

Q413/1635

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042001

REPORTS ON THE
CAMP 30, AHEARNE'S CREEK AND WILSON RIVER
AREAS, EL 2/63

MR LINDSAY Feb 1969

69-598

FEBRUARY, 1969.

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ADEKFOYLE TIN
M^L LINDSAY AREA.
REPORT 1.

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21 JUL 1969		E & IL
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DEPT. OF MINES		
REF. NO.		

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CAMP 30 REPORT

M. JORDAN,
FEBRUARY 69.

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INTRODUCTION

As a result of the field programme conducted in the Camp 30 area in 1967/68 by Jessup and Chenhall it had been provisionally decided to drill the various anomalies obtained principally by geochemical sampling. This was postponed until further work was completed. This entailed detailed mapping, augering and additional geochemical sampling to be done over the anomalies.

In addition lines have been cut and geochemically sampled on the "laterite capped" ridge to the south east of Camp 30 between Riley's and Trinder Creek.

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GEOCHEMICAL RESULTS

Surface sampling was carried out over all the proposed drill lines. This was accompanied by auger drilling where possible, samples being taken every two feet from the surface.

Surface sampling differed to that of Jessup and Chenhall in that samples have been taken at a deeper horizon in the soil profile. The higher values of cobalt and nickel obtained are a result of this. The nickel "highs" are closely associated with cobalt anomalies over these lines. But the geochemical results show very low copper values. This probably indicates that no copper sulphides are present in the area.

The lines cut to the southeast of Camp 30 reveal no geochemical "highs" either for cobalt or nickel.

Augering could not be done systematically over the grid positions because of two restrictions. As the anomalies are centred over serpentinite outcrop as a rule no augering could be done over these areas. Also where laterite occurs to any depth it is difficult to auger through. So augering was restricted to ^{deep}soil profiles formed over serpentinite with little or no surface laterite.

Surface sampling on the laterite does not reveal any marked anomalies. If it were possible to sample beneath this surface laterite which over a wide area is only one to five feet deep similar geochemical values as those encountered over the serpentinite outcrop would possibly result. In some instances, where the laterite was only about one foot deep it was possible to auger. On these positions surface sampling taken in this laterite showed low geochemical values while samples taken from depths of two or four feet gave values up to 1% Ni.

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GEOLOGY

Detailed geological mapping of the laterite and serpentinite was carried out on and around anomalies one to seven. This revealed that these anomalies closely follow outcropping serpentinite.

On anomalies four and six the overall picture is complicated by deposited creek gravels but on these anomalies no significant laterite is found.

The outcropping serpentinite was examined closely over the anomalies but no sulphides were found.

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SAMPLES TAKEN IN PITS

LOCATION	DEPTH	ANALYSES (p. p. m.)		
		CU	NI	CO
Pit 1	18"	13	2600	650
4570' on R2	3'	15	3000	1160
	4½'	10	3000	1450
Pit 2	18"	10	2600	1450
4450' on R2	3'	8	3600	1450
	4½'	8	2600	1050
Pit 3	18"	10	3200	700
4175' R2	2½'	13	6500	1400
Pit 4	18"	8	4500	1530
4050' R2	3'	5	2600	750
	5'	8	6500	4000
Pit 5	18"	10	1820	335
3970' R2	3½'	10	1480	335
	5½'	15	2000	335
Pit 6 3870' R2	18"	10	1520	300
Pit 7	18"	15	3200	700
3720' R2	3½'	15	2600	2000
	5'	15	3400	2350
Pit 8	18"	13	2000	1230
3600' R2	3½'	13	3400	1300
	5½'	10	1720	800
Pit 9	18"	13	1880	900
3533' R2	3'	10	3000	800
	5½'	13	3200	1050
Pit 10	18"	10	4800	1650
00 of Anom. 6	3'	10	4550	2200
	4½'	10	2700	2320
Trench 15' N.E. of Anom 6	18"	10	3700	2040
	4'	8	3820	1960
Trench 25' N.E. of Anom 6	18"	10	3320	1720
	3½'	8	3320	1880
	6'	13	3320	1500
200W	6'	12	4850	1050
	8'	10	8000	900
	10'	20	4530	1730
Anomaly 4				
100N	2½'	14	3470	1050
300 N	3'	18	4000	1850
400N	3'	16	4000	1230
100W	2½'	14	2280	1600
100W	4'	18	6500	1100
	6'	24	5500	750
	8'	4	1%	3580
100S	2'	12	4500	1000

