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DENISON MINES LIMITED

Calgary, Alberta

1977 Exploration Assessment Report

For

Saxon Coal Limited

C.L.# 2763-2812

November 1977

PREFACE

The 1977 Saxon Exploration Assessment Report incorporates Volumes II and III of the Saxon Project Feasibility Study 1977; Volume II contains the geology, reserve and quality sections plus some appendices while Volume III contains more appendices relating to Volume II. These volumes correspond to Volumes II and III of this report. Additional appendices which present descriptive core logs and geophysical logs are to be found in Volume IV (Parts A and B) and Volume V (Parts A, B, and C) respectively.

Discussions of some of the more physical aspects of the 1977 Saxon exploration programme are presented here in Volume I.

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1 INTRODUCTION

The 1977 field season was split into two parts: late winter and summer, separated by a three week period in May due to "break-up".

Snow removal and maintenance of the main access road to the Saxon camp site commenced on February 27, 1977, and a 30-man camp was operational by March 5. With the addition of two extra sleeper trailers, a 50-man camp was established by the middle of March. In this late winter period, the exploration programme was confined to diamond drilling and aditing in the Saxon East area, and snow removal, road construction and maintenance in the Saxon South area. The camp was closed between May 5 and May 27 due to impossible ground conditions accompanying spring thaw.

In the second (summer) portion of the programme, diamond drilling and aditing continued in Saxon East and also started in the Saxon South area. A 40-man camp was established at Saxon South on June 10 and was shut down on July 24. A geological mapping programme was initiated at the beginning of June which continued until the second week in August. Hand and mechanized trenching was carried out in both Saxon South and Saxon East, although trenches were concentrated in the latter area. Camp "closed" on September 3, leaving a reclamation crew which continued through until October 18.

2 GEOLOGICAL MAPPING

The geological mapping undertaken during the 1977 Saxon exploration project was accomplished by four 2-man teams supported by a Hughes 500 helicopter. The mapping was primarily within the Saxon East area although a number of traverses were run in other parts of the property. Data collection was undertaken at a scale of 1:2500 and this information was later transferred to 1:5000 scale base maps. Control of traverse lines was achieved using chain and compass, corrected for slope variation. Data points were plotted directly onto 1:2500 maps in the field by orienting the maps with a Silva compass on a portable map board. Points such as creek confluences or survey control points shown on the base maps were used to locate the beginning and end of each traverse.

A compilation of all the geological mapping carried out during 1977 and previous years was prepared at scales of 1:2500 for Saxon South, and 1:5000 for Saxon East. Reductions of these maps plus a 1:50,000 scale geological compilation have been included in the appendices of Volume II.

3 SURVEYING

During the summer, a 2-man crew using truck and helicopter undertook survey control work throughout the Saxon property. Points surveyed included all 1977 and pre-1977 drill holes and adits plus most of the pre-1977 survey control points and targets. In addition to this, thirteen new survey control points were established in the Saxon East area. Survey control points used in the survey programme are presented in Table 3.1

Initially, drill holes and adits were tied-in to local survey control points using a Wild T2 Theodolite for measuring angles and either a 50 metre chain or a DM 60 Cubitape for measuring distances. Occassionally, leveling was achieved using a Wild NA2 Automatic Level but, because of the usually very steep topography and long distances between survey points, trigonometric levelling was preferred.

In the second phase of the survey programme, traverses were tied-in to existing Provincial Triangulation Stations. For measurement of long distances a tellurometer (CA 1000) was used. Vertical angles were measured simultaneously at both ends of the measured distance.

Elevations were derived from trigonometric levelling and data derived from Provincial Triangulation Stations. Coordinates and elevations for drill holes and adits are given in Tables 3.2 and 3.3 respectively. All coordinates are on the Universal Transverse Mercator Grid.

TABLE 3.1

SURVEY CONTROL STATIONS

USED FOR THE SAXON 1977 SURVEY PROGRAMME

Station	Elevation	Northings	Eastings
"CAP" (#2373)	2806.1	6,017,245.45	686,893.44
H #3	1815.3	6,028,926.70	682,877.30
HV #6	1869.2	6,023,766.60	690,017.70
SC #1	1219.8	6,021,876.70	691,411.50
SC #5	1350.7	6,021,559.70	691,910.10
SC #6	1462.7	6,022,549.40	689,354.70
SC #9	1555.8	6,023,481.20	688,129.20
SC #11	1367.3	6,020,269.30	692,620.10
SC #12	1254.1	6,021,772.90	690,409.30
SC #15	1206.2	6,024,748.00	687,213.50
SC #16	1372.1	6,026,966.90	681,703.40
SC #17	1208.1	6,025,784.30	684,916.40
SC #19	1136.6	6,024,568.60	685,751.70
SC #20	1442.8	6,023,496.30	687,298.60
SC #21	1335.1	6,027,041.60	683,673.10
SC #22	1456.4	6,021,184.80	692,305.60
"FLUME"(#2399)	2120.5	6,031,309.90	686,176.25
60-3	1870.1	6,014,177.58	695,495.81
61-4		6,019,574.12	695,266.59
61-5	1937.6	6,021,227.26	695,196.24
61-5A		6,021,219.97	694,908.09
2373	2306.1	6,017,254.45	686,893.44
35	1808.11	6,013,327.89	695,034.36
60-3	1873.35	6,014,177.56	695,495.80
20	1770.48	6,014,958.23	692,768.03
25	2099.11	6,014,679.94	693,842.49
1	1793.08	6,015,769.86	692,325.86
2	2109.71	6,014,544.31	693,946.46
4	2014.47	6,013,915.44	694,460.33
5	2000.65	6,013,756.64	694,340.30
6	1880.32	6,014,180.63	695,448.88
9	1882.03	6,013,110.64	694,592.07
10	1920.22	6,013,336.13	694,740.92

Note: All coordinates are referred to the Universal Transverse Mercator Grid.

Elevations are in metres.

All Saxon Control points (SC #) are marked on the ground by 8" spikes except SC #11 which is the invert of a 4" pipe casing.

TABLE 3.2

SAXON DRILL HOLE COORDINATES

Hole	Elevation	North	East
D 7001	1254.1	6,021,772.9	690,409.3
D 7002	1220.9	6,022,037.3	691,232.8
D 7101	1449.1	6,020,024.0	693,084.2
D 7102	1572.8	6,023,937.6	688,050.2
D 7103	1106.7	6,024,763.0	685,673.8
SD 7601	1926.9	6,013,392.5	694,713.2
SD 7602	1827.5	6,014,441.1	693,217.7
SD 7603	1794.4	6,014,618.2	695,237.7
SD 7604	2003.0	6,014,196.7	694,589.6
SD 7605	1726.7	6,015,500.7	693,512.5
SD 7606	1902.8	6,014,516.3	694,823.6
SD 7607	2066.0	6,014,553.4	693,822.5
SD 7608	1967.4	6,014,265.4	693,807.0
SD 7609	1240.9	6,021,839.2	690,787.4
SD 7610	1793.6	6,013,128.3	694,352.1
SD 7611	2004.6	6,014,935.1	693,514.2
SD 7613	1751.1	6,015,173.7	692,791.3
SD 7714	1560.4	6,015,788.6	692,903.9
SD 7615	1814.0	6,015,015.7	694,298.5
SD 7617	1450.9	6,019,409.8	693,931.5
SD 7718	1759.4	6,015,946.9	692,438.9
SD 7619	1185.7	6,024,624.2	686,922.8
SD 7620	1428.0	6,021,055.8	692,206.9
SD 7701	1240.4	6,021,568.4	691,388.9
SD 7702	1367.3	6,020,269.3	692,620.1
SD 7703	1716.5	6,023,864.0	688,721.9
SD 7704	1405.1	6,024,290.5	687,524.2
SD 7705	1634.3	6,022,899.6	689,822.6
SD 7706	1422.4	6,019,256.4	693,737.1
SD 7707	1726.7	6,015,500.7	693,512.5
SD 7708	1245.7	6,021,608.9	691,015.9
SD 7709	1374.3	6,022,179.6	690,573.4
SD 7710	1461.6	6,022,537.8	689,370.2
SD 7711	1984.8	6,014,395.5	693,707.3
SD 7712	1962.4	6,019,518.2	695,111.7
SD 7713	1969.8	6,014,807.8	693,376.4
SD 7714	1720.4	6,015,383.0	693,003.8
SD 7715	1847.9	6,020,319.6	693,839.3
SD 7716	1725.7	6,015,153.7	694,377.1
SD 7717	1607.0	6,015,614.8	694,013.5
SD 7718	1978.9	6,015,042.7	693,428.2
SD 7719	1696.2	6,013,669.5	695,215.9
SD 7720	1961.1	6,013,557.6	694,353.4
SD 7721	2096.5	6,014,582.0	693,990.6
SD 7722	2021.7	6,014,238.2	694,448.2
SD 7723	1919.9	6,014,417.1	694,872.0
SD 7724	1742.8	6,015,249.2	692,861.7
SD 7725	1873.7	6,014,342.5	695,075.9
SD 7726	1986.9	6,013,760.5	694,568.6

TABLE 3.3

SAXON ADIT COORDINATES

Adit	Elev. to Nail In Beam	North	East
76-4-1	1445.2	6,021,166.0	692,287.2
76-2-3	1709.9	6,015,426.7	693,108.5
76-4-4	1731.2	6,015,337.2	692,963.1
76-4-2	1694.5	6,015,501.9	693,192.5
77-2-4	1686.8	6,012,906.6	694,730.8
77-1-3	1685.8	6,012,938.4	694,759.9
77-1-1	1216.8	6,024,721.0	687,257.2
77-4-5	1699.6	6,012,828.6	694,618.6
77-2-2	1370.1	6,022,288.8	690,754.3
T.B.M.	1698.6	6,012,818.2	694,603.9
71-1-1("A")	1650.3	6,023,983.8	688,902.3
71-2-2("B")	1650.6	6,023,976.6	688,860.9
71-4-3("C")	1626.6	6,024,061.1	688,570.2

Note: Elevation of adits 71-1-1, 71-2-2, 71-4-3 = Elevation of adit floor.

T.B.M. is a reference point for adit 77-4-5.

4 DIAMOND DRILLING

Diamond drilling was undertaken by Canadian Longyear Drilling Limited and Tonto Drilling Limited of Vancouver, British Columbia. A total of 3355 metres of H.Q. drilling were completed in the Saxon East area and 3605 metres (H.Q.) in the Saxon South area. The drilling was performed by four skid-mounted Longyear 44 and Super 38 wireline rigs, complete with 10 foot and 5 foot triple tube core barrels. Usually the rigs were moved by D6 and/or D7 Caterpillar tractors. In the case of three drill holes, a stripped-down Super 38 rig was moved by helicopter. During the early part of the programme, water was usually supplied to the drill rigs by water truck. Later, water was pumped from nearby streams.

All holes were cased to bedrock, completely cored and, apart from SD 7719 which did not intersect any coal seams, were geophysically logged. During the second portion of the programme Denison required that controlled drilling be performed within the major coal seams in an effort to enhance coal core recovery. This controlled drilling meant reducing the rotation of the bit to a minimum, decreasing the water pressure, and increasing pressure on the rods. This method of drilling required skilled application but, although time consuming, greatly improved the coal core recovery.

The drill core was logged by a geologist who recorded basic lithologies, sedimentary structures, fossiliferous zones and identified marker horizons and any structural features, particularly

folds and faults. Coal seams along with roof and floor lithologies were logged in great detail with close reference to the detailed geophysical logs. Descriptive core logs are presented in Appendix IV, (Parts A & B).

Drill hole locations are shown on the detailed geology maps, isopach maps and thickness maps presented in the appendices.

5 GEOPHYSICAL LOGGING

The geophysical logging of drill holes was carried out by B.P.B. Instruments Limited of Calgary, Alberta. A sidewall multisonde, capable of producing gamma-ray, long-spacing density, bed resolution density and caliper logs was used together with a standard sonde for neutron logs. All log information was stored in digital form on cassette tape for subsequent reprocessing onto computer tape into a time and depth format.

All drill holes, except S.D. 7719, were logged at 5 centimetres to 10 metres (1:200) general scale for long-spacing density, gamma-ray, caliper and, for most drill holes, neutron-neutron and occassionally neutron-gamma. This was supplemented by detailed logs run at 5 centimetres to 1 metre (1:20) for long-spacing density, bed resolution density, gamma-ray and caliper over economic coal seam intervals. Water levels were recorded and logging was not carried out through the drill rods unless poor hole conditions required it. The geophysical logs for holes drilled (and deepened) in the 1977 Saxon exploration programme are presented in Appendix V,(Parts A, B, & C).

6 ADITING

A & B Contractors Ltd. of Calgary were contracted for all adits driven during the Saxon 1977 exploration programme. Once the seam had been excavated, a portal was established at or near the seam footwall and driveage commenced. Geological sampling was carried out every 2.5 metres and the free swelling index (F.S.I.) of the coal sample determined as a test for oxidation. The adits were usually driven a minimum of 50 metres and a maximum of 100 metres. Once consistantly high F.S.I.'s were obtained over a 10 to 15 metre interval the seam was cross-cut from floor to roof. The adit was then mapped and the face of the cross-cut geologically logged. Sample intervals were marked off and the various samples were taken and subsequently sent for laboratory analysis.

Drawings illustrating the adit plans, F.S.I. values and sampled intervals for new and re-sampled adits are presented in Volume III, Appendix 1.7.

7 COAL ANALYSIS

7.1 DRILL CORE ANALYSIS

Drill core coal samples from the 1977 programme were analysed by Warnock-Hersey Professional Services of Calgary, Alberta. Dependent upon core recovery and oxidation, the analysis of coal core samples followed are of three different procedures. The majority of the samples followed the standard analysis procedure (see Figure 7.1.1), while those with less than 50% core recovery followed a reduced procedure which omitted all but those washability cut pounts used to obtain the simulated product. If the F.S.I. values were less than 4 these samples were subject to the oxidized sample analysis procedure. This procedure was designed to determine the thermal generating value of the oxidized coal, however, because of the excellent quality of Saxon coal, this procedure was rarely used.

The standard analysis procedure was designed to maximize the quantity of clean coal which would later be used for additional analysis and blending. The product clean coal was obtained by cutting the various size fractions at predetermined cut points. These cut points were determined when 1976 Saxon drill core and adit data were fed into a computer simulated wash plant and cut to achieve a 7.5% ash product. Individual coal core analyses are presented in Volume III, Appendix 3.1. Results of the computer wash plant simulation are presented in Volume II and further described in Volume III.

SAXON DRILL CORES 1977 STANDARD ANALYSIS PROCEDURE

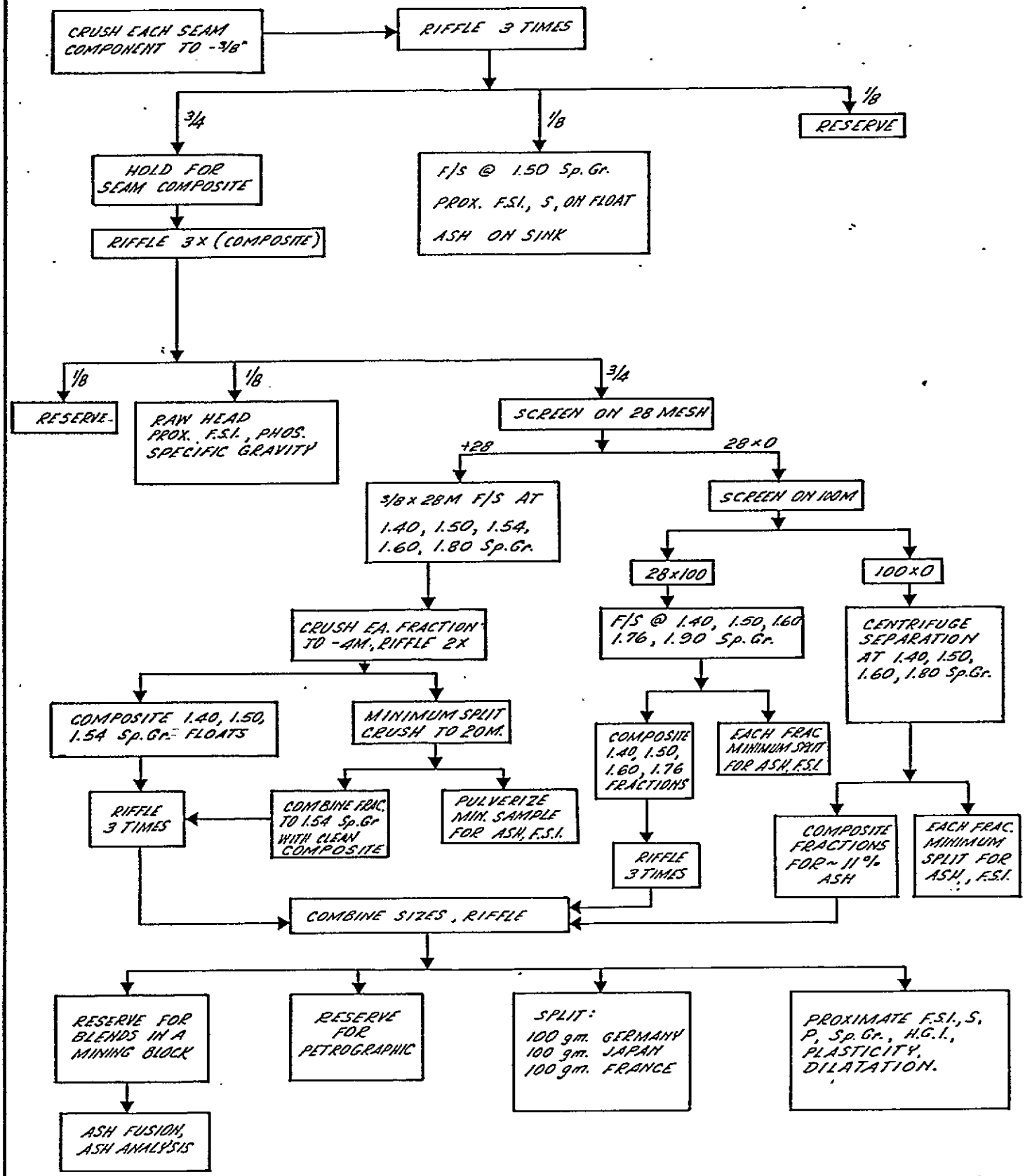

FIGURE 7.1.1

7.2 ADIT SAMPLE ANALYSIS

Usually, three types of samples were taken from each of the Saxon adits; channel samples, bulk samples, and attrition samples. The channel and bulk samples were shipped to Birtley Engineering Limited, Coal Science and Minerals Testing, in Calgary. Channel samples were generally used to verify the quality of the various bulk sample lots, to determine which lots were to be combined. The bulk samples usually consisted of approximately 50 drums and were washed at Birtley's pilot plant in Calgary.

The attrition samples consisted of six drums and underwent tumbling at Cyclone Engineering Limited in Edmonton. The attrited coal was then shipped to Warnock-Hersey (Calgary) for complete washability tests. Analyses of adit samples are presented in Volume III, Appendix 3.2.

8 TRENCHING

Trenching was done both by hand and by backhoe during the 1977 Saxon programme. The hand trenching was carried out by a crew of two, working with a geologist and a geological assistant. Both a climbing backhoe and a track-mounted backhoe were employed in the mechanized trenching. Most of the trenching was done in Saxon East. A total of 30 trenches were dug, although not all of these trenches successfully exposed major seams.

Hand trenching was carried out in the least accessible areas, where construction of roads or trails was impractical or undesirable. The crew was moved by helicopter and by foot. The hand trenches were unshored, so safety considerations limited their depth to a maximum of 1.5 metres. As a result, seams could not always be exposed in areas where there was a thick cover of soil, talus, or coal spoil. Most of the hand trenching was done in alpine areas, and a few successful trenches were also constructed below tree line.

Most of the mechanized trenching was done by a climbing backhoe. This machine was leased from Canadian Climbing Backhoe Ltd. of Edmonton, Alberta, and was operated by Mr. Roy Isley of Beaverlodge, Alberta. The climbing backhoe was towed to trenching areas by a log skidder, and could then leave the road and "walk" or "climb" to the trench site with the aid of limited slashing. The trenches dug by the climbing backhoe were up to 4 metres deep, so a protective

steel cage was constructed for the geologist to work in while logging the trench.

A backhoe mounted on a D4 caterpillar tractor was used to a limited extent while repairs were being carried out on the climbing backhoe. This machine was less maneuverable than the climbing backhoe, was hampered by swampy terrain, and could not dig as deep a trench. As a result, the D4 dug trenches in areas where coal seams crossed roads and trails. The D4 and its operators were contracted from Tompkins Contracting Limited of Fort St. John, B.C.

Detailed pictorial logs of trench sections are presented in Appendix 1.8.

9 ROAD CONSTRUCTION AND MAINTENANCE

Road construction and maintenance was carried out by Tompkins Contracting Limited of Fort St. John, B.C. and D. Isley & Sons of Beaverlodge, Alberta. The main access road was cleared of snow in late February and other access roads in the Saxon East area were cleared by the middle of March. In the Saxon South area, snow removal continued until early in April. Much time was spent up-grading the access road to Saxon South which for quite some distance, runs across muskeg type ground. Several new roads and cat trails were established and these have been fully described in the report entitled "Saxon Coal Limited 1977 Reclamation Report".

10 FIELD CAMPS

Room and board was supplied by Denison from a 50-man trailer camp situated where the main access road through the property crosses Saxon Creek. An additional camp capable of handling forty people was established at Saxon South for a five week period. Catering for both camps was contracted to Westcamp Construction Catering Limited of Edmonton.

11 RECLAMATION

A detailed report on the reclamation carried out by Denison on areas disturbed during the 1977 and 1976 Saxon exploration programme has already been prepared and presented to the Government of British Columbia (Saxon Coal Limited 1977 Reclamation Report).

12 ACKNOWLEDGEMENTS

12.1 CONTRACTORS

The following table summarizes the major contractors employed by Denison Coal Limited on the Saxon project during the 1977 program and their areas of responsibility under Denison's supervision:

Tompkins Construction Ltd.	- drill site preparation
Day Isley & Sons Ltd.	and road construction
McCord Helicopters Ltd.	- chartered aircraft
Nahanni Helicopters Ltd.	- chartered aircraft
Okanagan Helicopters Ltd.	- chartered aircraft
West Camp Construction Catering Ltd.	- catering and field camp rental
Territorial Leasing Ltd.	- catering and field camp rental
B.P.B. Instruments Ltd.	- geophysical logging
Bowmac Truck Rentals Ltd.	- truck rental
A & B Contracting	- adit construction
Tonto Drilling Ltd.	- diamond drilling
Canadian Longyear Drilling Ltd.	- diamond drilling
Warnock-Hersey Laboratories Ltd.	- coal core testing
Cyclone Engineering Sales Ltd.	- coal core testing
Birtley Laboratories Ltd.	- adit sample testing
Dept. of Energy Mines & Resources (E.M.R.)	- coke tests

12.2 EXPLORATION PROGRAMME PERSONNEL

During the 1977 exploration programme for Saxon Coal Limited, technical supervision and data analysis was carried out by the staff of Denison Coal Limited with assistance from personnel from Montan Consulting. The professional staff involved are listed below:

DENISON MINES LIMITED

Mr. Alan A. Johnson	Exploration Manager
Mr. Gordon P. Gormley	Chief Geologist
Mr. Ivan Delas	Project Geologist
Mr. Hans Palloks	Project Geologist
Mr. Ed Santiago	Senior Geologist
Mr. Matthew Duford	Geologist
Ms. Cathy Bevan	Geologist
Mr. Bob Elgby	Surveyor
Ms. Georgia Hoffman	Geologist
Mr. John H. Perry	Geologist
Mr. Roger Shields	Geological Technician (Camp and Reclamation Manager)
Mr. Buck C. Wong	Geological Engineer

Extremely valuable assistance was also provided by a team of technically qualified geological assistants.

G. R. JORDAN CONSULTING LTD.

Mr. G. R. Jordan	Consultant Geologist

MONTAN CONSULTING

Mr. Dirk Bisping	Geological Assistant
Mr. Karl Engels	Consultant Geologist
Dr. Manfred Von Sperber	Consultant Geologist

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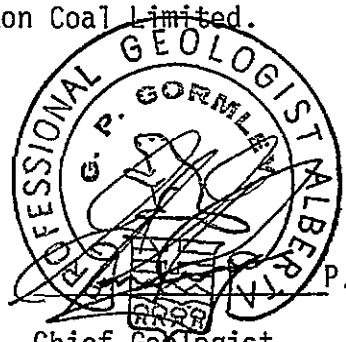
January 12th, 1978

STATEMENT OF QUALIFICATION

I, Gordon P. Gormley, graduated from the University of British Columbia with a B.Sc. (Geology) degree in 1970 and have been a member of the Association of Professional Engineers, Geologists and Geophysicists of the Province of Alberta since 1972. Since graduation I have been employed as a geologist, project geologist and chief geologist and have worked on various coal projects in British Columbia and Alberta.

I consider that this report accurately documents the exploration programme undertaken by Saxon Coal ~~Limited~~.



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INTRODUCTION + SUMMARY

GEOLOGY

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SAXON COAL LIMITED

SAXON PROJECT FEASIBILITY STUDY

OCTOBER 1977

VOLUME II

GEOLOGY, RESERVES AND QUALITY

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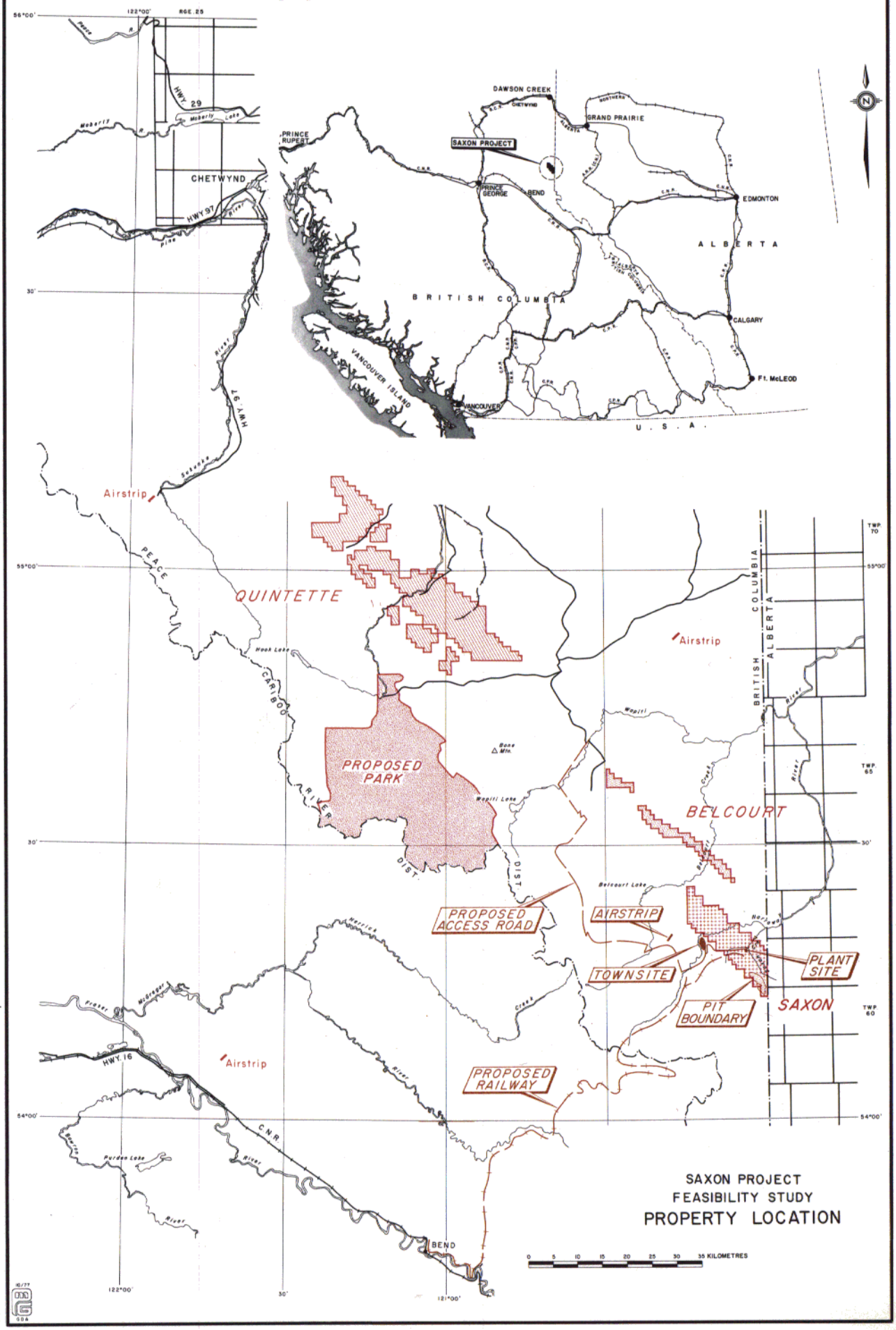

SAXON PROJECT
FEASIBILITY STUDY
PROPERTY LOCATION

Within this report International System (S.I.) weights and measures have been used throughout. British standards together with S.I. units have been stated in some instances for comparative purposes. Similarly, all maps and diagrams are prepared according to S.I. standards, except that degrees of dip rather than grads are used on geological maps.

PREFACE

This volume presents the geology, reserves and quality of the Saxon property based on all pertinent data available including that of the 1977 exploration programme. Much of the detail of the results obtained from the 1977 programme has been included in Volume III - Geology, Reserves and Quality - Appendices. Data obtained from exploration programmes prior to 1977 has been previously presented in the following geological reports:

1) Saxon Project Preliminary Feasibility Report 1976
   Volume II Technical Studies

2) Denison Mines (B.C.) Limited
   1975 Data Summary for Saxon Coal Limited

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SUMMARY AND INTRODUCTION

PART ONE

SUMMARY AND INTRODUCTION

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1.1 SUMMARY

111 GEOLOGY

The basic structure underlying the Saxon property is that of a complex syncline or synclinorium which brings coal bearing Gates member strata to the surface at its edges. The Saxon East reserve area is found on the eastern limb of the major synclinorium where consistently steep dips are found in blocks suitable for hydraulic mining. The Saxon South reserve area is located in the southwestern corner of the property where the Gates strata are faulted and folded into a series of anticlines which provide coal reserves that are suitable for open pit mining. Coal seams within the mine plans for these areas have the following weighted average thicknesses:

RESERVE AREA	MINE	SEAM NO.	WEIGHTED AVERAGE THICKNESS (m)
Saxon East Block I	No. 1	4	9.22
	No. 1	2	5.53
	No. 2	4	9.70
	No. 2	2	5.09
Saxon East Block II	No. 1	4	3.99
	No. 1	1	5.55
Saxon South	South Pit	10	1.20
		5	1.42
		4	9.37
		3	2.01
		2	4.76
		1	3.99
Saxon South	North Pit	10	1.22
		5	1.46
		4	8.21
		3	1.87
		2	5.85
		1	3.94

112 RESERVES

A total reserve of 468.5 million tonnes of raw coal in place has been delineated to a depth of 500 metres throughout the Saxon property from areas having various amounts of exploration work beyond that of geological mapping. In addition to the above total, an exploration potential of some 260 million tonnes of coal has been estimated from areas in which only geological mapping has been done.

The following reserves have been outlined by extensive exploration within the proposed mine plans and possible mine plan extensions:

MINE	IN PLACE RAW COAL (TONNES X 10^6)	CLEAN COAL (TONNES X 10^6)
No. 1 Underground (Hydraulic)	44.9	19.3
No. 2 Underground (Hydraulic)	38.9	16.2
North Pit	45.8	25.6
South Pit	20.9	11.7
North Pit Extension	5.6	3.2
TOTAL	156.1	76.0

It should be noted that the 37.3 million tonnes of clean coal shown above for the planned open pit mines have a stripping ratio of 7.64 cubic metres of overburden to one tonne of plant feed coal. The North Pit extension of these reserves was calculated to contain 3.2 million tonnes of clean coal at effectively the same strip ratio.

In addition to the 35.5 million tonnes of clean coal available from the planned No. 1 and 2 mines at Saxon East, a further reserve of 68.2 million tonnes of mineable coal is available to a depth of approximately 500 metres to allow for further mine planning or the development of alternate mine plans.

Although seam Number 2 in Saxon East has a poorer than expected clean coal yield in part of the proposed mine area, there are a number of ways in which this coal might be replaced by mining from other areas. While various mine plans remain to be considered to obtain the optimum layout, it is clear from the reserve calculations that far more than sufficient coal reserves are available to satisfy the requirement for 2 million tonnes per year of clean coal production. In fact, since seam 2 is the most affected by faulting and a 10% allowance has been made in costing the underground main driveages to accommodate structures like this, if a better seam is substituted, some improvement in overall mining costs may be possible. Also, selection of any other seam would also improve the average clean coal yield and may further reduce development costs.

113 QUALITY

.1 Coal Quality

Although this study is based on significantly different mining plans compared with those that were used for the preliminary 1976 Saxon study, there is almost no difference in the average annual coal quality which is to be expected from the mines. Except that, with the present mining schedule the reduction in volatile content may not be as gradual in the early mining periods and the volatile content may stabilize around 22% on a dry mineral-matter free basis during periods 6, 7, and 8. The following table summarizes the ranges of the average period product quality for the Saxon project based on the combined production from the open pit and underground mines.

	MINIMUM VOLATILE AND ASH	PROJECT WEIGHTED AVERAGE	MAXIMUM VOLATILE AND ASH
Total Moisture	----	6.0%	----
Residual Moisture	0.6%	0.8%	1.0%
Ash	7.3%	7.5%	7.7%
Volatiles	21.3%	22.5%	23.7%
Fixed Carbon	70.8%	69.2%	67.6%
Sulphur	0.41%	0.44%	0.47%
Phosphorous	0.013%	0.016%	0.019%
F.S.I.	6	6½	7

.2 Coke Quality

The coking test results for the 1976 samples and a few of the 1977 samples have now been received and they confirm that the Saxon coals are consistently good coking coals.

The tests from Japan have shown that Saxon coals have unusually high JIS 30/15 drum indices with the majority of laboratories reporting indices over 94 and the other labs reporting between 91.5 and 92.5 on the pure coal samples. The comparative tests on the Saxon coals indicated that they were as good or better than comparable western Canadian coking coals.

In France the Saxon coals were tested in comparison to Polish coals and low volatile Australian coals. The Saxon coal blend

was shown to be somewhat superior to the Polish coal and roughly equivalent to the Australian coal despite a relatively light charge density.

The tests results from Germany indicate that very good strength values (over 77% ISO 40) can be obtained by blending Saxon coal with 70% medium volatile coking coal from the Ruhr. Blending with a combination of high and medium volatile coals from other regions also yielded satisfactory to good results.

1.2 INTRODUCTION

This volume and the associated appendices in Volume III have been prepared with the following objectives:

a) to report fully on the 1977 Saxon field exploration work.

b) to incorporate the 1977 field results with those from previous years and to prepare detailed reserve calculations relating to specific mine plans which have been based on previous data and preliminary data from the 1977 program.

c) to calculate reserves for and assess the mining potential of alternate areas where discrepancies have resulted between the results of calculations based on preliminary information and the final ones presented here.

d) to use all new and old drill core washability data and analyses to re-assess the potential clean coal yield of the mined coal and the quality of the clean coal product.

e) to assess the coking characteristics of the Saxon coals.

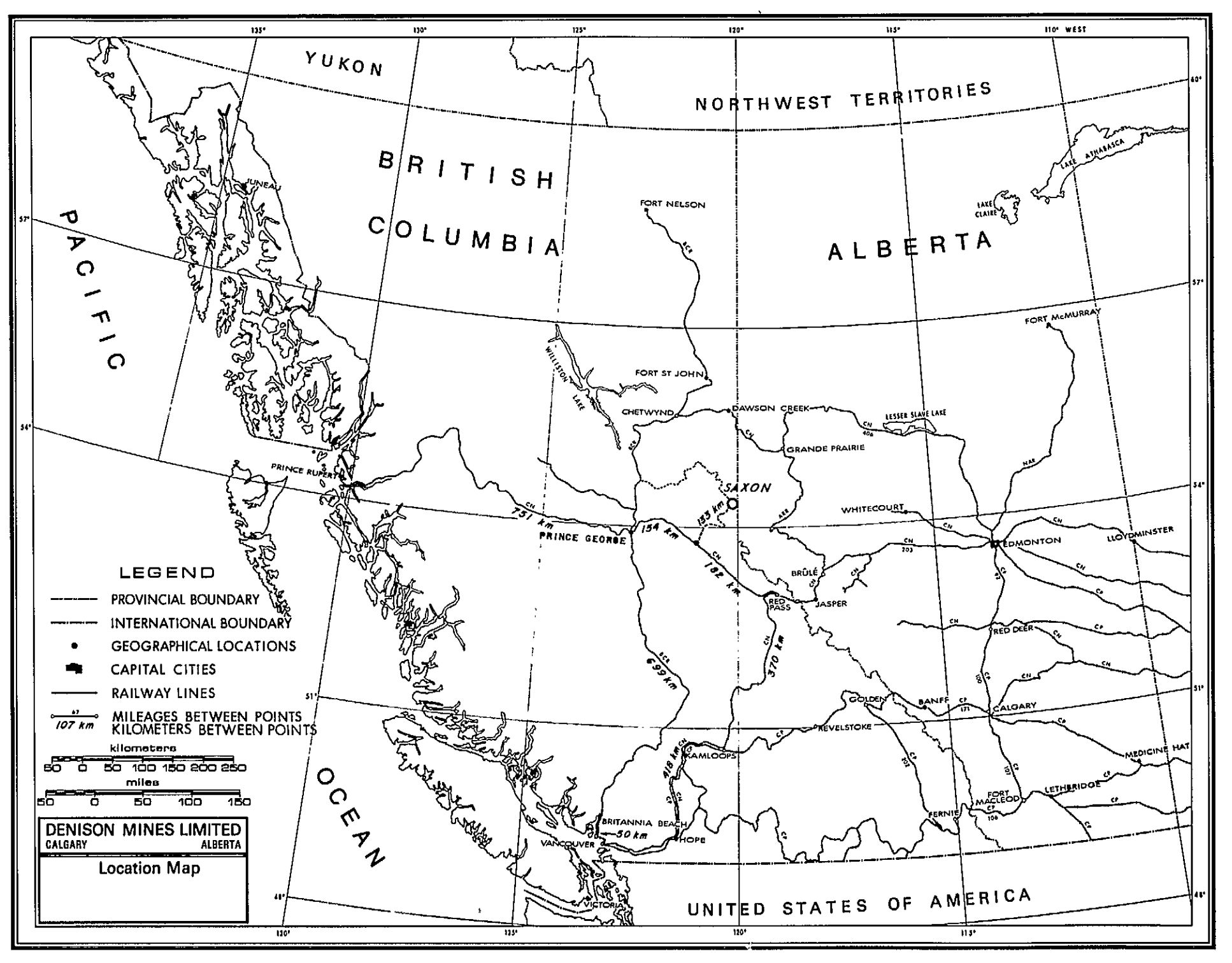
This report has been prepared simultaneously with the associated reports on open pit mining, underground mining, and preparation plant design, the preparation of which proceeded on the basis of all 1976 and prior data as well as preliminary 1977 field data. Consequently, some discrepancies are present in the results of reserve calculations as they relate to specific mine plans. In general, however, these results show very good overall agreement with the proposed mine areas. Details are given in the appropriate sections of this report.

Some new geological informaton was obtained from this year's field work, particularly in Saxon East where seam stratigraphic information was significantly expanded and reasonably good definition was obtained on the fault problem that had originally been identified in the Saxon camp area. This information along with minor modifications to the Saxon South geology are presented in Part 2 of this volume.

Reserve calculations for the proposed mine areas, alternate mine areas, and possible mine area extensions have been completed as have geological reserves to a depth of 500 metres. These results are presented in Part 3 of this volume along with reserve

summaries which include reserves in areas that were explored prior to 1977. These additional reserves were not recalculated for this report but were simply extracted from the 1976 report on the Saxon project where the details of the calculations can be found.

Most of the coal analysis from the 1977 program has been completed and the results are represented in part along with summaries of the previous work. Only a few coke test results which have been received from the 1977 work, and various 1976 results are included in Part 4 of this report or in related Appendices in Volume III.


YUKON
NORTHWEST TERRITORIES
BRITISH COLUMBIA
ALBERTA
PACIFIC OCEAN
UNITED STATES OF AMERICA
JUNEAU
FORT NELSON
LAKE ATHABASCA
LAKE CLAIRE
FORT McMURRAY
WILLISTON LAKE
FORT ST JOHN
CHETWYND
DAWSON CREEK
LESSER SLAVE LAKE
GRANDE PRAIRIE
PRINCE RUPERT
SAXON
WHITECOURT
731 km
PRINCE GEORGE
154 km
153 km
182 km
EDMONTON
LLOYDMINSTER
BRÛLÉ
RED PASS
JASPER
RED DEER
699 km
370 km
GOLDEN
BANFF
CALGARY
REVELSTOKE
MEDICINE HAT
418 km
KAMLOOPS
LETHBRIDGE
FORT MACLEOD
FERNIE
BRITANNIA BEACH
50 km
HOPE
VANCOUVER
VICTORIA
LEGEND
PROVINCIAL BOUNDARY
INTERNATIONAL BOUNDARY
GEOGRAPHICAL LOCATIONS
CAPITAL CITIES
RAILWAY LINES
MILEAGES BETWEEN POINTS
KILOMETERS BETWEEN POINTS
107 km
kilometers
50 0 50 100 150 200 250
miles
50 0 50 100 150
DENISON MINES LIMITED
CALGARY ALBERTA
Location Map

1.3 PROPERTY, LOCATION, AND ACCESS

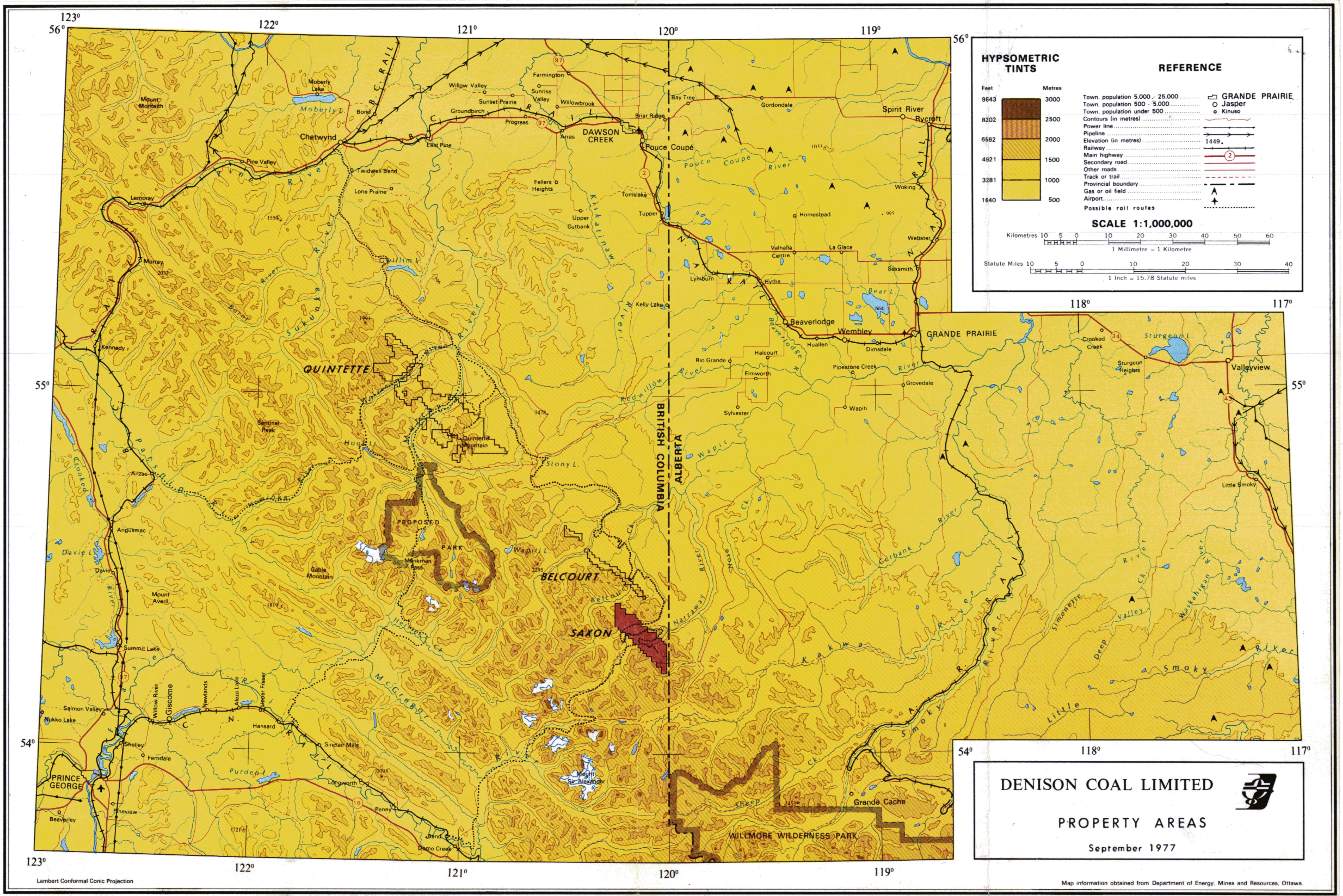
The Saxon coal property consists of 53 coal licences (numbers 2763 through 2812 inclusive) which were issued under the British Columbia Coal Act of 1974 to Saxon Coal Limited. These licences include an area of about 13,592 hectares (33,585 acres), and are shown on Drawing No. SXON 75-0587-R01 and listed on the pages following that drawing at the end of this section.

The eastern boundary of the Saxon property is coincident with the British Columbia/Alberta border about 160 km south of Dawson Creek, B.C. and 185 km east of Prince George, B.C. The location of the Saxon property with respect to the Rocky Mountains and surrounding areas, other coal properties and the towns of Prince George, Dawson Creek, Grande Prairie and Grande Cache is shown on the Property Area map on the following page. The property is located to cover exposures of the Lower Cretaceous Commotion and Gething Formations, which are the main coal-bearing horizons in this part of the foothills coal belt.

The centre of the Saxon property is transected by the broad valley of the Narraway River. This valley forms the main transportation corridor for potential routes going both east and west from the property. To the west, the headwaters of the Narraway River meet those of Jarvis Creek at Gray Pass. A natural route to the west lies from Gray Pass, through Jarvis Creek, the McGregor River Valley, and Walker Creek, to Bend, B.C. The distance from the property to Bend, B.C. is 133 km. Other routes, both east and southeast, result in longer total distances to the B.C. coast than the western route, however B.C. rail is also considering a route to the northwest from the Narraway River (or Saxon Creek) which would tie the entire lower portion of the northeast coal field, including the Saxon property, into the rail system that it has planned for the Quintette area. All of these routes are shown on the previously mentioned map entitled "Property Areas".

From Bend there are three alternative routes to the Pacific Coast: by Canadian National Railway to Vancouver (970 km); by Canadian National Railway to Prince Rupert (905 km); or by Canadian National Railway to Prince George, B.C., then by British Columbia Railway to Britannia Beach, B.C. (853 km). These routes as well as the proposed northern system are shown on the map on the preceding page.

The Saxon property is also suitably located for the transportation of coking coal to an Eastern Canadian market. The main access route to the east follows the valley of the Narraway River from the centre of the property to existing rail access in the vicinity of Grande Prairie, Alberta. This route involves no severe geographical features which would affect rail construction.



HYPSOMETRIC TINTS
Feet
Metres
9843 3000
8202 2500
6562 2000
4921 1500
3281 1000
1640 500
REFERENCE
Town, population 5,000 - 25,000 GRANDE PRAIRIE
Town, population 500 - 5,000 Jasper
Town, population under 500 Kinuso
Contours (in metres)
Power line
Pipeline
Elevation (in metres) 1449.
Railway
Main highway
Secondary road
Other roads
Track or trail
Provincial boundary
Gas or oil field
Airport
Possible rail routes
SCALE 1:1,000,000
Kilometres 10 5 0 10 20 30 40 50 60
1 Millimetre = 1 Kilometre
Statute Miles 10 5 0 10 20 30 40
1 Inch = 15.78 Statute miles
DENISON COAL LIMITED
PROPERTY AREAS
September 1977
QUINTETTE
BELCOURT
SAXON
PROPOSED PARK
BRITISH COLUMBIA
ALBERTA
WILLMORE WILDERNESS PARK
DAWSON CREEK
GRANDE PRAIRIE
PRINCE GEORGE
Chetwynd
Grande Cache
Beaverlodge
Wembley
Spirit River
Pouce Coupe
Valleyview
Lambert Conformal Conic Projection
Map information obtained from Department of Energy, Mines and Resources, Ottawa.

1.4 SUMMARY OF EXPLORATION WORK

141 . PRE 1977 EXPLORATION WORK

On the basis of published regional geology that outlined Lower Cretaceous stratigraphy but did not document the existence of significant coal deposits, Denison Mines Limited acquired 53 coal licences in the Saxon area in the fall of 1970. After a brief preliminary examination, these licences were drilled late in 1970 and the first major discoveries of potentially mineable coal resources were made.

This initial program was followed by more extensive drilling and limited geological mapping in 1971 and 1972. When possible, samples taken from this program were sent to a commercial laboratory for thorough testing of their chemical properties and cleaning characteristics. In addition, four adits were driven and bulk samples were taken, washed to approximately 7% ash, and shipped to Ottawa for coke testing In 1974, the British Columbia Government repealed the Coal Act of 1960 under which the original coal licences were issued, and therefore the licences were replaced by new licences under the Coal Act (1974).

The 1975 program consisted of helicopter supported geological mapping carried out by three geological teams. This exploration program included a re-evaluation of the proposed hydraulic mining area in Saxon East by detailed surface mapping. In addition, the first tentative identification of Gates Member strata in Saxon West was made, and the overall stratigraphy and structure of the Saxon South block was mapped. The mapping of the Saxon South block was highlighted by the discovery of numerous thick coal exposures which were to become the prime target for the 1976 exploration program. At that time no positive correlation of those seams could be made with the coal seams which had been defined in Saxon East (see Denison Mines (B.C.) Limited 1975 Data Summary for Saxon Coal Limited). However, the 1976 program provided the information for such a correlation to be made. Work carried out by Saxon Coal Limited under the management of Denison Coal Limited during the 1976 program is tabulated below:

DIAMOND DRILLING

Saxon South	14 Diamond Drill Holes
Saxon West	2 Diamond Drill Holes
Saxon East	4 Diamond Drill Holes

SEAM TRENCHING

Saxon South	60 Hand Trenches
Saxon West	2 Hand Trenches
Saxon East	1 Hand Trench
and	
	2 Cat Trenches

ADITS

Saxon South	Seam 2	76-2-3
	Seam 4	76-4-2
	Seam 4	76-4-4
Saxon East	Seam 4	76-4-1

The results of this program are fully documented in the report entitled *1976 Data Summary for Saxon Coal Limited.*

142 THE 1977 EXPLORATION WORK

The objectives of the 1977 Exploration Program have been detailed in section 1.2 and are summarized as follows:

1) to further delineate the coal reserves in Saxon East and Saxon South in the preliminary mine plan areas.

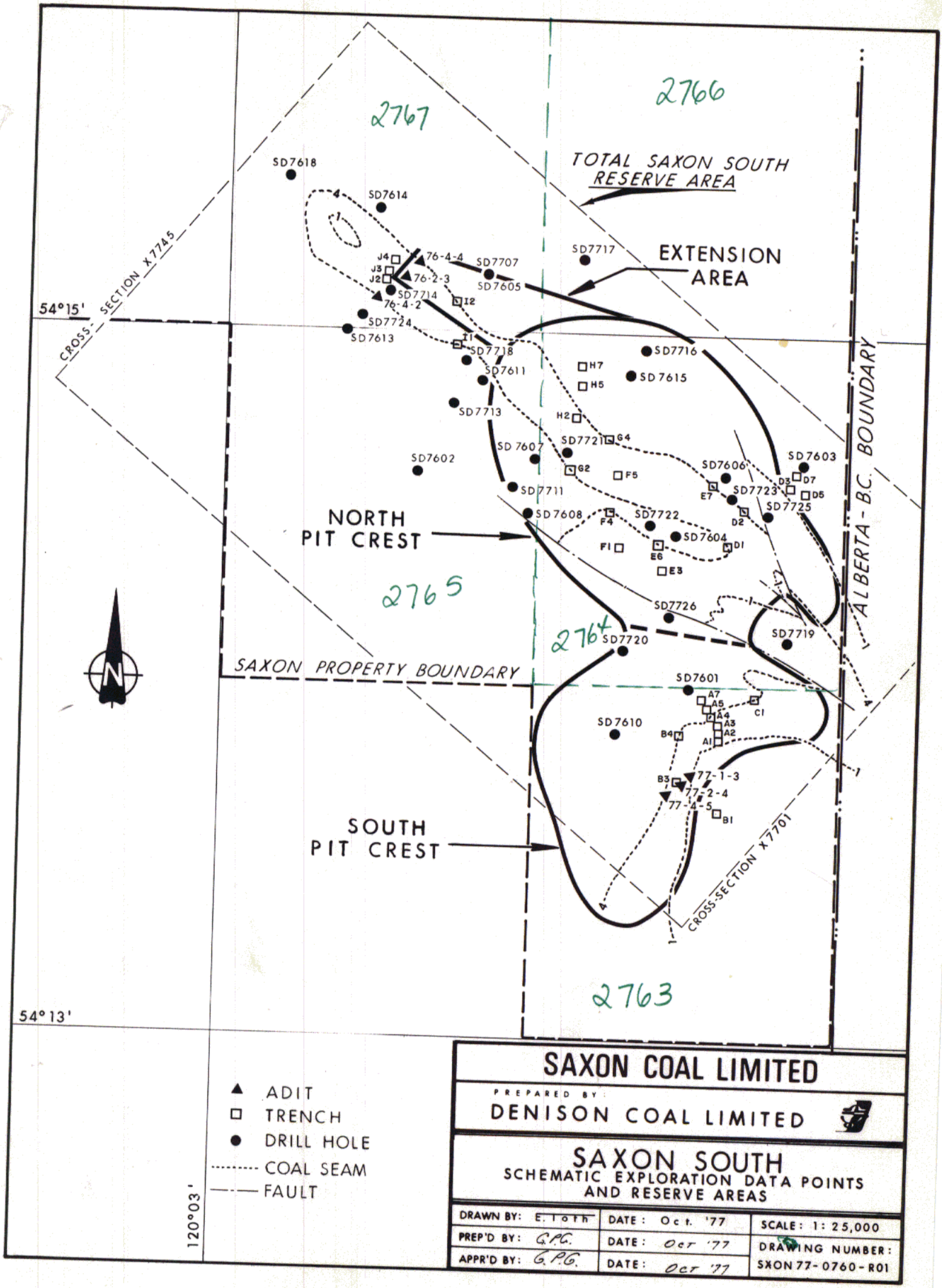
2) to acquire more coal quality data from drill core and adits.

