

7307

DEAD FALLEN

BOREHOLE NO. 2

WEARDALE

Submitted to: Acorn Exploration N.L. Ltd.  
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Sydney,  
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Australia.

by: Mackay & Schnellmann  
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LONDON  
April, 1973

## Borehole No. 2 Dead Friars

1. Borehole No. 2 at Dead Friars was drilled from the same location as Borehole 1 and set at an inclination of  $63^{\circ}$  so as to intersect the High Flat mineralisation within the Great Limestone 20 ft. on the north-west side of presumed extension of the Boltburn Vein. Drilling was started on 6th February and was completed on 22nd February.

### Inclination of the Hole

2.

<u>Depth in feet</u>	<u>Inclination in degrees</u>
100	62
200	63
300	65
Wedge set at 302 ft. 4 in.	
400	69
500	71
600	73
700	75
800	75
Final depth 897 ft.	

### Result.

- 3.a) The stratigraphy of borehole 2 differed only in detail from borehole 1 and showed an apparent dip of  $5^{\circ}$  to the north west.
- b) The Little Limestone showed some replacement mineralisation but with insignificant quantities of galena.
- c) The Boltburn fault zone was intersected from 767-0 to 784-3 within mudstones and siltstones. This establishes, by comparison with the fault zone intersection in borehole 1, that the Boltburn Vein is almost vertical between the Little Limestone and the Three Yard Limestone in this area.
- d) The Great Limestone was intersected from 819-9 to 899-3. Mineralisation was most strongly developed between 835-0 and 858-0; this corresponds with the expected location of the High Flat within the Great Limestone.

### Sampling

4. The most strongly mineralized core section of 23 ft. within the Great Limestone was split into six sections as follows, with the assay results shown:-

<u>Sample No.</u>	<u>From ft.in.</u>	<u>To ft.in.</u>	<u>Thickness ft.in.</u>	<u>Pb%</u>	<u>Zn%</u>
2/01	835-0	839-0	4-0	5.87	0.18
2/02	839-0	842-0	3-0	0.62	0.13
2/03	842-0	844-0	2-0	18.33	0.40
2/04	844-9	850-0	5-3	1.70	0.68
2/05	850-0	852-9	2-9	11.76	0.43
2/06	852-9	858-0	5-3	1.01	0.30

5. Weighted averages for the complete 23 foot intersection are 5.28% and 0.42%, lead and zinc respectively.

#### Conclusion

6. The hole was then cemented back to 587 ft. and a wedge set to achieve a downward deflection with the intention of intersecting the Boltburn Vein within the Great Limestone.

7. Day-to-day core logging and supervision of the drilling were taken over by Mr. P. H. Jack of ACHIN on Thursday 8th March when the deflected hole had reached 755 feet 3 inches, still short of the Great Limestone. The deflection was completed, and an intersection similar to the above has been completed and is being assayed, but the results are not yet to hand. The Boltburn Vein itself was apparently not intersected and a second deflection was attempted but ran into difficulties and was abandoned. Borehole 3 was then sited by Mr. Jack and was being drilled at the date of this report.



London  
April 11 1973

F. H. Fitch  
Mackay & Schnellmann Limited

MACKAY & SCHNELLMANN LTD

CLIENT: WOMEN EXPLORATION (UK) LTD PROJECT: WEARDALE

Co-ordinates 3969160  
5446953

Elevation 1533ft.  
Bearing 341°

Inclination 02°-75°  
Final Depth 997-0

Drill BBS 20

Geologist Neil Scott

Date Started 1.2.73

Hole No. 2

Drillers Colin Beardsley, Charles Reilly  
and Mick Brown

Date Stopped 22.2.73

Sheet No. 1

Graphic Log	Depth		Bit Size/Type	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS				
	Scale	From					To	From	To	%	%	%		%			
		0	7-0	H	Nil												
		7-0	59-0		100	Rather hard, weathered, generally coarse grained, micaceous, feldspathic sandstone with occasional weathered, micaceous partings, and one or two thin coaly partings. Some conglomeratic bands. Iron stained. Ferruginous deposition on some fracture surfaces.											
		59-0	67-0		100	Firm, dark grey, micaceous mudstone, broken throughout. Marine fossils 64-6 to 66±0.											
		67-0	68-6		65	Firm, pale fireclay with abundant plant debris. Crushed.											
		68-6	71-0		100	Firm, greenish, silty, micaceous mudstone.											
		71-0	72-9		100	Firm, grey, micaceous mudstone, broken.											
		72-9	74-3		100	Firm, slightly greenish, silty, micaceous mudstone. Fracture surfaces iron stained.											

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Hole No. 2

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Hole 1

Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale	From	To	From					To	%	%	%	%		
	74-3	84-0	H	100	Firm, grey, micaceous mudstone with scattered, infrequent plant debris and marine fossil debris 83-3 to 84-0. Some hard, thin, ironstone bands. Mudstone fragmented with some ferruginous staining on fracture surfaces.									
	84-0	84-6		100	Soft, black fireclay.									
	84-6	87-0		100	Firm, grey, micaceous, slightly silty mudstone with abundant plant debris.									
	87-0	88-0		100	Firm, weathered, iron stained, medium grained micaceous sandstone with some black carbonaceous plant debris, passing into									
	88-0	93-9		100	Hard, pale, fine grained sandstone with dark micaceous mudstone cross laminations and partings. Fractures (FA 15°) iron stained or with traces of dolomite. Sandstone passes into									
	93-9	96-6		100	Firm, grey, micaceous mudstone with pale, fine grained sandstone cross laminations or thin bands.									
	96-6	97-9		100	Rather hard, pale, generally fine grained, micaceous sandstone, siltier towards the top.									

Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
		97-9	105-9	H	100	Firm, dark grey, micaceous, very slightly pyritic mudstone, silty above 98-6. Marine fossil debris at 102-4 with scattered plant debris below. Mudstone broken, passing into								Verticality test at 100 ft. Inclination 62° Azimuth 343°
		105-9	106-6		100	Firm, black, carbonaceous mudstone with abundant plant debris and, at the base, pyritic with thin coal bands and partings.								
		106-6	110-3		100	Firm, grey fireclay with abundant plant debris. Broken.								
		110-3	112-0		100	Firm, dark grey mudstone with abundant calcareous marine fossil debris.								
		112-0	112-6		100	Hard, dark grey, argillaceous. Bioclastic limestone.								
		112-6	114-0		100	Firm, dark grey mudstone with abundant calcareous marine fossil debris, passing into								
		114-0	118-9		100	Firm, grey, crumbly, oolitic mudstone with scattered plant debris. Some shearing. Mudstone passes into								
		118-9	123-6		100	Hard, pale, partially silicified, micaceous sandstone with dark carbonaceous partings and plant								

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Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type		Depth		Assay/Test Results				REMARKS
Scale	From	To	From						To	%	%	%	%		
						Debris toward the base. Fracture surfaces iron stained and lined with traces of quartz and pyrite.									
	123-6	125-3	H	100	Firm, grey, rather crumbly, colitic mudstone, some shearing. Mudstone passes into										
	125-3	127-3		100	Rather hard, grey, micaceous, partially silicified siltstone with some dark, carbonaceous partings, passing into										
	127-3	127-9		100	Firm, grey, silty, micaceous mudstone, passing into										
	127-9	128-9		100	Rather hard, grey, micaceous siltstone.										
	128-9	129-3		100	Firm, grey, micaceous mudstone, crushed throughout.										
	129-3	131-9		100	Firm, dark grey, slightly pyritic, micaceous mudstone with dolomite septaria in thin ironstone bands. Broken throughout. Pyritic at the base with calcareous marine fossil debris.										
	131-9	132-9		100	Hard, dark grey, argillaceous, bioclastic limestone, partially limonitized along fracture surface (TA 35°) and in a small cavitous section.										

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Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale	From	To	From					To	%	%	%	%		
	132-0	133-3	H + NQ	60	Firm, dark grey, slightly pyritic, micaceous mudstone									Grindstone Limestone.
	135-3	136-3	NQ	100	Hard, grey, argillaceous, bioclastic limestone, partially limonitised along near vertical fracture surface.									
	136-9	139-0	NQ	100	Firm, dark grey, micaceous mudstone, broken with fracture surfaces iron stained.									
	139-0	141-6	NQ	100	Hard, pale, silicified sandstone with dark, carbonaceous plant material. Broken, with fracture surfaces iron stained.									
	141-6	143-6		100	Firm, pale, silty, micaceous mudstone with some dark, carbonaceous plant debris, passing into									
	143-6	146-6		75	Hard, pale, fine grained, partially silicified sandstone with dark, carbonaceous plant material. Fractured with traces of dolomite and pyrite on near vertical fracture surfaces. Sandstone passes into									
	146-6	148-6		100	Hard, pale, micaceous siltstone with some dark, carbonaceous partings and coaly bands, passing into									

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Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results					REMARKS	
	Scale	From					To	From	To	%	%	%	%		
		148-6	177-9	NQ	100	Hard, pale, generally fine grained, micaceous sandstone, some fracture surfaces (FA 0-40°) iron stained. Occasional dark, micaceous partings. Thin dolomite vein at 176-0.									
		177-9	178-3		100	Dark grey, micaceous mudstone band.									
		178-3	189-3		100	Hard, pale, generally fine to medium grained micaceous sandstone with occasional dark, micaceous partings. Fracture surfaces (FA 0-30°) iron stained. Fragmented 185-6 to 186-6.									
		189-3	190-3		100	Rather hard, dark grey, micaceous mudstone.									
		190-3	192-9		100	Hard, pale, generally medium to fine grained, micaceous sandstone with dark, micaceous partings. Fracture surfaces iron stained.									
		192-9	193-3		100	Firm, dark grey, micaceous mudstone band, some plant debris.									
		193-3	196-9		100	Hard, pale, generally medium to fine grained, micaceous sandstone with occasional dark micaceous partings.									
		196-9	197-3		100	Firm, dark grey, micaceous mudstone.									

Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
		196-9	197-3	80	100	Firm, dark grey, micaceous mudstone.								
		197-3	197-6		100	Hard, pale, fine grained, micaceous sandstone band.								
		197-6	198-9		100	Firm, grey, micaceous, silty mudstone								
		198-9	199-9		100	Hard, pale, fine grained, micaceous sandstone, fracture surface (FA 15°) lined with partially oxidised (limonitic) dolomite.								
		199-9	208-6		90	Firm, grey, micaceous. Slightly silty mudstone with occasional harder siltstone bands. Some thin dolomite veining.								Verticality test at 200 ft. Inclination 63° Azimuth 343°
		208-6	211-9		100	Hard, pale, fine grained, micaceous sandstone with occasional dark, micaceous partings or thin mudstone partings. Fractures (FA 30°) lined with dolomite and traces of pyrite.								
		211-9	212-6		100	Firm, dark grey, micaceous mudstone band.								
		212-6	213-0		100	Hard, pale, fine grained, micaceous sandstone.								
		213-0	213-3		100	Firm, dark grey, micaceous mudstone.								

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Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS	
	Scale	From					To	From	To	%	%	%		%
		213-3	215-9	ND	100	Hard, pale, fine grained, micaceous sandstone. Fractured, with dolomite on fracture surfaces.								
		215-9	224-6		100	Firm, dark grey, micaceous mudstone with some siltstone bands above 219-0. Scattered, infrequent plant debris. Mudstone passes into								
		224-6	228-3		100	Rather hard, dark grey, micaceous, calcareous mudstone with abundant calcareous marine fossil debris. Some limonitic deposition along near vertical fracture surface. Calcareous mudstone passes into								
		228-3	229-0		100	Hard, grey, argillaceous, bioclastic limestone.								
		229-0	232-0		100	Rather hard, dark grey, micaceous calcareous mudstone with abundant calcareous marine fossil debris and occasional thin, hard, argillaceous limestone bands. Mudstone passes into								
		232-0	233-3		100	Hard, grey, argillaceous, bioclastic limestone, passing into								
		233-3	235-9		100	Hard, grey, clean, bioclastic limestone with occasional slightly argillaceous bands. Some limonitic deposition on fracture surfaces.								Upper Felton Limestone.

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Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
		235-9	237-9	10	100	Hard, pale, micaceous ganister, passing into								
		237-9	246-9		100	Hard, pale, fine grained, micaceous sandstone with occasional dark, micaceous partings. Iron staining along fracture surfaces. Sandstone passes into								
		246-9	248-3		100	Hard, pale, fine grained, micaceous sandstone with some thin, dark, micaceous mudstone bands, passing into								
		248-3	251-9		100	Hard, pale, fine grained, micaceous sandstone with dark, micaceous mudstone cross laminations, passing into								
		251-9	254-0		100	Dark grey, micaceous, silty mudstone with pale, fine grained sandstone cross laminations or thin bands. Infrequent plant debris, passing into								
		254-0	261-4		100	Firm, dark grey, micaceous mudstone with scattered plant debris.								
		261-4	261-6		100	Fragmented coal.								
		261-6	262-3		100	Firm, grey fireclay.								
		262-3	265-0		100	Firm, dark grey, micaceous mudstone								

into

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Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
		265-0	266-9	NO	100	Firm, dark grey, micaceous mudstone with pale, fine grained sandstone laminations and bands. Siltier towards the base. Slump structures.								
		266-9	267-0		100	Firm, dark grey, micaceous mudstone.								
		267-0	319-0		100	Hard, pale, generally medium grained, micaceous sandstone with dark, micaceous partings above 285-0. Dolomite on fracture surface (FA 40°) at 273-6, calcite and pyrite (FA 0°) at 279-0, (FA 30°) at 283-6 and (FA 40°) at 286-0, dolomite (FA 0°) 293-0 to 297-3, quartz (FA 40°) at 299-6 and (FA 30°) at 309-0, dolomite (FA 110°) at 311-6. Some coaly partings and mudstone fragments at the base.								Verticality test at 300-0 Inclination 65° Azimuth 340°
		319-0	331-0		100	Firm, dark grey, micaceous, slightly silty mudstone with scattered, infrequent plant debris, passing into								
		331-0	331-6		100	Hard, pale, fine grained sandstone with dark, micaceous laminations.								
		331-6	332-9		100	Hard, pale, fine grained sandstone with a dark, micaceous mudstone band.								
		332-9	354-6		100	Firm, dark grey, micaceous mudstone with infrequent plant debris above 332-0 and marine fossil debris from 351-3 to 352-0. Some harder siltier bands.								

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Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
		354-6	355-0	10	100	Firm, black, carbonaceous mudstone.								
		355-0	355-3		100	Fragmented coal.								
		355-3	355-9		100	Firm, black, carbonaceous mudstone with thin coal bands.								
		355-9	356-6		100	Hard, grey, silty micaceous mudstone with thin, dark, carbonaceous mudstone bands.								
		356-6	356-9		100	Firm, black carbonaceous mudstone with thin coal bands.								
		356-9	357-6		100	Hard, grey, silty, micaceous mudstone.								
		357-6	357-9		100	Firm, dark grey, micaceous mudstone with some plant debris.								
		357-9	358-9		100	Hard, grey, micaceous, silty mudstone with pale, fine grained sandstone bands.								
		358-9	359-3		100	Firm, grey, micaceous mudstone.								
		359-3	392-4		100	Hard, pale, generally coarse grained, micaceous, feldspathic sandstone with occasional dark, micaceous partings. Highly micaceous band at 371-6. Some mudstone partings at the top, occasional dark, carbonaceous or coaly partings. Dolomite on fracture (FR 30%) at 366-6, dolomite, quartz and talc (FR 0%)								

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Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
		380-0	418-6	ND	100	From 370-6 to 372-0, sphalerite (FA 20°) at 373-0, quartz (FA 30°) at 382-6, quartz and pyrite (FA 10°) 385-6 to 387-0, sphalerite (FA 35°) at 388-0 and quartz (FA 15°) at 389-0.								Wedge set at 392-4.
		418-6	427-6		100	Hard, pale, generally coarse grained, micaceous, feldspathic sandstone with occasional dark, micaceous, carbonaceous or coaly partings. Quartz on fracture (FA 30°) at 384-0, pyrite and quartz from 386-0 to 387-6, sphalerite (FA 35°) at 388-0, quartz and pyrite (FA 30°) at 390-6, quartz (FA 30°) at 391-0, 393-0 and 394-0, quartz and pyrite (FA 30°) at 398-0, quartz (FA 50°) at 404-6 and (FA 30°) at 406-0 and 407-0, quartz and calcite (FA 40°) at 409-0, quartz (FA 30°) at 409-9, 413-9 to 414-6.								Verticality test at 400 ft. Inclination 62° Azimuth 338°
		427-6	430-6		100	Rather hard, dark grey, micaceous mudstone with scattered plant debris, passing into								
		430-6	440-0		100	Hard, pale, fine grained, micaceous sandstone with some bands of finer grained siltstone.								
						Dark grey, micaceous mudstone, some plant debris.								

Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
		440-0	473-3	NO	100	Hard, pale, generally coarse grained, micaceous, feldspathic sandstone with occasional dark, micaceous partings. Sphalerite on fracture (FA 25°) at 441-0, quartz (FA 30°) at 488-9, calcite and quartz (FA 20°) at 452-0 and 456-6, quartz and talc (FA 0°) at 461-3, quartz (FA 35°) at 465-6 and (FA 20°) at 471-6 and 472-9.								
		473-3	485-6		100	Firm, dark grey, micaceous mudstone with scattered plant debris above 485-0, more abundant below. Some shearing with pyrite and talc on shear surfaces. Some sections oolitic. Mudstone becomes black and carbonaceous towards the base with some coaly partings at 485-3.								
		485-6	487-6		100	Hard, pale, medium grained, micaceous sandstone with dark, micaceous partings, passing into								
		487-6	488-6		100	Firm, dark grey, micaceous mudstone with some plant debris and coaly partings.								
		488-6	491-6		100	Hard, pale, medium grained, micaceous sandstone with occasional dark, micaceous partings. Some black, carbonaceous plant debris at the top. Sandstone passes into								

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Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
		491-9	491-9	100	100	Hard, rather dark siltstone with dark micaceous mudstone bands, passing into								
		491-9	495-0		100	Firm, dark grey, micaceous mudstone with some harder, siltier bands some coaly partings. Scattered plant debris.								
		495-0	495-3		100	Hard, pale, fine grained sandstone with dolomite and quartz veining.								
		495-3	496-6		100	Firm, grey, micaceous, silty mudstone.								
		496-6	507-0		100	Hard, pale, generally coarse grained, micaceous, feldspathic sandstone with occasional dark micaceous, carbonaceous or coaly partings. Medium grained above 502-2, some sections conglomeratic. Witherite, dolomite, quartz and pyrite veining at the top and along fracture surface (FA 0°) from 498-3 to 499-3, witherite quartz, pyrite and calcite (FA 35°) at 503-9, dolomite calcite and pyrite (FA 30°) at 510-9, pyrite and dolomite (FA 30°) at 515-9, pyrite calcite and quartz (FA 15°) at 519-6, quartz witherite and pyrite (FA 20°) 522-0 to 523-0, quartz (FA 25°) at 524-0, dolomite, quartz and pyrite (FA 30°) at 529-0, quartz and calcite (FA 20°) at 540-3, quartz (FA 30°) at 545-6, traces of pyrite at 554-3, dolomite and pyrite (FA 15°)								Verticality test at 500 ft. Inclination 71° Azimuth 345°

