1986/32

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD

Record 1986/32

RANFORD HILL, NORTHERN TERRITORY; DATA RECORD OF 1:100 000 SCALE MAPPING

P.G. Stuart-Smith, R.S. Needham and L. Bagas

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P.G. Stuart-Smith, R.S. Needham and L. Bagas*

*Northern Territory Geological Survey

R8603201

CONTENTS

ABSTRACT

This record summarises the results of 1980-1 fieldwork by the Pine Creek Geological Party (BMR and NTGS) in the Ranford Hill 1:100 000 - scale Sheet area. Reductions to 1:100 000 - scale of the 1:25 000 - scale compilation sheets, thin section locality sheets, and petrographic descriptions of selected samples, are enclosed. The geology of the area is briefly described.

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INTRODUCTION

This Record summarises results of the 1980-1 field work of the Pine Creek Geosyncline Geological Party of the Bureau of Mineral Resources (BMR) and the Northern Territory Geological Survey (NTGS) in the Ranford Hill 1:100 000 Sheet area. The work was a continuation of geological field work in the Pine Creek Geosyncline, as part of the Pine Creek Project, whose overall objective is to study the geology, geophysics, and mineralisation of the geosyncline; an important subsidiary objective is to produce 1:100 000 - scale geological maps of the region. A detailed account of the geology of the area is in preparation and will be published in the BMR Map Commentary Series.

This Record presents 1:100 000 - scale reductions (Figures 4b-15b) of the 1:25 000 - scale compilation sheets, and an outline of the stratigraphy. Petrographic descriptions are apppended.

The location of the area is shown in Figure 1. Colour airphotos at 1:25 000 - scale were used, in conjunction with 1:89 000 - scale panchromatic airphotos. Figure 3 contains the geological reference and an index to the compilation sheets. Copies of the compilation sheets at 1:25 000 original photo-scale can be obtained from the Copy Service, Australian Government Printer (Production)G.P.O. Box 84, Canberra, ACT 2601 - price on application.

The field positions of specimens described petrographically are shown on topographic bases accompanying each compilation sheet, as 8-digit BMR sample submission numbers.

GEOLOGY

Generalised solid geology is shown in Figure 2, and the stratigraphy is summarised in Table 1.

The region is dominated in the west by a large mass of granite which forms the eastern part of the late Early Proterozoic Cullen Batholith, and in the east by a basin of interlayered sandstone and volcanics ('Mount Callanan Basin'), which represents a thickened sequence of the Middle Proterozoic Kombolgie Formation at the western edge of the McArthur Basin. Late Early Proterozoic volcanic sequences of the El Sherana and Edith River Groups underlie the sandstone in the northeast. The

granite batholith and sandstone basin are separated by a tight to isoclinally folded and faulted northerly belt of low-grade Early Proterozoic metasediments of the Pine Creek Geosyncline sequence.

The **Namoona Group**, the oldest unit in the Sheet area, crops out in the northeast around the Mount Callanan Basin. It contains the Masson Formation and Stag Creek Volcanics. Elsewhere in the Pine Geosyncline correlatives of the Masson Formation overlie the basal Early Proterozoic Kakadu Group or the Archaean to Early Proterozoic Rum Jungle and Nanambu Complexes (Needham & others, 1980).

Clastic sediments of the **Mount Partridge Group** unconformably overlie the Namoona Group. The Mundogie Sandstone, a fluvial sequence of sandstone and minor conglomerate and pelites, forms the base of the group; it is overlain, probably transitionally, by the Wildman Siltstone, a dominantly pelitic sequence.

A conformable sequence of hematitic, carbonaceous and tuffaceous sediments of the **South Alligator Group** crops out in the north, mostly along the eastern margin of the Cullen Batholith and in a northwest-trending belt along the western margin of the Mount Callanan Basin. The group, which includes the Koolpin Formation, Gerowie Tuff and Mount Bonnie Formation, rests unconformably on the Namoona and Mount Partridge Groups, and is itself unconformably overlain by the late Early Proterozoic El Sherana and Edith River Groups and by Cretacous sediments.

The Burrell Creek Formation is the only member of the **Finniss River Group**, which is the youngest unit of the Early Proterozoic geosynclinal sequence. The formation is very extensive, occupying about 60 percent of the area, and is bounded to the west by the Cullen Batholith and to the east by subhorizontal Middle Proterozoic and Mesozoic sandstone tablelands. The unit represents a turbidite sequence of greywacke, pelites and minor conglomerate conformable upon the Mount Bonnie Formation.

The Early Proterozoic geosynclinal metasediments are intruded by a pre-orogenic sill of Zamu Dolerite, syn to post-orogenic granitoids of the Cullen Batholith, and post-orogenic dykes of dolerite (Oenpelli Dolerite), lamprophyre, and felsite. The granitoids form eight coalesced plutons and two isolated cupolas of the **Cullen Batholith** (previously named the Cullen Granite by Noakes, 1949), which intrude and extensively contact metamorphose the Early Proterozoic metasediments. The current investigation has distinguished, on the basis of mineralogy and texture, ten

varieties of granitoid eight of which occur in RANFORD HILL. These rocks are classified following the nomenclature recommended by the IUGS Subcommission on the Systematics of Igneous Rocks (Streckeisen, 1973). As well as the ten granitoid phases, older bodies of monzonite, Early Proterozoic hornfels rafts, and post-granite dykes (Lewin Springs Syenite) have been distinguished. The granitoids include three types of granite and five types of leucogranite.

Two groups of unmetamorphosed late Early Proterozoic volcanic rocks and associated sediments underlie the Middle Proterozoic Kombolgie Formation. Field relationships outside the Sheet area indicate that both these groups pre-date granitoid intrusion (Stuart-Smith & others, 1986; Needham & others, 1986). The units making up these groups were previously regarded as Middle Proterozoic in age. The older El Sherana Group was previously mapped in RANFORD HILL as the Edith River Volcanics, and the younger Edith River Group was mapped as the Kurrundie and Plum Tree Creek Volcanic Members of the Kombolgie Formation (Walpole, 1962). The revised stratigraphy follows that defined by Stuart-Smith & others (1984), and Needham & Stuart-Smith (1985 a & b).

Minor remnants of the **El Sherana Group** occur in RANFORD HILL, unconformably overlying tightly folded Early Proterozoic geosynclinal metasediments as a discontinuous horizon at the base of the Mount Callanan Basin and in a small basin in the south. Of the five formations in the Group (Needham & Stuart-Smith, 1985b), the Coronation Sandstone, Pul Pul Rhyolite, Big Sunday Formation and Tollis Formation are present.

The **Edith River Group** crops out as a continuous belt of bouldery hills and ridges in the northeast, around the base of the Mount Callanan Basin. The group unconformably overlies the Namoona, South Alligator and Finniss River Groups with pronounced angularity and disconformably overlies remnant lenses of the El Sherana Group. The group is represented by the basal Kurrundie Sandstone and the Plum Tree Creek Volcanics. These units were previously included in the Middle Proterozoic Katherine River Group as the Kurrundie Sandstone Member and the Plum Tree Creek Volcanic Member, respectively, of the Kombolgie Formation (Walpole, 1962).

The new usage of **Katherine River Group** and Kombolgie Formation in RANFORD HILL is restricted to rocks above the old Plum Tree Creek Volcanic Member. The Kombolgie Formation forms the base of the Katherine River Group (Walpole & others, 1968), and crops out in the northeast and southeast where it forms a

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flat-lying, deeply dissected plateau. Minor mafic volcanics of the Mount Callanan Volcanic Member are exposed in the northeast in the centre of the Mount Callanan Basin.

Undivided flat-lying Mesozoic sediments form a Tableland and remnant mesa like cappings over older rocks in the east. These deposits, together with older strata, are extensively covered by thin veneers of Tertiary and Quaternary continental sediments.

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TABLE 1. SUMMARY OF STRATIGRAPHY OF RANFORD HILL, N.T.

	Unit		Description	Field Relationships	Thickness (m)
QUATERNARY		(Qa)	Silt, sand, clay, gravel	Alluvium	<3
		(Qs)	Quartz sand	Outwash and colluvial deposits	<5
		(Qal)	Silt, clayey silt	Levee deposits	<2
		(Qf)	Black and brown humic soil, clay	Alluvium and marshy deposits	<2
TERTIARY TO QUATERNARY		(Cz)	Lithosols-gradational red soils and yellow earth soils	Lithosols	<2
		(Czt)	Sandstone, quartzite and granite fragments, sand	Rubble and talus	<10
		(Czg)	Gravels-lateritised in places	Fan deposits	<3
		(Czs)	Quartz sand, ferruginous and clayey sand	Fan deposits	<10
		(Czl)	Pisolitic and concretionary ironstone	Cappings on older rocks	<3
MESOZOIC		(K)	Undivided friable quartz sandstone and conglomerate		
		(K_3)	Yellow to reddish brown friable fine to coarse quartz sandstone	Unconformable on older units, forms flat-lying cappings commonly covered by younger sand (Czs) and laterite (Czt)	10-20
		(K_2)	Massive friable white fine to coarse quartz sandstone; minor micaceous siltstone		57-63
		(K_1)	Limonitic and geothitic poorly sorted very coarse to pebbly quarts sandstone and conglomerate		2
			UNCONFORMITY		
MIDDLE PROTEROZOIC	KATHERINE RIVER GROUP Kombolgie Formation	Mount Callanan Volcanic Member (Bhc)	Massive amygdaloidal basalt, minor vitric silty tuff	Comprises a conformable sequence, itself unconformable on older units. Slight angular unconformity on Bep, major angular unconformity elsewhere.	100
		(Bhk_1)	Massive coarse to very coarse poorly sorted quartz sandstone, clayey and pebbly in places; basal polymictic boulder conglomerate. Ripple marks and cross-bedding common		1000-1100
			UNCONFORMITY		
EARLY PROTEROZOIC		Oenpelli Dolerite (Bdo)	Porphyritic olivine dolerite	Dykes intruding Bnm	200
		Lewin Springs Syenite (Bew)	Porphyritic quartz syenite, quartz microsyenite, syenite, microgranite, microleucogranite, quartz micromonzonite, microleucomonzonite	Dykes intruding Bgc and older Early Proterozoic metasediments	
		Cullen Batholith (Bgc a,b,c,d, e,h,i,j, k,l,z)	Fine to coarse equigranular to porphyritic, granite and leucogranite with hornfels rafts and xenoliths	Eight plutons which intrude and contact metamorphose older metasediments and dolerite. Intruded by Bew	

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	Unit	Description	Field Relationships	Thickness (m)
EDITH RIVER GROUP	Plum Tree Creek Volcanics (Bep)	Massive rhyodacitic ignimbrite, rhyolite, flow banded ignimbrite; minor altered mafic flows, crystal tuff, quartz sandstone and siltstone	Conformable sequence, disconformable on the EI Sherana Group, and overlies with a highly angular unconformity or faulted against all other metasedimentary units.	410-600
	Kurrundie Sandstone (Bek)	Massive purple poorly sorted very coarse to pebbly lithic quartz sandstone; basal massive polymictic boulder conglomerate in places; rare brown shale and micaceous siltstone		<150
		UNCONFORMITY		
EL SHERANA GROUP	Tollis Formation (Bbt)	Interbedded metasiltstone, slate, greywacke, pale green argillite; minor crystal tuff and tuffaceous chert	Unconformably overlies Bfb intruded by Bgc. probably a a lateral equivalent of Bbb	1000
	Big Sunday Formation (Bbb)	Altered amygdaloidal mafic volcanics; minor tuff, and laminated to thinly bedded dark brownish purple ferruginous siltstone, and fine feldspathic greywacke	Conformable over Bbp where present Unconformably overlies Bnm, Disconformably overlain by Bek	150
	Pul Pul Rhyolite (Bbp)	Massive pale grey to pink siliceous ignimbrite	Conformably overlies Bec where present. Elsewhere unconformably overlies older units. Overlain conformably by Bbb and disconformably by Bek	200
	Coronation Sandstone (Bbc)	Pebbly coarse quartz sandstone	Conformable lens beneath Bbp. Unconformable on Bso	100
		UNCONFORMITY		
EARLY PROTEROZOIC	Zamu Dolerite (Bdz)	Medium grey amphibolite	Pre-orogenic sill intruding Bsk and Bpw. Intruded and contact metamorphosed by Bgc	170
FINNISS RIVER GROUP	Burrell Creek Formation (Bfb)	Grey-brown phyllite, slate, and siltstone, fine to coarse feldspathic greywacke; rare volcanolithic pebble conglomerate, and banded green chlorite-magnetic ironstone. Micaceous andalusite and cordierite hornfels common near granite.	Conformably overlies Bso. Faulted against older units. Unconformably overlain by younger units. Intruded by Bgc	1000
SOUTH ALLIGATOR GROUP	Mount Bonnie Formation (Bso)	Interbedded slate, phyllite, phyllitic siltstone, argillite, and fine to coarse feldspathic greywacke; minor ferruginous, carbonaceous and dolomitic slate and phyllite with chert bands and nodules, glassy black spotted crystal tuff, and tuffaceous chert; rare dolomite. Micaceous andalusite and cordierite hornfels common near granite.	Conformably overlain by Bfb and underlain by Bsg. Intruded by Bgc. Unconformably overlain by later Early and Middle Proterozoic strata.	500-600
	Gerowie Tuff (Bsg)	Green, brown, or grey argillite; siliceous siltstone and slate; minor glassy black spotted crystal tuff, and tuffaceous chert; rare ferruginous phyllite	Conformably overlain by Bso and underlain by Bsk. Intruded by Bgc. Unconformably overlain by Bep.	300
	Koolpin Formation (Bsk)	Hematitic siltstone and phyllite with chert bands, lenses and nodules; massive limonitic and hematitic ironstone capping in places, pyritic and graphitic chiastolite, carbonaceous hornfels; minor dolomite. Marble and calc-silicate hornfels near granite	Conformably overlain by Bsg. Intruded by Bdz and Bgc. Unconformably overlain by Bep.	350
		UNCONFORMITY		

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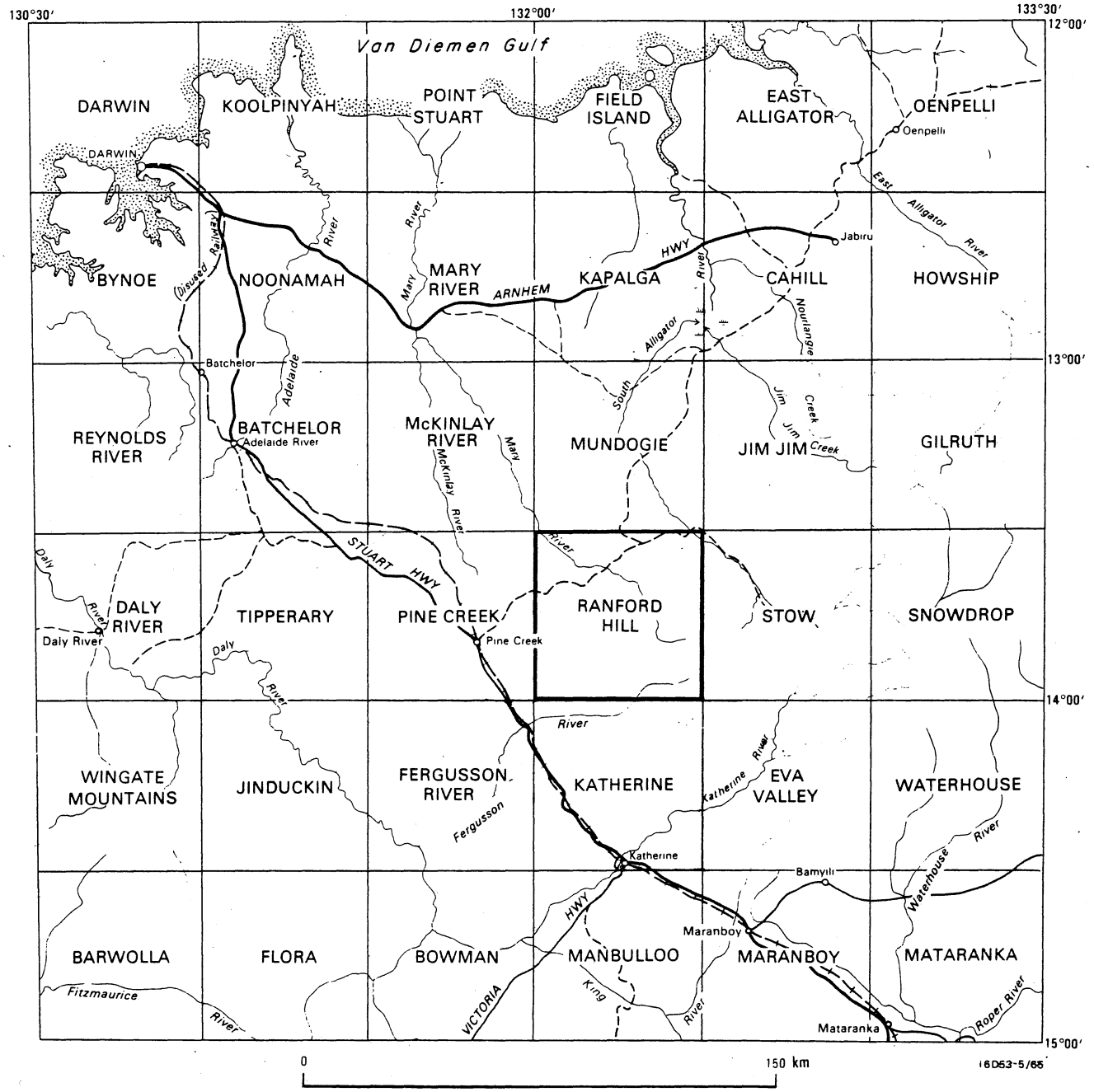
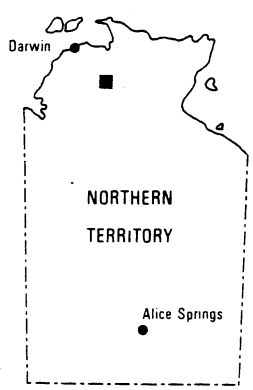
		Unit	Description	Field Relationships	Thickness (m)
EARLY PROTEROZOIC	MOUNT PARTRIDGE GROUP	Wildman Siltstone (Epw)	Colour banded pyritic silty carbonaceous phyllite, carbonaceous phyllite with sandy laminae, phyllite, siltstone; minor argillite, and thinly bedded medium feldspathic quartzite.	Conformable sequence, conformably overlies Epm Intruded by Edz and Egc.	
		(Epw_2)	Siltstone, phyllite; minor laminated medium feldspathic quartzite		150
		(Epw_1)	Phyllite - pyritic and carbonaceous at depth, siltstone, laminated red and white banded pyritic silty carbonaceous phyllite		200
		Mundogie Sandstone (Epm)	Medium to very coarse quartzite and arkose; minor quartz and chert pebble conglomerate, sandy siltstone, carbonaceous phyllite, and red and white banded silty phyllite	Unconformably? overlies Enm. Conformably Intruded by Egc	150-1100+
			UNCONFORMITY		
	NAMOONA GROUP	Stag Creek Volcanics (Ens)	Intermediate volcanic breccia, andesite, tuff, tuffaceous phyllite, tuffaceous greywacke	Conformable with Enm	<1000
		Masson Formation (Enm)	Laminated pale grey-purplish brown phyllite, silty phyllite, micaceous siltstone; minor gritty poorly sorted kaolinitic quartz sandstone, quartz pebble conglomerate, grey very fine quartzite, and limonitic silicified dolomite; rare dololutite	Conformably overlain by Ens. Unconformably overlain or faulted against younger units.	<2800