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LOCATION	DEPTH	CU	ANALYSES (p.p.m.)	
			NI	CO
Anomaly 5				
200S	4'	10	8000	4700
	6'	22	8000	1730
100E	2'	20	6500	2000
Anomaly 6				
00	4'	16	5000	2700
	6'	16	7500	4200
100E	4'	16	1860	560
	6½'	14	5000	2200
	8'	22	1%	7500
	10'	14	7500	3650
	12'	14	1%	1800
	14'	12	8600?	1800
100N	4'	22	1000	600
	8'	18	5000	650
	6'	16	6500	560
Auger Samples				
Anomaly 1				
Position (relative to proposed drill lines)				
00	4'	18	1%	700
100S	4'	10	2%	1160
200E	4'	14	4000	3230
	6'	16	5000	1½%
	8'	16	5500	6000
	10'	28	4500	3800
100N	4'	16	1300	1650
	0'	16	1650	200
	8'	14	3470	420
	10'	12	2%	310
Anomaly 2				
100E	2½'	16	8000	1450
100W	2¼'	12	2%	1920
150E	3'	16	4700	2350
200E	4'	18	5500	750
	6'	20	5500	650
	8'	18	8000	900
	10'	10	1%	1000
250E	4'	36	1%	950
"	5½'	14	8600	3650
Anomaly 3				
100S	4'	20	3750	1650
"	6'	12	2%	3800
"	8'	18	4000	420
300N	3½'	20	3750	323
"	5½'	6	2%	560
200W	4'	12	8600	800
100N	10'	16	6000	850
200N	4'	20	1%	1230
	6'	12	1%	1530
	8'	16	4000	2000
	10'	16	7000	2000
100W	4'	22	1%	1050
	6'	14	1½%	1100
200W	3½'	14	7000	2350
100S	4'	20	7000	2350
	6'	16	7000	2580
200S	3'	10	8000	8000

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LOCATION	DEPTH	CU	ANALYSES (p.p.m.)	
			NI	CO
Anomaly 7				
200E	4'	14	9200	1350
"	6'	17	7700	520
	7'	18	2%	600
300E	3½'	16	920	180

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Mines Dept.

ABERFOYLE TIN

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MT. LINDSAY AREA.
REPORT 2

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21 JUL 1969			E & IL
ANSWERED			
DEPT. OF MINES			
REF. NO.			

REPORT ON THE GEOLOGY
OF THE AHEARNE'S CREEK AREA

FOUNDATION & GEOLOGICAL SERVICES PTY. LTD.

R. Overton

M. Jordan

February, 1969

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 - i. Correlation with Adjacent Areas
 - ii. Correlation within the Area

KEY TO "GEOLOGICAL FACT PLAN" MAPS

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GEOLOGY OF THE AHEARNE'S CREEK AREAA. INTRODUCTION

The aim of the programme was to:

(a) Investigate the western serpentinite-sediment contact for possible sulphide mineralisation (described by Jessup & Chenhall (1968)) by a series of traverses along the west-flowing tributaries of Ahearne's Creek (Creeks B, C, D);

(b) Determine, if possible, the stratigraphy of the sediments encompassed by the area from the serpentinite-sediment contact at the Wilson River near the Wilson-Harman junction in the north to the Ahearne's Creek-Wilson River junction in the south, and the Wilson River-Salmon Creek junction in the west.

The results of the geological and compass and tape traverses have been plotted on 100 scale maps (A.H. 1-9) and a 4 inch = 1 mile map (Geology of the Wilson-Pieman River Area).

