

PR-BELCOURT 77(1) A.

DENISON COAL LIMITED

CALGARY ALBERTA
1977 GEOLOGICAL REPORT

BELCOURT COAL LIMITED

C.L. 2872-2850 INC.

MINING RECORDER
RECEIVED and RECORDED

JAN 13 1978

M.R. #.....
VICTORIA, B. C.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 461

This report has been prepared primarily in
accordance with the International System
of Units (SI).



DENISON MINES LIMITED

COAL DIVISION

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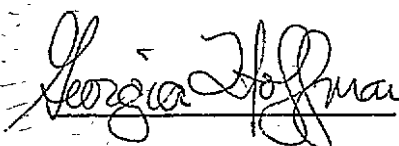
January 12th, 1978

STATEMENT OF QUALIFICATION

I, Georgia L. Hoffman, graduated from the University of Pennsylvania with a B. A. Degree in Geology in 1970, and then undertook work toward a Master's Degree in Geology at the University of Alberta. I have been employed as a Coal Geologist with Denison Mines Limited since 1975, and have worked on various coal projects in British Columbia and Alberta.

I consider that this report accurately documents the 1977 Exploration Program undertaken by Belcourt Coal Limited.

12


Coal Geologist,
Denison Mines Limited,
Coal Division

DENISON COAL LIMITED
BELCOURT COAL LIMITED

1977 GEOLOGICAL REPORT

December 1977
G. Hoffman, P. Geol.

Bel court Coal Limited
1977 Geol ogi cal Repprt

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PREFACE

The 1977 Belcourt exploration program consisted of a small program of hand trenching and geological mapping. The program took place between September 20 and October 20, 1977, and was hampered by adverse weather conditions which finally caused premature termination of the program. As a result, the body of the data obtained by the 1977 exploration program is small but significant.

The results of the 1977 program are presented and discussed in this report, which should be regarded as a continuation of the data presented in the previous report entitled "1976 Data Summary for Belcourt Coal Limited".

Due to the small size of the 1977 program, and because the results of the trenching at Pika spur tend to confirm previous reserve calculations, it is felt that a recalculation of reserves will not be necessary until more information is available, particularly in light of the present tentative nature of the correlation of the seams of Pika spur with those of other areas.

1.0 SUMMARY

The 1977 Belcourt exploration program was carried out between September 20 and October 20, 1977, with the objective of learning more about coal seam thicknesses and the stratigraphy of the coal-bearing portion of the geologic section by the trenching of coal seam exposures. A total of twenty-six trenches were dug by hand during this period; despite the adverse weather conditions which finally caused the termination of the program,

The majority of the trenching was carried out in the centre of the property on a ridge called Pika spur, where the coal-bearing portion of the Gates Member is well exposed. Trenching also took place in areas to the north and south of Pika spur, but complete sections could not be finished in these areas prior to termination of the project. The trenching revealed the following:

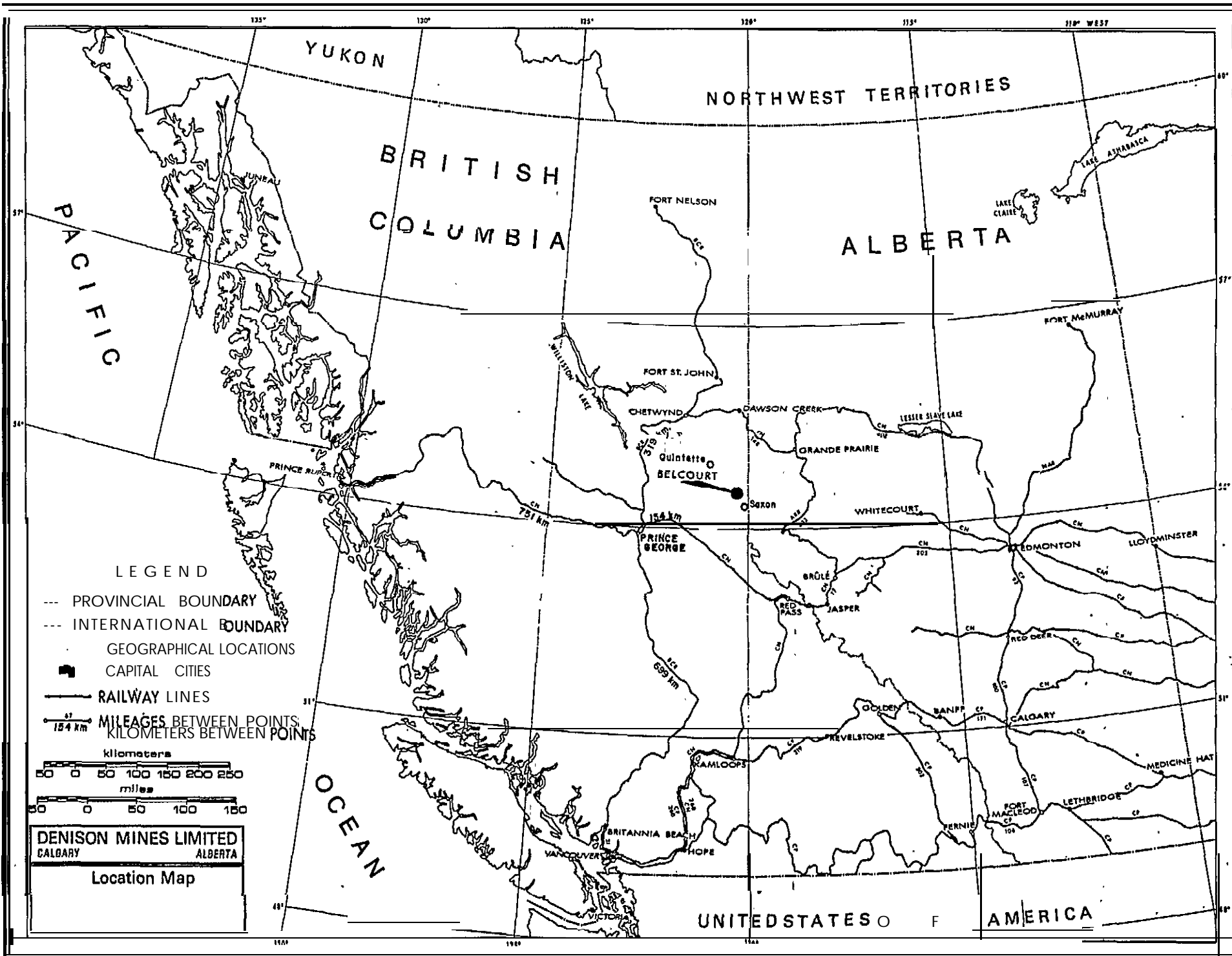
- (a) There are thirteen coal seams and coaly horizons at Pika spur, of which five were found to be two metres or more in thickness, although some of these seams could not be completely exposed due to thick accumulations of talus and coal spoil.
- (b) The cumulative thickness of the five largest seams at Pika spur is about 24 metres, which tends to confirm the use of a cumulative thickness of 24.5 metres for the central portion of

0 the property in previous reserve calculations.

As a result, reserves were not recalculated this year,

- (c) Trenching in other areas exposed a number of seams in excess of two metres thickness, but the correlation of some of these seams with those of Pika spur remains tentative until complete sections can be finished in these areas.
- (d) Further trenching, or drilling, particularly in the area of Holtslander Creek, will be required to improve the reliability of the correlation of the seams.

0 The 1977 Belcourt exploration program, despite its short duration, expanded the knowledge of coal seam thicknesses and Gates Member stratigraphy. Continuation of trenching at a later date may be sufficient to confirm seam correlations, as would a program of diamond drilling, which would also provide unweathered coal samples for quality analysis. Additional detailed geological mapping is also warranted now that new topographic base maps are available for the entire Belcourt property.



2.0 THE 1977 EXPLORATION PROGRAM

The objectives of the 1977 Belcourt exploration were to measure geological sections and to carry out trenching of Gates Member coal seams, in order to increase knowledge of coal seam thicknesses and of Gates Member stratigraphy. The work was carried out during September and October, 1977, by a geologist, a geological assistant, and a crew of five trenchers. The program was halted prematurely due to adverse weather conditions while work in some areas was still incomplete.

Camp facilities for the 1977 Belcourt program were leased at an existing camp set up by Peter Bawden Drilling Services Limited to drill for gas near the confluence of Belcourt Creek and the Wapiti River. This camp is reached by a newly constructed road and bridge across Red Deer Creek, which forms a continuation of the road from Stony Lake to the Wapiti River. Since this road and the road-along Little Prairie Creek are the only roads in the Belcourt area at present, access to the ridges of the Belcourt property was achieved by helicopter. Helicopter services were contracted from Terr-Air Limited.

3.0 TRENCHING

Trenching was carried out in three main areas: one north of Belcourt Creek (Target spur), one south of Pika Creek (Pika spur), and one south of Holtslander Creek (the Holtslander section). Trenching also took place between the latter two areas, and in the Red Deer reserve block, north of Red Deer Creek. Trenching areas are shown on the map following this section.

The trenches were dug by hand with picks and shovels. Since the trenches were unshored, safety considerations limited their depth to a maximum of 1.5 metres. As a result, in areas where weathering was deep or where there were thick accumulations of talus or coal spoil, a full section of a seam could not always be successfully exposed. A total of 26 trenches were dug during the 1977 Belcourt program, and 22 of these exposed complete or partial seam sections. The trenches are summarized in Table No. 1, and detailed drawings of seam sections are included in Appendix II. Trench locations are shown on the accompanying 1:25 000 scale geological maps.

Table No: **1**
SUMMARY OF TRENCHES

<u>Trench Number</u>	<u>Coal Licence No.</u>	<u>Seam Thickness</u>	<u>Trench Number</u>	<u>Coal Licence No.</u>	<u>Seam Thickness</u>
B-HS-T 7701	2829	8.0 m	B-HS-T 7714	2833	0.7 m
B-HS-T 7702	2828	3.0 m	B-HS-T 7715	2833	1.5 m (very shaley)
B-HS-T 7703	2828	2.6 m	B-HS-T 7716	2833	0.3 m
B-HS-T 7704	2828	(15.1 m) Section incomplet	B-HS-T 7717	2833	0.1 m
B-HS-T 7705	2830	Coal spoil only	B-HS-T 7718	2833	2.0 m
B-HS-T 7706	2830	" Coal spoil only	B-HS-T 7719	2833	1.1 m
B-HS-T 7707	2833	(>6.2 m) Section incomplet estimated 10 m	B-HS-T 7720	2834	3.8 m
B-HS-T 7708	2833	3.5 m	B-HS-T 7721	2836	2.4 m, 3.3 m (two splits)
B-HS-T 7709	2833	(>2.5 m) Section-incomplet	B-HS-T 7722	2836	0.7 m
B-HS-T 7710	2833	(>1.0 m) Section-incomplet	B-HS-T 7723	2836	0.9 m
B-HS-T 7711	2833	5.5 m	B-HS-T 7724	2830	Coal spoil only
B-HS-T 7712	2833	3.4 m	B-HS-T 7725	2830	Coal spoil only
B-HS-T 7713	2833	1.0 m	B-RO-T 7726	2849	Unlogged

Seam thicknesses include waste partings as well as coal. Detailed drawings of seam sections are included as Appendix I.

Trench locations are shown on the 1:25 000 scale geological maps.