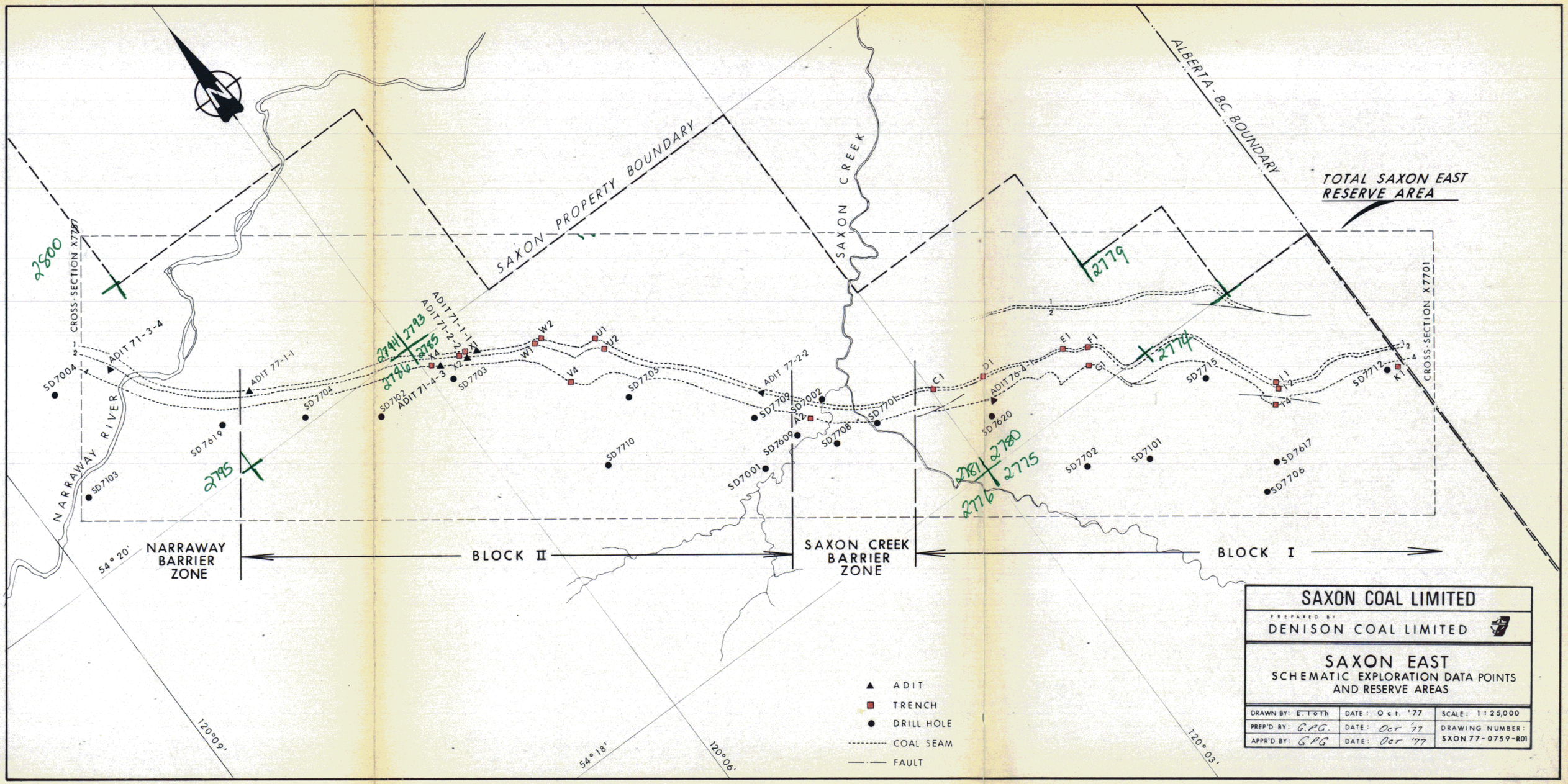
To achieve these objectives, a program of diamond drilling, aditing, trenching and geological mapping was carried out. Each phase of the program is described below and illustrated on the two following pages.

.1 Diamond Drilling

The following table summarizes the amount of diamond core drilling sampling and testing which was carried out in each of the Saxon areas during 1977.

Saxon South	15 Diamond Drill Holes
Saxon East	11 Diamond Drill Holes
Saxon East	2 Pre 1977 Drill Holes Deepened
Total	28


2767
2766
2765
2764
2763
TOTAL SAXON SOUTH RESERVE AREA
EXTENSION AREA
NORTH PIT CREST
SOUTH PIT CREST
SAXON PROPERTY BOUNDARY
ALBERTA - B.C. BOUNDARY
CROSS-SECTION X7745
CROSS-SECTION X7701
54°15'
54°13'
120°03'
SD7618
SD7614
SD7707
SD7605
SD7717
SD7714
SD7724
SD7613
SD7718
SD7716
SD7611
SD7615
SD7713
SD7721
SD7602
SD7607
SD7606
SD7603
SD7711
SD7723
SD7725
SD7608
SD7722
SD7604
SD7726
SD7720
SD7719
SD7601
SD7610
76-4-4
76-2-3
76-4-2
77-1-3
77-2-4
77-4-5
J4
J3
J2
I2
I1
H7
H5
H2
G4
G2
F5
F4
F1
E7
E6
E3
D3
D7
D5
D2
D1
A7
A5
A4
A3
A2
A1
C1
B4
B3
B1
ADIT
TRENCH
DRILL HOLE
COAL SEAM
FAULT
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
SAXON SOUTH
SCHEMATIC EXPLORATION DATA POINTS AND RESERVE AREAS
DRAWN BY: E. Toth
DATE: Oct. '77
SCALE: 1:25,000
PREP'D BY: G.P.G.
DATE: Oct '77
APPR'D BY: G.P.G.
DATE: Oct '77
DRAWING NUMBER: SXON 77-0760-R01



SAXON COAL LIMITED

PREPARED BY
DENISON COAL LIMITED

SAXON EAST
SCHEMATIC EXPLORATION DATA POINTS AND RESERVE AREAS

DRAWN BY: E. Toth	DATE: Oct. '77	SCALE: 1:25,000
PREP'D BY: G.P.G.	DATE: Oct '77	DRAWING NUMBER: SXON 77-0759-R01
APPR'D BY: G.P.G.	DATE: Oct '77	

The total length drilled in this program was 6993 metres.

.2 Trenching

The presence of surface seam exposures in Saxon East was used as much as possible to complement the drill core information and to provide as much detail of lateral seam variations as could be gained. The methods of trench construction were by hand and back hoe. The trenches constructed in each of the Saxon East blocks are tabulated below, located on respective geology maps and detailed in Volume III, Appendix 1.8.

Block I	6 Hand Trenches
	1 Back Hoe Trench
Block II	4 Hand Trenches
	5 Back Hoe Trenches
	16 Total

.3 Aditing

To allow bulk sampling, five adits involving some 290 metres of total driveage were constructed. The first of these adits, No. 77-1-1, tested seam 1 in Saxon East, Block II and 77-2-2 tested seam 2 in Block II. In addition, 76-4-1 was resampled to provide confirmation of coke test results and to obtain additional washability data. In Saxon South, adits 77-1-3, 77-2-4, and 77-4-5 were constructed in seams 1, 2 and 4, respectively. Plans showing details of the adits, their location, coal quality and seam sections are included in Volume III Appendix 1.7. Most previous and all 1977 drill holes and adits were resurveyed or surveyed during the 1977 programme.

.4 Geological Mapping

To complement the 1975 and 1976 Mapping Programmes, further geological mapping was carried out in the planned mine areas, particularly at Saxon East.

A compilation of all of the geological mapping carried out during 1977 and previous years was prepared at scales of 1:2500 for Saxon South, and 1:5000 for Saxon East. Reductions of these maps plus a 1:50,000 scale geological compilation have been included in the appendices of this volume.

.5 Testing and Analysis

An extensive program of geophysical borehole logging, coal core analysis, bulk coal sample testing and coke testing, similar to the 1976 programme has been undertaken for 1977.

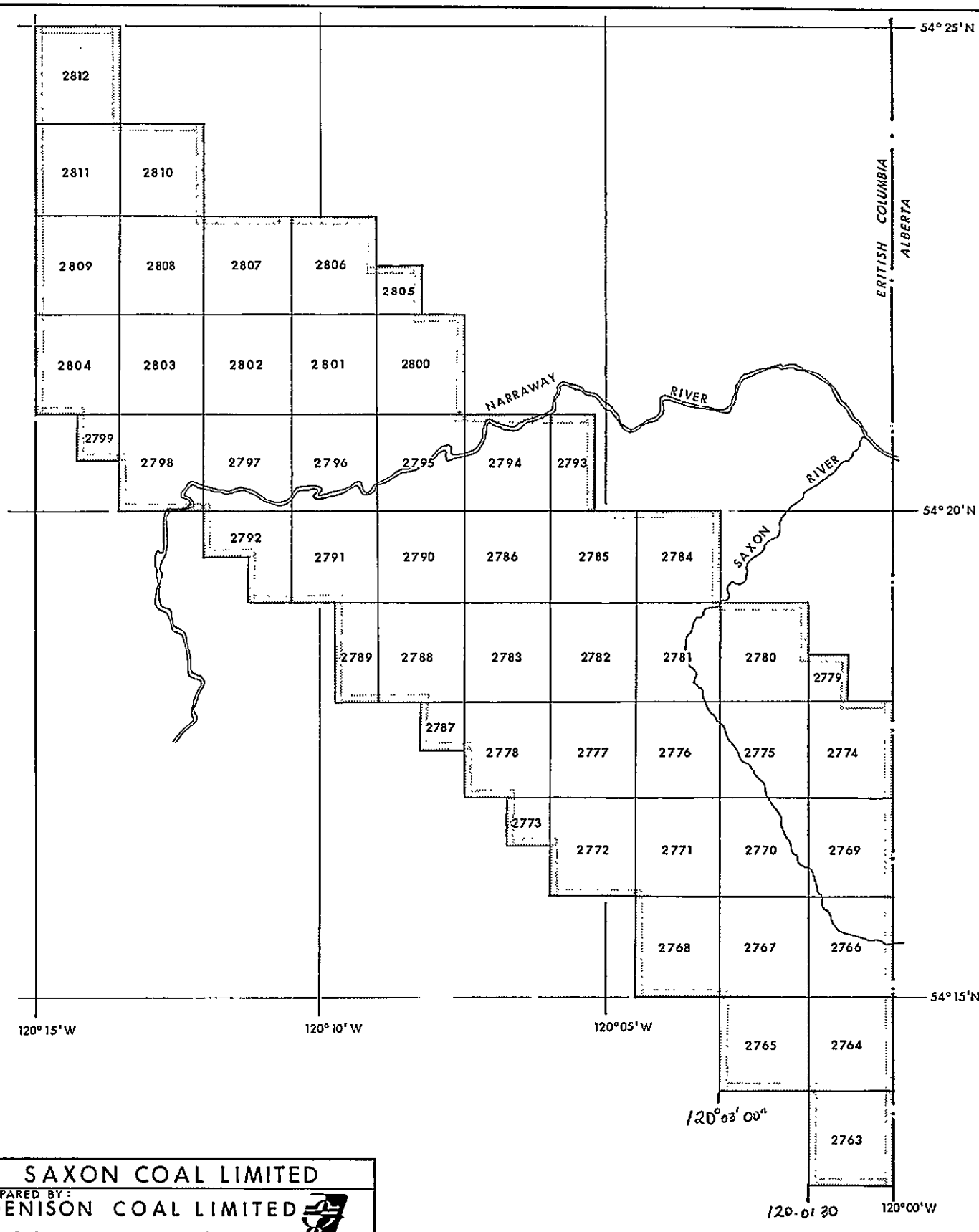
Geophysical logging using gamma ray, neutron-neutron, caliper and several density tools was carried out on 27 drill holes. This data has been extensively incorporated with geologist's detailed core logs to prepare the log summaries included in Volume III Appendix 1.1 as well as to determine seam thicknesses for reserve calculations and to prepare correlation diagrams.

The coal core and adit samples have been extensively tested by Canadian coal laboratories and the results of this phase of the program are fully outlined in the Coal Quality section of this report.

.6 Contractors

The following table summarizes the major contractors employed by Denison Coal Limited on the Saxon project during the 1977 program and their areas of responsibility under Denison's supervision:

Tomkins Construction Ltd.	- drill site preparation
Day Isley & Sons Ltd.	and road construction
McCord Helicopters Ltd.	- chartered aircraft
Nahanni Helicopters Ltd.	- chartered aircraft
Okanagan Helicopters Ltd.	- chartered aircraft
West Camp Construction Catering Ltd.	- catering and field camp rental
Territorial Leasing Ltd.	- catering and field camp rental
B.P.B. Instruments Ltd.	- geophysical logging
Bowmac Truck Rentals Ltd.	- truck rental
A & B Contracting	- adit construction
Tonto Drilling Ltd.	- diamond drilling
Canadian Longyear Drilling Ltd.	- diamond drilling
Warnock-Hersey Laboratories Ltd.	- coal core testing
Cyclone Engineering Sales Ltd.	- coal core testing
Birtley Laboratories Ltd.	- adit sample testing
Dept. of Energy Mines & Resources - E.M.R.	- coke tests



SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON COAL LICENSES

1 0 1 2 MILES

DRAWN BY: J.W.K.	DATE: OCT., 75	SCALE: 1: 100,000
APPROVED BY: G.P.G.	DRAWING NO: SXON 75-0587-R01	

TABLE 1-1

SAXON PROPERTY
Current Schedule of Coal Licences

Saxon Project Feasibility Report
October 1977

Licence No.	Date Issued	Acres	Land Description		
			Series	Block	Units
2763	Oct 16/74	748	93-I-1	I	61, 62, 71, 72
2764	"	748	93-I-1	I	81, 82, 91, 92
2765	"	748	93-I-1	I	83, 84, 93, 94
2766	"	747	93-I-8	A	1, 2, 11, 12
2767	"	747	93-I-8	A	3, 4, 13, 14
2768	"	747	93-I-8	A	5, 6, 15, 16
2769	"	747	93-I-8	A	21, 22, 31, 32
2770	"	747	93-I-8	A	23, 24, 33, 34
2771	"	747	93-I-8	A	25, 26, 35, 36
2772	"	747	93-I-8	A	27, 28, 37, 38
2773	"	187	93-I-8	A	39
2774	"	747	93-I-8	A	41, 42, 51, 52
2775	"	747	93-I-8	A	43, 44, 53, 54
2776	"	747	93-I-8	A	45, 46, 55, 56
2777	"	747	93-I-8	A	47, 48, 56, 58
2778	"	747	93-I-8	A	49, 50, 59, 60
2779	"	187	93-I-8	A	62
2780	"	746	93-I-8	A	63, 64, 73, 74
2781	"	746	93-I-8	A	65, 66, 75, 76
2782	"	746	93-I-8	A	67, 68, 77, 78
2783	"	746	93-I-8	A	69, 70, 79, 80
2784	"	746	93-I-8	A	85, 86, 95, 96
2785	"	746	93-I-8	A	87, 88, 97, 98
2786	"	746	93-I-8	A	89, 90, 99, 100
2787	"	187	93-I-8	B	51
2788	"	746	93-I-8	B	61, 62, 71, 72
2789	"	373	93-I-8	B	63, 73
2790	"	746	93-I-8	B	81, 82, 91, 92
2791	"	746	93-I-8	B	83, 84, 93, 94
2792	"	560	93-I-8	B	85, 95, 96

TABLE 1-1 (Continued)

Licence No.	Date Issued	Acres	Land Description		
			Series	Block	Units
2793	Oct 16/74	373	93-I-8	H	8, 18
2794	"	746	93-I-8	H	9, 10, 19, 20
2795	"	746	93-I-8	G	1, 2, 11, 12
2796	"	746	93-I-8	G	3, 4, 13, 14
2797	"	746	93-I-8	G	5, 6, 15, 16
2798	"	746	93-I-8	G	7, 8, 17, 18
2799	"	187	93-I-8	G	19
2800	"	746	93-I-8	G	21, 22, 31, 32
2801	"	746	93-I-8	G	23, 24, 33, 34
2802	"	746	93-I-8	G	25, 26, 35, 36
2803	"	746	93-I-8	G	27, 28, 37, 38
2804	"	746	93-I-8	G	29, 30, 39, 40
2805	"	187	93-I-8	G	42
2806	"	745	93-I-8	G	43, 44, 53, 54
2807	"	745	93-I-8	G	45, 46, 55, 56
2808	"	745	93-I-8	G	47, 48, 57, 58
2809	"	745	93-I-8	G	49, 50, 59, 60
2810	"	745	93-I-8	G	67, 68, 77, 78
2811	"	745	93-I-8	G	69, 70, 79, 80
2812	"	746	93-I-8	G	89, 90, 99, 100
		33,585			

PART TWO

GEOLOGY

PART TWO

GEOLOGY

CONTENTS

2.1 GEOLOGICAL SUMMARY

The Saxon property lies within Lower Cretaceous strata of the Rocky Mountain foothills of British Columbia, adjacent to the Alberta provincial boundary.

The stratigraphic sequence on the property is bounded at the top by Shaftesbury Formation sediments and at the bottom by rocks of the Nikanassin Formation. A complete sequence from Cadomin conglomerate through Gething Formation, Moosebar and Commotion Formation has been deposited upon the Nikanassin sediments. The Commotion Formation contains three defineable members on the property: the Gates, Hullcross and Boulder Creek Members.

The non-marine sediments of the Nikanassin Formation, Gething Formation and Boulder Creek Member all contain coaly horizons. However, the work to date has defined only the seams of the Gates Member as having sufficient thickness and lateral extent as well as the required quality to allow them to be considered for extraction.

The strata on the Saxon property have been folded and thrust to form a major complex syncline trending along the property in a north westerly direction. The syncline plunges from both the northern and southern ends of the property towards the centre.

The central syncline is flanked to the east by well exposed westerly dipping sediments which include the Gates Member coal seams. These consistantly dipping strata form panels which are suitable for mining by underground hydraulic methods. On the southwest flank of the central syncline a complex faulted anticlinorium again exposes Gates Member sediments and forms a structure suitable for mining by surface methods.

In Saxon East three Gates Member coal seams, numbered 1, 2 & 4 from the base up, can be considered for mining, while in Saxon South six mineable seams numbered 1 to 5 and No. 10 have been defined, although even in this area seams 1, 2, & 4 provide over 85% of the reserves.

While geological structures are a major factor on the Saxon property in so far as defining mining areas is concerned, they will not have a large effect on mining within each block, although some selectivity will be required.

2.2 STRATIGRAPHY

Within the Saxon property the Minnes Group (Nikanassin Formation) forms the base of the geological section, and a portion of the Shaftesbury Formation lies at the top of the sequence.

The intervening strata are a continuous and complete sequence from Cadomin Formation at the base to Commotion Formation at the top, with an overall thickness of some 652 metres. This stratigraphic sequence is illustrated on table 2-1.

221 REGIONAL STRATIGRAPHY

.1 Minnes Group (Nikanassin Formation)

Although the Minnes Group is a coal-bearing sequence of strata, very little exploration work has been carried out to define the nature of this stratigraphic unit on the Saxon property. The numerous coal seams within the unit are presently considered too thin and contorted to be of economic significance. In addition, the rather monotonous nature of the group as a whole appears to mask the presence of marker beds which would assist in defining geologic structures.

The Minnes Group consists of thin-bedded, medium-grained brown sandstones, interlayered with dark grey to brown shales and mudstones. Numerous coal seams, usually less than one metre in thickness, appear to be present throughout the group. The group has a more arenaceous nature towards the centre where several thick massive sandstone units are observed.

An incomplete section of the Minnes Group is located on the Saxon property since this stratigraphic unit is considered to lie beyond the area of economic interest. Thus, the presence of the Minnes Group has been used to establish the boundary of the licence area.

.2 Cadomin Formation

The non-marine Cadomin Formation unconformably overlies the Minnes Group. Conglomerate, varying from granule to boulder, and coarse-grained sandstone constitute this formation. The conglomerate grains consist largely of multicoloured and well-rounded fragments of chert and quartzite, contained within a matrix of sand size material which appears to have a similar lithology. The coarse-grained sandstone phases within the Cadomin Formation appear to consist of the same material as that which forms the conglomerate matrix.

TABLE 2-1

STRATIGRAPHY

TABLE OF FORMATIONS

SERIES	GROUP	FORMATION		LITHOLOGY	UNIT THICKNESS (METRES)
Lower Cretaceous	Fort St. John	Shaftesbury		Dark grey marine shales, sideritic concretions, some sandstone grading to silty, dark grey marine shale, siltstone and sandstone in lower part, minor conglomerate.	+450
		Commotion	Boulder Creek	Fine-grained, well sorted, non-marine sandstone, mudstone and carbonaceous shale, conglomerate, few thin coal seams.	115
			Hulcross	Dark grey marine shale in the north grading to extremely fossiliferous shaly beds interlayered with sandstone and thin coal seams in the south.	15
			Gates	Fine-grained marine and non-marine sandstones; conglomerate, coal, shale and mudstone.	365
		Moosebar		Dark grey marine shale with sideritic concretions, glauconitic sandstones and pebbles at base.	60
	Bullhead	Gething		Fine to coarse brown calcareous sandstone, coal, carbonaceous shale, and conglomerate.	70
		Cadomin		Massive conglomerate containing chert and quartzite pebbles.	55
	Minnes Group	Nikanassin		Thin-bedded grey and brown shales and brown sandstones, containing numerous thin coal seams.	

The thickness of this formation is extremely variable in the foothills region surrounding and including the Saxon property. An example of this variation is shown by comparing Cadomin Formation thicknesses from Mount Torrens, lying within the property in the southeast, and from Mount Belcourt, located nearby in a northerly direction. At Mount Torrens, Stott, in G.S.C. Bulletin No. 152 (1968), has reported a thickness of 9.5 metres for the Cadomin Formation thickness, while a thickness of 161.5 metres has been reported at Mount Belcourt.

The current exploration program on the Saxon property has established a thickness of 80 metres for the Cadomin Formation north of the Narraway River, and 30 metres south of that point, giving an average value of 55 metres.

The Cadomin Formation is a distinct marker bed which has been extensively mapped to define the geologic structure at that stratigraphic level.

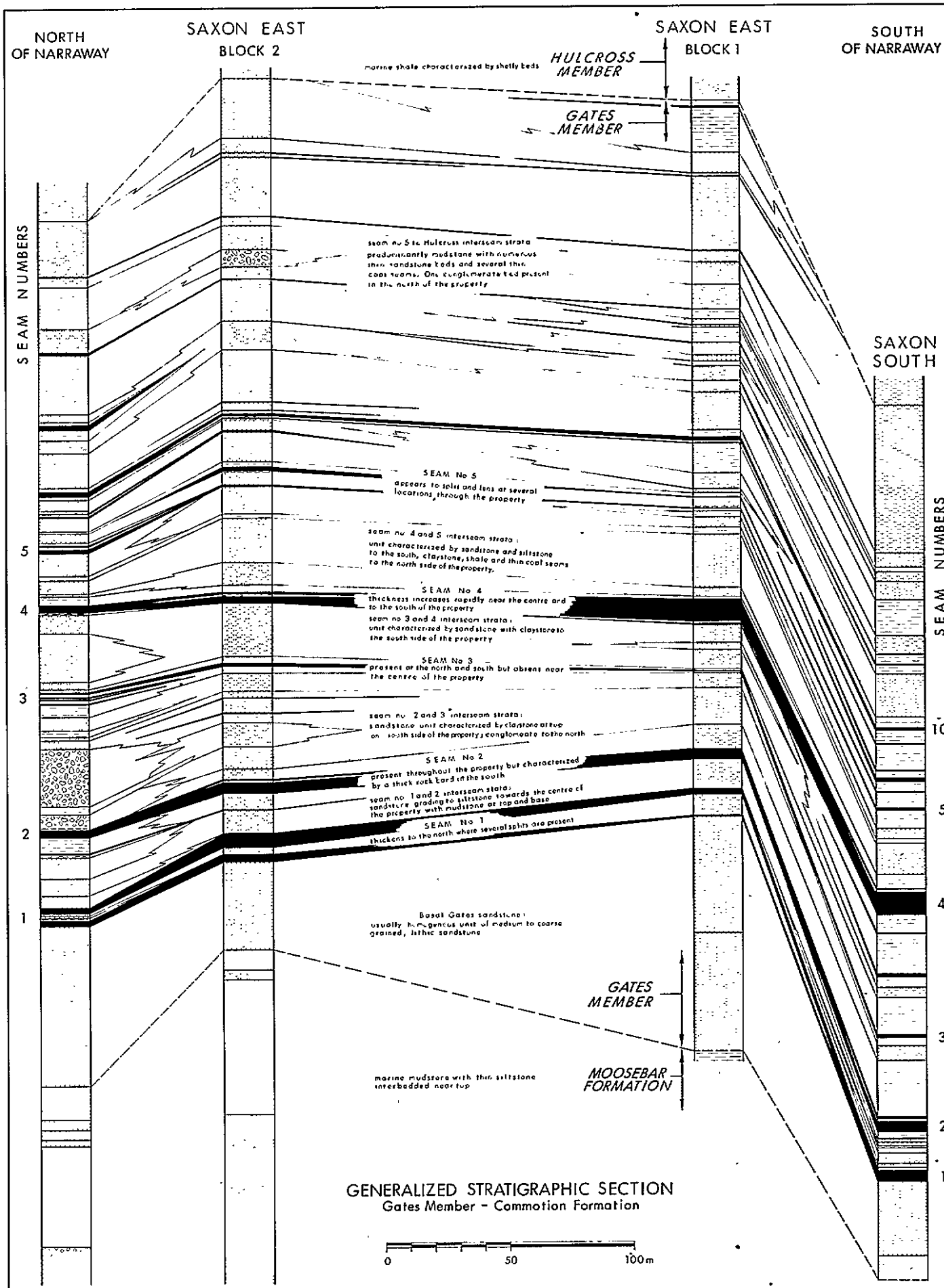
.3 Gething Formation

Sedimentary rocks of the Gething Formation conformably overlie the Cadomin Formation. This essentially non-marine unit consists of brown coloured calcareous lithic sandstone ranging from fine to coarse grain size, interbedded with conglomerate, carbonaceous shale and coal seams. Along the foothills, north of the Saxon property, the coal seams of the Gething Formation have attracted the attention of commercial interests. In the centre of the Saxon property, one drill hole (SD 7001) intersected the Gething Formation and located no coal seams in excess of 0.5 m thickness. One coal seam of possible economic thickness has been located on the surface beyond the northern end of the property, and one drill hole (SD 7725) intersected a Gething coal seam at Saxon South. No information is presently available regarding the quality and continuity of these seams.

The Gething Formation has an average thickness of 70 metres on the Saxon property.

.4 Moosebar Formation

On the Saxon property, the Moosebar Formation consists of a monotonous sequence of dark grey marine shale containing numerous sideritic concretions. The formation appears to conformably overlie the Gething Formation, although a thin glauconitic pebble-conglomerate is located at the base. This glauconitic unit is thought to be the equivalent of the Bluesky Formation located in the same stratigraphic position in central Alberta.



GENERALIZED STRATIGRAPHIC SECTION
Gates Member - Commotion Formation

As in most other parts of the foothills, the boundary between the top of the marine Moosebar Formation and the overlying, predominantly non-marine Gates Member of the Commotion Formation is indistinct. A gradual increase in the sandstone interbeds is observed.

The top of the Moosebar Formation is taken to be the appearance of the first prominent sandstone unit which has a thickness of approximately two metres on the property.

The average thickness of the Moosebar Formation on the Saxon property is 60 metres. This distinct unit has greatly assisted the definition of the structure of the property.

.5 Commotion Formation

The Commotion Formation is subdivided into three members: the Gates Member, the Hulcross Member and the Boulder Creek Member.

.51 Gates Member

The section of the stratigraphy with the greatest economic potential on the Saxon property is the Gates Member of the Commotion Formation.

This mainly non-marine unit consists of sandstone, conglomerate, coal, shale and mudstone and has an average thickness of 365 metres within the Saxon property. Contained within the total thickness of Gates Member section are six potentially economic coal seams which have an average total thickness of 18 metres. The seams are labelled 1 to 5 and No. 10, as shown on the Saxon correlation diagrams in Appendix 1.11.2 and 1.11.3 and the generalized stratigraphic section of the preceding page. Three of these seams, Nos. 1, 2, and 4, are suitable for mining by underground methods in Saxon East while seam Nos. 1, 2, 3, 4, 5 and 10 may be mined by open pit methods in Saxon South. Details of Gates Member stratigraphy are presented in section 222 of this report.

.52 Hulcross Member

The major stratigraphic problem in the Saxon property concerns the identification of marker horizons which allow precise coal seam correlation.

Within the Rocky Mountain foothills, the dark grey marine siltstones and shales of the Hulcross Member and the marine shales of the Moosebar Formation are usually readily identifiable, and clearly establish the top and base of the

Gates Member respectively. These markers assist in the interpretation of geological structures and seam correlations. However, on the Saxon property, while the Moosebar Formation has always been readily observed, the development of the Hulcross Member has been retarded to such an extent that this unit has often remained unobserved or has been miscorrelated with similar thin shaley units. Therefore, for practical local correlation purposes, the Hulcross Member has been defined as that shaley unit, some 15 metres thick, often characterized by an abundance of shelly fossils and lying approximately 365 metres above the top of the Moosebar Formation. This correlation is shown on the Stratigraphic Correlation charts previously mentioned.

The Hulcross Member conformably overlies the Gates Member and is similarly overlain by the Boulder Creek Member.

.53 Boulder Creek Member

The Boulder Creek Member consists of fine to medium-grained, well-sorted, non-marine sandstone, containing phases and interbeds of mudstone, carbonaceous shale and conglomerate. A few thin and discontinuous coal seams were intersected in this unit, but these seams have proven to be of no economic significance.

Most of the Boulder Creek strata are considerably more resistant to erosion than the overlying beds of the Shaftesbury Formation. Thus, these older strata are largely responsible for the development of the series of ridges trending along the eastern side of the Saxon property.

The upper 25 metres of Boulder Creek Member strata in D.D.H. 7602 consisted of carbonaceous claystone, mudstone and some siltstone containing numerous thin coal bands. The contact between the Boulder Creek Member and the overlying Shaftesbury Formation is thus placed at the contact between the predominantly marine and non-marine strata.

The Boulder Creek Member has a thickness of approximately 115 metres on the Saxon property.

.6 Shaftesbury Formation

The youngest stratigraphic unit on the Saxon property, conformably overlying the Boulder Creek Member, is the Shaftesbury Formation.

The Shaftesbury Formation consists of dark grey marine shale containing sideritic concretions and some sandstone phases.

These lithologies grade in the lower half to silty dark grey marine shale and siltstone, with sandstone and minor conglomerate near the base.

Erosion has left only an incomplete section of this formation near the south central part of the Saxon property. In this area, a section containing 450 metres of the Shaftesbury Formation can be observed.

222 DETAIL STRATIGRAPHY OF THE GATES MEMBER

.1 Seam Stratigraphy

As a result of detailed logging of drill cores, geophysical logging, and trench logging, it has been possible to establish a positive correlation between the coal seams encountered in Saxon East with those in Saxon South. This correlation is especially apparent when the characteristics of No. 4 seam are examined; a rock band approximately 10 cm thick is consistently found approximately 30 cm from the top of seam 4 while two thick rock bands, each often as thick as 50 cm, are commonly located approximately one metre from the base of the seam. The rock band near the top of the seam is especially characteristic in outcrop, where it is usually found to have a metallic blue sheen after weathering has taken place. In addition, it has been found that the fine-grained sandstone which immediately overlies No. 4 seam is especially abundant in fossil flora.

Another seam characteristic which has aided the seam correlation is found to occur at seam No. 1. The base of this seam is distinguished by an abrupt change from coal to the coarse-grained sandstone forming the seam floor. This feature was found to be unique: for all other seams the floor material was found to be composed of mudstone, carbonaceous claystone or silty mudstone, with somewhat gradual reduction in the presence of coaly matter in these rock types.

The coal seam correlation in the northern part of the property was further strengthened by the results gained from D.D.H. 7616. Previously D.D.H. 7202 had been correlated tentatively with D.D.H. 7003 in a manner which indicated that seams Nos. 1 and 2 had not been intersected in the former drill hole (c.f. 1975 Data Summary for Saxon Coal Limited). A thick conglomerate unit intersected at the base of D.D.H. 7202 had been interpreted in the field to be part of either the Gething or Cadomin Formations, but later correlation placed it in the Lower Gates. In hole 7202 drilling was terminated at that horizon before the full section was penetrated. The same Gates Member conglomerate was intersected in D.D.H. 7616 and drilling

was continued to intersect two coal seams underlying the conglomerate. Subsequent comparisons of the seam characteristics, detailed core logging, and geophysical logs, have established that the original tentative correlation was correct and has, at the same time, established the relationship between the strata of Saxon West and the sequence at Saxon East on a firm basis.

Near the proposed plant site of Saxon East, drill core shows the presence of a facies change which affects the strata of the seam No. 1 to seam No. 2 sequence. Drill holes Nos. SD 7702 and SD 7620 have a greatly thickened coal section with several coal splits in this interval, while the non-coal sediments display a significantly retarded development. The Saxon East Drill Hole Correlation illustrates this feature.

Initially, thrust fault repeats were proposed to explain the increase in coal thickness of this area. An in-depth investigation of the drill cores from holes SD 7620 and SD 7702 with hole Nos. SD 7701, SD 7609 and SD 7709 was carried out to study this feature prior to coal sampling. Particular emphasis was placed upon comparison of the inter-seam and intersplit sediments in hole SD 7620 to locate repeated sections of strata.

The investigation showed that no significant repeat within the seam No. 1 to seam No. 2 section was possible due to the marked dissimilarity of the roof and floor strata of the various coal partings.

A small zone of tectonic shearing was observed in the centre of the interval. Any thrust faulted seam or split repeats related to this structure, if they were present at all, were found to be confined to two small coal partings on either side of the shear zone where roof and floor sediments were similar.

The investigation concluded that the thickened coal interval was a product of sedimentary processes without any significant contribution from tectonic events.

It should be noted that all seam correlation and stratigraphic correlation diagrams have been corrected to true thickness intervals for the 1976 and 1977 data, while data from previous programs included in the stratigraphic correlation is presented as core intervals. The use of true thickness

was not carried out because of time limitations and the lack of access to some of the earlier cores. In any case, it is found that most of the pre-1976 drill holes were made at an angle almost perpendicular to the dip of the bedding and their sections thus approximate true thickness intervals.

.2 Seam Thickness Variations

Seam correlation charts Nos. SXON 77-0757-R01 and SXON 77-0758-R01 illustrate the variations of thickness of both coal and rock bands which occur within the mineable seam of Saxon South and Saxon East respectively.

The maximum and minimum seam thicknesses are tabulated below:

Saxon South

Seam	Minimum Thickness	Maximum Thickness
10	0.34 m	1.46 m
5	0.44 m	3.05 m
4	6.82 m	11.37 m
3	1.07 m	2.70 m
2	2.22 m	7.95 m
1	0.73 m	4.75 m

Saxon East

Seam	Minimum Thickness	Maximum Thickness
4	2.51 m	14.04 m
2	1.98 m	14.38 m
1	1.86 m	9.11 m

The range of seam thicknesses included in the above tabulation encompass all the coal and non-coal strata of the seam. Hence the ranges may or may not be the same as those for the mining sections of each seam. The intervals selected as mining sections are shown adjacent to the seam sections on the correlation charts.

Rock bands, usually consisting of carbonaceous claystone, are found in most of the seams in Saxon South and Saxon East, except for seam No. 10 in Saxon South which is small and free of partings. No definite intraseam distribution can be established for rock bands within seams No. 5 and No. 3 in Saxon South. However, the maximum thickness achieved by any one band is 0.35 metres for each seam.

Seam No. 2 in Saxon South is characterized by a rock band usually located approximately one third of the seam thickness distance from the roof. The band achieves its

#2 SAXON SOUTH

maximum thickness towards the south in drill hole SD 7725 where it is 1.27 metres thick, but it thins towards the north to a thickness of 0.09 metres in drill hole SD 7713.

Seam No. 1 in Saxon South contains a consistant rock band located half way through the seam. The band is present throughout the Saxon South area but the thickness is quite variable, ranging from 0.03 metres in SD 7604 to 0.45 metres in SD 7614.

Seam No. 4 in Saxon South contains two principal horizons where non-coal sediments show marked accumulation. A rock band usually 0.35 metres thick is located approximately 0.50 metres from the top of the seam and a pair or zone of bands with a maximum thickness of 2.50 metres are located approximately one metre to 1.5 metres above the seam floor. The thick lower bands have usually been excluded from the mining sections, while the thinner upper band is often included.

In seam 4 of Saxon East a somewhat similar pattern of rock band development is present; the location of bands within the seam section is often the same as in Saxon South but the lateral distribution appears to be less consistent and band thicknesses are often less.

Seam No. 2 in Saxon East shows the development of the same rock band that is present within seam No. 2 at Saxon South. Although this band's thickness is very similar, it is usually located within 0.50 metres of the seam roof.

The central portion of the mining districts formed by Block Nos. 1 and 2 of Saxon East includes a rock band near the top of seam No. 1. This band lies approximately 0.5 metres from the seam roof and has a maximum thickness of 0.85 metres. The band appears to thin towards the north and south. At the northern end of the Block No. 2 mining district, a rock band and lower coal parting of seam No. 1 continues to develop in a southerly direction to form a lower, unmineable split of seam No. 1.

.3 Interseam Sediments

No detailed study of the interseam sediments of the Gates Member strata on the Saxon property has been carried out. However, knowledge of the sequence gained during 1976 was found to be sufficient to allow seam and strata correlations to be done in 1977. No significant changes to the interseam stratigraphy were found during 1977; the trends of sedimentology are shown on the stratigraphic correlation charts for Saxon South and Saxon East in addition to the Generalized Stratigraphic Section in Part 221 of this volume.

2.3 STRUCTURAL GEOLOGY

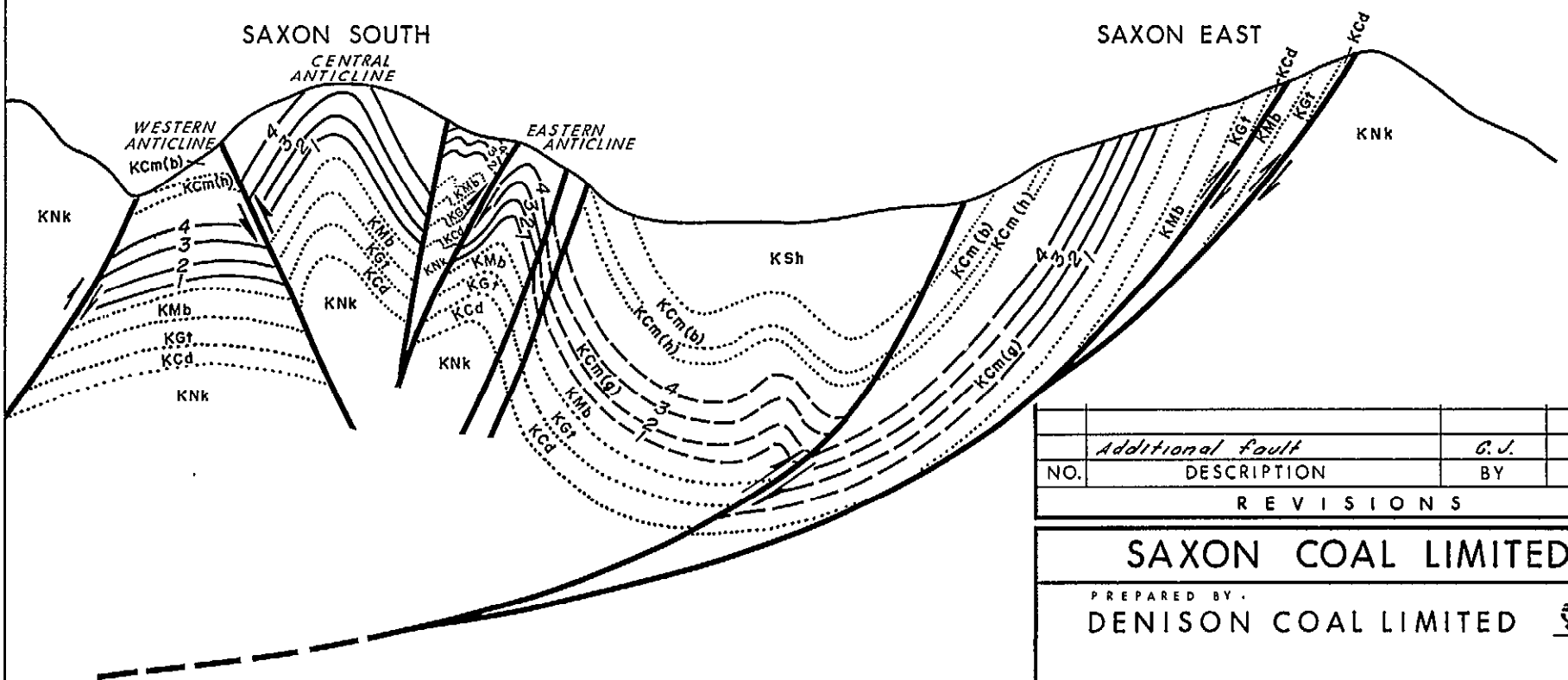
231 GENERAL STRUCTURE

On a regional scale, the structure of the Saxon property appears to be that of a large and complex synclinorium trending northwest and plunging from both the southern and northern ends to the centre of the property. The central portion of the property is thus a folded and faulted series of the Lower Cretaceous strata surrounded by older Lower Cretaceous rocks around the margins of the property. The reduced scale geology maps and sample cross-sections, included in the Appendices of this volume show details of the structural style. The geology of the area is summarized on the included 1:50,000 map (Drawing No. SXON 75-0616-R03). A thrust fault has removed portions of the western limb of the principal synclinorium, placing non-economic Minnes Group strata over the Lower Cretaceous formations. A section showing the general structure is included on the following page...

232 FAULTING

Large scale thrust faults which have produced imbricate thrust sheets, including the sheet containing the Saxon East mining district, are a principal feature of the tectonic deformation of the Saxon property. With a few exceptions, the nature of the thrust faulting at Saxon can be described according to a single pattern. The faults are commonly encountered in the well-exposed eastern ridge, and in this area they are steeply dipping from 50° to approximately 70°. It has also been observed that the bedding in this area dips in the order of 35° to 50°. The angular relationship between the faults and bedding is thus in the range of 10° to 20°. It should be noted that in many areas of flat dipping strata within the Rocky Mountain foothills north of the Saxon property, a similar relationship between thrust faulting and bedding is observed. In these areas, of course, the thrust faults have a shallow overall dip. At this time, it is not known whether the attitude of the thrust faults have been caused by their generation at a high angle or whether folding of the strata post-dated faulting.

An exception to the general pattern occurs at Saxon South where the faulting is reverse in style dipping between 70° and 90° independently of the dip of the strata. In addition, the direction of dip may be either easterly or westerly. At the present time, no particular mechanism has been developed to explain the orientation of these structures.



NO.	DESCRIPTION	BY	DATE
	Additional fault	G. J.	oct '77

REVISIONS

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

SCHEMATIC CROSS SECTION THROUGH SAXON PROPERTY VIEWED TOWARDS THE NORTH

DRAWN BY: D. W.	DATE: JAN. '77	SCALE: —
PREP'D BY: G. J.	DATE: JAN. '77	FIG. Nº 1.5
APPR'D BY: G. J.	DATE: JAN. '77	

233 FOLDING

The structural regime of the Rocky Mountain foothills of British Columbia and Alberta contains several domains which have distinct characteristics. Tectonic stresses have caused deformation of the strata by both fold and fault mechanisms; although the total amount of deformation and shortening may be the same in any area, the degree of deformation caused by each mechanism varies greatly from place to place.

At Saxon, large scale folding is the most prominent form of tectonic deformation. A major syncline trends in a north westerly direction along the property, following Saxon Valley. Thrust fault repeated strata form the eastern limb of the structure and contain the Saxon East underground mining districts. On the western flank of the syncline, a major anticline containing the Saxon South reserves has been generated. The anticline plunges towards the north at approximately 7 degrees. This anticline is truncated by a thrust fault system half way between the southern property boundary and the Narraway River.

The Saxon South anticline is made more complex by smaller scale folding and high angle reverse faulting.

In general, the folds have a mildly flattened concentric style with bed thickening occurring along the axes of only the more compressed folds. Thickening in these regions has been achieved mainly by small scale brittle deformation thrust faulting. However, thickening of the coal seams in these areas appears to have resulted from a ductile failure type of flow mechanism.

The folds in Saxon South are cylindrical over relatively long distances, but some terminate abruptly, with a rapid change to the hinge line orientation taking place.

The fold limbs in Saxon South usually dip in the range from 40^{o} to 60^{o}. An exception to this is the more tightly compressed northern end of the anticline, where dips on the east limb as steep as 80^{o} have been recorded. The area selected for the south pit is similarly exceptional, since dips range from 5^{o} to 40^{o} in that region.

The strata of the mining districts in Saxon East show only minor folding. On a large scale, the westerly dipping beds are seen to be broadly warped with dips ranging from 35^{o} to 60^{o}.

234 SAXON PROPERTY STRUCTURAL BLOCKS

.1 Definition of Saxon Areas

Each of the areas, Saxon East, Saxon West, and Saxon South, have been defined by structural features which separate them. Saxon East and Saxon West are separated by a south westerly dipping thrust or reverse fault which produces a repetition of the coal-bearing strata. All of the strata lying east of the fault are considered to be in the Saxon East area and the strata on the west side lie within either the Saxon West or Saxon South areas. Saxon South is separated from Saxon West by a further thrust fault lying on the western side of the former faults.

In the northern part of the Saxon property the fault forming the boundary between Saxon East and Saxon West is located near the centre of the northwestern property boundary and strikes in a southeasterly direction parallel to the strike of the beds. South of the Narraway River, the fault has been located on the eastern side of Saxon Valley at Saxon Creek, trending parallel to the alpine ridges. From the Narraway River south, Saxon East continues to be defined by the southeasterly trending alpine ridges to the southern end of the property.

The fault separating Saxon West and Saxon South has its northern limit against the western exposures of the Nikanassin Formation immediately south of the Narraway River. The fault trends southeasterly to continue beyond the southern end of the property at a point close to the centre of the southern property boundary (B.C. border).

.2 Saxon South Structure

In general, Saxon South consists of a large northwesterly trending anticline. In detail there are three principal northwesterly plunging anticlines flanked by several steeply dipping reverse faults. The trend of the fold axes is quite variable along strike, and in places significant folds die out over remarkably short distances.

The proposed mine plans for Saxon South include the near surface portions of the two westernmost anticlines as well as the western limb of the eastern anticline.

The south pit is confined to the broad western anticline. In the vicinity of the south pit, the anticline plunges northerly at approximately 10^{o} and drilling and extensive surface exposures show that the coal and adjacent strata have experienced a minimum of tectonic disturbance; no small scale thrust faults and very little shearing of the coal seams has been observed.

The north pit includes much of the crest of the central anticline extending along the eastern limb and including the western limb of the eastern anticline where overburden ratios are considered to be acceptable. Several smaller synclines and anticlines are located along the flanks of the central anticline in its southern half. However, the coal in this region shows relatively little tectonic disturbance, as opposed to the northern part of the central anticline. The anticline becomes more tightly compressed in this region with steeper dips on the limbs, in places in excess of 80°, and the seams are disturbed by more intense shearing and small scale faulting such as can be observed in adit 76-4-4.

The features described above are illustrated on the Saxon South geology map and representative cross-sections included in Appendix 1.11.3.

.3 Saxon East Structure

In general, Saxon East consists of uniformly dipping strata which trend southeasterly along the eastern property boundary. The dip of the strata varies from 35 degrees at the northern end of the property, to 60 degrees at the southern end of the property.

Fault repeats have been reported and mapped in Saxon East, south of the Narraway River. In general, the faults in this part of the property are located in the older Lower Cretaceous strata and usually affect only the Cadomin and Gething Formations.

Within the proposed mining area of Saxon East, diamond drilling and surface mapping have defined one complex thrust fault of sufficient magnitude to affect proposed mine plans. The thrust fault was intersected in drill holes SD 7710, SD 7001, SD 7708, SD 7620 and in the upper part of SD 7715. It was also observed on the surface near adit 76-4-1 and in a creek exposure south of drill hole SD 7715.

The thrust fault consists of two confining planes, each of which is shown on the Saxon East structure contour maps, enclosing folded and intensely deformed strata.

Data available at present indicates that the two planes converge at higher stratigraphic elevations, accompanied by a reduction in the amount of tectonic disturbance. The northern and southern limits of this structure are not as yet defined. However, the amount of deformation appears to be greatly reduced or die out towards the south, while the fault trends away towards the west at its northern extension beyond the proposed mining areas.

The greatest amount of disturbance is recorded in drill holes SD 7001 and SD 7708 where seam No. 1 exhibits a throw of approximately 150 metres.

At present, drilling and surface mapping has not shown any other fault or fold structures which would be of large enough dimensions to interfere significantly with mine plan layouts.

.4 Saxon West Structure

The internal structure of Saxon West is poorly understood because most of this area lies within the densely vegetated and poorly exposed portion of the property located in the central Saxon Valley. However, one fault repeated portion, formed in a manner identical to that which separates Saxon East from Saxon West, has been identified on the east side of the Saxon West area. On the west side of this fault, the strata are folded into two parallel anticlines, separated by a syncline trending southeasterly, north of the Narraway River.

235 *TECTONIC DEFORMATION*

Deformation by folding and faulting at Saxon has generated the various potential mining districts. The laterally extensive imbricate thrust sheets of the Gates Member in Saxon East are suitable locations for mining coal seams by hydraulic methods. In addition, folding and faulting has generated a broad anticline of exposed Gates Member strata in Saxon South where coal seams near the surface may be mined by open pit methods.

Small scale tectonic structures such as thrust faults with displacements of 6 metres or less have only rarely been observed in drill core. Seam No. 4 in hole No. SD 7620 exhibits one such example where the coal thickness appears to have been reduced by tectonic processes. Structures such as these have not been observed in surface exposures but they have been intersected during the driveage of adit 76-4-4 in Saxon South and at the portal of adit 71-3-4 in Saxon East. It is difficult to estimate the frequency of such structures with the amount of available data. However, it is reasonable to expect that their frequency will be no greater than has been experienced in the nearby underground operations at Smokey River which are located in a similar regional structural environment within the foothills coal belt, although the local structural deformation there is somewhat more intense than it is at Saxon East.

Most surface exposures on the Saxon property show that the coal has been sheared or tectonically disturbed to some extent. In general, occassional horizons of each seam are heavily sheared

in addition to sporadic shear joints being observed throughout most coal sections. The intensity of tectonic disturbance of this nature appears to be less than that experienced during mining of foothills coal seams further to the south within the province of Alberta.

Although the presence of large scale fold and fault structures dictates mine layout, little direct effect on the mining operations is anticipated. Based on the results obtained in the exploration program to date, it appears that it will be possible to plan the initial mines for the first twenty years of production in areas that are largely free of major faults. Normal precautions will have to be taken to avoid the possibility of problems related to any water contained within structures intersected during rock tunnelling.

Small scale roof structures which will be found in the underground operations of Saxon East will require local changes in the mining plans but they are not likely to be substantial enough to interfere with the overall planned productivity.

In the open pit mine, the large scale structures have been fully accounted for in the mine planning; indeed they control the definition of mine areas. These structures and the smaller associated structures are not expected to have any adverse effect on mining these.

2.4 PRELIMINARY TERRAIN CLASSIFICATIONS OF THE SAXON AREA

241 INTRODUCTION

The terrain classification map of the Saxon area which was prepared in 1976 using airphoto interpretation supported by field observations at Saxon South, Saxon Creek and the Saxon Ridge Road from the campsite to Narraway River is presented again in this volume as it provides a basis for a general analysis of infrastructure sites. No field observations of the proposed townsite areas are included here. The townsites were inspected by Montreal Engineering in their portion of the study.

Engineering site selections will ultimately consider the location relative to related structures or activities, foundation soil properties, depth to bedrock, seasonal groundwater levels, nearby rock or soil slope stability and possible snow avalanche risk. The terrain classification map is a guide to these expected foundation conditions (see Appendix 1.1.1).

242 GENERAL COMMENTS

The Saxon area is located within the Rocky Mountain foothills region. The upper ridges are steep and often serrated by numerous cirque basins. Below the ridge tops and towards treeline, the terrain becomes less steep with a correspondingly thicker cover of colluvium and/or a thin layer of till. Treeline was chosen to be the upper boundary of the morainal blanket common to the valleys. Thick ground moraine is also associated with cirque basins, one small example of which is found at Saxon South. Major valleys such as the Narraway and Belcourt are richly endowed with gravelly terraces and alluvial fans. Terrain and landforms of the Saxon area show significant influence from glaciation.

243 NARRAWAY VALLEY

The townsite and other structures are likely to be constructed in Narraway Valley and on till soil or over sand and gravel deposits. A well-drained, dense till soil or the internally drained high terraces in the valley are excellent building sites. Reclamation through drainage of low swampy areas may be possible at the proposed townsite. These wet areas tend to be groundwater discharge zones and water may be a constant problem. Secondly, if the drained soil contains clay, the clay tends to retain moisture and may cause the soil to liquefy upon being worked. More specific surface and sub-

surface work is required in this area before definite planning is done.

244 SAXON CREEK

Saxon Creek Valley, central to the coal operation, is of particular interest. The soil is dominantly a morainal blanket or veneer with areas of shallow underlying bedrock. The terrace-like landform near the creek denotes a lacustrine deposit of soft silty clay. The Saxon South access road across this material has found the clay to be relatively weak and sensitive to disturbance. If rail or terminated facilities are to be considered for this area, a significant amount of foundation study will be required. Heavy structures here will probably use pile supports to bedrock. The wide flat area near the present campsite, which may be considered as a location for plant sites or mine entries, is subject to occassional flooding and has a shallow groundwater table as mentioned in more detail in the hydrogeological studies. The borrow potential of the low creek terraces is poor since the gravel size gradation is variable and the boulder content is high.