B. SEDIMENTS

The sediments in the area consist of a monotonous sequence of grey, chocolate and khaki shales and grey and chocolate greywackes with minor brown shales and greywackes. The sequence is steeply dipping and strikes approximately $320-330^{\circ}$ (mag.). In the area studied these rocks have a thickness of approximately 5,500 ft and have been correlated with the Crimson Creek Formation. The different rock types are all interbedded and variation between lithologies is minor, except for variation in colour. The greywackes consist essentially of medium grained detrital feldspar with minor mica in a fine matrix. In many places tabular shale pebbles up to 1-2 cm in diameter are common. The brown greywackes are very likely moderately weathered varieties of the grey greywackes which are commonly harder than the chocolate greywackes. Graded bedding and cross bedding have both been observed in the greywackes on a scale generally of 1 inch. The shales are uniformly very fine grained and occur both massive and laminated, the latter showing a very well developed axial plane cleavage parallel to bedding.

The two lithologies may occur in units up to 50 ft thick but have also been commonly observed finely interbed-

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ded and these may alternate with individual beds in places less than 1 inch thick. The different finely interbedded lithologies may also differ in colour over this scale, making a detailed stratigraphy very difficult.

C.

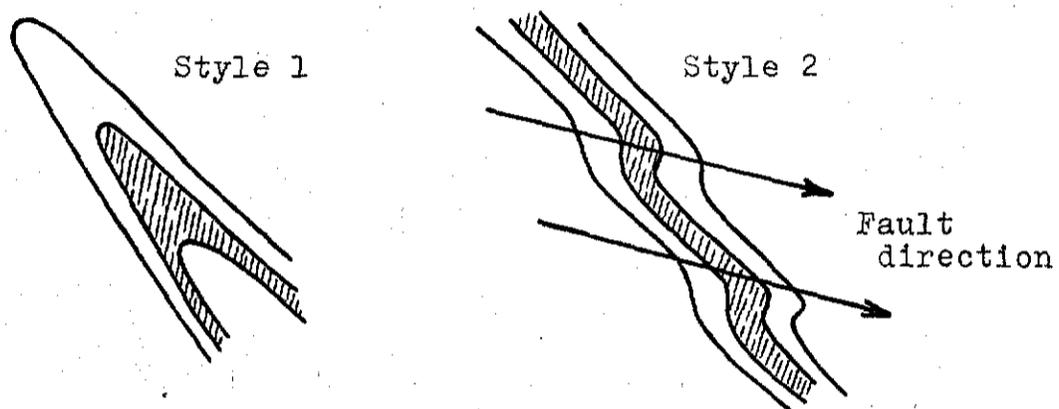
(i) The Serpentinite-Sediment Contact. The contact in Ahearne's Creek has been described by Jessup & Chenhall (1968) and Rubenach (1968). Briefly this consists of basic igneous rocks, in places highly altered to rodingites, etc., occurring along the contact between the sediments and the serpentinite. Amphibolites occur both along this contact and as large basic inclusions in the serpentinite up to 100 yards from the contact. The amphibolite has a well developed foliation parallel in strike and presumably in dip to that of the contact. The possible origin of the basic igneous rocks and associates, and their petrography, has been discussed and described by Rubenach (1968). Metamorphism accompanying the intrusion of the serpentinite and/or basic igneous rocks is at most slight. This is probably dynamic in nature and has been described only in creek "B" (Map A.H. 9) where, over a distance of less than 100 ft unmetamorphosed shales grade into phyllites and finally mica schists very close to the contact.

In the Wilson River, the contact is similar to that described by Rubenach as occurring in Riley's Creek; the sediments are in contact with a possible highly altered basic igneous rock (dolerite?) which contains traces of sulphide, probably pyrite. The amphibolite occurs here.