54° 45'

40'

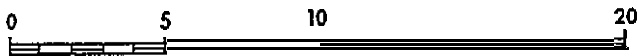
35'

30'

25'

54° 20'

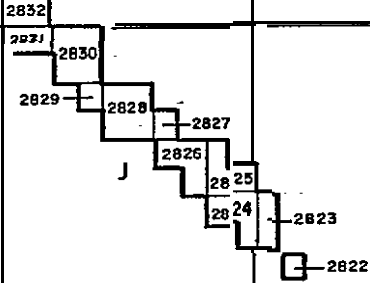
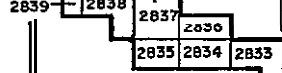
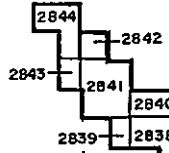
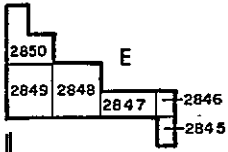
120° 30'




SCALE IN KILOMETRES

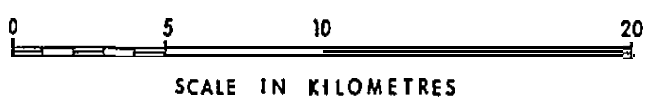
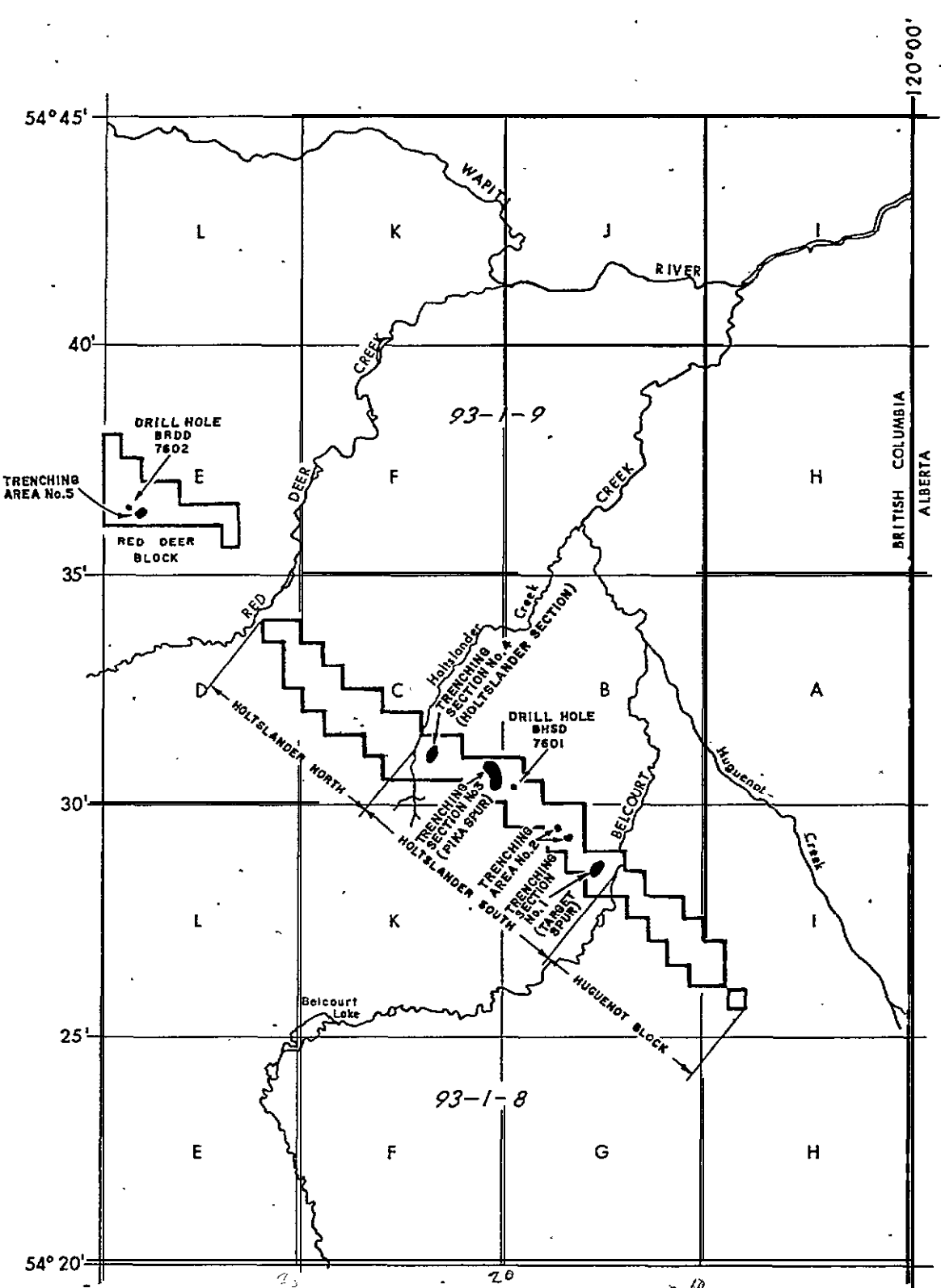
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93-1 8



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DENISON COAL LIMITED		
CALGARY	ALBERTA	
BELCOURT COAL LICENSES		

DRAWN BY: J.W.K.	DATE: NOV, 75	1: 250 000
APPROVED BY:	DRAWING NO: BLCR 75-0607- R01	

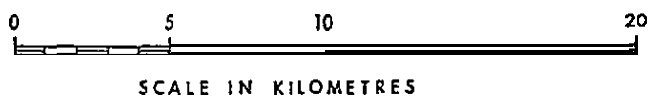
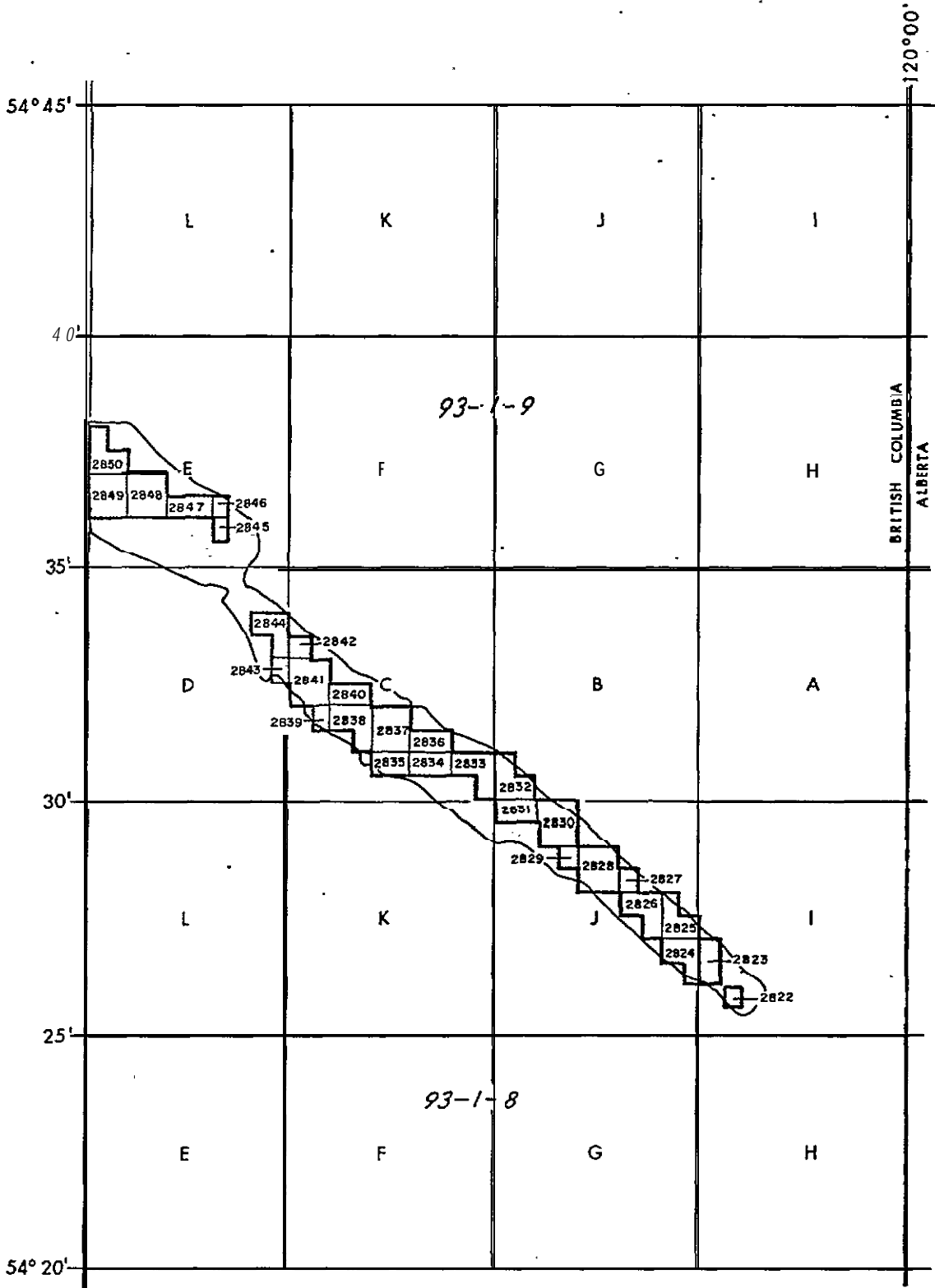



BELCOURT COAL LIMITED		
DENISON MINES LIMITED		
CALGARY	ALBERTA	
BELCOURT		
RESERVE AREAS DRILL HOLES, AND TRENCHING AREA;		
DRAWN BY J.W.K.	DATE NOV., 75	1:250 000
APPROVED BY G.H.	DRAWING NO BLCR 75-0629-R02	

4.0 TOPOGRAPHIC MAPPING

New cartography for the areas north of Red Deer Creek and south of Belcourt Creek was carried out at a scale of 1:5000 with a five metre contour interval, on the basis of 1975 survey data and aerial photographs. Similar maps had been prepared for the central portion of the property during 1976. The present 1:5000 scale topographic map coverage of the Belcourt property is outlined on the map on the following page.

Topographic mapping at a scale of 1:5000 is now complete for the entire Belcourt property, and the cartography is being reduced to scales of 1:25 000 and 1:50 000. The 1977 topographic mapping was carried out by R. M. Hardy and Associates Limited.



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BELCOURT		
COAL LICENCES AND AREA COVERED BY 1:5000 TOPOGRAPHIC MAPPING		
DRAWN BY: J.W.K.	DATE: NOV. 75	1:250 000
APPROVED BY: G.H.	DRAWING NO: BLCR 75-0607-R01	

5.0 GEOLOGICAL DATA

The section of the stratigraphy in the Belcourt area with the greatest economic potential is the Gates Member of the Commotion Formation. This mainly nonmarine unit, consisting of lithic sandstone, conglomerate, coal, shale and claystone, is estimated to have an average thickness of about 580 metres on the Belcourt property.

A geologic section of the coal-bearing portion of the Gates Member was measured at Pika spur near the centre of the property. Thirteen coal seams and coaly horizons were identified at Pika spur, and trenching proved five of the seams to be two metres or more in thickness. This new information indicates that the cumulative total of coal seam thicknesses in the Gates Member is about 124 metres. The Pika spur section is illustrated by Drawing No. 77-0769-R01, and the trench sections are contained in Appendix II.

The major stratigraphic problem of the Belcourt property is the identification of more marker horizons within the Gates Member which will facilitate precise coal seam correlation. Additional trenching was carried out above Holtslander Creek to the north of Pika spur, and at Target spur above Belcourt Creek to the south of Pika spur, and a tentative correlation of the coal seams of these three areas is shown on the geologic maps. Additional trenching and drilling will be essential to establish the final correlation of the seams.

5.1 Ptarmigan Seam

The lowermost seam of the Gates Member has been given the name Ptarmigan seam, and is the thickest, best-exposed and most easily correlated coal seam of the Belcourt property. The Ptarmigan seam overlies the basal sandstone of the Gates Member, which is an unfossiliferous, brown or grey-weathering, occasionally conglomeratic sandstone about forty metres in thickness. The roof of the Ptarmigan seam is a thick cross-bedded sandstone which is sometimes conglomeratic near its top.

