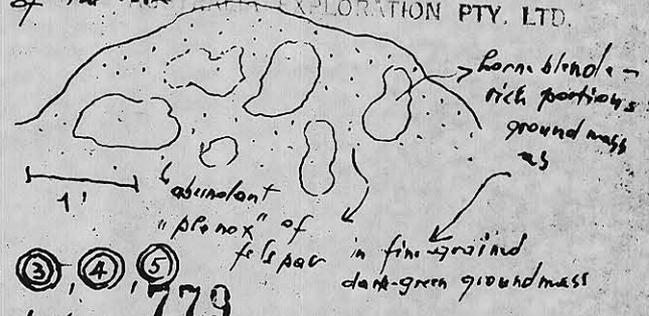


LYELL : RUN (2) 2779

- ① Frontal moraine (.....)
- ② Boulder moraine (AAA)
- ③ Scree (.....)
- ④ Oweg Conglomerate.
- ⑤ Massive, sandy, partially bedded formations (tuffs?), associated with felspathic porphyroidal "volcanics."
- ⑥ Quartz schists and chloritic schists, with schistose porphyroidal, largely felspathic = ①
- ⑦ Massive, coarse-grained, quartz-felspar-amphibole porphyry = ②
- ⑧ " " " " " "
- ⑨ Felspar porphyroids = ②
- ⑩ Quartz-felspar-hornblende porphyry
- ⑪ Schistose, porphyroid, felspar rich formation
- ⑫ Massive, dark green quartz-felspar-hornblende porphyry, giving rise to prominent round outcrops. On weathered surfaces the rock acquires a conglomeratic aspect, due to the differential weathering of hornblende-rich (light coloured) and hornblende-poor (brown) portions of the rock.

EXPLORATION PTY. LTD.

- ⑬ Massive felspar "porphyroids"
- ⑭ Dark to grey laminated slates
- ⑮ Agglomerate: angular slates and quartz fragments up to 2" ϕ



- ⑯ Porphyroidal lava-type formation, = ③, ④, ⑤
massive, grey to greenish, with abundant xenoliths of dark slates toward the base.
Sharp contact with unaltered "Owega" conglomerate, although marked by scree over a few yards.

- ⑰ Little amount of feldspathization (pink felspar) with some pyrite mineralization.
 - ⑱ Massive, fine grained, grey sandy beds: believed to be of tuffaceous facies.
- | | | |
|-------------|---|---------|
| 19, 20, 21. | Geochemical (ditch) spot anomalies (... tests conducted.) | |
| 22, 23. | | |
| 24, 25 | | Cu |
| 26, 27 | | Zn, Pb. |
| | | Cu |

Lyell 2, 779

[Faded handwritten notes and sketches, including a small diagram of a rock outcrop with labels like 'felspar', 'hornblende', and 'pyrite'.]

- 1) Frontal moraine(.....)
 - 2) Boulder moraine(▷▷▷▷▷)
 - 3) Scree(.....)
 - 4) Owen conglomerate
 - 5) Massive, sandy, partially bedded formations(tuffs?) associated with felspathic porphyroidal volcanics
 - 6) Quartz schists and chloritic schists with schists porphyroidal, largely felspathic,-- ①
 - 7) Massive, coarse grained, quartz-felspar-amphibole-pophyry ②
 - 8) Same as (7)
 - 9) Felspar porphyroids ①
 - 10) Quartz-felspar-hornblende porphyry
 - 11) Schistose, porphyroid, felspar rich formation.
 - 12) Massive dark green quartz-felspar-hornblende porphyry, giving rise to prominent round outcrops. On weathered surfaces the rock acquires a conglomeratic aspect, due to the differential weathering of hornblende rich (lightest coloured) and hornblende rich (brown) portions of the rock (presumably he means felspar rich for the light coloured portions--KLB)
 - 13) Massive felspar "porphyroids"
 - 14) Dark grey laminated slates
 - 15) Agglomerate: angular slate and round quartz fragments up to 2" diameter
 - 16) Porphyroidal lava-type formation ③ ④ ⑤
massive, grey to greenish, with abundant xenoliths of dark slates towards the base. Sharp contact with altered Owen conglomerate, although masked by scree over a few yards.
 - 17) Little area of felspathisation (pink felspar) with some pyrite mineralisation.
 - 18) Massive, fine grained, grey sandy beds: believed to be of tufaceous facies.
- ~~19, 20, 21, 22, 23, 24, 25, 26, 27~~
- | | | | | |
|-------------|--------------------|--------------|----|-------------------|
| 19, 20, 21) | Geochemical(dith.) | spot anomaly | Cu | (tests conducted) |
| 22, 23) | " | " | " | Cu |
| 24, 25) | " | " | " | Zn, Pb |
| 26, 27) | " | " | " | Cu |

(drawing referring to (12))



RIO AUSTRALIA EXPLORATION PTY. LTD.

Lyell 2, 781,

781

- (11) Massive, green porphyrid = (11)
 (10) Fine-grained, siliceous, green ash beds, unbedded, conchoidal fracture.
 (9) Sandy, green to greylastic: tuffs
 (8) Red and green quartz-felspar porphyry, associated with ^{hard} fine-grained rock type.

- (7) Alternating laminated siliceous slates and felspathic porphyridal rocks: 3 main bands, showing concordant relations with the sedimentary members. Contact either clear-cut or slightly hazy (corrosion effect?): "xenolith" of slates in the porphyridal rock, round or elongated, \pm parallel to the rough rock strike, which occur towards bottom of the band.

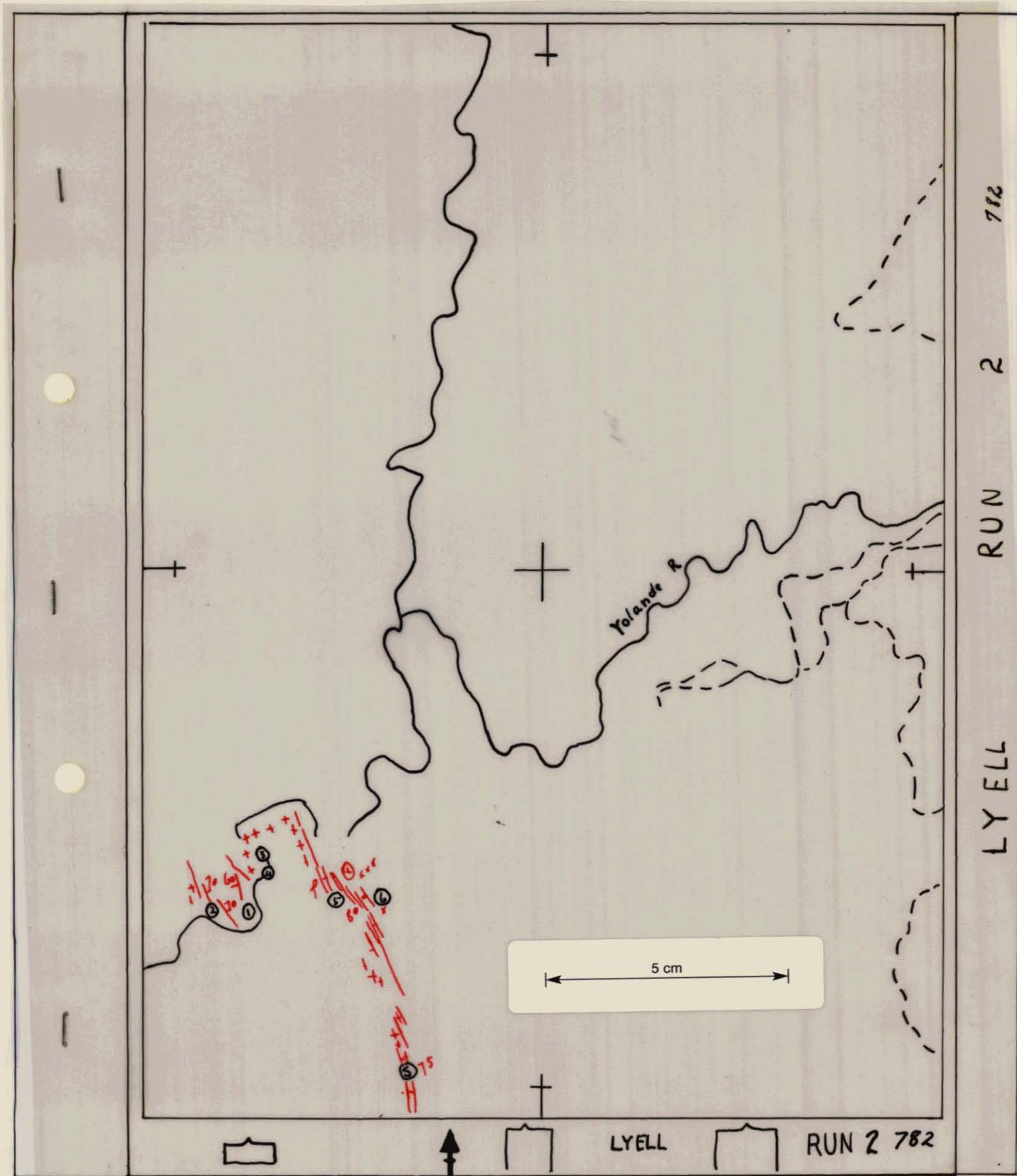


- (6) Weathered whitish, laminated, slaty sedi.
 (5) Band of decomposed quartz porphyries in bedded slaty formation.
 (4) Sandy slates and fine-grained clayish sandstones.
 (3) Bedded formations, consisting of dark to grey siliceous slates, well laminated and showing in places a cherty, compact texture (secondary silification?). Some more sandy layers alternating with them. Outcrops of these rocks are separated by deeply weathered masses of yellow or white clays. Numerous quartz veins at intervals.
 (2) Coarse moraine, up to the edge of the terrace: bed-rock beneath, along river.
 (1) Massive, (unbedded) volcanics, consisting of fine-grained grey-green rocks, ranging from a micro-crystalline tuff-like type to porphyritic type (felspar porphyries, striped)