RANFORD HILL *1:100 000 Sheet area*

Area covered in Figure 2

Figure 1. Locality map

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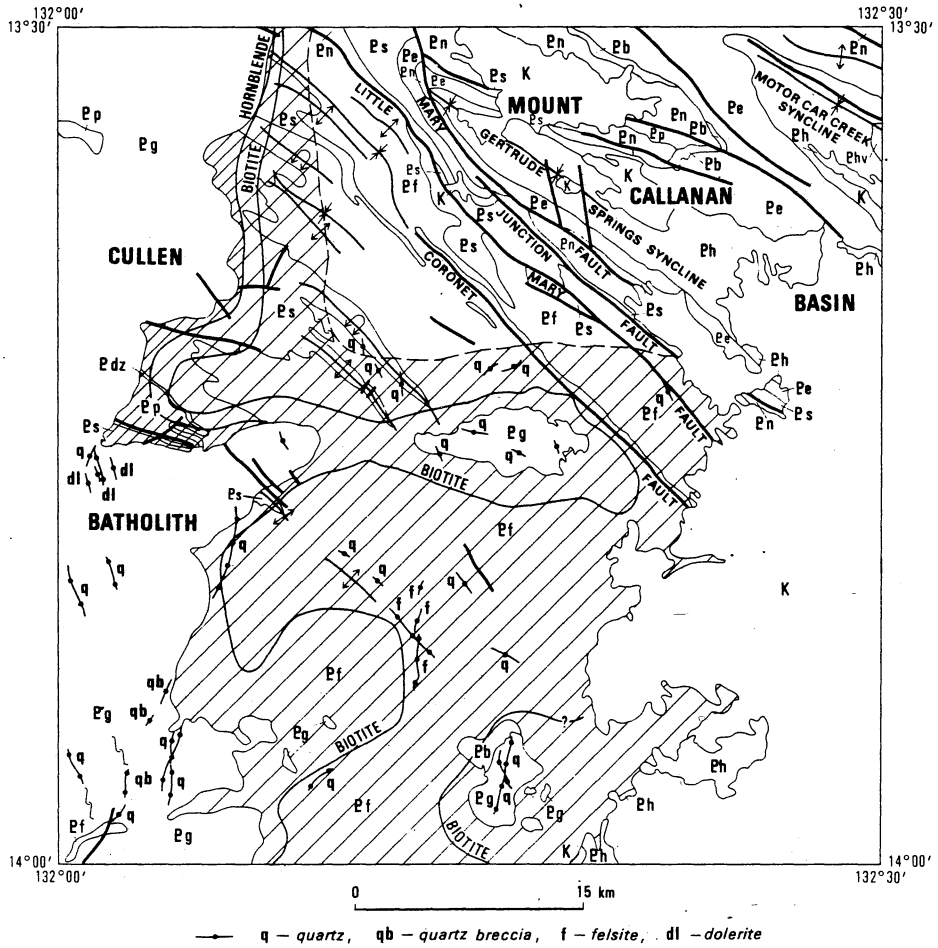

q — *quartz*, qb — *quartz breccia*, f — *felsite*, dl — *dolerite*

BIOTITE / HORNBLENDE — *Contact metamorphic isograd with index mineral on higher side of isograd*

Limit of contact metamorphism

Albite epidote hornfels facies

Hornblende hornfels facies

Note: *All pre-orogenic units are regionally metamorphosed to the lower greenschist facies*

Mesozoic	K	*Sandstone, siltstone*
Katherine River Group	Ph	*Sandstone, and conglomerate*
Edith River Group	Pe	*Acid and minor basic volcanics, pyroclastics, sandstone*
	Pg	*Granite, leucogranite*
El Sherana Group	Pb	*Acid volcanics, sandstone, greywacke, shale*
Zamu Dolerite	Pdz	*Dolerite and amphibolite*
Finniss River Group	Pf	*Siltstone, greywacke, phyllite*
South Alligator Group	Ps	*Carbonaceous and ferruginous phyllite and siltstone with chert bands, carbonate, tuff, bif*
Mount Partridge Group	Pp	*Sandstone, siltstone, quartzite, arkose, conglomerate*
Namoona Group	Pn	*Calcareous and carbonaceous phyllite, quartzite, dolomite, arkose, conglomerate*

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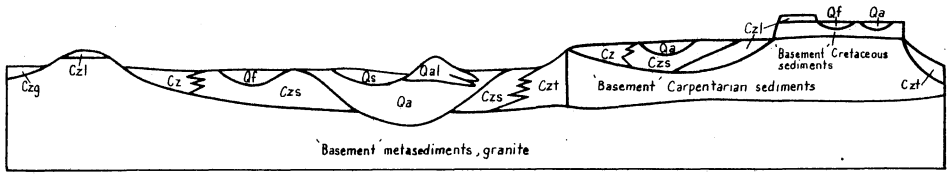
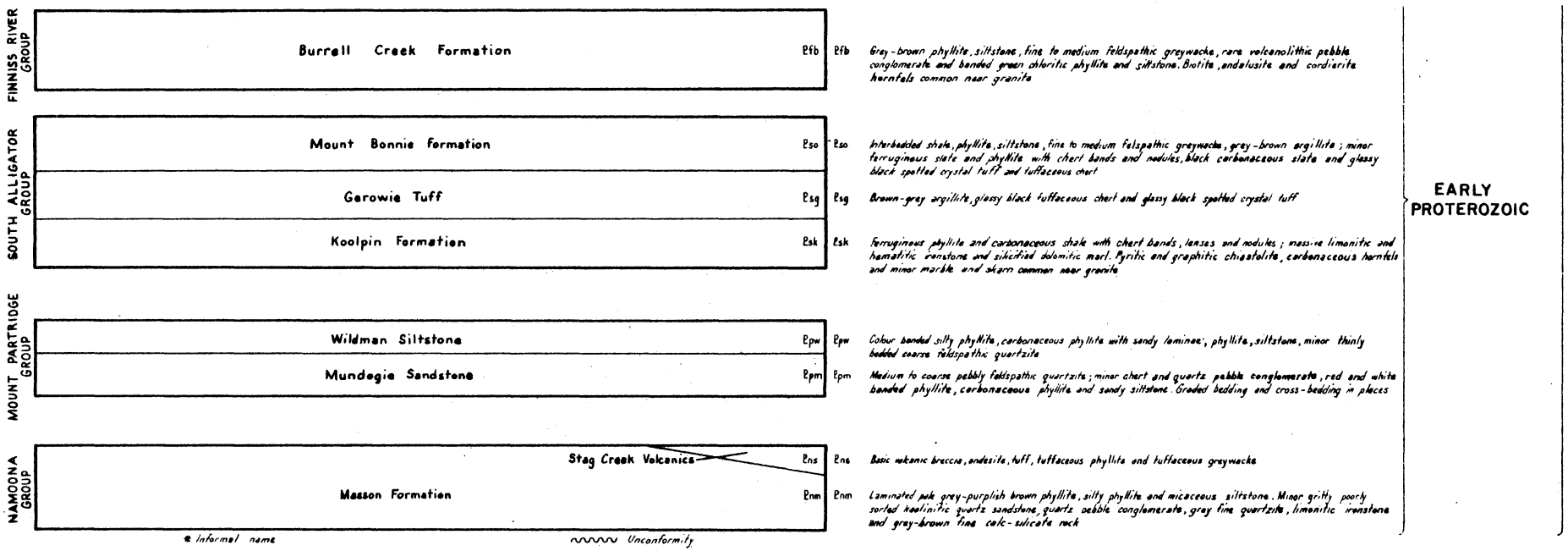
Fig 2 Solid Geology



Qa	Silt, sand, clay, locally consolidated grey sandy siltstone along some drainage courses: creek and river alluvium	QUATERNARY	CAINOZOIC
Qal	Silt, clayey silt: levee deposits		
Qf	Black and brown humic soil		
Qs	Unconsolidated sand: outwash and colluvial deposits		
Cz	Gradational red soils and yellow earth type soils: skeletal soils	TERTIARY TO QUATERNARY	
Czs	Ferruginous and clayey sand: unconsolidated sand		
Czl	Nodular and concretionary laterite		
Czg	High level gravels and gravelly skeletal soil		
Czt	Sandstone, quartzite and shale fragments: sand rubble and talus		
K	Undifferentiated poorly consolidated white quartz sand, friable white quartz sandstone, pebble to cobble conglomerate, limonitic quartz sandstone, poorly consolidated red clayey sand, laterite, and minor micaceous siltstone and limonitic sandstone	EARLY TO LATE CRETACEOUS	MESOZOIC
K_3	Red clayey poorly consolidated sand, friable white quartz sandstone, friable limonitic quartz sandstone, quartz cobble conglomerate		
K_2	Poorly consolidated white quartz sand, massive friable white fine to medium quartz sandstone; minor friable kaolinitic micaceous siltstone and limonitic sandstone		
K_1	Poorly sorted coarse to pebbly limonitic quartz sandstone and conglomerate		
Ehc	Massive amygdaloidal basalt, banded chert	MIDDLE PROTEROZOIC	
Ehk_1	Coarse to very coarse poorly sorted quartz sandstone, clayey and pebbly in places; basal polymictic boulder conglomerate common; minor siltstone beds. Ripple marked and cross-bedded		
Edo	Porphyritic pale pinkish grey olivine dolerite	EARLY PROTEROZOIC	PROTEROZOIC
Pgc_s	Feldspar porphyry		
Pgi_p	Feldspar porphyry		
Pg_a	Coarse pink and green porphyritic granite		
Pgi_k	Coarse porphyritic pink granite		
Pgw_{c1}	Medium-grained pink equigranular granite		
Pgw_{c2}	Coarse pink equigranular granite		
Pgw_d	Fine grey leucogranite		
Pgc_d	Coarse pink and green porphyritic granite		
Pgc_b	Coarse grey porphyritic granite		
Pgc_c	Coarse pink equigranular leucogranite		
Pgc_d	Fine to medium grained leucogranite and alkali feldspar granite		
Pgc_h	Fine granodiorite		
Pgc_j	Fine equigranular adamellite		
Pgc_k	Coarse porphyritic pink granite		
Pgc_l	Fine to coarse white-russet quartz feldspar porphyritic granite		
Pgc_m	Medium-grained porphyritic grey-green granodiorite		
Pgc_z	Cordierite – andalusite – biotite – quartz hornfels: Hornfels rafts and screens		
Pgc	Undifferentiated Cullen Batholith		
Pet	Ignimbrite, rhyodacite, rhyolite and basalt with cherty tuff interbeds, minor sandy siltstone and siltstone, ... denotes poorly sorted sandstone lenses		
Per	Massive purple poorly sorted very coarse to pebbly lithic quartz sandstone; basal massive polymictic boulder conglomerate in places. Minor purple shale and micaceous siltstone		
Pbp	Massive pale grey to pink ignimbrite with minor tuff, ferruginous siltstone and fine quartzite, basalt, massive amygdaloidal dacite		
Pbc	Pebbly coarse quartz sandstone, commonly tuffaceous		
Pdz	Medium-grained grey quartz dolerite		

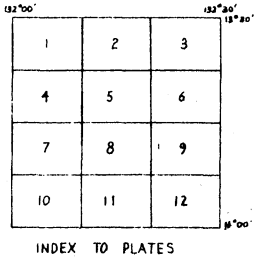
Record 1986/30 Fig (3a) Reference to compilation sheets, Ranford Hill 1:100 000 Sheet area 16/D53-5/37



Geological boundary
Anticline
Syncline
Overturned anticline
Fault
Fault showing relative horizontal displacement
Fault containing breccia
Where location of boundaries, folds and faults is approximate line is broken; where inferred, queried; where concealed boundaries and folds are dotted. Faults are shown by short dashes
Minor anticline
Minor syncline
Fold axis
Arrow indicates trend and values indicates plunge of fold axis
Shear zone
Strike and dip of strata
Vertical strata
Horizontal strata
Strike and dip of overturned strata
Strike and dip of strata, dip 5° to 15°
Strike and dip of strata, dip 15° to 45°
Trend-line
Lineament
Joint pattern
} Airphoto interpretation

Strike and dip of joint, dip not measured
Strike and dip of joint
Vertical joint
Strike and dip of foliation
Vertical foliation
Strike of foliation, dip indeterminate
Strike and dip of cleavage
Strike and dip of kink or crenulation cleavage
Vertical cleavage
Trend and plunge of crenulation
Strike and dip of platy flow structure
Platy flow structure, dip indeterminate or not determined
Some structural elements observed at a single locality may be combined on the map
Direction of movement of sediment-bearing currents: x = cross stratification
Dyke or vein: ap-aplite, dl-dolerite, f-felsite, Gb-gabbro, g-greisen peg-pegmatite, q-quartz, qb-quartz breccia
DD Drillhole, DD-Diamond drillhole
Prospect or mine with little production
Abandoned prospect, no production
Abandoned mine
Abandoned alluvial workings
Treatment plant, not operating
Costean

Limit of extensive workings
Ag-Silver, Au-Gold, Cu-Copper, Pb-Lead, Sn-Tin, W-Tungsten
Waterhole
Swamp
Escarpment
Minor road
Vehicle track
Fence
Building
Trigonometrical station
Elevation in metres



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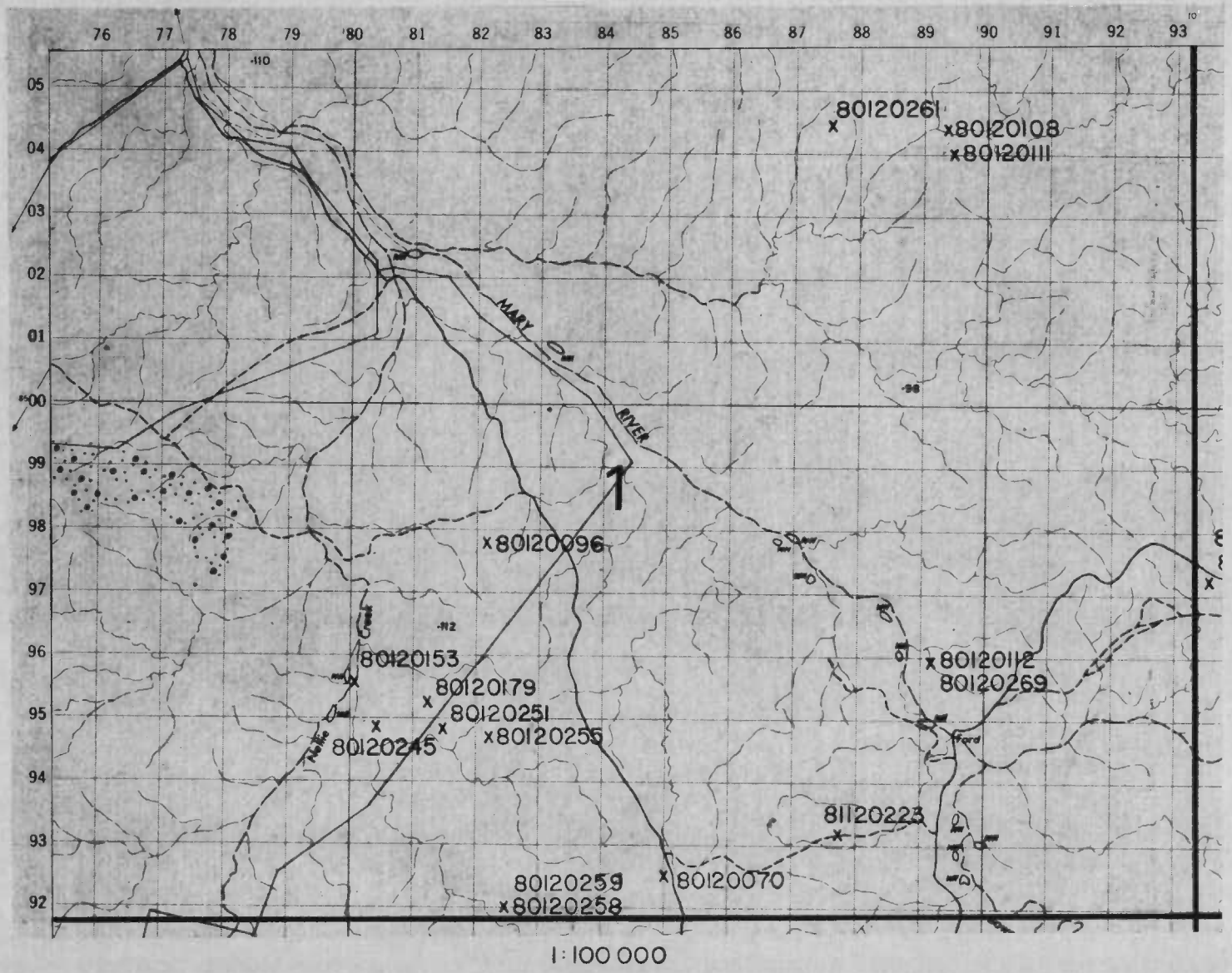
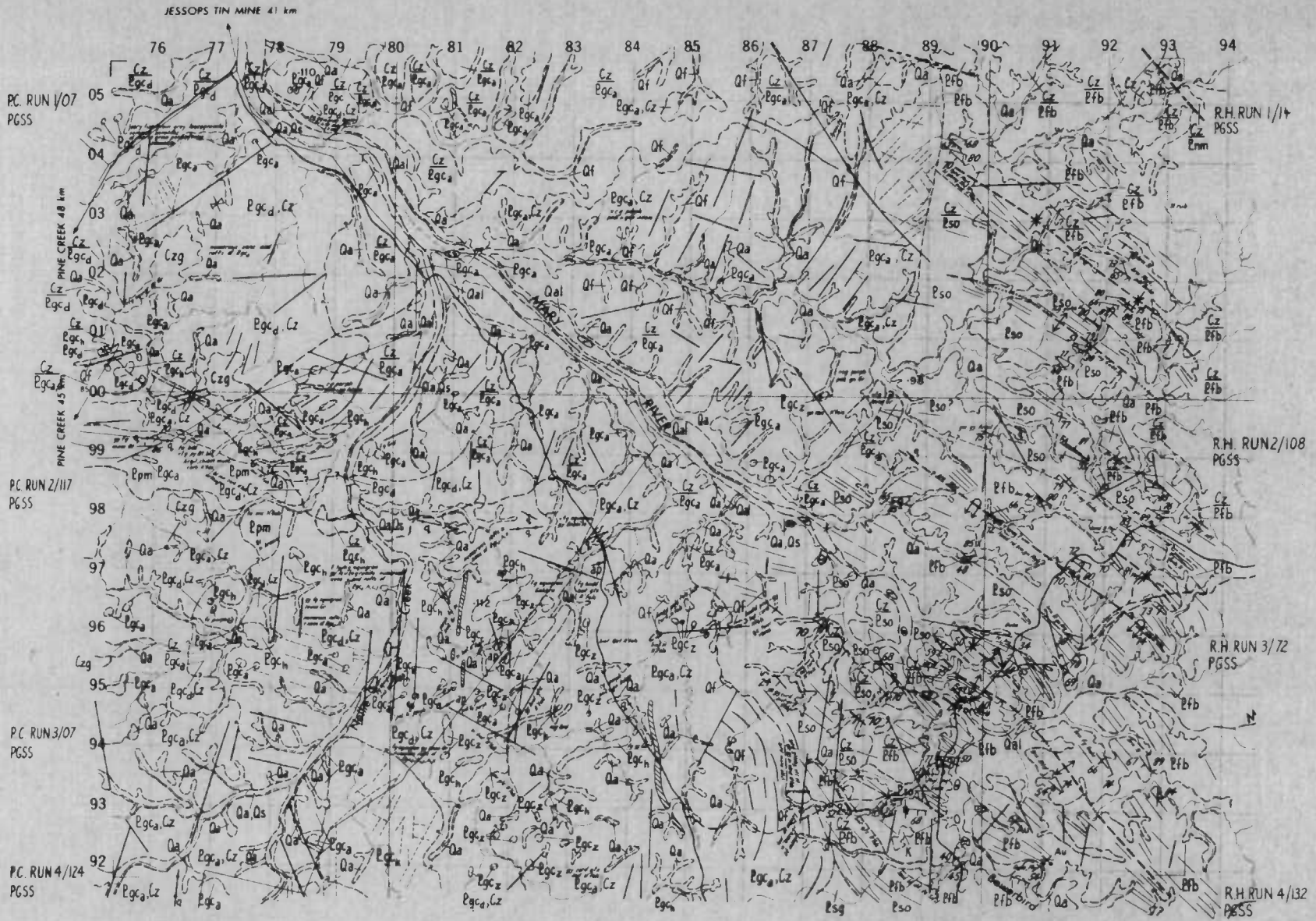
Record 1986/30 Fig (3b) Reference to compilation sheets, Ranford Hill 1:100 000 Sheet area 16/D53-5/38



x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 4 (a) Ranford Hill thin section localities 16 / D53 - 5/39