(ii) Mineralisation. Sulphides have been reported by Jessup and Chenhall (1968) in gabbros, dolerites and rodingites along the western contact north of Ahearne's Creek. In the areas of the contact investigated by the present authors, only traces of pyrite, mentioned above, have been detected in the basic volcanics. No sulphides were found either in the sediments adjacent to the serpentinite or in the serpentinite itself. Away from the contact, in the greywackes, pyrite and minor chalcopyrite have been observed (e.g. Map A.H. 8). This occurrence is restricted to isolated beds and is not continuous along strike. Syngenetic pyrite is also probably present, although its occurrence is likewise restricted.

D. STRUCTURE

In places of favourable outcrop, especially in the Wilson River (Map A.H. 2), two styles of folding and small scale faulting have been observed. The predominant style, observed also in Ahearne's Creek, is of tight isoclinal folding; the axial plane of these folds is everywhere parallel to the bedding, but no plunges of fold axes have been recorded. The second style is much more open with variable strike of axial plane.



The second style is apparently induced by faulting in some cases. The widespread nature of isoclinal folding is best shown by lack of significant change in strike together with opposite facings of beds in close proximity to each other.

Small scale effects have been observed in the Wilson River (Map A.H. 2) striking approximately 130° . These show movement of the north east block to the north west and a south west block to the south east. The maps of Wilson and Ransom (1966) and photo-interpretation show, however, an apparent regional strike of north east with movement opposite the above. Failure to correlate prima facie continuous beds of thickness up to 500 ft over any great distance presumably indicates that the area as a whole has been extensively deformed.

E. PROBLEMS OF THE STRATIGRAPHY OF THE AREA

(i) Correlation with Adjacent Areas. The rock types present in Jordan Creek and in the area west of that studied are very similar. It is suggested that the lithology named "mudstone", as applicable to the rocks in Jordan Creek, is essentially the same as that termed "greywacke" by

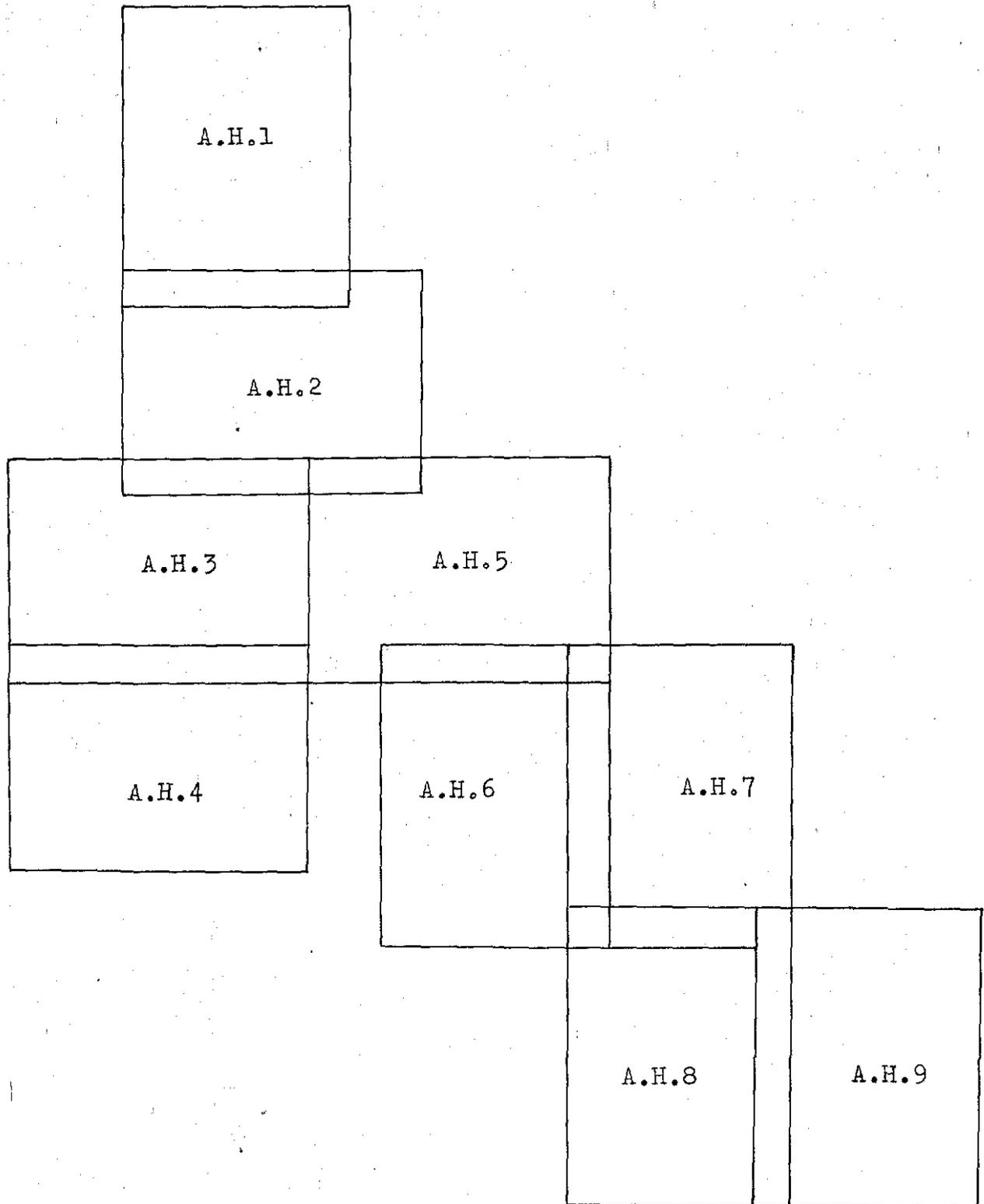
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KEY TO AHEARNE'S CREEK "GEOLOGICAL FACT PLAN" MAPS