During 1976, the Ptarmigan seam was drilled on Coal Licence No. 2849 north of Red Deer Creek, where this seam was found to be 9.3 metres in thickness. In 1977 a complete section of the Ptarmigan seam was trenched at Target spur above Belcourt Creek on Coal Licence No. 2828 (trench B-HS-T 7701), where the seam was 8.0 metres thick. The structural setting of the latter exposure suggests that the seam had been subjected to tectonic thinning at this locality, with some coal having been squeezed into the thickened Ptarmigan seam exposure in the syncline atop the main ridge.

The Ptarmigan seam has also been trenched at Pika spur on Coal Licence No. 2833 (B-HS-T 7707), and although the seam floor could not be uncovered at Pika spur because of thick accumulations of talus and coal spoil, the seam is estimated to be about ten metres thick at that location. Additional efforts

0 to trench the Ptarmigan seam were made (trenches B-HS-T 7705 to 7706) but only thick accumulations of coal spoil were exposed by those trenches.

5.2 Other Gates Member Seams

Twelve coal seams and coaly horizons; in addition to the Ptarmigan seam, were located during the trenching on Pika spur. All but two of these seams were completely uncovered, and four of these seams, trenches B-HS-T 7708, 7711, 7712, and 7718, were found to have mining section thicknesses of 3.5 m, 5.5 m, 3.4 m, and 2.0 m respectively.

0 Three major seams were located in exposures above Holtslander Creek during the 1975 exploration program, and were referred to as the Holtslander, Belcourt, and Red Deer seams in the geological report of that year: Only the Red Deer seam exposure was completely trenched before the termination of the 1977 program. The Red Deer seam, previously estimated to be 4.0 metres thick, was found to be 3.8 metres thick in trench B-HS-T 7720.

Because trenching in the Holtslander Creek area and other areas is incomplete, the correlation of those seams with the seams trenched on Pika spur remains uncertain at present, although there is some indication that the Holtslander seam may be a fault repeat of the Ptarmigan seam. Only tentative coal

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0 seam correlations can be made at this time. More trenching, or drilling, will be required in the area of Holtzlander Creek to test the correlations.

5.3 Reserves

During 1975 reserves of the central portion of the Belcourt property were calculated on the basis of a cumulative Gates Member coal seam thickness of 24.5 metres. The trenching at Pika spur tended to confirm this by indicating that the five largest seams at that locality probably have a cumulative thickness of about 24 metres, although the Ptarmigan seam could not be completely exposed and its total thickness had to be estimated.

0 On the basis of the new data from Pika spur, it is felt that a recalculation of reserves is not warranted at this time. Previous reserve calculations are detailed in the report entitled "1976 Data Summary for Belcourt Coal Limited". Recalculation of reserves will be undertaken at a later date when more information is available and the correlation of the major seams becomes more firmly established.

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6.0 CONCLUSIONS

Although the 1977 Belcourt exploration program had to be halted prematurely due to adverse weather conditions, the program did greatly increase knowledge of coal seam thicknesses and Gates Member stratigraphy. In particular, the hand trenching on Pika spur demonstrated that, in the central portion of the property, there are five major seams in the Gates Member with a cumulative thickness of about 24 metres. This tends to confirm the use of a cumulative coal seam thickness of 24.5 metres in previous reserve calculations for that area.

Correlation of seams in other areas with those of Pika spur remains tentative at this time because trenching in those areas remains incomplete. - A continuation of the trenching program would probably suffice to resolve problems of stratigraphy and to establish a firm correlation. The trenching could be carried out in conjunction with a program of diamond drilling, which would provide coal samples for quality analysis, as well as some indication of seam continuity at depth. Additional detailed geological mapping should also be undertaken now that improved topographic base maps are available for the entire Belcourt property.

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APPENDIX I

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CURRENT SCHEDULE OF LICENCES
BELCOURT PROPERTY

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BELCOURT

<u>Licence No.</u>	<u>Date Issued</u>	<u>Acreage</u>	<u>Land Description</u>		<u>Units</u>
			<u>Series</u>	<u>Block</u>	
2822	Oct 16/74	186	93-I-8	I	19
2823	"	372	93-I-8	I	30, 40
2824	"	558	93-I-8	J	21, 31, 32
2825	"	558	93-I-8	J	41, 42, 52
2826	"	558	93-I-8	J	43, 53, 54
2827	"	186	93-I-8	J	64
2828	"	744	93-I-8	J	65, 66, 75, 76
2829	"	186	93-I-8	J	77
2830	"	743	93-I-8	J	87, 88, 97, 98
2831	"	372	93-I-8	J	99, 100
2832	"	557	93-I-9	B	9, 10, 20
2833	"	557	93-I-9	C	1, 11, 12
2834	"	372	93-I-9	C	33, 14
2835	"	372	93-I-9	C	15, 16
2836	"	372	93-I-9	C	23, 24
2837	"	743	93-I-9	C	25, 26, 35, 36
2838	"	557	93-I-9	C	27, 37, 38
2839	"	186	93-I-9	C	39
2840	"	371	93-I-9	C	47, 48
2841	"	742	93-I-9	C	49, 50, 59, 60
2842	"	186	93-I-9	C	70
2843	"	186	93-r-9	D	51
2844	"	557	93-I-9	D	61, 71, 72
2845	"	186	93-I-9	E	14
2846	"	186	93-I-9	E	24
2847	"	371	93-I-9	E	25, 26
2848	"	741	93-I-9	E	27, 28, 37, 38
2849	"	741	93-I-9	E	29, 30, 39, 40
2850	"	556	93-I-9	E	49, 50, 60

13,002 acres
(5,261 hectares)

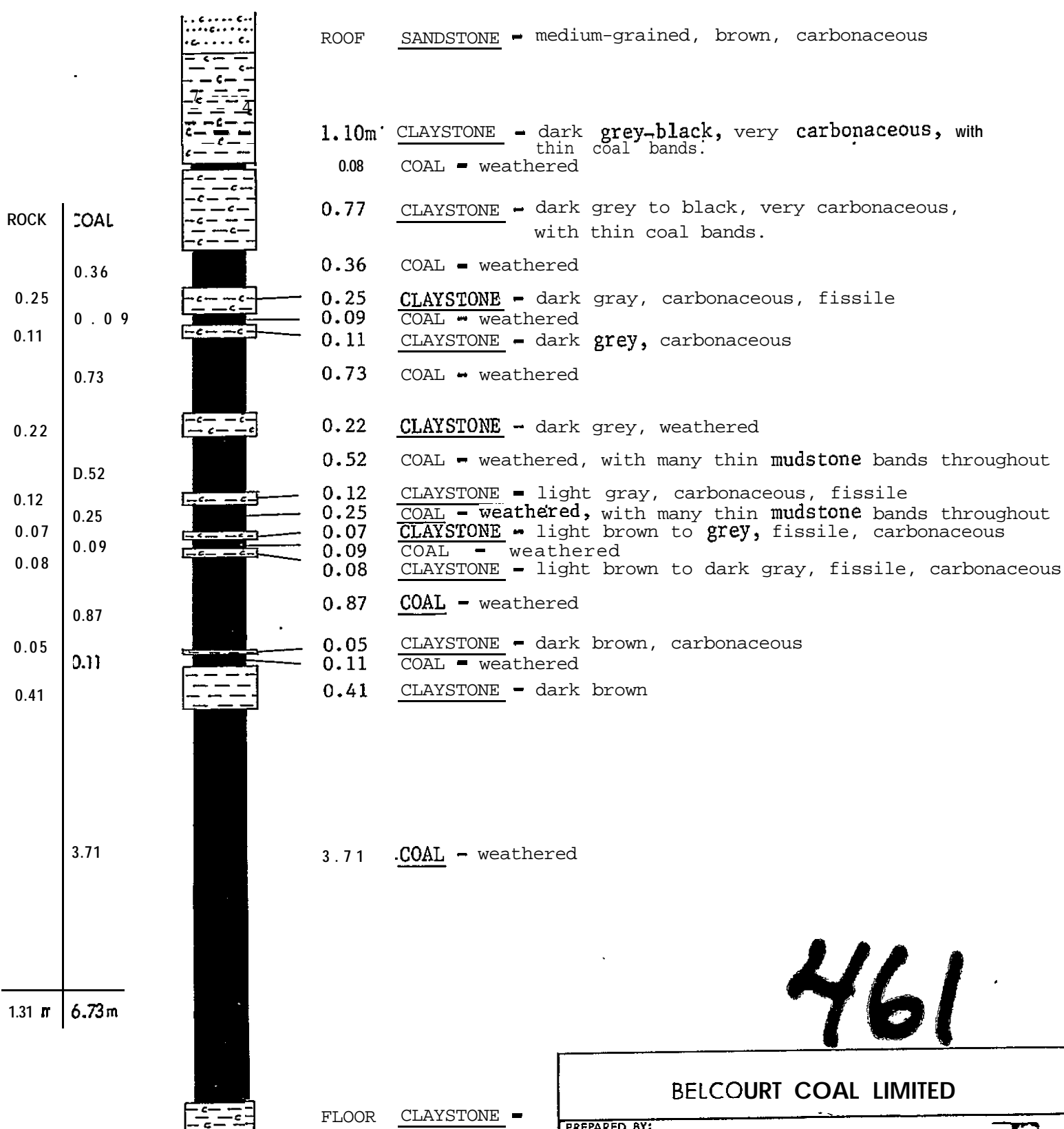
APPENDIX II

1977 TRENCH SECTIONS


BELCOURT COAL LIMITED

B-HS-T 7701 - B-HS-T 7722

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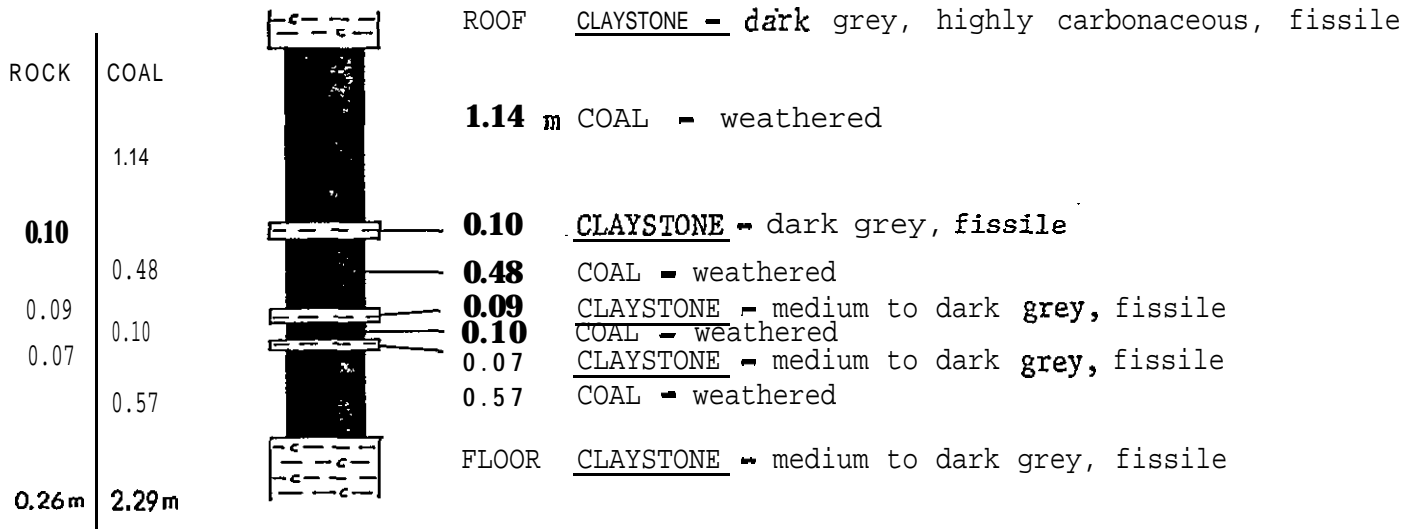