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Geology - 1980 by P.G. Stuart-Smith , S. Needham , D.A. Wallace BMR.
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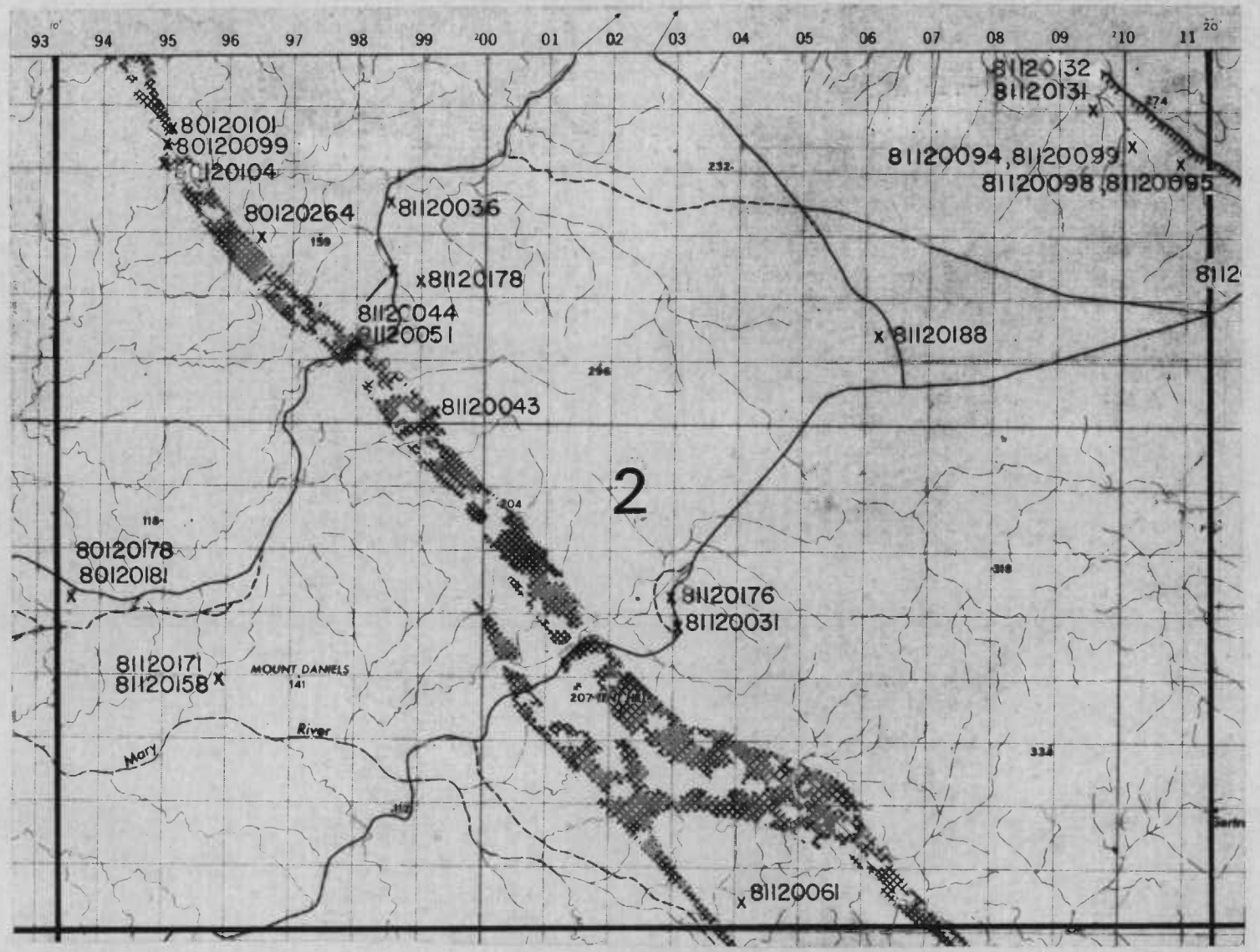
R8603202

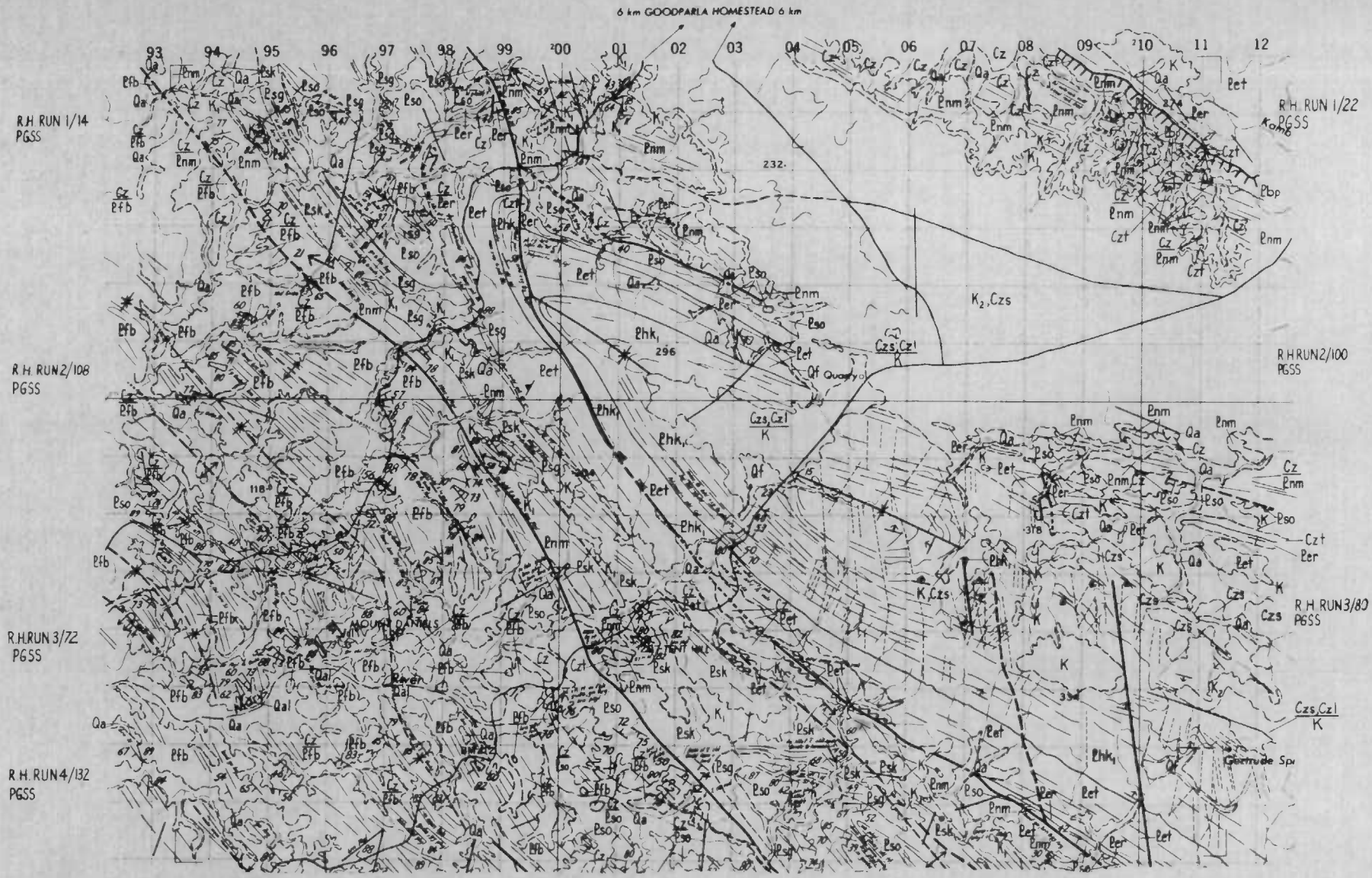
Figure 4 (b) Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet



1:100 000

x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 5 (a) Ranford Hill thin section localities 16 / D53 - 5/41



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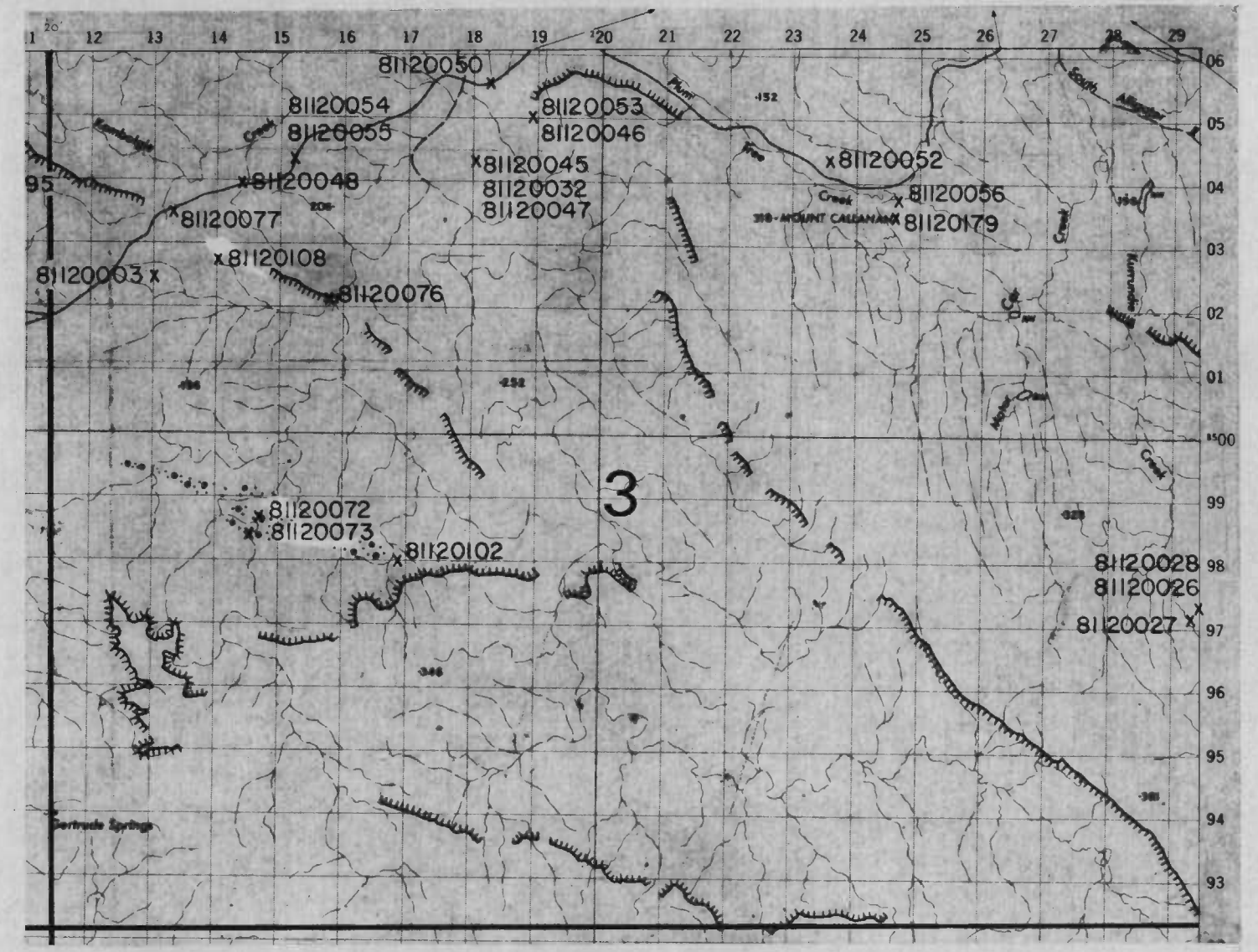
Record 1986/30

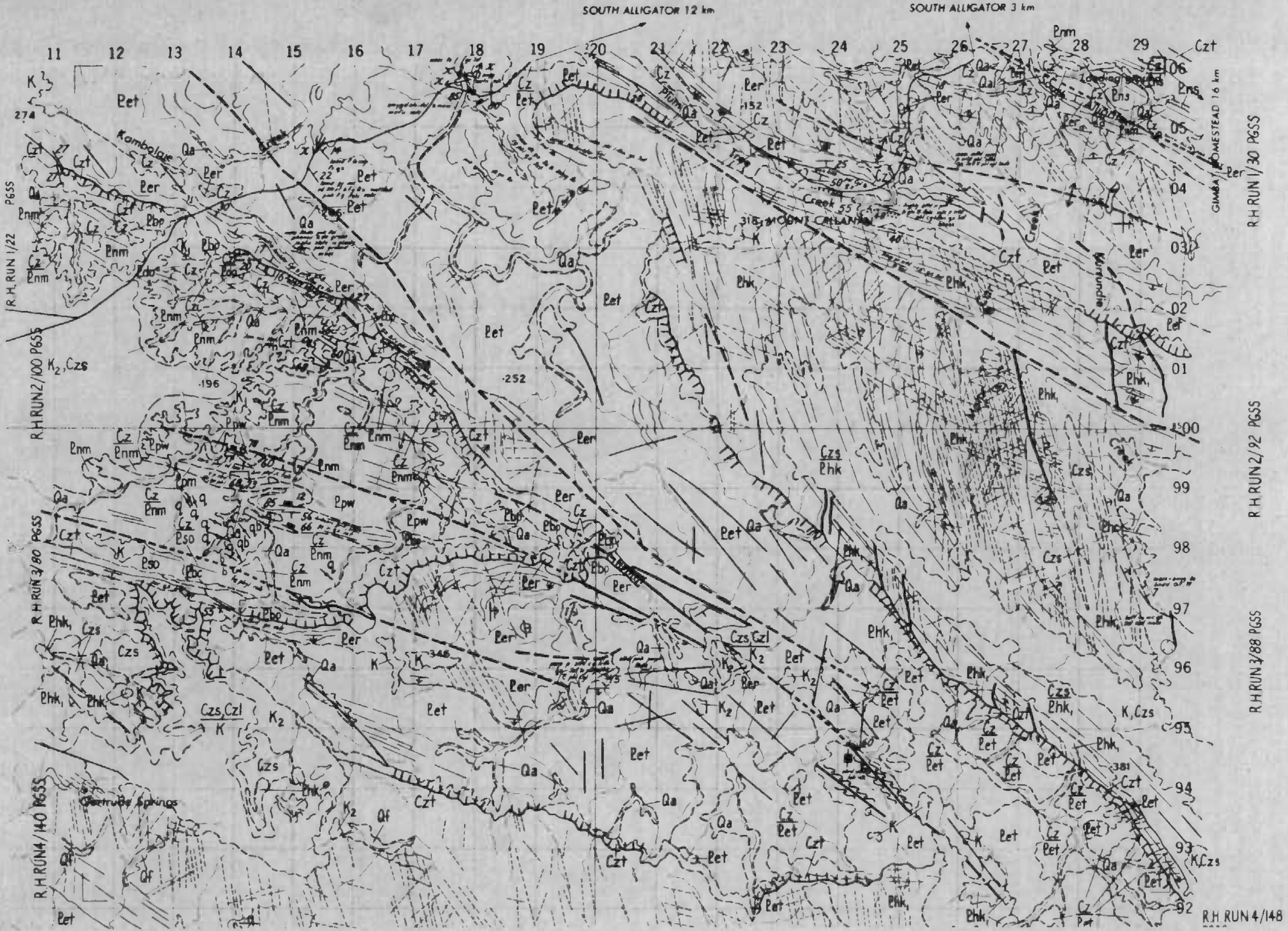
Figure 5 (b). Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet

16/D53-5/42



x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 6 (a) Ranford Hill thin section localities 16 / D53 - 5/43



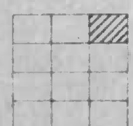


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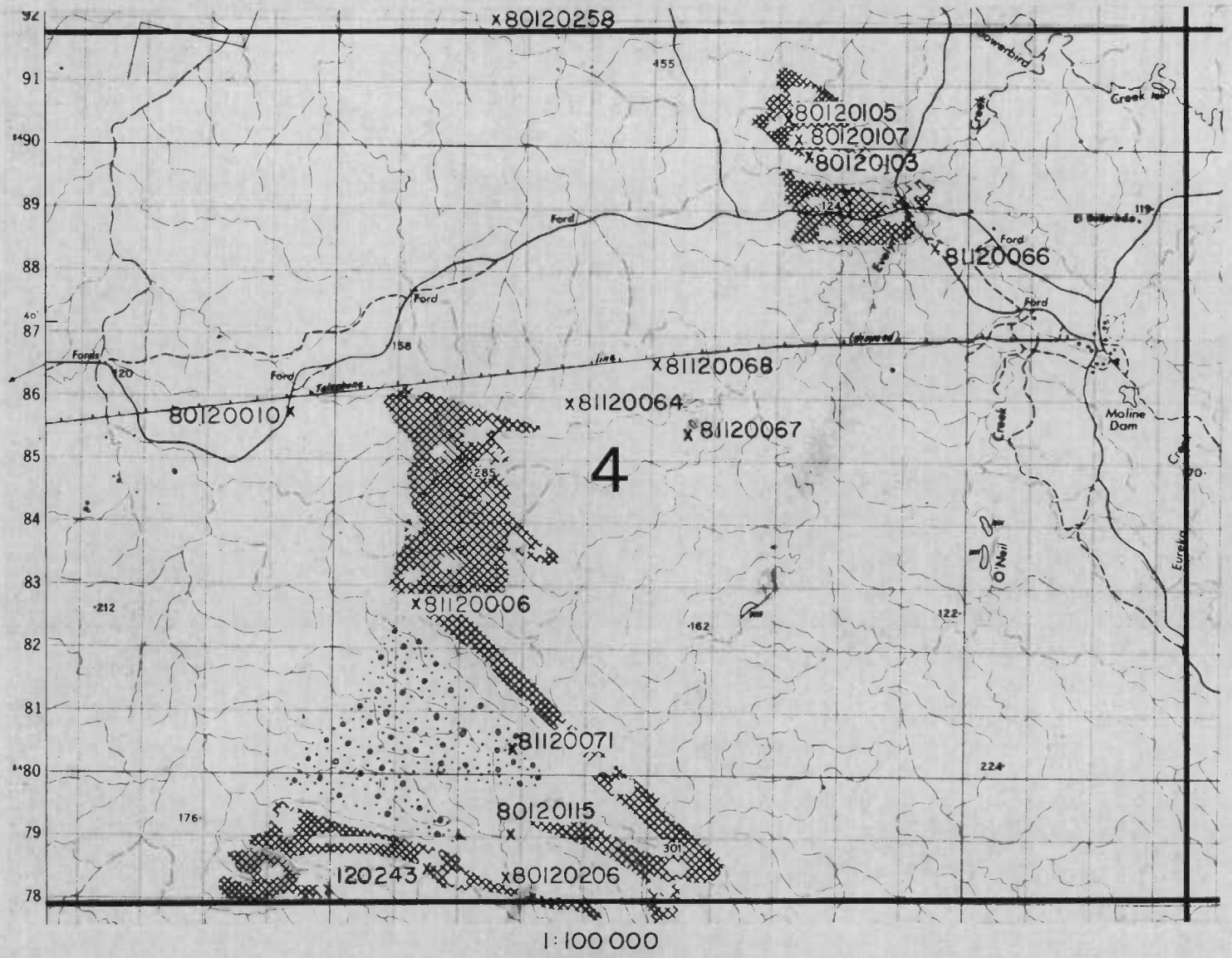
Figure 6 (b). Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet

16/D53-5/44



x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 7 (a) Ranford Hill thin section localities 16 / D53 - 5/45