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Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS		
	Scale	From					To	From	To	%	%	%		%	
					at 572-0, traces of pyrite and quartz 572-6 to 573-6, calcite and pyrite (W. 30°) at 584-9, calcite, pyrite, dolomite and quartz (FA 5°) at 586-3, dolomite and witherite (FA 30°) at 587-6, calcite dolomite and pyrite (FA 10°) at 590-0.										
		597-0	598-0	NO	100	Hard, dark grey, bioclastic limestone with styolites.									
		598-0	598-3		100	Firm, dark grey, micaceous, pyritic mudstone with calcareous, marine fossil debris.									
		598-3	600-3		100	Hard, dark grey, bioclastic limestone, passing into									
		600-3	600-9		100	Firm, dark grey, calcareous, micaceous mudstone with hard, argillaceous limestone bands and abundant calcareous, marine fossil debris, passing into									Crag limestone. Verticality test at 600 feet. Inclination 73° Azimuth 334°
		600-9	601-3		100	Hard, dark grey, argillaceous, bioclastic limestone, passing into									
		601-3	602-3		100	Firm, dark grey, calcareous micaceous mudstone with abundant calcareous marine fossil debris, passing into									

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Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
		602-3	606-0		100	Hard, pale, generally fine grained micaceous gaster with vertical plant rootlets in situ, passing into								
		606-0	620-0		100	Hard, pale, fine grained, partially silicified, micaceous sandstone with occasional dark, micaceous partings. Traces of pyrite on fracture (FA 15°) at 606-6, quartz and pyrite (FA 20°) at 607-6 and 610-6, dolomite and galena (FA 10°) at 612-9. Sandstone passes into								
		620-0	621-3		100	Hard, pale, micaceous siltstone with dark, micaceous mudstone laminations and partings, passing into								
		621-3	624-3		100	Rather hard, grey, silty micaceous mudstone with hard, pale, siltstone laminations and thin bands scattered plant debris. Silty mudstone passes into								
		624-3	625-6		100	Rather hard, grey, micaceous siltstone with darker silty mudstone laminations. Some thin bands of marine fossil debris. Siltstone passes into								
		625-6	627-3		100	Rather hard, grey, micaceous silty mudstone with scattered marine fossil debris and some thin bands of calcareous fossil debris. Traces								

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Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results					REMARKS
Scale		From	To					From	To	%	%	%	%		
		627-3	628-0	NO	100	of pyrite on vertical fractures. Silty mudstone passes into									
		628-0	728-6		100	Firm, dark grey micaceous mudstone passing into									
		628-6	629-0		100	Rather hard, grey, silty micaceous mudstone, passing into									
		629-0	629-6		100	Firm, dark grey, micaceous mudstone Abundant calcareous marine fossil debris at the base.									
		629-6	629-9		100	Rather hard, grey, silty micaceous mudstone, passing into									
		629-9	630-3		100	Hard, pale, micaceous siltstone with abundant calcareous marine fossil debris, passing into									
		630-3	631-6		100	Rather hard, grey, silty micaceous mudstone with abundant calcareous fossil debris.									
		631-6	633-6		100	Hard, pale, generally medium grained micaceous sandstone with abundant dark, carbonaceous plant material at the top.									

Project Beardsley

Hole No. 2

Sheet No. 1

Project

Hole No.

Sheet No.

Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results					REMARKS
Scale	From	To	From					To	%	%	%	%			
	633-6	634-0	100	100	Firm, dark grey, micaceous mudstone, scattered plant debris.										
	634-0	647-6	100	100	Hard, pale, partially silicified, medium grained, micaceous sandstone with occasional micaceous partings. Quartz and pyrite on fracture (FA 30 <sup>o</sup> ) at 636-3, calcite and quartz (FA 30 <sup>o</sup> ) at 641-3, pyrite and quartz at 643-6.										
	647-6	657-0	100	100	Firm, dark grey, pyritic micaceous mudstone with scattered marine fossil debris particularly above 651-6.										
	657-0	667-6	100	100	Hard, generally medium grained, partially silicified sandstone with scattered calcareous, marine fossil debris, occasional dark micaceous partings.										
	667-6	707-3	100	100	Firm, dark grey micaceous occasionally pyritic mudstone with paler, silty mudstone bands. Scattered marine fossil debris in the upper half and at the base, with plant debris in the lower half. Some dolomite and calcite veining from 674-0 to 676-3.									Verticality test at 700 ft. Inclination 75 <sup>o</sup> Azimuth 343 <sup>o</sup>	
	707-3	708-3	100	100	Rather hard, grey oolitic, ferruginous mudstone with abundant calcareous marine fossil debris, passing into										

Project Beardale  
Project

Hole No. 2  
Hole No.

Sheet No. 17  
Sheet No.

Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale	From	To	From					To	%	%	%	%		
	708-3	710-0	100	100	Hard, pale, medium grained gaster with abundant dark, carbonaceous plant material at the top, some thin dolomite veining.									
	710-0	720-6		95	Firm, dark grey micaceous occasionally pyrite mudstone with scattered infrequent marine fossil debris passing into									
	720-6	721-3		100	Firm, dark grey, dense, ferruginous oolitic, sparsely pyritic mudstone with abundant marine fossil debris.									
	721-3	737-6		100	Hard, pale, fine grained partially silicified sandstone with occasional dark, micaceous or carbonaceous partings, some dark carbonaceous plant material at the top scattered calcareous, marine fossil debris. Fracture surface (FA 20°) lined with quartz at 721-9, quartz and calcite (FA 30°) at 730-9.									
	737-6	760-3		100	Firm, dark grey micaceous mudstone scattered, infrequent plant debris some shearing at the base.									
	760-3	761-0		100	Rather hard, dense ferruginous dark grey mudstone with abundant marine fossil debris.									

Project Weardale  
Project

Hole No. 2  
Hole No.

Sheet No. 17  
Sheet No.



Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS	
	Scale	From					To	From	To	%	%	%		%
		793-0	817-0	12	100	Firm, dark gray, micaceous, rather broken mudstone with a few hard, pale siltstone bands at the top scattered infrequent plant debris some shearing, base highly pyritic.								Verticality test at 800 ft. Inclination 75° Azimuth 235°  PART OF GREAT Limestone
		817-0	818-9		100	Coal, hard and bright pyritic in parts.								
		818-0	818-9		100	Firm, grey mudstone.								
		818-9	821-0		100	Hard grey, bioclastic limestone with an argillaceous band towards the top passing into								
		821-0	822-0		100	Hard, grey, rather argillaceous limestone with dark, thin mudstone bands, passing into								
		822-0	823-6		100	Hard grey bioclastic limestone, passing into								
		823-6	824-0		100	Dark grey, calcareous mudstone with abundant calcareous marine fossil debris, passing into.								
		824-0	828-3		100	Hard, grey bioclastic limestone, argillaceous at the base, passing into								
		828-3	828-6		100	Firm, dark grey calcareous mudstone with abundant calcareous marine fossil debris, passing into								

Project Weardale  
Project ,

Hole No. 2  
Hole No.

Sheet No. 20  
Sheet No.



Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	Ta %	Ta %	%	%	
		830-0	830-0	100	100	Hard, grey, clean, bioclastic limestone, passing into								)
		830-0	832-0	100	100	Firm, dark grey, mudstone with abundant calcareous marine fossil debris, passing into								)
		832-0	833-0	100	100	Hard, grey, clean, bioclastic limestone with stylolites, passing into								)
		833-0	834-9	100	100	Firm, dark grey mudstone with abundant calcareous marine fossil debris.								)
		834-9	837-6	100	100	Hard, broken, slightly greenish, mineralised, bioclastic limestone. Galena and fluorite as cavity infilling and encrustation, thin veins and replacement mineralisation. Limestone passes into	2/01	835-0	839-0					)
		837-6	837-9	100	100	Firm, dark grey mudstone with some calcareous marine fossil debris.								)
		837-9	838-0	100	100	Hard, fragmented, slightly greenish mineralised bioclastic limestone. Galena, fluorite and dolomite as thin veins, lining fractures and as replacement mineralisation.								)
		838-0	839-0	100	100	Fragmented vein of dolomite, fluorite and quartz with traces of galena.								)

) Part of Great Limestone.



Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	Fe %	Pb %	Zn %	Cu %	
		863-6	872-0	NQ	100	Hard, grey, bioclastic limestone with some stylolites. Thin vein of dolomite, quartz and calcite (Pb O <sup>o</sup> ) from 864-9 to 871-0								)
		872-0	879-0		100	Rather dark, hard, fragmented, bioclastic, cavitous, mineralised limestone. Cavities thickly lined with quartz and chalcedony mineralisation as well as small amounts of dolomite. Some galena on fracture surfaces.								)
		879-0	883-3		100	Hard, grey, bioclastic limestone with stylolites.								)
		883-3	884-6		100	Hard, dark grey, mineralised limestone with galena and sphalerite as replacement mineralisation and quartz and fluorite as thin veins, or encrustations along partings.								) Part of Great Limestone.
		884-6	885-6		100	Hard, dark grey, cavitous limestone.								)
		885-6	890-3		100	Hard, grey, bioclastic limestone with stylolites. Pyritic at the base.								)
		890-3	891-9		100	Firm, grey, micaceous, pyritic mudstone with calcareous debris at the top.								)
		891-9	892-6		100	Hard, pale, fine grained, micaceous sandstone.								)

Project Weardale

Hole No. 2

Sheet No. 23

Project

Hole No.

Sheet No.



Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type		Depth		Assay/Test Results				REMARKS
Scale		From	To						From	To	%	%	%	%	
		892-6	893-3	10	100	Hard, pale siltstone with dark mudstone laminations and bands, passing into									
		893-3	896-0		100	Firm, dark grey, micaceous mudstone with some thin, hard siltstone bands. Scattered, infrequent plant debris.									
		896-0	897-0		100	Hard, pale, micaceous sandstone with some dark, carbonaceous material at the top.									