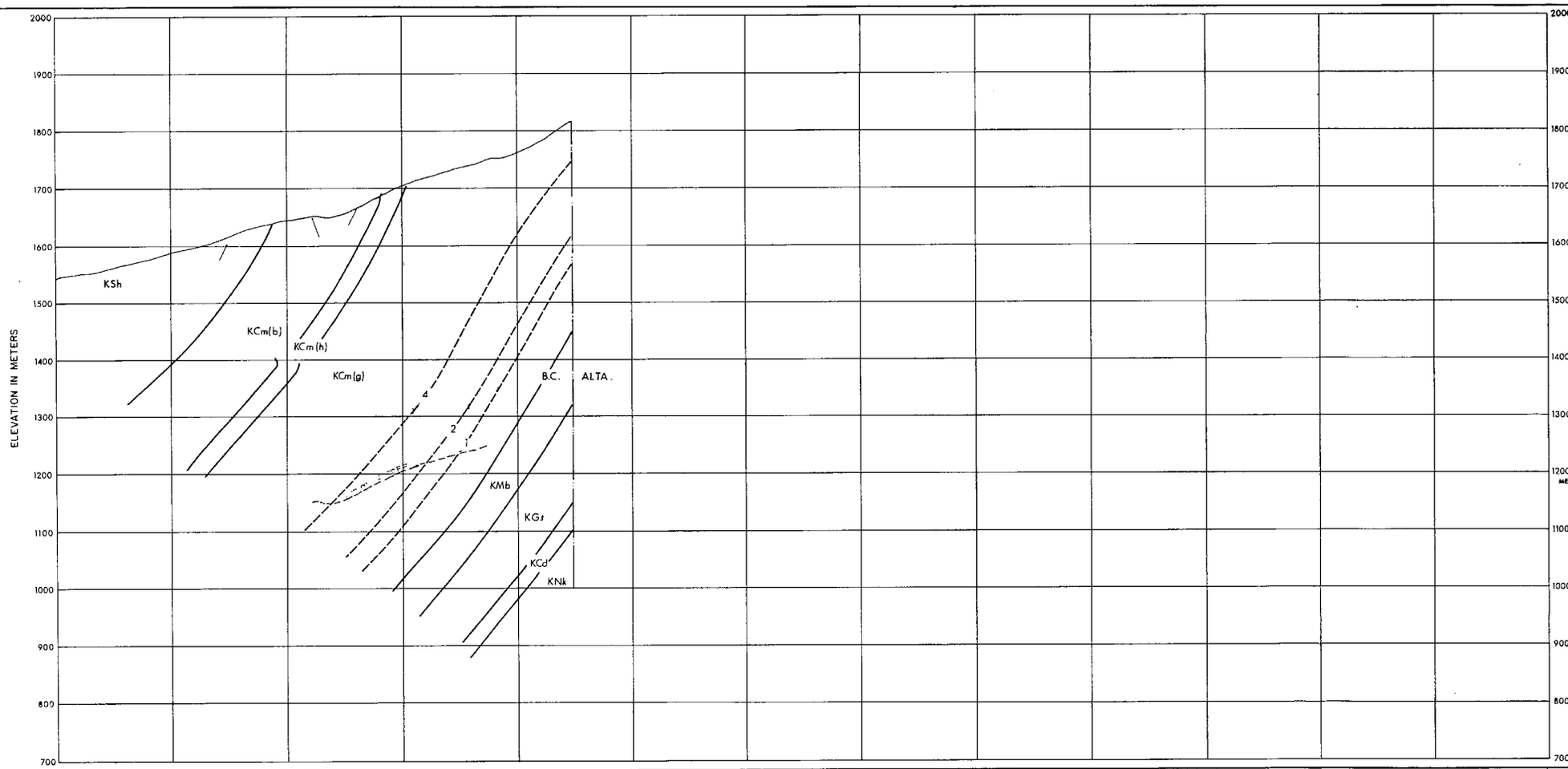
PR- SAXON 77 (2) A

CROSS SECTIONS

EAST AND SOUTH SAXON

BOOK 1 OF 5

DENISON MINES LTD. 1977



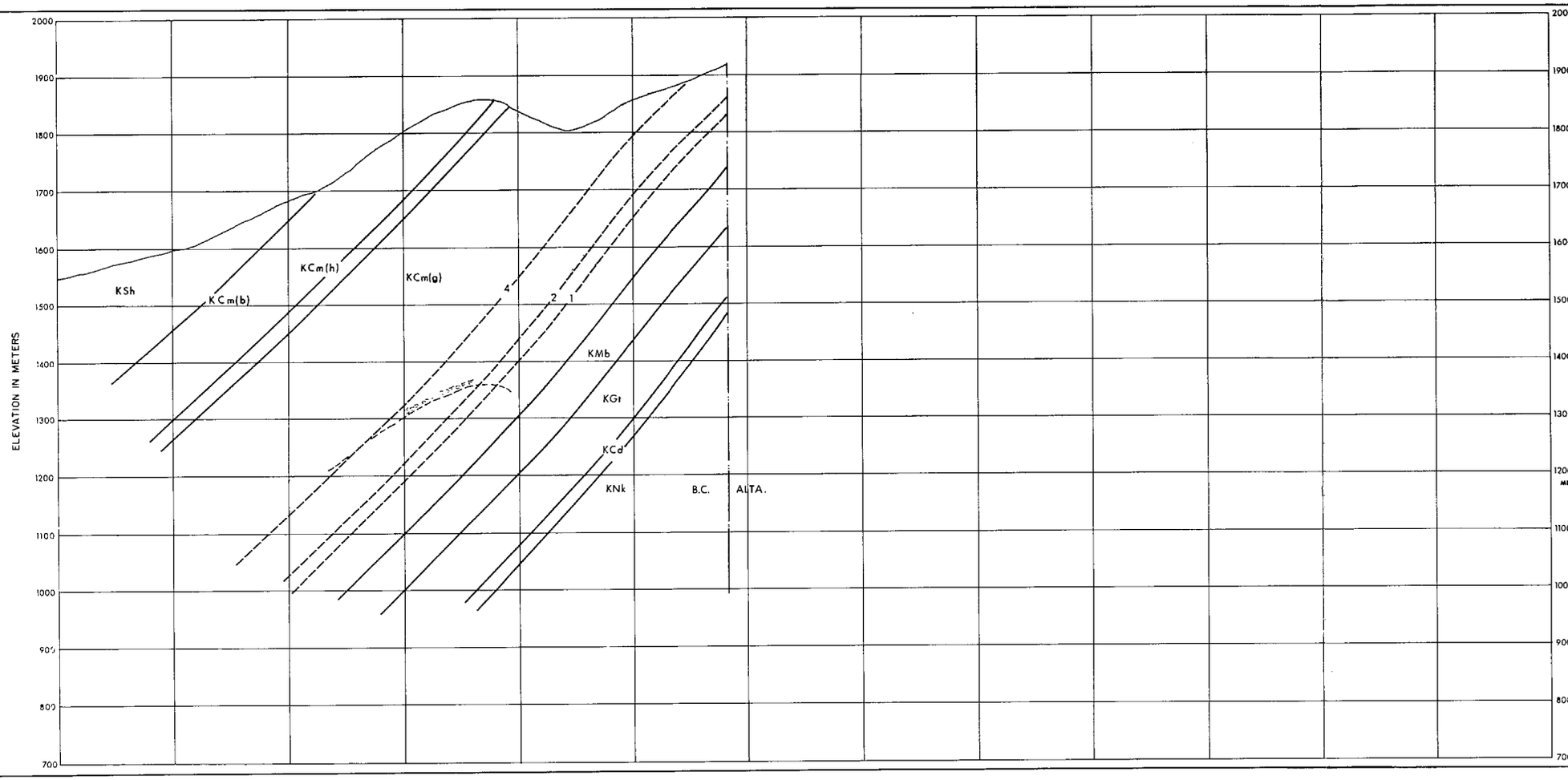
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7701

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. J.P.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct '77	SXON77-0750-R01



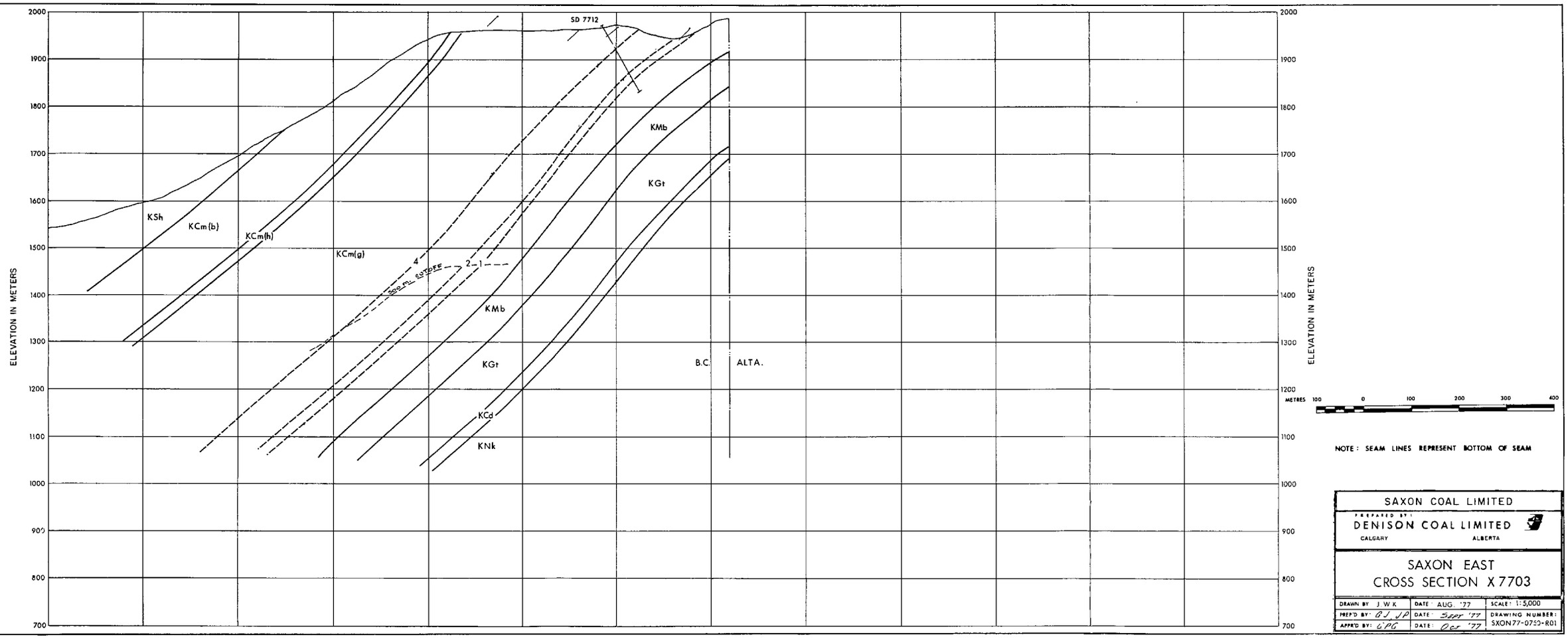
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7702

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. J.P.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct '77	SXON77-0750-R01



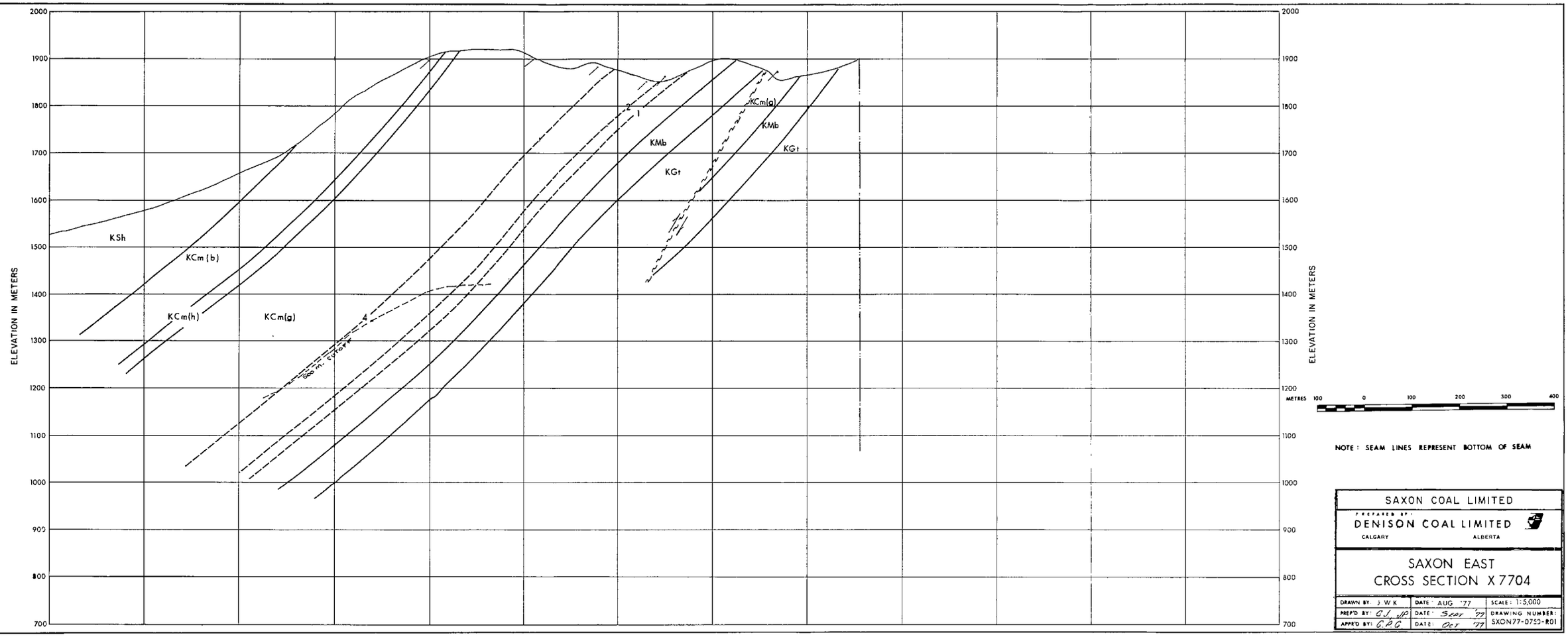
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7703

DRAWN BY: J.W.K	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. JP	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct '77	SXON77-0759-R01



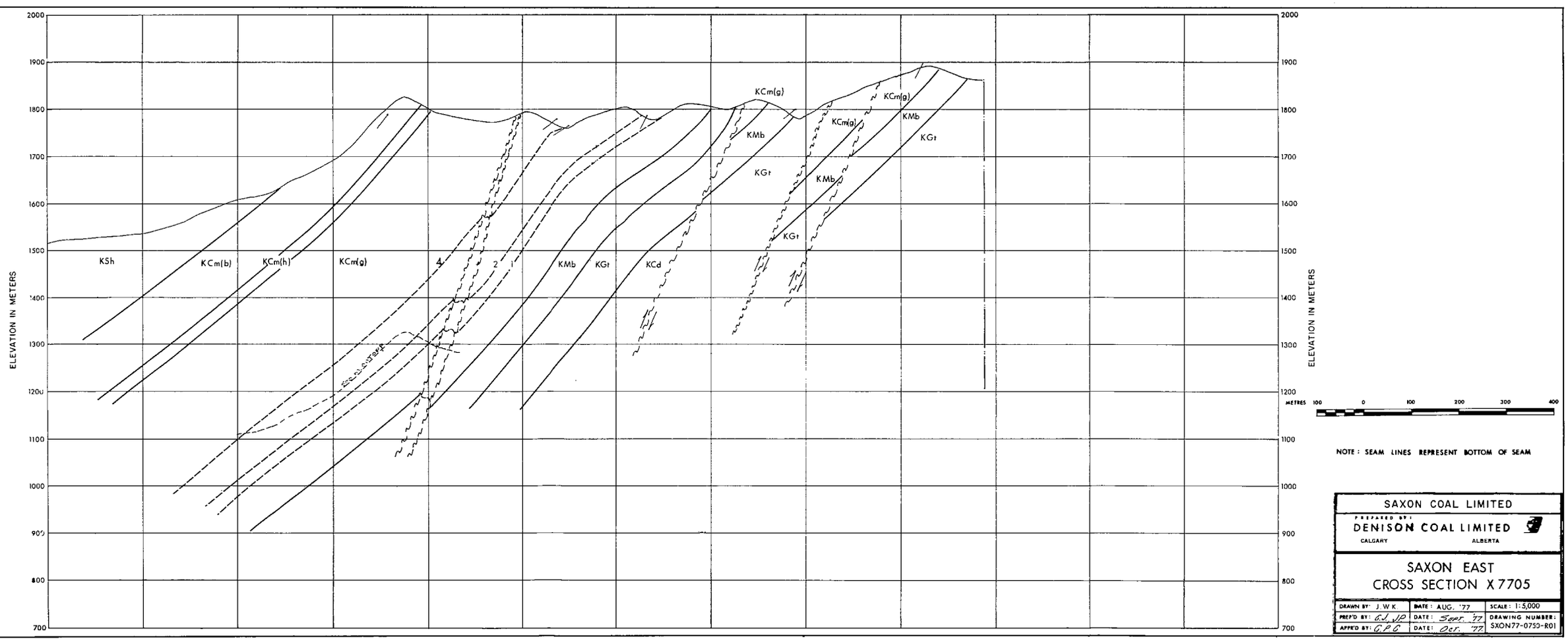
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7704

DRAWN BY: J.W.K	DATE: AUG '77	SCALE: 1:5,000
PREP'D BY: G.J. JP	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct '77	SXON77-0759-R01



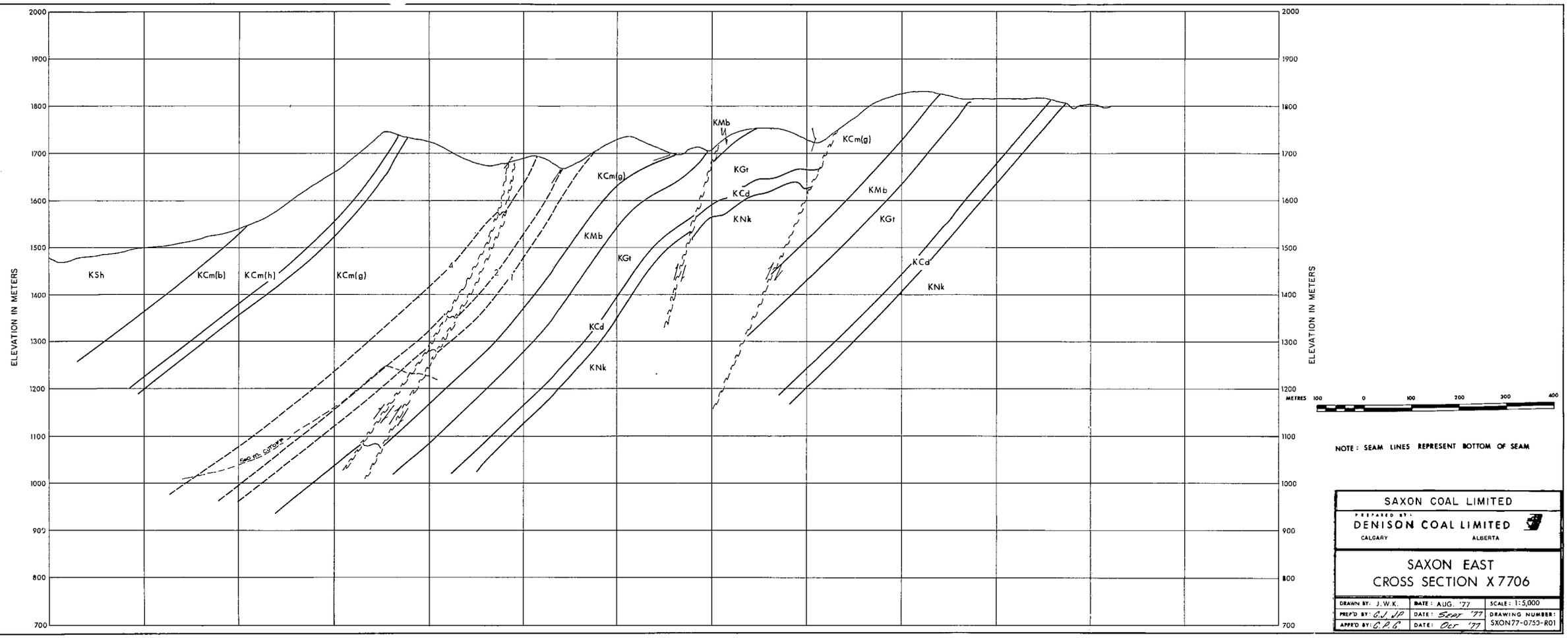
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7705

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. VP	DATE: Sept. '77	DRAWING NUMBER:
APPR'D BY: G.P.C.	DATE: Oct. '77	SXON77-0755-R01



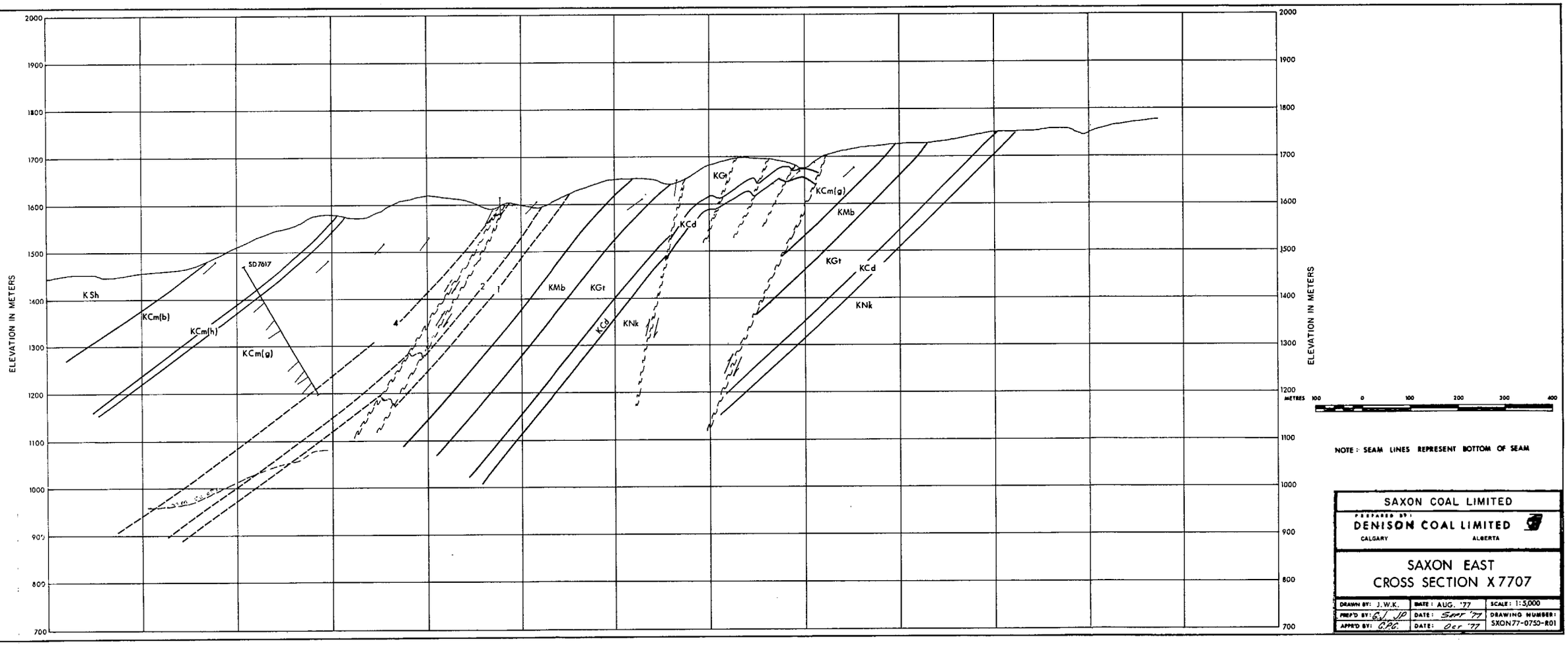
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7706

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. VP	DATE: Sept. '77	DRAWING NUMBER:
APPR'D BY: G.P.C.	DATE: Oct '77	SXON77-0755-R01



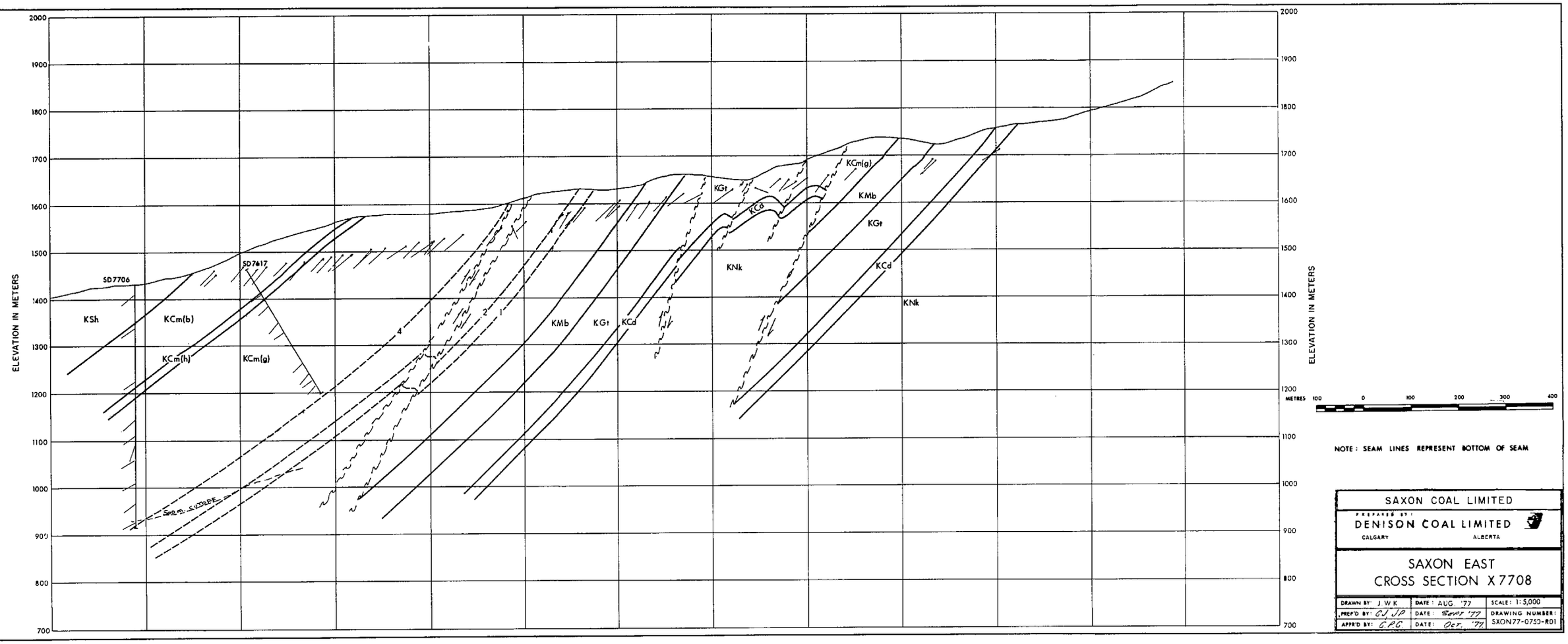
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7707

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. JP	DATE: Sept '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.C.	DATE: Oct. '77	



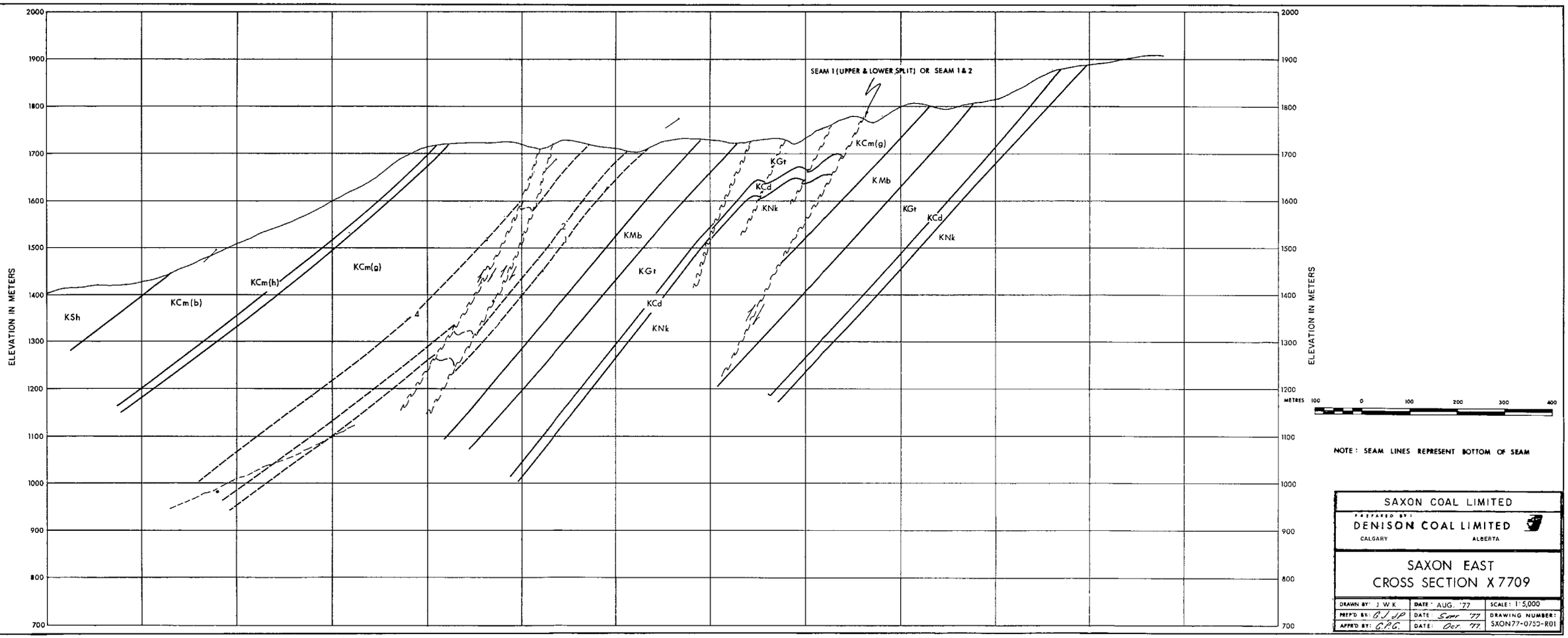
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7708

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: GJ JP	DATE: Sept '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.C.	DATE: Oct. '77	



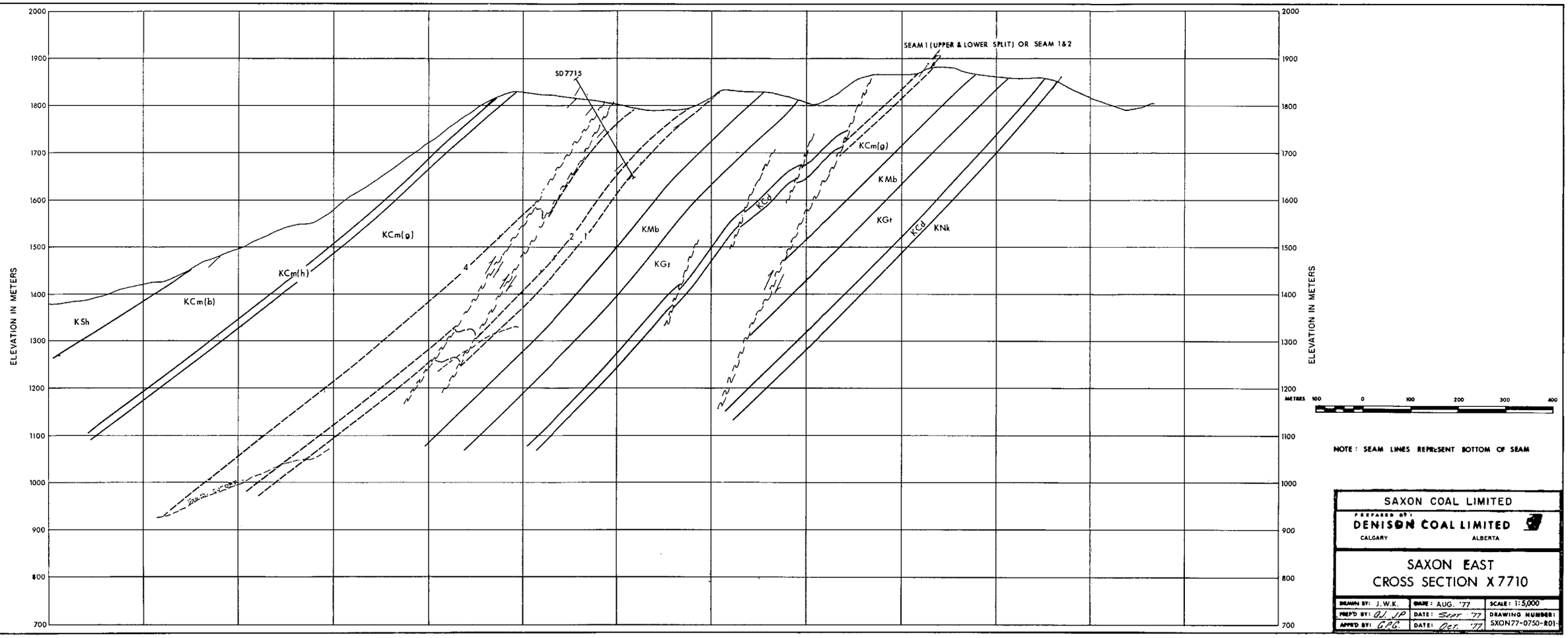
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7709

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: B.J. JP	DATE: Sept. '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01



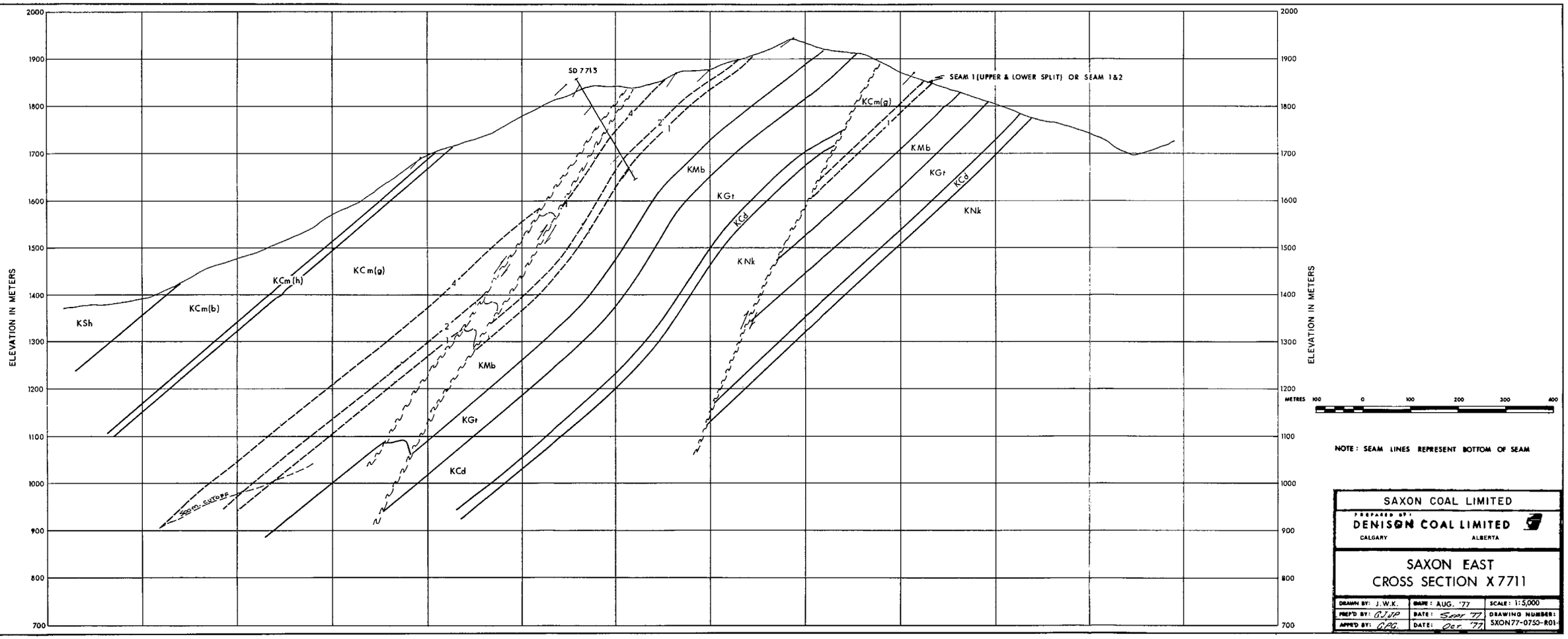
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7710

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: B.J. JP	DATE: Sept. '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01

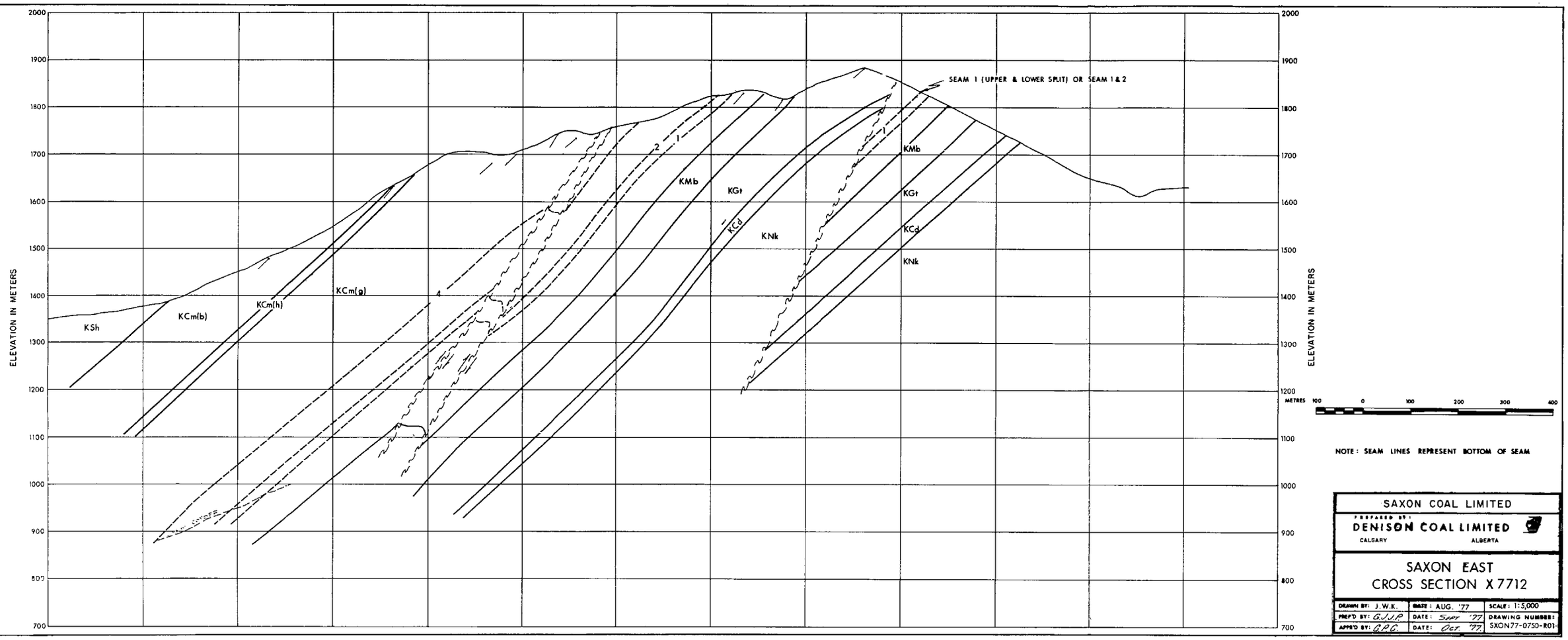


SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7711

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01

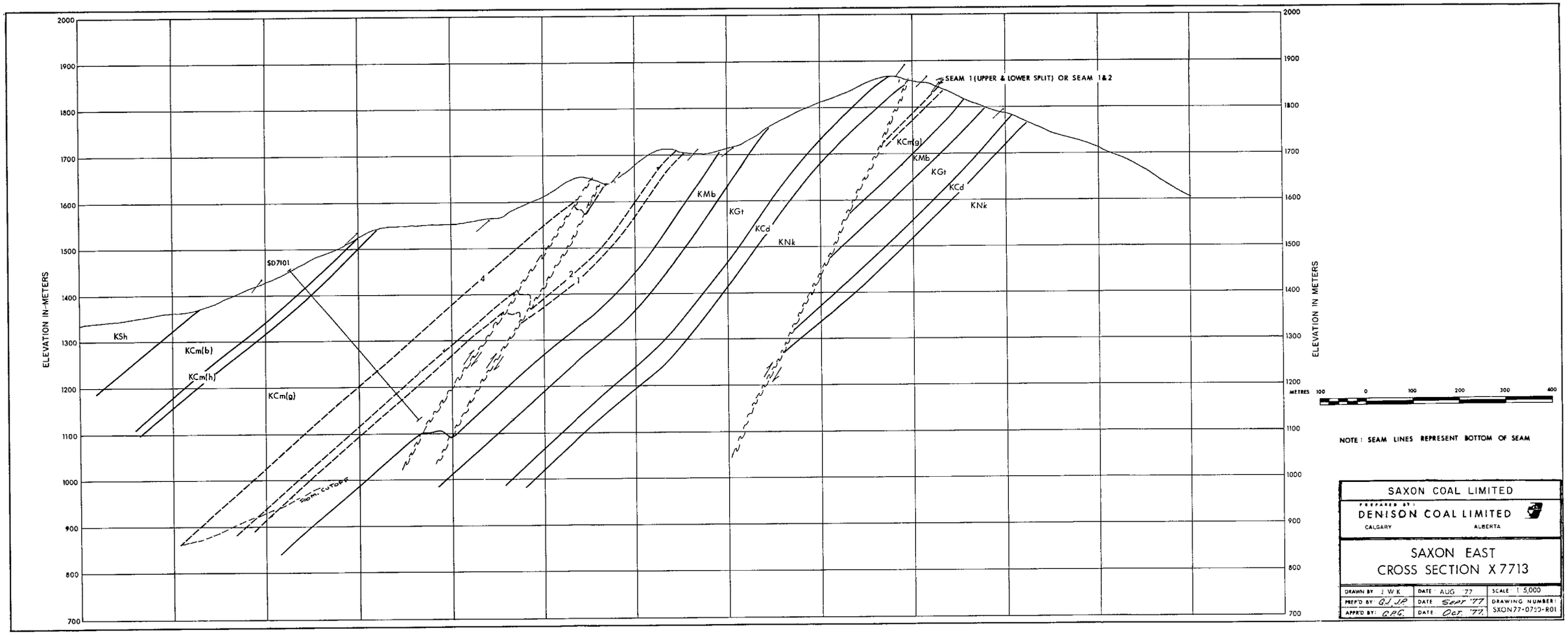


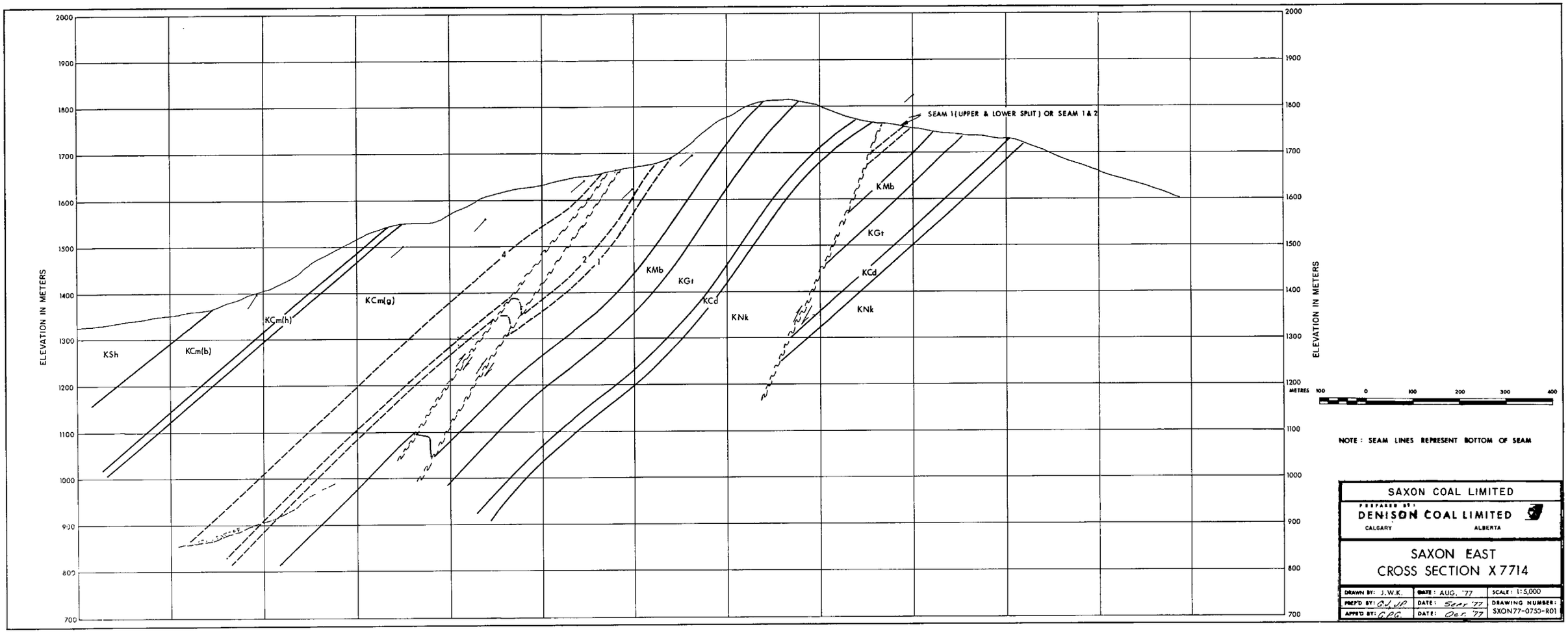
SAXON COAL LIMITED

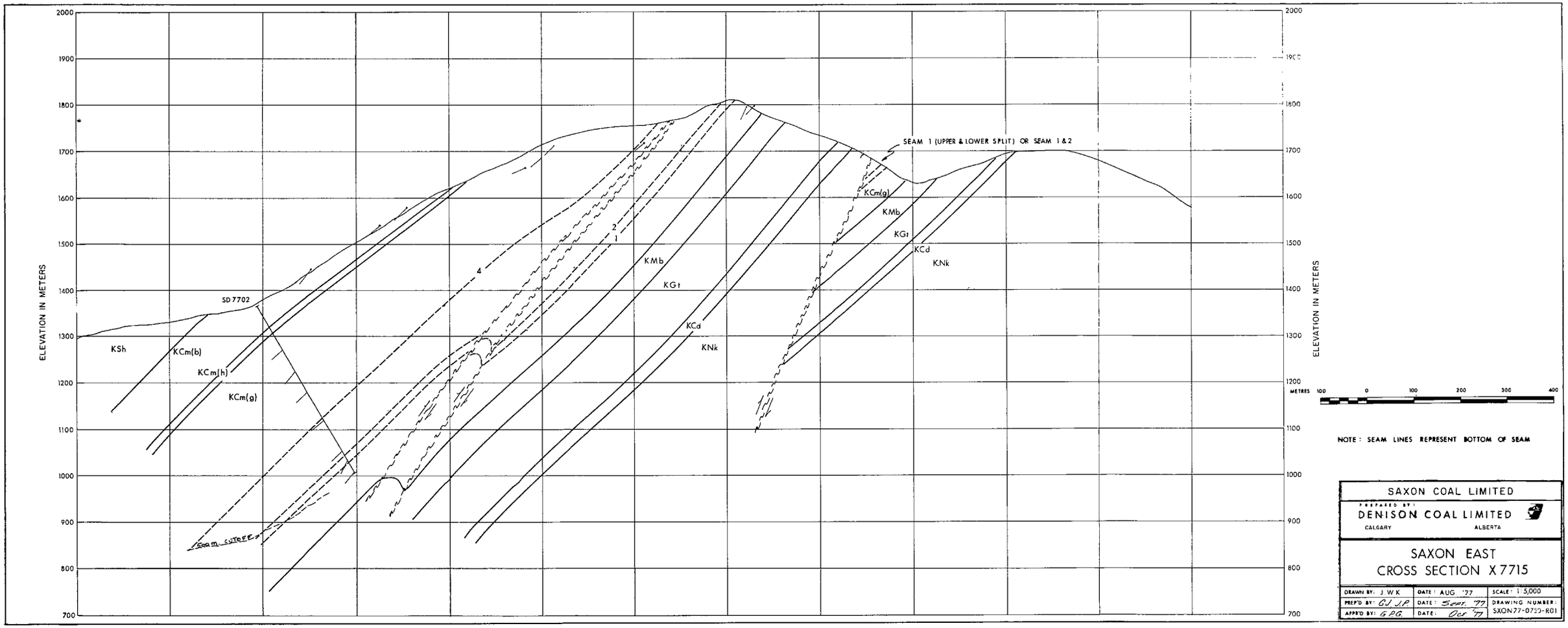
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

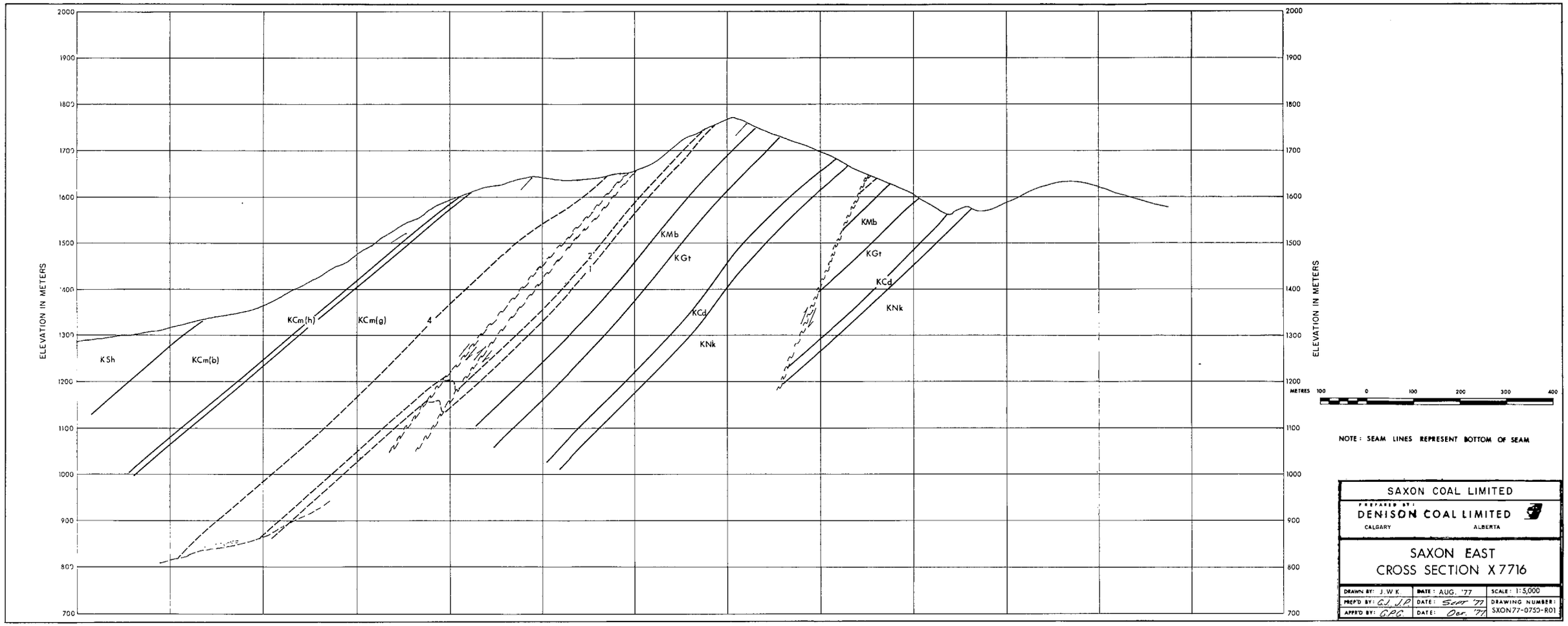
SAXON EAST
CROSS SECTION X 7712

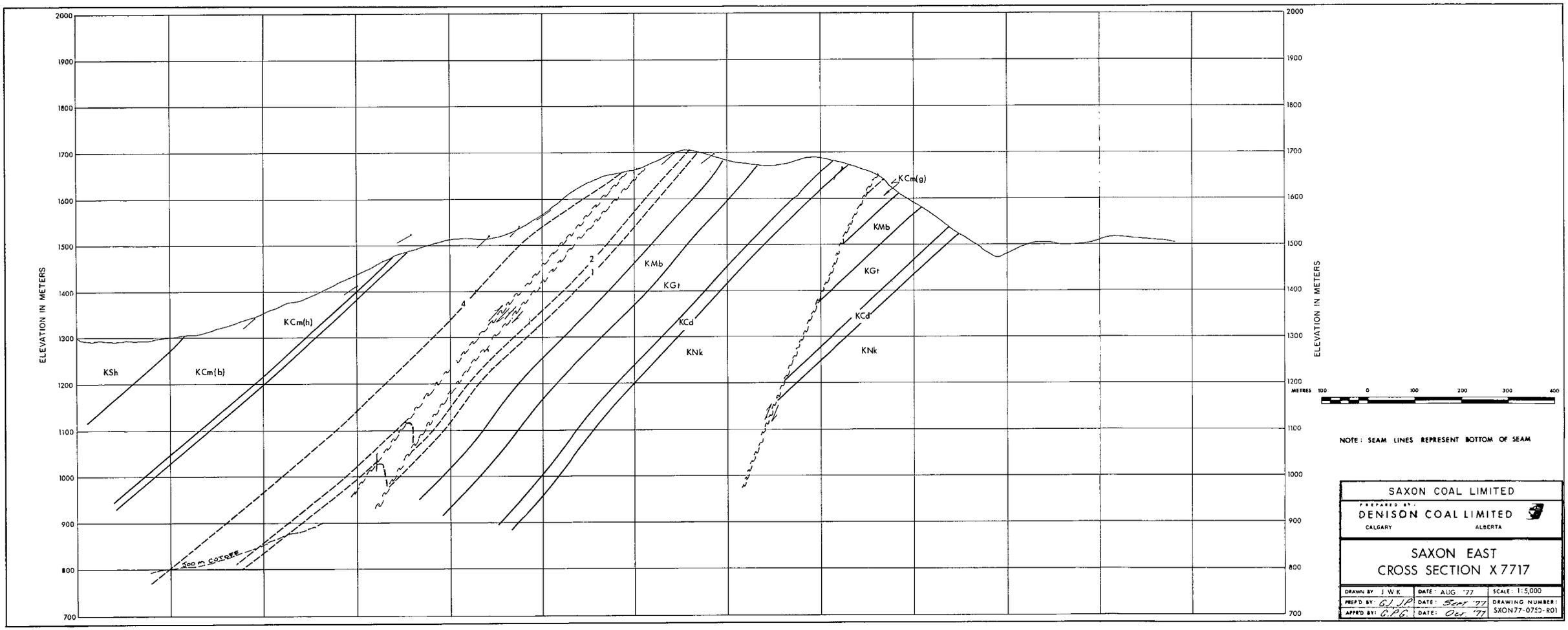
DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01