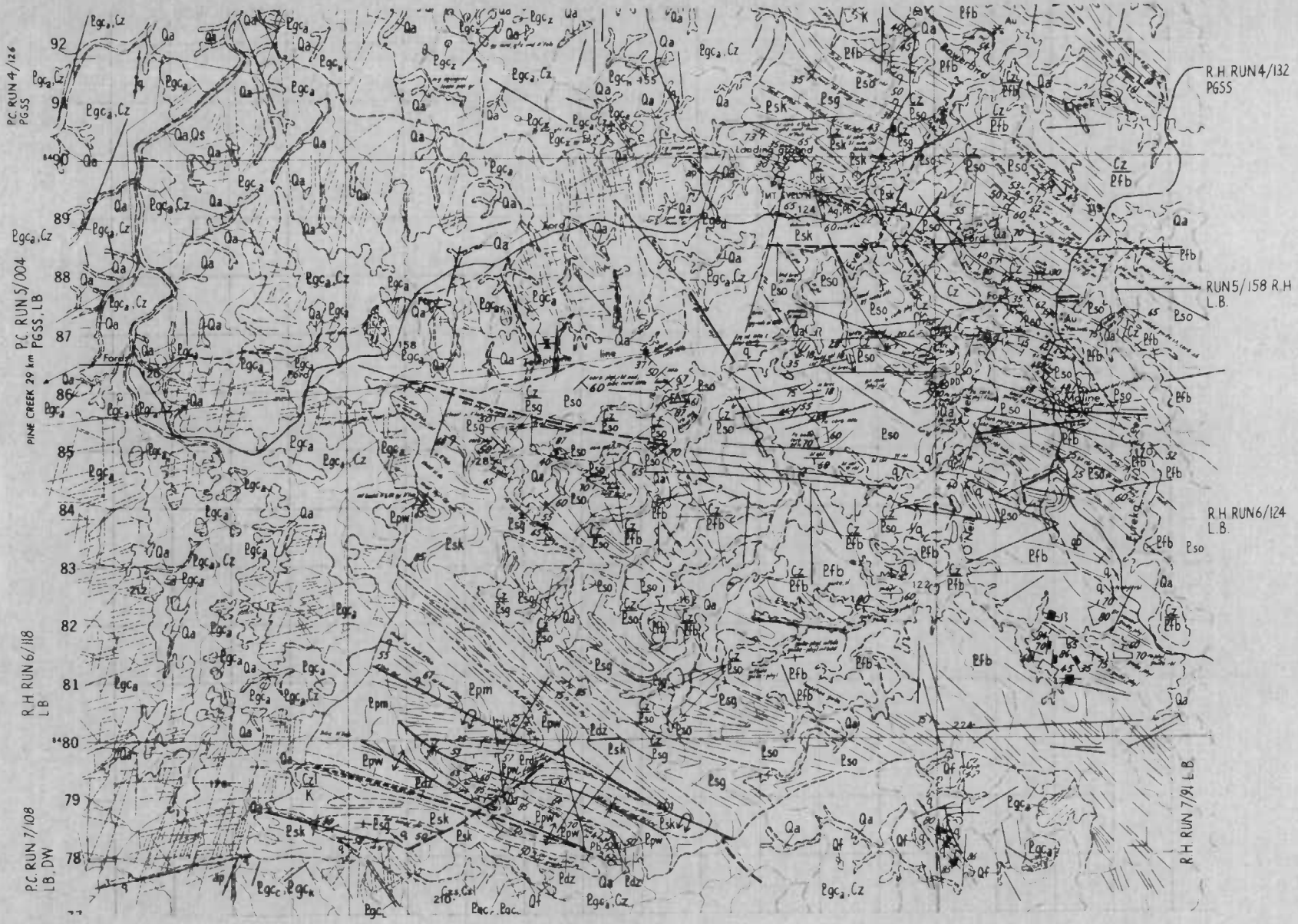


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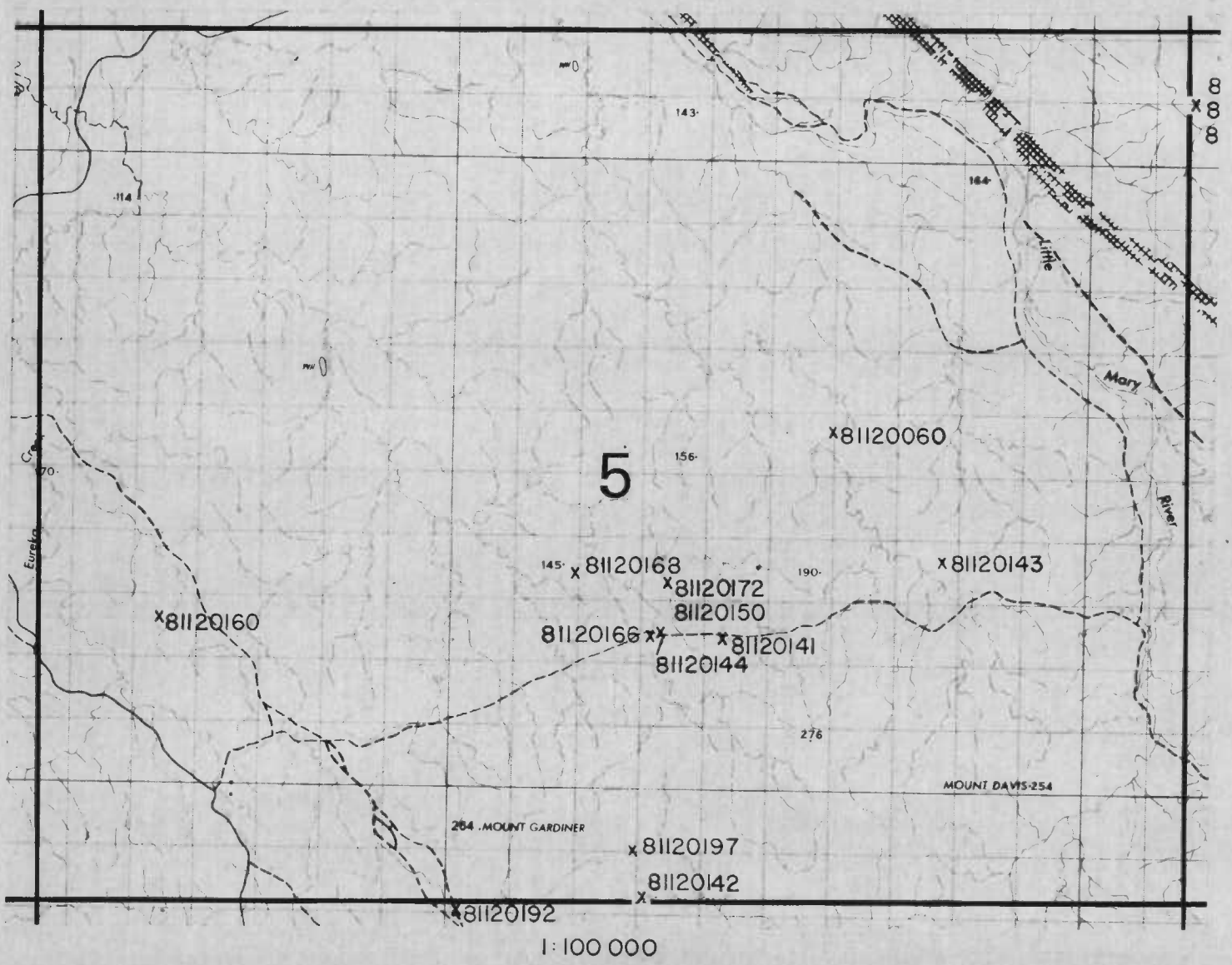
Figure 7 (b) Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet

16/D53-5/46



x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 8 (a) Ranford Hill thin section localities 16 / D53 - 5/47

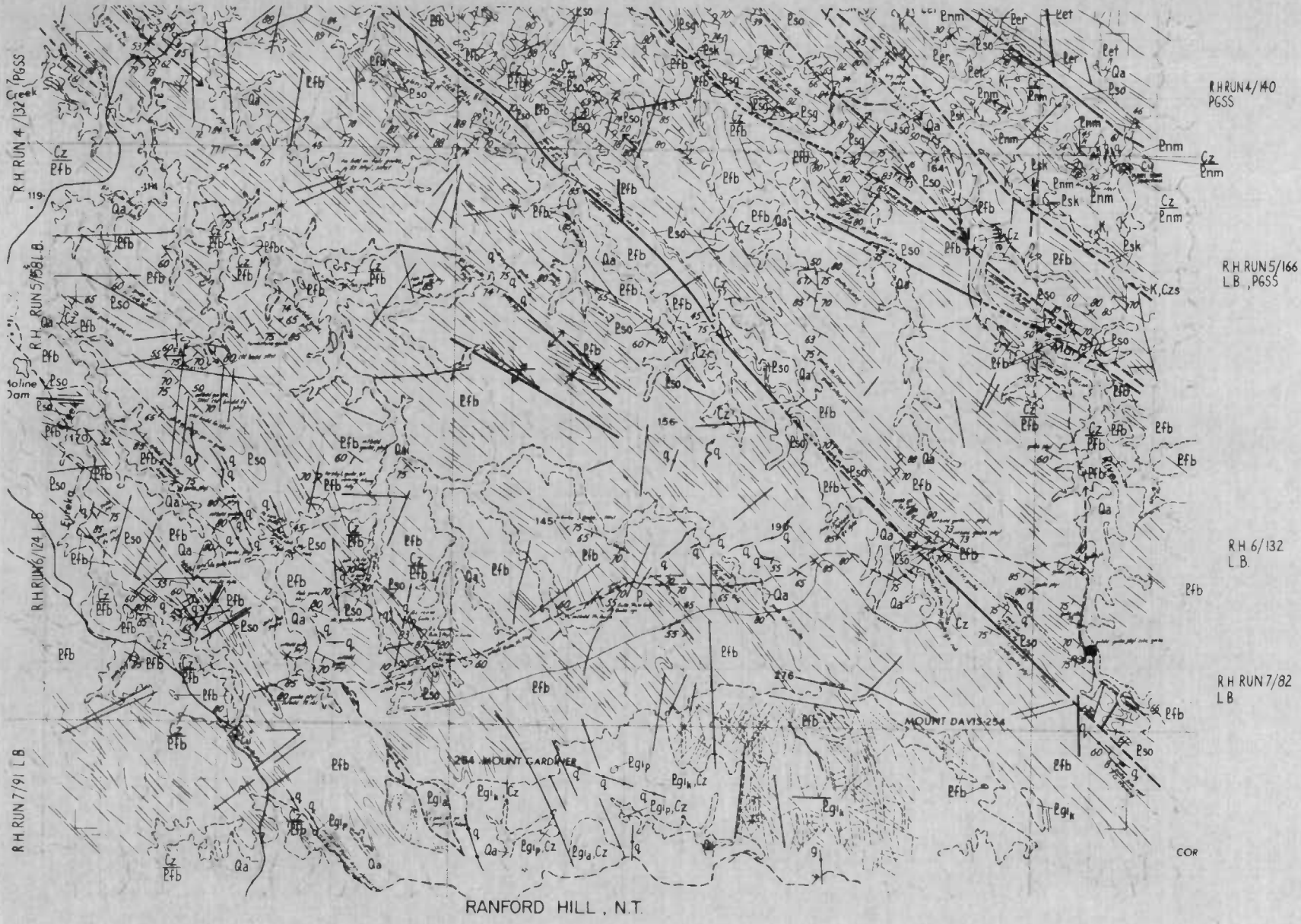


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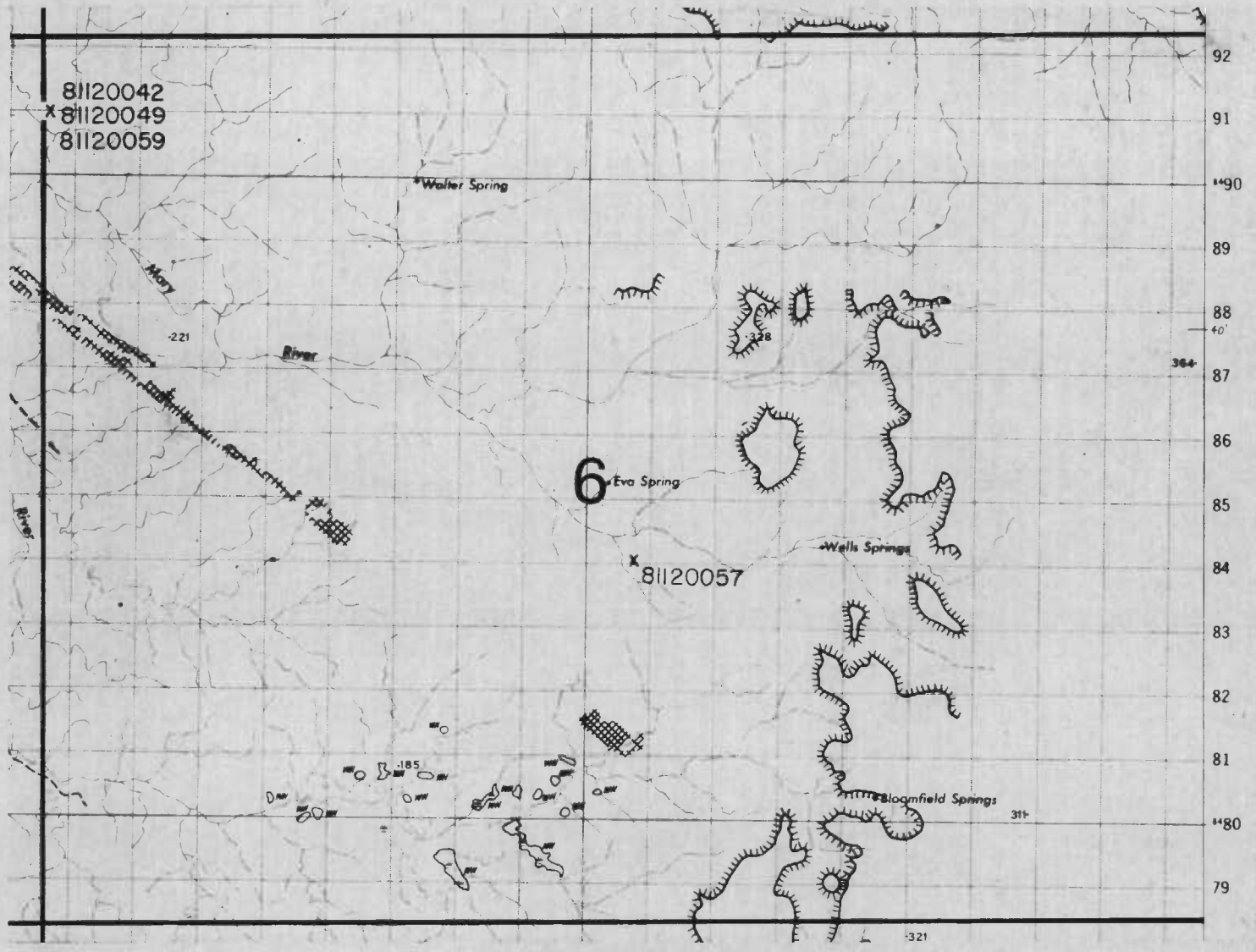
Figure 8 (b) Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet

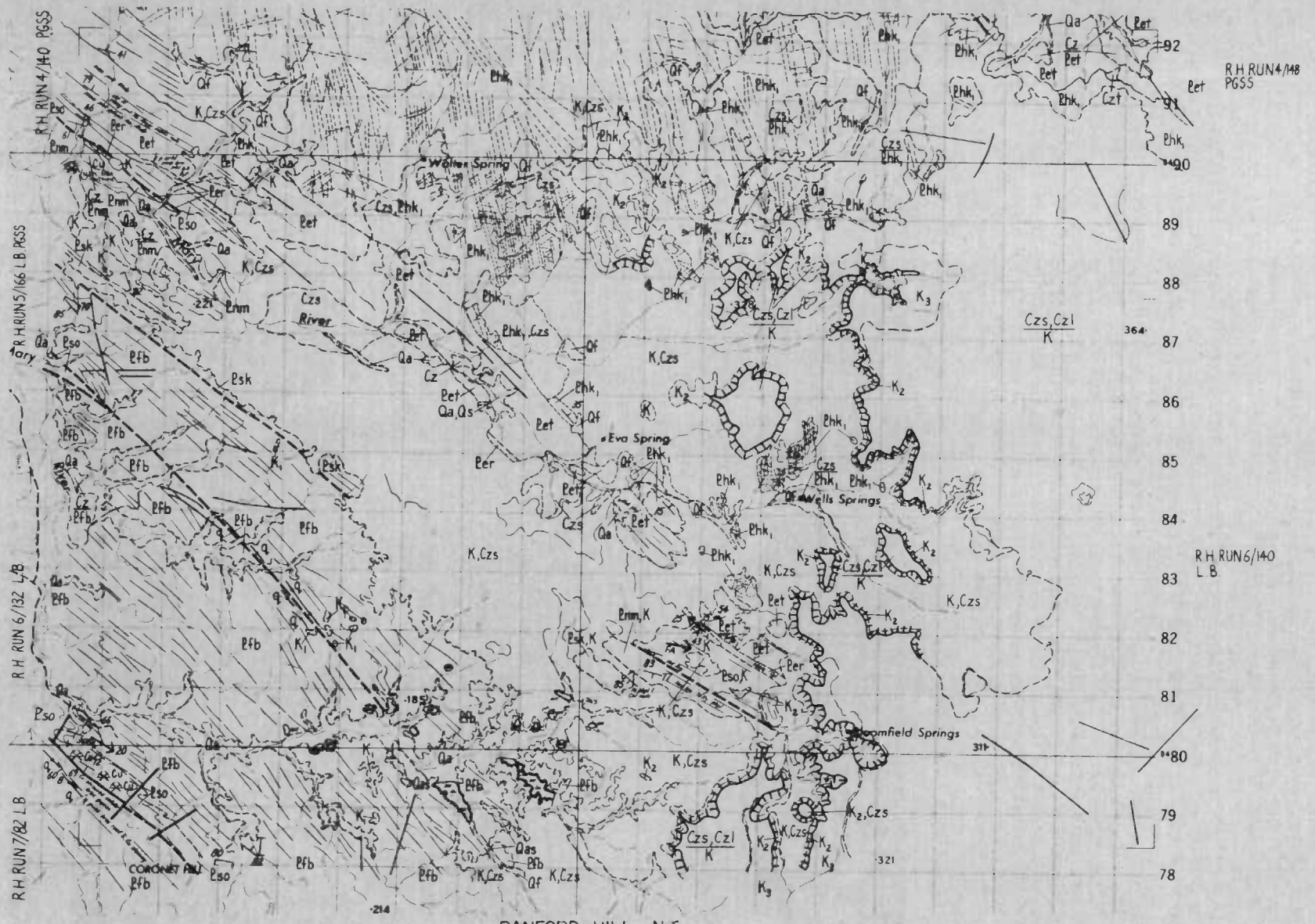
16/D53-5/48



1:100 000

x 80120245 *Thin section locality with BMR registered number*

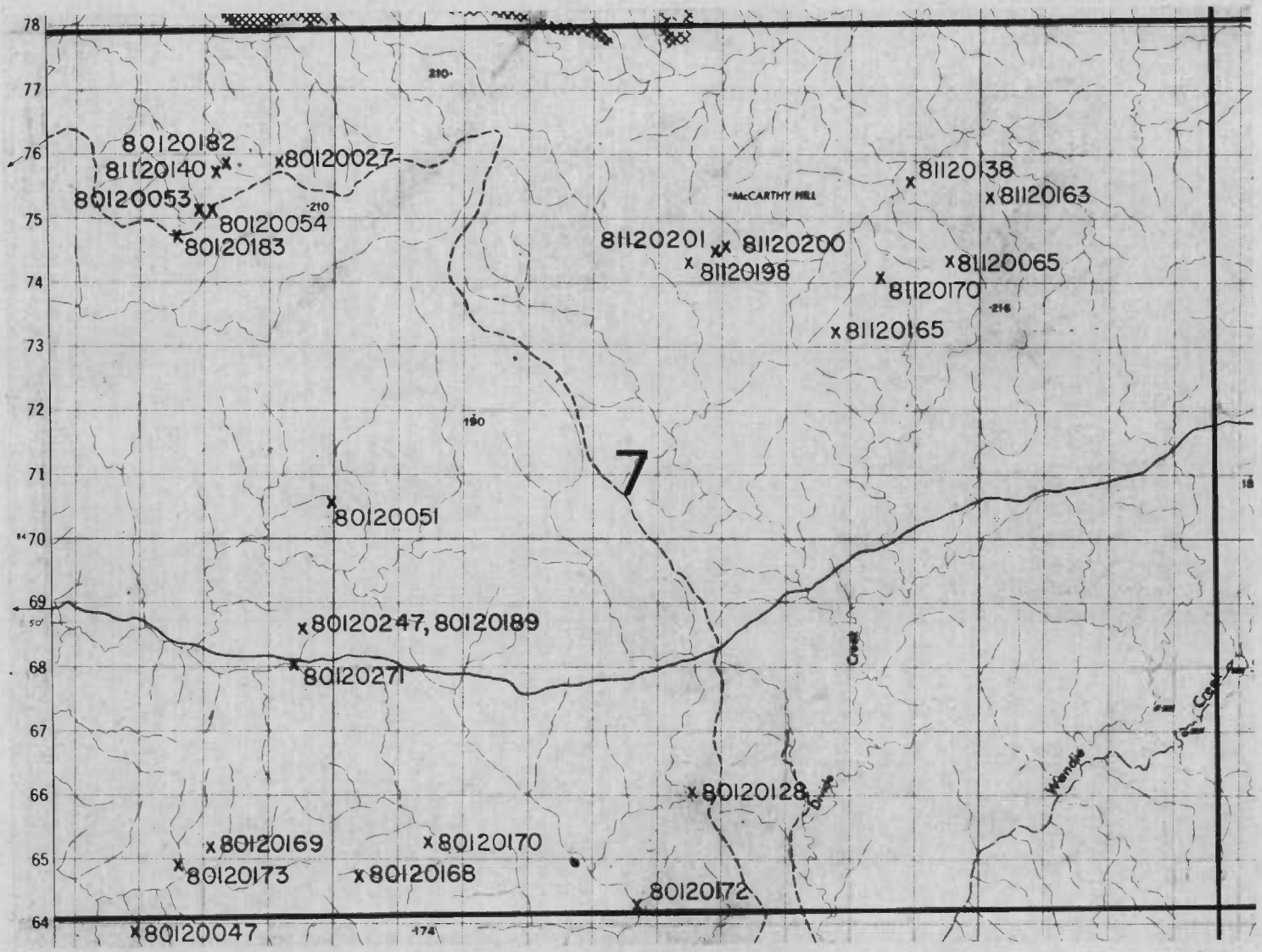
Record 1986/30 Figure 9 (a) Ranford Hill thin section localities 16 / D53 - 5/49



Record 1986/30

Figure 9 (b). Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet

16/D53-5/50



x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 10 (a) Ranford Hill thin section localities 16 / D53 - 5/51