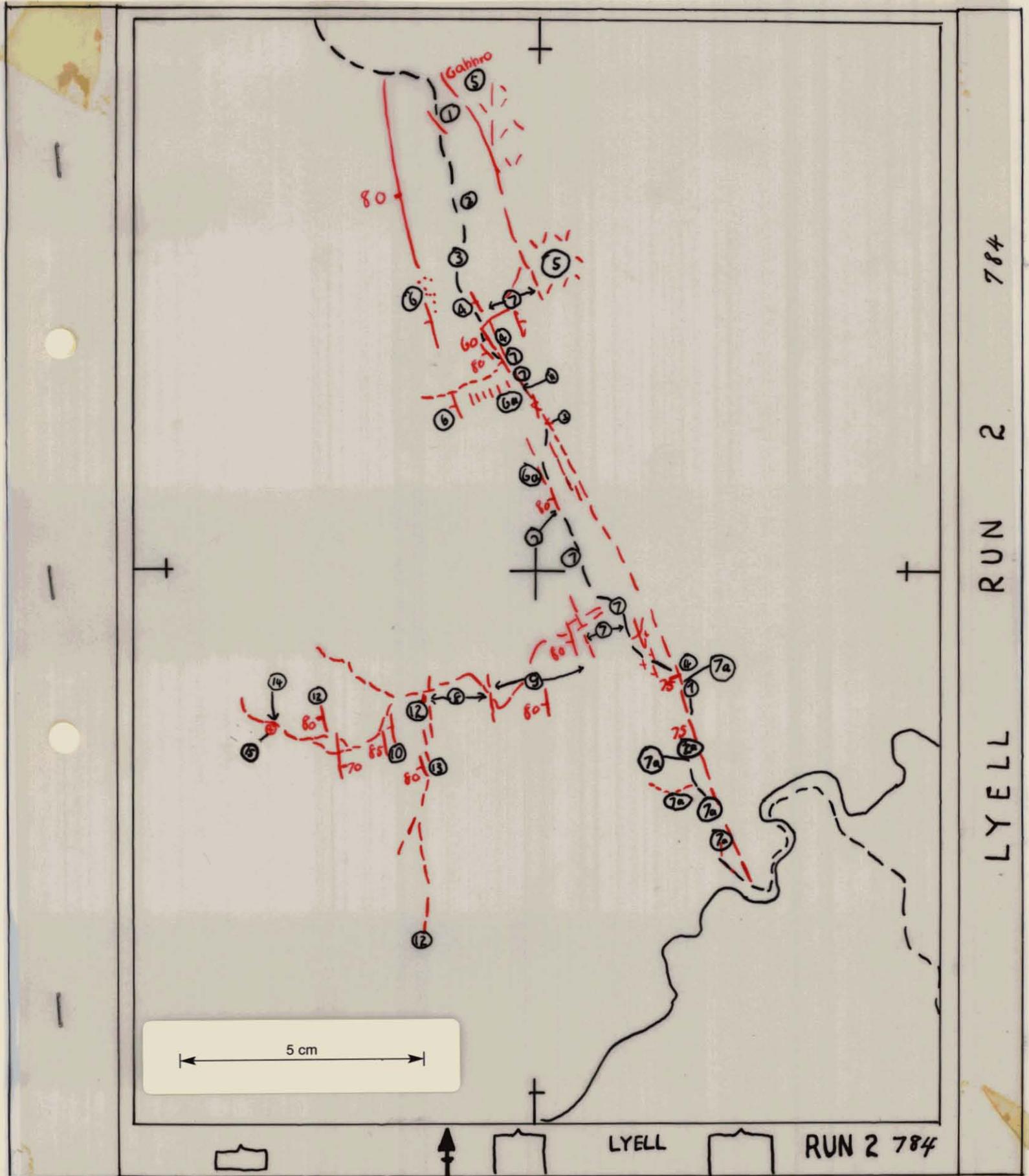
30. IV. 1957

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- 1) Massive (unbedded) volcanics, consisting of fine-grained grey-green rocks, ranging from a micro-crystalline lava-like type to porphyritic type (felspar porphyries, stressed)
- 2) Coarse moraine, up to the edge of the terrace: bed-rock beneath along river.
- 3) Bedded formations, consisting of dark to grey siliceous slates, well laminated and showing in places a cherty, compact texture (secondary silicification?) Some more sandy layers alternating with them. Outcrops of these rocks are separated by a deeply weathered masses of yellow or white clays. Numerous quartz veins at intervals.
- 4) Sandy slates and finegrained clayish sandstones
- 5) band of decomposed quartz porphyries in bedded slaty formation
- 6) weathered whitish, laminated shaly sediment
- 7) Alternating laminated siliceous slates and felspathic porphyroidal rocks: three main bands, showing concordant relations with the sedimentary members. Contact either clear-cut or slightly hazy (corrosion effect?): Xenoliths of slates in the porphyroidal rocks, round or elongated, approx. parallel to the country rock strike, which occur towards the bottom of the band. Flows?
(Drawing)
- 8) Red and green quartz-felspar porphyry, associated with more fine grained rock types.
- 9) Sandy, green to grey clastic: tuffs
- 10) Fine grained, siliceous, green ash-beds, unbedded, conchoidal fracture
- 11) Massive green porphyroid (1)



- (1). Quartz and massive chert.
- (2). Grey shales.
- (3). Porphyroidal lava with cherty bands.
- (4). Porphyry lava with large and small fragmentary inclusions of cherty bedded rock.
- (5). Bedded cherts in lavas, decomposed felsites? along track to east.
- (6). Grey crystal tuff. Assorted with tuff cherts and dense felsitic .