ELEVATION IN-METERS
ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
SEAM 1 (UPPER & LOWER SPLIT) OR SEAM 1&2
SD7101
KSh
KCm(b)
KCm(h)
KCm(g)
KMb
KGt
KCd
KNk
4
3
2
1
ROOM CUTOFF
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
SAXON COAL LIMITED
PREPARED BY :
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7713
DRAWN BY J.W.K. DATE AUG. '77 SCALE 1:5,000
PREP'D BY G.J.P. DATE Sept '77 DRAWING NUMBER: SXON77-0750-R01
APPR'D BY G.P.G. DATE Oct. '77


ELEVATION IN METERS
ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
SEAM 1 (UPPER & LOWER SPLIT) OR SEAM 1&2
KSh
KCm(b)
KCm(h)
KCm(g)
KMb
KGt
KCd
KNk
4
3
2
1
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
SAXON COAL LIMITED
PREPARED BY :
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7714
DRAWN BY: J.W.K. DATE: AUG. '77 SCALE: 1:5,000
PREP'D BY: G.J.P. DATE: Sept '77 DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.G. DATE: Oct. '77


ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
SEAM 1 (UPPER & LOWER SPLIT) OR SEAM 1 & 2
SD 7702
KSh
KCm(b)
KCm(h)
KCm(g)
KMb
KGt
KCd
KNk
4
2
1
Seam outcrop
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7715
DRAWN BY: J.W.K. DATE: AUG. '77 SCALE: 1:5,000
PREP'D BY: G.J. J.P. DATE: Sept. '77 DRAWING NUMBER:
APP'D BY: G.P.G. DATE: Oct. '77 SXON77-0750-R01


ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
KSh
KCm(b)
KCm(h)
KCm(g)
KMb
KGt
KCd
KNk
4
2
1
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7716
DRAWN BY: J.W.K. DATE: AUG. '77 SCALE: 1:5,000
PREP'D BY: G.J. J.P. DATE: Sept. '77 DRAWING NUMBER:
APP'D BY: G.P.G. DATE: Oct. '77 SXON77-0750-R01



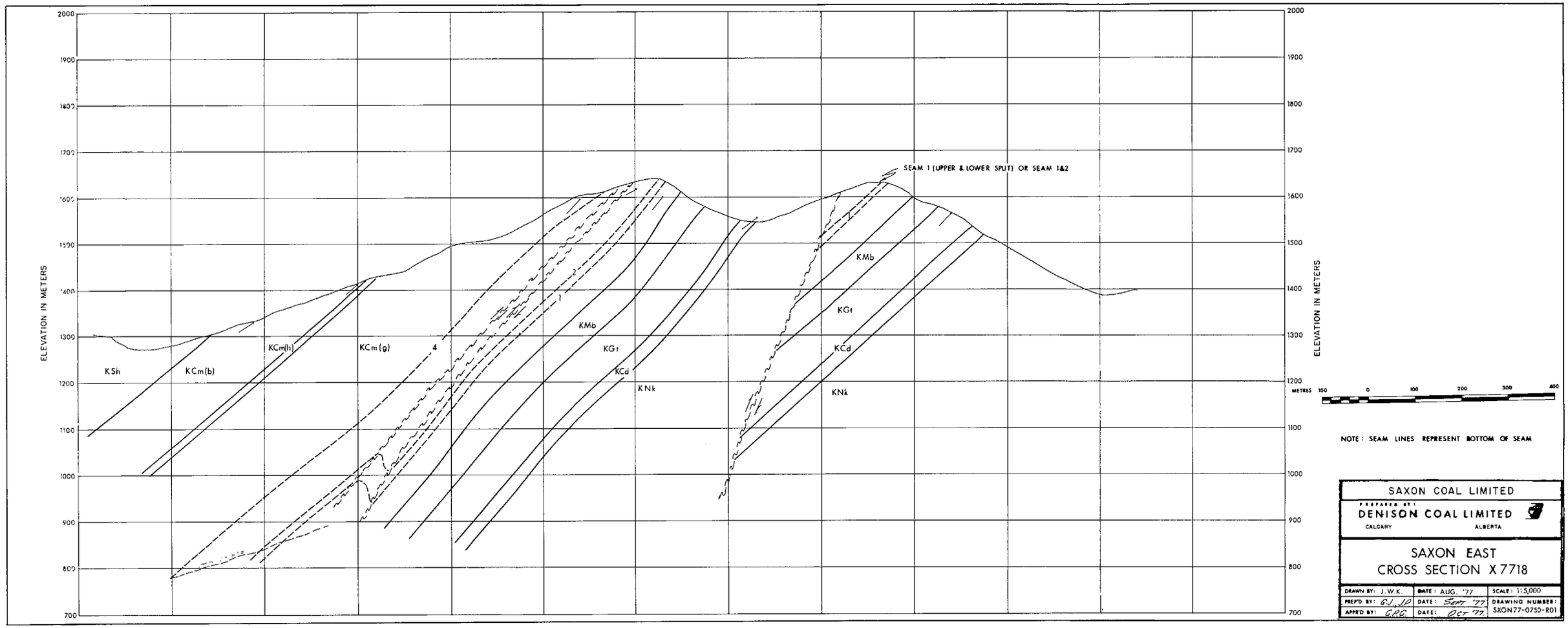
NOTE: SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7717

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: SEPT '77	DRAWING NUMBER:
APPR'D BY: G.P.C.	DATE: OCT '77	SXON77-0750-R01



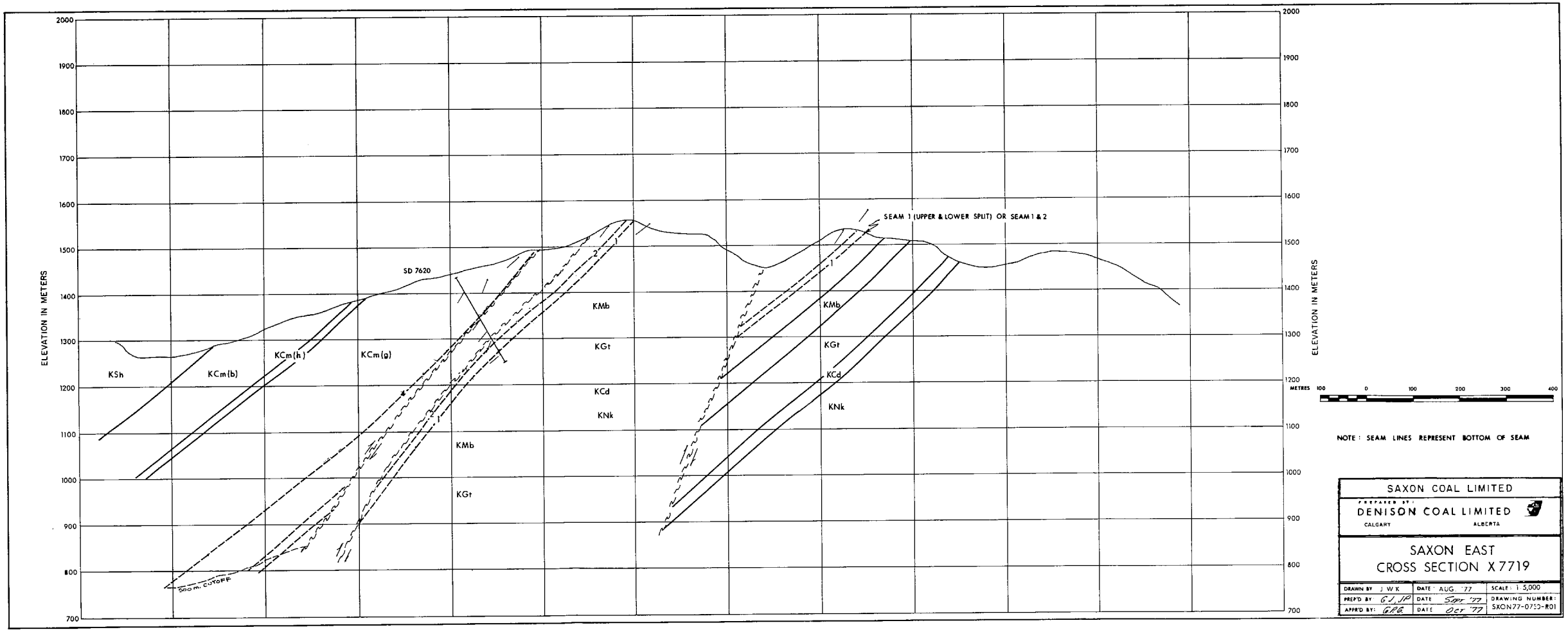
NOTE: SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7718

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: SEPT '77	DRAWING NUMBER:
APPR'D BY: G.P.C.	DATE: OCT '77	SXON77-0750-R01



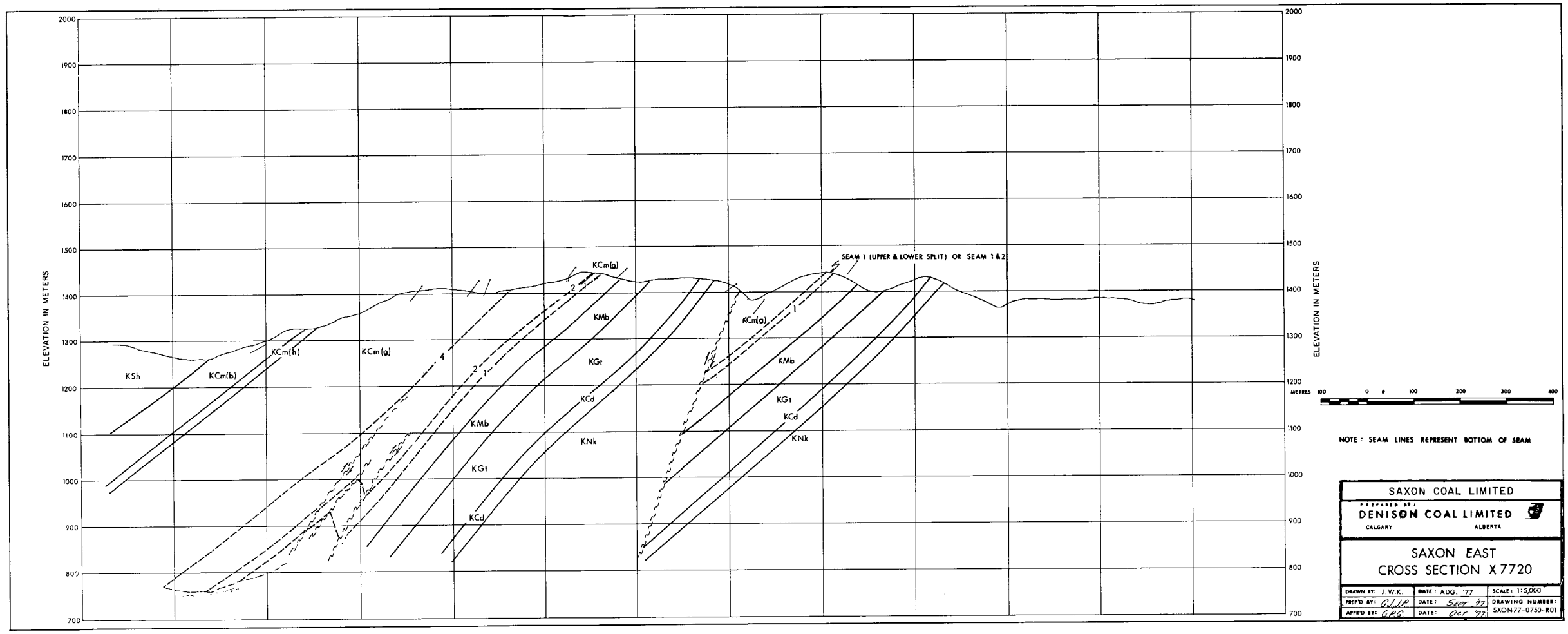
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7719

DRAWN BY J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct '77	SXON77-0750-R01



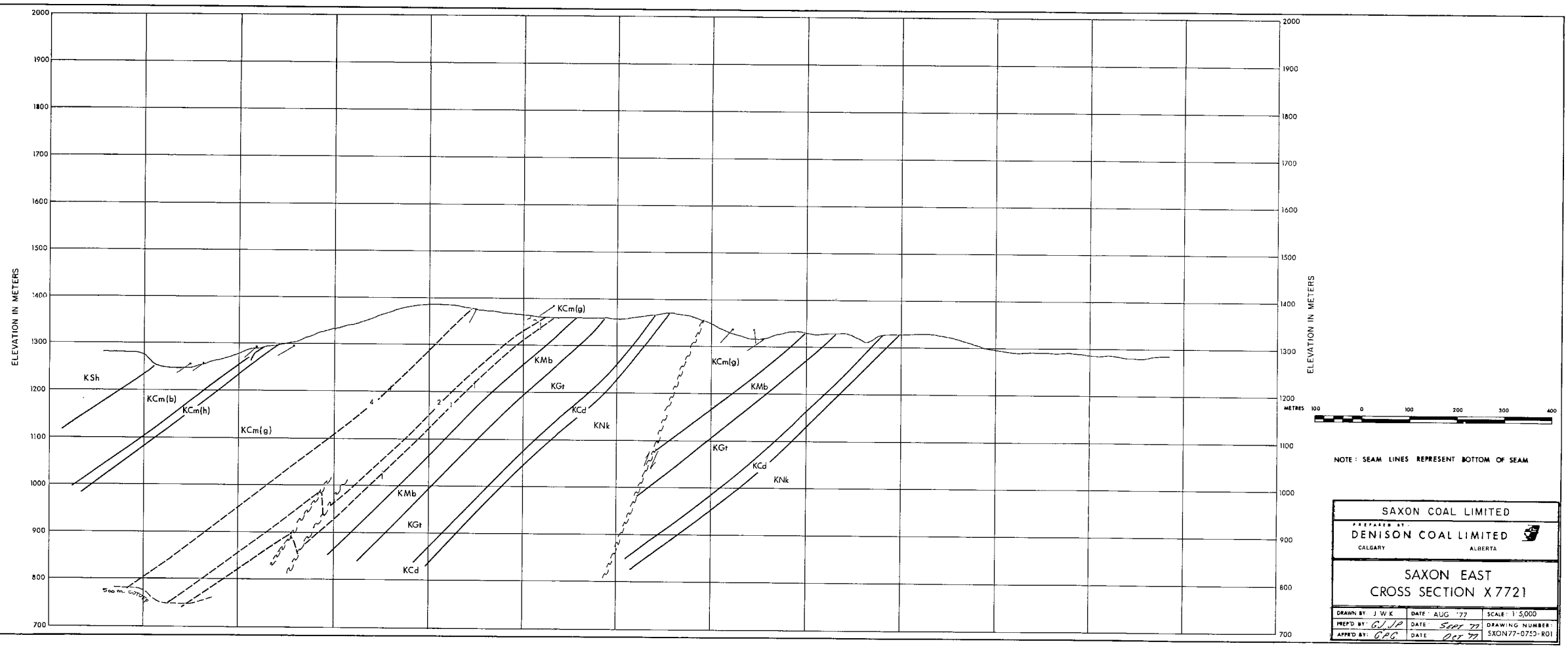
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7720

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct '77	SXON77-0750-R01



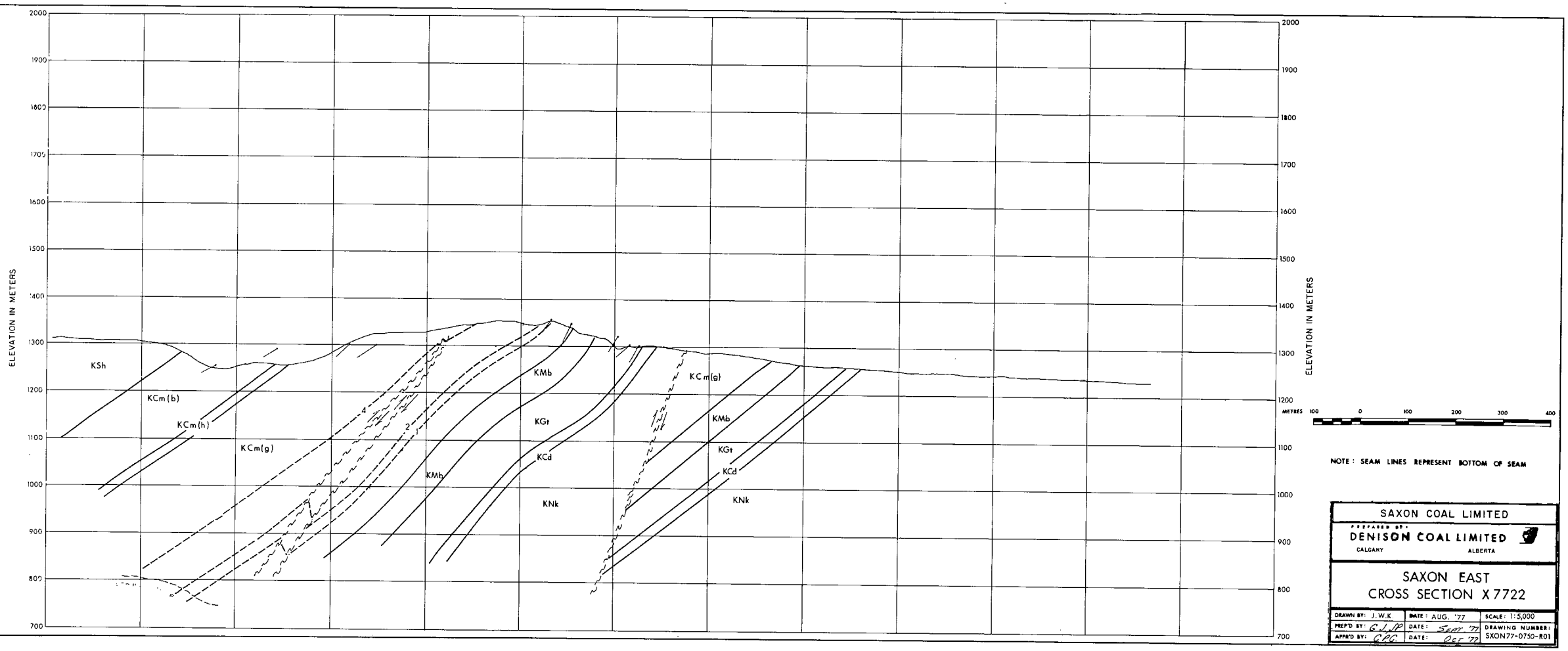
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7721

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. J.P.	DATE: Sept '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.G.	DATE: Oct '77	



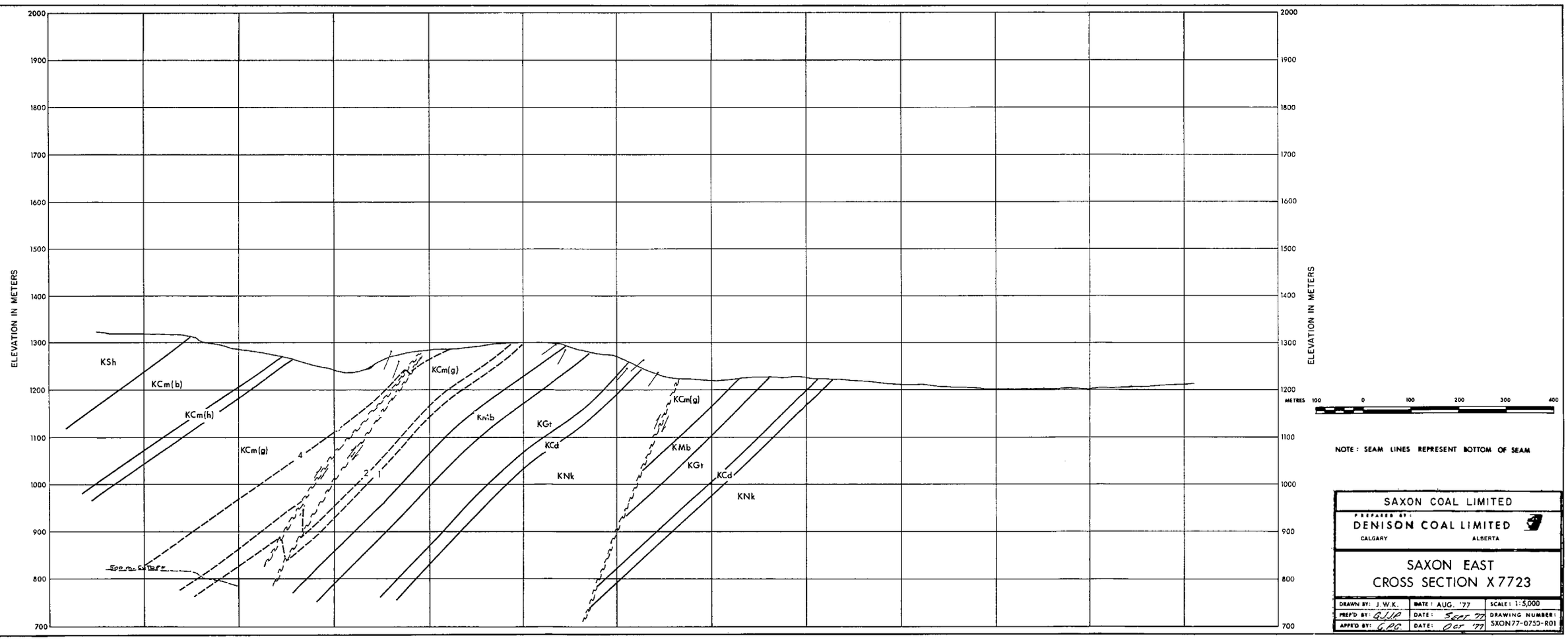
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7722

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. J.P.	DATE: Sept '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.G.	DATE: Oct '77	



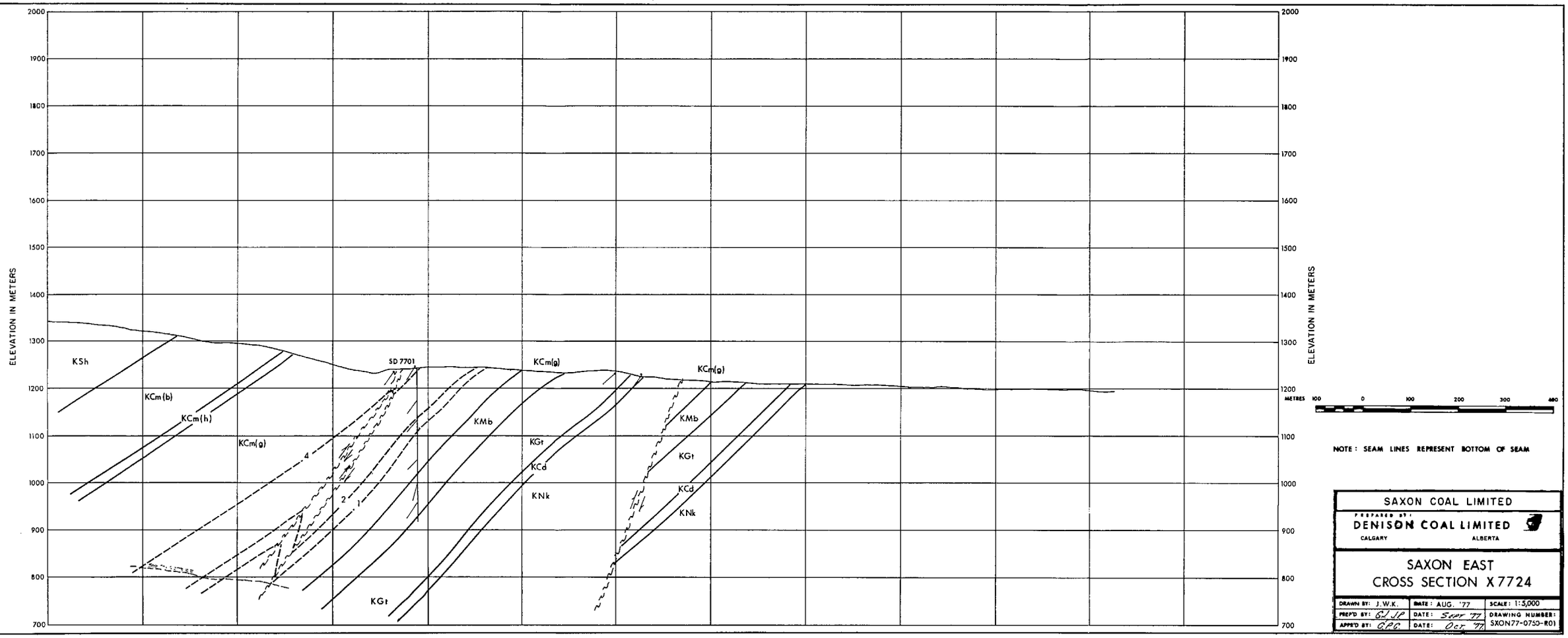
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7723

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: GJP	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: GPG	DATE: Oct '77	SXON77-0750-R01



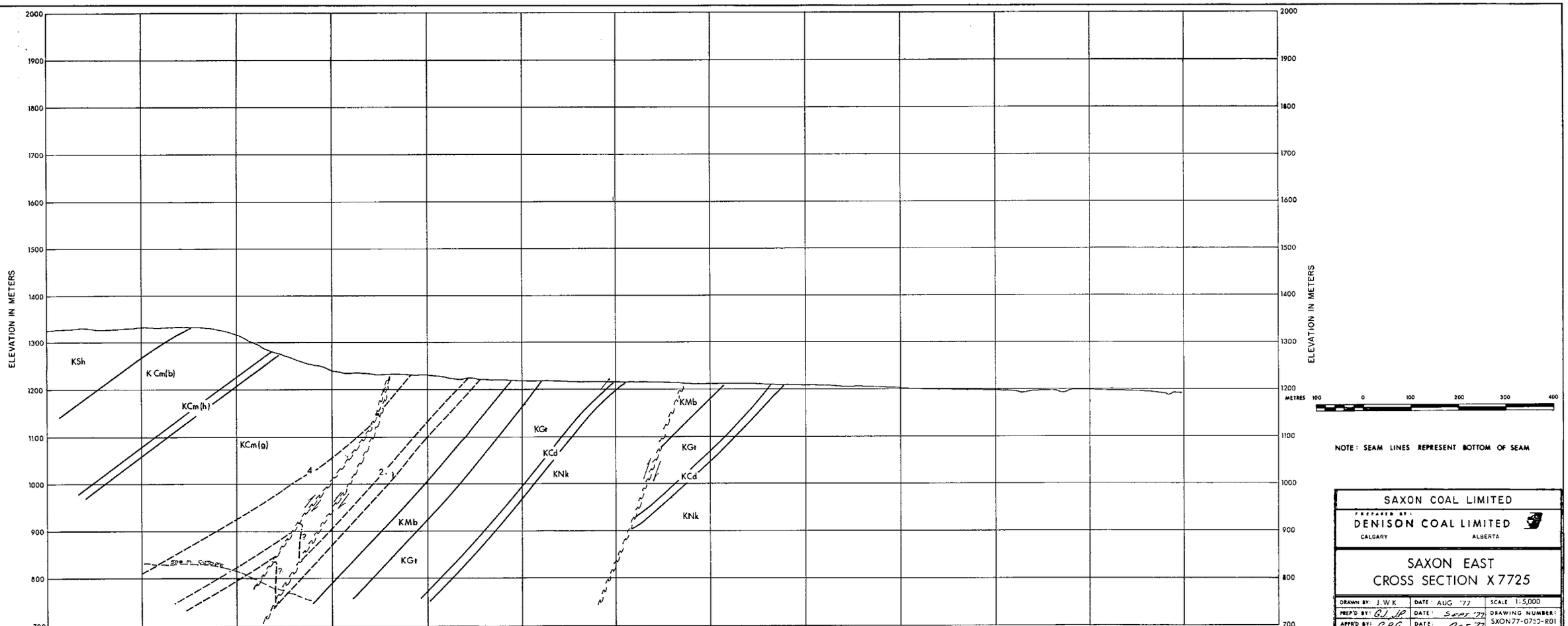
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7724

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: GJP	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: GPG	DATE: Oct '77	SXON77-0750-R01



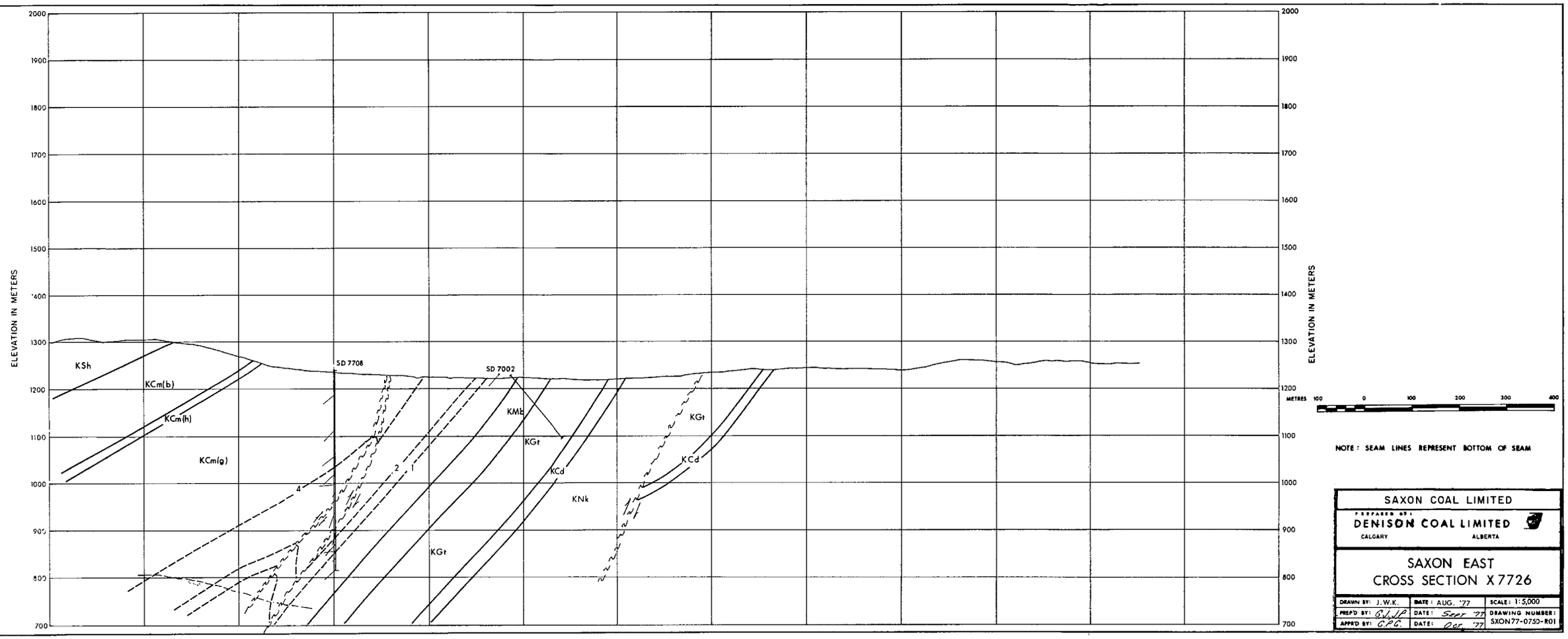
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7725

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: C.P.G.	DATE: Oct '77	



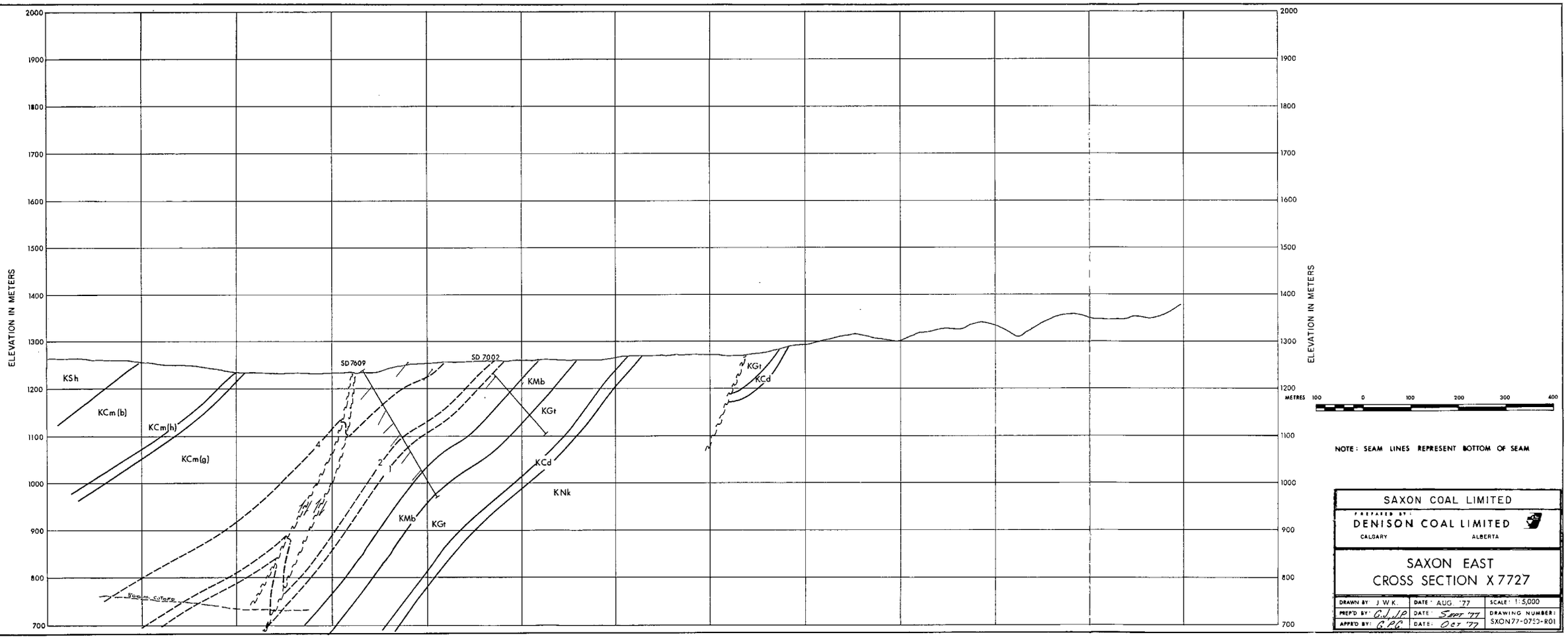
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7726

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: C.P.G.	DATE: Oct '77	



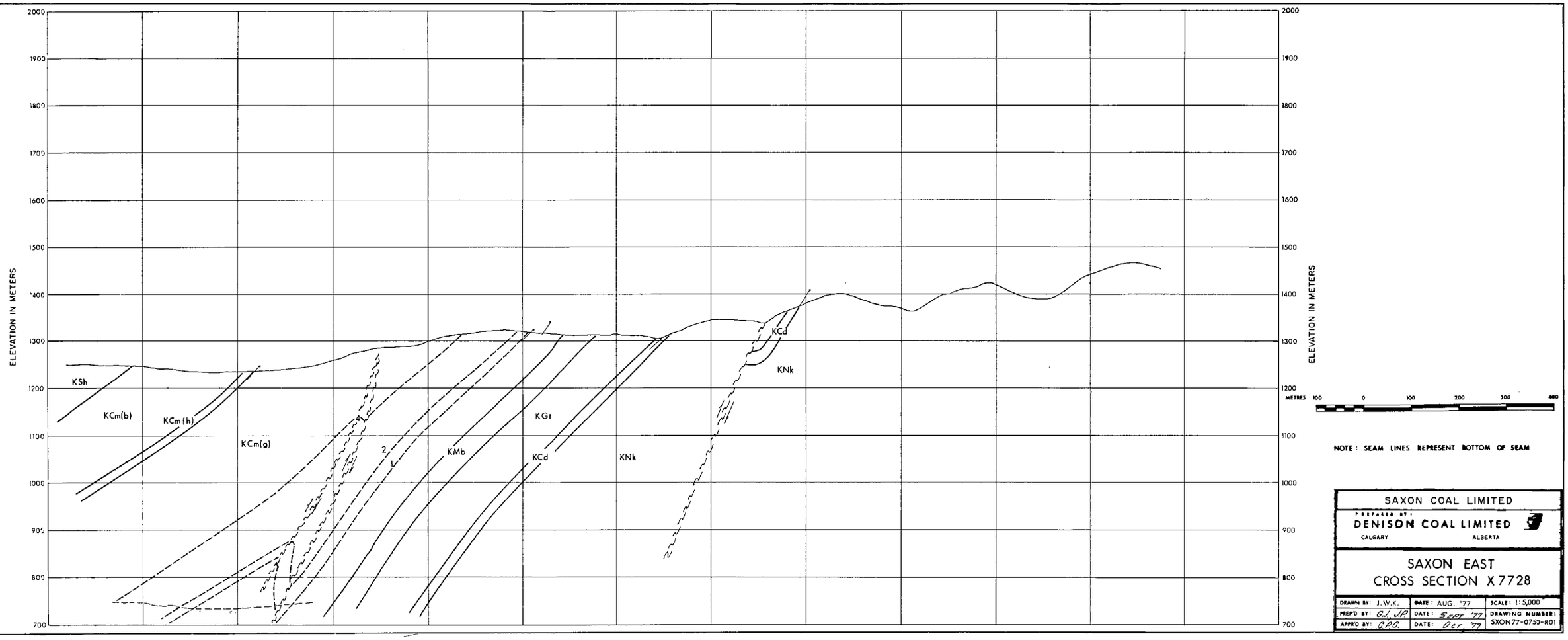
NOTE: SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7727

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J., J.P.	DATE: Sept '77	DRAWING NUMBER: SXON77-0753-R01
APPR'D BY: G.P.G.	DATE: Oct '77	



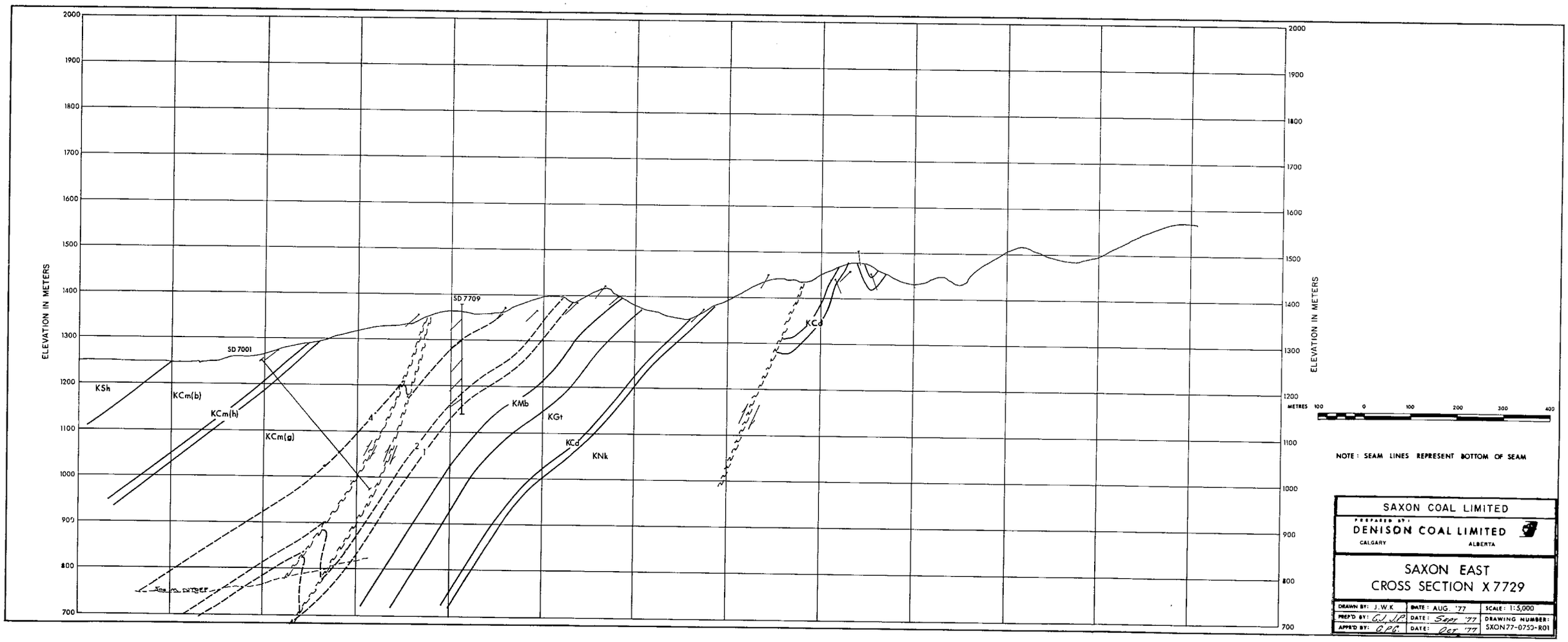
NOTE: SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7728

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J., J.P.	DATE: Sept '77	DRAWING NUMBER: SXON77-0753-R01
APPR'D BY: G.P.G.	DATE: Oct '77	



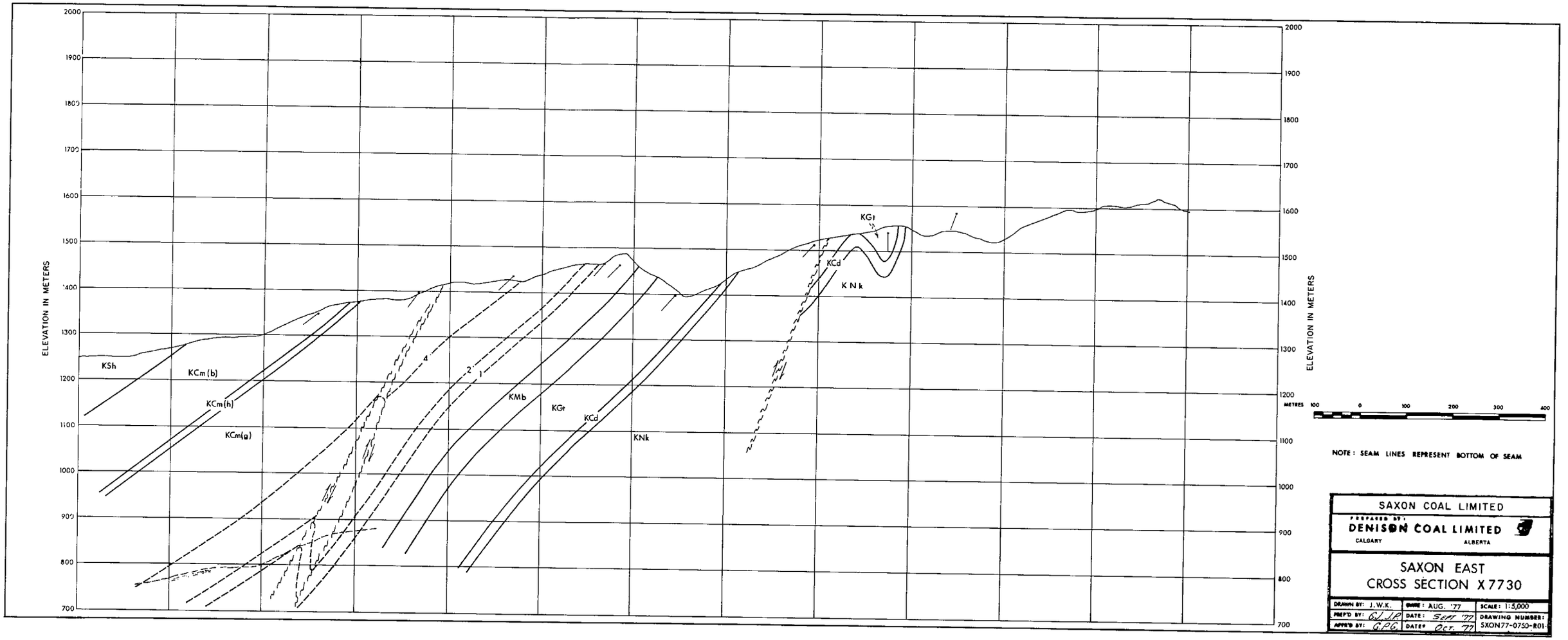
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7729

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.C.	DATE: Oct. '77	SXON77-0750-R01



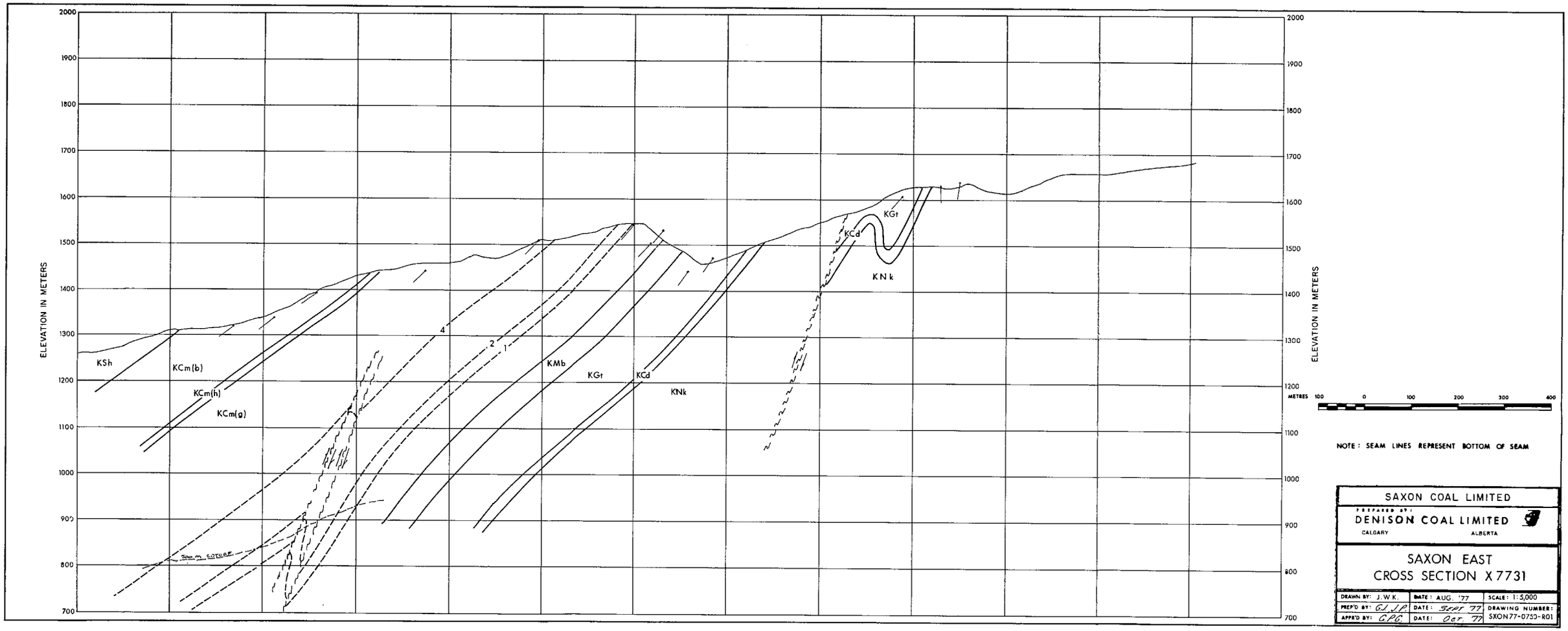
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7730

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.C.	DATE: Oct. '77	SXON77-0750-R01



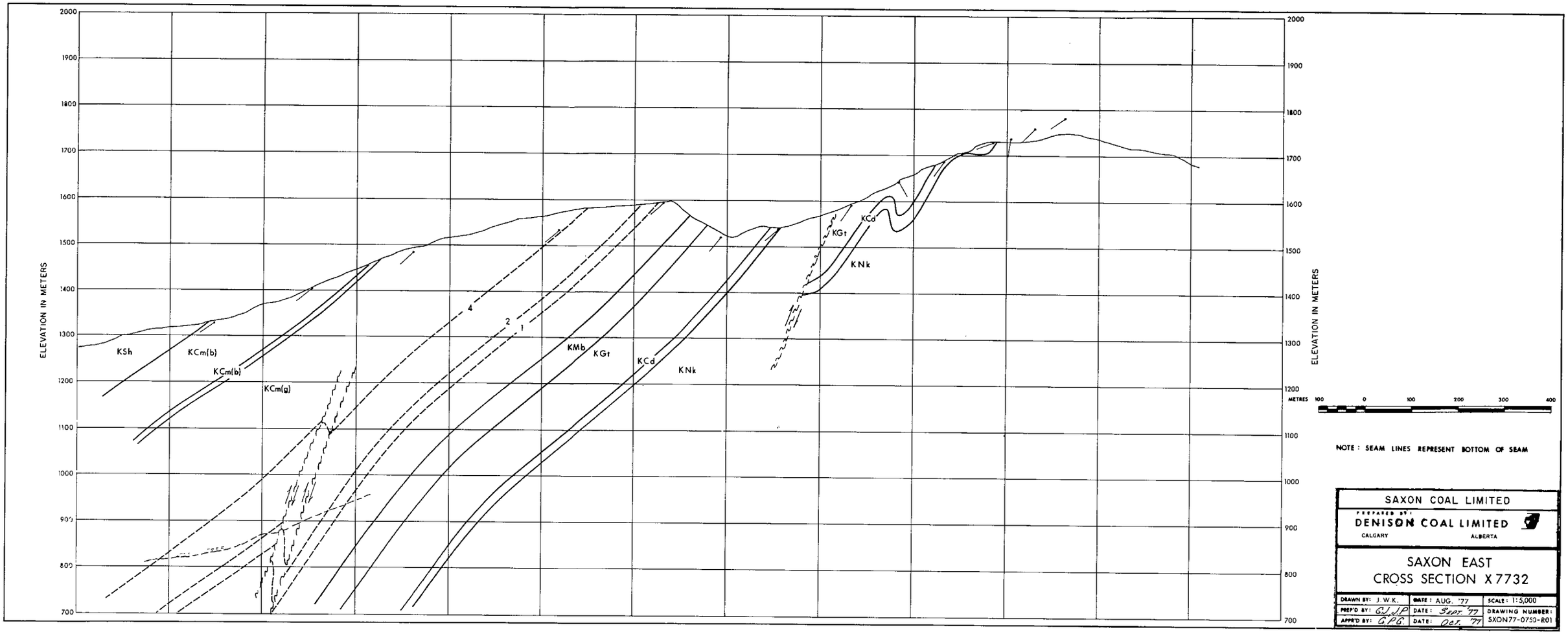
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7731

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: GJ JP	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01



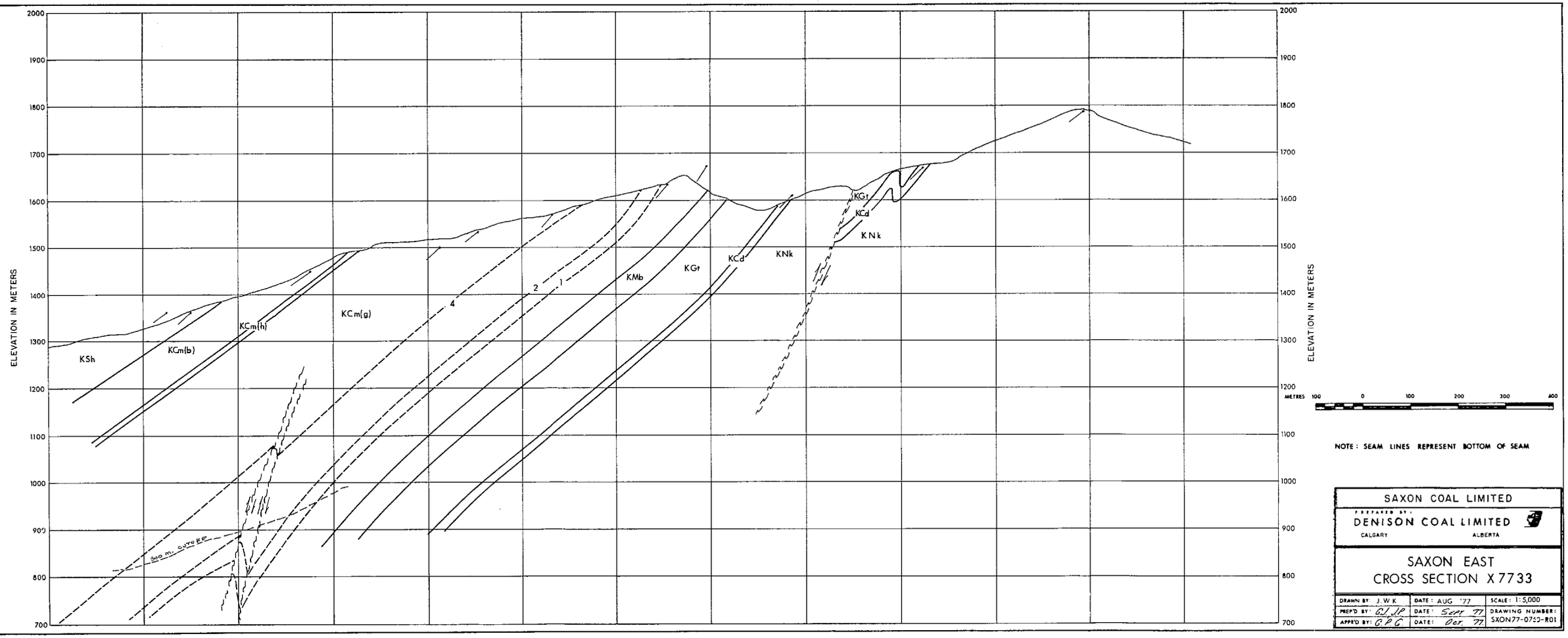
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7732

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: GJ JP	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01



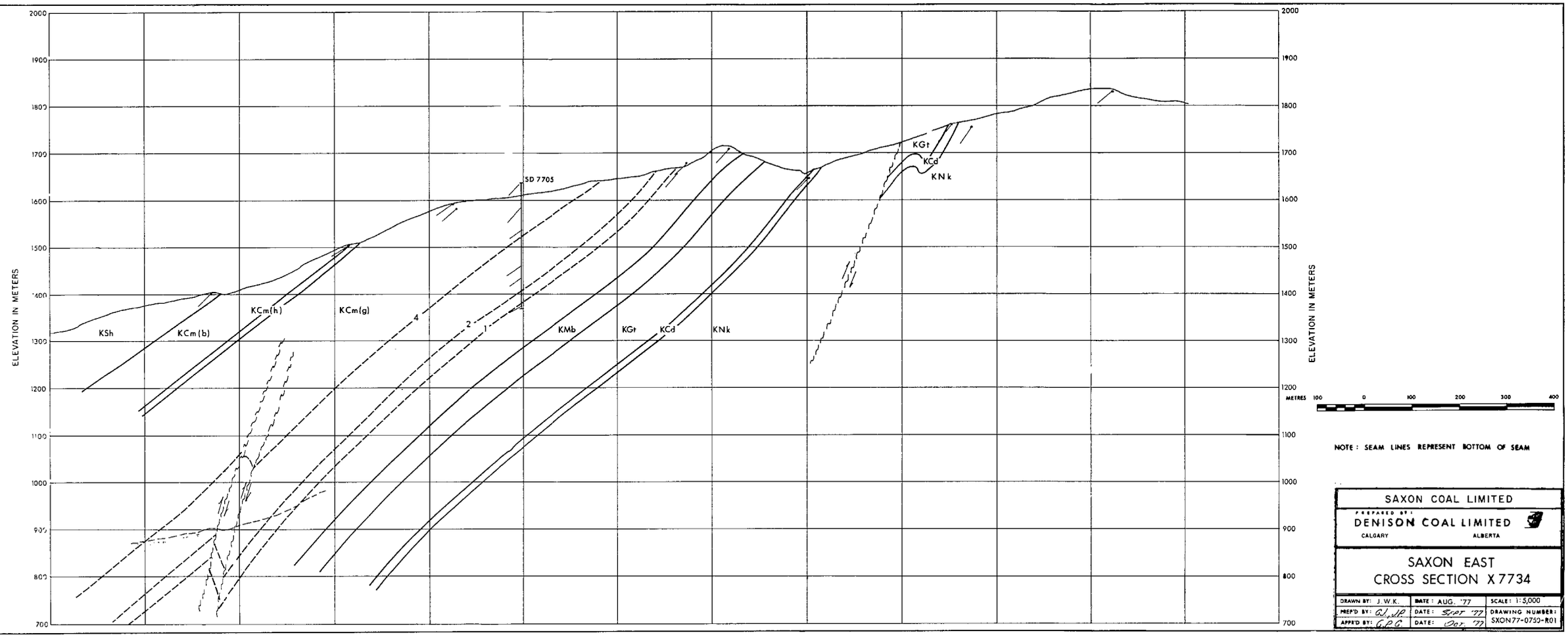
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7733