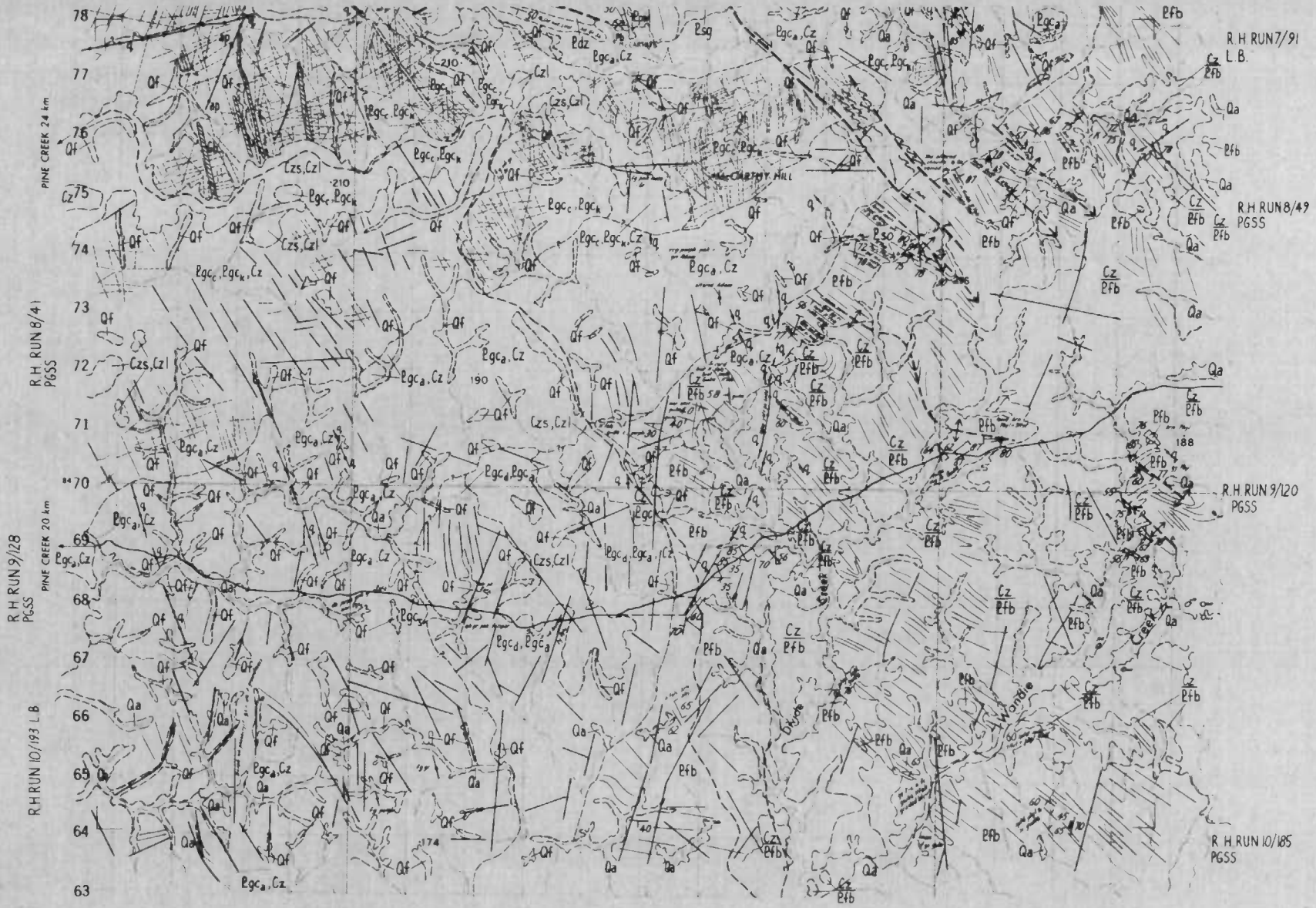
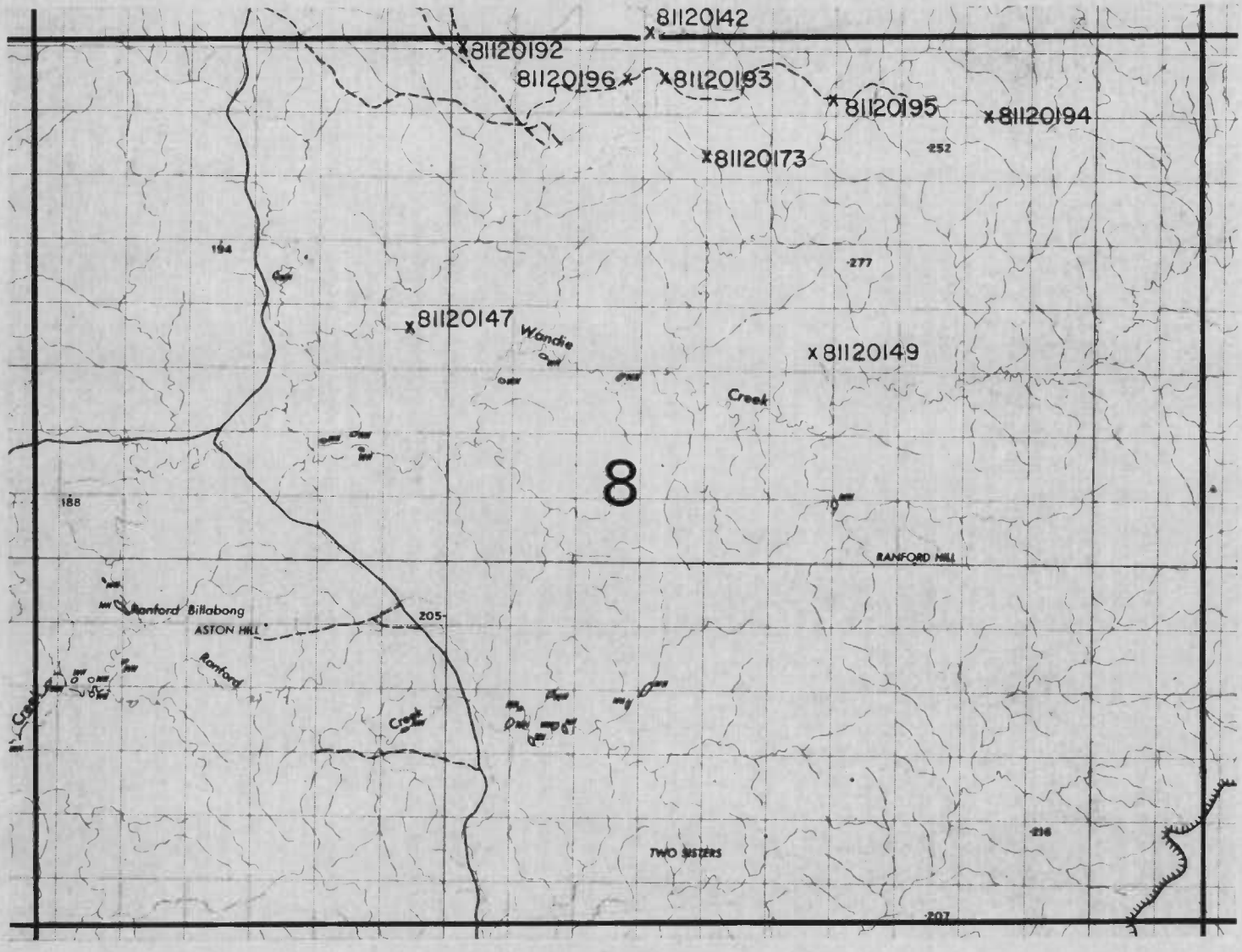


Figure 10 (b). Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet



1:100 000

x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 11 (a) Ranford Hill thin section localities 16/D53-5/53

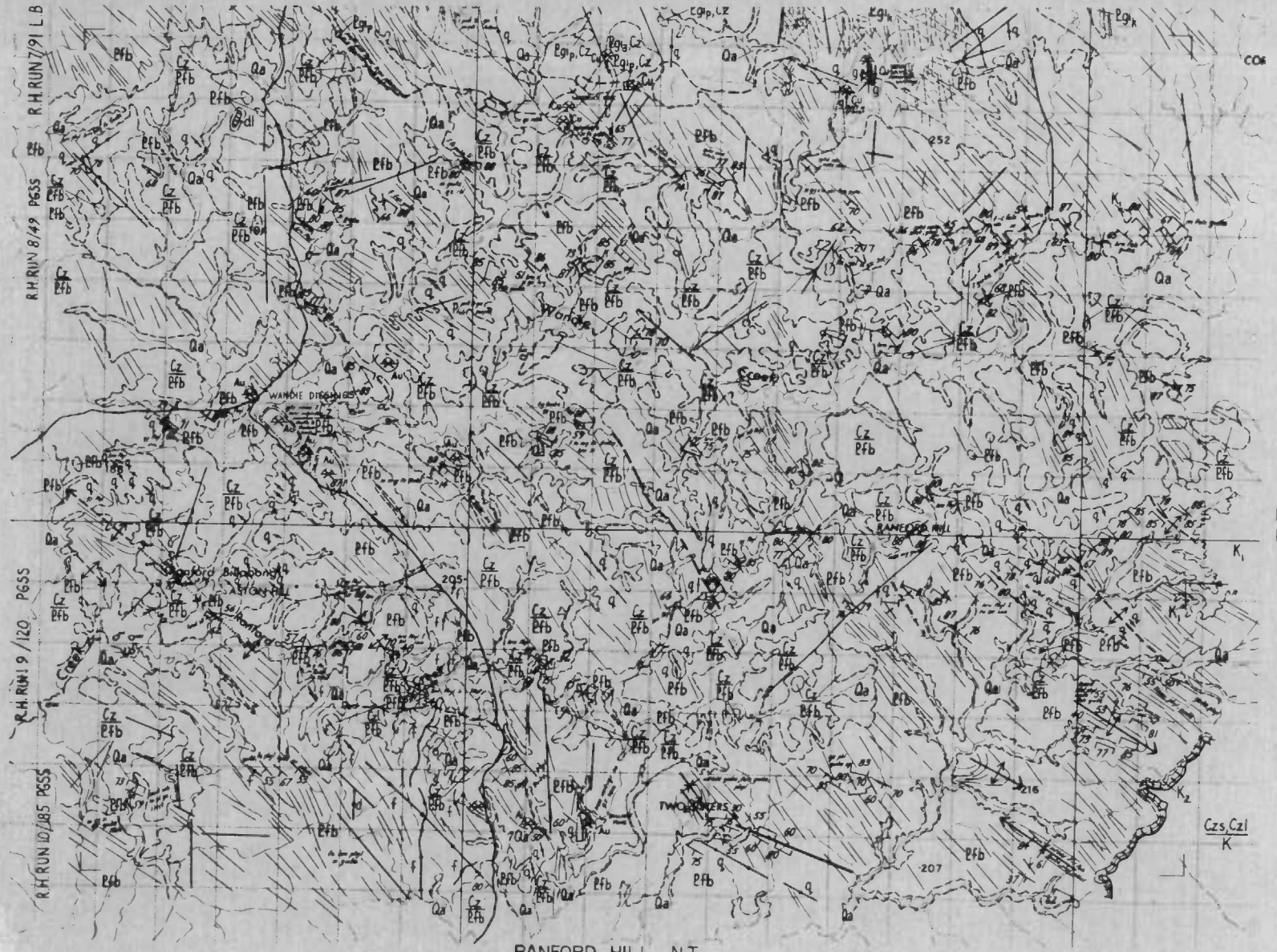


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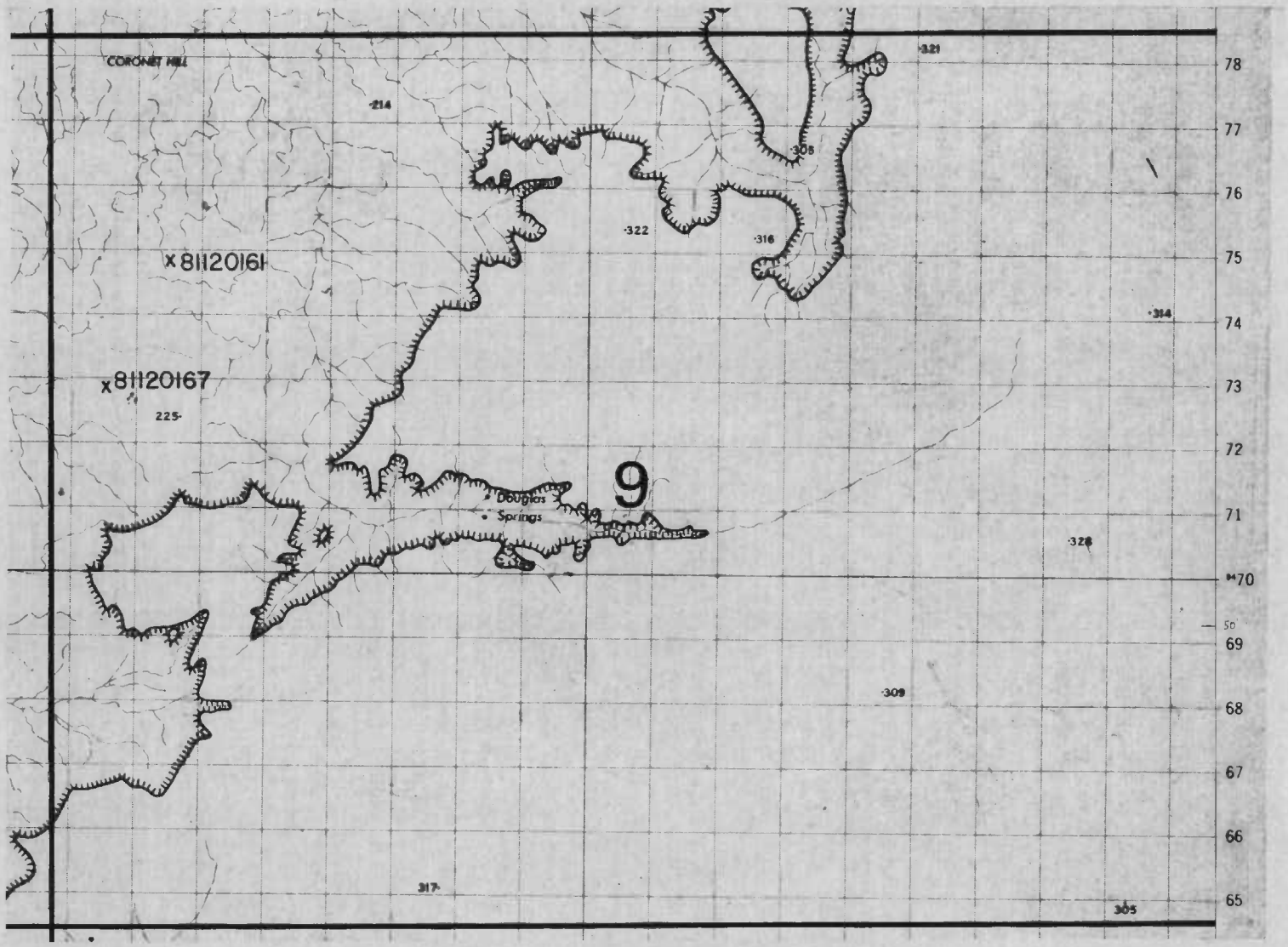
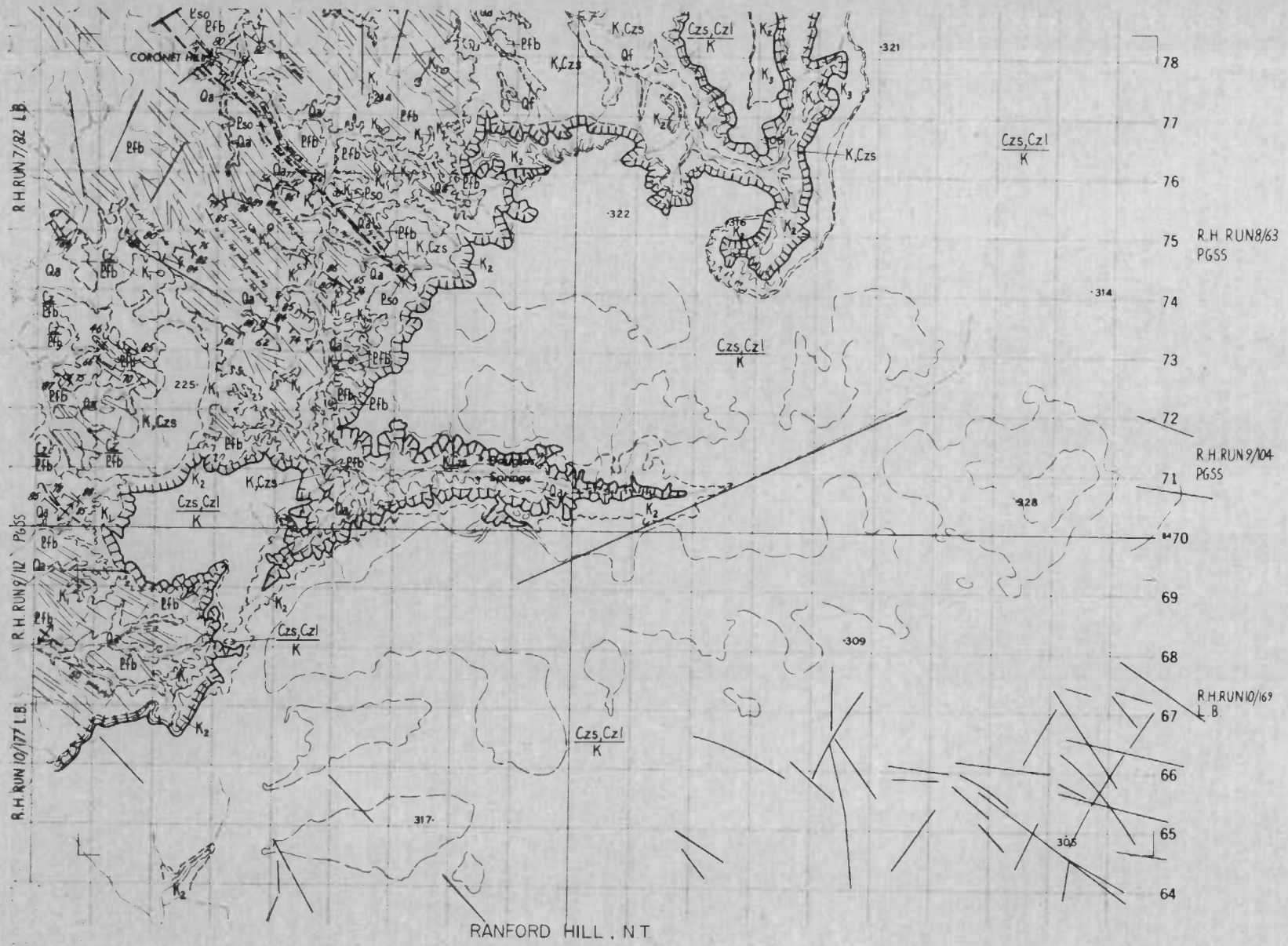
Figure 11 (b) Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet



1:100 000

x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 12 (a) Ranford Hill thin section localities 16 / D53 - 5/55



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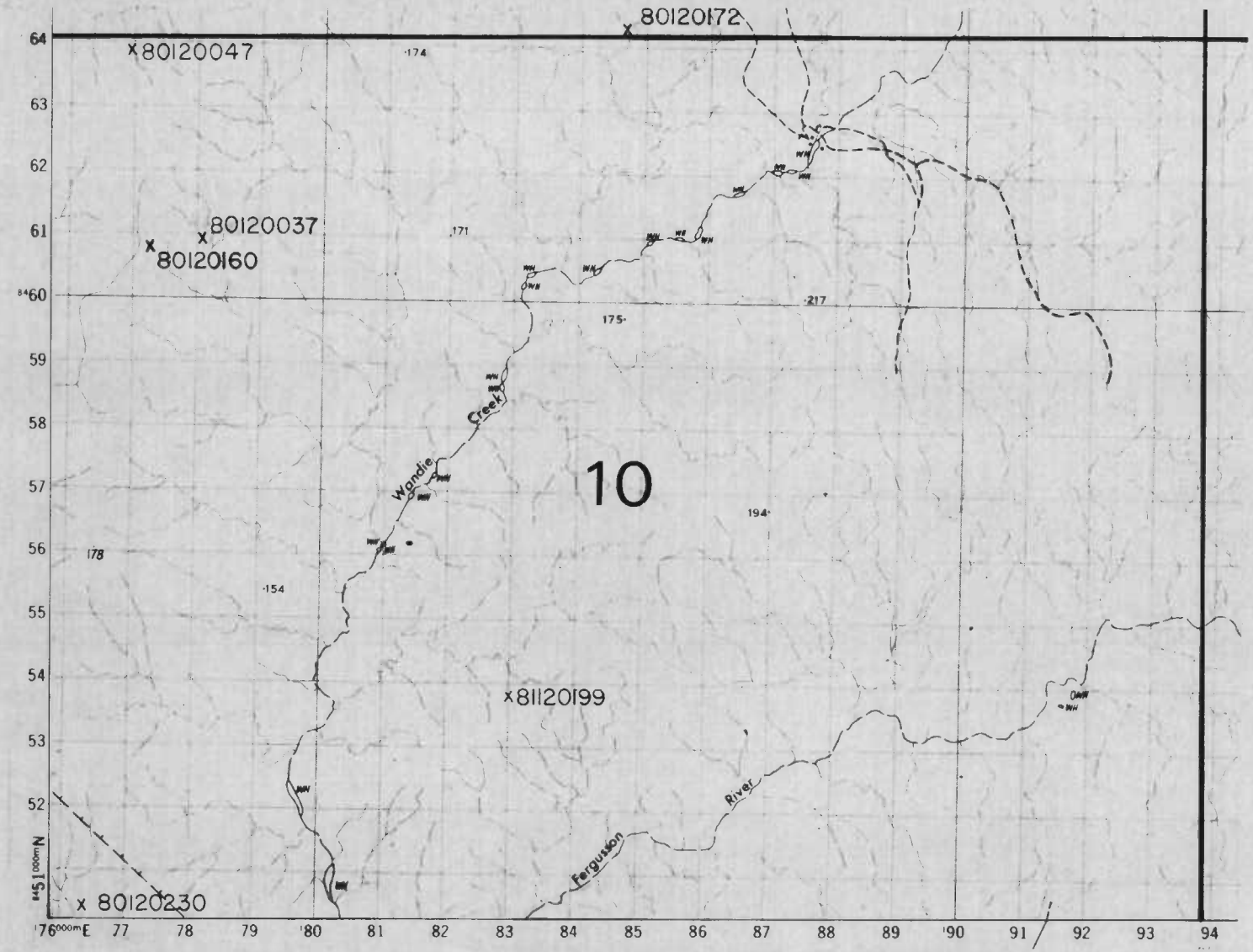
Record 1986/30