784

RUN 2

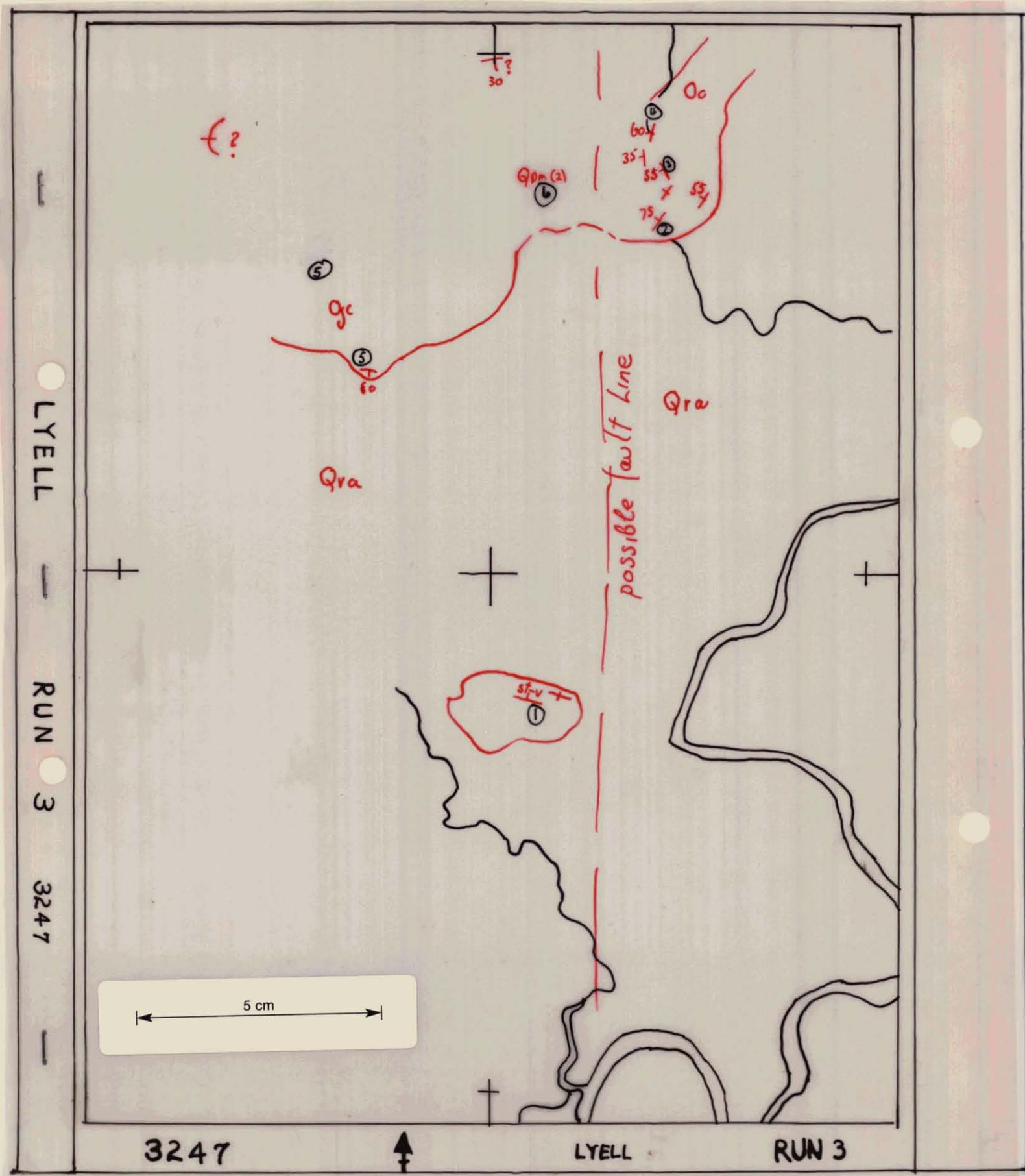
LYELL

LYELL

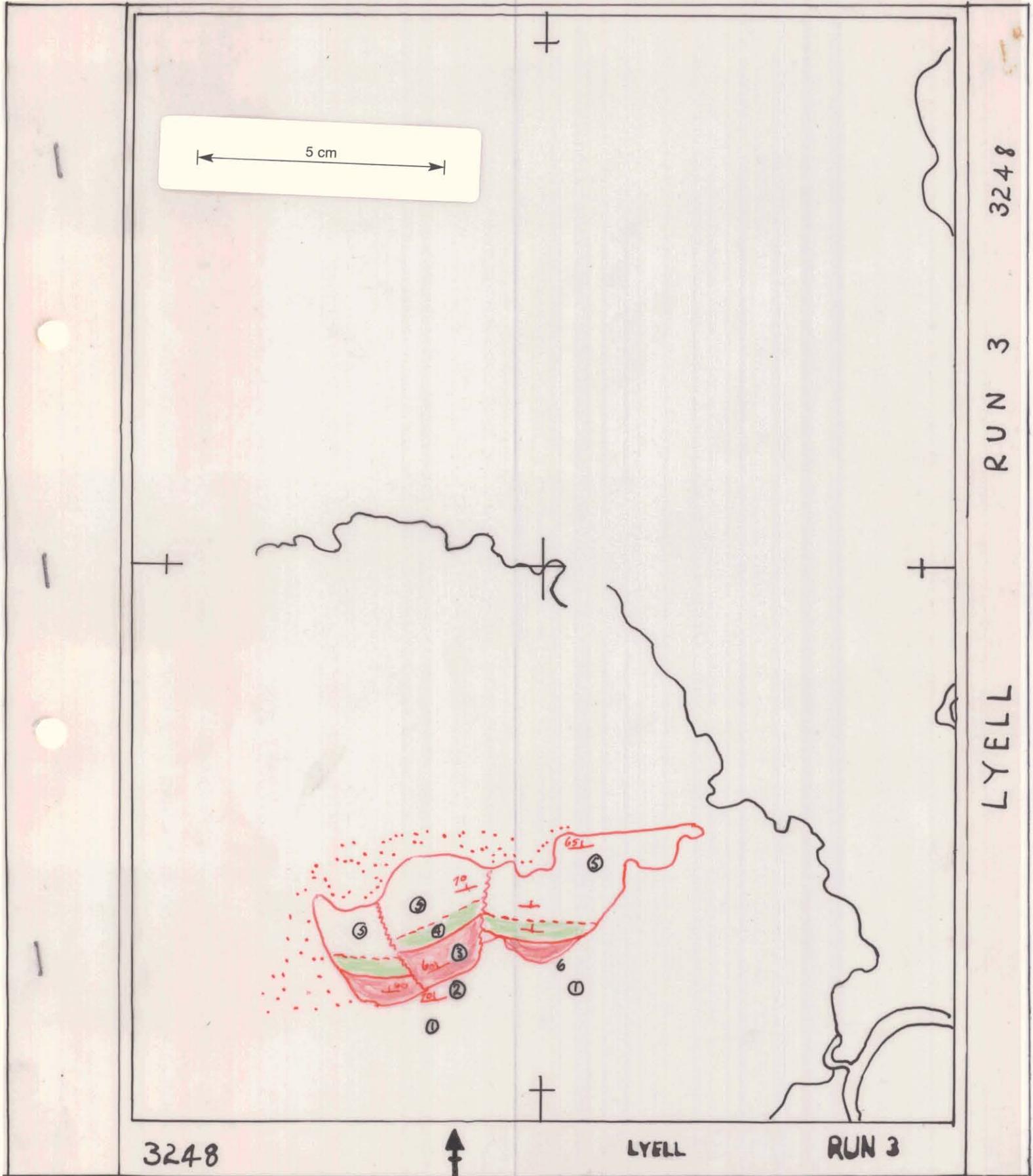
RUN 2 784

Lyell Run 2 NO 784

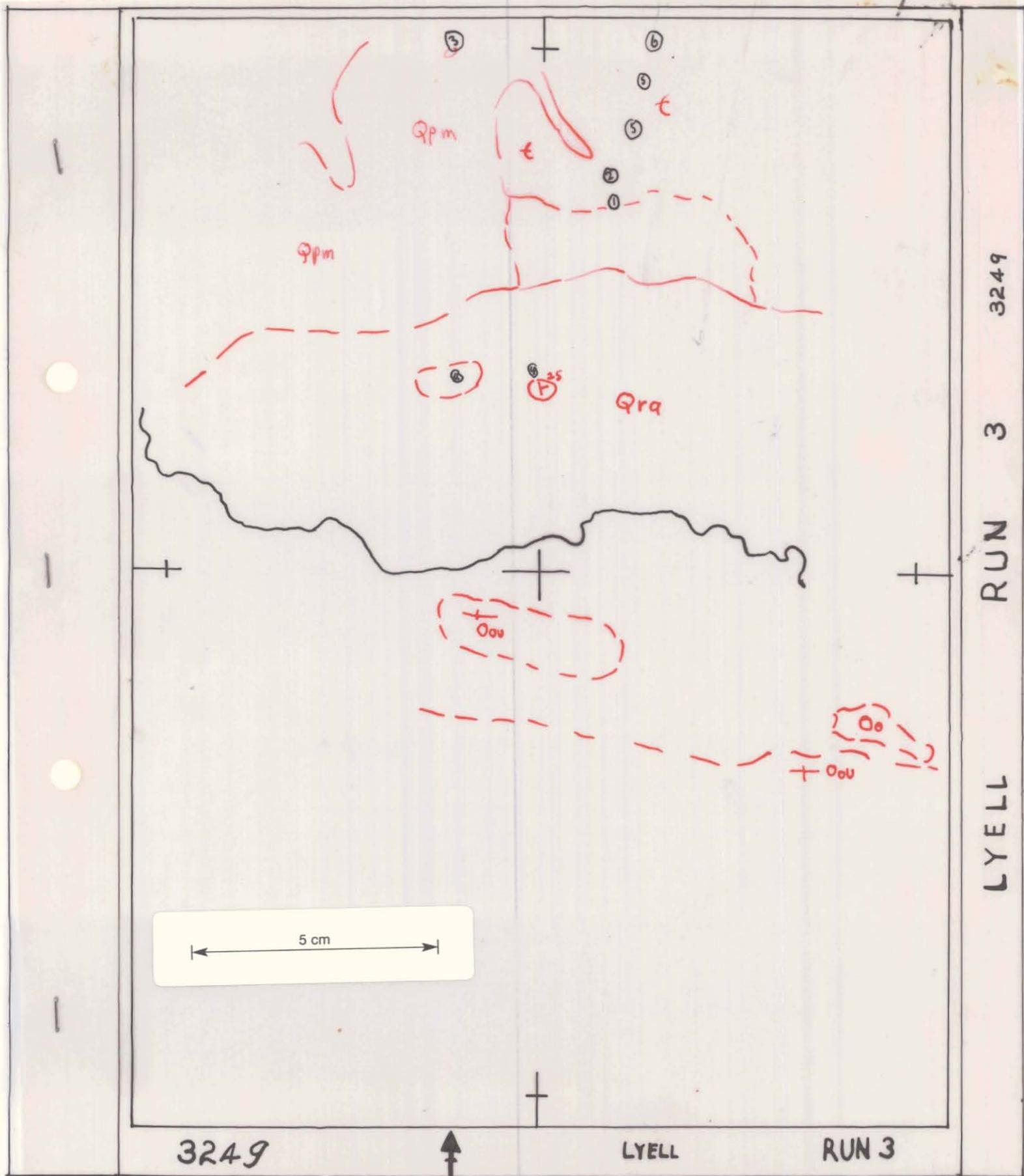
- (1). Whitish f.g. quartzite and tuffaceous shale.
- (2). Essentially dense pale grey non-bedded chert. Intercalations of decomposed felsitic lava.
- (3). Sequence of poorly bedded white to pale grey chert, shales and tuffaceous sandstones.
- (4). White felsite and interbedded laminated chert, quartzite and grey slates, and a black slate band.
- (5). Massive gabbro.
- (6). White tuffaceous quartzite and tuffs. (6a).
- (7). Wide zone of white sericitic felsite, foliation 330° v N° fresh exposures of felsitic lava.
- (8). Decomposed m.g. igneous rock—probably porphyry.
- (9). Grey finegrained, highly micaceous sandy greywacke tuff. Considerable thickness and consistent bedding 340° dip, $\text{W}80^{\circ}$.
- (10). Pale greenish shale, f.g. greywacke tuffs similar 9, and dark grey cherty shale.
- (11). Well laminated grey siltstone with black shale laminae. 350° dip. E. 70° .
- (12). Fine agglomerate (greywacke composition) and tuffaceous shales.
- (13). Laminated shales and greywacke agglomerate bands.
- (14). Black and grey shales.
- (15). Fine-grained porphyry—small outcrop.



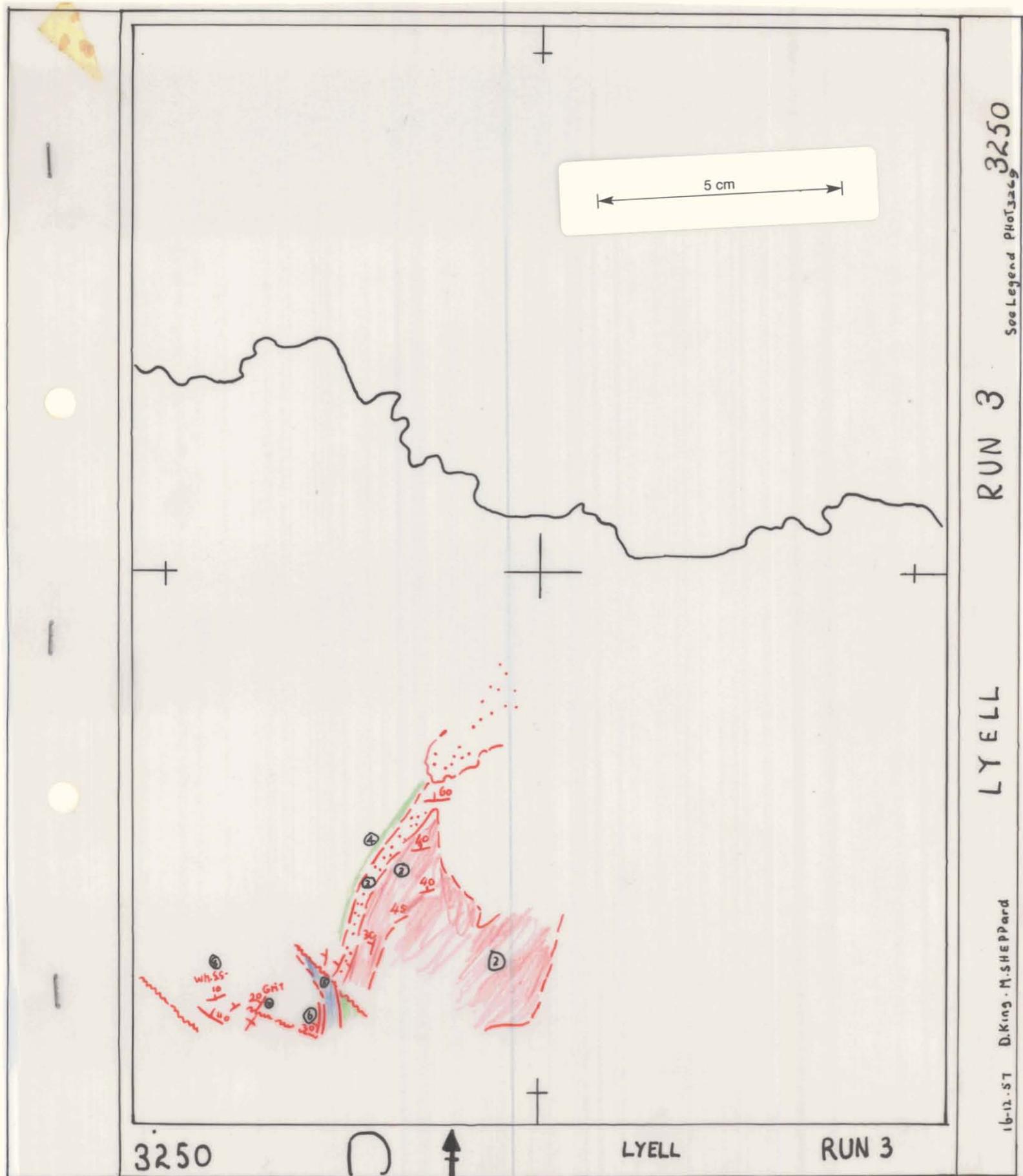
- (1). grey quartzites and sandstones, some cross-bedding, vague fossil outlines like erinoid stems. Similar to Thureau Fossiliferous sandstones. Probably Upper Owen.
- (2). Siliceous grey coarse sandstone and grit, fairly well bedded. Some what coarser up dip.
- (3). Finely alternating quartzite and shale, bands $\frac{1}{2}$ "- $\frac{1}{4}$ " thick, with occasional coarse sandstone bands up to ~~an~~ 1" thick. In cliffs above, shales give way to more massive grits.
- (4). Thinly bedded coarse sandstone. Facies variations appear to be fairly rapid.
- (5). Jukes conglomerate. P~~f~~ pebbles in sheared greywacke type conglomerate with mainly P~~f~~ pebbles.
- (6). Large boulders of Owen Conglomerate strewn over, This area probably @pm.