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.G.	DATE: Oct. '77	



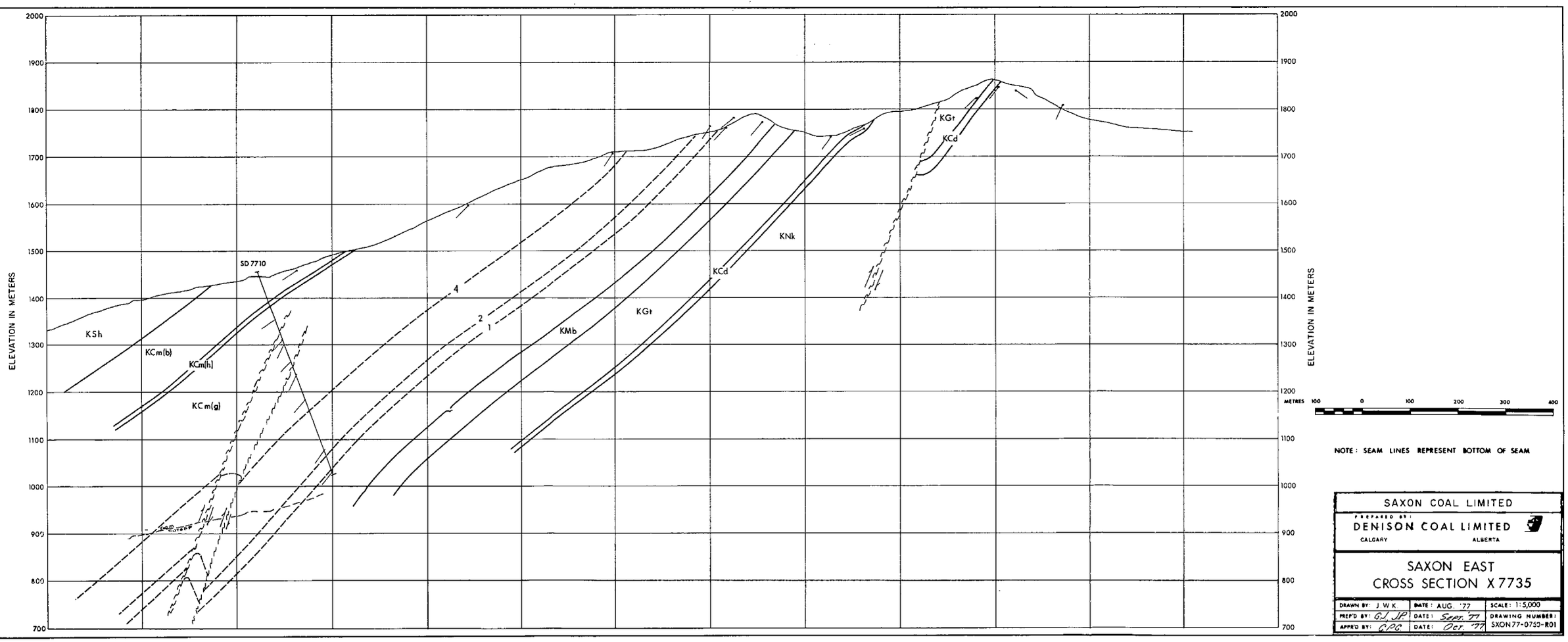
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7734

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.G.	DATE: Oct. '77	



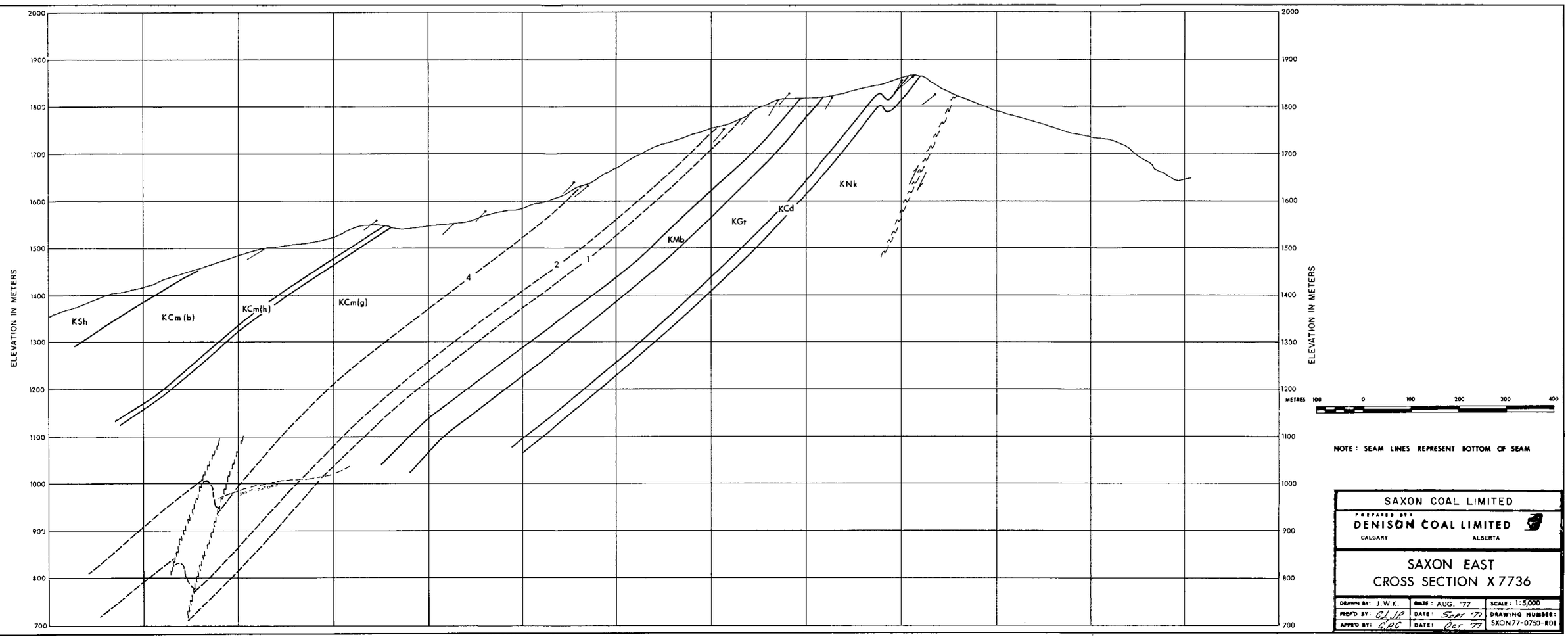
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7735

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: CJ, JP	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: GPG	DATE: Oct '77	SXON77-0750-R01



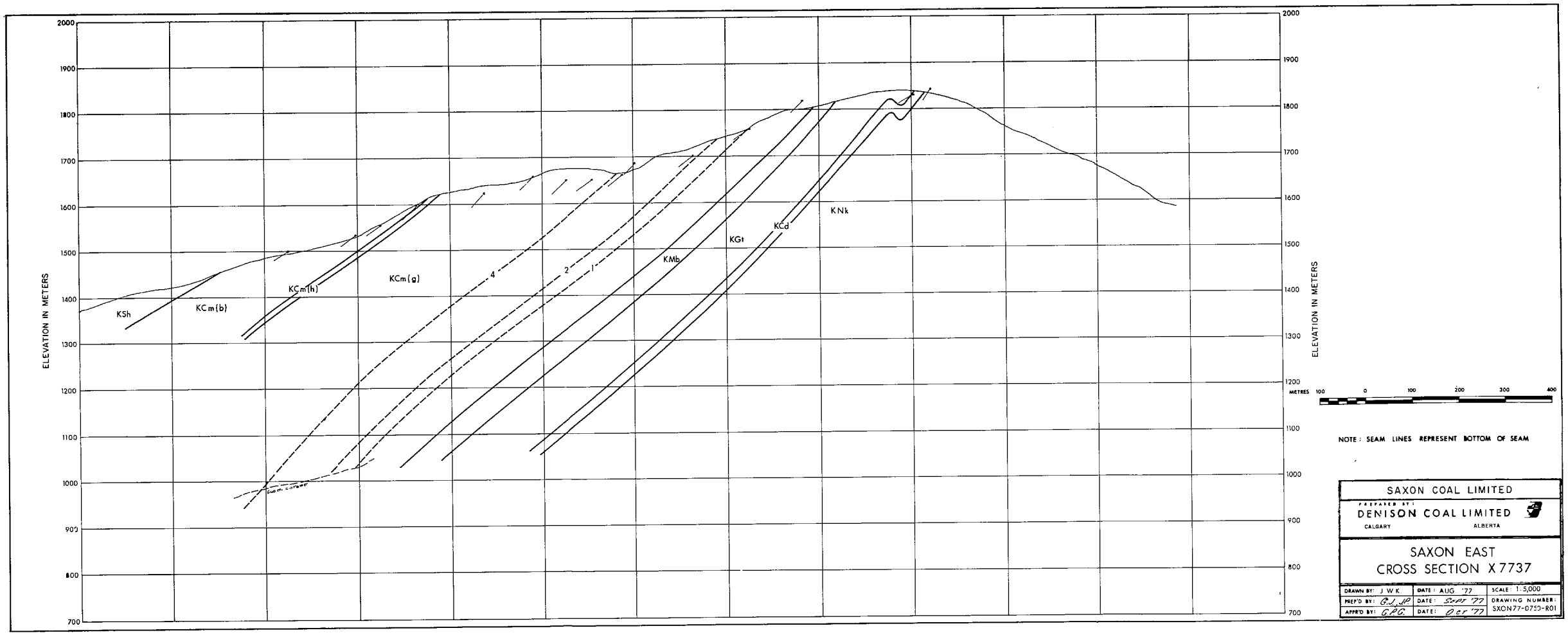
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

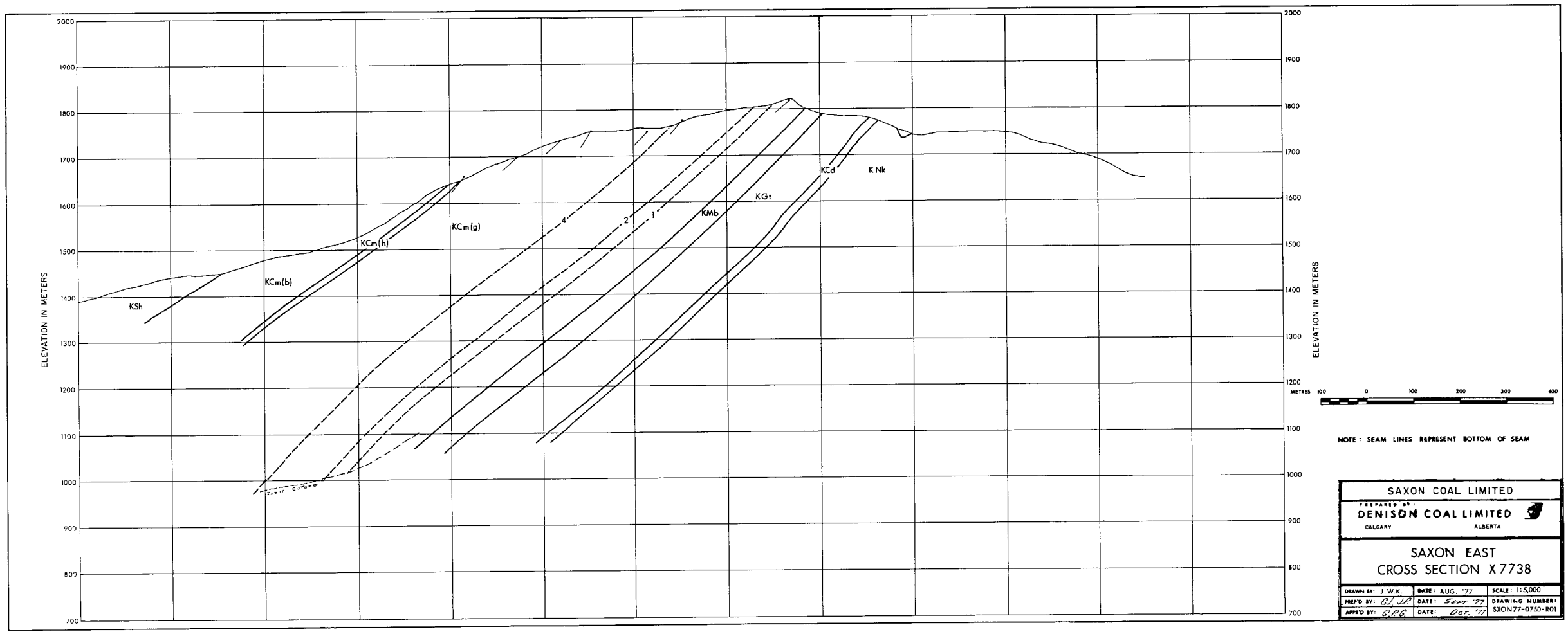
SAXON COAL LIMITED

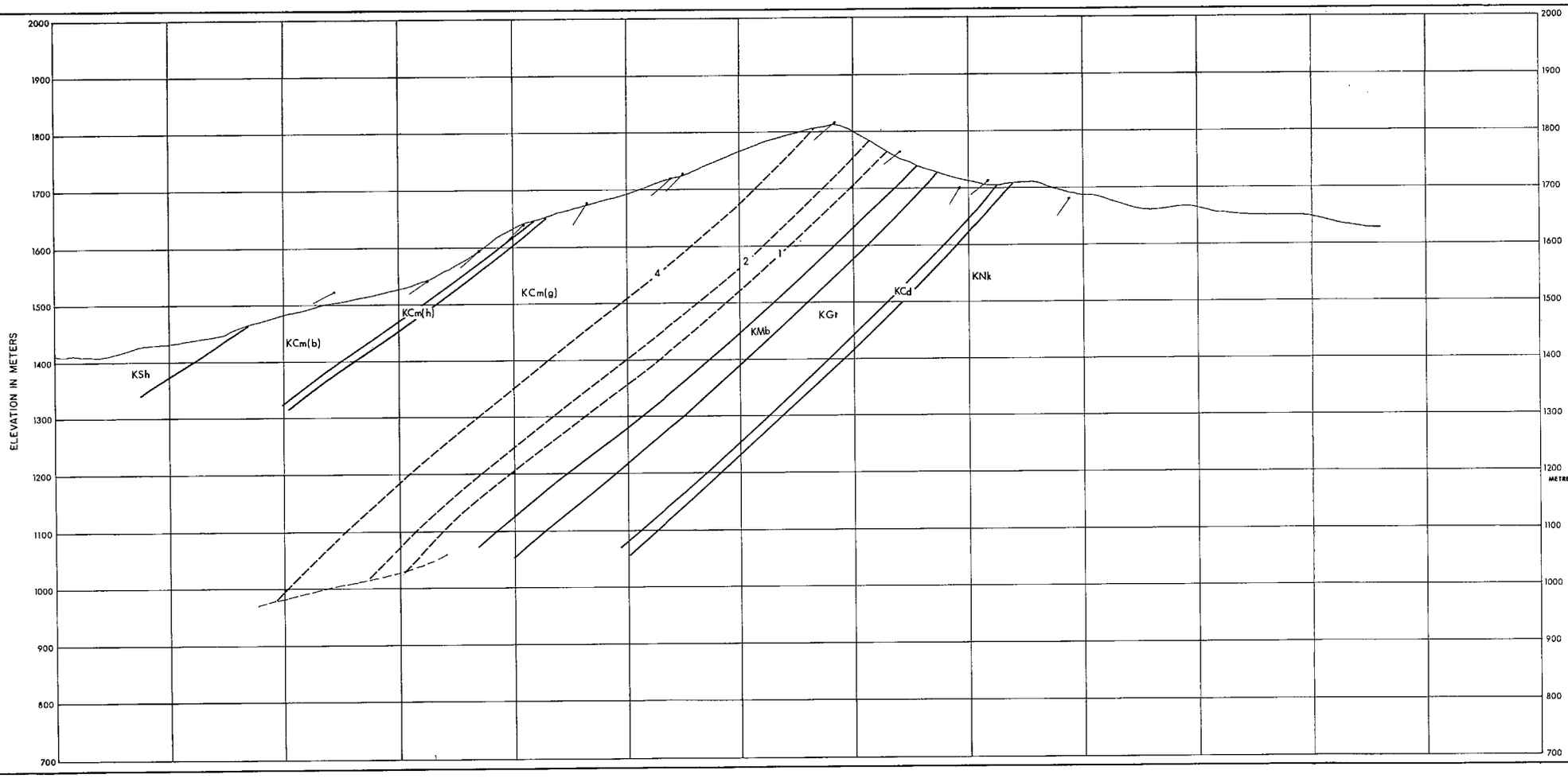
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

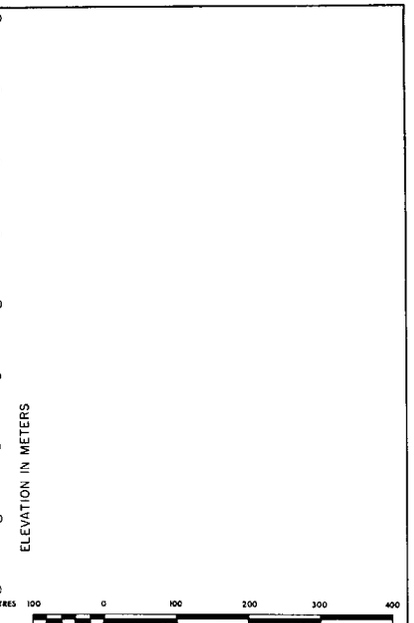
SAXON EAST
CROSS SECTION X 7736

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: CJ, JP	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: GPG	DATE: Oct '77	SXON77-0750-R01


ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
KSh
KCm(b)
KCm(h)
KCm(g)
KMb
KGt
KCd
KNk
4
2
1
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7737
DRAWN BY: J.W.K. DATE: AUG. '77 SCALE: 1:5,000
PREP'D BY: G.J.P. DATE: Sept '77 DRAWING NUMBER:
APPR'D BY: G.P.G. DATE: Oct '77 SXON77-0759-R01


ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
KSh
KCm(b)
KCm(h)
KCm(g)
KMb
KGt
KCd
K Nk
4
2
1
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7738
DRAWN BY: J.W.K. DATE: AUG. '77 SCALE: 1:5,000
PREP'D BY: G.J.P. DATE: Sept '77 DRAWING NUMBER:
APPR'D BY: G.P.G. DATE: Oct. '77 SXON77-0750-R01





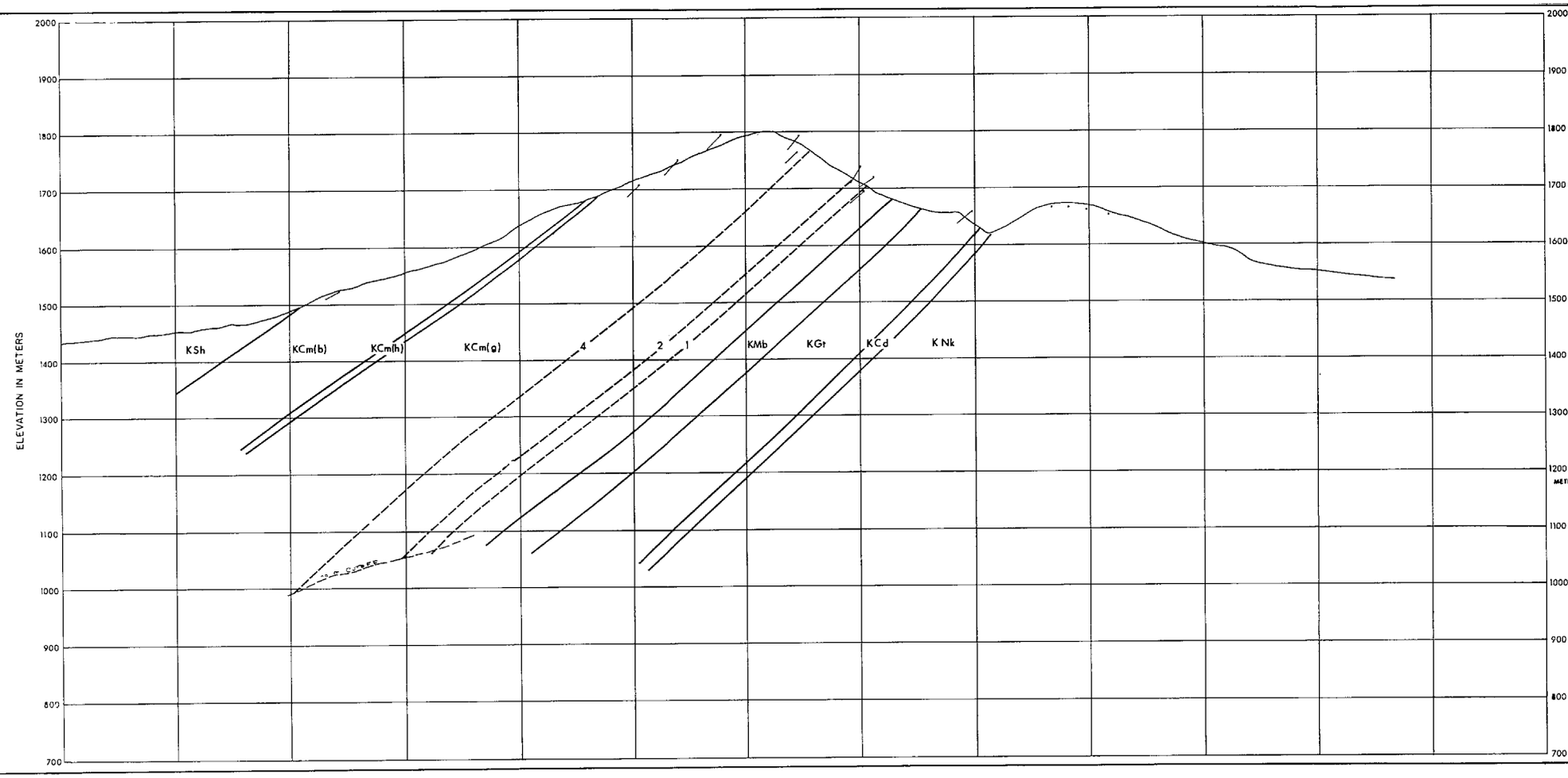
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

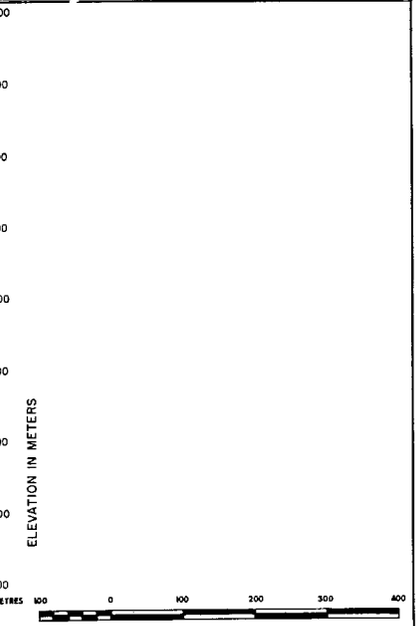
SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7739

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: G.P.C.	DATE: Oct '77	SXON77-0759-R01





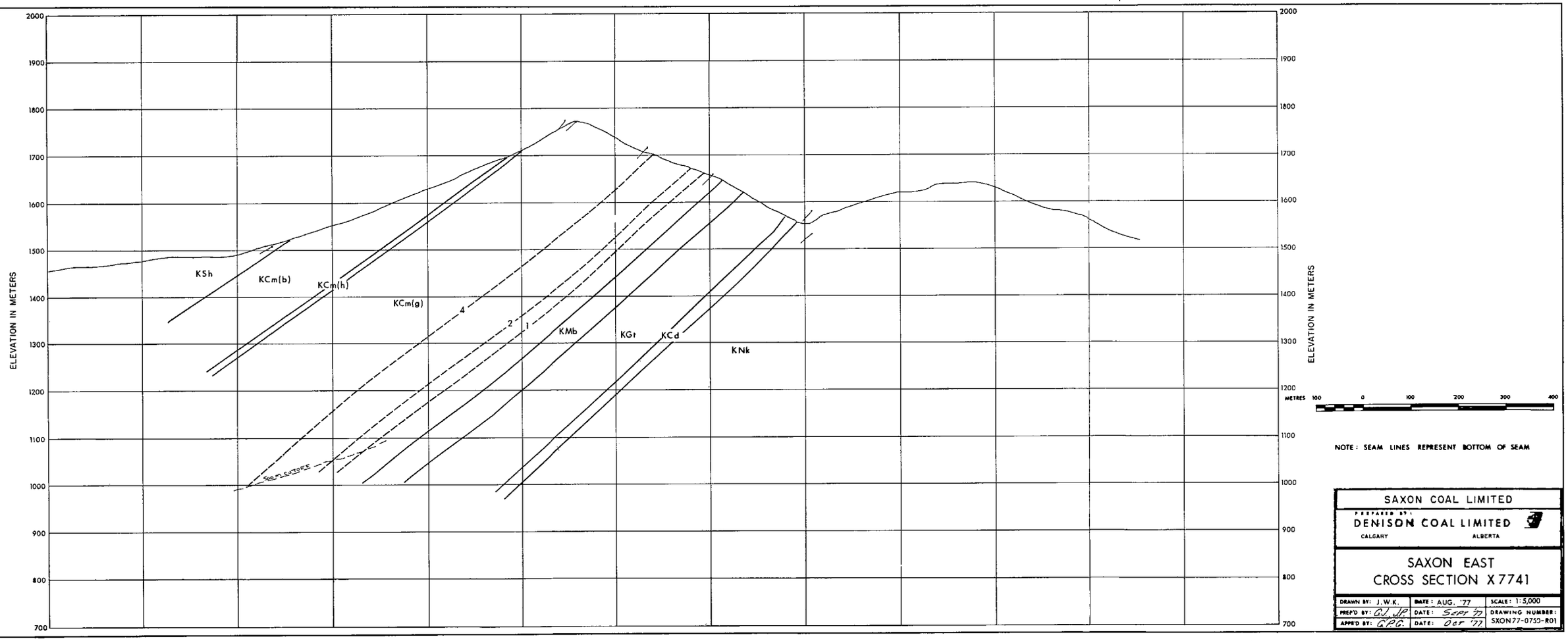
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7740

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: G.P.C.	DATE: Oct '77	SXON77-0750-R01



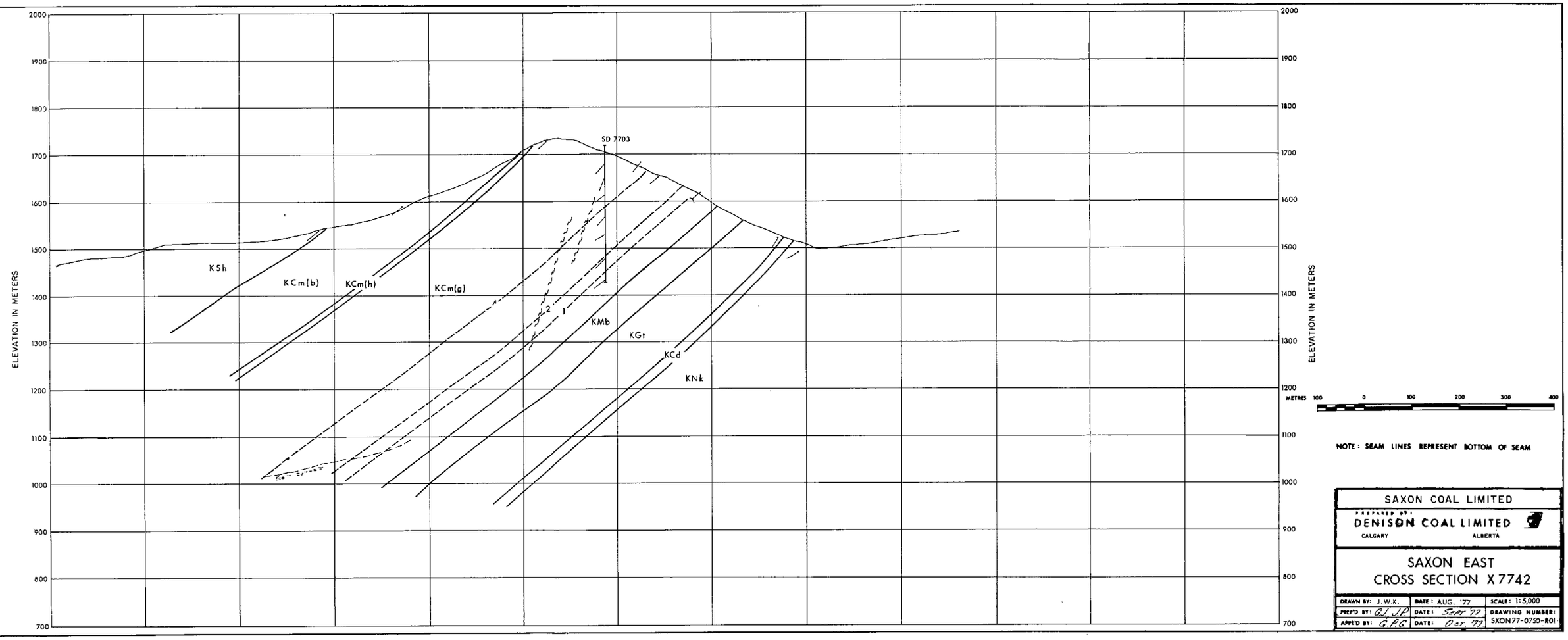
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7741

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct '77	SXON77-0750-R01



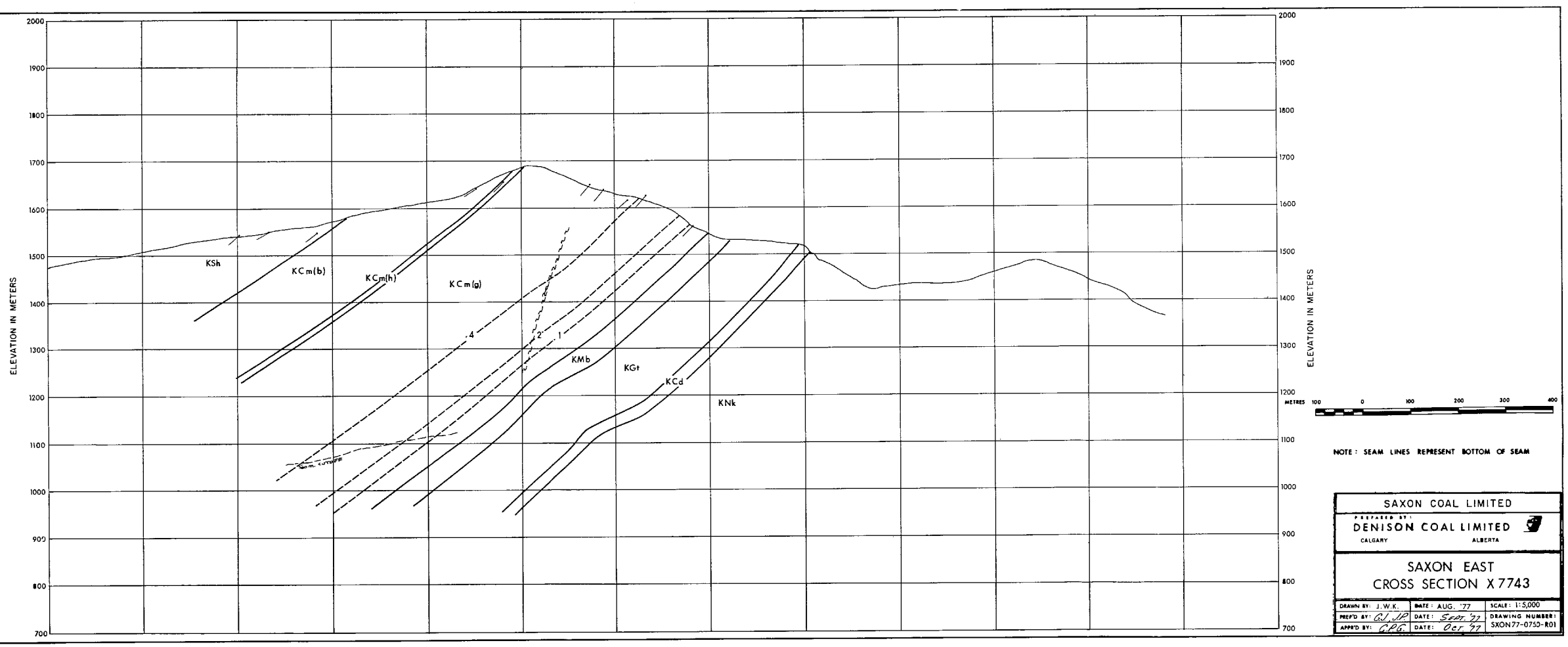
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7742

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct '77	SXON77-0750-R01



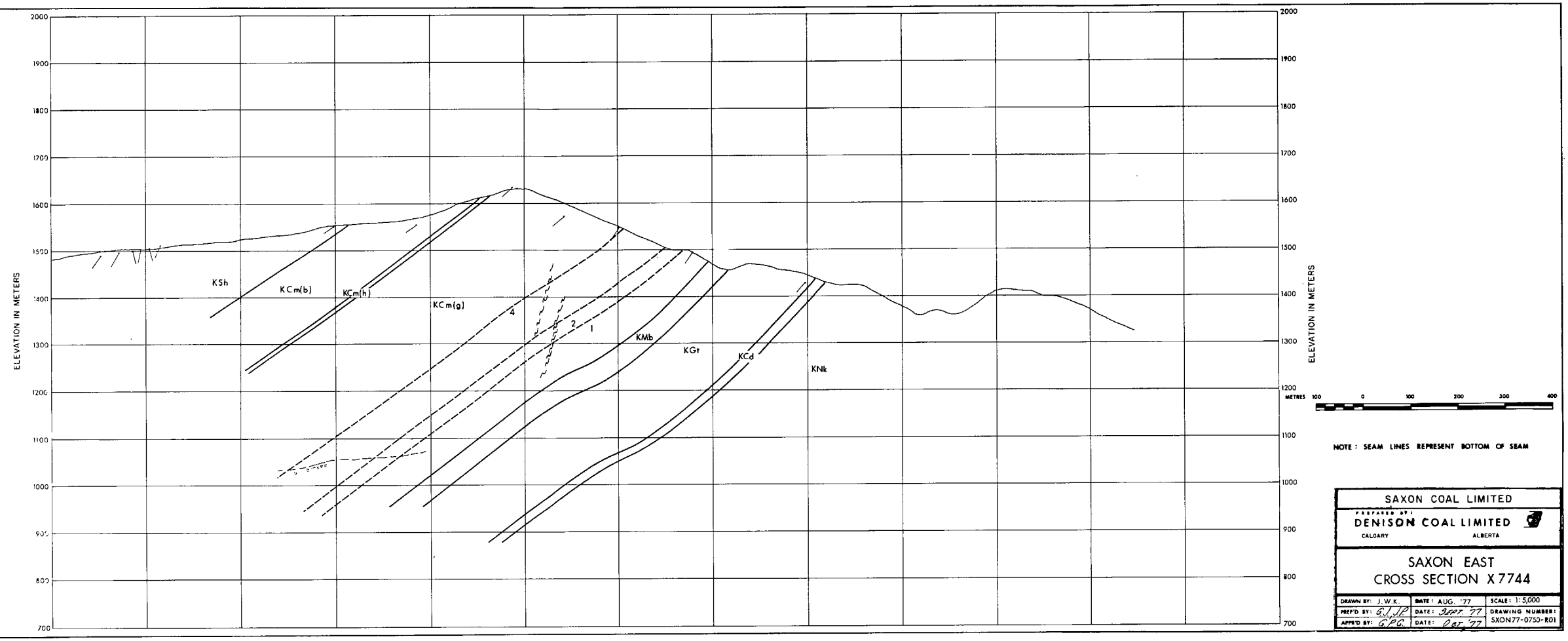
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7743

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept. 77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01



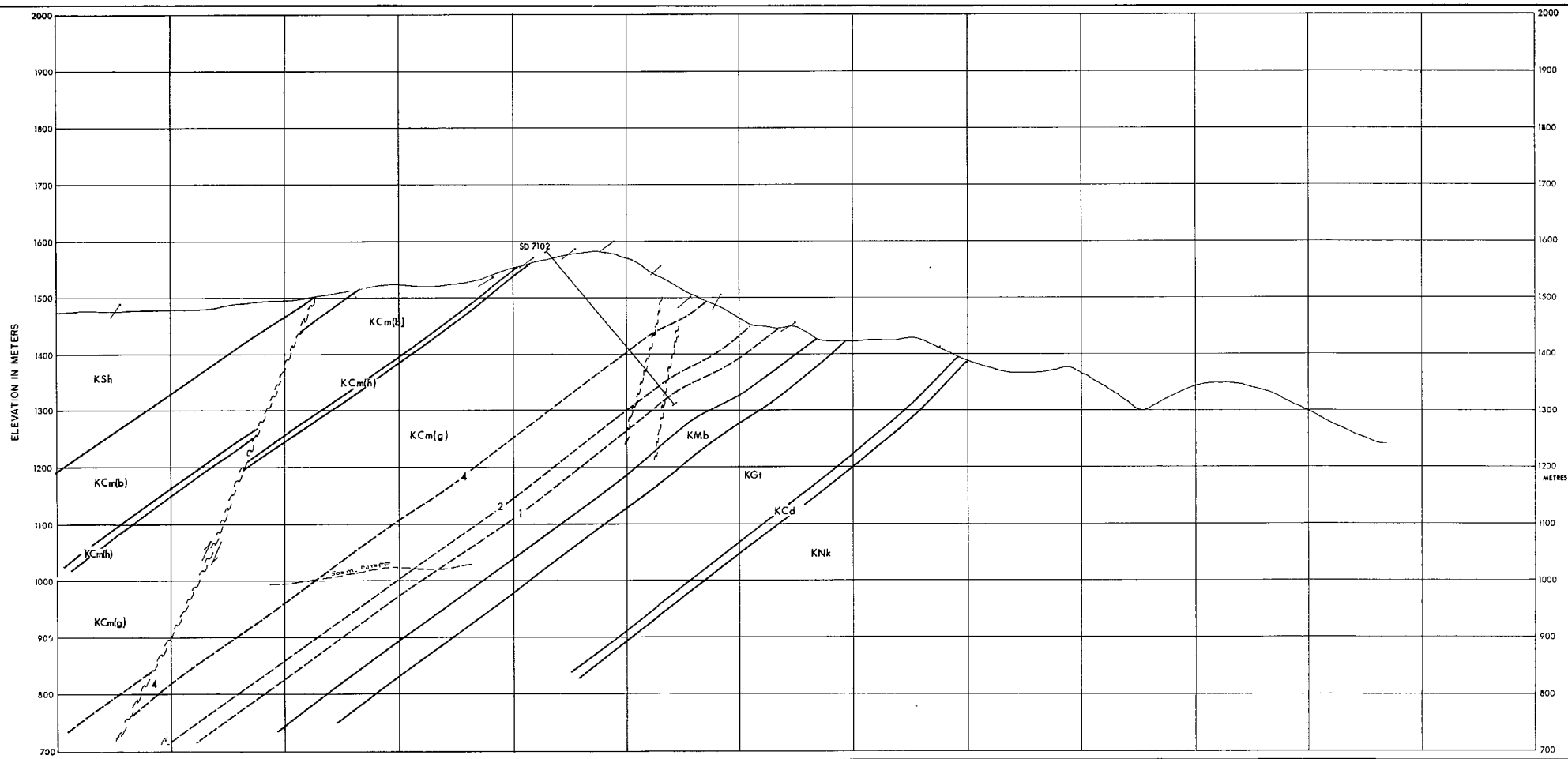
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7744

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept. 77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01



ELEVATION IN METERS

METRES 100 0 100 200 300 400

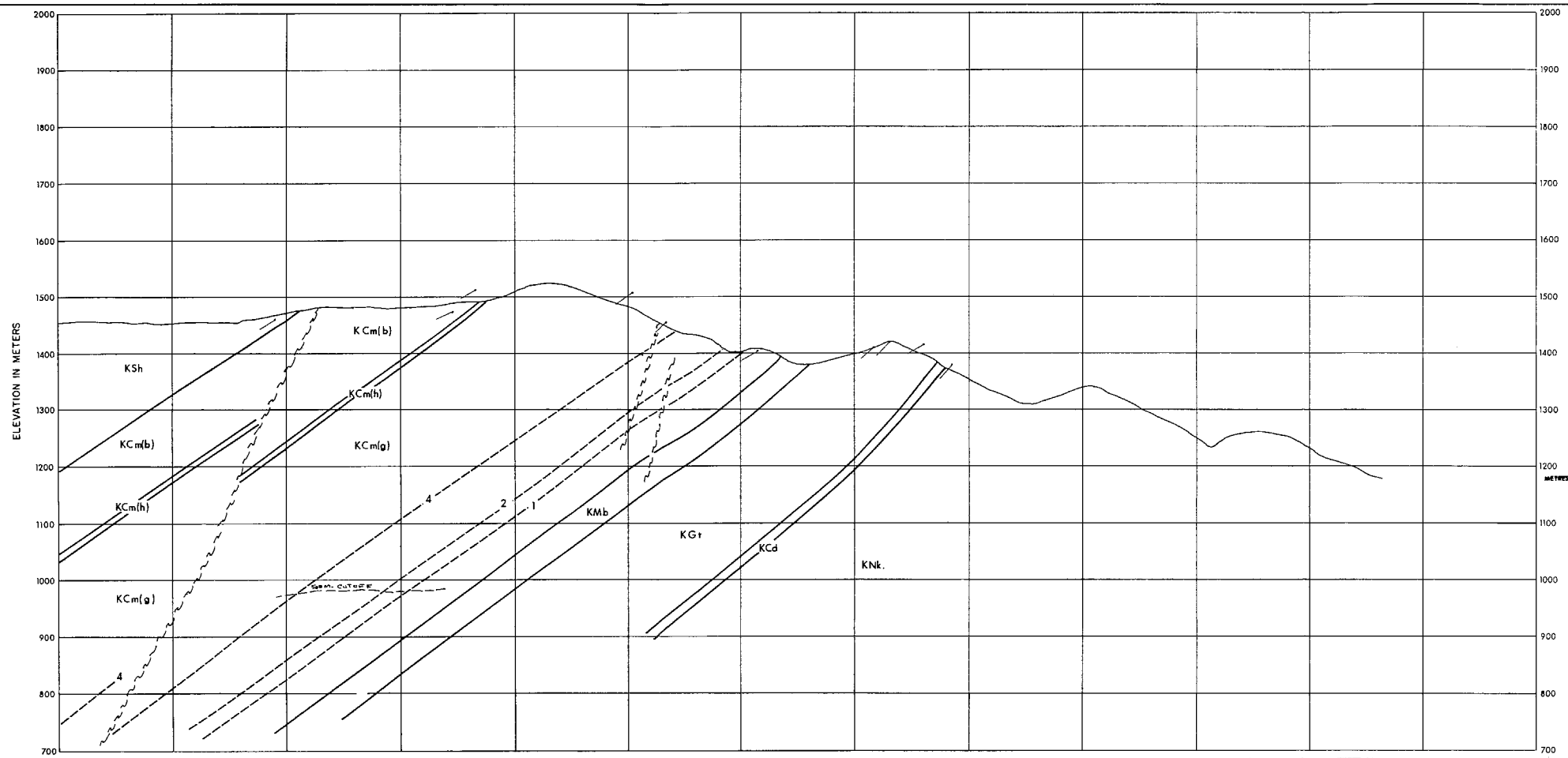
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7745

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: GJP	DATE: Sept. '77	DRAWING NUMBER:
APP'D BY: GPG	DATE: Oct. '77	SXON77-0755-R01



ELEVATION IN METERS

METRES 100 0 100 200 300 400

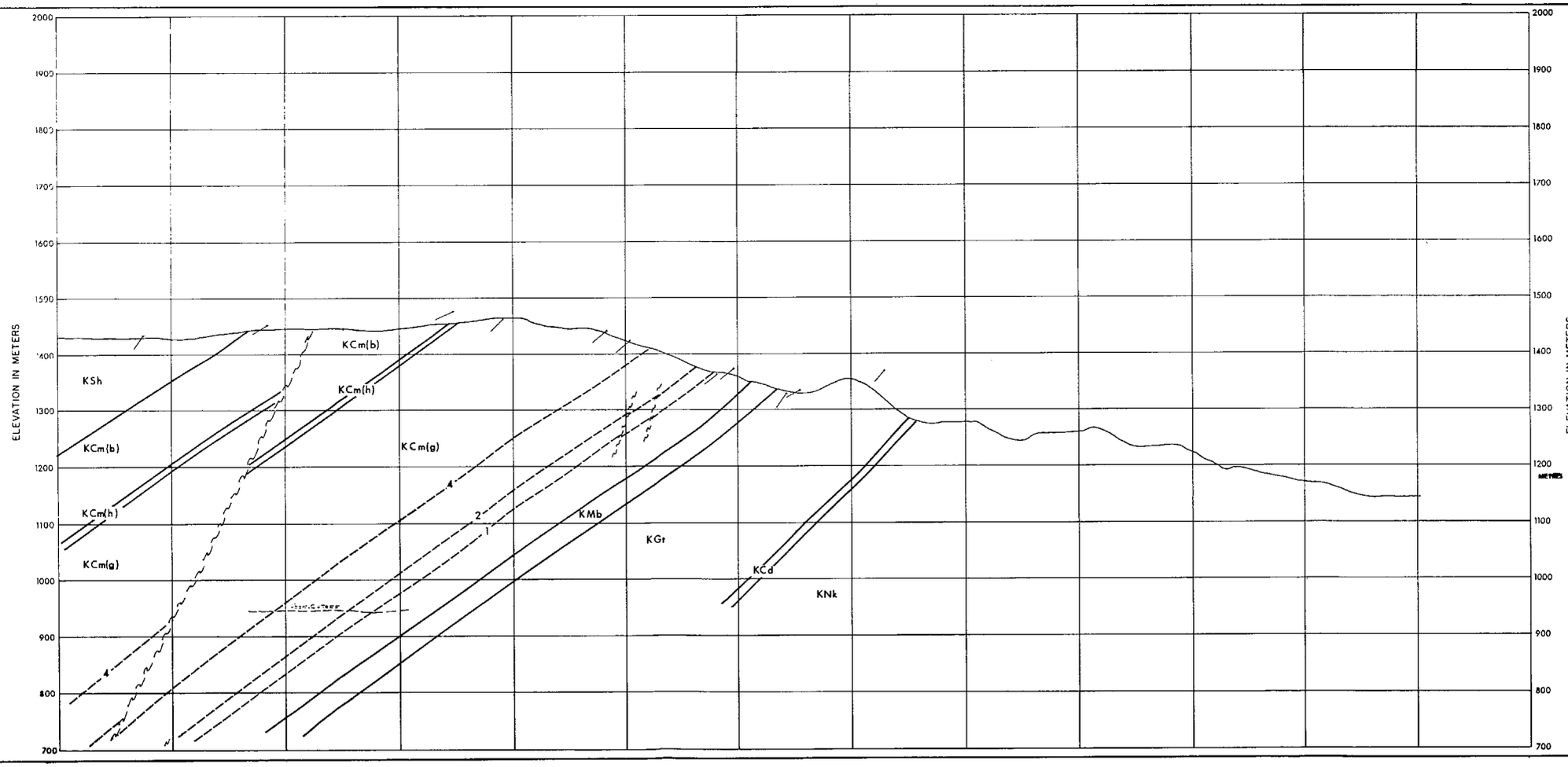
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

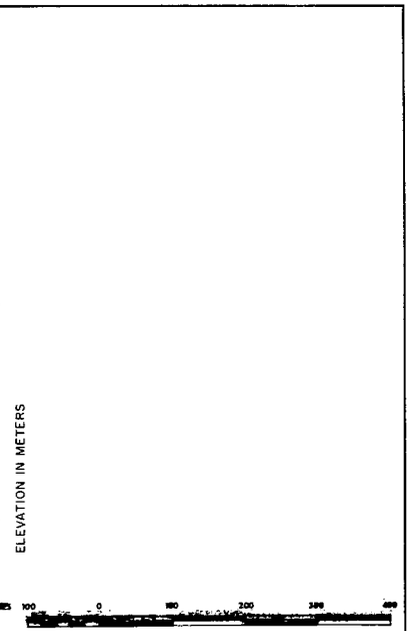
SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7746

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: GJP	DATE: Sept. '77	DRAWING NUMBER:
APP'D BY: GPG	DATE: Oct. '77	SXON77-0755-R01





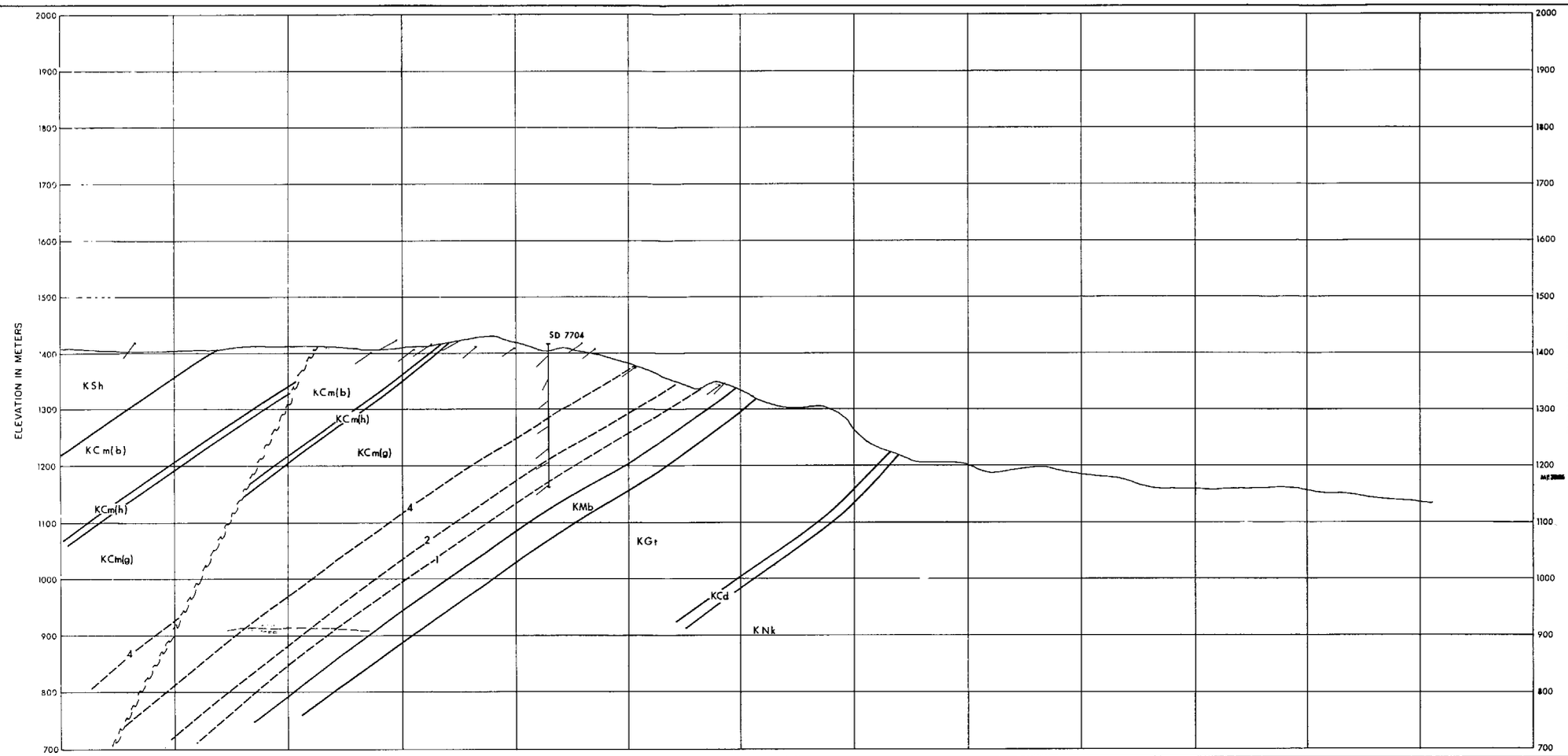
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

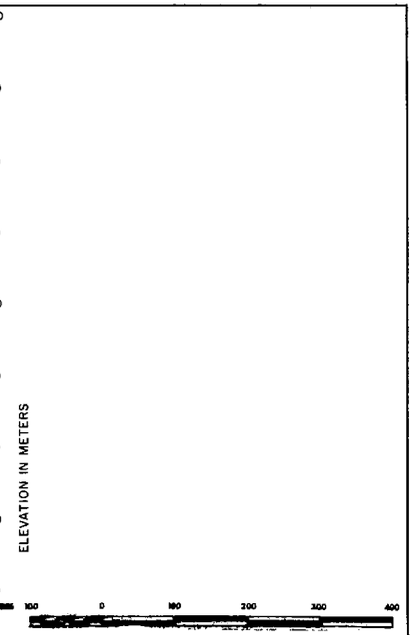
SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7747

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. J.P.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01-