Figure 12 (b) Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet

16/D53-5/56



1:100 000

x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 13 (a) Ranford Hill thin section localities 16 / D53 - 5/57

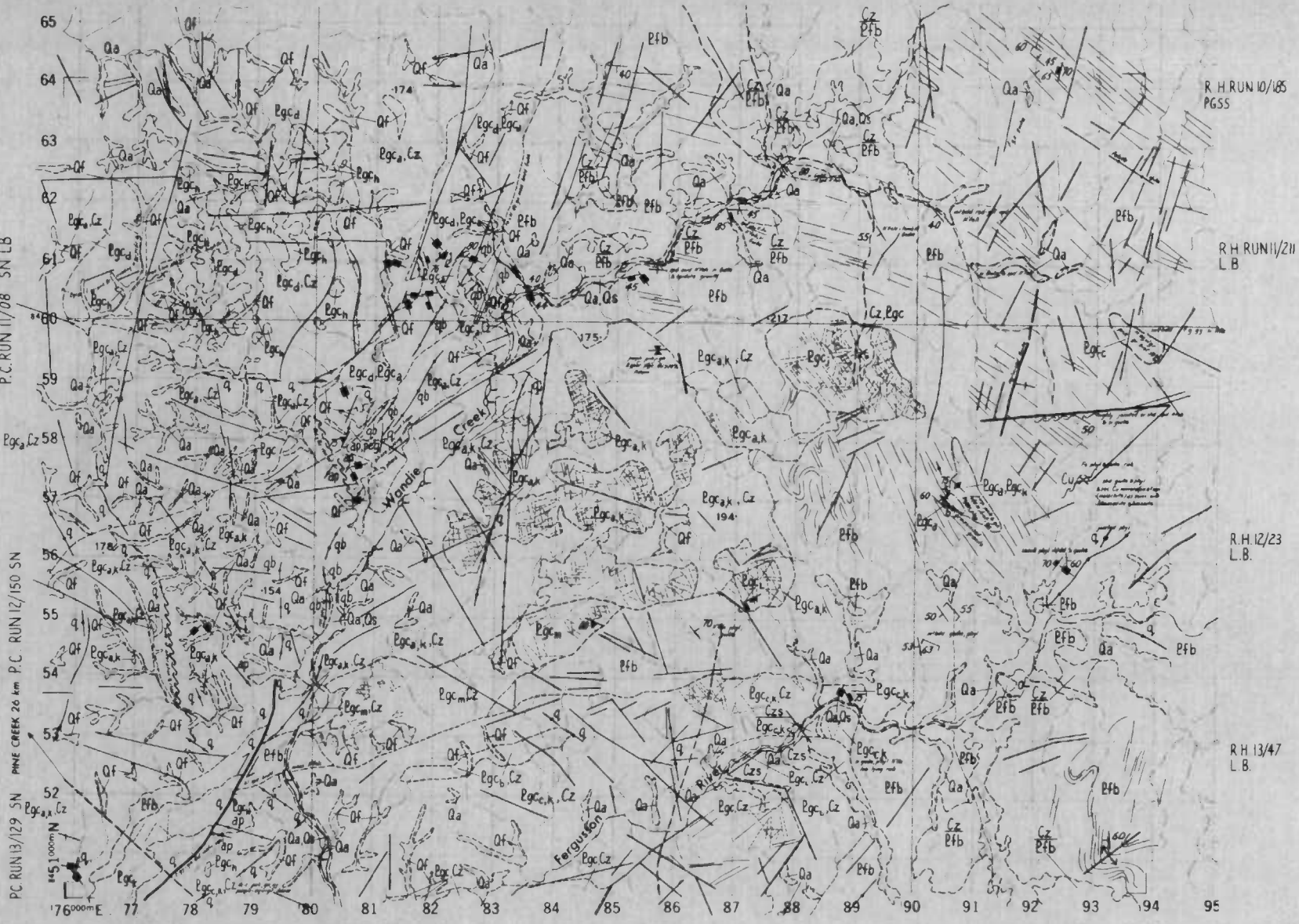


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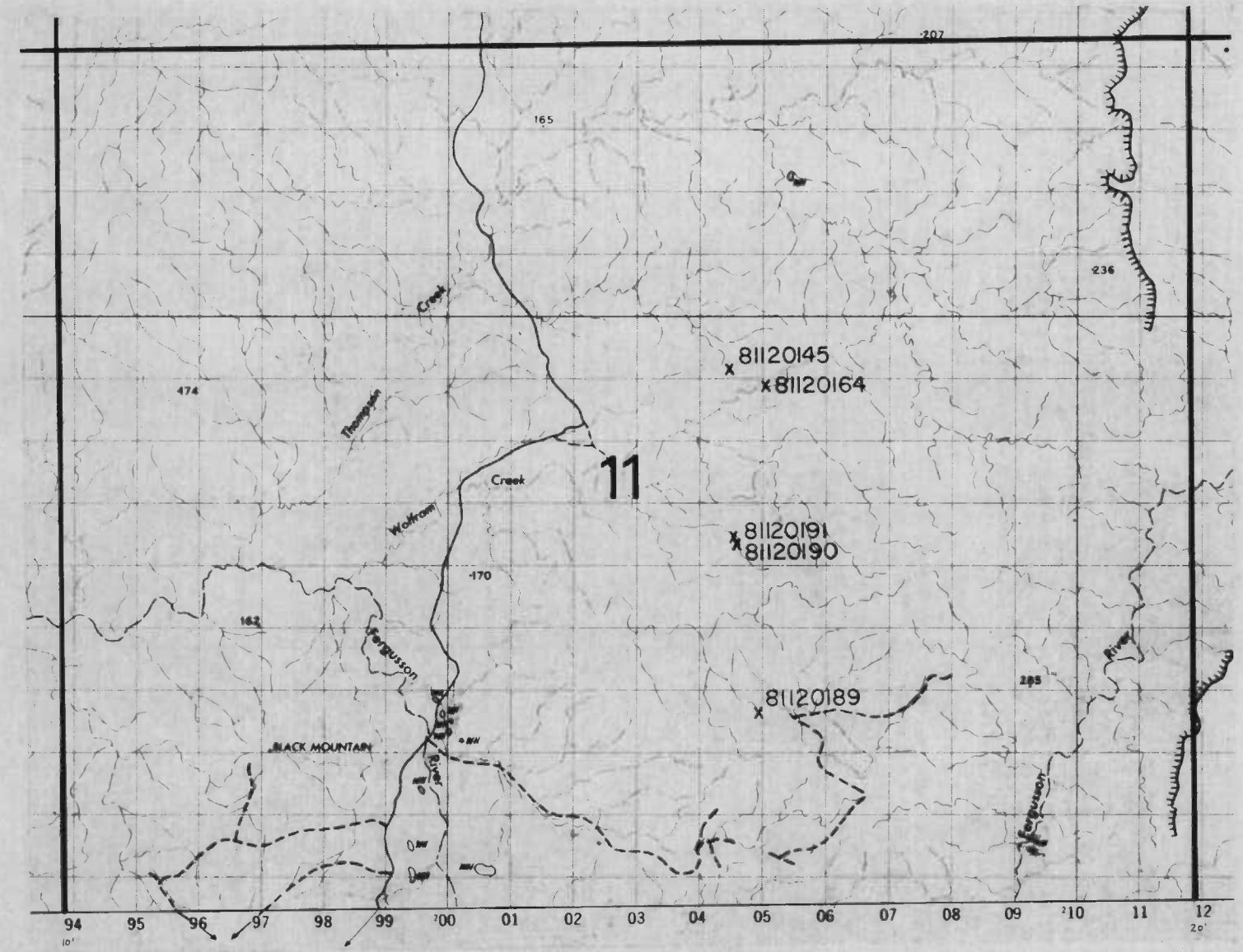
Figure 13 (b) Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet



1:100 000

x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 14 (a) Ranford Hill thin section localities 16/D53-5/59

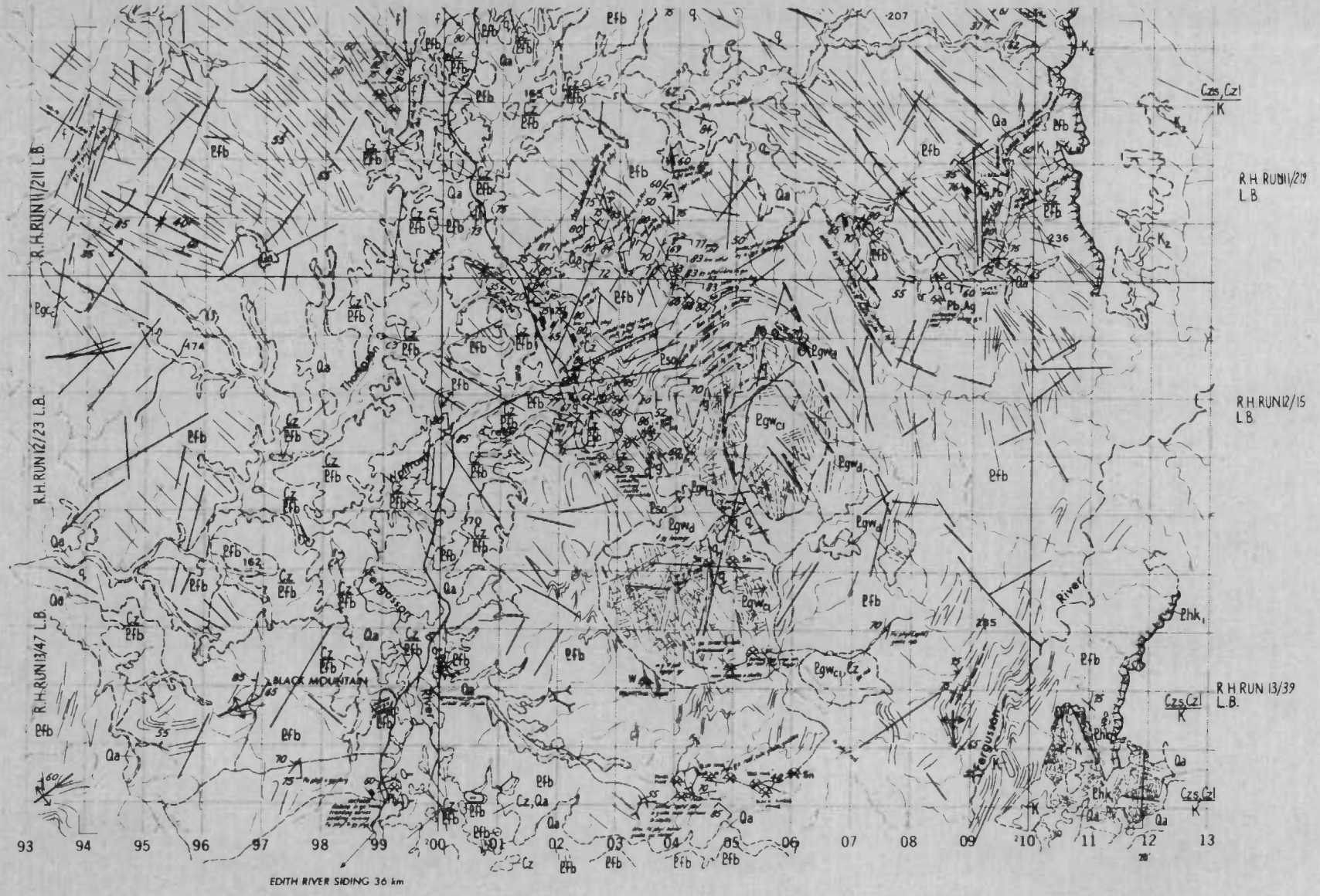


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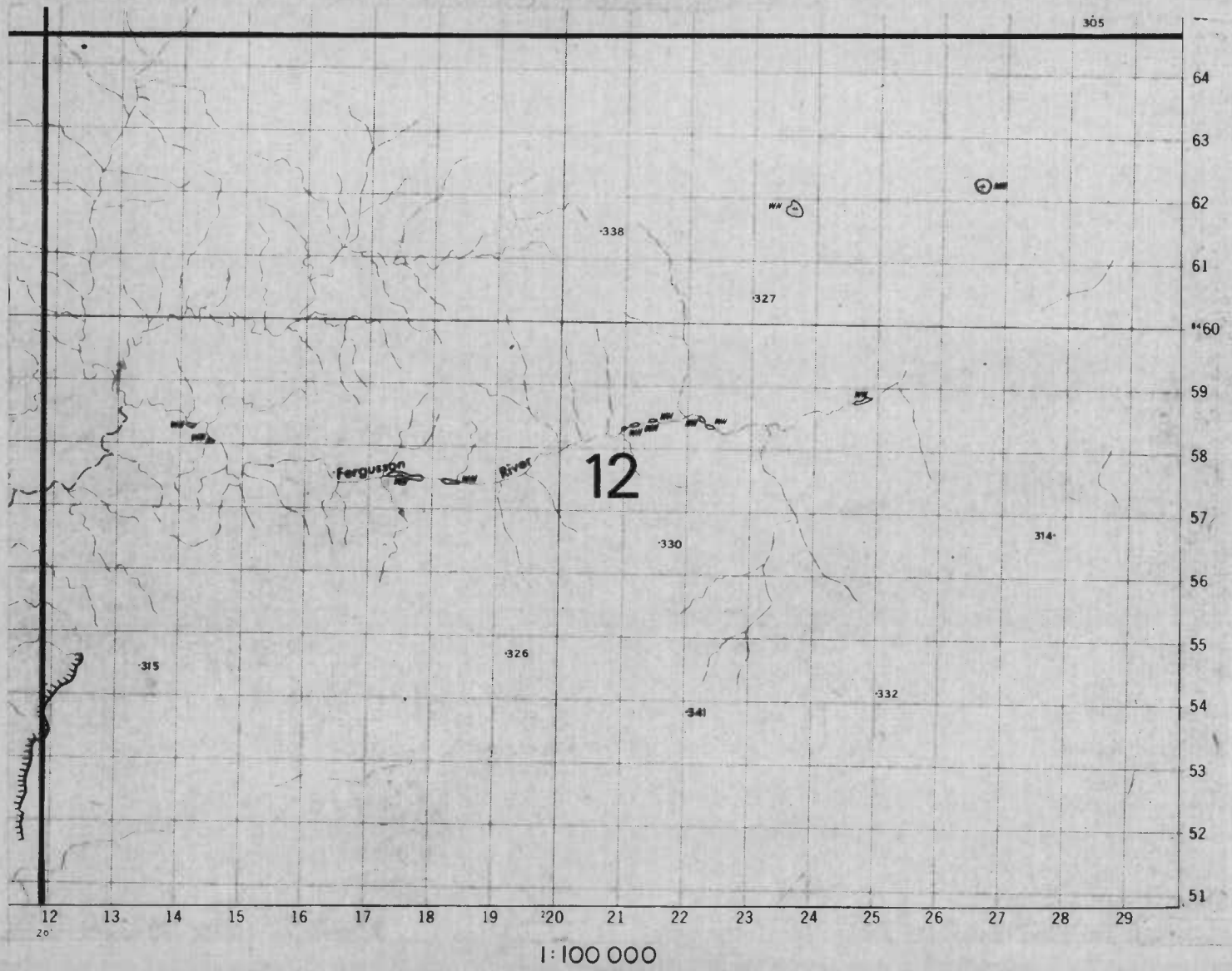
Figure 14 (b) Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet

16/D53-5/60



1:100 000

x 80120245 *Thin section locality with BMR registered number*

Record 1986/30 Figure 15 (a) Ranford Hill thin section localities 16 / D53 - 5/61

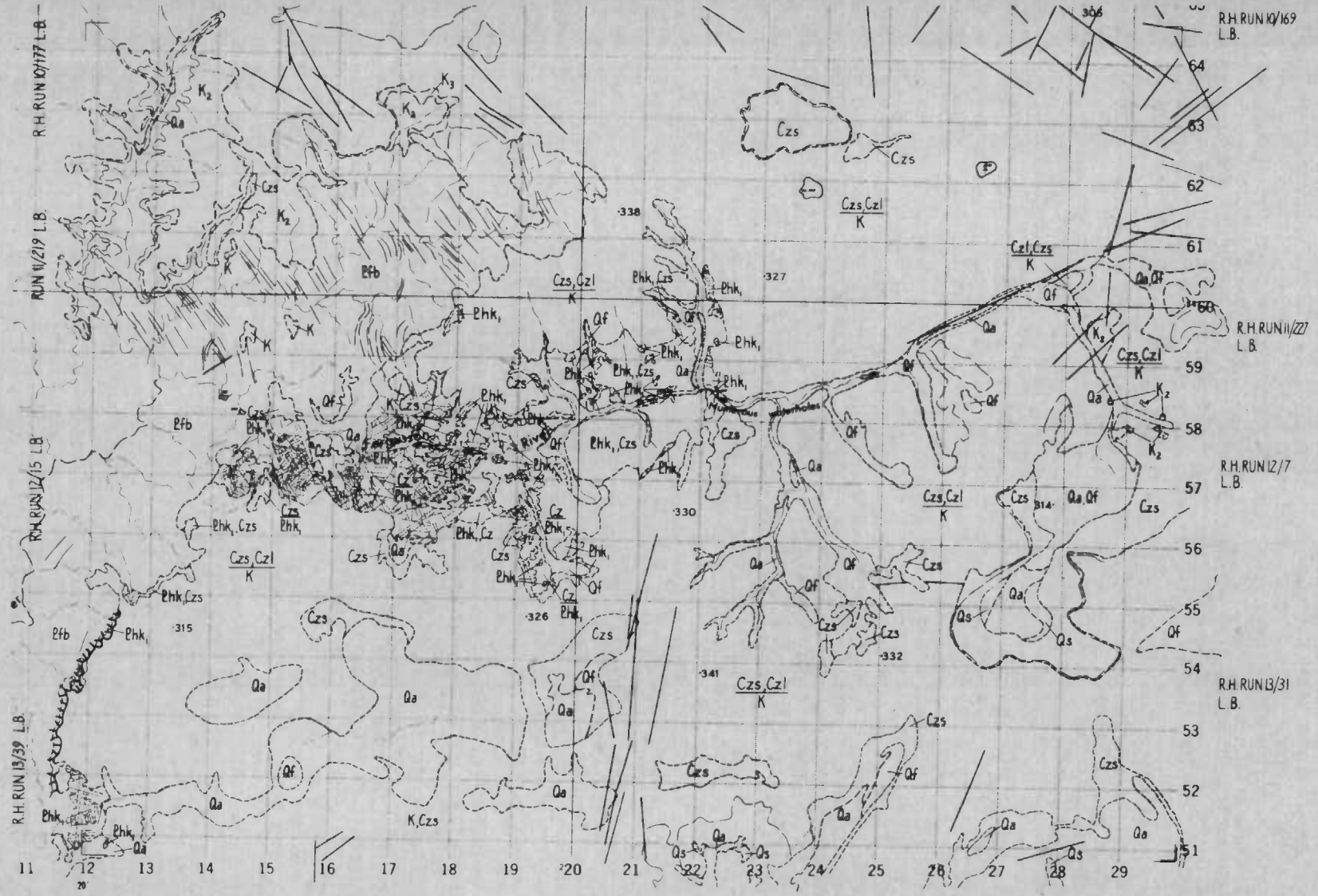


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Figure 15 (b). Ranford Hill 1:100 000 reduction of 1:25 000 compilation sheet

16/D53-5/62

37

69

APPENDIX 1. PETROGRAPHIC DISCRIPTIONS

The first line of each entry records BMR sample submission number, AMG grid reference, and compilation sheet number. The second and third lines list the rock type and formation respectively. All percentages are visual estimates only.

80120010 JE793858 4
Coarse porphyritic hornblende-biotite granite
Allamber Springs Granite

Subhedral microperthite megacrysts, up to 2 cm across, comprise about 50% of the rock. The groundmass consists of coarse-grained undulose anhedral quartz, K-feldspar, sericitised subhedral albite/oligoclase, deformed biotite crystals, and hornblende (inclusions of allanite, zircon, apatite and opaques common).