- (1). Medium conglomerate, pebbles (2" diam and not abundant, of quartzites and porphyries. Matrix fine to med grained of quartz (euhedral) and pink felspar (anhedral) porphyroblasts. Felspar not as abundant as in (13)-4/3272, therefore possibly lesser mmt. grade; segregation and recrystallization not so advanced. (= (11)-4/3272).
- (2). "Jukes Horizon"-the contact with 1. is gradational. Consists of coarse conglomerate beds up to 3' wide, separated by thinner sandstone and grit bands, General colour reddish purple. Matrix feldspathized and gritty. Grades laterally into (6). Distinct from (1) in that the bedding is the dominant structure, in (1) the schistosity of the matrix eliminates any visible bedding.
- (3). Massive Owen Conglomerate (basal) Pebbles large, up to 6" diam, generally quartzite but in lower layers porphyry pebbles are common. Colour light pinks and yellows. (300ft).
- (4). Pink sandstone weathering light pink with abundant grit and fine conglomerate bands. Heavy mineral layers (hematite) abundant.
- (5). Light pink sandstones and quartzites, in general somewhat lighter in colour and of coarser grain size. Well bedded with hematite rich and medium conglomerate beds. (4) and (5) most likely variations of the one formation grading into one another.
- (6). Contact of basal Owen Conglomerate with the Jukes Horizon. Contact structure not definite, but shows no evidence of faulting, probably disconformable.
 "Owen"-a coarse light pink silicious conglomerate some porphyry pebbles.
 "Jukes"-similar in texture to the Owen; of large rounded pebbles of quartzites, slates and porphyries, red-purple in colour. rich in hematite. Jukes at (6) grades into (2), but section along track lacks grit bands, and bedding is less pronounced. Deposits similarity of texture at (6). Jukes differs from Owen in the presence of felspar in the matrix. Moving South along track, pebbles become smaller and fewer with an apparent increase in feldspathization and development of quartz porphyroblasts in the matrix.



- (1). Brecciated porphyry, much quartz veining.
- (2). Green (chloritic) felspar porphyry, locally showing brecciated or pyroclastic texture.
- (3). Small exposure, pale green coarse greywacke conglom. (or volcanic)
- (4). Pale grey quartzites medium bedded, with thin fossiliferous (?) bands - no recognizable forms.
- (5). Agglomerates and felspathic lavas (?).
- (6). Jukes conglomerate (in situ).



See Legend PHOT 3250

RUN 3

LYELL

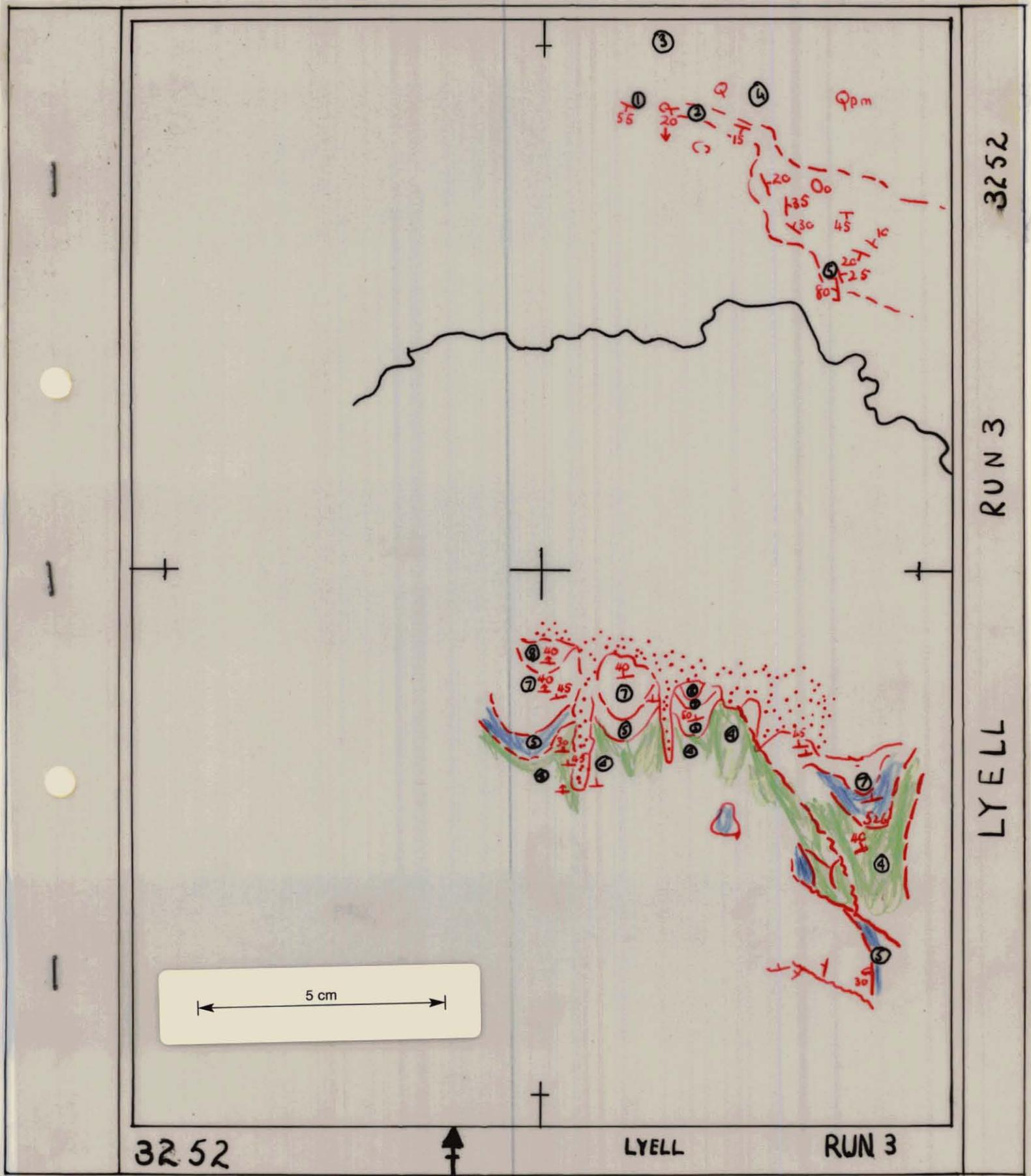
16-12-57 D. King - M. SHEPPARD

444051

Lyell Run 3 No 3250 D.King@ M.Sheppard

049

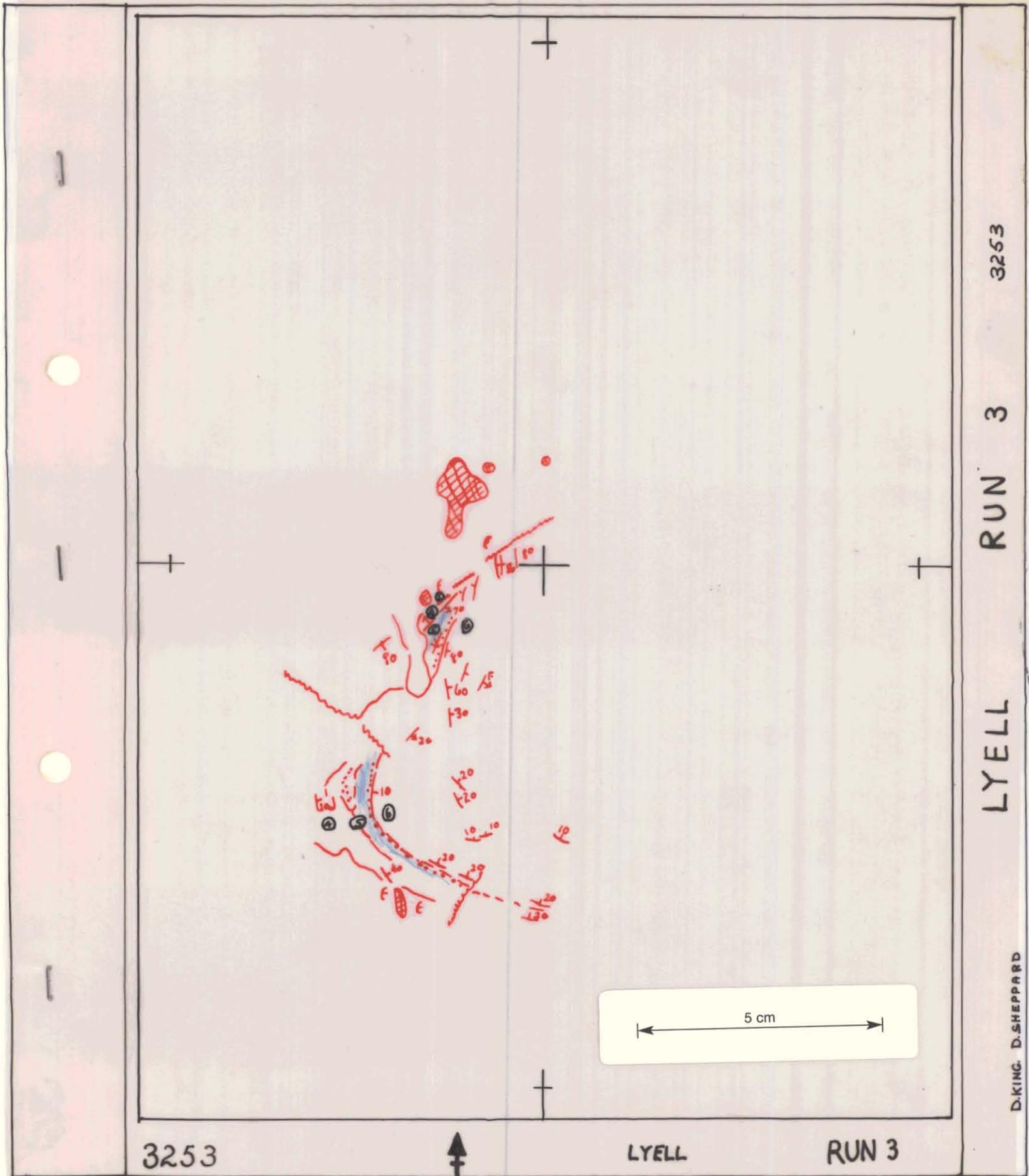
See Legend on Photo 3269.