SCALE: 1" = 100'

5 cm



the present authors. This lithology is also essentially identical with the greywackes in the Mt. Lindsay area close to the serpentinite. The difficulty in correlating the Mt. Lindsay sequence with the Ahearne's Creek sequence is the complete lack of colour change in the former because of the monotony of the sequence and lack of variation in lithology or regionally penetrative "marker horizons". No definite correlation between the two is here proposed, although no doubt they are closely related.

In the area to the west dolomitic horizons, described by Cameron & Raetz (1969), are fairly common, although totally absent in the present area (except for a small horizon outcropping in Jordan Creek) which, if continuous, would outcrop also in Ahearne's Creek. The occurrence of these dolomitic beds to the west would appear to be a regional trend.

(ii) Correlation within the Area. No stratigraphy of the area investigated is to be proposed in this report because of the following difficulties:

(a) Sufficient time could not be spent in the field to allow an overall structural interpretation of the area to be worked out; the area is intensely deformed.

(b) Any stratigraphy of the area would be proposed on the basis of colour and difference between the two lithologies (shale and greywacke). These lithologies are so closely interbedded over almost the whole area as to defy division or subdivision on a regional scale.

It has been concluded that any stratigraphy proposed would necessarily be the result of very detailed work in the field. However, were this stratigraphy necessary, it is suggested that detailed work be carried out also to the north west of the Ahearne's Creek area to discover the reason for overall lack of correlation between the rocks in this area and at Mt. Lindsay-Harman River.

It is suggested that further search for sulphide mineralisation in the Ahearne's Creek area - the area covered in this report - and exclusive of that investigated by Jessup (1968) be abandoned.

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ABERFOYLE TIN

M^t LINDSAY AREA,

REPORT 3

GEOLOGY OF THE WILSON RIVER AREA

M. ROETZ
P. CAMERON
B. ALLEN

SUMMARY

1. The stratigraphy of the lower half of the Crimson Creek-Mt. Lindsay Tullock Creek Formation is given in some detail. A structural interpretation for the area map is also given.

2. Minor pyrite mineralization was found.

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INTRODUCTION

Geological traversing was done over this area with the aim of determining the stratigraphy and structure of the Lower Wilson River area. The main traverse was along the Mt. Lindsay Track, from the Wilson-Pieman River junction to the Salmon Creek-Tulloch Creek junction. This work was supplemented with geological traverses about $1\frac{1}{2}$ mile up the Pieman River from the junction and also a traverse down Annas Creek (see locality map).