80120027 JE792758 7
Medium-grained equigranular biotite leucogranite (c)
Allamber Springs Granite

Medium-grained equigranular anhedral microcline, oligoclase, minor chloritised biotite (1%), and trace allanite, zircon, apatite, and muscovite. Minor secondary actinolite.
K-feldspar : plagioclase = 5:1
Quartz 40%
Dyke rock.

80120037 JE781609 10
Fine equigranular leucogranite (d)
McCarthys Granite

Fine-grained irregular mosaic of quartz (30%), K-feldspar, sericitised albite/oligoclase, chloritised biotite (apatite inclusions), and opaques. Slightly porphyritic with subhedral plagioclase aggregates, quartz and biotite forming coarser grains up to 5 mm across. Rare secondary epidote.
K-feldspar : plagioclase = 3:1
Quartz 30%

R8603203

80120047 JE769639 10
Altered coarse porphyritic monzonite
Bludells Monzonite

Subhedral microperthite megacrysts in a coarse-grained groundmass of strained anhedral oligoclase, microperthite and minor quartz, and patches of recrystallised polygonal grains. Secondary prismatic epidote, actinolite and carbonate.
K-feldspar : plagioclase = 1:1

80120051 JE800705 7
Porphyritic microgranite
Lewin Springs Syenite

Stongly porphyritic. Megacrysts and aggregates, up to 1 cm across, of eroded euhedral K-feldspar, embayed quartz, albite/oligoclase, and golden brown biotite. The groundmass consists of microcrystalline anhedral K-feldspar, quartz (graphically intergrown with K-feldspar in places), minor subhedral plagioclase, and chloritised biotite. Accessory zircon and apatite. Secondary muscovite and carbonate.

80120053 JE780752 7
Porphyritic microgranite
Lewin Springs Syenite

Stongly porphyritic. Megacrysts and aggregates, up to 1 cm across, of eroded euhedral K-feldspar, embayed quartz, albite/oligoclase, and golden brown biotite. The groundmass consists of microcrystalline anhedral K-feldspar, quartz (graphically intergrown with K-feldspar in places), minor subhedral plagioclase, and chloritised biotite. Accessory zircon, allanite, and apatite. Secondary epidote, muscovite and carbonate.

80120054 JE781751 7
Porphyritic microgranite
Lewin Springs Syenite

Stongly porphyritic. Megacrysts and aggregates, up to 1 cm across, of eroded euhedral K-feldspar, embayed quartz, albite/oligoclase, and golden brown biotite. The groundmass consists of microcrystalline anhedral K-feldspar, quartz (graphically intergrown with K-feldspar in places), minor subhedral plagioclase, and chloritised biotite. Accessory zircon and apatite. Secondary muscovite and carbonate.

80120070 JE850926 1
Medium-grained equigranular biotite-clinopyroxene monzonite
Bludells Monzonite

Medium-grained anhedral K-feldspar encloses fine-grained subhedral to euhedral clinopyroxene (mostly altered to fibrous pale green amphibole); biotite, opaques, apatite, sericitised plagioclase and minor quartz.

80120096 JE822978 1
Fine biotite leucogranite (d)
Frances Creek Leucogranite

Slightly porphyritic. Megacrysts, up to 5 mm across, of quartz, K-feldspar, albite/ oligoclase, and biotite aggregates in a groundmass of anhedral quartz, K-feldspar (microcline), biotite (4%), and accessory allanite and apatite.
K-feldspar : plagioclase = 5:1
Quartz 30%

80120099 JF950043 2
Quartz sandstone
Cretaceous (K_2)

Poorly-sorted, medium-grained sub- to well-rounded quartz grains cemented by microcrystalline chlorite and quartz. Rare detrital tourmaline.

80120101 JF951046 2
Very fine quartzite
Masson Formation

Very fine-grained sutured quartz grains with scattered white mica and patchy chlorite/sericite after feldspar? Rare detrital tourmaline and zircon.

80120103 JE875898 4
Calc-silicate hornfels
Koolpin Formation

Fine-grained mosaic of sphene, calcite, vesuvianite, diopside (showing slight alteration to actinolite), and garnet.

42

80120104 JF949041 2
Limonitic quartz sandstone
Cretaceous (K_1)

Porous, very poorly sorted, fine- to very coarse-grained, strained rounded grains of quartz and chert cemented by limonite and secondary quartz overgrowths. Cavities commonly lined by botryoidal goethite.

80120105 JE872904 4
Calc-silicate hornfels
Koolpin Formation

Mosaic of diopside, fibrous wollastonite, vesuvianite, calcite and sphene.

80120107 JE873900 4
Calc-silicate hornfels
Koolpin Formation

Fine-grained mosaic of granular diopside and vesuvianite.

80120108 JF893044 1
Magnetite-muscovite-quartz-cordierite-andalusite-biotite hornfels (pelitic hornfels)
Burrell Creek Formation

Fine-grained mosaic of muscovite, biotite, quartz, rounded poikilitic andalusite and cordierite (retrogressed to white mica in places), and scattered magnetite octahedra.

80120111 JF894040 1
Fine feldspathic greywacke hornfels
Burrell Creek Formation

Poorly-sorted fine-grained subrounded quartz, plagioclase, K-feldspar, in a recrystallised polygonal mosaic of quartz, feldspar, chlorite/biotite, poikilitic muscovite and opaques.

80120112 JE892960 1
Feldspathic greywacke hornfels
Mount Bonnie Formation

Poorly sorted angular medium-grained quartz, chert, feldspar, and plagioclase in a recrystallised matrix of the same plus sericite, opaques, biotite/chlorite and carbonate. Detrital tourmaline and zircon.

43

80120115 JE829790 4
Muscovite-cordierite carbonaceous hornfels
Wildman Siltstone (Ppw_1)

Ovoid to psuedohexagonal cordierite occurs as porphyroblasts in a laminated, recrystallised and partly foliated matrix of very fine-grained muscovite and carbonaceous matter. The cordierite porphyroblasts form poorly defined cloudy crystals up to 4 mm long which are crowded with inclusion trails parallel to the foliation in the matrix. They deflect adjacent coarse foliated muscovite crystals.

80120128 JE856660 7
Coarse feldspathic greywacke hornfels
Burrell Creek Formation

Recrystallised, poorly sorted, fine to coarse-grained, subangular grains of quartz, chert, K-feldspar, plagioclase, and minor crystal tuff fragments. Metamorphic fine biotite and muscovite along grain boundaries.

80120153 JE801955 1
Syenite
Unnamed dyke

Coarse-grained equigranular anhedral microcline, hematite-dusted plagioclase, minor anhedral quartz, and dark yellowish brown Fe-oxide (goethite)-stained chlorite?
K-feldspar : plagioclase = 4:1
Quartz 5%

80120160 JE773607 10
Silicified granite
McCarthys Granite

Coarse-grained microperthite and biotite (altered to white mica and Fe-oxides) with cavities filled by Fe-oxides, quartz crystals and minor fluorite.
Altered granite from a shear zone.

80120168 JE804648 7
Fine porphyritic syenite
Lewin Springs Syenite

Strongly porphyritic rock with phenocrysts of corroded quartz, altered plagioclase, subhedral K-feldspar, and a slender prismatic mineral (probably biotite but now altered to chlorite and epidote) in a fine-grained groundmass of subhedral K-feldspar, plagioclase, minor anhedral quartz (5%), graphic intergrowths of quartz and K-feldspar, and secondary chlorite, actinolite and epidote.

80120169 JE781652 7
Sheared and altered coarse porphyritic biotite leucogranite
McCarthys Granite

Subhedral microperthite megacrysts up to 2 cm across, coarse-grained anhedral quartz, plagioclase, K-feldspar, and biotite (altered to chlorite and epidote). Most grains are fractured and strained with zones of recrystallised polygonal mosaics and minor unstrained fine-grained biotite crystals. Chlorite and epidote are concentrated in fractures.

80120170 JE815653 7
Porphyritic microleucogranite
Lewin Springs Syenite

Strongly porphyritic rock containing phenocrysts and aggregates (up to 5mm across) of rounded quartz, sericitised euhedral oligoclase, and minor corroded K-feldspar (partly replaced by quartz micrographic intergrowths) in a microcrystalline groundmass of stout K-feldspar euhedra surrounded by radiating K-feldspar, quartz K-feldspar graphic intergrowths and scattered chlorite-epidote (replaced biotite).

80120172 JE847643 7
Porphyritic microleucogranite
Lewin Springs Syenite

Strongly porphyritic rock containing phenocrysts (up to 5mm across) of rounded embayed quartz, albite/oligoclase, subhedral K-feldspar, and altered biotite? (now chlorite and epidote) in a microcrystalline groundmass of anhedral quartz, K-feldspar, minor plagioclase and trace apatite and zircon.
K-feldspar : plagioclase = 5:1

45

80120173 JE776650 7
Medium-grained monzonite
Bludells Monzonite

Recrystallised mosaic of coarse to microcrystalline K-feldspar, sodic plagioclase, prismatic epidote, and minor chlorite, actinolite, sphene and quartz.

80120178 JE936973 2
Lamprophyre
Unnamed dyke

Euhedral phenocrysts of oligoclase (epidote alteration), and prismatic augite (hornblende, chlorite and epidote alteration) up to 5 mm across in a very fine-grained groundmass of subhedral K-feldspar and minor granular augite, euhedral plagioclase and interstitial quartz. Secondary chlorite, carbonate, and epidote.

80120179 JE812952 1
Coarse porphyritic biotite leucogranite
Unnamed dyke

Subhedral megacrysts of tabular microcline up to 2 cm across, commonly rimmed by graphic intergrowths with quartz. Minor oligoclase and quartz megacrysts. Fine-grained groundmass of anhedral quartz, microcline, subhedral plagioclase, and biotite (with inclusions of apatite, zircon, and fluorite).

80120181 JE936973 2
Lamprophyre
Unnamed dyke

Euhedral phenocrysts of oligoclase (epidote alteration), and prismatic augite (hornblende, chlorite and epidote alteration) up to 5 mm across in a very fine-grained groundmass of subhedral K-feldspar and minor granular augite, euhedral plagioclase and interstitial quartz. Secondary chlorite, carbonate, and epidote.

80120182 JE784758 7
Porphyritic microleucogranite
Lewin Springs Syenite

Strongly porphyritic rock containing phenocrysts of rounded embayed quartz, microperthite, oligoclase, and chloritised biotite in a microcrystalline groundmass of anhedral quartz, subhedral microcline, minor plagioclase and trace apatite and allanite. Secondary muscovite, epidote, and chlorite.

46

80120183 JE776748 7
Metadolerite
Unnamed dyke

Subhedral andesine phenocrysts, up to 1 cm across, in a medium-grained groundmass of ophitic clinopyroxene (mostly altered to fibrous pale green amphibole, biotite and opaques) which encloses altered andesine laths and rare quartz.

80120189 JE795686 7
Metadolerite
Unnamed dyke

Subhedral andesine phenocrysts, up to 1 cm across, in a medium-grained groundmass of ophitic clinopyroxene (mostly altered to fibrous pale green amphibole, biotite and opaques) which encloses altered andesine laths and rare quartz.

80120206 JE828783 4
Amphibolite
Zamu Dolerite

Medium-grained irregular grains to fibrous aggregates of pale green amphibole, minor granular diopside, sphene, clinozoisite, plagioclase, carbonate and rare quartz.

80120230 JE763504 10
Fine feldspathic quartzite
Undivided hornfels (Pgc_h)

Fine-grained foliated biotite (white mica and Fe-oxide alteration), elongate polygonal quartz, and altered feldspar (white mica aggregates).

80120243 JE815784 4
Feldspathic greywacke hornfels
Mount Bonnie Formation

Coarse-grained, poorly sorted, recrystallised angular quartz, K-feldspar, chert grains, and fragments of quartz K-feldspar intergrowths in a recrystallised polygonal mosaic of quartz, microcline, biotite, muscovite, opaques and rare detrital zircon.

80120245 JE804948 1
Medium-grained equigranular syenite
Unnamed dyke

Medium-grained equigranular anhedral microcline, hematitised feldspar, patches of quartz and biotite (granular and radiating crystals). Trace apatite.

80120247 JE795686 7
Fine equigranular syenite
Lewin Springs Syenite

Fine-grained subhedral oligoclase, K-feldspar, quartz and biotite (mostly altered to chlorite, epidote and carbonate). Secondary granular epidote. Minor plagioclase phenocrysts up to 5 mm across.
K-feldspar : plagioclase = 3:1

80120251 JE815948 1
Porphyritic quartz microsyenite
Unnamed dyke

Minor scattered phenocrysts of anhedral microcline, up to 5mm across, in a microcrystalline groundmass of anhedral microcline quartz, hematitised feldspar and chlorite, and minor zircon and apatite.

80120255 JE823947 1
Pelitic hornfels
Undivided hornfels

Fine-grained mosaic of quartz, biotite, minor plagioclase, K-feldspar, poikilitic cordierite, and magnetite. Minor patches of coarse-grained quartz.

80120258 JE825920 1
Pelitic hornfels
Undivided hornfels

Fine-grained mosaic of quartz, microcline, poikilitic cordierite and andalusite, biotite and magnetite.

80120259 JE825920 1
Pelitic hornfels
Undivided hornfels

Fine-grained mozaic of quartz, microcline, poikolitic cordierite (mostly retrogressed to white mica) and andalusite, biotite and magnetite.

80120261 JF875045 1
Lamprophyre
Unnamed dyke

Fine-grained fibrous pale green amphibole with rare cores of clinopyroxene, sausseritised plagioclase laths, euhedral K-feldspar, minor chloritised biotite and interstitial quartz, trace apatite. Secondary epidote and carbonate.

80120264 JF965029 2
Phyllite
Mount Bonnie Formation

Microcrystalline foliated white mica with scattered opaque grains.

80120269 JE892960 1
Crystal tuff hornfels
Mount Bonnie Formation

Fine-grained angular crystal fragments of K-feldspar, quartz and albite in a microcrystalline quartz-feldspar mosaic base, carbonate, clinozoisite, biotite and coarser recrystallised patches of quartz.

80120271 JE794681 7
Fine porphyritic biotite granite
Unnamed dyke

Anhedral megacrysts up to 1 cm across, of quartz, sericitised plagioclase, and biotite in a fine-grained groundmass of anhedral quartz, microcline, plagioclase, granular biotite, very minor hornblende and apatite.
K-feldspar : plagioclase = 1:1
quartz >25%

8112003 KF131025 3
Porphyritic olivine dolerite
Oenpelli Dolerite

Interlocking andesine laths partly enclosed by medium subophitic augite. Scattered subhedral crystals and aggregates of fractured and chloritised olivine; accessory apatite and opaques. Rare interstitial quartz and micrographic intergrowths.

81120006 JE813827 4
Amphibolite
Zamu Dolerite

Medium-grained pale green fibrous and anhedral actinolite, minor skeletal opaques, rare fine-grained quartz (up to 0.3mm). Secondary calcite, sphene, clinozoisite. Minor unaltered plagioclase (up to 0.3mm) almost completely altered to fine-grained white mica, K-feldspar and acicular apatite.

81120026 KE294973 3
Tuffaceous siltstone
Mount Callanan Volcanic Member

Graded laminae of chlorite, muscovite, silty quartz, opaques, sphene? and devitrified glass? Minor rounded fine-grained sandy quartz.

81120027 KE293972 3
Amygdaloidal basalt
Mount Callanan Volcanic Member

Interlocking labradorite euhedra and prismatic colourless augite with interstitial devitrified glass containing microlites and amygdales (<1 cm) filled by epidote, prehnite and chlorite. Patchy sericitic and hematitic alteration of feldspar.

81120028 KE294973 3
Amygdaloidal basalt
Mount Callanan Volcanic Member

Interlocking labradorite euhedra and prismatic colourless augite with interstitial devitrified glass containing microlites and small amygdales filled by quartz and chlorite. Patchy sericitic alteration of feldspar.

57

81120031 KE031969 2
Rhyodacite
Plum Tree Creek Volcanics

Porphyritic massive rock containing partly corroded euhedral phenocrysts of plagioclase (andesine) and lesser alkali feldspar and hornblende (mostly reverted to actinolite) in a microcrystalline groundmass of alkali feldspar, quartz with minor sphene, biotite, opaques, and apatite.

81120032 KF180043 3
Crystal lithic tuff
Plum Tree Creek Volcanics

Angular and in places curved crystal fragments of quartz, feldspar (commonly altered to sericite), and minor rhyolite fragments in a heavily oxidised base containing minor chlorite and devitrified glass.

81120036 JF985035 2
Altered rhyodacite
Plum Tree Creek Volcanics

Euhedral phenocrysts of sericitised plagioclase and a mafic mineral (now altered to chlorite and epidote, probably hornblende or pyroxene? either as single crystals or in aggregates together with minor alkali feldspar and apatite in a brown microcrystalline base of feldspar and opaques. Phenocrysts plagioclase - 60%, alkali feldspar - 10%, mafic - 30%

81120042 KE116910 6
Rhyolite
Plum Tree Creek Volcanics

Minor scattered corroded quartz and alkali feldspar phenocrysts in an Fe-oxide stained microcrystalline base of weakly flow-banded quartz and feldspar.

81120043 JF993002 2
Devitrified rhyolite?
Plum Tree Creek Volcanics

Microphenocrysts of tabular alkali feldspar and small rounded micrographic intergrowths of alkali feldspar and quartz, with tabular alkali feldspar crystal cores in places, in a brown microcrystalline groundmass of alkali feldspar, quartz and Fe-oxides. Incipient banding in hand specimen.

51

81120044 JF985024 2
Weathered rhyodacite
Plum Tree Creek Volcanics

Completely sericitised feldspar phenocrysts with minor Fe-oxide patches in a microcrystalline groundmass of Fe-oxide, sericite and quartz. Weathered version of 81120031, typical of saprolite beneath Kombolgie Formation.

81120045 KF180043 3
Altered basalt?
Plum Tree Creek Volcanics

Similar to 81120046. Rare euhedral sericitised feldspar phenocrysts in a highly altered groundmass of feldspar laths (plagioclase), opaques, chlorite, epidote, clinopyroxene and rare interstitial alkali feldspar.

81120046 KF189050 3
Altered basalt?
Plum Tree Creek Volcanics

Euhedral sausseritised feldspar laths and colourless clinopyroxene crystals with interstitial patches of altered glass (brown palagonite ?), chlorite, epidote and minor scattered opaques. May be an altered version of 8120047.

81120047 KF180043 3
Basalt?
PLum Tree Creek Volcanics

Holocrystalline rock composed of subidiomorphic andesine laths, and augite crystals (commonly chloritised) with rare interstitial quartz and alkali feldspar. Accessory apatite needles and opaque granules.

81120048 KF144039 3
Olivine dolerite
Plum Tree Creek Volcanics

Medium-grained ophitic pale brown clinopyroxene crystals mould fine-grained idiomorphic plagioclase (andesine) and olivine crystals. In clinopyroxene-free areas brown interstitial glass? with apatite needles and patches of chlorite and epidote (probably after olivine or clinopyroxene). Trace alkali feldspar and opaques.

52

81120049 KE116910 6
Altered amygdaloidal basalt?
Plum Tree Creek Volcanics

Irregular-shaped amygdales (up to 1cm across) filled with calcite, chlorite and granular quartz. Calcite also occurs throughout the rock with chlorite, minor granular quartz and altered tabular feldspar laths.

81120050 KF183056 3
Altered amygdaloidal mafic volcanic
Plum Tree Creek Volcanics

Irregular-shaped amygdales filled with quartz, chlorite and minor carbonate occur in a highly altered brown base of chlorite, relict feldspar laths, and secondary hematite - i.e. ferruginised and chloritised.

81120051 JF985024 2
Altered amygdaloidal basalt
Plum Tree Creek Volcanics

Irregular-shaped amygdales (up to 1cm across) filled with calcite, chlorite and granular quartz. Calcite also occurs throughout the rock with chlorite, minor granular quartz, and altered tabular feldspar laths.

81120052 KF236044 3
Volcanolithic pebble conglomerate
Plum Tree Creek Volcanics

Very poorly-sorted sub- to well-rounded pebbles of quartz, chert, rhyolite, ignimbrite, felsic glassy tuff and phyllite cemented by finely crystalline and in places optically continuous quartz and sericite.

81120053 KF189050 3
Fine quartz sandstone
Plum Tree Creek Volcanics

Moderately sorted sub-rounded to rounded quartz grains cemented by optically continuous quartz rims and finely crystalline sericite. Minor detrital muscovite, tourmaline and microcline. Numerous cavities may indicate weathered-out feldspar. Some quartz grains show undulose extinction.

53

81120054 KF152044 3
Tuffaceous siltstone
Plum Tree Creek Volcanics

Laminated, angular silty quartz, intergrown muscovite and opaques (probably after biotite) in a microcrystalline sericitic base.

81120055 KF152044 3
Tuffaceous siltstone
Plum Tree Creek Volcanics

Graded laminae of angular and curved silty quartz and muscovite crystal fragments in a microcrystalline sericitic Fe-oxide base (probably substantial altered volcanic glass and feldspar component). Flame structures present.