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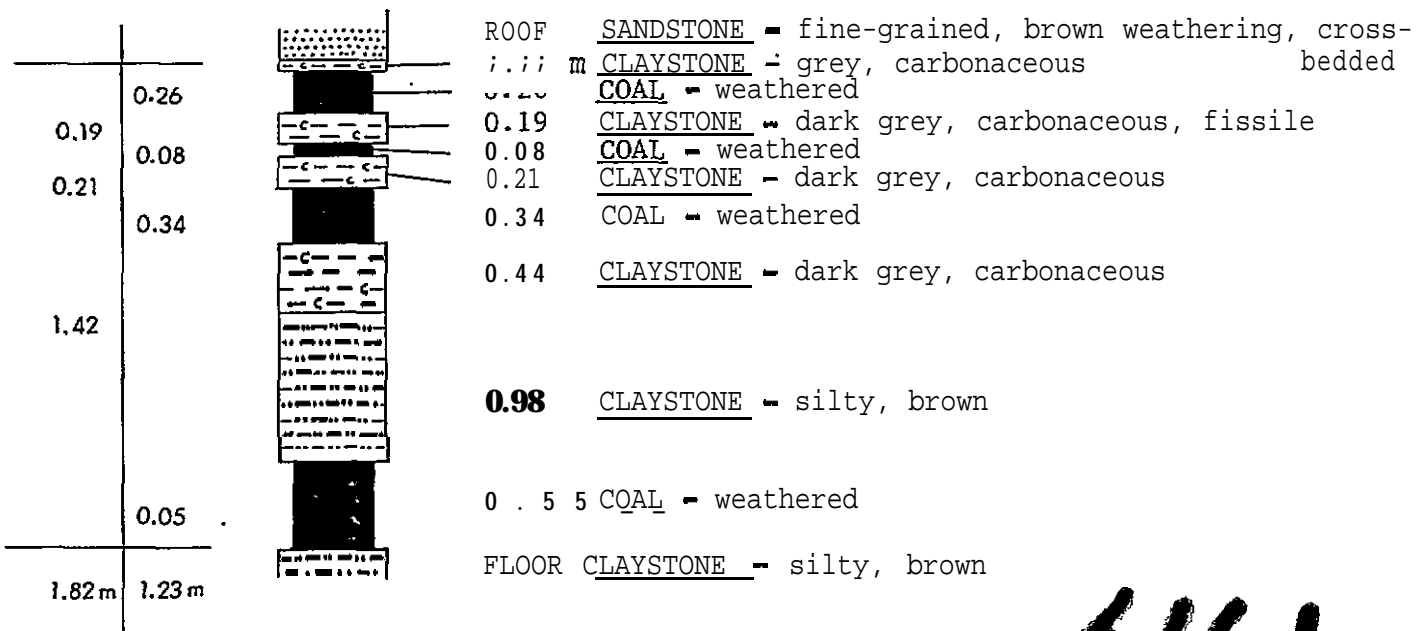
BELCOURT COAL LIMITED		
PREPARED BY:		
DENISON MINES LIMITED (COAL DIVISION)		
CALGARY	ALBERTA	
TRENCH SECTION B-HS -T 7701 PTARMIGAN SEAM TARGET SPUR		
DRAWN BY: L.McB	DATE: Nov. 1977	SCALE: 1:50
APPROVED BY: G.H.	DRAWING NO: BLCR 77 - 0766 - R01	

1.31 m 6.73m


7703

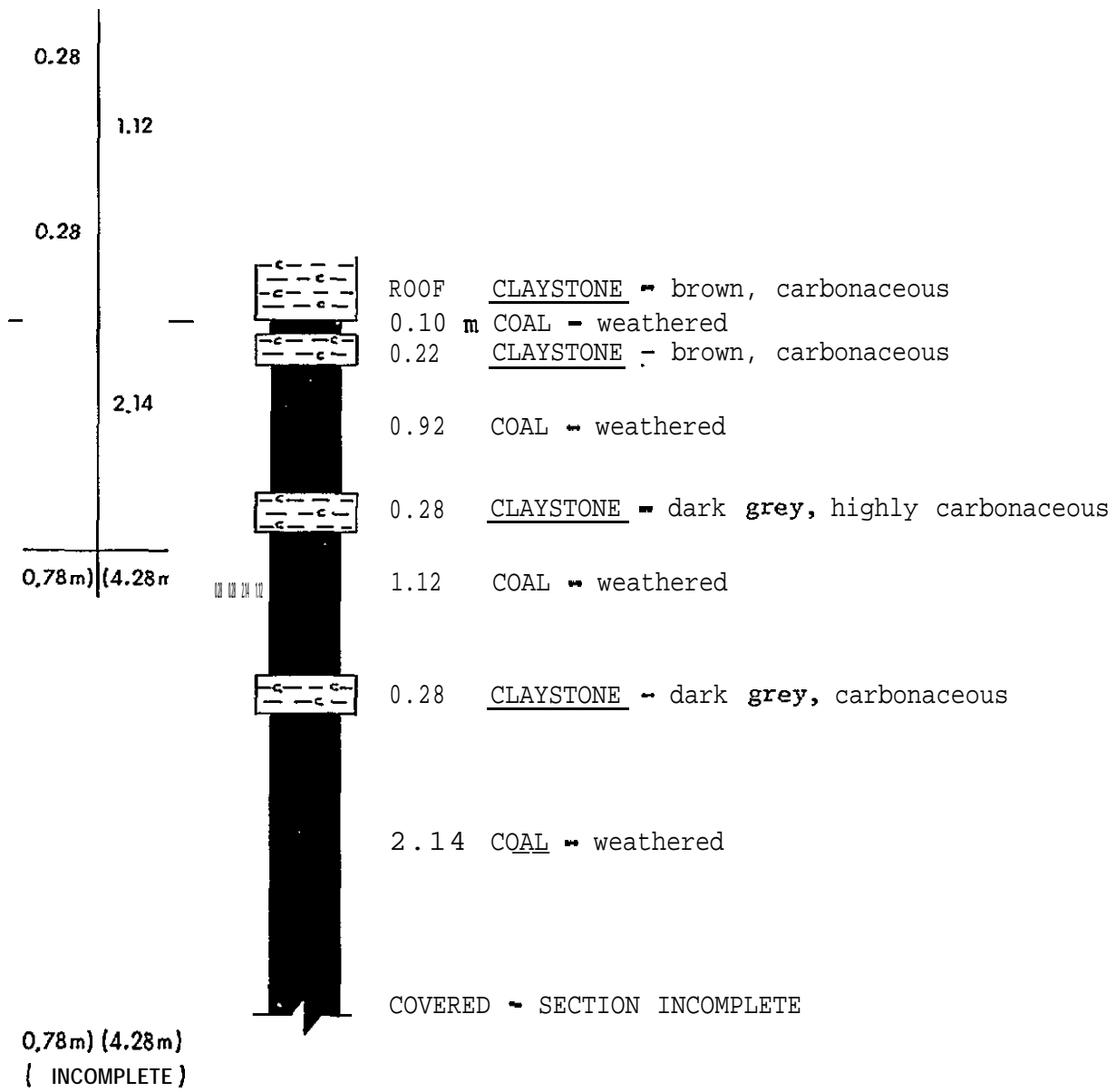


7702




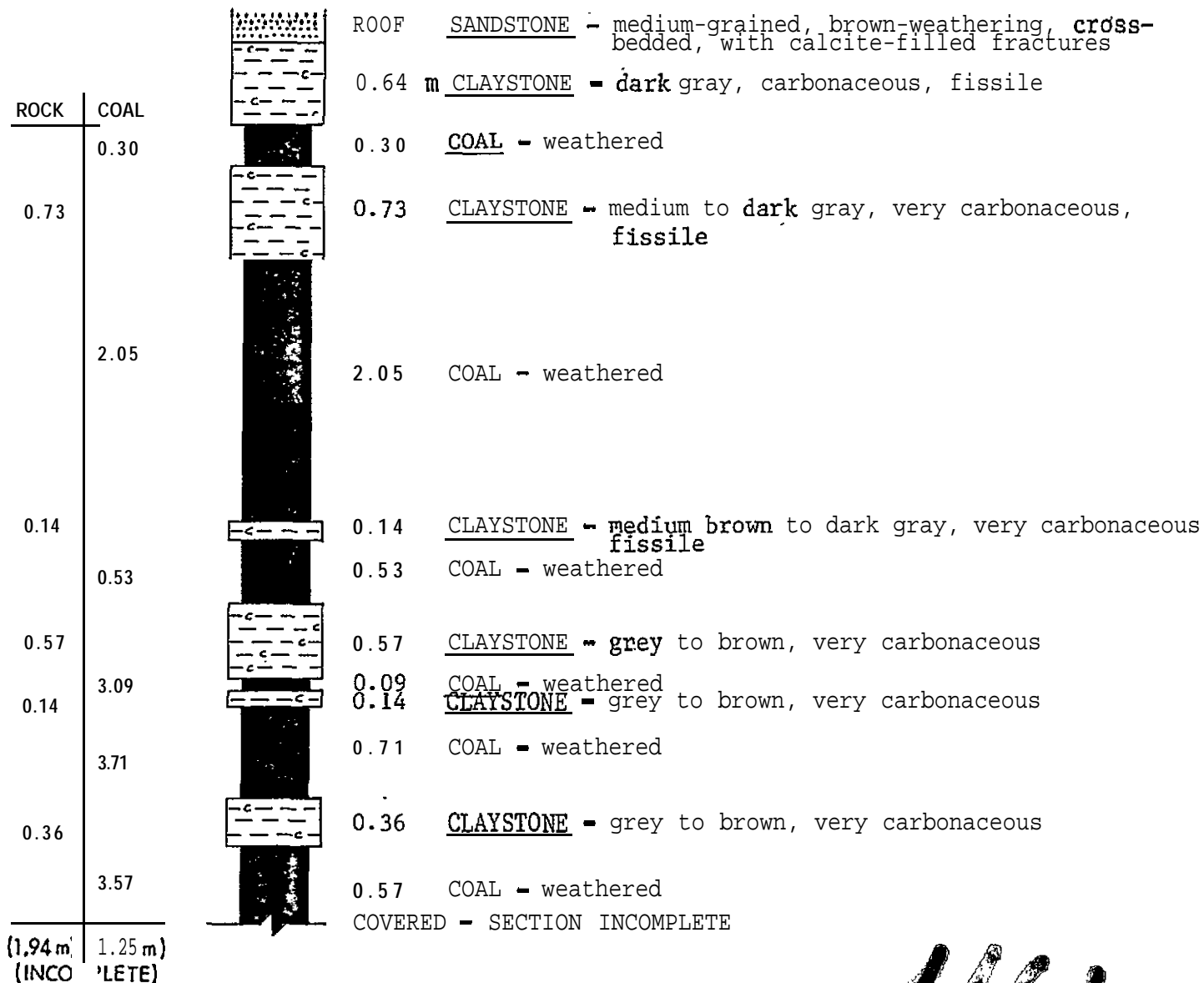
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PREPARED BY: DENISON MINES LIMITED (COAL DIVISION)		
CALGARY	ALBERTA	
TRENCH SECTION B- HS-T 7703, 7702		
TARGET SPUR		
DRAWN BY: L.McB	DATE: Nov. 1977	SCALE: 1:50
APPROVED BY: G.H.	DRAWING NO: BLCR 77-0766 - R01	