MACKAY & SCHNELLMANN LTD

ACME EXPLORATION  
(P.R.) LIMITED

CLIENT

PROJECT

WEARDALE

Co-ordinates

396816E  
544695A

Elevation

1533 ft.

Inclination

73°-79°

Drill

BBS 20

Geologist

Neil Scott

Date Started 24.2.73

Hole No. 2a

Bearing

Final Depth

887-3

Drillers

Wick Brown & Charles Reily

Date Stopped

Sheet No. 1

Graphic Log	Depth		Bit Size/Type	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS	
	Scale	From					To	From	To	%	%	%		%
		0	552-6	NQ	See borehole No.2 base of wedge set at 565-0									
		552-6	596-3		95 Hard, pale, generally coarse grained, micaceous, feldspathic sandstone with occasional dark micaceous, carbonaceous or coaly partings. Dolomite, calcite and quartz on fracture from 578-3 to 579-3. Fracture angle to core axis (FA) 0°. Traces of pyrite (FA 50°) at 579-6, witherite, dolomite and pyrite (FA 20°) at 581-3 and 582-3, dolomite, witherite, quartz and pyrite (FA 15°) at 583-6 and 586-6 to 588-0, pyrite and calcite (FA 20°) from 590-3 to 593-0, dolomite and pyrite (FA 10°) at 595-3.									
		596-3	597-0		65 Brown, friable, broken mudstone.									
		597-0	598-6		65 Black, carbonaceous mudstone sweared, friable and broken.									

Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
	Scale	From					To	From	To	%	%	%	
	598-0	599-0	N2	100	Hard, grey, bioclastic limestone								)
	599-0	599-3		100	Firm, dark grey, calcareous mudstone.								)
	599-3	601-0		100	Hard, grey, bioclastic limestone								)
	601-0	601-3		100	Firm, dark grey calcareous mudstone.								) Crag Limestone
	601-3	602-3		100	Hard, grey, bioclastic limestone argillaceous and with dark mudstone bands at the top and the base.								)
	602-3	603-0		100	Firm, dark grey, micaceous calcareous mudstone with abundant calcareous, marine fossil debris.								)
	603-0	606-9		100	Hard, pale, fine grained ganister, silicified at the top.								)
	606-9	617-0		100	Hard, generally medium grained partially silicified, micaceous sandstone with occasional micaceous partings. Some thin dolomite veining from 608-0 to 609-3 and quartz and dolomite veining from 612-3 to 613-0. Vein of dolomite half inch thick from 616-0 to 616-9 sandstone passes into								) Verticality test at 615-0 Inclination 73° Azimuth 343°

Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS	
	Scale	From					To	From	To	%	%	%		%
	617-6	618-0	100	100	Hard, pale siltstone with silty micaceous mudstone bands, passing into									
	618-0	618-6		100	Hard pale, fine grained micaceous sandstone with dark micaceous partings.									
	618-6	619-3		100	Hard pale, fine grained sandstone with dark, micaceous partings, and at the top and the base. Thin, dark silty mudstone bands.									
	619-3	620-3		100	Hard, pale, fine grained sandstone with dark micaceous partings.									
	620-3	623-0		100	Firm, grey silty micaceous mudstone with some harder thin pale siltstone bands scattered infrequent plant debris. Some coaly partings silty mudstone passes into									
	623-0	624-3		100	Hard, pale, fine grained sandstone with dark micaceous partings and at the base a thin band of calcareous marine fossil debris. Sandstone passes into									
	624-3	627-0		100	Firm, grey, silty, micaceous mudstone with pale siltstone bands and several bands of									



Graphic Log		Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS
Scale		From	To					From	To	%	%	%	%	
				NI		calcareous, marine fossil debris.								
		627-9	628-0		100	Firm, dark grey micaceous mudstone.								
		628-0	631-0		100	Firm, grey, silty micaceous mudstone with pale siltstone laminations and bands and some dark mudstone bands. Several bands of calcareous marine fossil debris.								
		631-0	633-0		100	Hard, pale, generally medium grained sandstone with dark, carbonaceous or micaceous partings and abundant dark, carbonaceous plant material at the top.								
		633-0	634-3		100	Firm, dark grey micaceous mudstone.								
		634-3	646-3		100	Hard, pale, generally medium grained, partially silicified micaceous sandstone with occasional dark, micaceous partings. Some dark carbonaceous plant material at the top fracture (FAC <sup>o</sup> ) lined with quartz and pyrite from 634-3 to 635-3. Sandstone becomes finer grained and passes into								

Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results					REMARKS	
	Scale	From					To	From	To	%	%	%	%		
		648-3	648-3	100	Hard, pale, fine grained sandstone with thin, dark micaceous mudstone bands.										
		648-6	656-6	100	Firm, dark grey, occasionally pyritic, micaceous mudstone with some harder, paler silty mudstone sections at the top scattered marine fossil debris. Some poorly developed pyritic ironstone nodules and bands.										
		656-6	666-0	100	Hard, pale, medium grained sandstone with occasional dark micaceous or carbonaceous partings. Scattered calcareous marine fossil debris.										
		666-0	669-3	100	Firm dark grey micaceous mudstone										Wedge set at 669-3
		669-3	655-6	100	Firm, dark grey micaceous mudstone										
		655-6	666-0	100	Hard, pale generally medium grained sandstone with occasional dark micaceous or carbonaceous partings, scattered infrequent marine fossil debris.										

Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS	
	Scale	From					To	From	To	%	%	%		%
	668-0	672-0	20	100	Rather hard, grey silty micaceous mudstone with some paler siltstone laminations or bands scattered marine fossil debris silty mudstone passes into									Verticality test at 670-0 Inclination 75° Azimuth 329°
	672-9	673-0		100	Hard, pale, micaceous siltstone passing into									
	673-6	706-0		95	Firm, dark grey micaceous occasionally pyritic mudstone rather silty in the upper half scattered infrequent plant debris above 695-0 and marine fossil debris at the base.									
	706-0	707-0		100	Hard, dark, dense ferruginous oolitic mudstone with some marine fossil debris passing into									
	707-0	708-0		100	Hard, pale medium grained partially silicified ganister with occasional dark carbonaceous or micaceous partings abundant plant material at the top. Some thin dolomite veining.									
	708-6	717-0		100	Firm, dark grey micaceous mudstone with scattered infrequent marine fossil debris. Ironstone band at 714-6.									

Project

HEARDALE

Hole No.

2a

Sheet No.

Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS	
	Scale	From					To	From	To	%	%	%		%
	717-0	718-0	N2	100	Firm, dark, dense ferruginous oolitic mudstone with abundant marine fossil debris									
	718-0	735-3		100	Hard, pale, generally fine grained partially silicified sandstone with occasional dark micaceous or mudstone partings scattered marine fossil debris. Some dark, carbonaceous plant material at the top. Some thin dolomite and siderite veining.									Verticality test at 727 ft. Inclination 77° Azimuth 344°
	735-3	755-3		100	Firm, dark grey micaceous mudstone. Scattered infrequent plant debris. Fossiliferous at 749-0.									
	755-3	761-0		100	Mudstone, coaly shale bands for last 0-6									
	761-0	762-0		100	Fossiliferous mudstone									
	762-0	763-0		100	Hard mudstone, slightly limey									
	763-0	770-0		100	Limestone									Little Limestone
	770-0	771-0		100	Mudstone									
	771-0	771-2		100	Thin coal band									
	771-2	776-0		100	Mudstone, probably fault in this section but very poor									

Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results					REMARKS			
	Scale	From					To	From	To	%	%	%	%		%		
		772-2	775-0		100	Discontinuation, not as much as on previous hole (hole no.2)											
		775-0	795-0		100	Sandstone with some thin mudstone bands as at 778-4 - 778-8 780-0 to 780-3 and at 780-4. small minor faults in sandstone with slight zinc sulphide mineralisation. More minor faulting in sandstone at 790-0 to 791-0.											
		795-0	816-0		100	Mudstone, slight zinc sulphide mineralisation on fracture at 801-3.											
		816-0	816-0		100	Coal highly sheared											
		816-9	818-0		100	Limey mudstone, moderately sheared, fossiliferous											
		818-0	822-0		100	Limerudstone, fossiliferous slight shearing											Verticality test at 820 ft.
		822-0	827-0		100	Fossiliferous limestone, two half inch fluorite veins cross core at 823-6 and 823-8.											Inclination 78°
		827-0	828-6		100	Limestone, slight veining with fluorite, quartz and zinc sulphide from 827-3 - 828-0	3/01	827-0	828-6								Aximuth 352°
		828-6	831-0		100	Fossiliferous shaley limestone minor zinc sulphide at 830-3											Part of Great Limestone

Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS	
	Scale	From					To	From	To	%	%	%		%
		831-0	833-0	100	Limestone									
		833-0	833-6	100	Shaley limestone with large blobs up to 1/2 inch in diameter of zinc sulphide.									Part of Great Limestone
		833-6	835-0	100	Limestone with weak zinc sulphide mineralisation	3/02	833-0	835-6						
		835-0	835-6	100	black, shaley limestone									
		835-6	840-6	100	Limestone, weak lead sulphide mineralisation	3/03	835-6	840-6						
		840-6	848-0	100	Limestone, moderate lead sulphide mineralisation	3/04	840-6	845-6						
		848-0	854-6	100	Coralline limestone, weak lead sulphide mineralisation, also some quartz and fluorite.	3/05 3/06 3/07	845-6 850-0 852-6	850-0 852-6 855-0						
		854-6	858-0	100	Limestone minor lead sulphide mineralisation	3/08	855-0	858-0						
		858-0	859-0	100	Quartz, fluorite, galena mineralisation in limestone									
		859-0	860-0	100	Quartz, fluorite vein with minor galena	3/09	858-0	860-0						
		860-0	865-5	100	Weakly lead sulphide mineralised fossiliferous limestone with some dolomite veining. Few specks of chalcocite at 861-0	3/10	860-6	865-6						