81120056 KF247038 3
Very coarse quartz sandstone
Plum Tree Creek Volcanics

Poorly-sorted fine-grained to very coarse-grained subangular to well-rounded quartz grains and minor clasts of chert, quartz schist, devitrified volcanic glass (palagonite), altered feldspar and phyllite (foliated sericite), in a microcrystalline matrix of quartz and sericite. Quartz grains are commonly surrounded by finely crystalline, and in places, optically continuous quartz rims. Detrital tourmaline.

81120057 KE207841 6
Altered fine crystal tuff
Plum Tree Creek Volcanics

Fine-grained poorly-sorted angular crystal fragments of quartz, chloritised mafic mineral, brown (almost isotropic) mineral (palagonite?) with finely crystalline chlorite, opaques and fine-grained patches of carbonate, epidote and tremolite/actinolite.

81120059 KE116910 6
Banded siliceous tuff
Plum Tree Creek Volcanics

Finely banded and graded microcrystalline silica (devitrified glass), opaques, biotite and sericite with a weak relict eutaxitic texture.

81120060 KE060856 5
Crystal tuff
Mount Bonnie Formation

Laminated very fine to fine-grained, angular fragments and splinters (curved) of quartz, albite/oligoclase and K-feldspar, and rare zircon in a recrystallised devitrified glassy base.

81120061 KE042925 2
Devitrified vitric tuff
Mount Bonnie Formation

Microcrystalline mosaic of quartz, opaques and chlorite with very fine scattered angular fragments (curved and elongate) of quartz, K-feldspar and plagioclase (oligoclase). Wavy fabric probably eutaxitic structure.

81120064 JE837858 4
Quartz-muscovite-biotite-cordierite hornfels.
Mount Bonnie Formation

Recrystallised mosaic of fine granular quartz and biotite, poikilitic muscovite, and elliptical poikilitic cordierite up to 3mm across.

81120065 JE895744 7
Phyllite hornfels
Mount Bonnie Formation

Microcrystalline mosaic of quartz, white mica and biotite with coarse-grained recrystallised patches of biotite and muscovite along bedding laminae and the main metamorphic foliation.

81120066 JE895884 4
Carbonaceous shale hornfels
Mount Bonnie Formation

Microcrystalline quartz and opaque matter (carbonaceous) with scattered very fine-grained muscovite suggesting slight hornfelsing. Patches of coarse-grained quartz (less than 2cm across) appear to replace either a metamorphic mineral (eg. andalusite) or an early evaporitic mineral.

55

81120067 JE856855 4
Dolomitic carbonaceous siltstone hornfels.
Mount Bonnie Formation

Foliated very fine carbonaceous matter and silty quartz grains with radiating aggregates of fine prismatic tremolite.

81120068 JE850866 4
Muscovite-microcline-biotite-quartz-andalusite-cordierite hornfels
Mount Bonnie Formation

Poikilitic rectangular andalusite (less than 3mm across), coarse-grained poikilitic cordierite, poikilitic muscovite, microcline, fine rounded quartz, and scattered magnetite?

81120071 JE828803 4
Very coarse quartzite
Mundogie Sandstone

Very coarse-grained, poorly-sorted, strained, quartz grains with finely sutured grain boundaries, minor chert and kaolinised feldspar grains. Fe-oxides (limonite) along grain boundaries outline well-rounded grains.

81120072 KE147986 3
Pebble conglomerate
Mundogie Sandstone

Rounded pebbles of quartz and chert (silicified dolomite - indicated by concentric solution structures) in a poorly sorted sandy matrix of quartz, chert, very fine sericite, and limonite. Rare detritial epidote.

81120073 KE146985 3
Medium-grained arkose
Mundogie Sandstone

Poorly-sorted medium-grained strained quartz, white mica aggregates (after feldspar) and chert. Optically continuous quartz overgrowths. Rare detrital tourmaline, epidote, and biotite.

81120076 KF158021 3
Coarse lithic greywacke
Kurrundie Sandstone

Poorly-sorted subrounded grains of quartz and rock fragments of chert, tuffaceous chert and phyllite. Rare pitchstone and fine-grained sericite aggregates (after feldspar). Hematitic cement.

81120077 KF133035 3
Pebble conglomerate
Kurrundie Sandstone

Subangular to subrounded pebbles (up to 2cm across) of quartz, phyllite, felsic volcanic (rhyolite, pitchstone, crystal tuff), and fine-grained quartz greywacke, in a sericitic and hematitic matrix.

81120094 KF101045 2
Altered basalt?
Big Sunday Formation

Aggregates and crystals of euhedral colourless twinned clinopyroxene, sericitised plagioclase? and chlorite pseudomorphs (after pyroxene) in a fine sericitised and chloritised intergranular subtrachytic groundmass of opaques, clinopyroxene, and sericitised feldspar laths. Minor secondary carbonate.

81120095 KF109042 2
Altered basalt?
Big Sunday Formation

Relict intergranular texture. Interlocking andesine laths and brown Fe-oxide stained chlorite after granular pyroxene?. Minor amygdales of quartz, carbonate and chlorite.

81120098 KF109042 2
Altered amygdaloidal mafic volcanic
Big Sunday Formation

Slightly porphyritic rock (mostly carbonate pseudomorphs) consisting of glomeroporphyritic aggregates of plagioclase and alkali feldspar phenocrysts in a groundmass of interlocking plagioclase (andesine?) laths, tabular alkali feldspar, granular opaques, and secondary chlorite and carbonate. Rounded to irregular-shaped amygdales filled with chlorite, carbonate and quartz. Very weak subtrachytic fabric.

81120099 KF101045 2
Altered amygdaloidal mafic volcanic
Big Sunday Formation

Strongly porphyritic rock consisting of tabular crystals and glomeroporphyritic aggregates of sericitised and zoned plagioclase, with minor chlorite pseudomorphs (after clinopyroxene or amphibole) and K-feldspar crystals in a subtrachytic groundmass of plagioclase laths, minor tabular K-feldspar (extensively carbonated), and amygdales filled by chlorite and quartz.

81120102 KE169980 3
Welded vitric tuff (ignimbrite)
Pul Pul Rhyolite

Rare quartz fragments scattered in a base of devitrified glass shards (palagonite). The structure is eutaxitic with drusy cavities filled with quartz and carbonate. The cavities outline a crude layering.

81120108 KF140028 3
Fine felspathic greywacke
Big Sunday Formation

Graded poorly-sorted angular grains of quartz, sericitised feldspar, rare biotite, muscovite, and tourmaline in an Fe-oxide-rich siliceous sericitic matrix.

81120131 KF095050 2
Brecciated silicified dolomite
Masson Formation

Net-veined and brecciated quartz, granular yellow brown Fe-oxide (limonite) acicular apatite ad minor coarse dolomite.

81120132 KF095050 2
Dololutite
Masson Formation

Microcrystalline dolomite with scattered secondary yellow brown Fe-oxides, silty quartz and muscovite grains.

81120138 JE890756 7
Fine equigranular quartz syenite
Lewin Springs Syenite

Fine-grained subhedral to euhedral K-feldspar, minor albite/oligoclase, anhedral quartz, pale green fibrous to prismatic amphibole, chloritised biotite, and graphic intergrowths of quartz and feldspar. Patchy secondary carbonate and epidote.

81120140 JE782757 7
Porphyritic microgranite
Lewin Springs Syenite

Strongly porphyritic. Rounded subhedral K-feldspar, embayed quartz, and minor sericitised oligoclase phenocrysts (less than 1cm across) and minor chloritised biotite aggregates in a microcrystalline groundmass of quartz, K-feldspar (commonly graphically intergrown) chloritised biotite, minor subhedral oligoclase and trace apatite. Secondary epidote and carbonate.

81120141 KE043824 5
Porphyritic microgranite (or quartz micromonzonite)
Lewin Springs Syenite

Subhedral oligoclase phenocrysts and aggregates with chlorite and carbonate (after a mafic mineral) in a microcrystalline groundmass of stout K-feldspar and oligoclase crystals, intergranular quartz and secondary chlorite and carbonate (after a mafic mineral). Minor sphene, opaques, apatite, and graphic intergrowths of K-feldspar and quartz.
Total quartz 20%. Plagioclase greater than or equal to K-feldspar.

81120142 KE032783 5
Porphyritic quartz microsyenite
Lewin Springs Syenite

Subhedral phenocrysts of sericitised and carbonated oligoclase (less than 0.5 cm across) and aggregates with chlorite and carbonate (after a mafic mineral) in a microcrystalline groundmass of stout K-feldspar euhedra, graphicaly intergrown K-feldspar and quartz-chlorite-opaque-carbonate-apatite aggregates (after a mafic mineral), and very minor plagioclase. Rare apatite phenocrysts.

81129143 KE078838 5
Porphyritic microleucogranite
Lewin Springs Syenite

Weathered, strongly porphyritic, anhedral embayed phenocrysts and aggregates of quartz and K-feldspar. Minor phenocrysts of sericitised oligoclase and biotite (altered to white mica and Fe-oxide). The groundmass consists of anhedral quartz, K-feldspar (commonly graphically intergrown with quartz), accessory zircon, apatite and secondary white mica, hematite, and carbonate.

81120144 KE033824 5
Porphyritic quartz microsyenite
Lewin Springs Syenite

Euhedral phenocrysts of sericitised and carbonated plagioclase (less than 1cm across in a microcrystalline groundmass of subhedral plagioclase, K-feldspar, anhedral quartz, and minor apatite, sphene, opaques, micrographic intergrowths of quartz and K-feldspar. Secondary chlorite and carbonate.

81120145 KE045592 11
Porphyritic microleucomonzonite
Lewin Springs Syenite

Subhedral crystals and aggregates of sericitised oligoclase phenocrysts (less than 0.5 cm across) and minor chlorite/opaque intergrowths (after hornblende phenocrysts) in a microcrystalline groundmass of subhedral K-feldspar, oligoclase, interstitial quartz and granular chloritised biotite, opaques and rare secondary prehnite.

81120147 JE995737 8
Porphyritic microgranite
Lewin Springs Syenite

Strongly porphyritic texture. Rounded embayed quartz, sericitised oligoclase (less than 1cm across), minor K-feldspar and chloritised biotite phenocrysts in a groundmass of micrographic quartz - K-feldspar intergrowths, minor polygonal quartz, carbonate, slender chlorite crystals (after biotite) radiating muscovite sheafs, and apatite.

81120149 KE057734 8
Feldspathic greywacke
Burrell Creek Formation

Coarse-grained poorly-sorted subangular quartz, plagioclase, K-feldspar, chert and minor volcanic rock fragments (feldspar laths and Fe-oxides) in a weakly foliated matrix of the same composition with white mica, chlorite, granular epidote, and patchy carbonate.

81120150 KE034832 5
Volcanolithic greywacke
Burrell Creek Formation

Coarse-grained poorly-sorted subangular fragments of tuffaceous chert, pitchstone, oligoclase, K-feldspar, quartz, and chert in a matrix of the same composition with metamorphic white mica, patchy carbonate, epidote and chlorite.

81120158 JE959960 2
Laminated ironstone
Burrell Creek Formation

Fine mosaic of laminated granular magnetite, pale green chlorite, white mica and very minor quartz.

81120160 JE954827 5
Coarse feldspathic greywacke hornfels
Burrell Creek Formation

Massive poorly-sorted fine to coarse-grained subangular grains of quartz, chert, K-feldspar, and plagioclase, and minor crystal tuff fragments. Very fine-grained metamorphic biotite and muscovite growths along grain boundaries.

81120161 KE135749 9
Medium-grained greywacke hornfels
Burrell Creek Formation

Medium poorly-sorted angular grains of quartz, K-feldspar, and chert in a recrystallised matrix of quartz, muscovite, biotite, calcite, opaques and detrital zircon.

81120163 JE902754 7
Magnetite-quartz-biotite-andalusite-muscovite hornfels (metashale)
Burrell Creek Formation

Recrystallised mosaic of very fine-grained white mica, biotite, muscovite, magnetite octahedra with poikilitic andalusite crystals (up to 1cm long) with inclusions of quartz. Ovoid patches of fine white mica aggregates maybe altered cordierite or feldspar.

81120164 KE050589 11
Biotite-muscovite hornfels (metashale)
Tollis Formation

Fine-grained mosaic of biotite, muscovite and minor quartz with scattered randomly oriented coarser grained muscovite crystals. Round patches (less than 0.5 mm across) depleted in biotite are probably altered cordierite.

81120165 JE878733 7
Magnetite-K-feldspar-biotite-muscovite-andalusite-quartz-cordierite hornfels (metashale/siltstone)
Burrell Creek Formation

Fine-grained mosaic of ovoid aggregates (less than 1cm across) of fine white mica (probably after cordierite) surrounded by polygonal quartz, biotite, muscovite, poikilitic feldspar and minor elongate poikilitic patches of very fine-grained white mica (probably after andalusite).

81120166 KE032824 5
Fine greywacke
Burrell Creek Formation

Poorly-sorted very fine to fine-grained angular sericitised feldspar and chert in a recrystallised, weakly foliated, matrix of quartz, muscovite, chlorite, biotite and Fe-oxides. Probably low grade hornfels.

81120167 KE126730 9
Spotted phyllite
Burrell Creek Formation

Microcrystalline foliated sericite with ovoid chlorite and opaque-rich patches less than 2mm across (probably altered cordierite). Outer albite-epidote hornfels facies.

81120168 KE020835 5
Spotted phyllite
Burrell Creek Formation

Microcrystalline foliated sericite with ovoid chlorite and opaque-rich patches less than 2mm across (probably altered cordierite). Outer albite-epidote hornfels facies.

81120170 JE885741 7
Spotted metasiltstone hornfels
Burrell Creek Formation

Poikilitic muscovite-rich ovoid patches (less than 2mm across) are separated by dark brown biotite-rich areas. Scattered angular silty quartz grains throughout.

81120171 JE959960 2
Volcanolithic pebble conglomerate
Burrell Creek Formation

Rounded pebbles (less than 0.5 cm) of porphyritic pitchstone, massive dolomite, strained quartz, tuffaceous chert, devitrified vitric tuff and fine-grained arkose, in a fine to coarse-grained poorly-sorted feldspathic greywacke matrix containing patchy secondary chlorite, muscovite and carbonate.

81120172 KE034832 5
Volcanolithic pebble conglomerate
Burrell Creek Formation

Rounded pebbles (less than 1cm across) of pitchstone (80% of pebbles) containing phenocrysts of albite/oligoclase and radiating sheafs of microlites, minor pebbles of micrographic intergrowths, strained quartz, and quartz greywacke in a poorly sorted medium feldspathic greywacke matrix. Secondary epidote, chlorite and carbonate.

81120173 KE041763 8
Volcanolithic pebble conglomerate
Burrell Creek Formation

Rounded pebbles (less than 1cm across) of pitchstone, (as for 81120172), chert (silicified dolomite with carbonate patches), tuffaceous chert (splinters of feldspar and quartz), quartz and porphyritic dacite? (embayed quartz, K-feldspar, oligoclase phenocrysts) in a medium-grained felspathic matrix with minor secondary carbonate, chlorite, epidote and sphene.

81120176 KE030974 2
Coarse quartz sandstone
Kombolgie Formation (Phk_1)

Compact, moderately-sorted subrounded, strained quartz and chert grains cemented by optically continuous quartz rims. Minor sericite aggregates after feldspar.

81120178 JF989022 2
Pebble conglomerate
Kombolgie Formation (Phk_1)

Rounded to well-rounded pebbles (less than 5cm across) of strained quartz, chalcedony, shale and siltstone, very fine-grained hematitic quartzite, tuffaceous chert, and detrital zircon in a clayey, hematitic quartz sandy matrix.

81120179 KF246035 3
Very coarse quartz sandstone
Kombolgie Formation (PhK_1)

Poorly-sorted medium to very coarse-grained subrounded quartz and minor quartzite grains, cemented by quartz overgrowths and sericite.

81120186 KE217789 6
Limonitic sandstone
Undivided Cretaceous (K_1)

Coarse poorly-sorted sub to well-rounded quartz grains cemented by porous limonite with goethite-lined cavities.

81120188 KF062015 2
Limonitic siltstone
Undivided Cretaceous

Graded laminae of scattered angular silty quartz grains and muscovite flakes in a limonitic matrix.

81120189 KE049536 11
Muscovite quartz greisen
Wolfram Hill Granite

Coarse anhedral equigranular quartz, muscovite and patchy fine-grained sericite, altered feldspar, and accessory zircon.

81120190 KE046563 11
Medium-grained equigranular biotite leucogranite
Wolfram Hill Granite

Medium-grained anhedral K-feldspar, quartz and subhedral sericitised plagioclase (oligoclase) with patchy muscovite, carbonate and chloritised biotite. Accessory fluorite and zircon.
Quartz 40%
K-feldspar : plagioclase 1:1

81120191 KE045565 11
Coarse equigranular leucogranite
Wolfram Hill Granite

Coarse-grained equigranular anhedral microperthite, quartz, subhedral oligoclase and minor white mica and opaques (after biotite). Plagioclase shows patchy alteration to fine-grained white mica in cores and along twin planes.
K-feldspar : plagioclase 3:1
Quartz 40%

81120192 KE003780 8
Coarse equigranular biotite leucogranite
Mount Davis Granite

Anhedral K-feldspar, subhedral albite/oligoclase, anhedral quartz, and biotite (marginal chloritisation). Accessory zircon, interstitial fluorite, allanite, and apatite.
Biotite 3%
K-feldspar : plagioclase 2:1
Quartz 30%

81120193 KE033776 8
Medium-grained equigranular biotite leucogranite
Mount Davis Granite

Medium-grained anhedral quartz microperthite, subhedral albite/oligoclase, minor biotite (minor chloritisation) and accessory zircon, allanite and magnetite.
Biotite 1%
K-feldspar : plagioclase 5:1
Quartz 25%

81120194 KE084770 8
Medium-grained equigranular leucogranite
Mount Davis Granite

Anhedral quartz (50%), K-feldspar, plagioclase (oligoclase) and minor chloritised biotite (1%) and opaques (1%). Trace topaz and zircon.
K-feldspar : plagioclase 3:1.

81120195 KE060773 8
Medium-grained sericite-quartz greisen
Mount Davis Granite

Anhedral quartz, fine-grained patchy sericite and secondary Fe-oxides.

81120196 KE028776 8
Medium-grained porphyritic biotite-hornblende granite
Mount Davis Granite

Subhedral zoned phenocrysts of K-feldspar (less than 1cm across), and anhedral quartz in a medium-grained groundmass of anhedral K-feldspar, subhedral sericitised plagioclase (albite/oligoclase), anhedral quartz, prismatic green-brown hornblende and chloritised biotite. Accessory allanite, zircon, apatite and opaques.
Biotite = hornblende - (5% total)
Quartz 30%
K-feldspar : plagioclase 1:1

81120197 KE030790 5
Porphyritic quartz micromonzonite?
Lewin Springs Syenite

Strongly porphyritic. Phenocrysts of sericitised euhedral plagioclase, corroded K-feldspar, (K-feldspar : plagioclase phenocrysts = 2:1) and chlorite-carbonate clots after a mafic mineral with apatite inclusions. The groundmass consists of microcrystalline K-feldspar, quartz, chlorite, opaques, minor plagioclase and secondary carbonate.

81120198 JE855743 7
Fine biotite leucogranite (d)
Allamber Springs Granite

Fine-grained equigranular K-feldspar, quartz, plagioclase (sericitised), minor biotite (chlorite and epidote alteration), and rare allanite and zircon. Very minor rounded and sutured quartz phenocrysts up to 1 cm across.
K-feldspar : plagioclase = 5:1
Quartz 40%
Biotite 1%
Chilled margin of type c.

81120199 JE830537 10
Coarse porphyritic biotite granite (b)
Wandie Granite

Perthite megacrysts (up to 1 cm across), plagioclase (sericitised), and strained anhedral quartz, biotite with zircon inclusions, minor K-feldspar - quartz intergrowths and rare primary muscovite (inclusions in quartz and K-feldspar). Accessory apatite, opaques and rare garnet. Secondary chlorite and sericite.
K-feldspar : plagioclase = 1:1
Quartz 20%
Biotite 10%

81120200 JE861746 7
Fine equigranular biotite leucogranite (d)
Allamber Springs Granite

Fine-grained anhedral K-feldspar, oligoclase, quartz, minor biotite (1%, chlorite and epidote alteration), and rare allanite.
Chilled margin of type c.

81120201 JE860745 7
Coarse porphyritic hornblende-biotite granite
McCarthys Granite

Tabular pink megacrysts of microperthite up to 2 cm across in a coarse-grained groundmass of anhedral quartz, sericitised plagioclase, K-feldspar, biotite (chlorite and epidote alteration) and sub-prismatic hornblende. Accessory apatite, zircon, and allanite. Undulose extinction and sutured grain boundaries common.
K-feldspar : plagioclase = 1:1
Quartz 20%, Biotite + hornblende 5%

81120223 JE876932 1
Calcite-quartz-diopside hornfels
Mount Bonnie Formation

Very fine to medium-grained, patchy polygonal diopside, quartz and calcite. Minor chlorite alteration.

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