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PREPARED BY:		
DENISON MINES LIMITED		
(COAL DIVISION)		
CALGARY	ALBERTA	
TRENCH SECTION <u>B-HS-T</u> 7704		
TARGET SPUR		
DRAWN BY: L.McB	DATE: Nov. 1977	SCALE: 1:50
APPROVED BY: G.H.	DRAWING NO: BLER 77-0766 -R01	



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BELCOURT COAL LIMITED

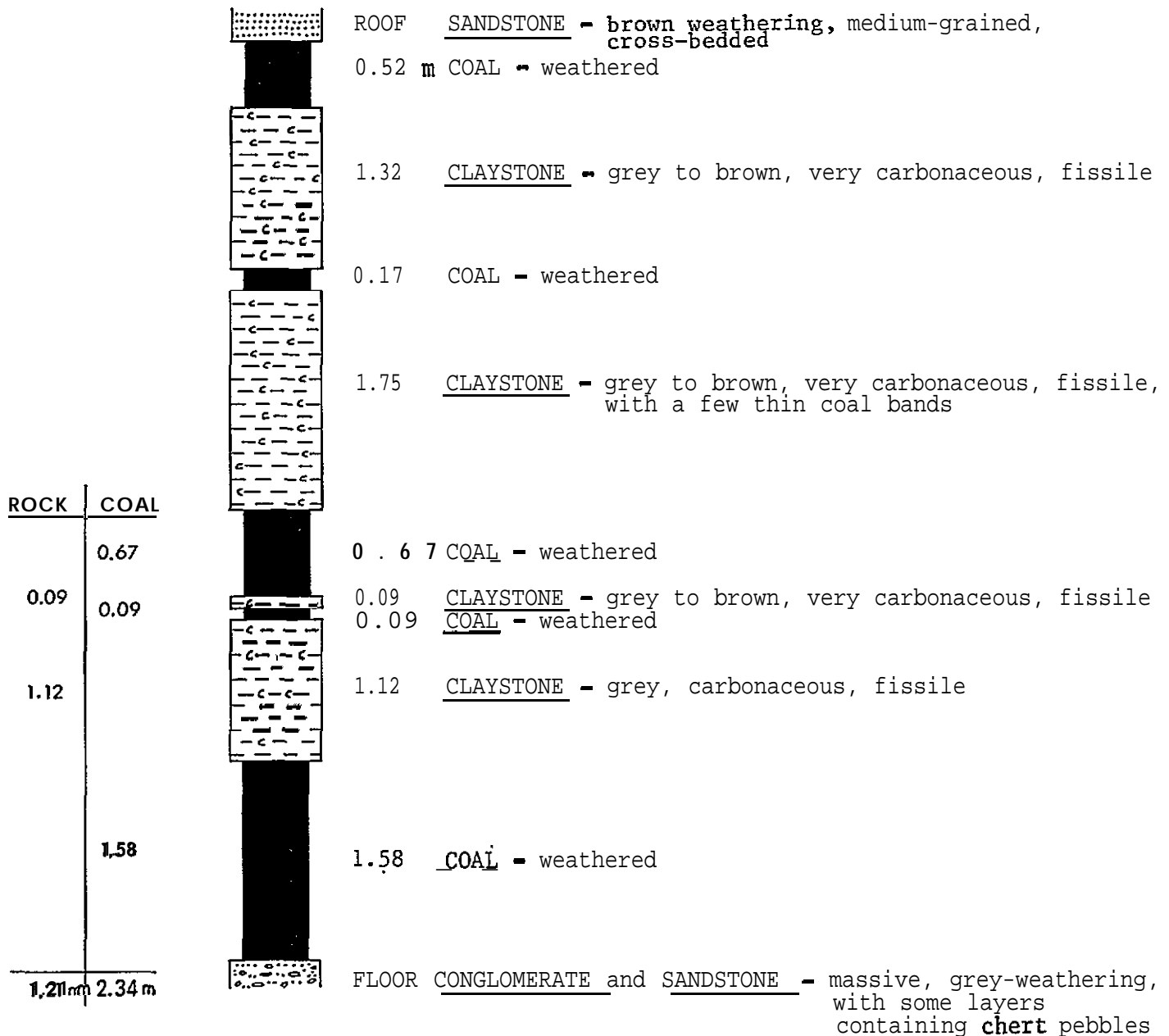
PREPARED BY:
DENISON MINES LIMITED
(COAL DIVISION)

CALGARY ALBERTA


TRENCH SECTION EI-HS-T 7707
PTARMIGAN SEAM
PIKA S P U R

DRAWN BY: L. McB DATE: Nov. 1977 SCALE: 1:50

APPROVED BY: G. H. DRAWING NO: BLCR 77 - 0766 - R01



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BELCOURT COAL LIMITED		
PREPARED BY: DENISON MINES LIMITED <small>(COAL DIVISION)</small>		
CALGARY	ALBERTA	
TRENCH SECTION B-HS-T 7708		
PIKA SPUR		
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APPROVED BY: CH	DRAWING NO: BLCR 77 - 0766 - R01	

7710

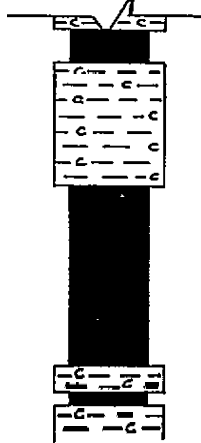
ROCK	COAL
	0.53
0.08	0.10
0.06	0.22
(0.14m)	(0.85m)
(INCOMPLETE)	



ROOF CLAYSTONE - brown, fissile
 0.07 m CLAYSTONE - grey fissile
 0.53 COAL - weathered
 0.08 CLAYSTONE - grey, carbonaceous, fissile
 0.10 COAL - weathered
 0.06 CLAYSTONE - grey, carbonaceous, fissile
 0.22 COAL - weathered
 COVERED - SECTION INCOMPLETE

7709

0.06	0.24
0.83	
	1.16
0.15	0.08
(1.04m)	(1.48m)
(INCOMPLETE)	



COVERED - SECTION INCOMPLETE
 0.06 m CLAYSTONE - grey, carbonaceous, fissile
 0.24 COAL - weathered
 0.83 CLAYSTONE - grey, carbonaceous, fissile
 1.16 COAL - weathered
 0.15 CLAYSTONE - medium to dark brown, carbonaceous
 0.08 AL - weathered
 FLOOR CLAYSTONE - medium to dark brown, very carbonaceous

4461

BELCOURT COAL LIMITED

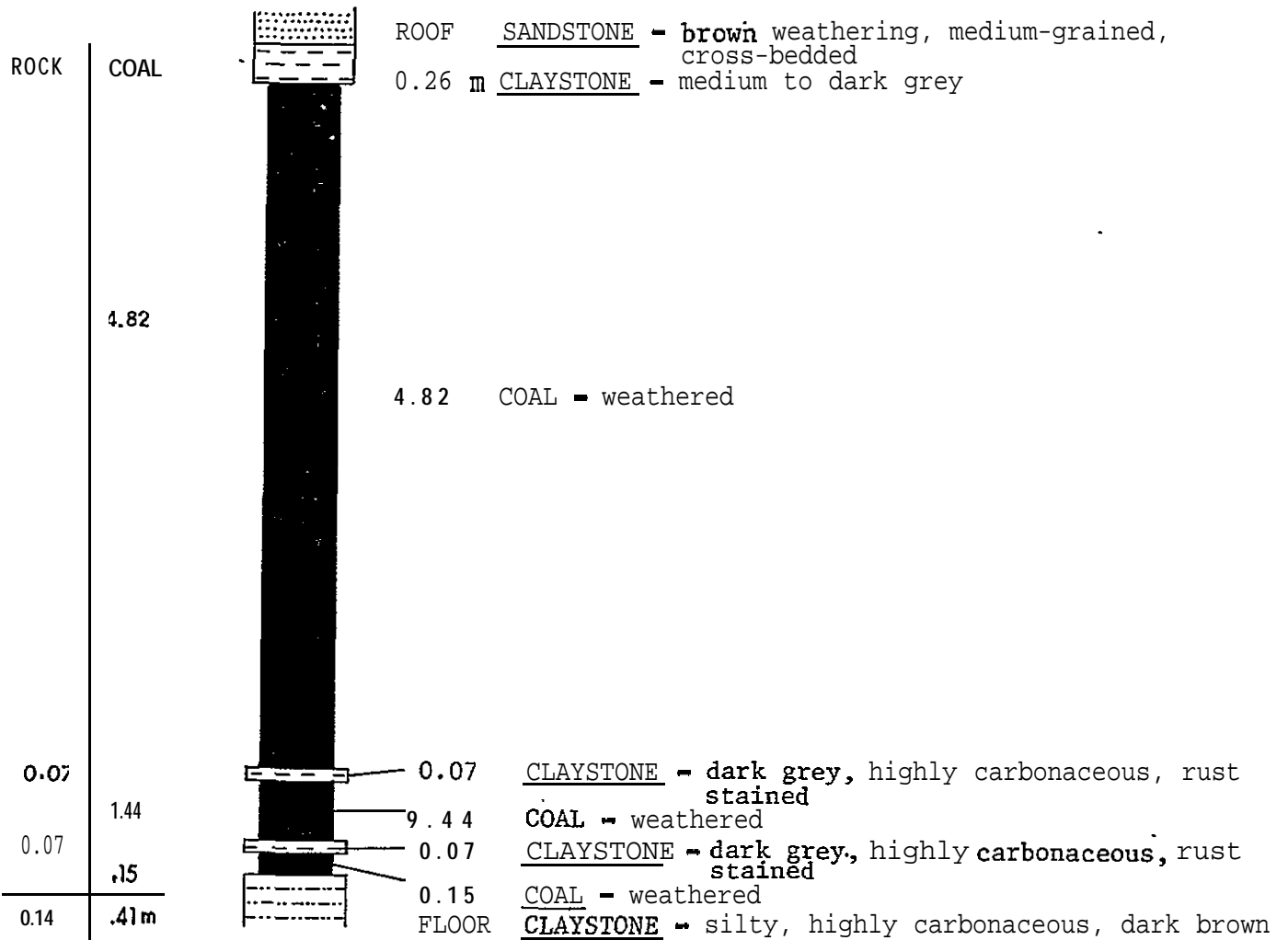
PREPARED BY:
 DENISON MINES LIMITED
 (COAL DIVISION)
 CALGARY ALBERTA



**TRENCH SECTION B-HS -T
 7710, 7709**

PIKA SPUR

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APPROVED BY: G.H	DRAWING NO: BLCR 77 - 0766 -_R01	