Graphic Log	Depth		Bit No.	Recovery %	DESCRIPTION	Sample Number and Type	Depth		Assay/Test Results				REMARKS	
	Scale	From					To	From	To	%	Zn %	Pb %		%
		865-6	865-7	100	silica, quartz vein									
		865-7	868-3	100	Limestone, weak lead sulphide mineralisation	3/11	865-6	869-6						
		869-6	871-6	100	Vuggy limestone with lead sulphide, quartz and dolomite veining	3/12	869-6	871-6						PART
		871-6	877-3	100	Chert with some quartz and dolomite veining weak lead sulphide	3/13	871-6	877-3						OF GLENT
		877-3	878-0	100	Vein at 30° to core. Two inch Pbs one inch dolomite six inches quartz. dolomite and a few chert fragments in breccia	3/14	877-3	878-3						LINESTONE
		878-0	878-6	100	Sheared, shaley, cherty limestone									
		878-6	887-3	100	Fossiliferous limestone, vuggy quartz vein at 880-6 to 880-9 shearing and brecciation 883-3 to 883-8 very weak zinc sulphide mineralisation at 883-9 to 883-11									

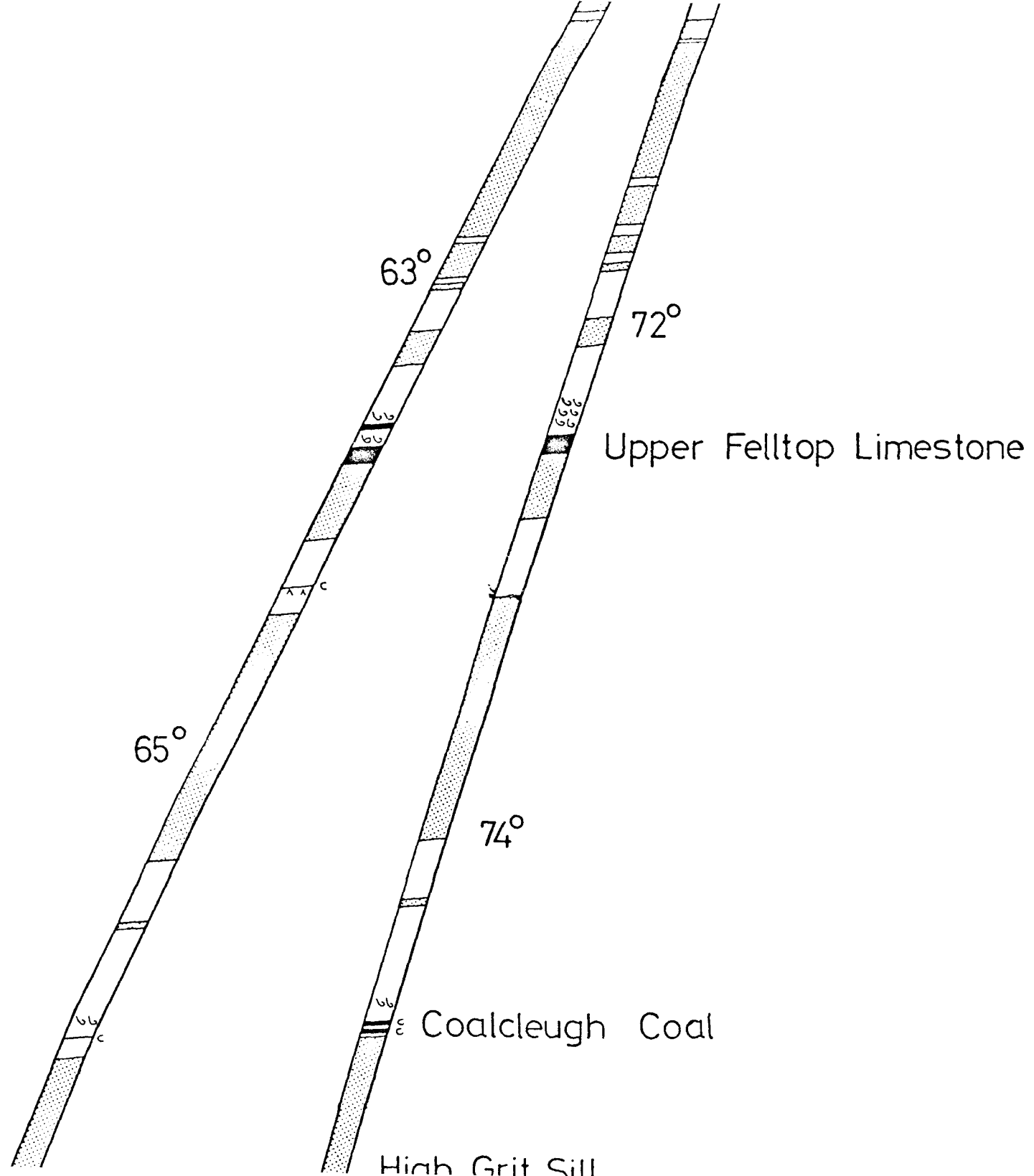
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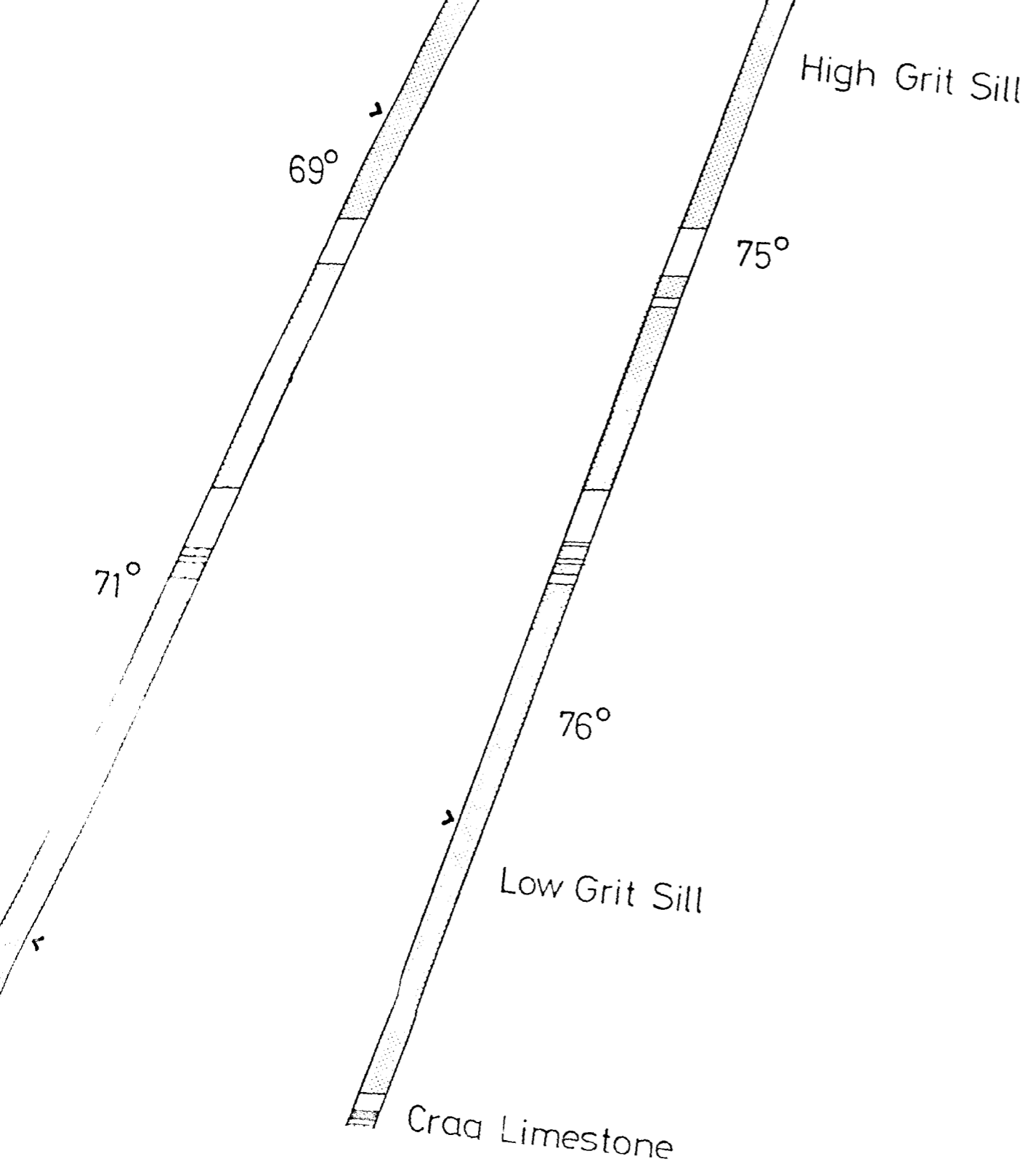
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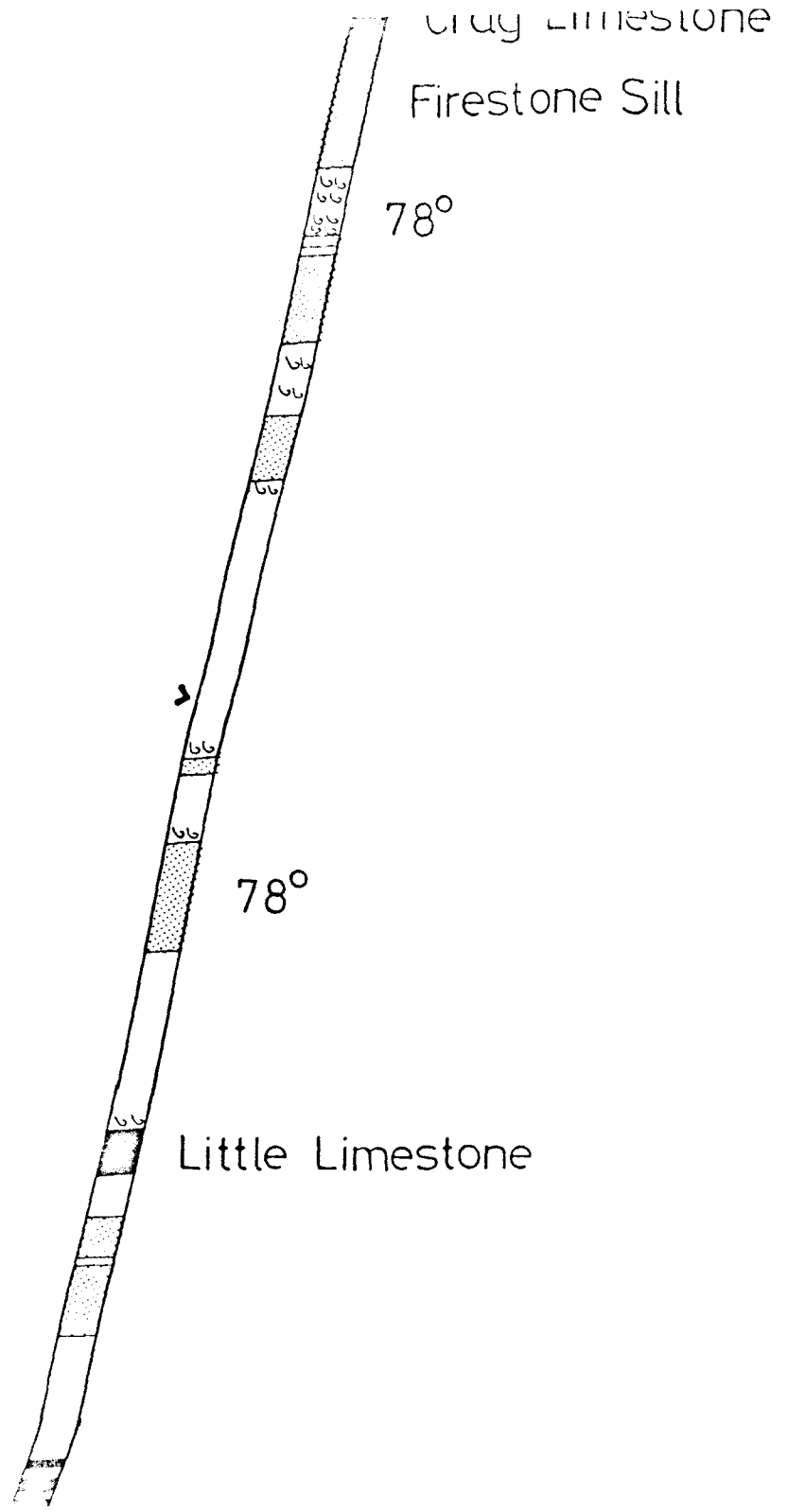
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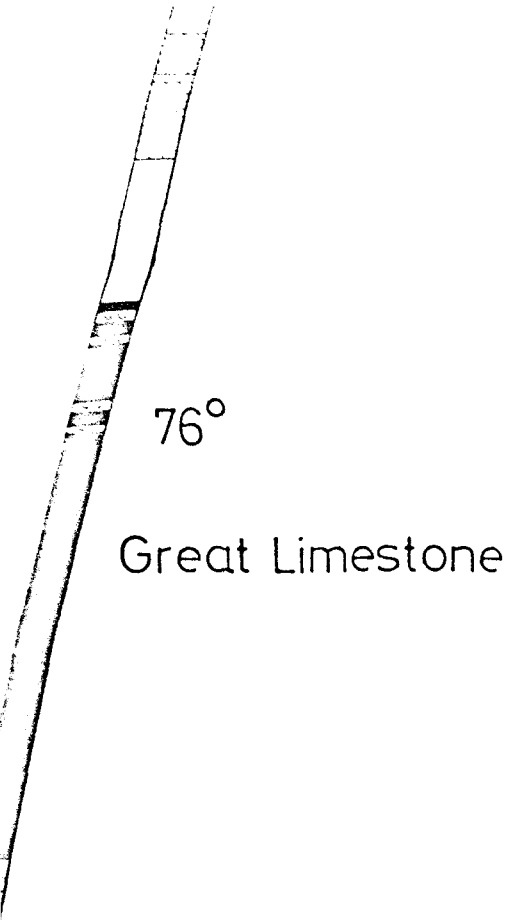