Lyell Run 3 NO 3252

- (1). Red sandstone with gravelly bands, sub-angular fragments
100' thick
- (2). Similar sandstones, now about 300' thick, increases to east
to e. 500' and then again.
- (3). Greenish q.f.p. some parallelism of felspar.
- (4). Glacial with boulders Jukes Conglomerate.
- (5). Sheared grey sandstone with gravel bands, cleavage 160/80w.

LYELL 3 - 3253



3253

RUN 3

LYELL

D.KING. D.SHEPPARD

3253



LYELL

RUN 3

5 cm

053

Lyell Run 3 No 3253 D.King and M.Shepherd.

- (1). Mineralised schist (Cambrian).
- (4). a. 50' of massive conglomerate, poorly sorted with pebbles generally about 1", but ranging down to grit. Usually heterogeneous with some large pebbles porphyry and red chert. Many pebbles are angular. Pellets of chocolate shale with enclosed quartz pebbles, showing originally clay. Strike, 50°, dip N.W. 60°
- (5). a. Clear white sandstone overlain unconformably by alternating white angular conglomerate and dark chert-rich greywacke grit. total 20'.
b. 50' of banded very coarse dark conglomerate (angular pebbles) rich in hematite and cherty quartz, alternating with fine sandstone, current bedded, rich in hematite. E facing.
- (6). Inter bedded red-brown grit rich in cherty fragments passing upwards into red sandstone, and upper hard capping of dense blue-grey sandstone (pink weathering). Basal section is rich in hematite bands. Large area of crest occupied by these rocks, gentle dip.

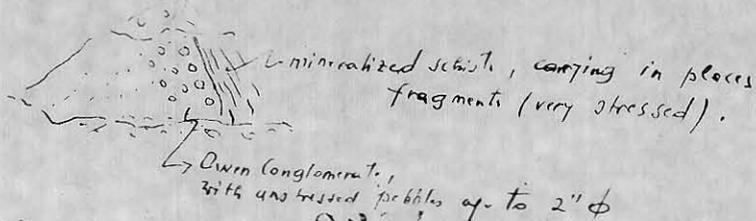
054



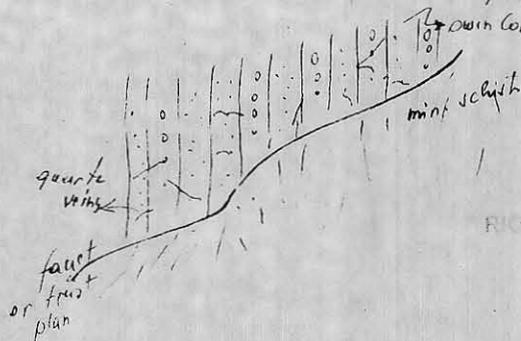
① Comstock mineralized formations: Pyrite & Cu + minor amounts of Pb and Zn replacing schistose and heavily sheared sediments, in which bedding is in places well shown. These formations undoubtedly belong to the Dundee's clastic, in part formed by breccias (Jukes horizon), in part by finer well bedded clastics: tufts or ash beds possibly, judging from the formations of which they form the extension along the strike (see photographs 3255). Specimen ① represent mineralized portions of this zone.

② is the Owen Conglomerate in a steep to overturned position, formed by alternating beds of fine-medium grained hematitic quartzite and micro-conglomeratic beds.

① and ② show no gradational passage, but a sharp, clear-cut contact, clearly of tectonic nature (see photograph by W. Atkinson). In the open cut, some 60' above the base adit, this contact is as follows:



The general disposition in the face of the quarry is as follows:

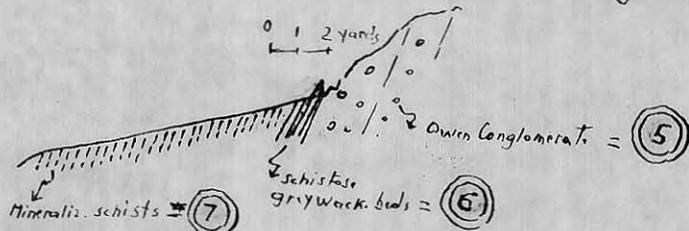


③ Zone of feldspathization, as described in adjoining photographs, but more intense in this zone, particularly near the mineralized beds of ①. Bedding admirably preserved and well exposed along the railway cutting. Near the open cut, the feldspathization give rise to 'massive' rocks (= ②), largely

composed of pink feldspar, and recalling the Red Hill "porphyry", and carrying in places abundant hematite (= ③).

Specimen ④ represent another feldspathized beds, some 800 yards north-west of the open-cut, along the railway.

- ④ Boulder moraine. ⑤ Alluvial. ⑥ Scree.
- ⑦ Pyritic schists and schistose breccia, outcropping as sharp prominent blades
- ⑧ Trench, exposing contact exposing the following contacts:



Lyell Run 3. 3254.

056

- 1) Comstock mineralised formations; Pyrite and Cu and minor amounts of Pb and Zn replacing schistose and heavily sheared sediments, in which bedding is in places well shown. These formations undoubtedly belong to the Dundas clastic, in part formed by breccias (Jukes horizon) in part by finer well bedded clastics: tuffs or ash beds possibly, judging from the formations of which they form the extension along the strike (see photograph 3255). Specimen ① represents mineralised portions of this zone.
- 2) is the Owen conglomerate in a steep to overturned position formed by alternating beds of fine-medium grained hematitic quartzite and micro-conglomeratic beds.

(1) and (2) show no gradational passage, but a sharp clear-cut contact, clearly of a tectonic nature (see photograph by W. Atkinson). In the open cut, some 60 feet above, this contact is as follows: (drawing)

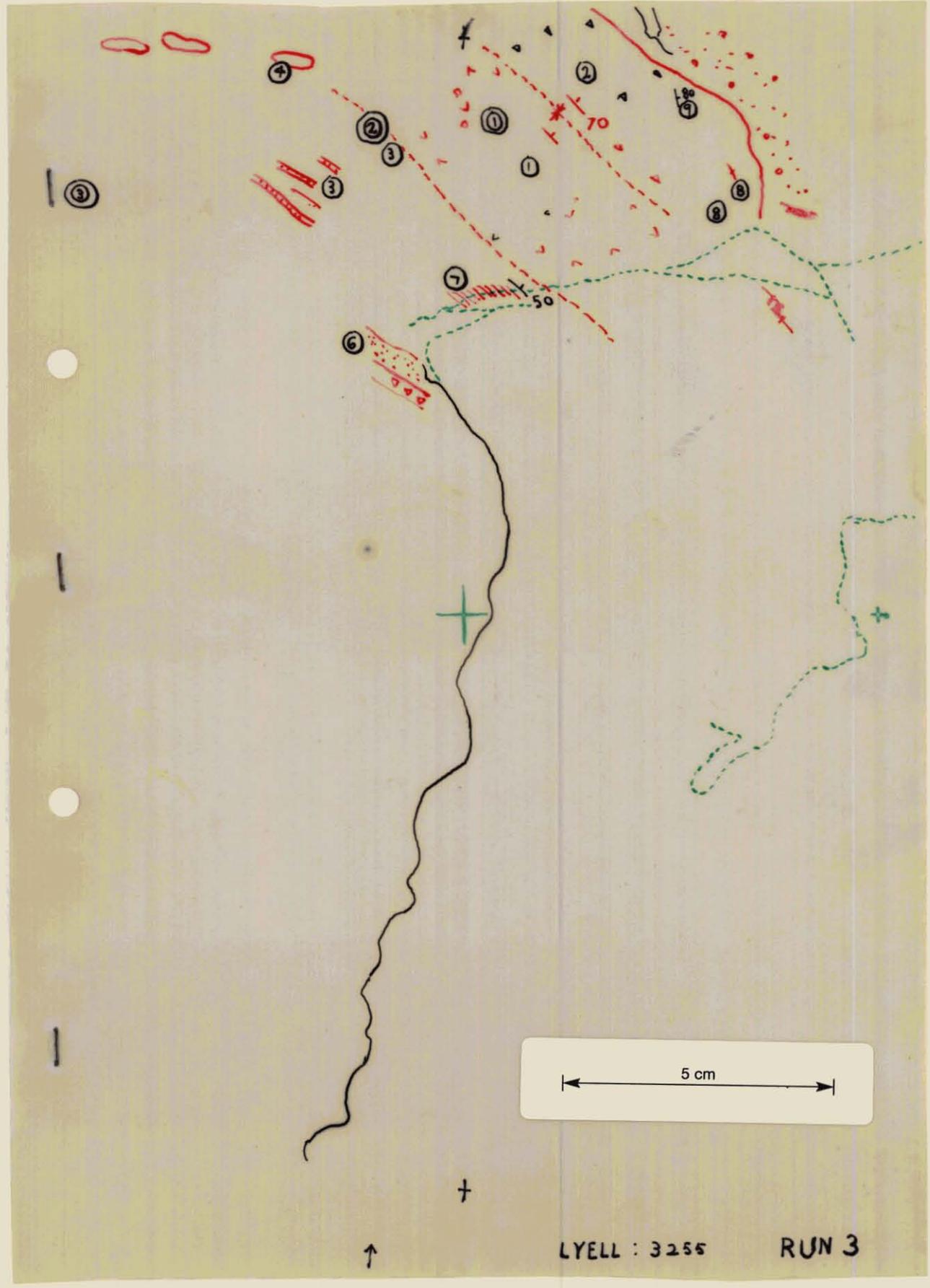
Mineralised schist, carrying fragments (very stressed)

Owen conglomerate with unstressed pebbles up to 2" diameter.