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 CALGARY, ALBERTA



TRENCH SECTION B-HS -T 7711

PIKA SPUR

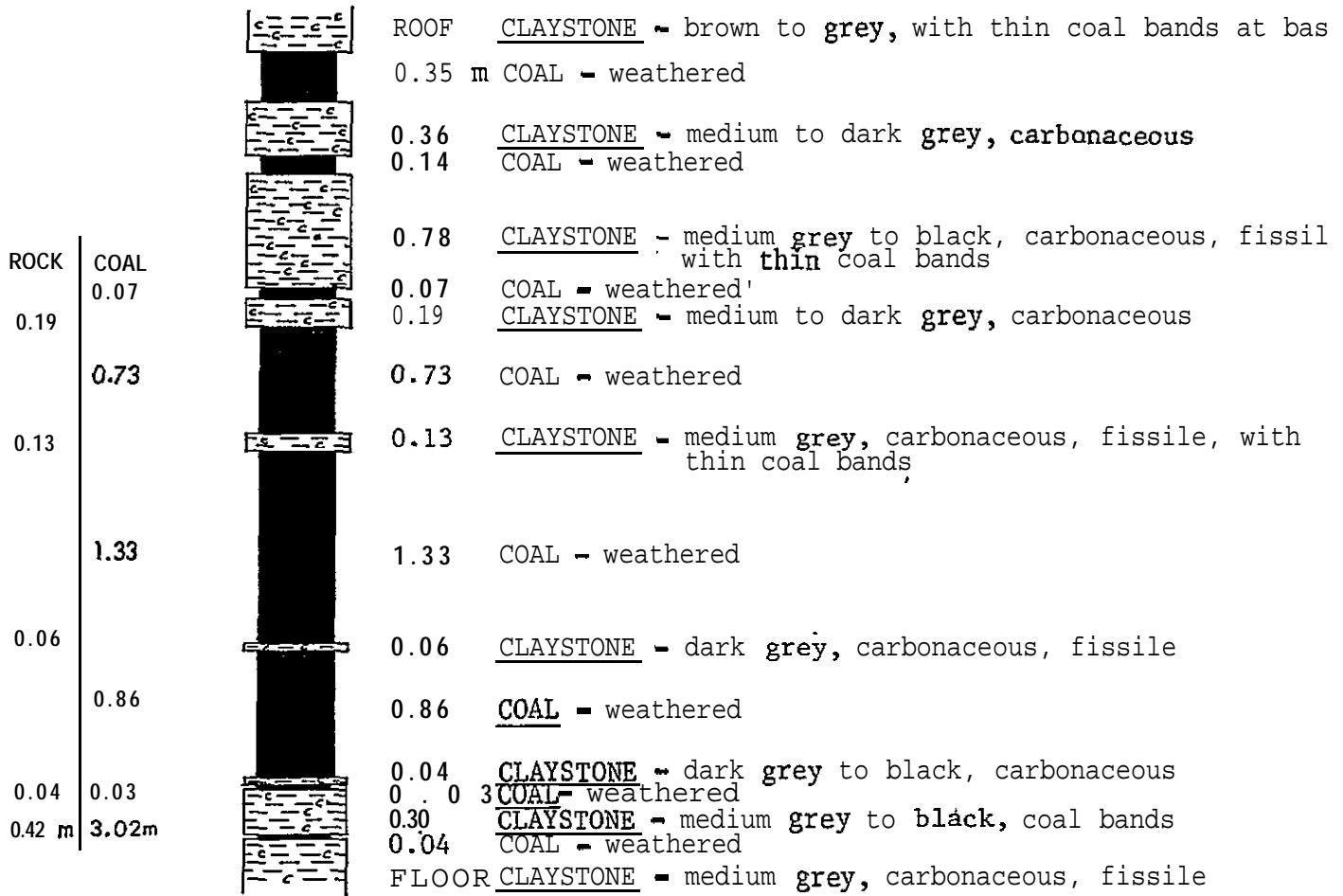
DRAWN BY: L.McB

ME: Nov. 1977


SCALE: 1:50

APPROVED BY: G.H.

DRAWING NO: BLCR 77-0766 -R01



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DENISON MINES LIMITED (COAL DIVISION)		
CALGARY	ALBERTA	
TRENCH SECTION B-HS-T 7712		
PIKA SPUR		
DRAWN BY: L.McB	DATE: Nov. 1977	SCALE: 1:50
APPROVED BY: G.H.	DRAWING NO: BLCR 77 - 0766 - R01	

ROCK	COAL
0.23	0.07
0.03	0.23
	0.16
0.26m	0.46 m



- ROOF SANDSTONE ~ brown-weathering, medium-grained, cross-bedded
- 1.48 m CLAYSTONE ~ medium to dark grey, very carbonaceous
- 0.15 CLAYSTONE ~ grey to black, very carbonaceous, with thin coal bands
- 0.20 COAL ~ weathered
- 0.83 CLAYSTONE ~ medium grey, carbonaceous, fissile
- 0.23 CLAYSTONE ~ medium brown, carbonaceous, plant fossils
- 0.23 CLAYSTONE ~ medium grey, carbonaceous, fissile
- 0.07 COAL ~ weathered
- 0.23 CLAYSTONE ~ medium brown, carbonaceous, fissile
- 0.23 COAL ~ weathered
- 0.03 CLAYSTONE ~ medium brown, carbonaceous, fissile
- 0.16 COAL ~ weathered
- FLOOR CLAYSTONE ~ medium to dark grey, carbonaceous

441

BELCOURT COAL LIMITED		
PREPARED BY:		
DENISON MINES LIMITED		
(COAL DIVISION)		
CALGARY	ALBERTA	
TRENCH SECTION B-HS-T 7714		
PIKA SPUR		
DRAWN BY: L.McB	DATE: Nov. 1977	SCALE: 1:50
APPROVED BY: G.H.	DRAWING NO: BLCR 77 - 0766 - R01	

7717

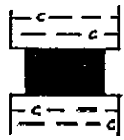
ROCK	COAL
-	0.10
0.00m	0.10m



ROOF CLAYSTONE - brown, carbonaceous, fissile
 0.10 m COAL - weathered
 FLOOR CLAYSTONE - brown, carbonaceous, fissile

7716

	0.31
0.00m	0.31m



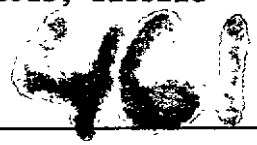
ROOF CLAYSTONE - brown, carbonaceous, fissile
 0.31 m COAL - weathered
 FLOOR CLAYSTONE - grey, carbonaceous, fissile


7715

	0.67
0.41	
	0.10
0.35	
	0.16
0.75m	0.83m



ROOF SANDSTONE - brown-weathering, medium-grained, cross-bedded
 0.67 m CLAYSTONE - medium grey, carbonaceous, fissile
 AL - weathered
 0.67 CLAYSTONE - medium grey, carbonaceous, fissile
 0.67 COAL - weathered
 0.41 CLAYSTONE - medium grey, carbonaceous, fissile
 0.10 COAL - weathered
 0.35 CLAYSTONE - medium grey, carbonaceous, fissile
 0.16 COAL - weathered
 FLOOR CLAYSTONE - medium grey, carbonaceous, fissile



BELCOURT COAL LIMITED		
PREPARED BY:		
DENISON MINES LIMITED		
(COAL DIVISION)		
CALGARY	ALBERTA	
TRENCH SECTION B-HS-T		
7717, 7716, 7715		
PIKA SPUR		
DRAWN BY: L.McB	DATE: Nov. 1977	SCALE: 1:50
APPROVED BY: G.H.	DRAWING NO: BLCR 77 - 0766 - R01	

ROCK	COAL
—	1.10
0.00m	1.10m



7 7 1 9

ROOF SANDSTONE - fine to medium-grained, brown-weathering

1.10 m COAL - weathered

FLOOR CLAYSTONE - medium grey, carbonaceous, fissile

7718

0.04	0.33
	1.65
0.04r	1.98m



ROOF SANDSTONE - fine to medium-grained, brown-weathering, carbonaceous

0.1 m CLAYSTONE - brown, with plant fossils

0.33 COAL - weathered

0.04 CLAYSTONE - medium grey, carbonaceous, fissile

1.65 COAL - weathered

FLOOR CLAYSTONE - medium to dark gray, vary carbonaceous, fissile

BELCOURT COAL LIMITED

PREPARED BY:

DENISON MINES LIMITED
(COAL DIVISION)

CALGARY

ALBERTA



TRENCH SECTION B -HS -T
7719, 7718

PIKA SPUR

DRAWN BY: L.McB

DATE: Nov. 1977 | SCALE: 1:50

APPROVED BY: G.H.

DRAWING NO: BLCR 77 -0766 -R01

ROCK	COAL
	0.60
0.07	0.03
0.07	0.04
0.20	0.21
0.15	
	2.44
0.49 m	3.32 m



ROOF CLAYSTONE - light grey, rust stained

0.60 m COAL - weathered

0.07 CLAYSTONE - dark grey, carbonaceous, fissile

0.03 COAL - weathered

0.07 CLAYSTONE - dark grey, carbonaceous, fissile

0.04 COAL - weathered

0.20 CLAYSTONE - dark grey, carbonaceous, fissile

0.21 COAL - weathered

0.15 CLAYSTONE - dark grey, carbonaceous, fissile

2.44 COAL - weathered

FLOOR CLAYSTONE - medium to dark grey, carbonaceous, fissile, plant fossils

40

BELCOURT COAL LIMITED

PREPARED BY:
DENISONMINES LIMITED
(COAL DIVISION)
CALGARY ALBERTA

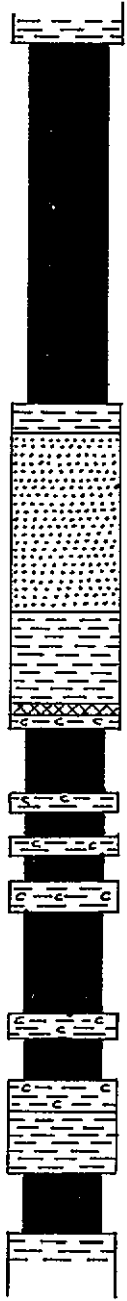


TRENCH SECTION B-HS-T 7720
HOLTSLANDER SECTION
RED DEER SEAM

DRAWN BY: L.McB | DATE: Nov. 1977 | SCALE: 1:50

APPROVED BY: G.H. | DRAWING NO: BLCR 77 - 0766 - R01

ROCK	COAL
—	2.36
0.00m	2.36m
0.11	0.41
0.12	0.16
0.19	0.19
	0.65
0.16	0.27
0.60	0.39
1.18m	2.07m



ROOF CLAYSTONE - brown, fissile, plant fossils

2.36m COAL - weathered

0.17 CLAYSTONE - brown, fissile

1.16 SANDSTONE - brown-weathering, fine to medium-grained, cross-bedded

0.62 CLAYSTONE - brown, fissile, plant fossils

0.06 COAL - stoney

0.10 CLAYSTONE - brown, carbonaceous, with thin coal bands

0.41 COAL - weathered, with thin claystone bands

0.11 CLAYSTONE - medium grey, fissile, carbonaceous

0.16 COAL - weathered

0.12 CLAYSTONE - medium to dark gray, highly carbonaceous

0.19 COAL - weathered

0.19 CLAYSTONE - medium brown to dark grey, carbonaceous

0.65 COAL - weathered

0.16 CLAYSTONE - medium to dark grey, carbonaceous, fissile

0.27 COAL - weathered

0.20 CLAYSTONE - medium grey, carbonaceous

0.40 CLAYSTONE - light to medium brown


0.39 COAL - weathered

FLOOR CLAYSTONE - brown, fissile, plant fossils

BELCOURT COAL LIMITED

PREPARED BY:
DENISON MINES LIMITED
(COAL DIVISION)

CALGARY ALBERTA



TRENCH SECTION B-HS-T 7721
HOLTSLANDER SECTION

DRAWN BY: L.McB	DATE: Nov. 1977	SCALE: 1:50
APPROVED BY: G.H.	DRAWING NO: BLCR 77 - 0766 - R01	

7723

ROCK	COAL
	0.30
0.23	
	0.40
0.23m	0.70m



ROOF CLAYSTONE - dark to medium grey, very carbonaceous, fissile
 0.30 m COAL - weathered
 0.23 CLAYSTONE - dark to medium grey, very carbonaceous, fissile
 0.40 COAL - weathered
 FLOOR CLAYSTONE - dark to medium grey, very carbonaceous, fissile