76°

Great Limestone

Iron Post Limestone

Quarry Hazle

77°







Fathom Limestone

Fathom Limestone

Thin Sill

Gill Hazle

Boltsburn Vein  
Limestone

-  Mudstone and Silty Mudstone
-  Sandstone and Siltstone
-  Limestone
-  Quartz Dolerite
-  Fault Breccia
- c Coal
- ∩∩ Marine Fossils
- ∧∧ Plant Fossils
- 70° Inclination in Degrees
-  Target
- > Wedge

Boltsburn Vein  
limestone

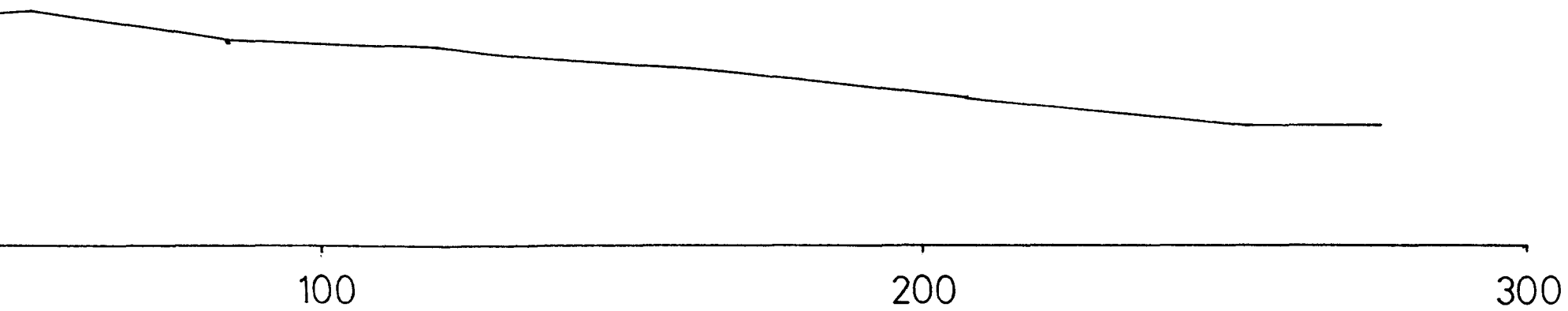
70° Inclination in Degrees  
Target  
Wedge