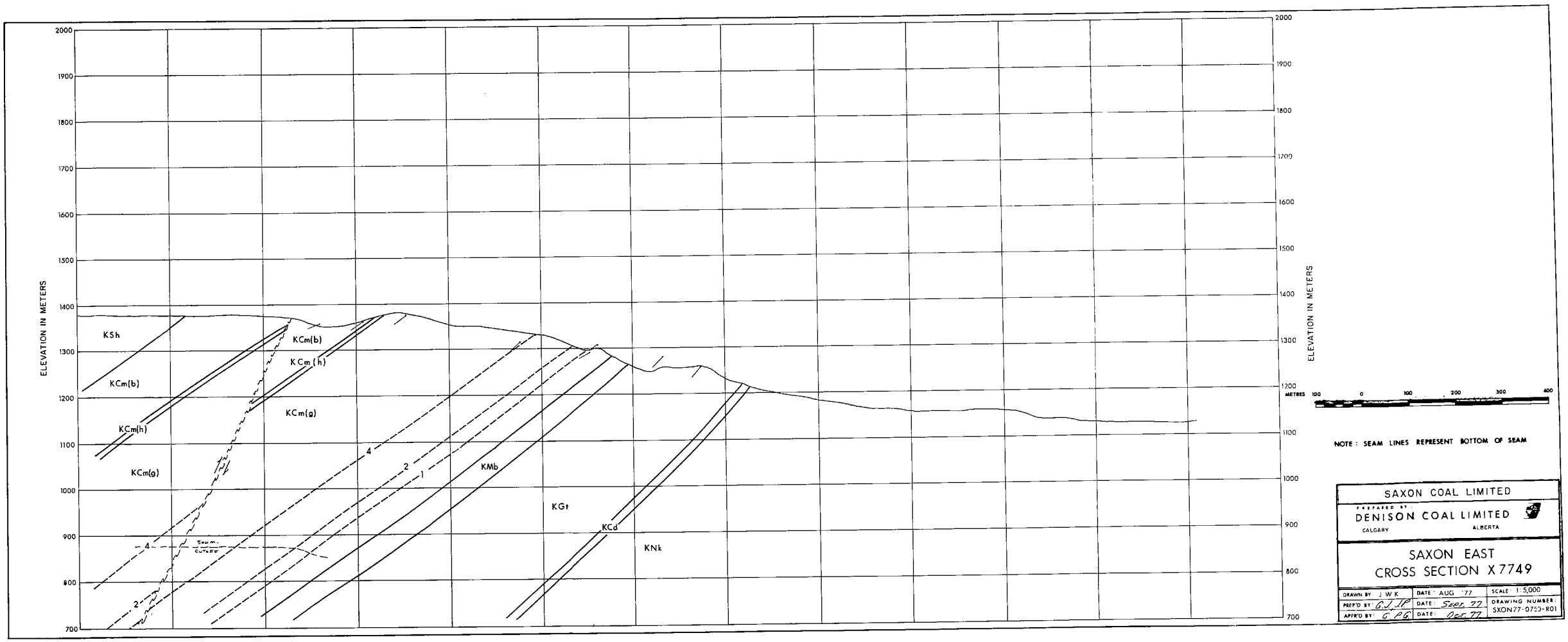
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

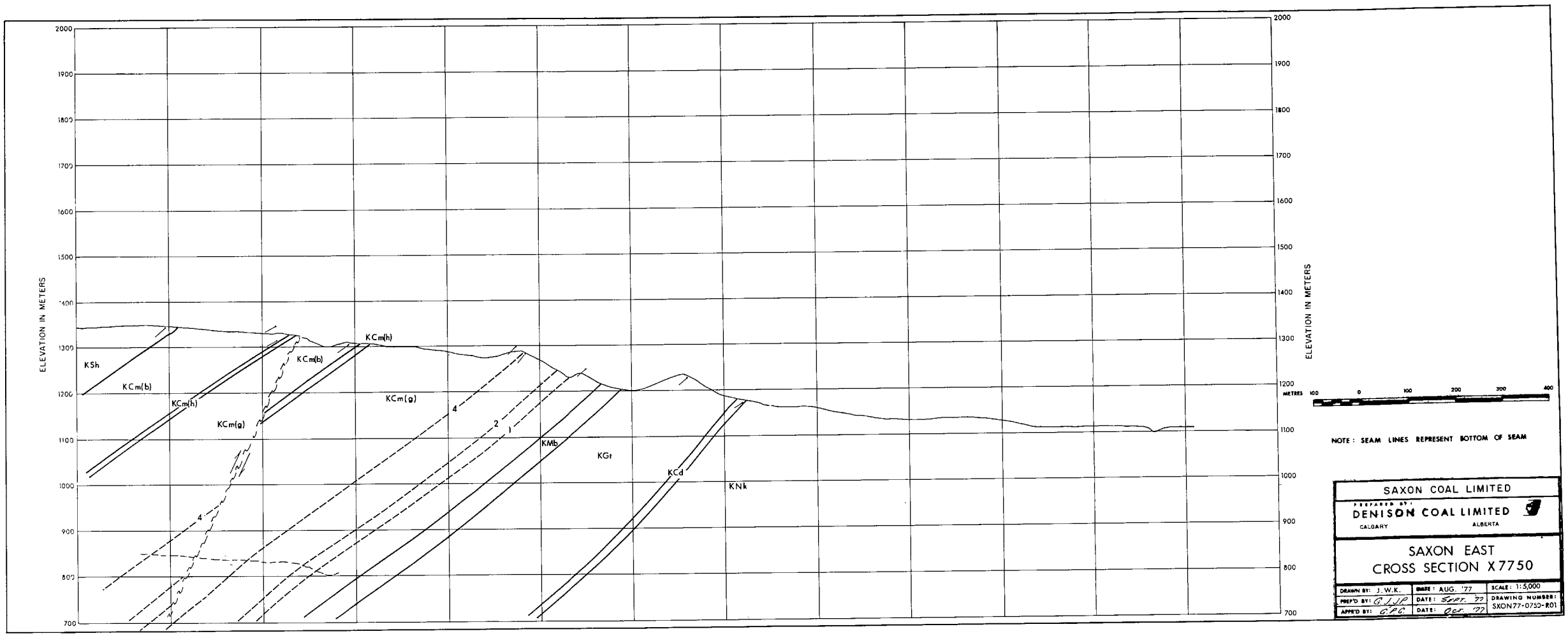
SAXON COAL LIMITED

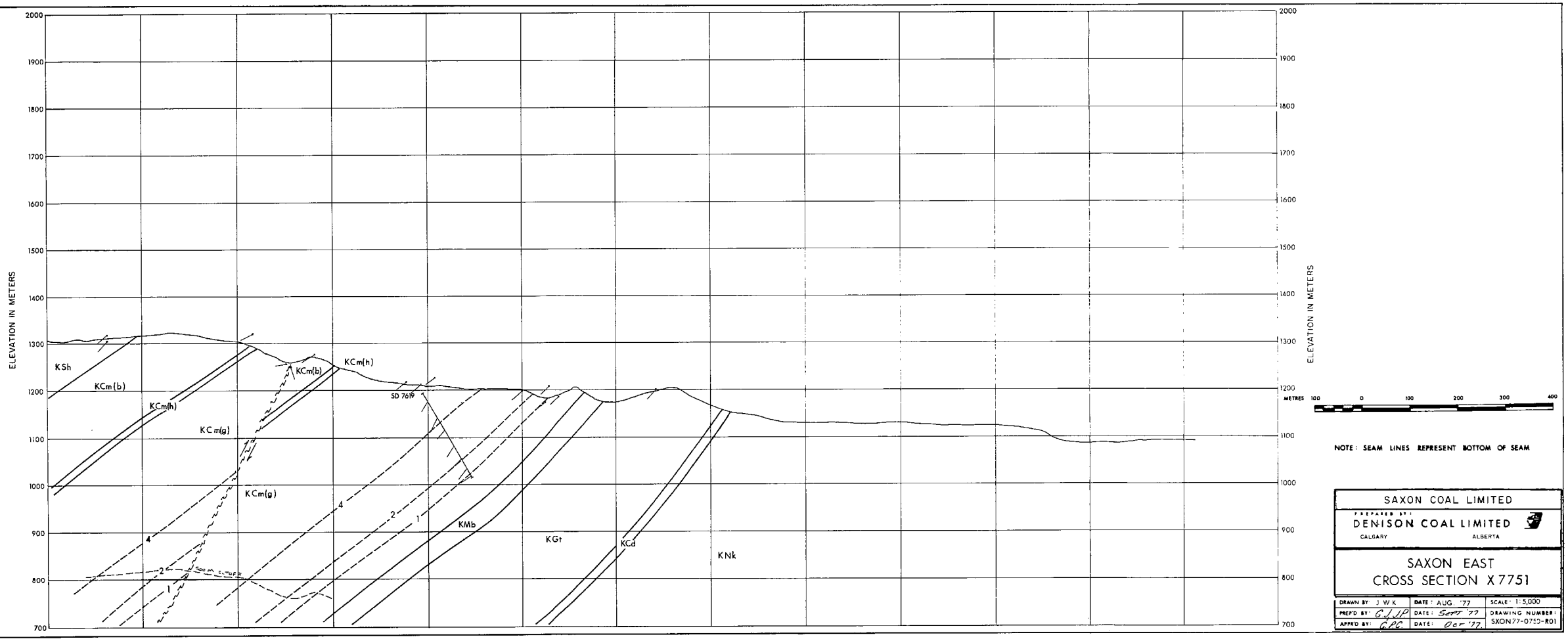
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7748

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J. J.P.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01-


ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
KSh
KCm(b)
KCm(h)
KCm(g)
KMb
KGr
KCd
KNk
4
2
1
Seam Outcrop
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7749
DRAWN BY: J.W.K. DATE: AUG. '77 SCALE: 1:5,000
PREP'D BY: G.J.P. DATE: Sept. 77 DRAWING NUMBER: SXON77-0759-R01
APPR'D BY: G.P.G. DATE: Oct. 77


ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
KSh
KCm(b)
KCm(h)
KCm(g)
KMb
KGr
KCd
KNk
4
2
1
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7750
DRAWN BY: J.W.K. DATE: AUG. '77 SCALE: 1:5,000
PREP'D BY: G.J.P. DATE: Sept. 77 DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.G. DATE: Oct. 77



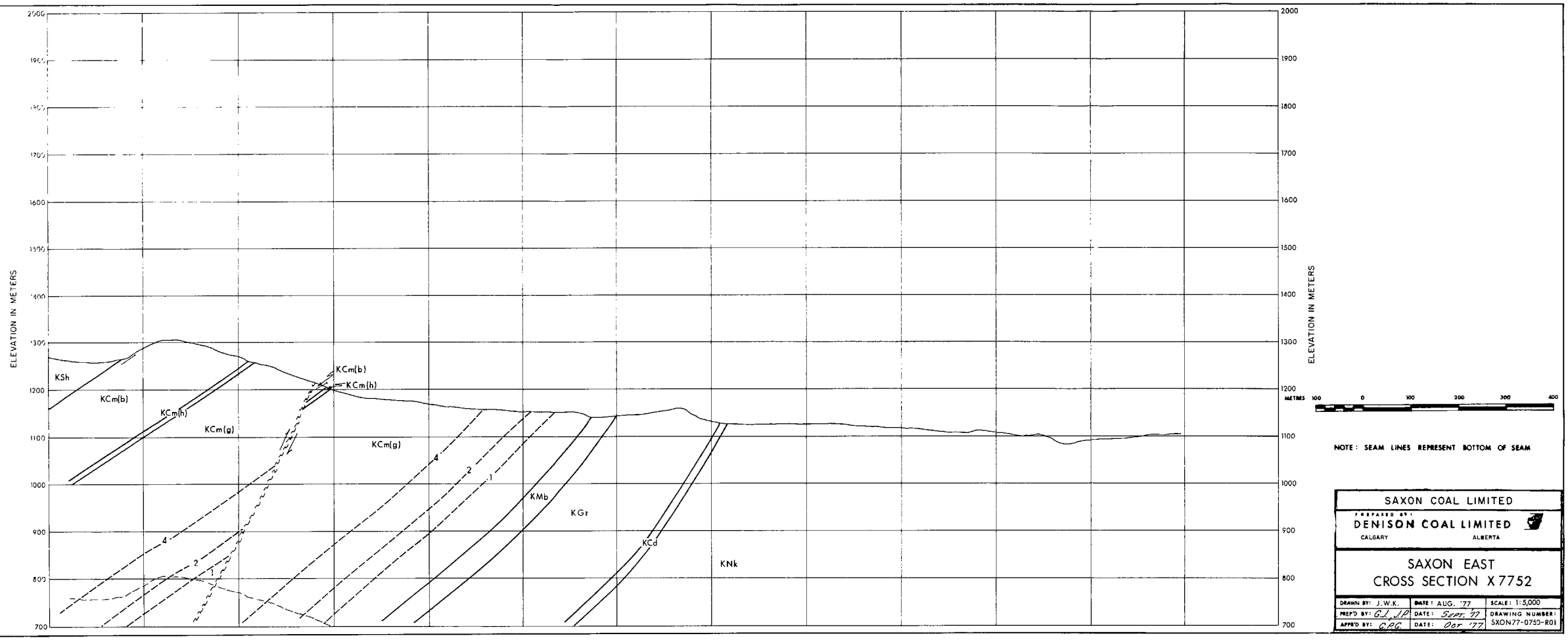
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7751

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: G.P.C.	DATE: Oct '77	SXON77-0750-R01



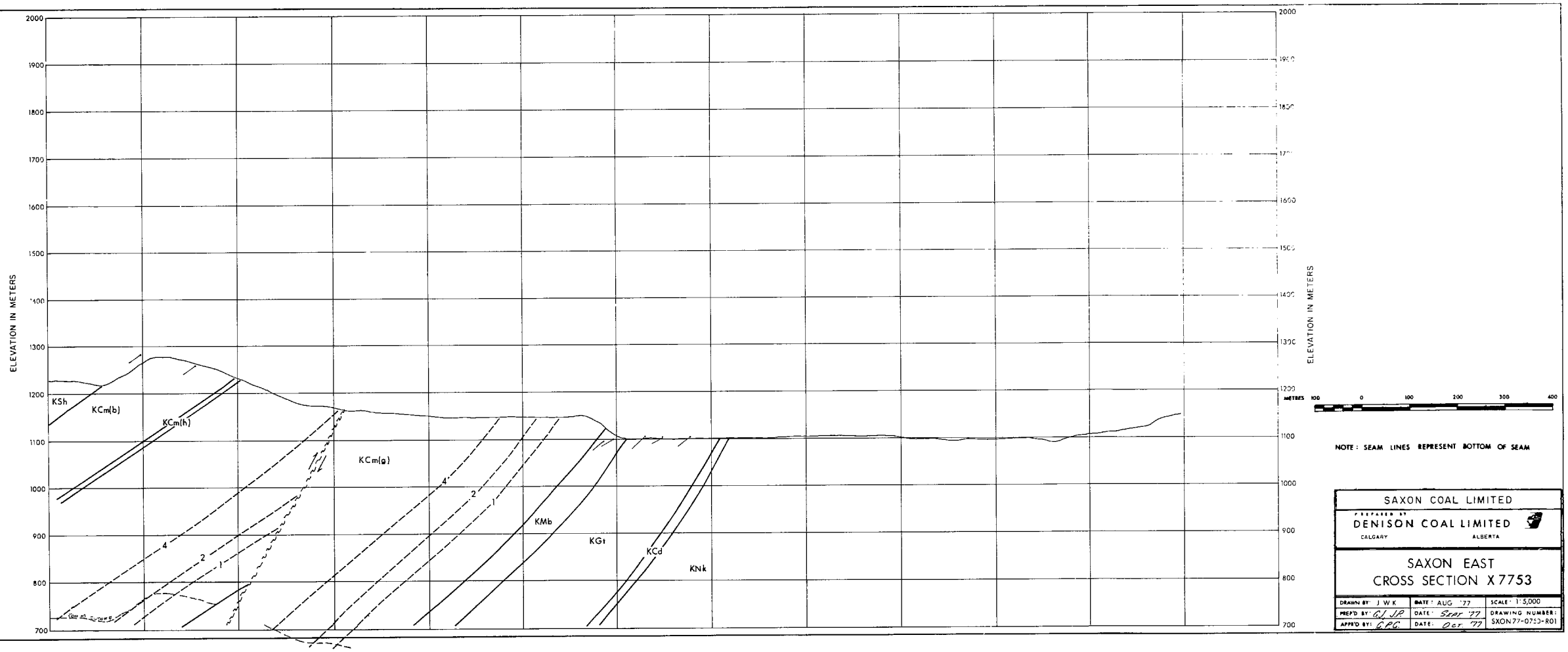
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7752

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept. '77	DRAWING NUMBER:
APPR'D BY: G.P.C.	DATE: Oct '77	SXON77-0750-R01



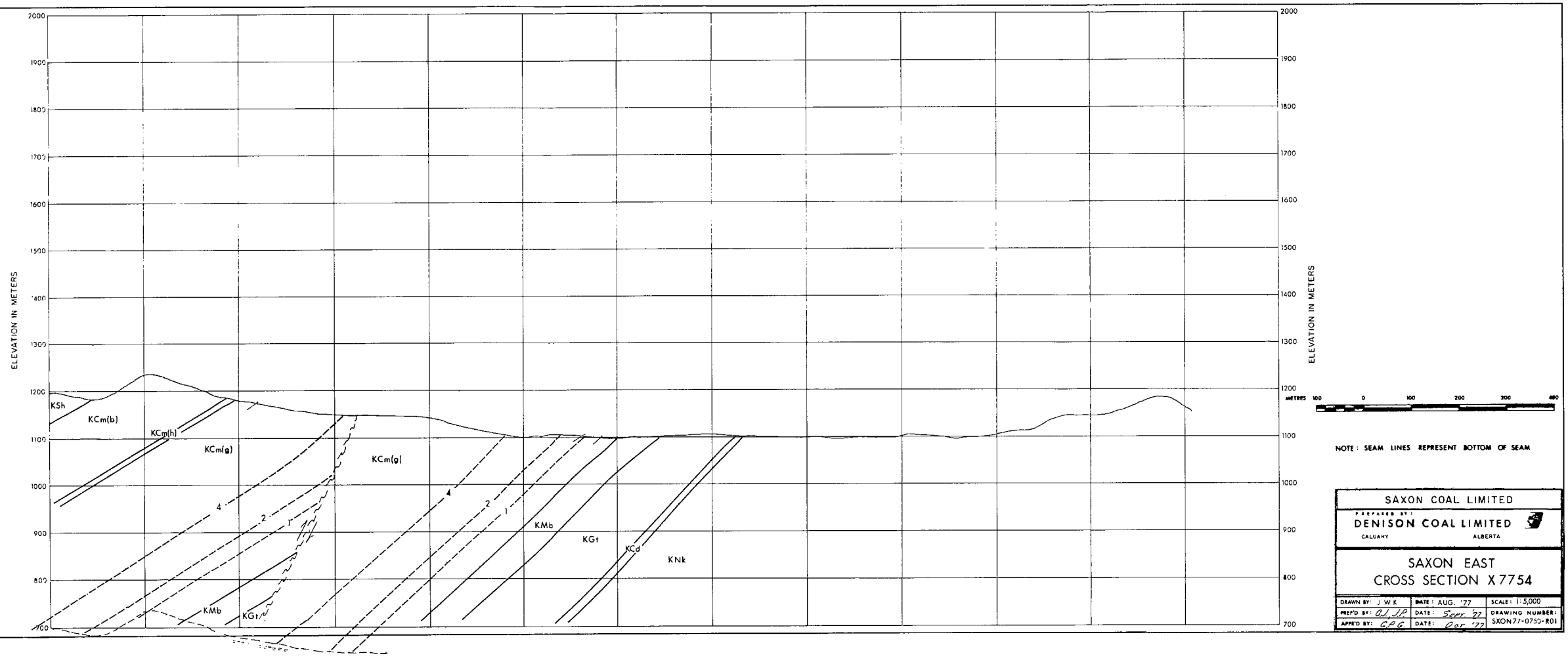
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7753

DRAWN BY: J W K	DATE: AUG '77	SCALE: 1:5,000
PREP'D BY: GJ JP	DATE: Sept '77	DRAWING NUMBER: SXON77-0753-R01
APP'D BY: G.P.G.	DATE: Oct '77	



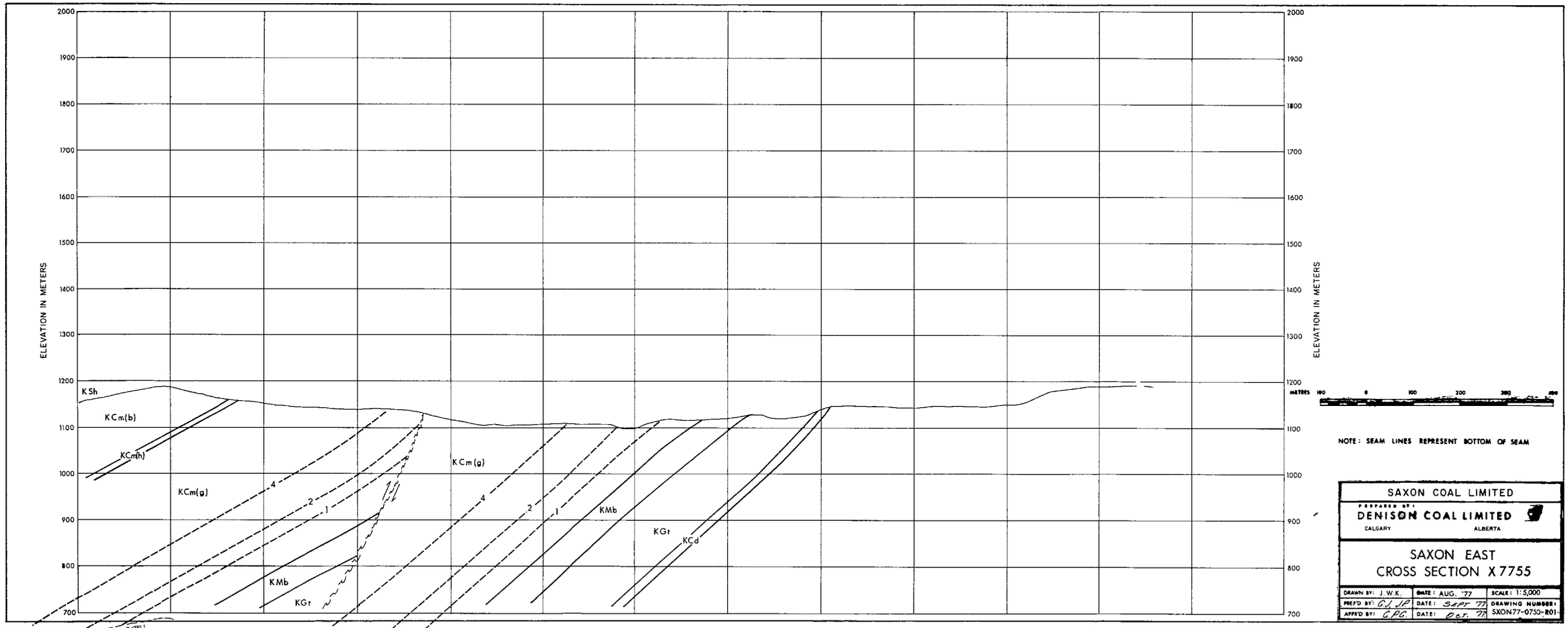
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7754

DRAWN BY: J W K	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: GJ JP	DATE: Sept '77	DRAWING NUMBER: SXON77-0753-R01
APP'D BY: G.P.G.	DATE: Oct '77	



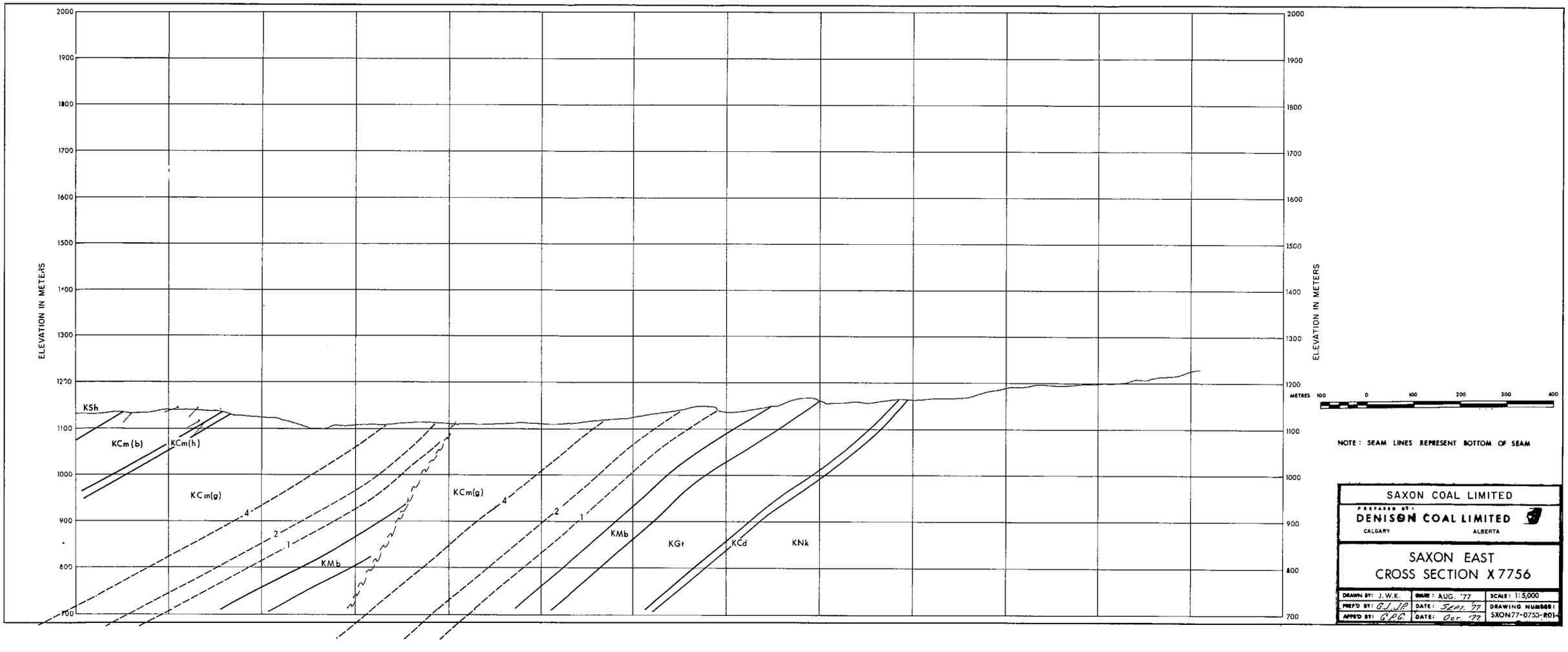
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7755

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept. '77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01



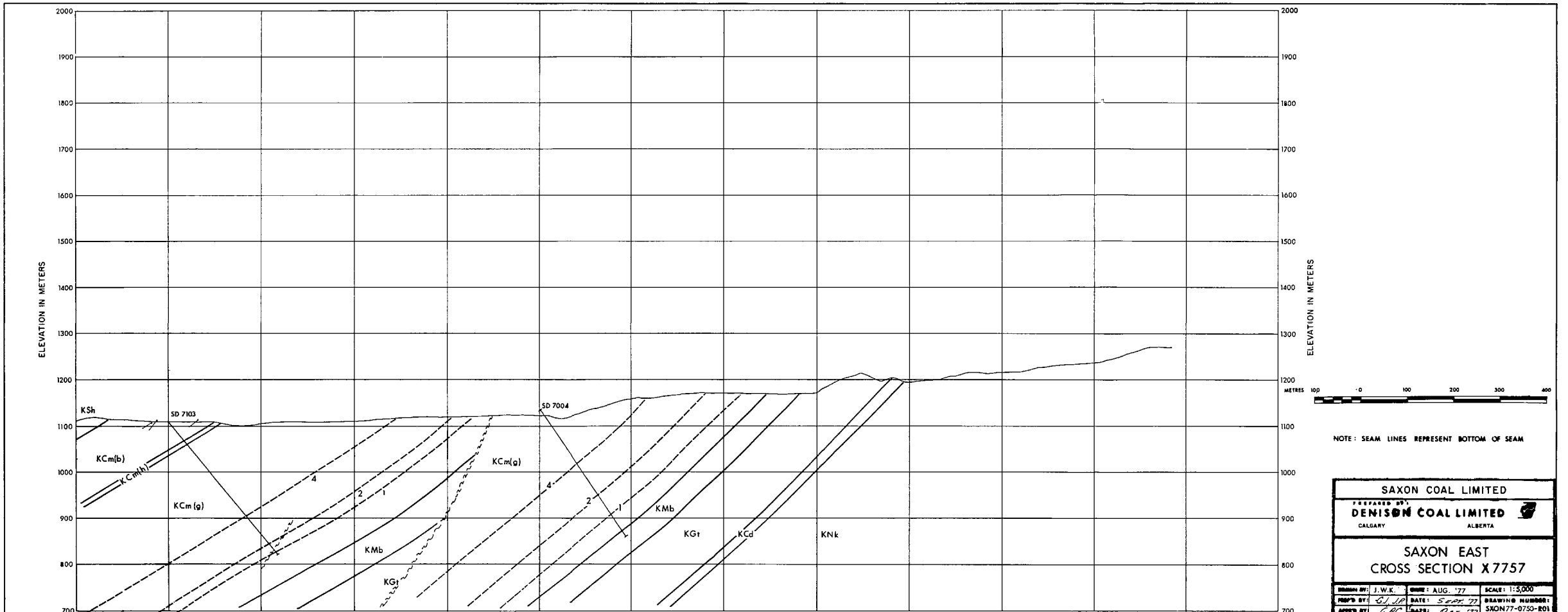
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

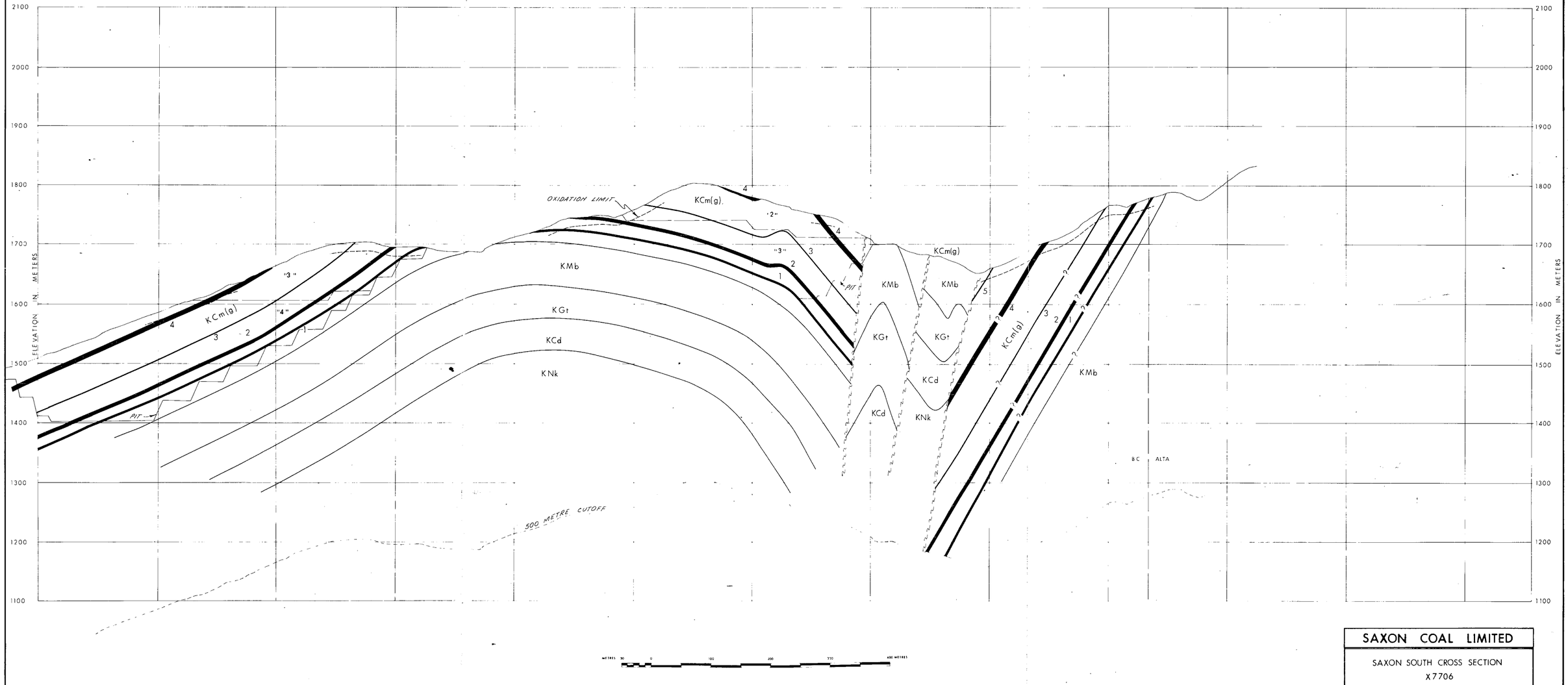
SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7756

DRAWN BY: J.W.K.	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept. '77	DRAWING NUMBER:
APP'D BY: G.P.G.	DATE: Oct. '77	SXON77-0750-R01


ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
KSh
SD 7103
SD 7004
KCm(b)
KCm(h)
KCm(g)
KCm(g)
4
2
1
4
2
1
KMb
KMb
KGt
KGt
KCd
KNk
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X7757
DRAWN BY: J.W.K.
CHKD'D BY: G.J.P.
APPR'D BY: G.P.G.
DATE: AUG. '77
DATE: SEPT. '77
DATE: Oct. '77
SCALE: 1:5,000
DRAWING NUMBER:
SXON77-0750-R01

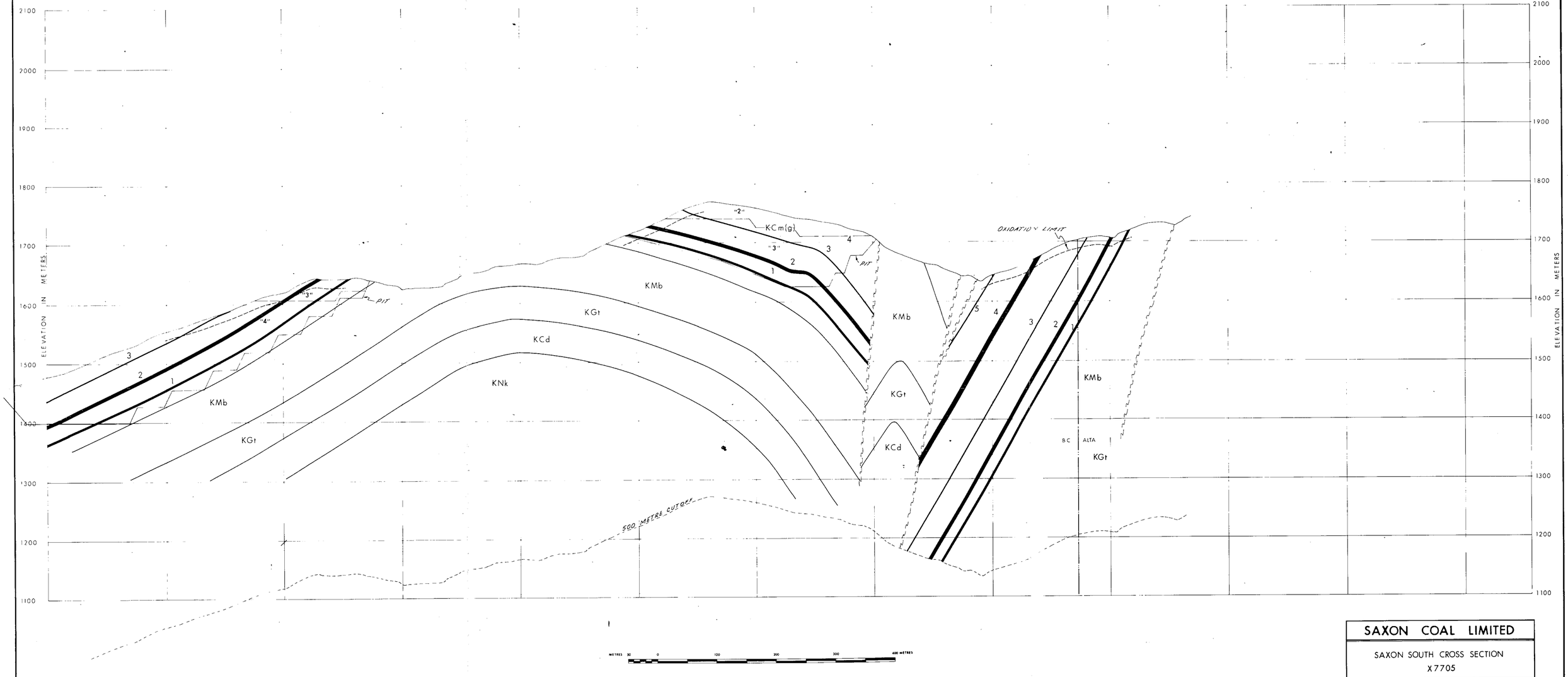


SAXON COAL LIMITED

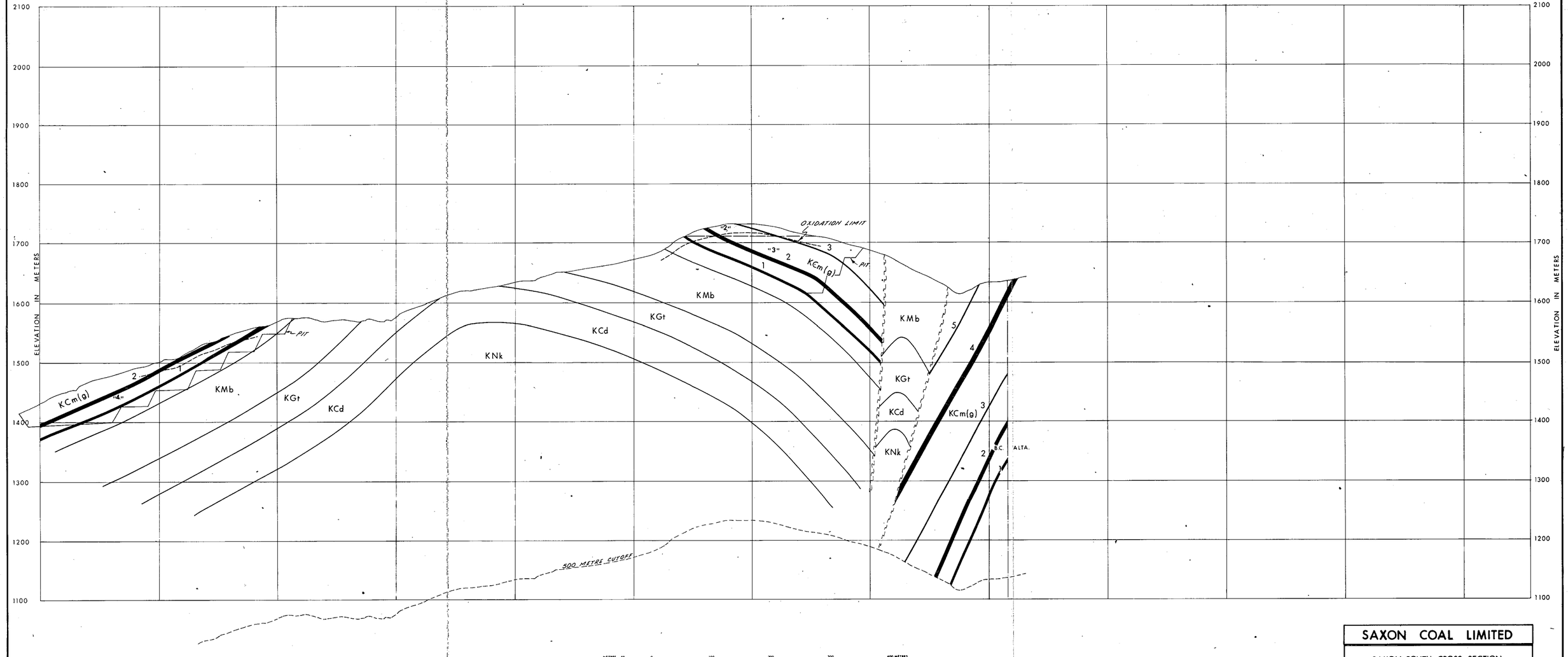
SAXON SOUTH CROSS SECTION

X7706

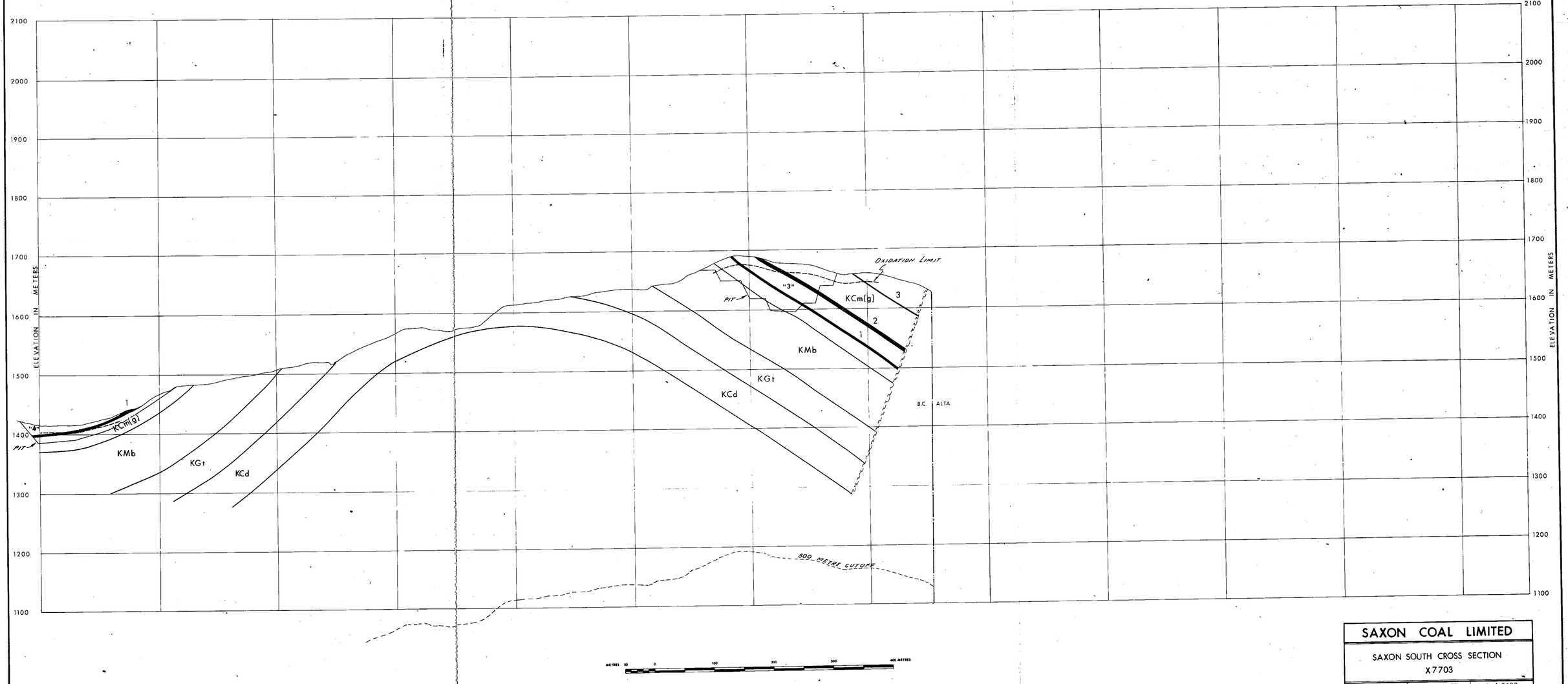
DRAWN BY: J.W.K	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J	DATE: Sept 77	DRAWING NUMBER:
APPR'D BY: I.D	DATE: Oct '77	SXON77-0749-R01



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7705		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept. '77	DRAWING NUMBER:
APPR'D BY: I.D.	DATE: Oct. '77	SXON 77-0749-R01

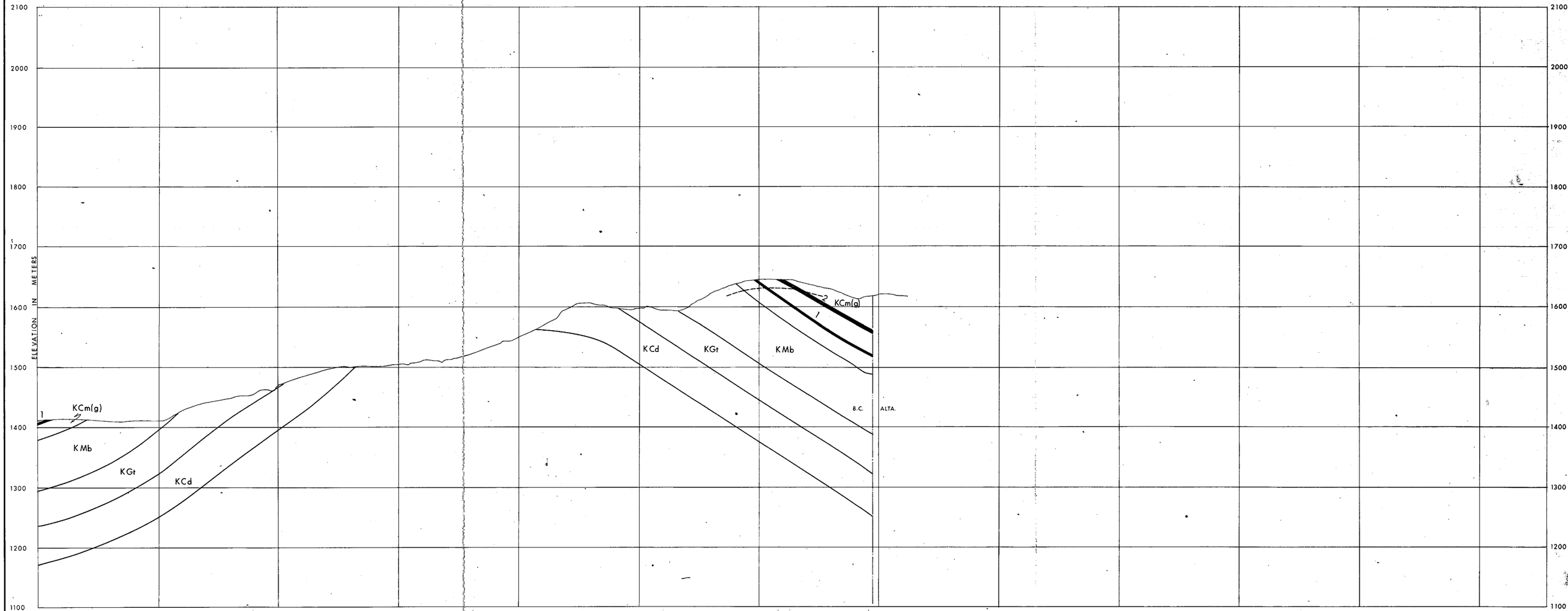


SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7704		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept. 77	DRAWING NUMBER:
APPR'D BY: J.D.	DATE: Oct. 77	SXON 77-0749-R01



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7703		
DRAWN BY: J.W.K.	DATE: JULY 4; 77	SCALE: 1:2500
PREP'D BY: D.J.	DATE: Sept '77	DRAWING NUMBER: SXON77-0749-R01
APP'D BY: I.D.	DATE: Oct '77	

X7602

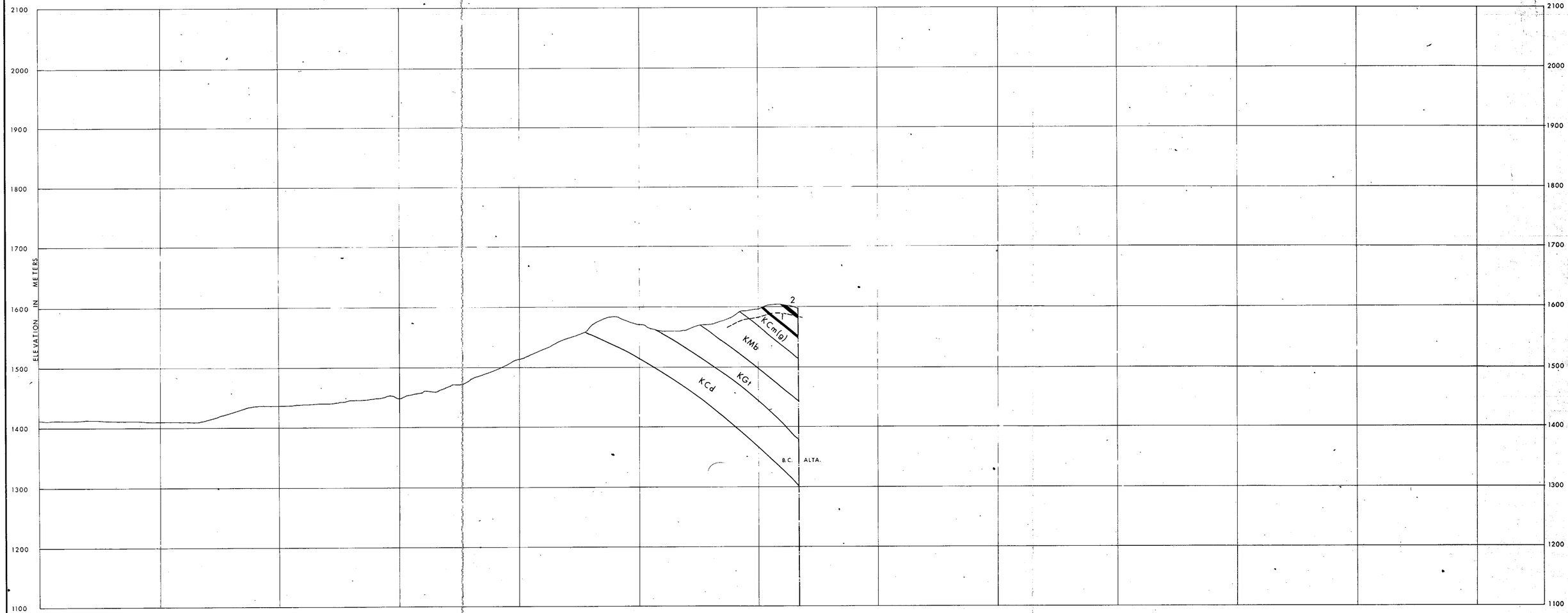


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7702

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: C.J.	DATE: Sept. 77	DRAWING NUMBER:
APP'D BY: I.D.	DATE: Oct. 77	SXON 77-0749-R01



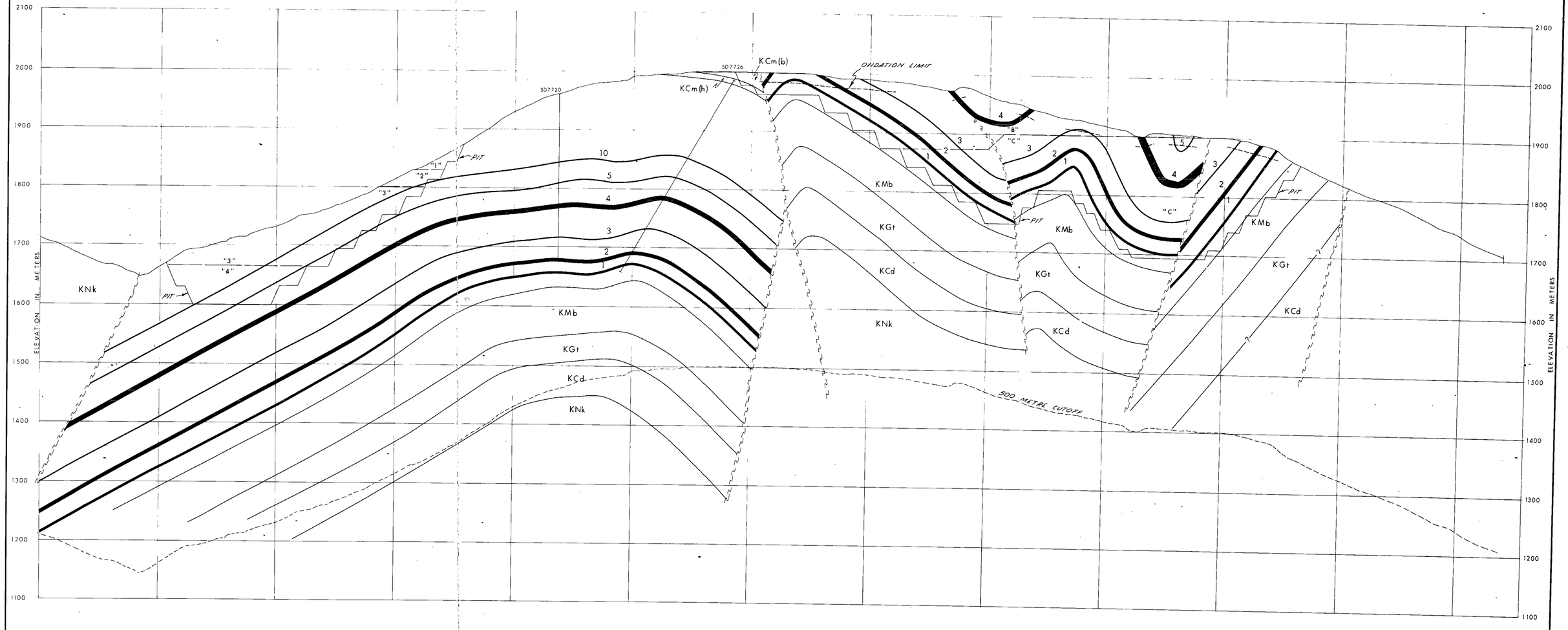
SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7701

DRAWN BY: J.W.K.	DATE: JULY 4, 77.	SCALE: 1:2500
PREP'D BY: G.F.	DATE: Sept. 77	DRAWING NUMBER:
APP'D BY: I.D.	DATE: Oct. 77	SXON77-0749-R01