7722

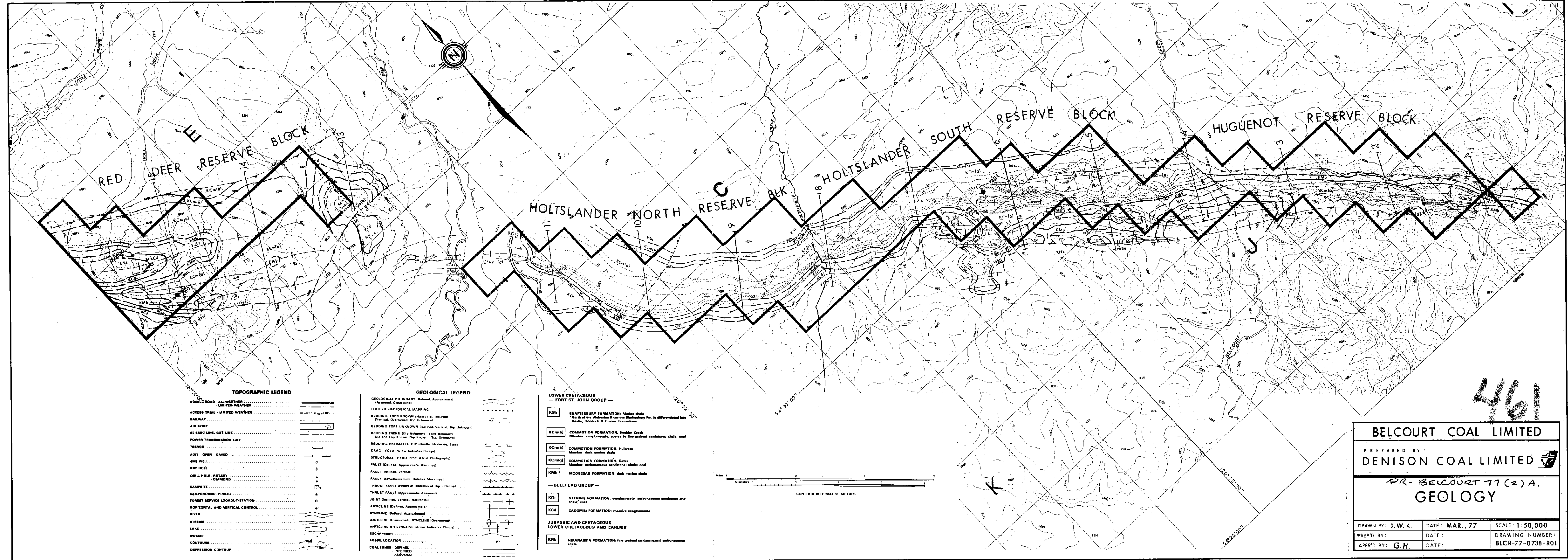
ROCK	COAL
-	0.66
0.00m	0.66m



ROOF CLAYSTONE - dark grey, very carbonaceous
 0.66 m COAL - weathered
 FLOOR CLAYSTONE - medium to dark grey, carbonaceous

Handwritten signature or initials

BELCOURT COAL LIMITED		
PREPARED BY: DENISON MINES LIMITED (COAL DIVISION) CALGARY ALBERTA		
TRENCH SECTION B-HS-T 7723; 7722		
HOLTSLANDER SECTION		
DRAWN BY: L. McB	DATE: Nov. 1977	SCALE: 1:50
APPROVED BY: G. H.	DRAWING NO: BLCR 77 - 0766 - R01	



TOPOGRAPHIC LEGEND

- ACCESS ROAD - ALL WEATHER
- ACCESS ROAD - LIMITED WEATHER
- RAILWAY
- AIR STRIP
- SEISMIC LINE, CUT LINE
- POWER TRANSMISSION LINE
- TRENCH
- ADIT - OPEN - CAVED
- GAS WELL
- DRY HOLE
- DRILL HOLE - ROTARY
- DIAMOND
- CAMPFIRE
- CAMPGROUND, PUBLIC
- FOREST SERVICE LOOKOUT/STATION
- HORIZONTAL AND VERTICAL CONTROL
- RIVER
- STREAM
- LAKE
- SWAMP
- CONTOURS
- DEPRESSION CONTOUR

GEOLOGICAL LEGEND

- GEOLOGICAL BOUNDARY (Defined, Approximate)
- LIMIT OF GEOLOGICAL MAPPING
- BEDDING TOPS KNOWN (Horizontal, Inclined)
- BEDDING TOPS UNKNOWN (Inclined, Vertical, Dip Unknown)
- BEDDING TREND (Dip Unknown, Top Unknown)
- BEDDING, ESTIMATED DIP (Gentle, Moderate, Steep)
- DRAG FOLD (Arrow Indicates Plunge)
- STRUCTURAL TREND (From Aerial Photographs)
- FAULT (Defined, Approximate, Assumed)
- FAULT (Inclined, Vertical)
- FAULT (Downthrow Side, Relative Movement)
- THRUST FAULT (Points in Direction of Dip, Defined)
- THRUST FAULT (Approximate, Assumed)
- JOINT (Inclined, Vertical, Horizontal)
- ANTICLINE (Defined, Approximate)
- SYNCLINE (Defined, Approximate)
- ARTICLINE (Overturned), SYNCLINE (Overturned)
- ARTICLINE OR SYNCLINE (Arrow Indicates Plunge)
- ESCARPMENT
- FOSSIL LOCATION
- COAL ZONES - DEFINED
- COAL ZONES - INFERRED
- COAL ZONES - ASSUMED

LOWER CRETACEOUS

- FORT ST. JOHN GROUP —**
- KSh** SHAFTESBURY FORMATION: Marine shale
- KCM(b)** COMMOTION FORMATION, Boulder Creek
- KCM(h)** COMMOTION FORMATION, Hukroak
- KCM(g)** COMMOTION FORMATION, Geste
- KMB** MOOSEBAR FORMATION: dark marine shale
- BULLHEAD GROUP —**
- KGt** GETHING FORMATION: conglomerate; carbonaceous sandstone and shale; coal
- KCd** CADOMIN FORMATION: massive conglomerate
- JURASSIC AND CRETACEOUS**
- LOWER CRETACEOUS AND EARLIER**
- KNK** NIKANASSIN FORMATION: fine-grained sandstone and carbonaceous shale

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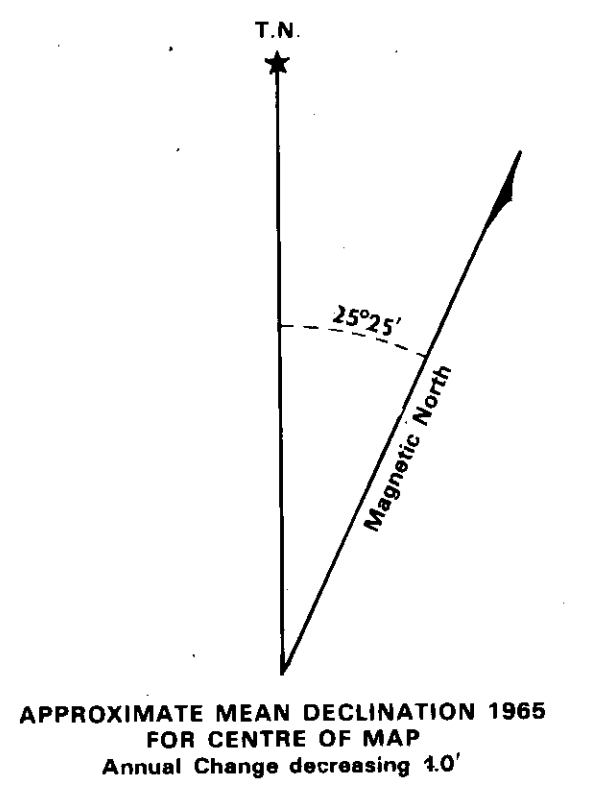
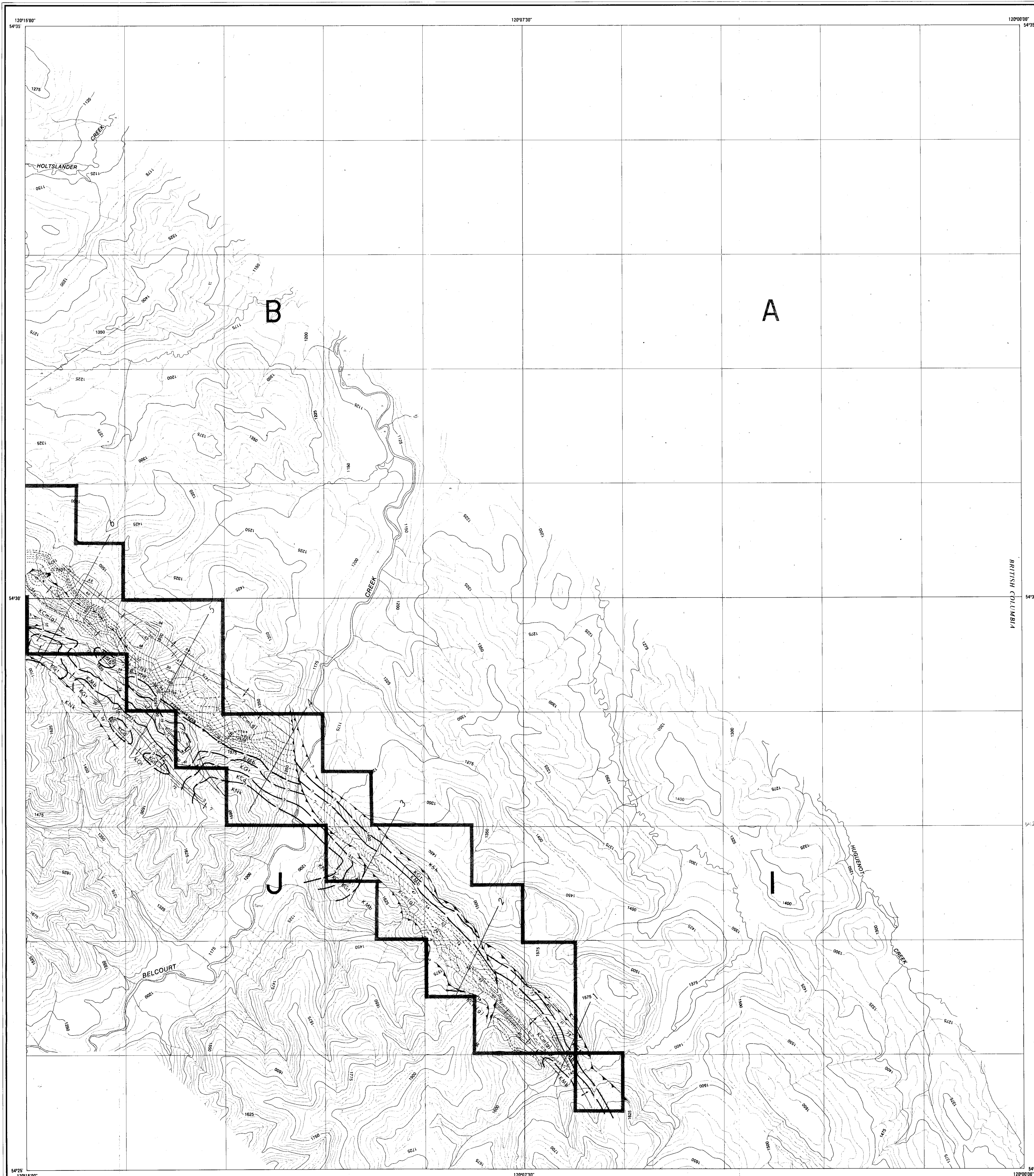
BELCOURT COAL LIMITED		
PREP'D BY: DENISON COAL LIMITED		
PR- BELCOURT 77 (2) A.		
GEOLOGY		
DRAWN BY: J.W.K.	DATE: MAR., 77	SCALE: 1:50,000
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY: G.H.	DATE:	BLCR-77-0738-R01