Over much of the area the outcrop was poor. However, outcrop was sufficient to allow a fairly reliable interpretation. All traversing was done with tape and compass, and pegs were placed at stations and given numbers P1 to P316. The geology in this area was done by B. Allen, P. Cameron and M. Roetz.

STRATIGRAPHY

The rocks in this area have been tentatively equated with the Crimson Creek Formation. From the general succession given by Etheridge it appears that our mapping was limited to approximately the lower 4,000 ft of his 10,000 ft.+ Mt. Lindsay-Tullock Creek Formation. Although a detailed stratigraphy cannot be obtained from the work, a regional trend was noted and the following succession is believed to be correct.

Lower half of the Mt. Lindsay-Tullock Creek
Formation

Approx. thickness	(see locality map)
100 ft.+ (D)	Minor blue grey dolomite (or dolomitic greywacke, refer to specimens), with grey shale of unknown extent.
400 ft. (C)	Chocolate shale and chocolate greywacke with greywacke predominating. The shales are often laminated and show fine current marking. Thin greywacke bands are interbedded and show grading. This unit appears the best marker horizon for correlation.
2000 ft. (B)	Massive blue grey dolomites, blue grey dolomitic shale and dolomitic greywacke interbedded. Also approximately 60 ft. graphitic shale and minor black shale.
1000 ft. (A)	Khaki shale Chocolate shale and minor fine greywacke. Khaki shale Minor quartzites Minor chert. Red chert Blue grey chert
	Unconformity ?
1500 ft.+ Oonah Shales? and quartzites	Highly contorted, sheared blue, grey black, slates and shales, with interbedded minor greywacke (Seen near Pieman Cage).

The rocks of the same succession, overlying these rocks have been mapped in detail by Overton and Tonolan.

Reference should be made to specimens taken to help clarify the terminology used, e.g. Specimens S269, 249, 277, 72, 224 have been termed massive blue, grey dolomites. The term greywacke has been reserved for rocks very similar to the dolomites, but either micaceous or lithic. It was also noted that the dolomites weather to a soft, brown rock that appears like a weathered greywacke e.g. S277 (both fresh and weathered).

Disseminated sulphides (pyrite) are common in the massive dolomites e.g. S72 and S249. Also syngenetic pyrite is common in the minor black shales.

Strongly deformed, blue grey slates, etc. (possibly Onah Shale) underly the dolomite-turbidite sequence to the south west, near the Pieman-Wilson River Junction. These are probably non-conformable, as they show much stronger type of deformation than the overlying rocks.

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STRUCTURE

In the area mapped a simple structural trend was noted. The strike trend is approximately 300° , with not much variation generally. South of Annas Creek, the rocks dip uniformly, steep to the N.E. ($70^{\circ} - 90^{\circ}$). However, north of here there is a uniform trend with the rocks dipping steep to the S.W. ($70^{\circ} - 90^{\circ}$). This entire sequence is probably overturned, and was seen to be so on four occasions. It appears that the sequence has been overturned by a regional fault, which extends onto the Wilson near Annas Creek. Dragging to the east from this fault has overturned the beds north of Annas Creek.

MINERALIZATIONNon Syngenetic Sulphides

These are sulphides in veins etc., were noted at a few localities.

(1) The most significant was near P110 and P117, flanking Annas Creek (see specimens). A line P-C was set off at 306° , but has not been cut or pegged. The sulphides (pyrite) occurred in a massive dolomitic rock. The veins were fairly extensive and were found on strike at least 100 ft. apart, on both sides of the creek.

(2) A small vein of sulphides (possibly pyrrhotite, see specimen 277) was found at P227 also in a dolomite.

(3) Very minor small veins of sulphides were found in blue grey cherts, on the east bank of the Wilson near the footings of the old bridge.