X 7601

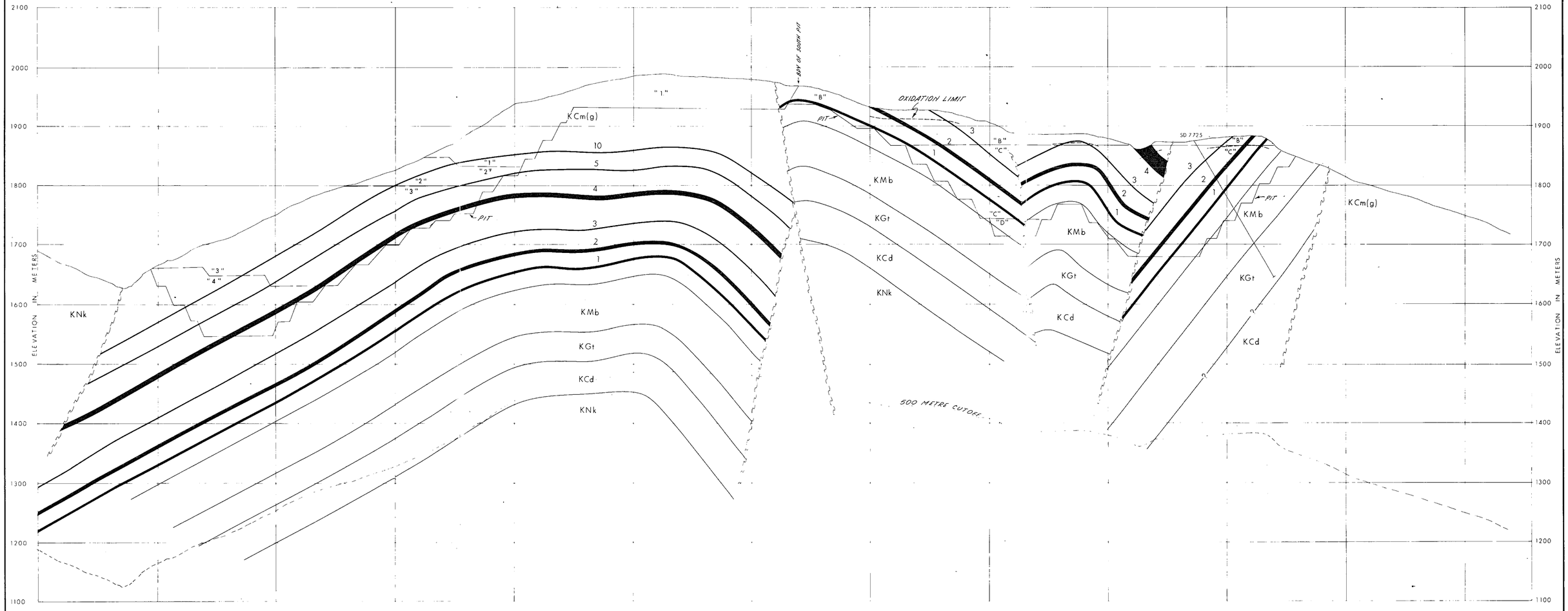


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7713

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500	
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:	
APPR'D BY: I.D.	DATE: Oct '77	SXON 77-0749-R01	

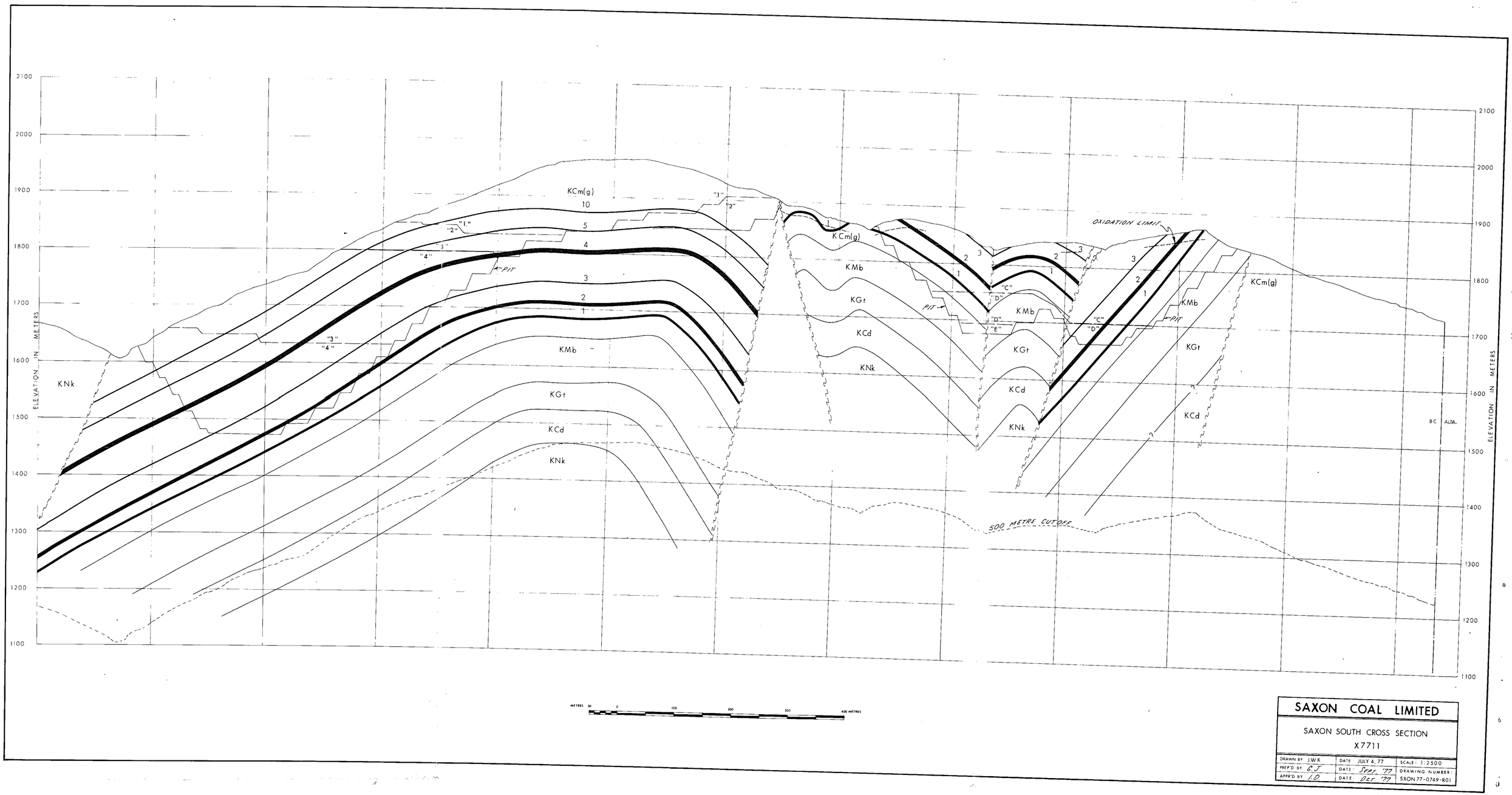


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7712

DRAWN BY J.W.K	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY G.J.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY I.D.	DATE: Oct '77	SXON77-0749-R01

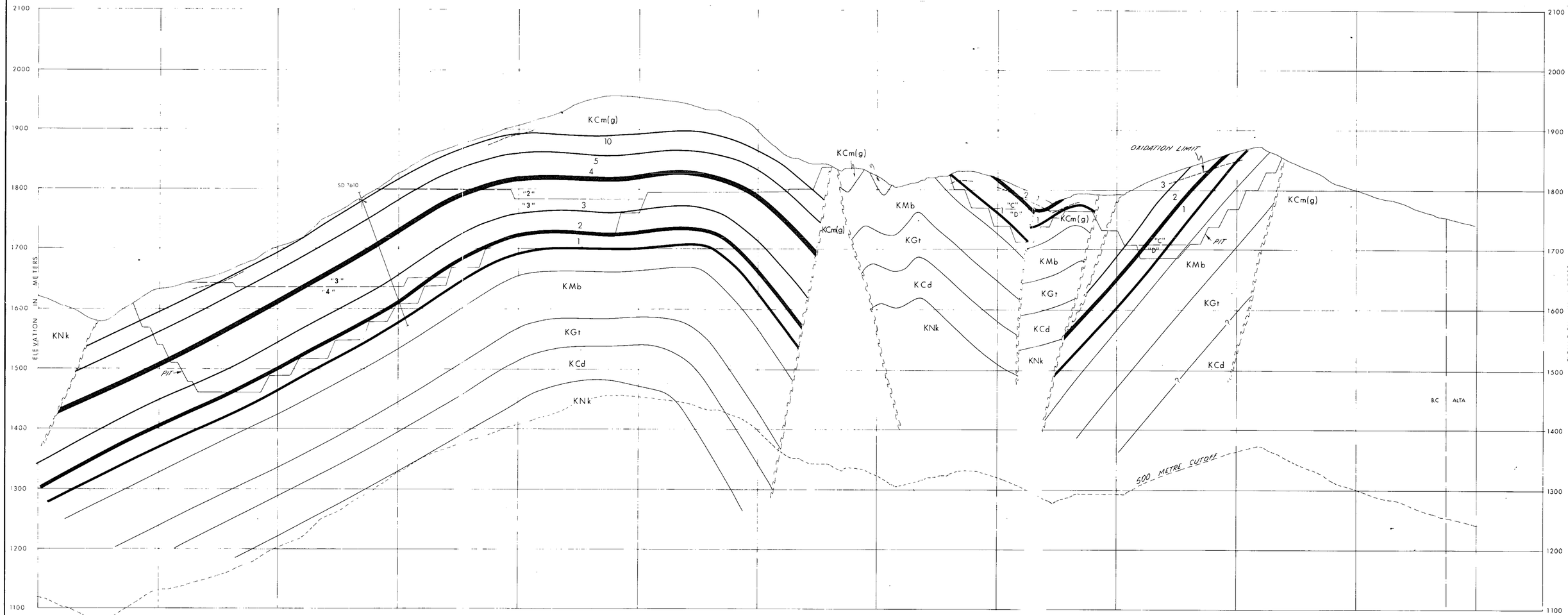


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7711

DRAWN BY J.W.K	DATE JULY 4, 77	SCALE: 1:2500
PREP'D BY C.J.	DATE Sept '77	DRAWING NUMBER:
APPR'D BY I.D.	DATE Oct '77	SAXON 77-0749-R01

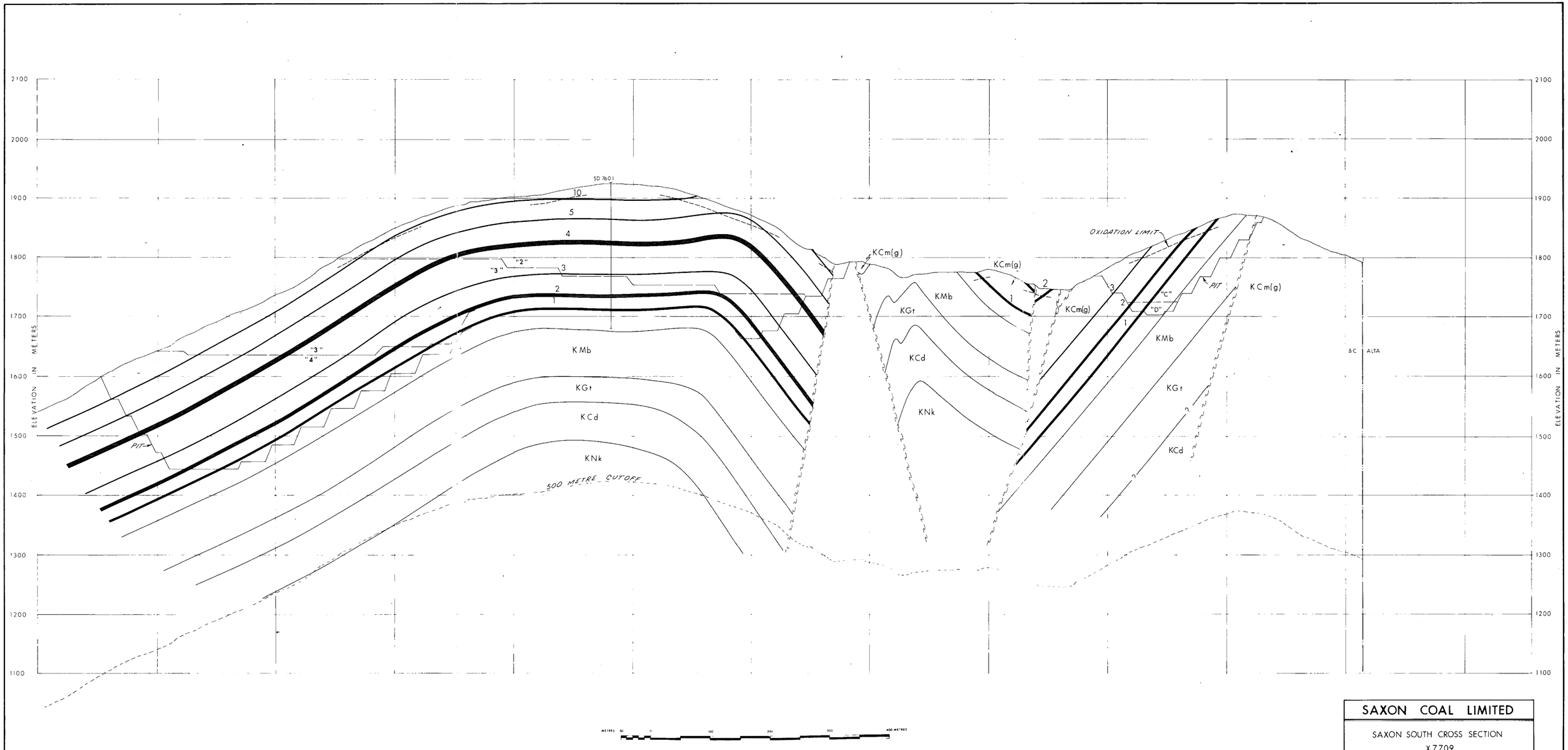


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7710

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: I.D.	DATE: Oct. 77	SXON77-0749-R01

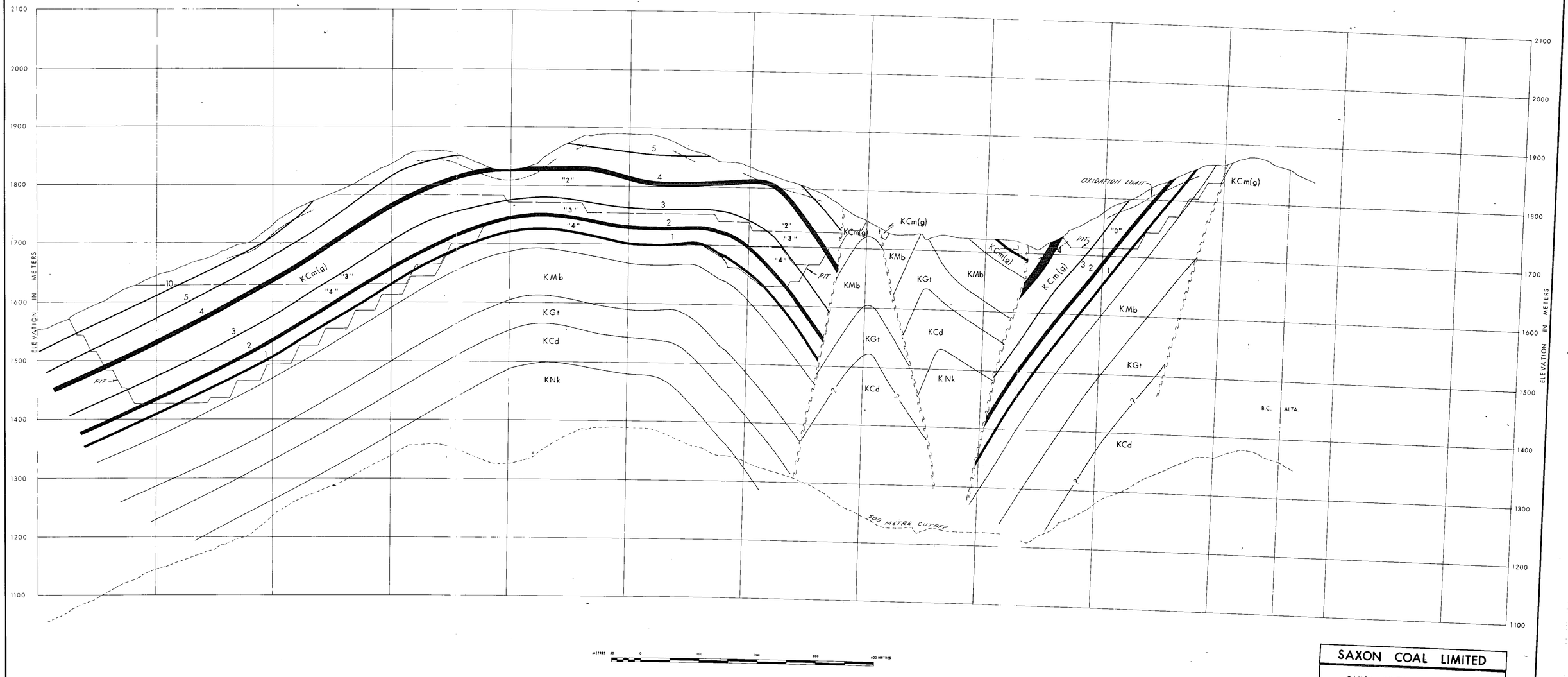


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7709

DRAWN BY J.W.K.	DATE JULY 4, 77	SCALE 1:2500
PREP'D BY G.J.	DATE Sept. '77	DRAWING NUMBER:
APPR'D BY I.D.	DATE Oct. '77	SXON 77-0749-R01

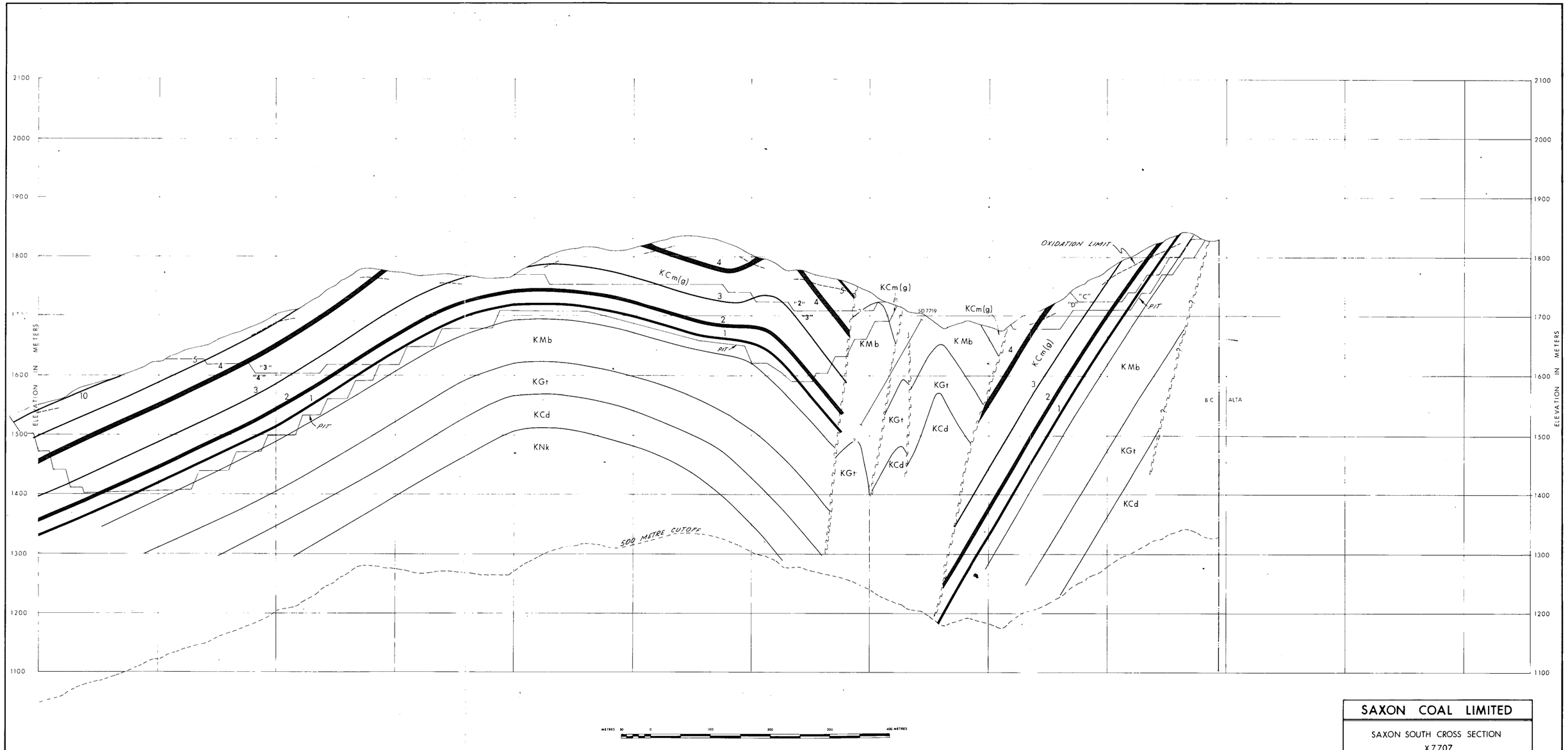


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7708

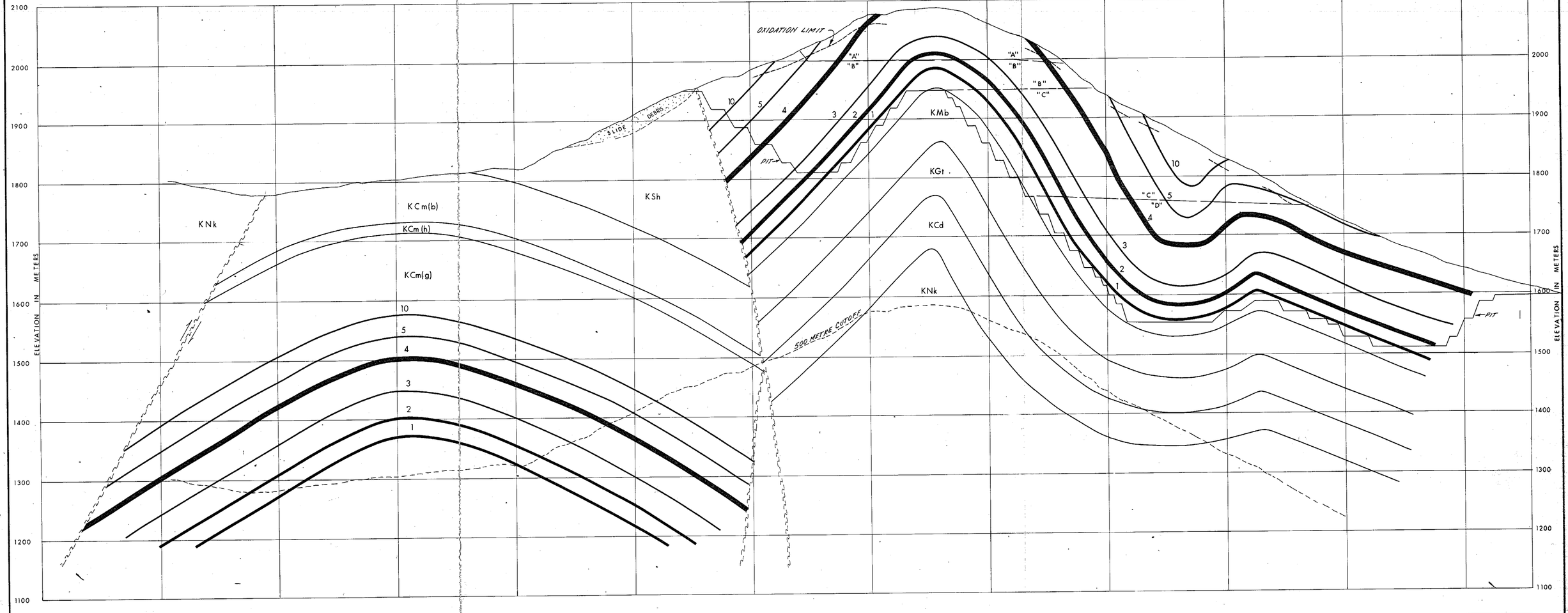
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept. 77	DRAWING NUMBER:
APPR'D BY: I.D.	DATE: Oct. 77	SXON77-0749-R01



SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION
X 7707

DRAWN BY J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY G.J.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY I.D.	DATE: Oct '77	SXON 77-0749-R01

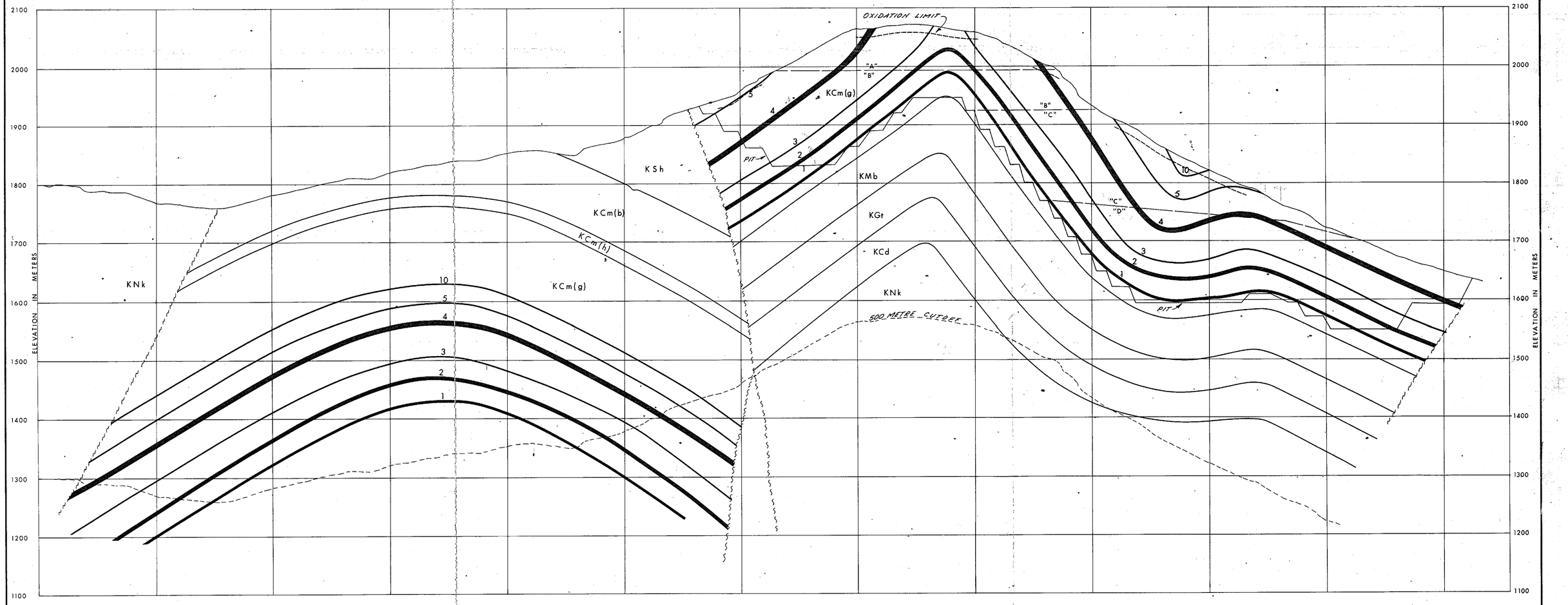


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7721

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept 77	DRAWING NUMBER:
APP'D BY: I.D.	DATE: Oct 77	SXON 77-0749-R01

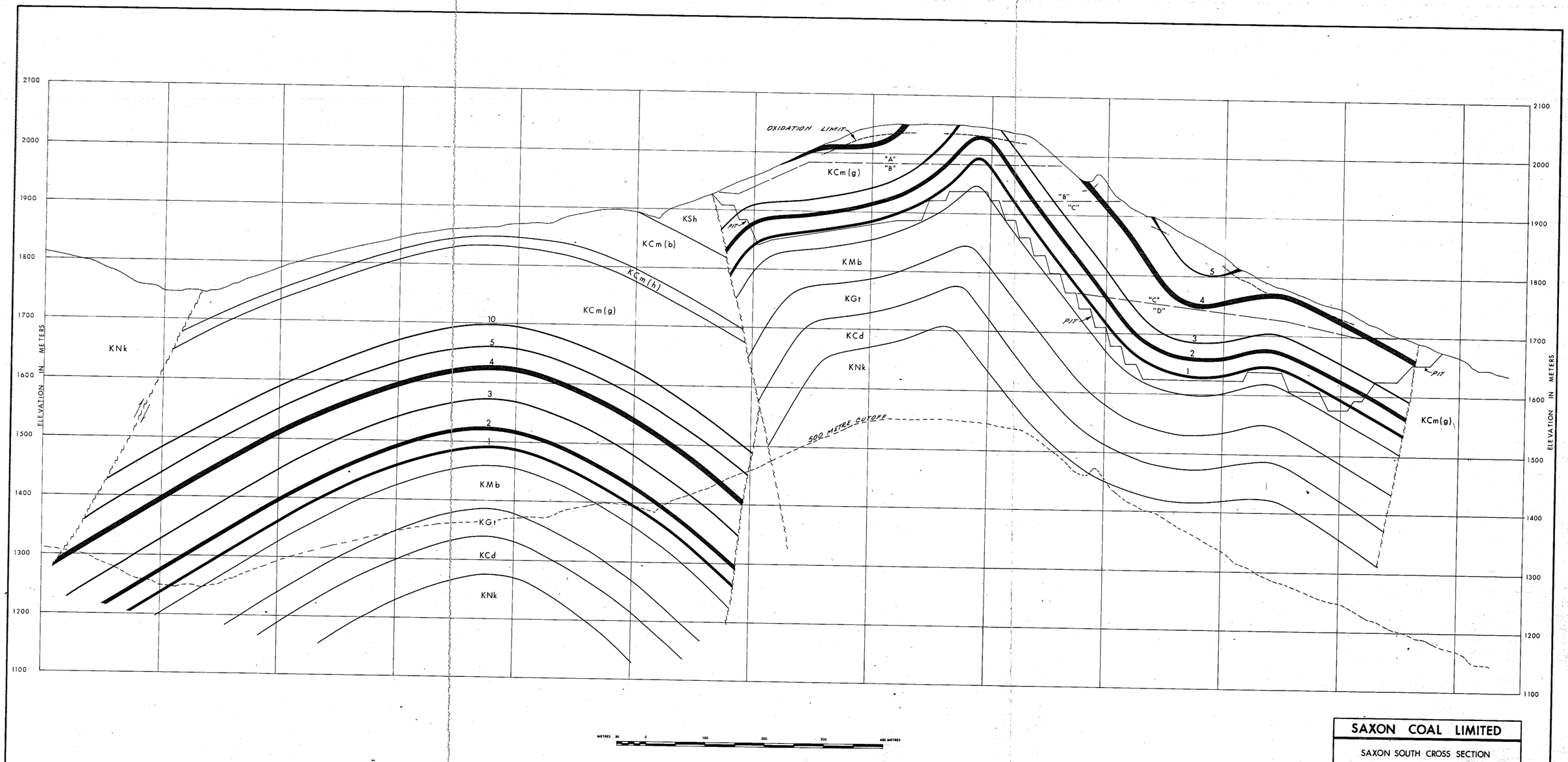


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7720

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: J.D.	DATE: Oct '77	SXON77-0749-801



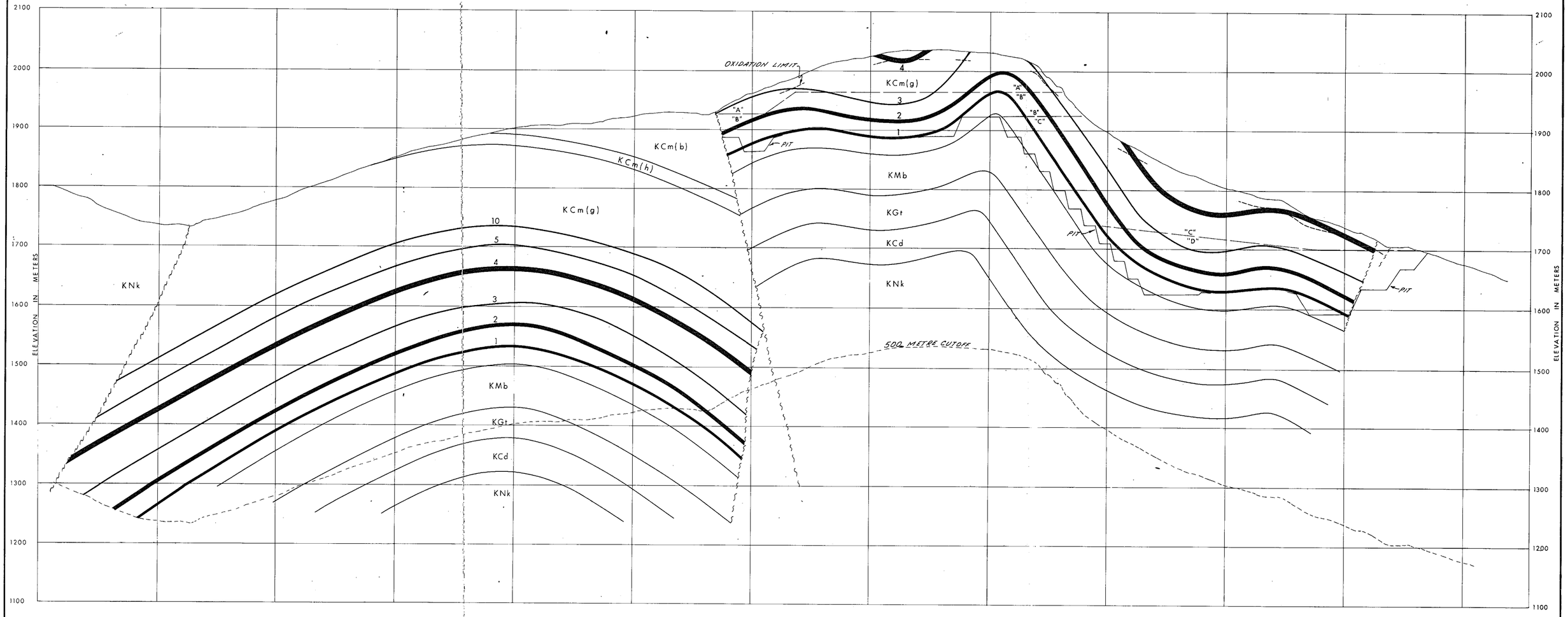
SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7719

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500	
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:	
APP'D BY: I.D.	DATE: Oct '77	SXON 77-0749-R01	

X7610

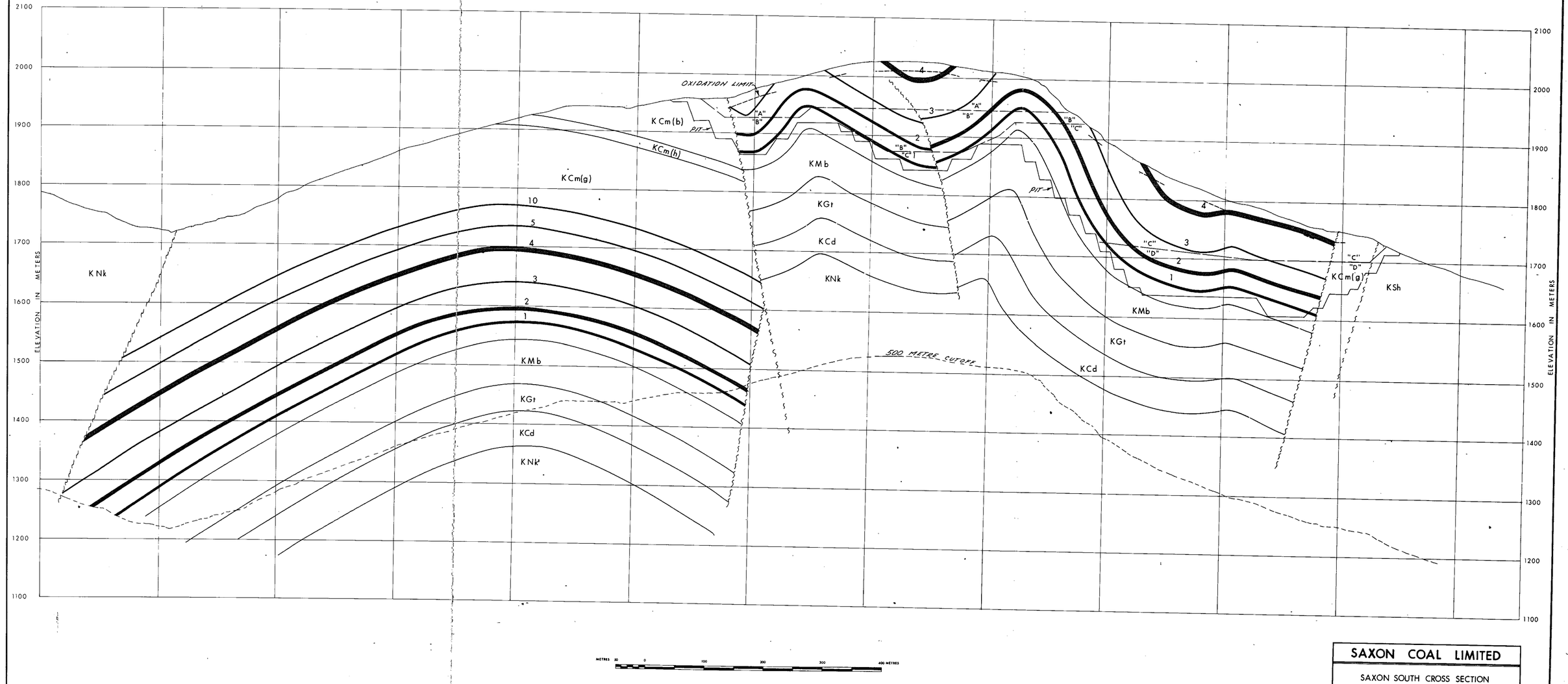


SAXON COAL LIMITED

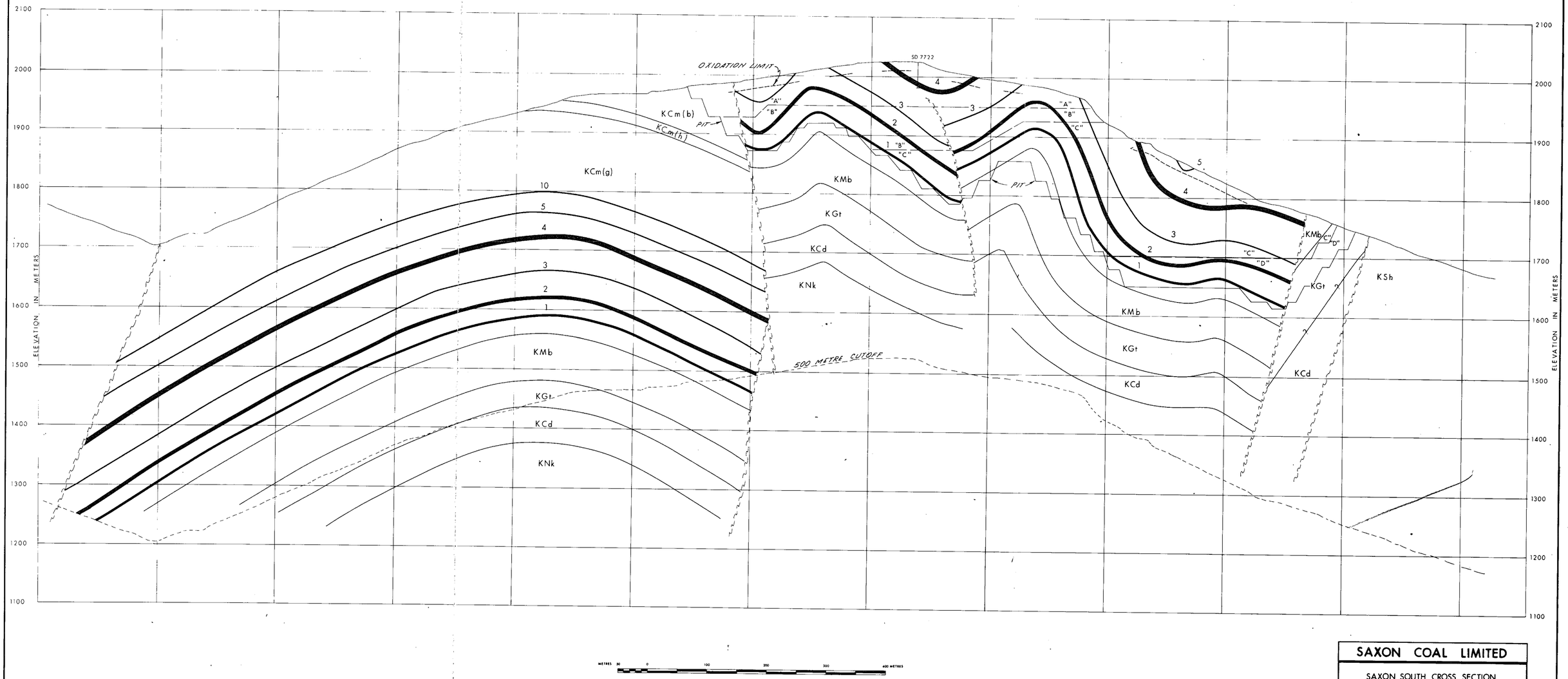
SAXON SOUTH CROSS SECTION

X7718

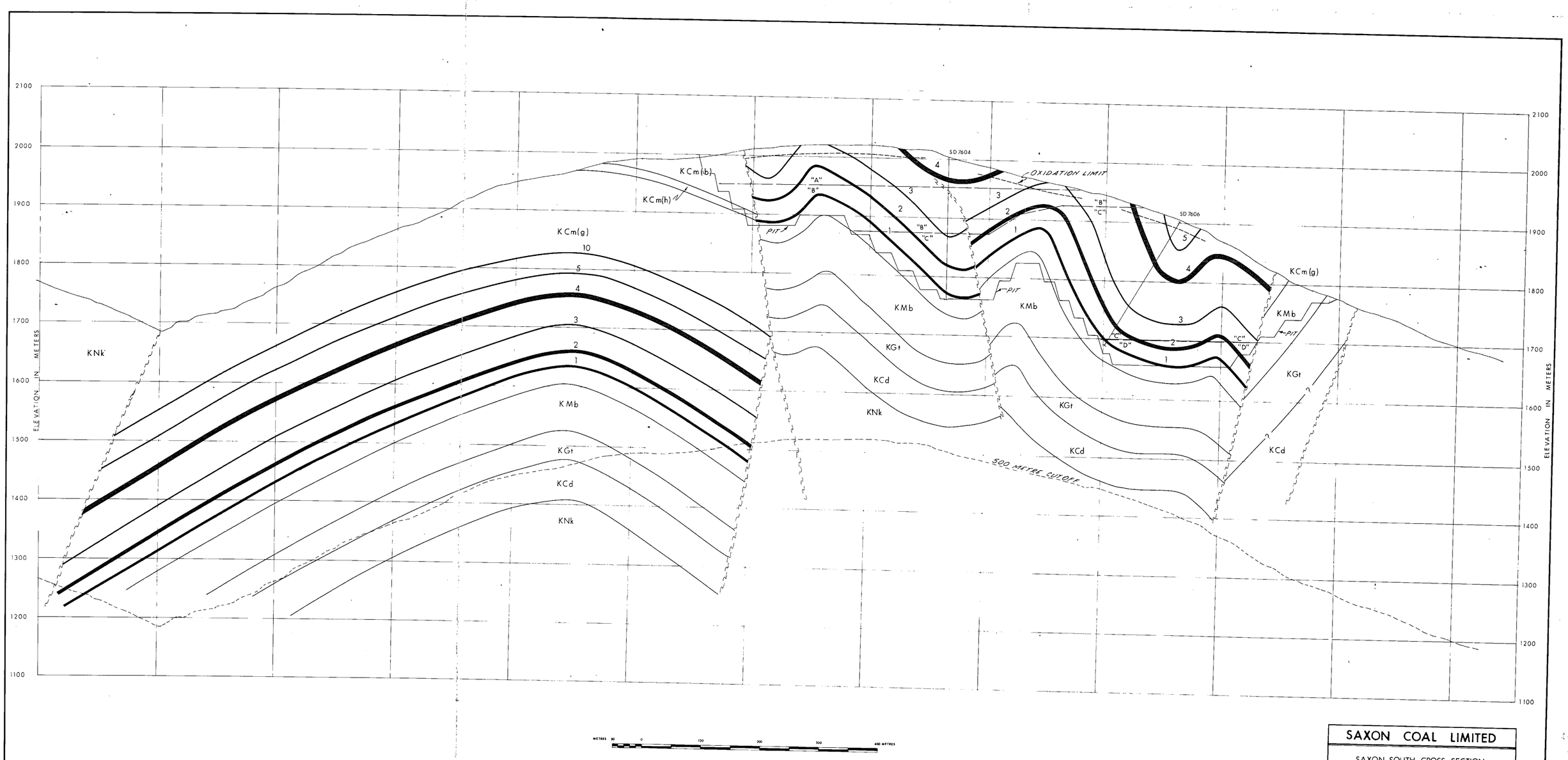
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: J.D.	DATE: Oct. '77	SXON77-0749-R01



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7717		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: B.J.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: I.D.	DATE: Oct '77	SXON 77-0749-R01



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7716		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: J.D.	DATE: Oct '77	SXON77-0749-R01

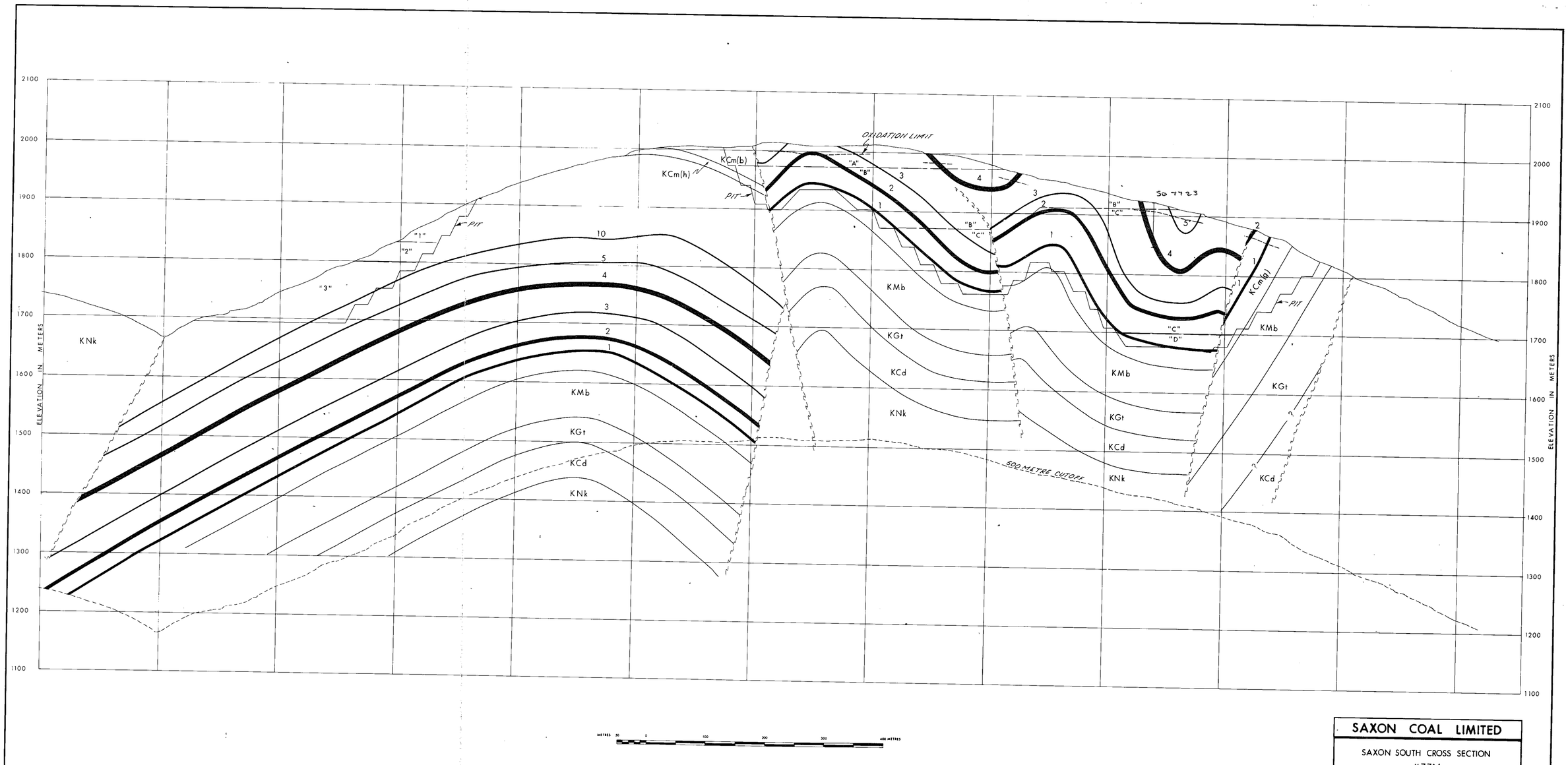


SAXON COAL LIMITED

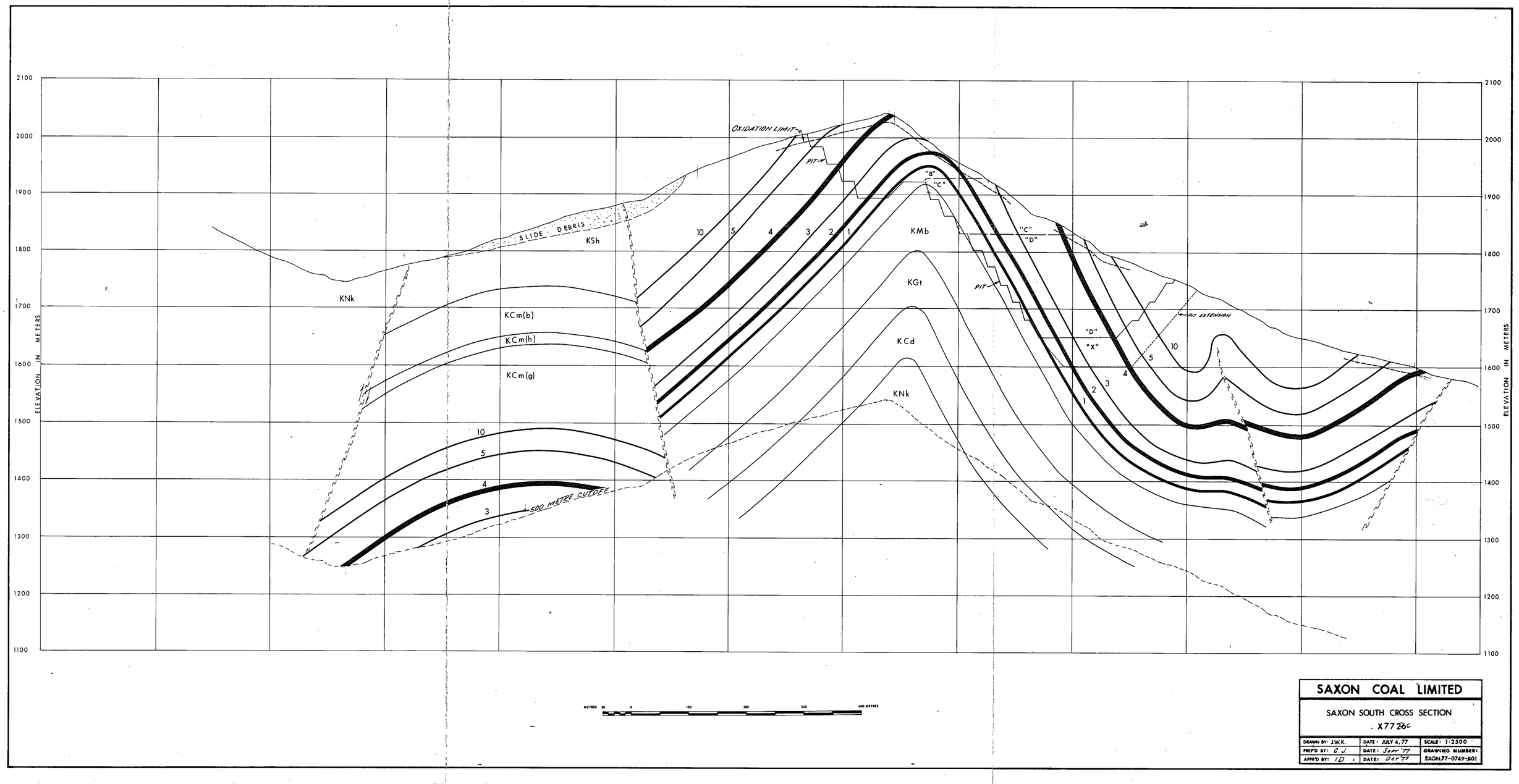
SAXON SOUTH CROSS SECTION

X7715

DRAWN BY JWK	DATE JULY 4, 77	SCALE 1:2500
PREP'D BY C.J.	DATE Sept '77	DRAWING NUMBER
APPR'D BY I.D.	DATE Oct. '77	SXON77-0749-R01



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7714		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: I.D.	DATE: Oct '77	SXON 77-0749-R01

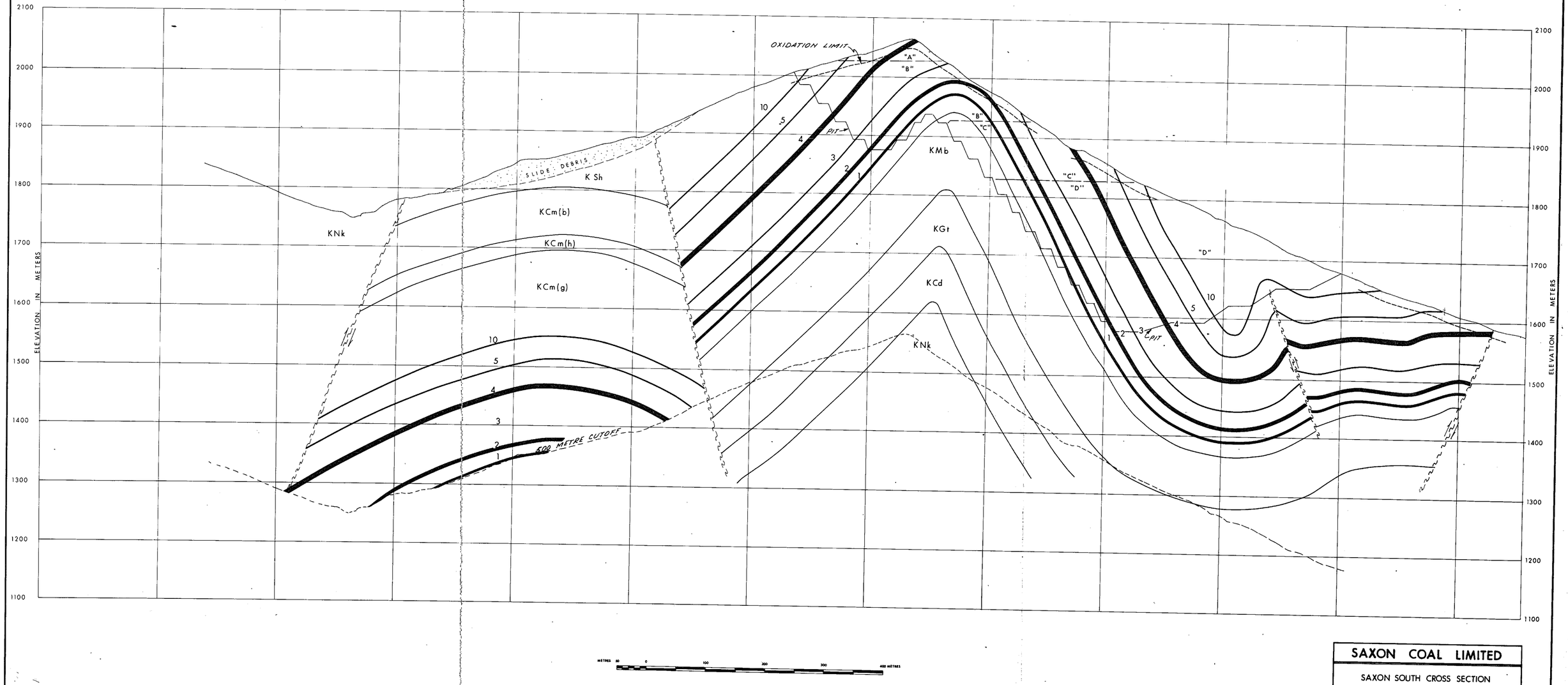


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7726C

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: I.D.	DATE: Oct '77	SXON77-0749-R01