GEOLOGICAL LEGEND

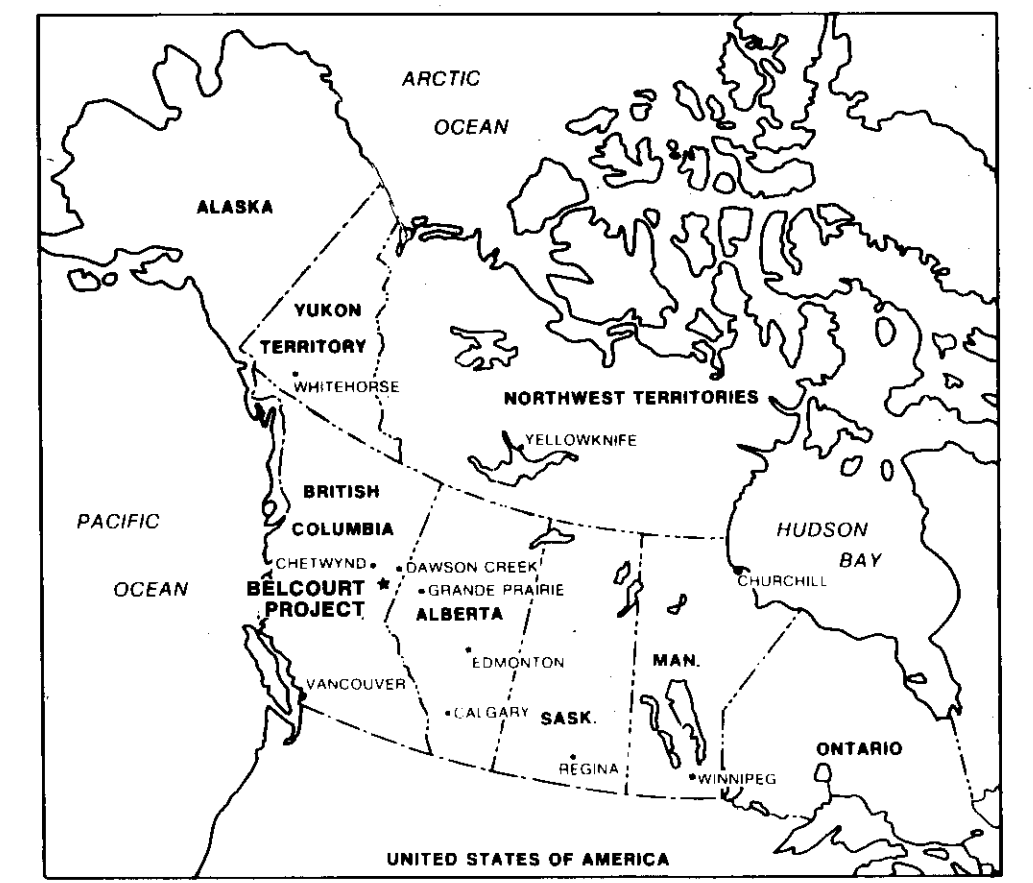
- DRIFT COVERED AREA
- GEOLOGICAL BOUNDARY (Defined, Approximate)
 (Assumed, Gradational)
- LIMIT OF GEOLOGICAL MAPPING
- BEDDING TOPS KNOWN (Horizontal, Inclined)
 Vertical, Overturned, Dip Unknown)
- BEDDING TOPS UNKNOWN (Inclined, Vertical, Dip Unknown)
- BEDDING TREND (Dip Unknown - Tops Unknown,
 Dip and Top Known, Dip Known - Top Unknown)
- BEDDING ESTIMATED DIP (Gentle, Moderate, Steep)
- DRAG FOLD (Arrow Indicates Plunge)
- STRUCTURAL TREND (From Aerial Photographs)
- FAULT (Defined, Approximate, Assumed)
 (Inclined, Vertical)
- FAULT (Downthrow Side, Relative Movement)
- THRUST FAULT (Points in Direction of Dip - Defined)
- THRUST FAULT (Approximate, Assumed)
- JOINT (Inclined, Vertical, Horizontal)
- ANTICLINE (Defined, Approximate)
- SYNCLINE (Defined, Approximate)
- ANTICLINE (Overturned), SYNCLINE (Overturned)
- ANTICLINE OR SYNCLINE (Arrow Indicates Plunge)
- ESCARPMENT
- FOSSIL LOCATION
- COAL ZONES: DEFINED, INFERRED, ASSUMED

- UPPER CRETACEOUS**
- KDu** DUNVEGAN FORMATION: Marine and non-marine sandstone and shale
- LOWER CRETACEOUS**
 — FORT ST. JOHN GROUP —
- KSh** SHAFESBURY FORMATION: Marine shale
 *North of the Wolverine River the Shafesbury Fm. is differentiated into Hasler, Goodrich & Cruiser Formations.
- KCr** CRUISER FORMATION: Marine shale
- KGo** GODDRICH FORMATION: Fine-grained sandstone
- KHa** HASLER FORMATION: Dark marine shale
- KCm** COMMOTION FORMATION
 Undifferentiated
- KCmb** COMMOTION FORMATION, Boulder Creek
 Member: conglomerate, coarse to fine-grained sandstone, shale, coal
- KCmh** COMMOTION FORMATION, Hulcoos
 Member: dark marine shale
- KCmg** COMMOTION FORMATION, Gates
 Member: carbonaceous sandstone, shale, coal
- KMb** OSEBAR FORMATION: dark marine shale
- BULLHEAD GROUP —
- KGt** GETTING FORMATION: conglomerate, carbonaceous sandstone and shale, coal
- KCd** GADOMIN FORMATION: massive conglomerate
- JURASSIC AND CRETACEOUS
 LOWER CRETACEOUS AND EARLIER**
- KNk** NIKANASSIN FORMATION: fine-grained sandstone and carbonaceous shale

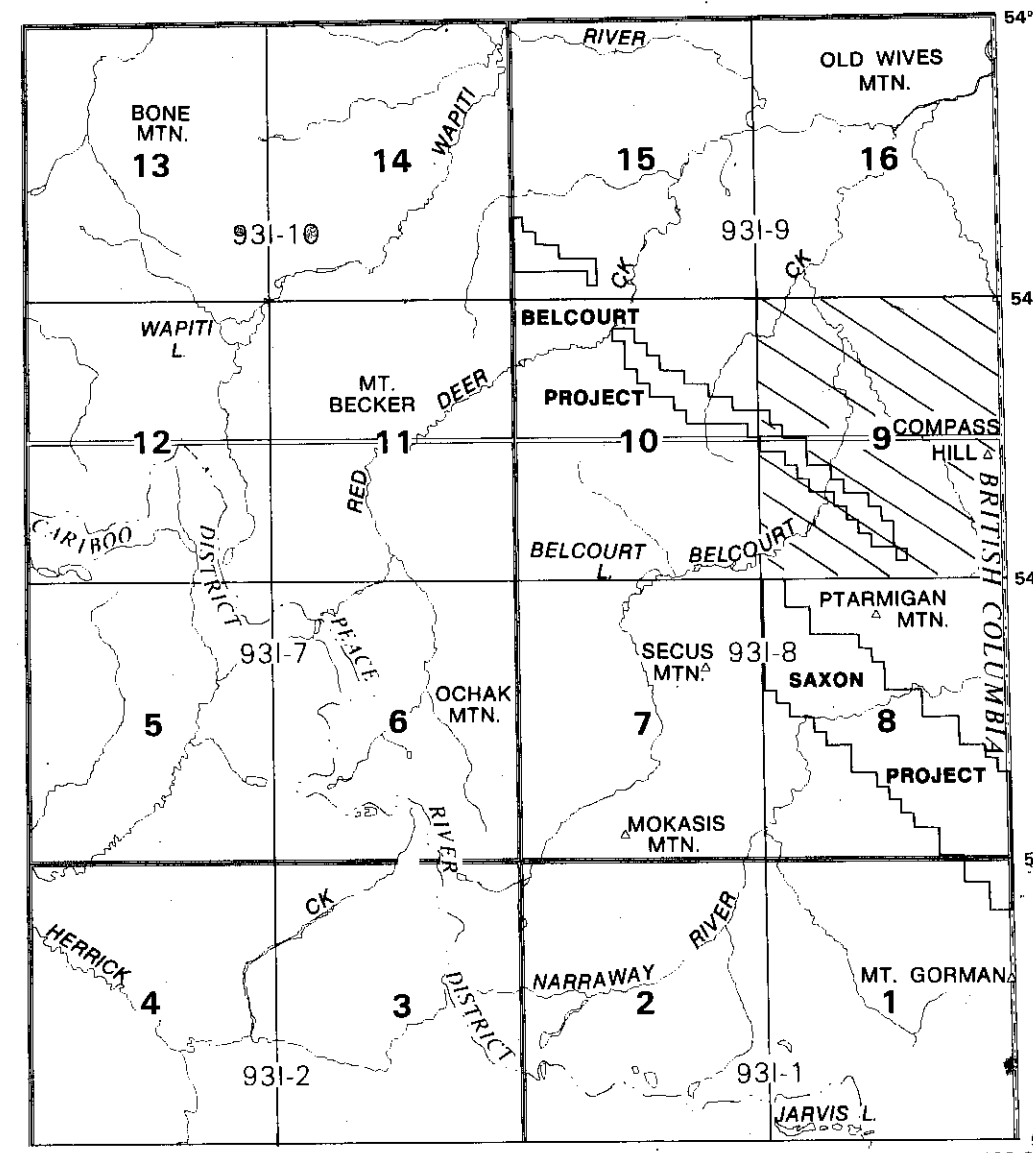
- TOPOGRAPHIC LEGEND**
- ACCESS ROAD - ALL WEATHER, LIMITED WEATHER
- ACCESS TRAIL - LIMITED WEATHER
- RAILWAY
- AIR STRIP
- SEISMIC LINE, CUT LINE
- POWER TRANSMISSION LINE
- TRENCH
- ADIT - OPEN - CAVED
- GAS WELL
- DRY HOLE
- DRILL HOLE - ROTARY, DIAMOND
- CAMP SITE
- CAMPGROUND, PUBLIC
- FOREST SERVICE LOOKOUT/STATION
- HORIZONTAL AND VERTICAL CONTROL
- RIVER
- STREAM
- LAKE
- SWAMP
- CONTOURS
- DEPRESSION CONTOUR



LOCATION MAP



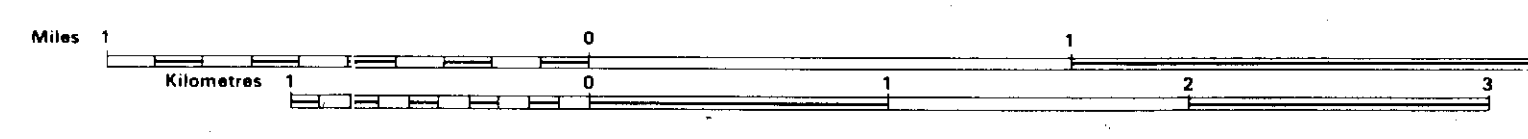
INDEX MAP



**PR-BELCOURT 77 (2) A.
 BELCOURT PROJECT
 BRITISH COLUMBIA**

SCALE 1:25,000

Dwg. No. : BLCR 76-0625-R02



CONTOUR INTERVAL 25 METRES

NOTE: 25 Metre contour was interpolated from photogrammetric map data, which was compiled from aerial photography taken 1976 to 1978, and from 1:50,000 National Topographic Series maps.

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SHEET NO. 9

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