The general disposition in the face of the quarry is as follows: (drawing)

- 3) Zone of feldspathisation as described in adjoining photographs but more intense in this zone, particularly near the mineralised beds of (1). Bedding admirably preserved and well exposed along the railway cutting. Near the open cut, the feldspathisation gives rise to a massive rock ② largely composed of pink feldspar, and recalling the Red Hill porphyry and carrying in places abundant hematite ③. Specimen ④ represents another feldspathised beds some 800 yards north-west of the open-cut, along the railway.
- 4) Boulder moraine
- 5) Alluvial
- 6) Scree
- 7) pyritic schists and schistose breccia, outcropping ~~as~~ as sharp prominent ridges (ridge? KLB)
- 8) Trench, exposing contact--exposing the following contacts-- (drawing)

057



LYELL : 3255

RUN 3

058

① "Felspathized pyroclastic". The original rock is a fairly coarse volcaniclastic breccia or agglomeration, with abundant angular fragments of black slates, etc., alternating with finer, well bedded, layered material (tuffs). Both agglomerate and tuffaceous layers are extensively felspathized, the felspathization being clearly a later phenomena. The original pyroclastics have thus been changed into massive, hybrid formation by metasomatism. The felspathic groundmass has a character either by a microcrystalline to cherty structure or a porphyritic character with angular quartz grains embedded in the felspathic matrix. The fragments of slates have also undergone partial felspathization, and by development of small (up to 2mm) feldspar grains (usually round) in the slaty matrix.

Original bedding still well preserved in portions of the rock, plus for the felspathization as been preferential: abundant in certain favourable layers (which acquired a pink coloration), scanty in other layers.

See specimen ① where fine lamination is not only preserved, but also emphasized by a lit-par-lit metasomatic felspathization. See also closed-up photograph by W. Atkinson.

Abundant quartz veins and in places Fe-mineralization, some track-type and mineralization type recalling the Red Hill conditions. See other descriptive notes in adjoining photograph.

② "Coarse and medium-grained pyroclastics", almost unaltered or showing in places limited felspathization. ② ③

③ Zone of pyrite mineralization in a fine-grained, dark green unbedded rock type, of the type of specimen ② ③

④ Dark green porphyrid, carrying abundant hornblende. See adjoining photographs.

⑤ Felspathized tuff, at the edge of ①

⑥ Agglomerate and tuffs. ⑦ Schistose fine-grained sediments (tuffaceous facies?)

⑧ Grey-green medium grained geywacke-type (or volcanic) conglomerate, poorly sorted, mainly pebbles porphyres, slates but some Pt pebbles hematitic pebbles.

⑨ Grey-green shaley beds in felspathic agglomerates or geywacke conglomerates.

Lyell Run 3. 3255.

059

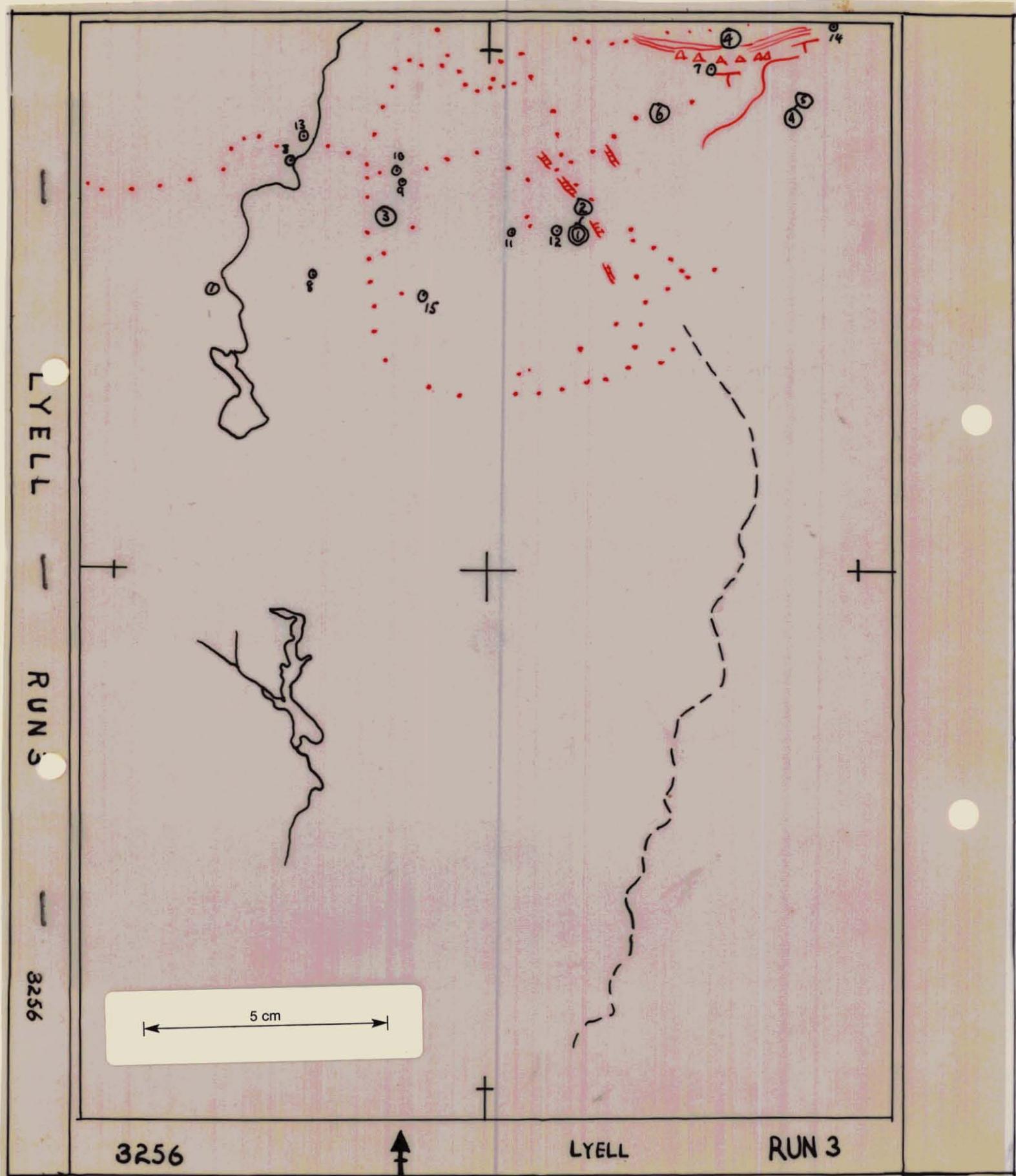
1) Felspathised pyroclastic: The original rock is a fairly coarse volcanic clastic, with abundant angular fragments of black slate etc alternating with finer, well bedded layered material (tuffs). Both agglomeratic and tuffaceous layers are extensively felspathised, the felspathisation being clearly a later phenomena. The original pyroclastics have thus been changed into a massive, hybrid formation. The felspathic groundmass has either a microcrystalline to cherty structure or a porphyritic character, with angular quartz grains embedded in the felspathic matrix. The fragments of slates have also undergone partial felspathisation, by development of small (up to 2mm) feldspar grains (usually round) in the slaty matrix.

Original bedding still well preserved in portions of the rock, for the felspathisation has been preferential: abundant in certain favourable layers (which acquired a pink colouration) scanty in other layers. See specimen ①

where fine laminations is not only preserved, but also emphasised by a lit-par-lit metasomatic felspathisation. See also close-up photograph by W. Atkinson.

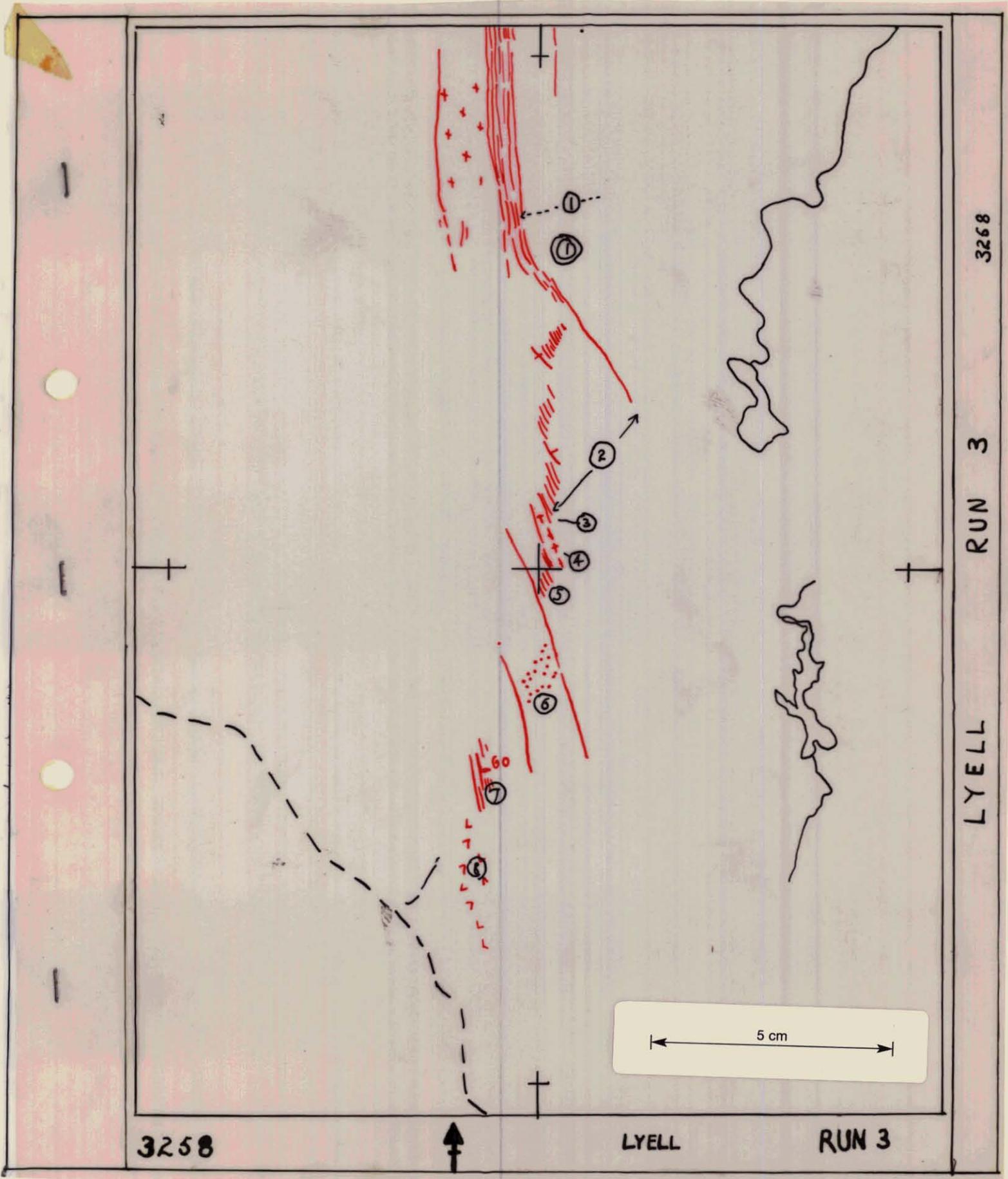
Abundant quartz veins and in places Fe-mineralisation some rock-type and mineralisation type recalling the Red Hill conditions. See other descriptive notes in adjoining photographs.