Borehole BH1

Borehole BH2



rehole BH2



e in Feet

Ltd

March 1973

# Simplified Graphic Log of Boreholes BH1, BH2, BH3

Acmin Exploration (UK) Ltd

Vertical Scale in Feet

0

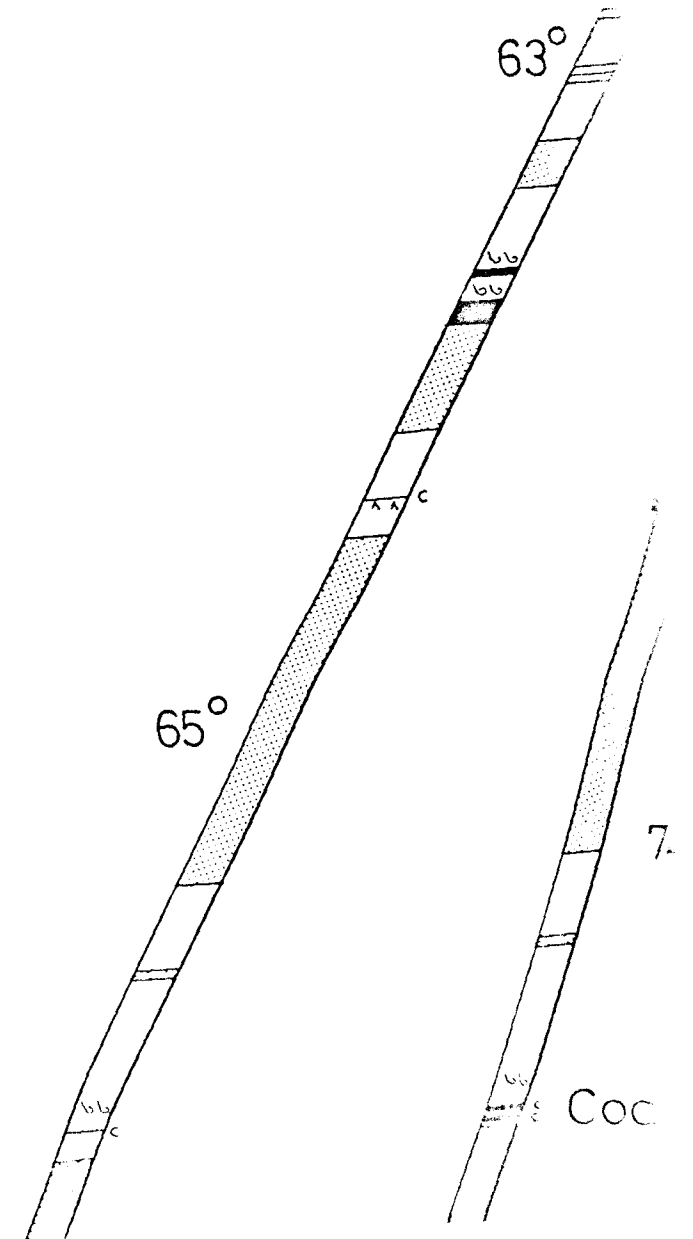
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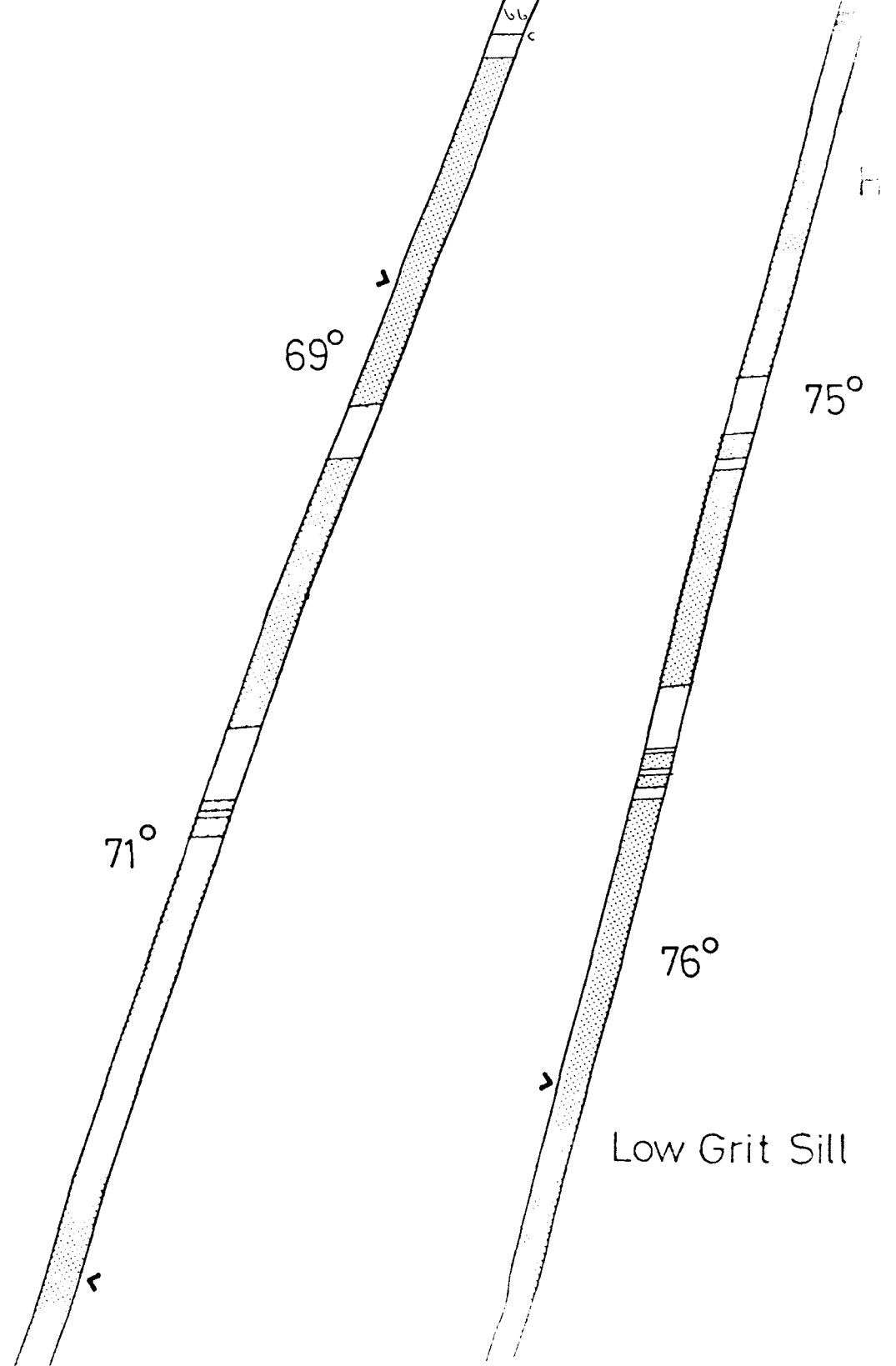
200

300



400

500



$69^\circ$

$71^\circ$

$75^\circ$

$76^\circ$

Low Grit Sill

b  
c

500

600

700

Low Grit Sill

Crag Limestone

Firestone Sill

Little Limestone

73°

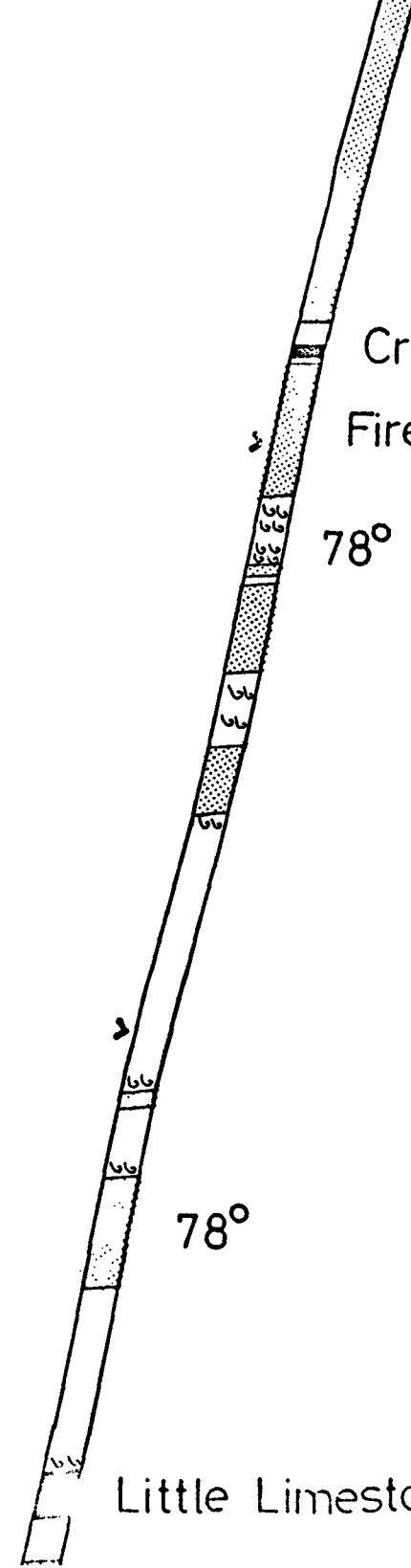
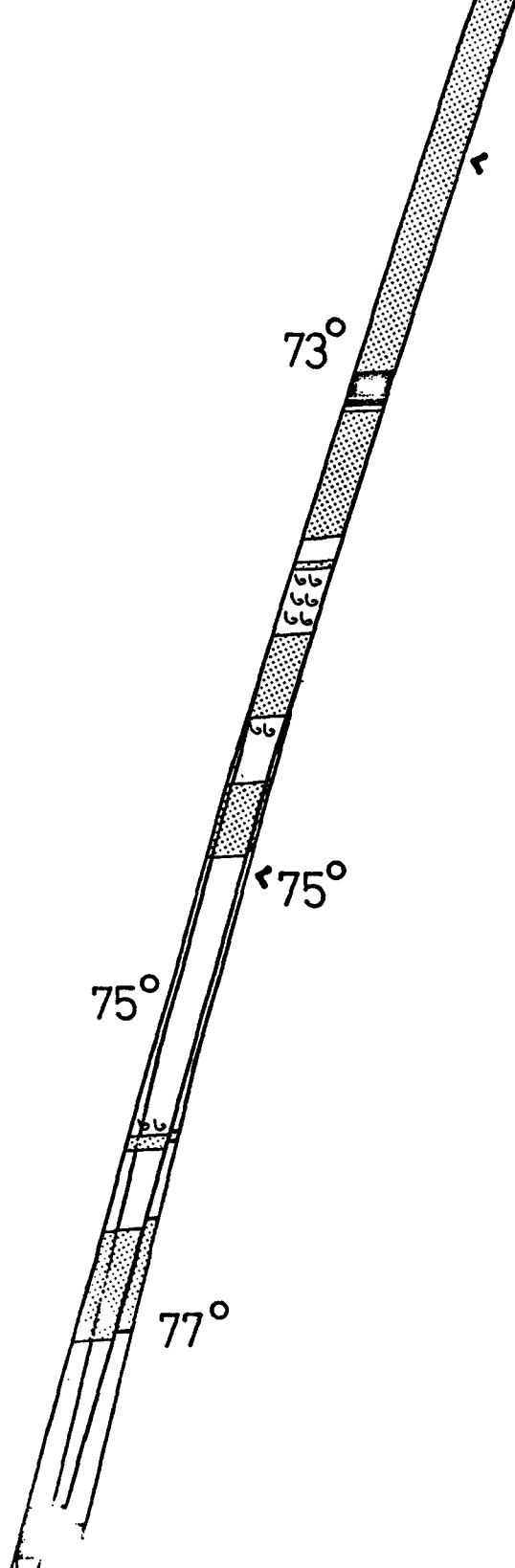
75°