- 2) Coarse and medium grained pyroclastics, almost unaltered or showing in places limited felspathisation
 - 3) Zone of pyrite mineralisation in fine grained, dark green unbedded rock type of the type of specimen ② ③
 - 4) Dark green porphyroid, carrying abundant hornblende. See adjoining photographs.
 - 5) Felspathised slate, at the edge of (1) ②
 - 6) Agglomerates and tuffs
 - 7) Schistose fine grained sediments (tuffaceous facies?)
- M. Solomon
- 8) Grey-green medium grained greywacke type (or volcanic) conglomerate, poorly sorted, mainly pebbles porphyries, slates, but some PC pebbles and hematite pebbles,
 - 9) grey green shaley beds in felspathic agglomerates or greywacke conglomerates



- (1). Hornblende-felspar porphyry.
- (2). Dark green, finely crystalline pyrite-carrying "lava", showing flow structures and orange oxidation surfaces. 200' thick ①
Note its proximity with feldspathized zone.
- (3). Dark green, schistose "volcanics": outcrops very scarce and deeply weathered.
- (4). Dark, fissile, laminated slates associated with coarse volcaniclastic, largely feldspathized (see details in adjoining photograph)
- (5). Bedded outcrop of feldspathized pyroclastic.
- (6). Geochemical testing; see E. Muceniekas field books N05/Blue.....
Test conducted ① Anomaly recorded, soil, water, outcrops.
- (7). Cu mineralization below dark fissile, laminated slates.
- (8,9,10, Cu mineralization near decomposed rock and rock fragments
- 11,12, Soil mineralization (anomalies).
- 13, Cu mineralization in soil 12' deep.
- 14, Cu, Zn, Pb mineralization in rock and soil.
- 15, Cu, mineralization in silt.

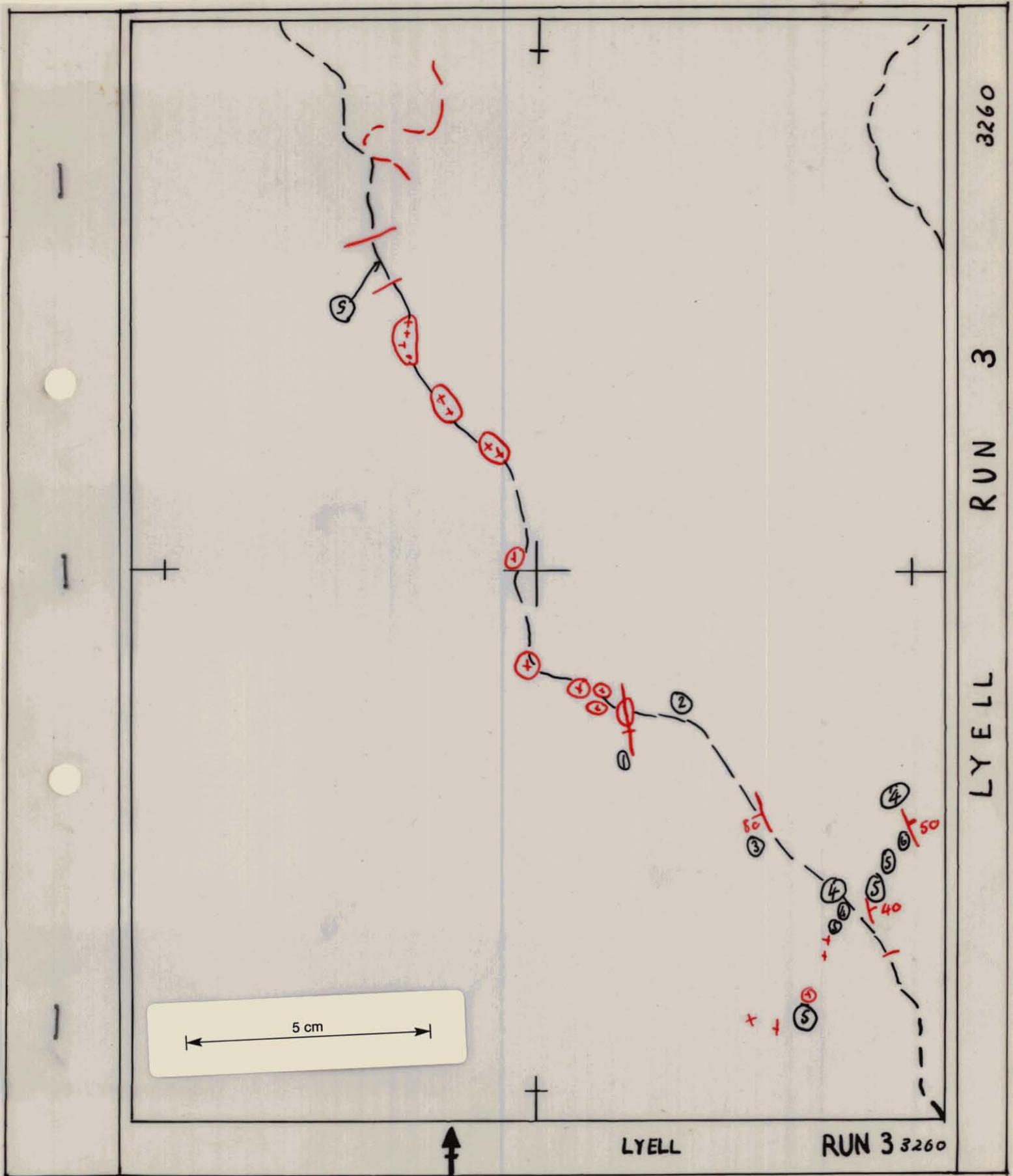
062



-Lyell Run NO 3 NO 3258 3253

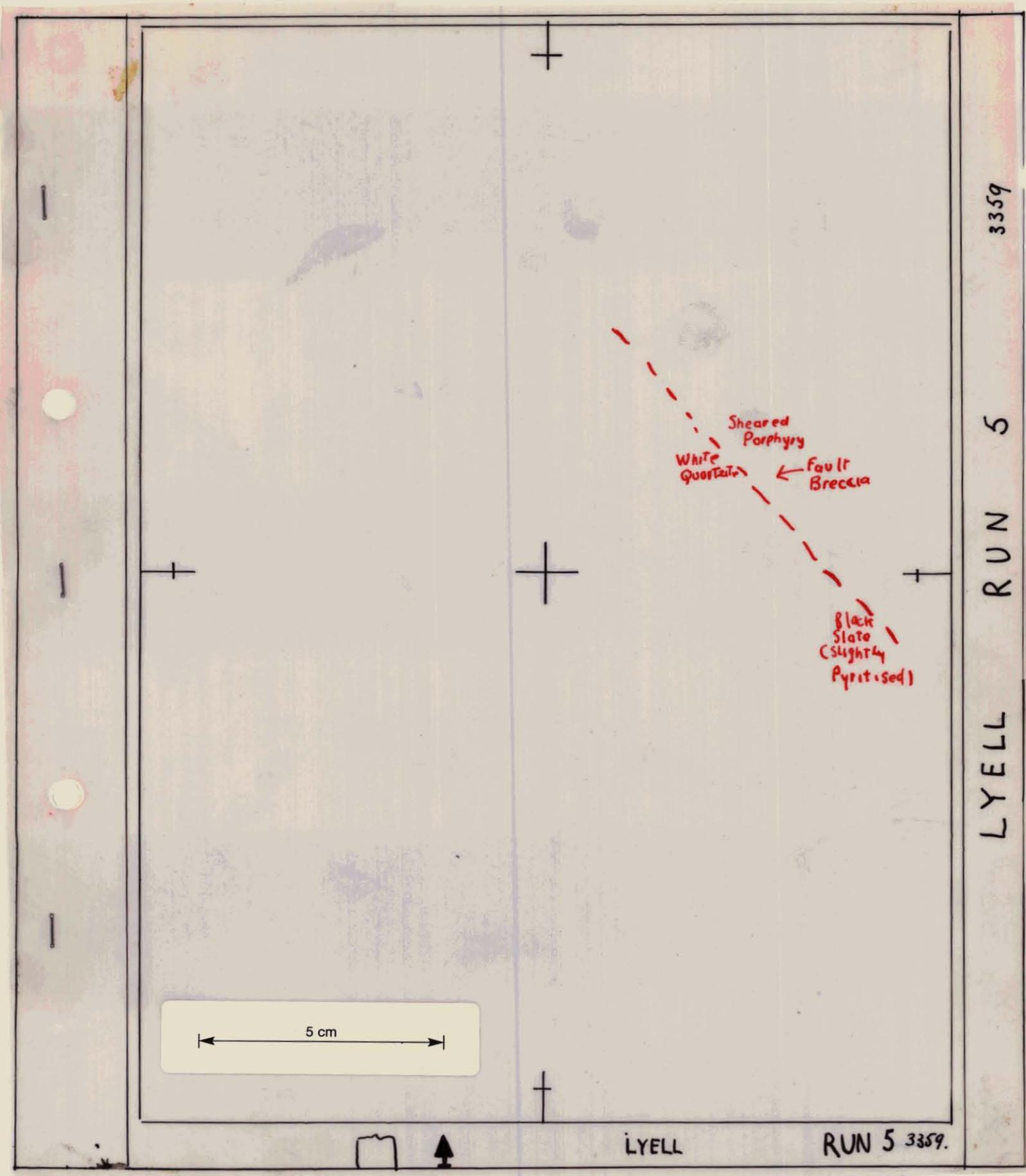
- (1). Massive porphyroidal ① (felspar, porphyries, quartz-felspar porphyry grading to rhyoli rock type). See specimen of this formation.
- (2). Chiefly argillaceous Sediments, slaty and bedded in places otherwise poorly stratified, whitish in colour much decomposed and looking like quartz, free (?andesitic) ash beds. Some porphyritic band present at interval.
- (3). Pyritic dark seists.
- (4). Porphyry.
- (5). Dark-green, lava-like formation, much decomposed by weathering.
- (6). Massive, grey-green, sandy beds, can be regarded as tuffs.
- (7). Well bedded, grey- siliceous slates.
- (8). Massive, green, lava like formation.

064



Lyell Run 3 No 3260

- (1). Bedded sequence felspathic tuffs with large fragments of cherty slate, notibily sandy tuffs and siliceous slate 355°vert.
- (2). Greenish felspathic tuffs with slate pebbles, grey shaley cherts.
- (3). Well bedded sequence of and dark slates, greenish tuffaceous quartzite, cleavage flatter than bedding, W dip (overturned).
- (4). Shaley beds slates.
- (5). White unbedded massive shaley rock.
- (6). Pale grey porphyry with thin slate bands.
- (7). Band of black slate in creek.



3359

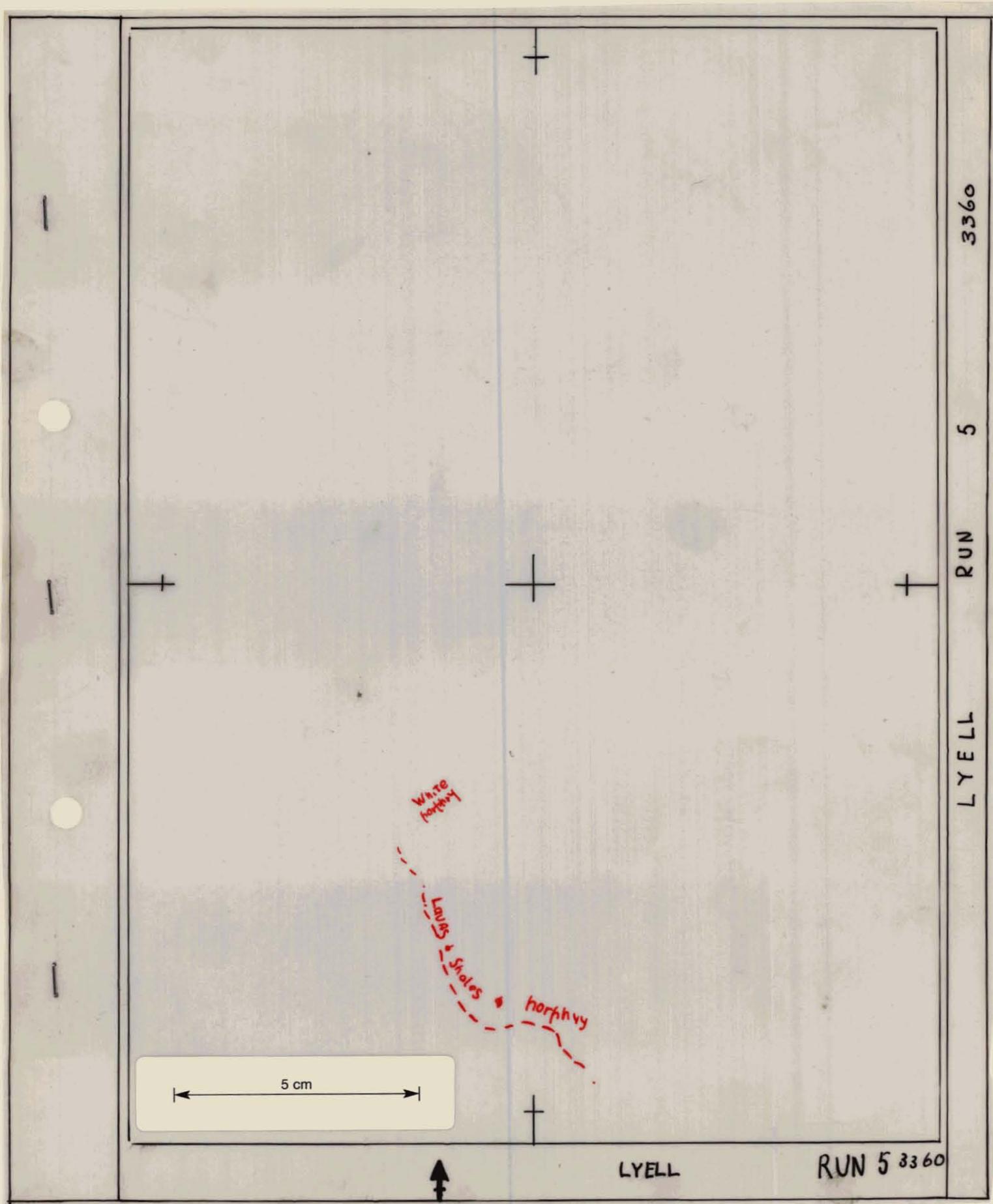
5

RUN

LYELL

LYELL

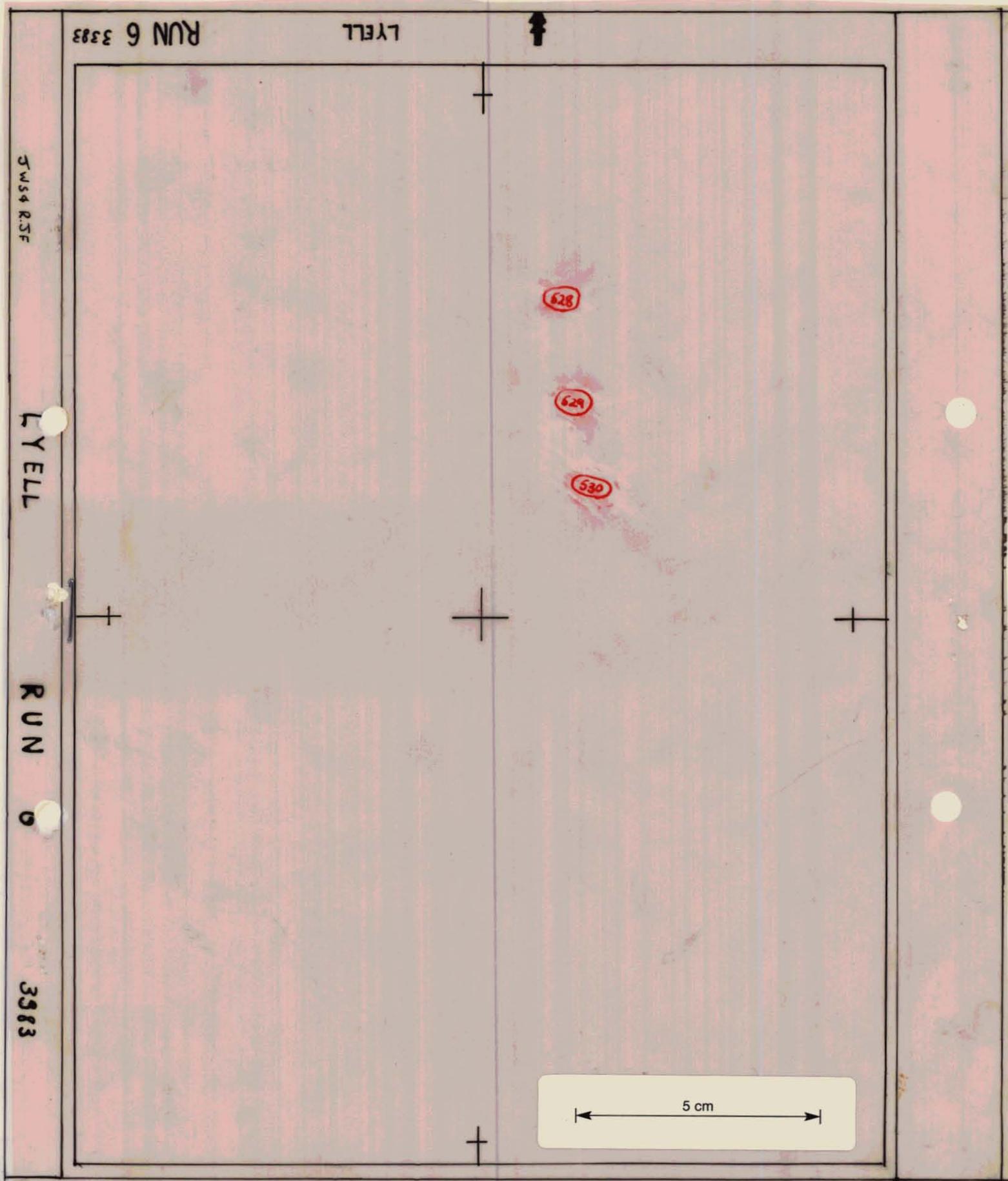
RUN 5 3359.



068

LYELL 6 - 3383

444070



069

Lyell Run 6 NO 3383 J.W.S & R.J.F

- J.S. 28. See spec. Fined grained chalky white Porphyry
very schistose, schistosity E-W.
- J.S. 29. See spec. Dense m.g black lava. Few inclusions of $\frac{1}{4}$ "
- J.S. 30. Spec. Black lava crowded with pink inclusions-up to
1" diam. 29&30 both highly magnetic.