75°

77°

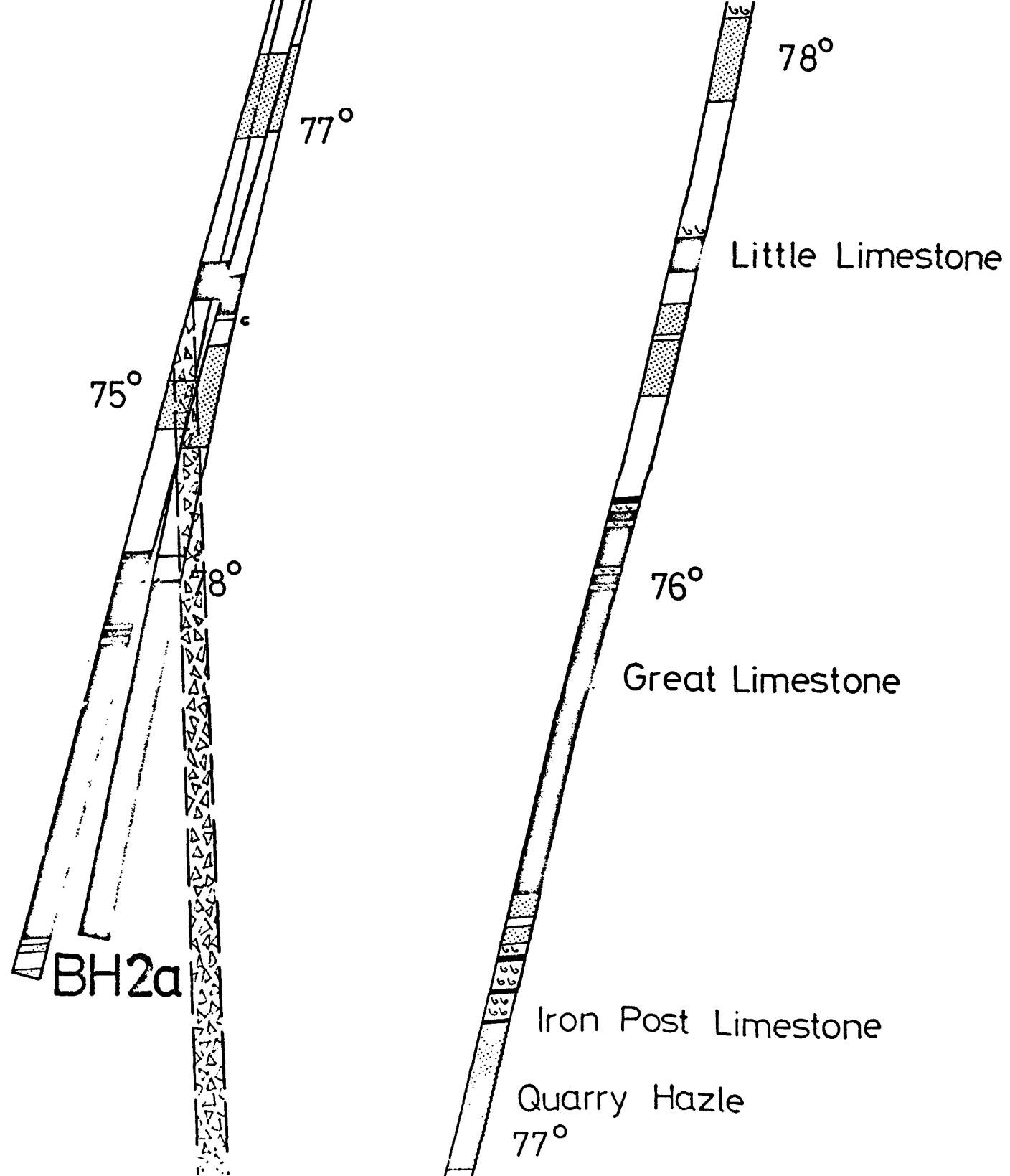
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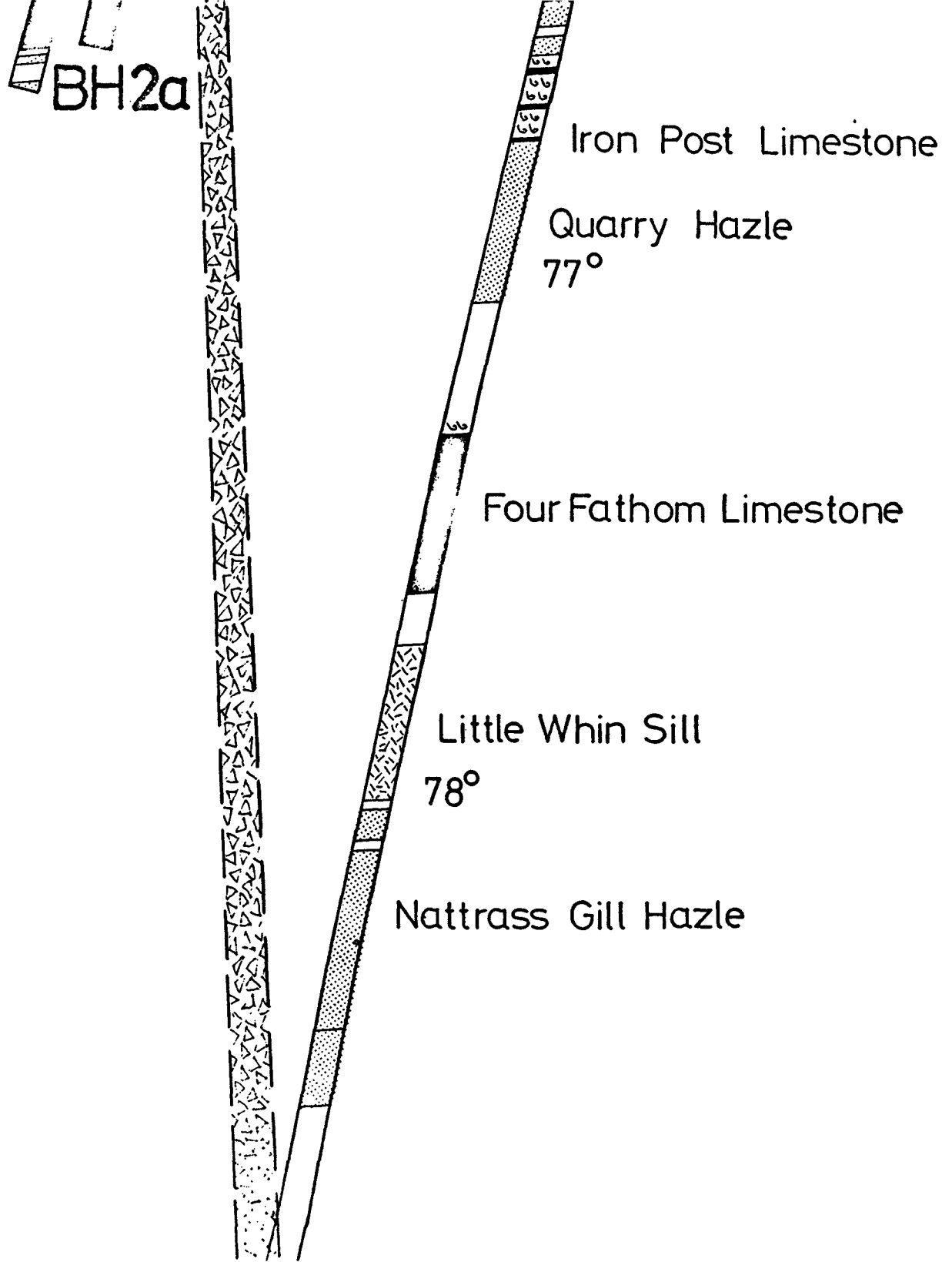
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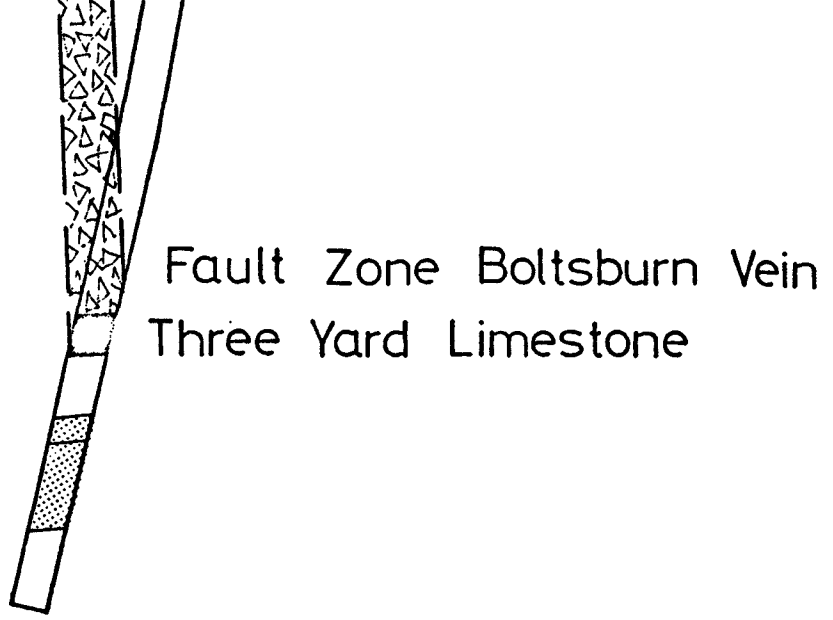
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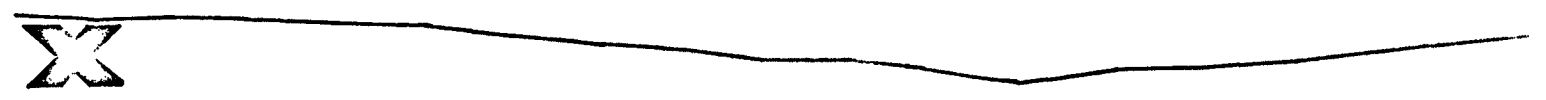


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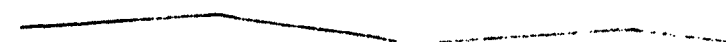


- C
- G
- A
- 7C
- X
- >

Plan View of Borehole BH1



Plan View of Borehole BH2





Plan View of Borehole BH2

22

5'2

235°!

302

370

303

334



0

100

Horizontal Scale in Feet

Mackay and Schnellmann Ltd