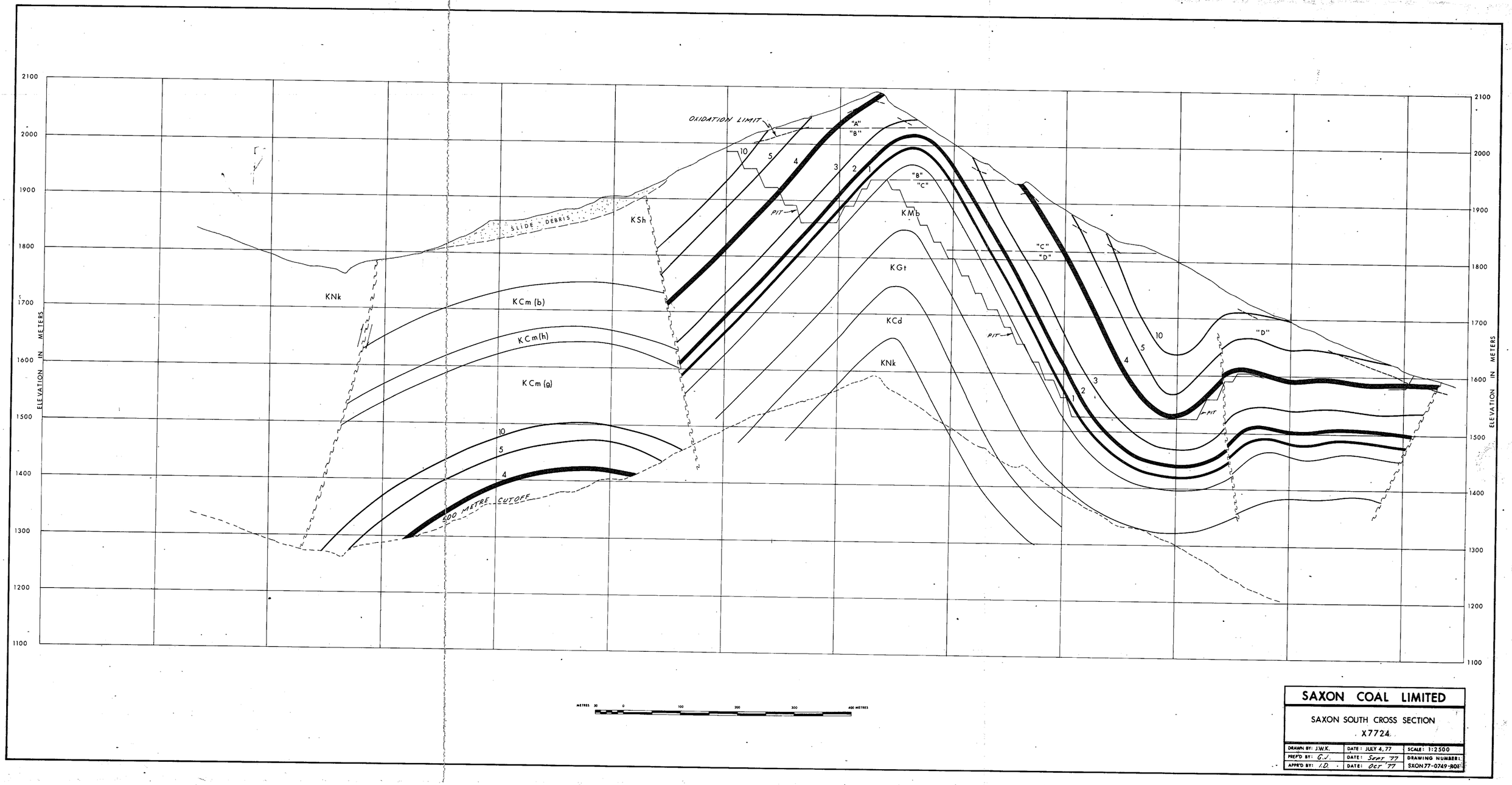


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7725

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept 77	DRAWING NUMBER:
APP'D BY: I.D.	DATE: Oct 77	SXON77-0749-R01

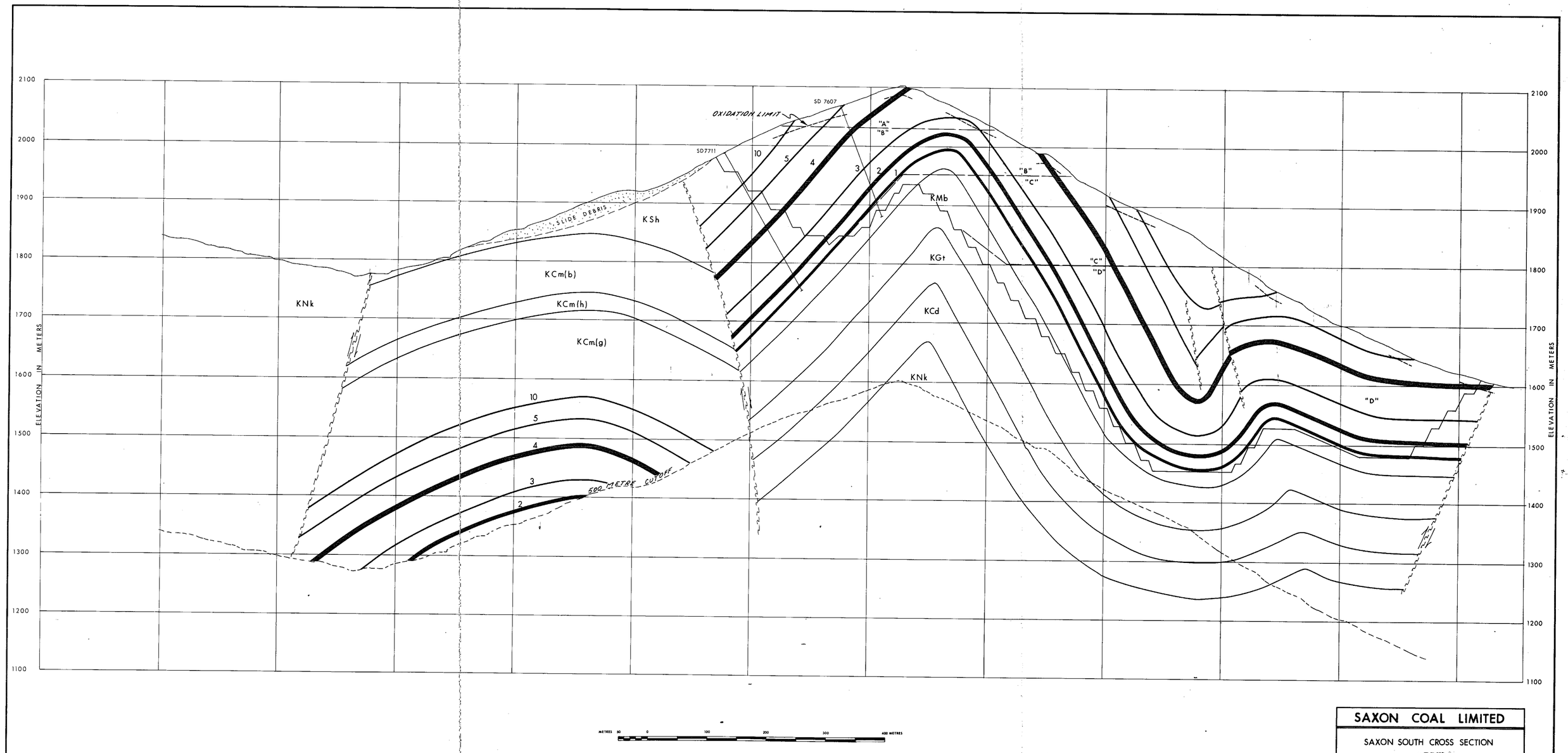


SAXON COAL LIMITED

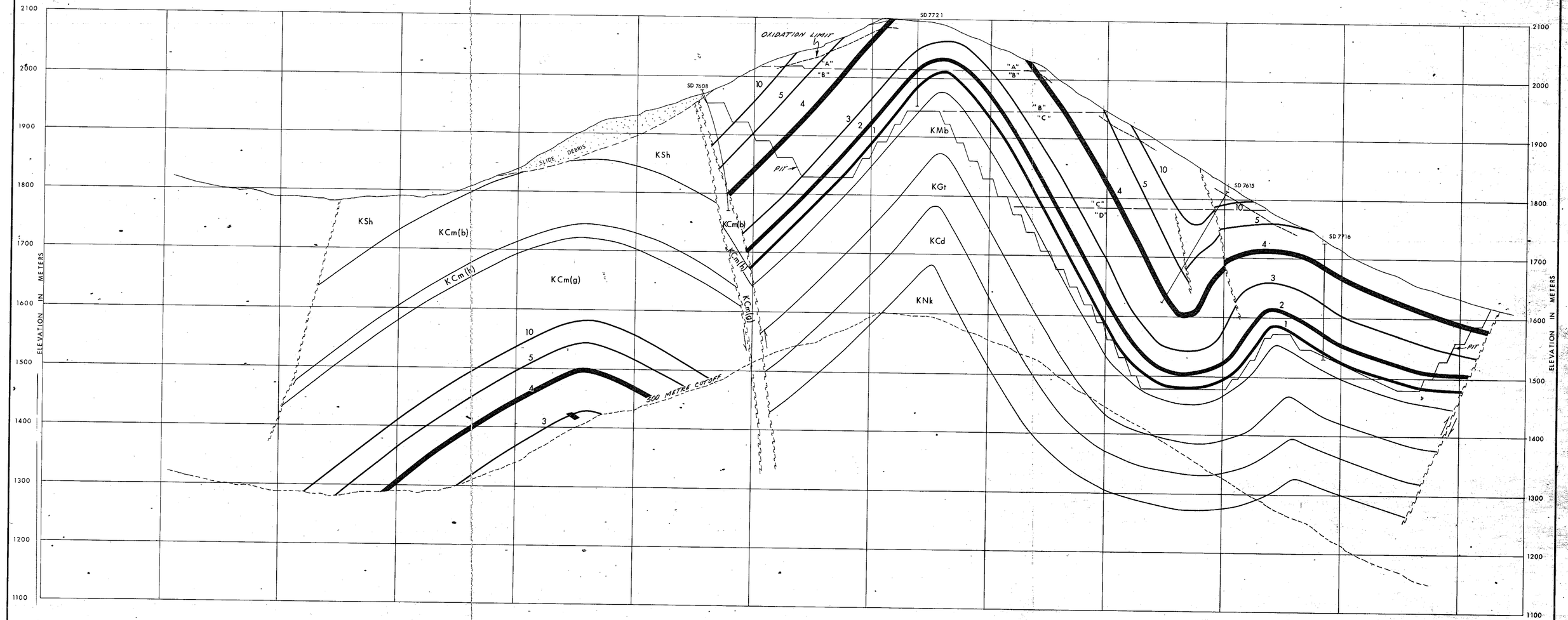
SAXON SOUTH CROSS SECTION

X7724

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept 77	DRAWING NUMBER:
APPR'D BY: I.D.	DATE: Oct '77	SXON77-0749-ROF



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7723		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: I.D.	DATE: Oct '77	SXON 77-0749-R01

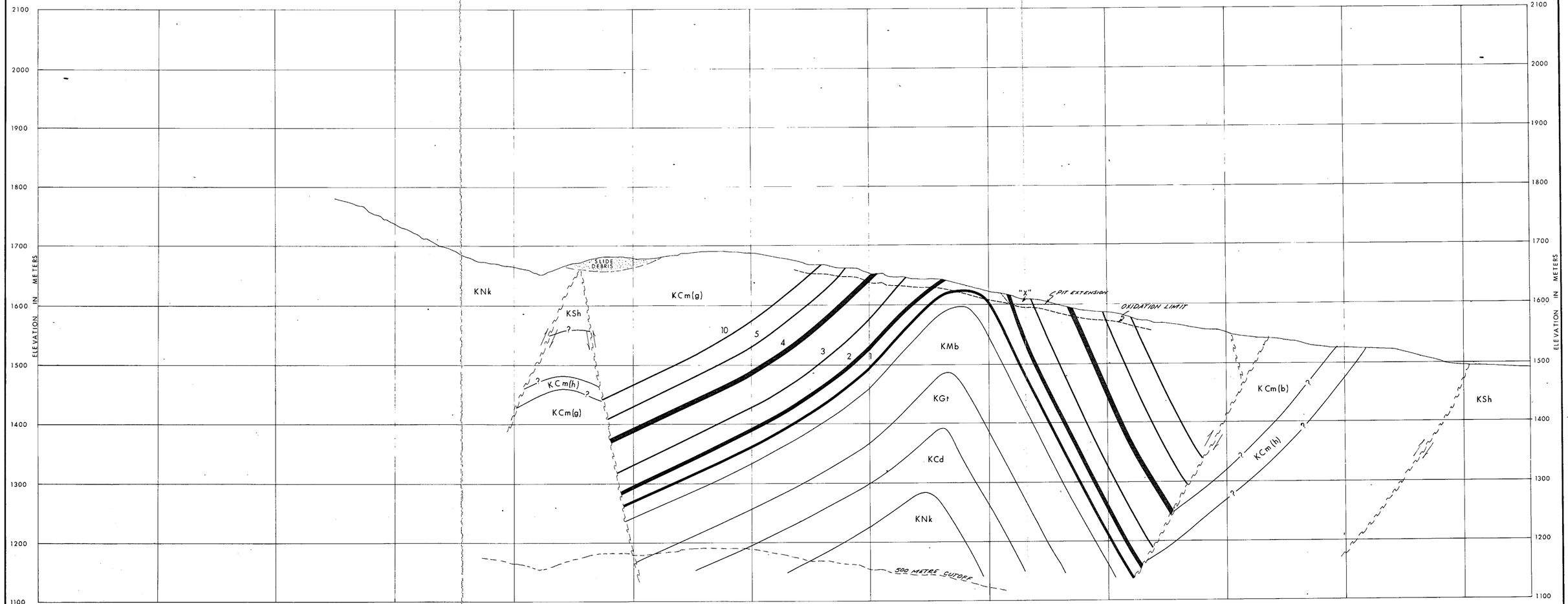


SAXON COAL LIMITED

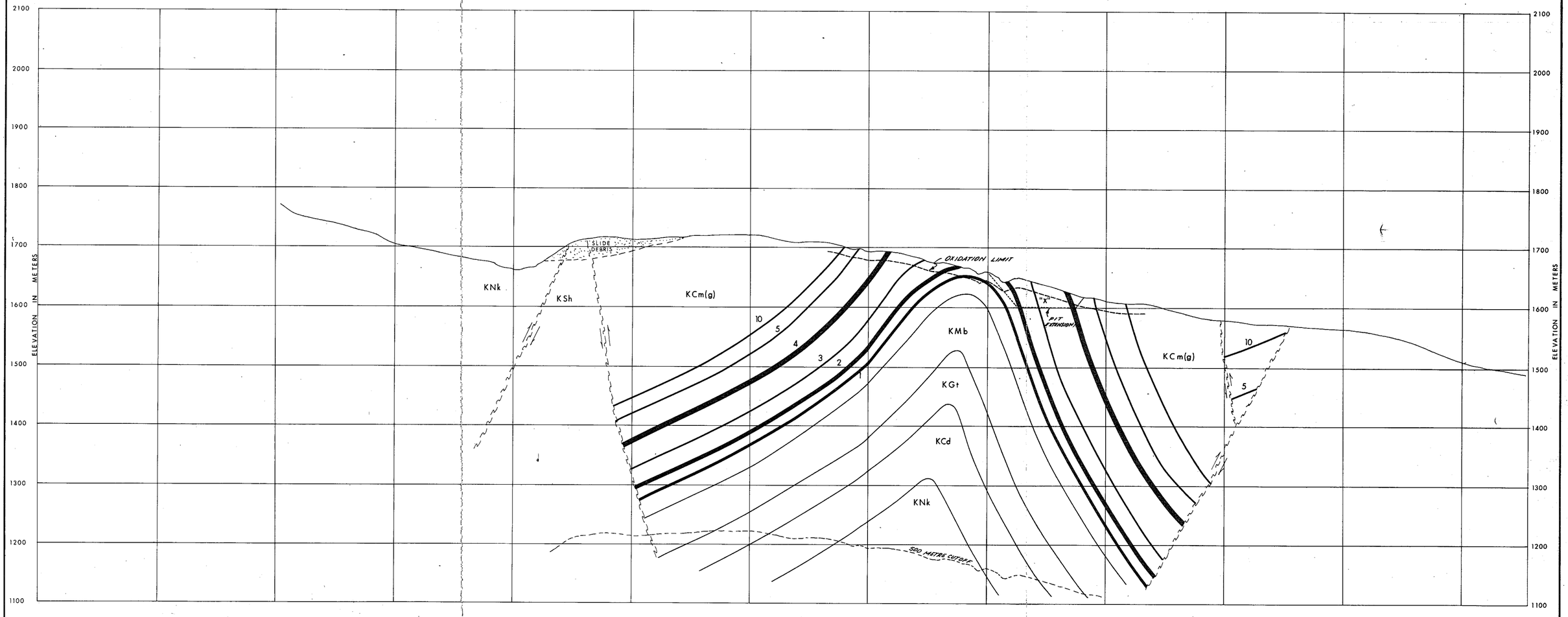
SAXON SOUTH CROSS SECTION

X7722

DRAWN BY: J.W.K.	DATE: JULY 4, 77.	SCALE: 1:2500	
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:	
APPR'D BY: I.D.	DATE: Oct '77	SAXON 77-0749-B01	



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7737		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept 77	DRAWING NUMBER:
APPR'D BY: J.D. G.G.	DATE: Oct 77	SXON77-0749-R01

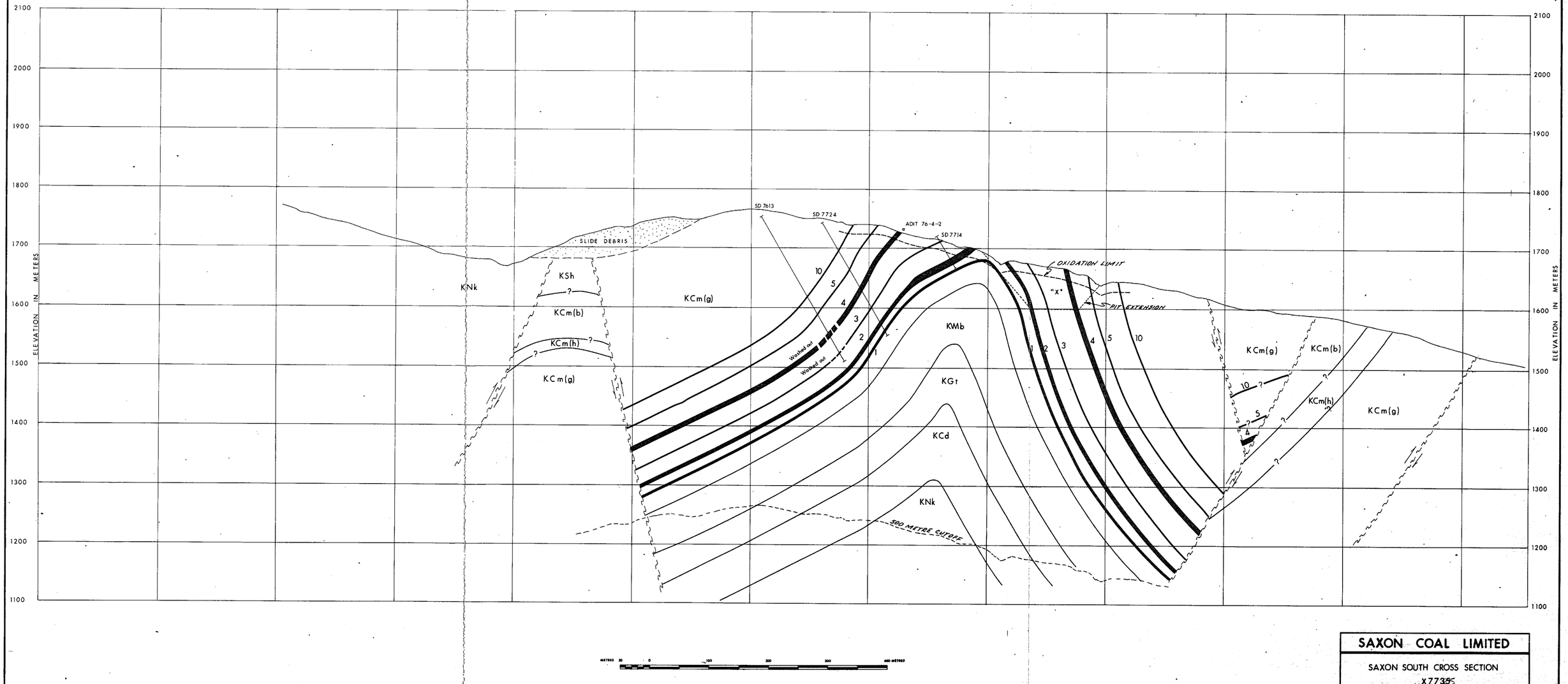


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

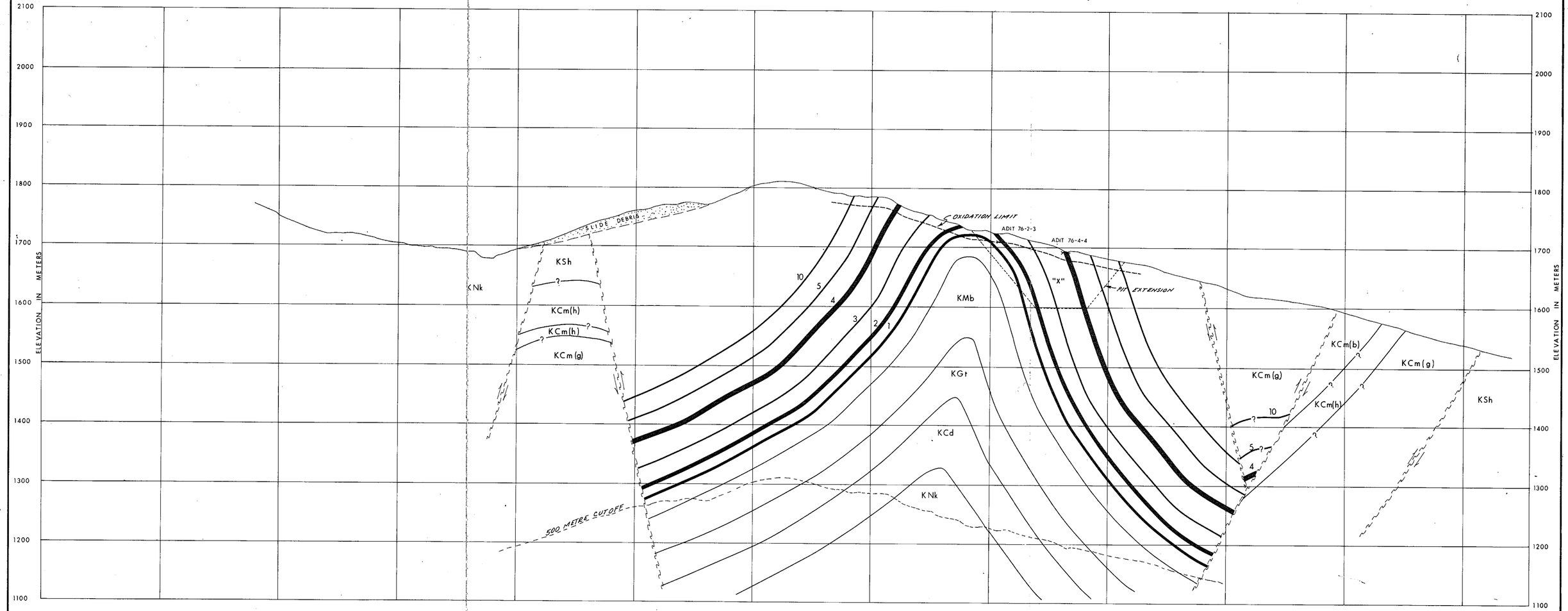
X77366

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: I.D. GG	DATE: Oct. '77	SXON77-0749-R01

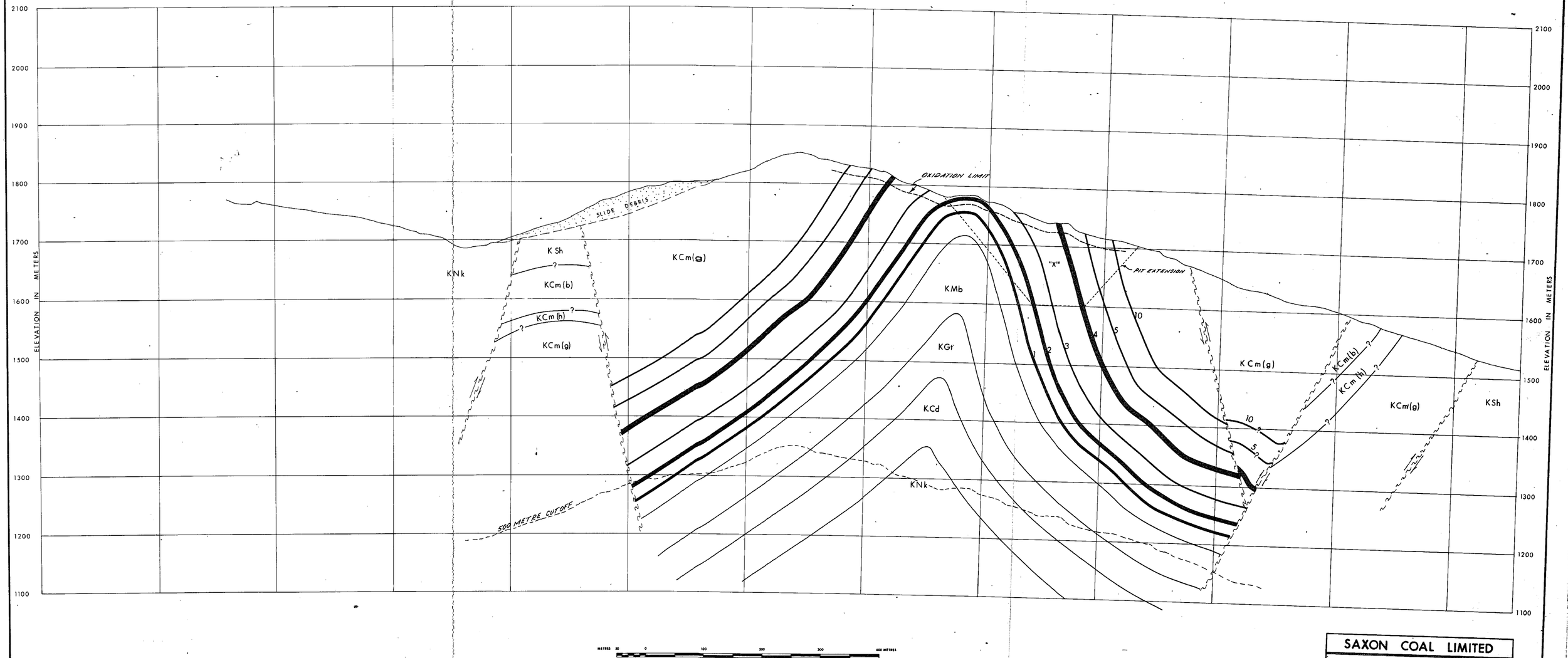


SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X77355		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: GJ	DATE: SEPT '77	DRAWING NUMBER:
APP'D BY: I.D. GE	DATE: OCT '77	SXON77-0749-R01

X7618

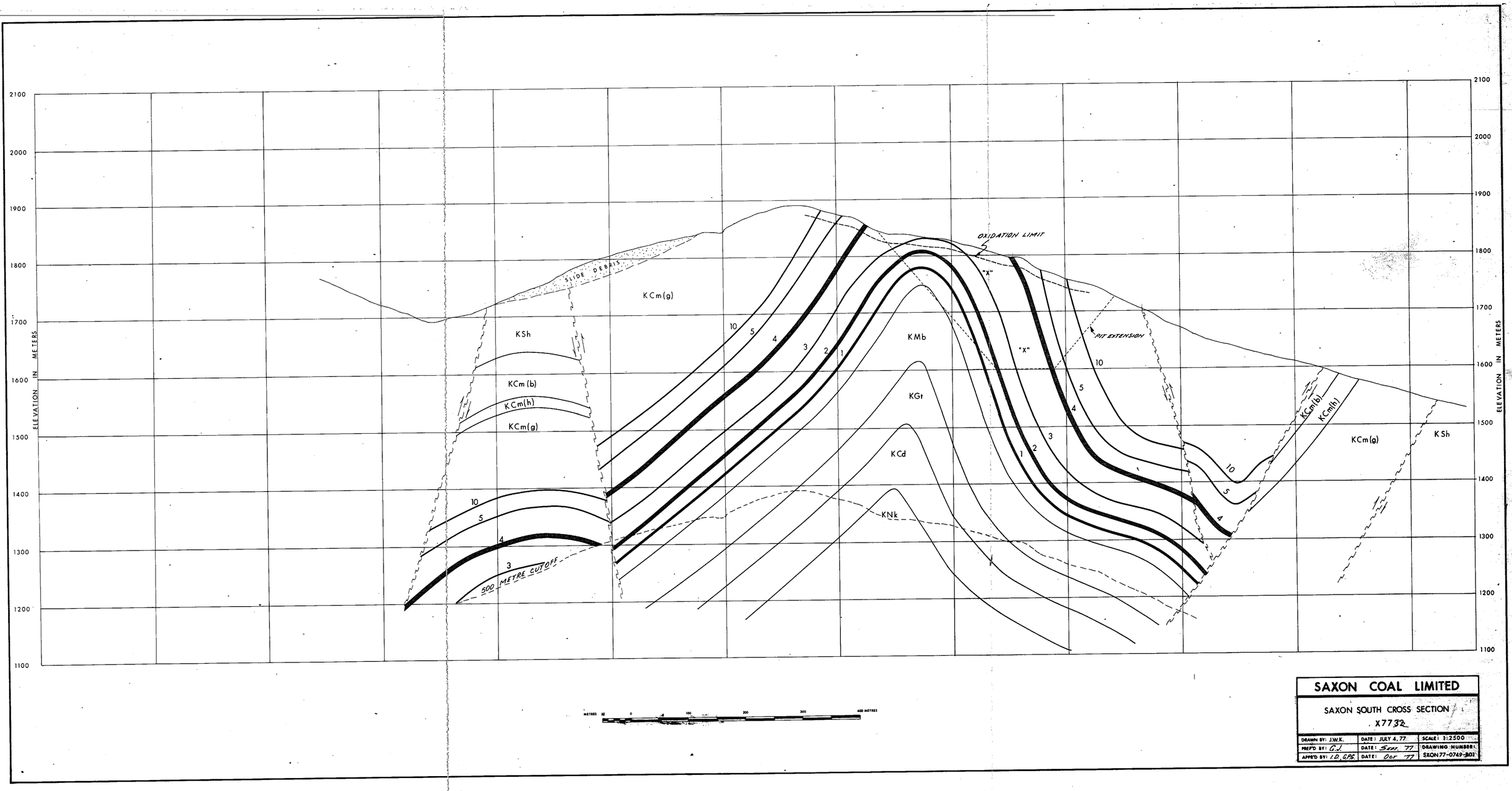


SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7734		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: J.D., G.P.G.	DATE: Oct '77	SXON77-0749-R01



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7733		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J	DATE: Sept. 77	DRAWING NUMBER:
APPR'D BY: J.D. G.P.G.	DATE: Oct. 77	SXON77-0749-R01

X 1617

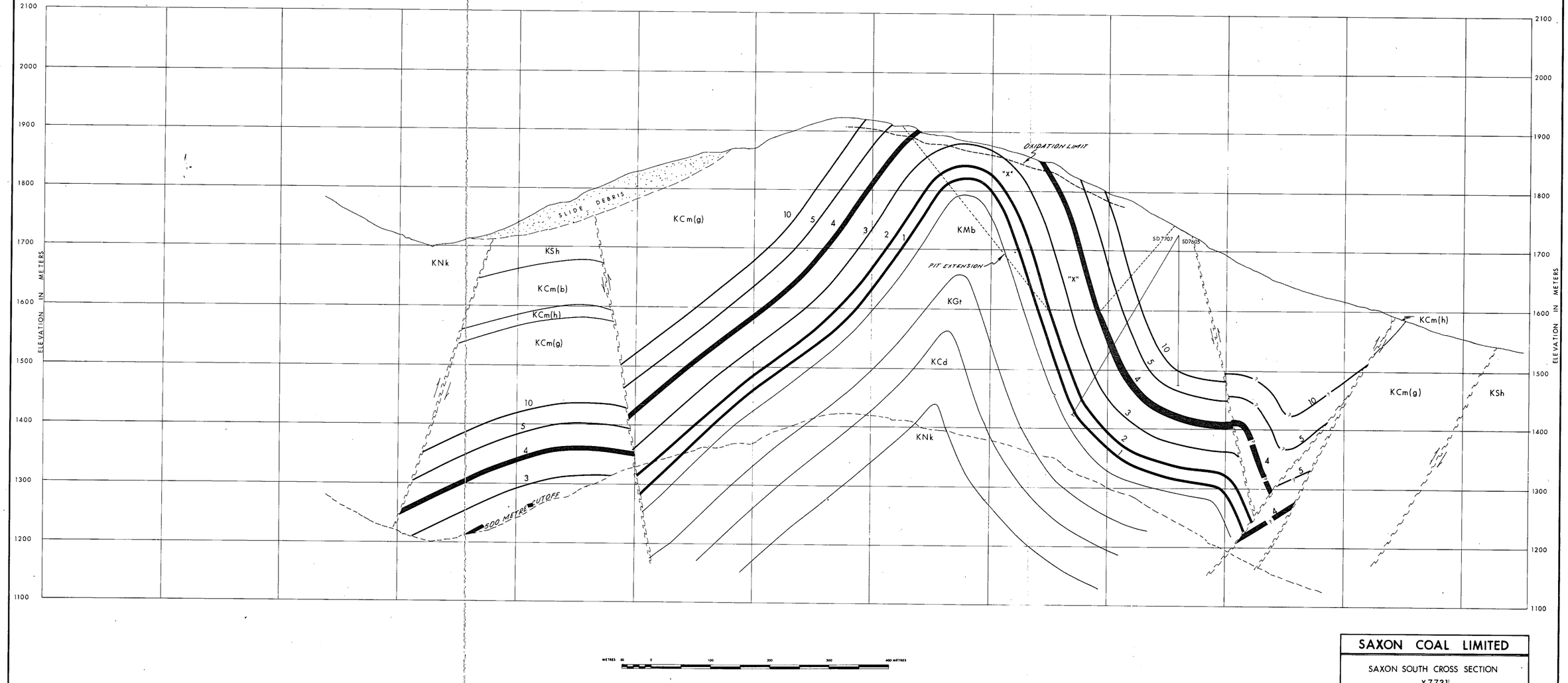


SAXON COAL LIMITED

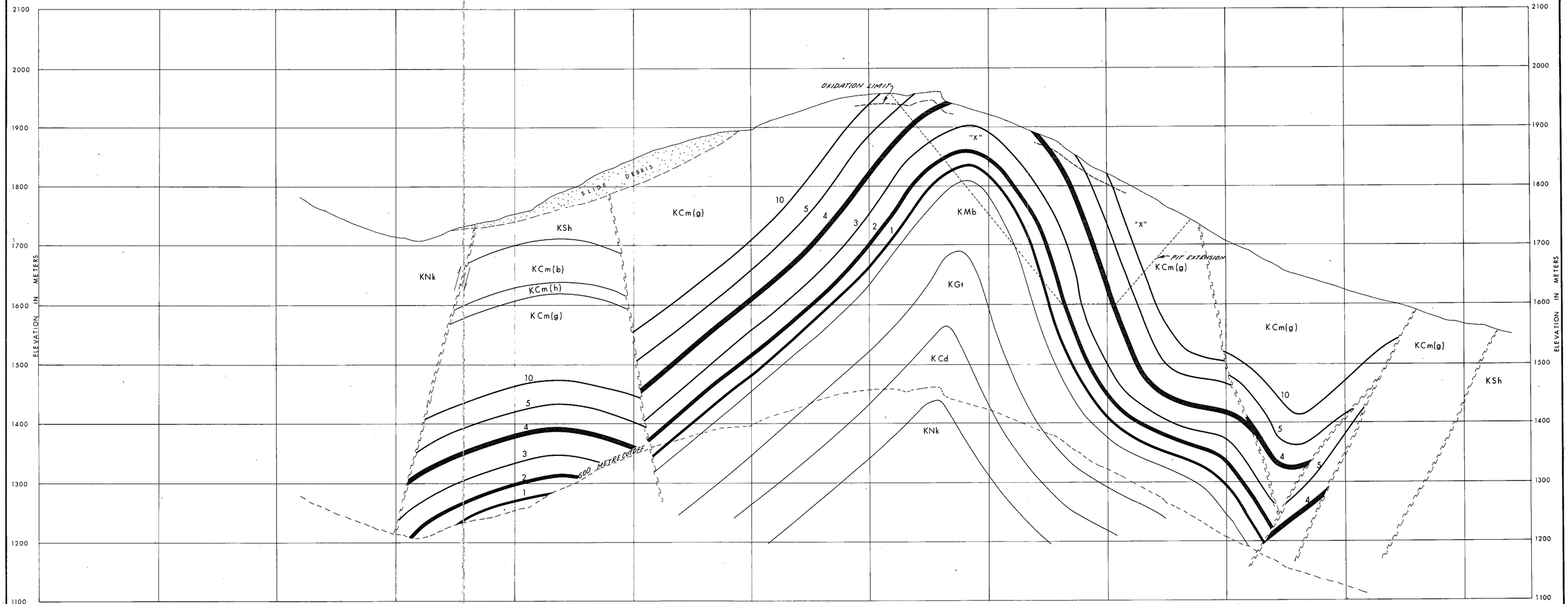
SAXON SOUTH CROSS SECTION

X7732

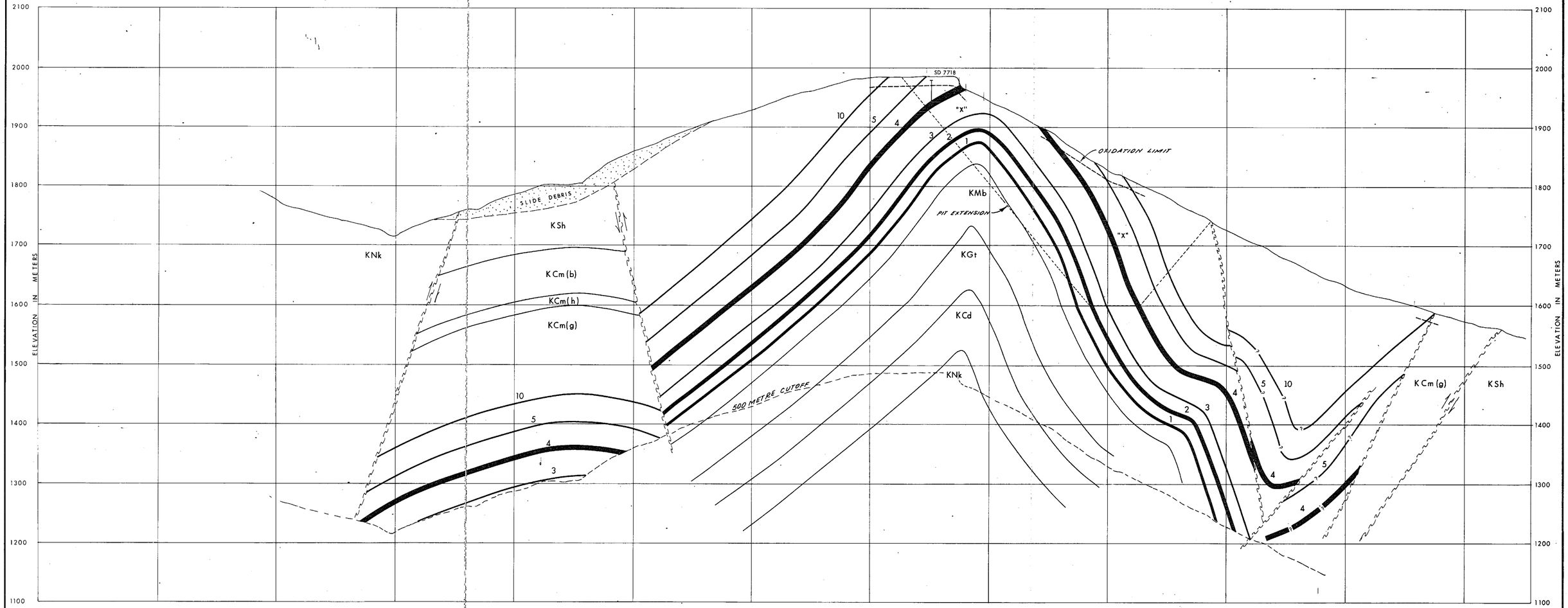
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept. 77	DRAWING NUMBER:
APP'D BY: J.D. G.P.E.	DATE: Oct 77	SXON 77-0749-3001



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7731		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.V.	DATE: Sept 77	DRAWING NUMBER:
APPR'D BY: I.D. G.P.C.	DATE: Dec. 77	SXON 77-0749-R01



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7730		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: SEPT 77	DRAWING NUMBER:
APPR'D BY: G.R.S	DATE: Oct. 77	SXON77-0749-A01

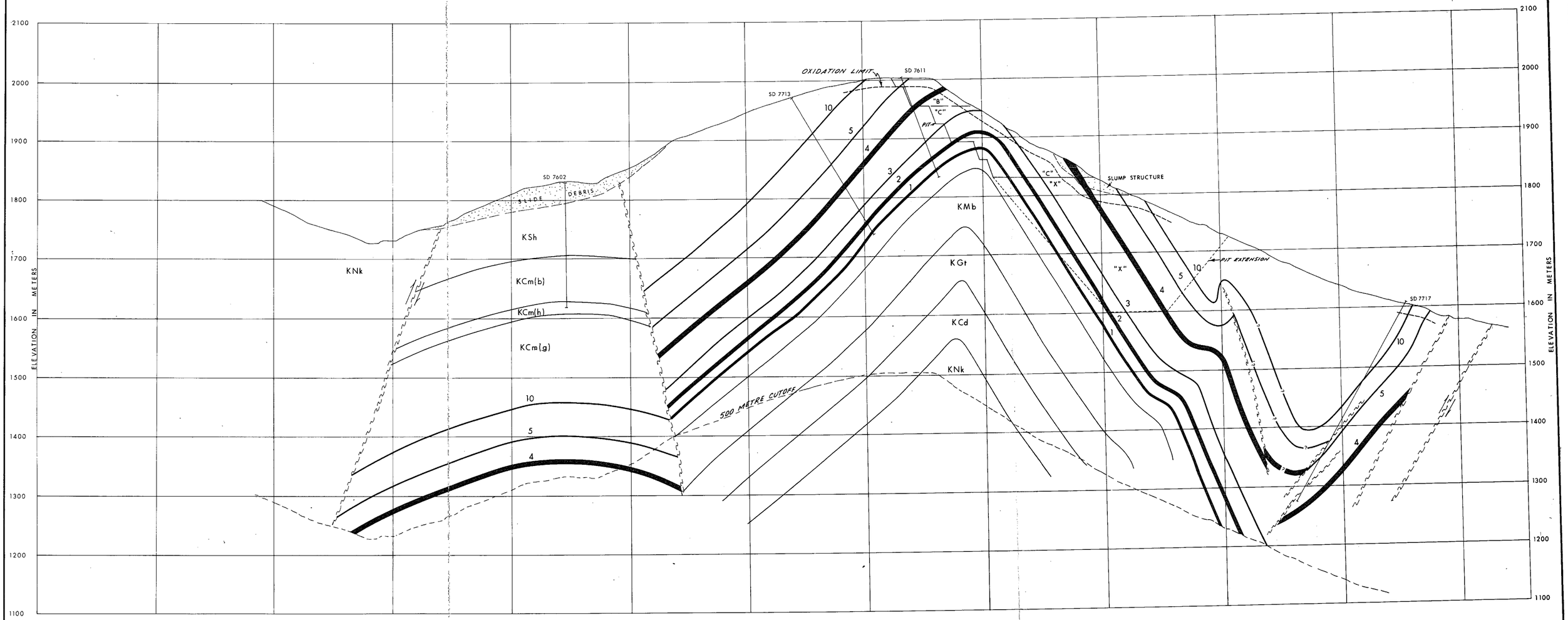


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7729

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: C.J.	DATE: Sept. '77	DRAWING NUMBER:
APP'D BY: G.P.C.	DATE: Oct. '77	SXON77-0749-R01

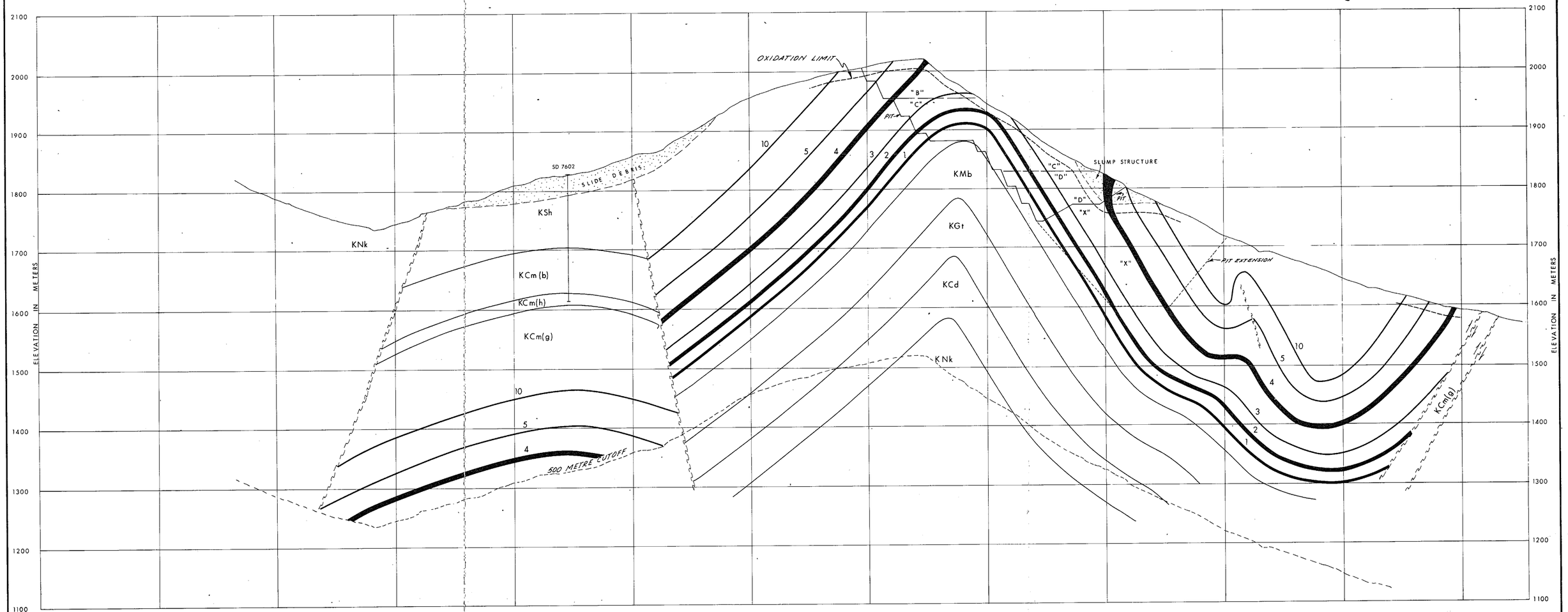


SAXON COAL LIMITED

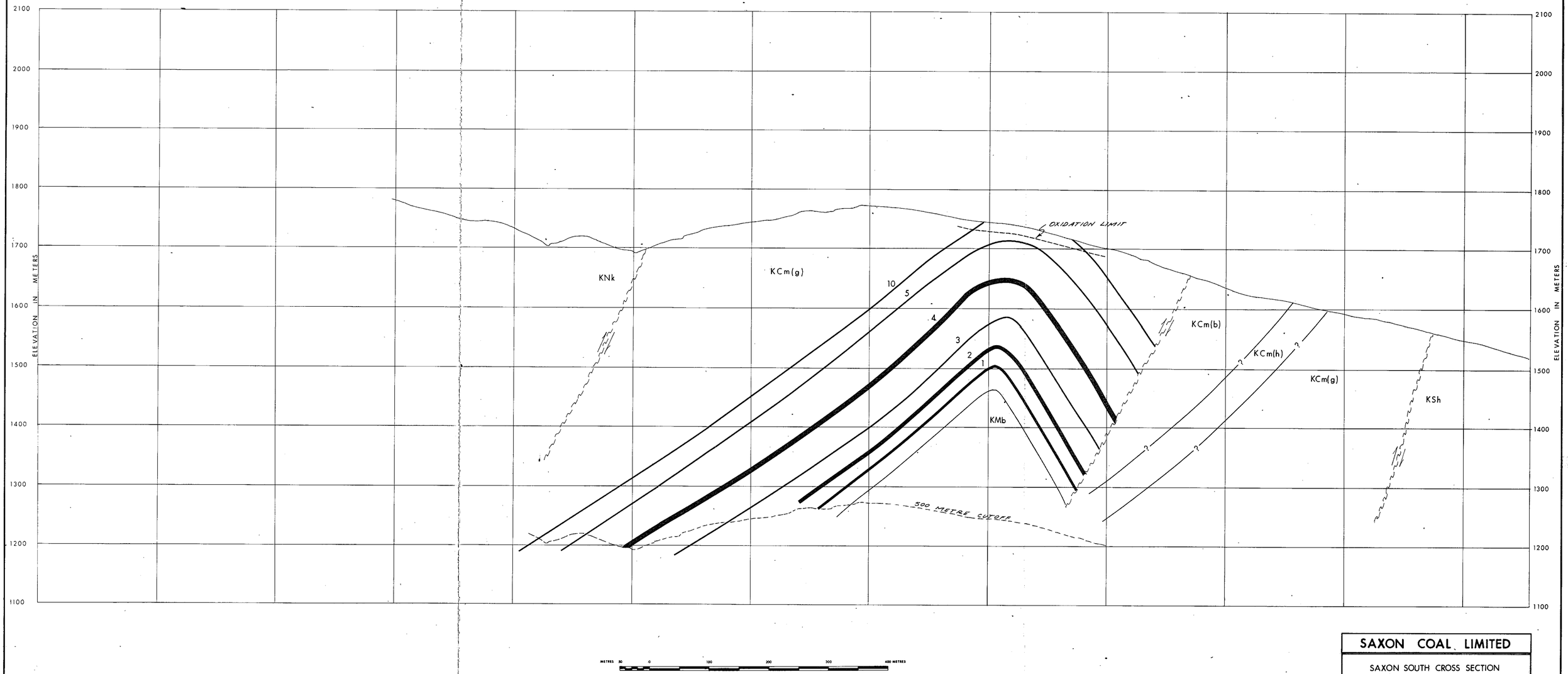
SAXON SOUTH CROSS SECTION

X7728

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: C.J.	DATE: Sept 77	DRAWING NUMBER:
APPR'D BY: C.P.C.	DATE: Oct. 77	SXON77-0749-R01



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7727		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: GJ	DATE: Sept. 77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: Oct. 77	SXON 77-0749-R01

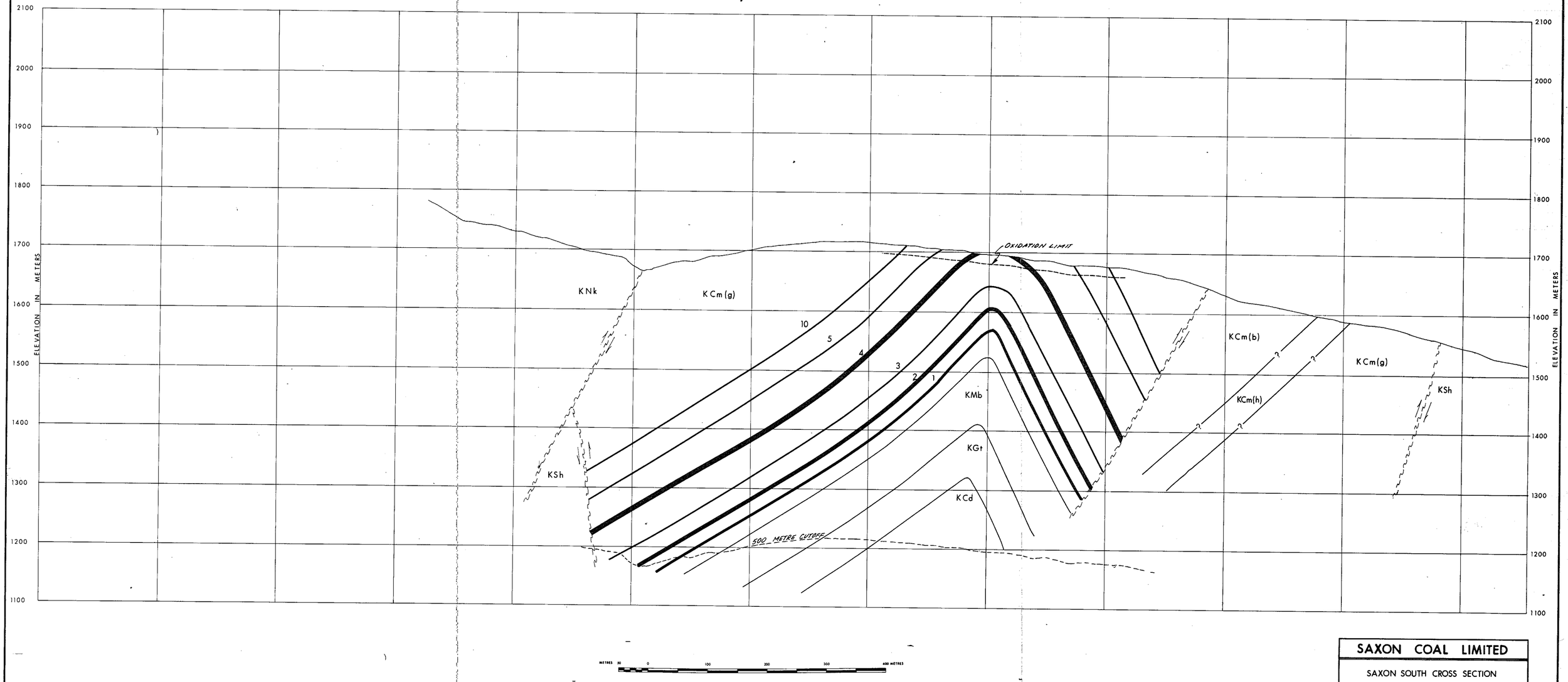


SAXON COAL LIMITED

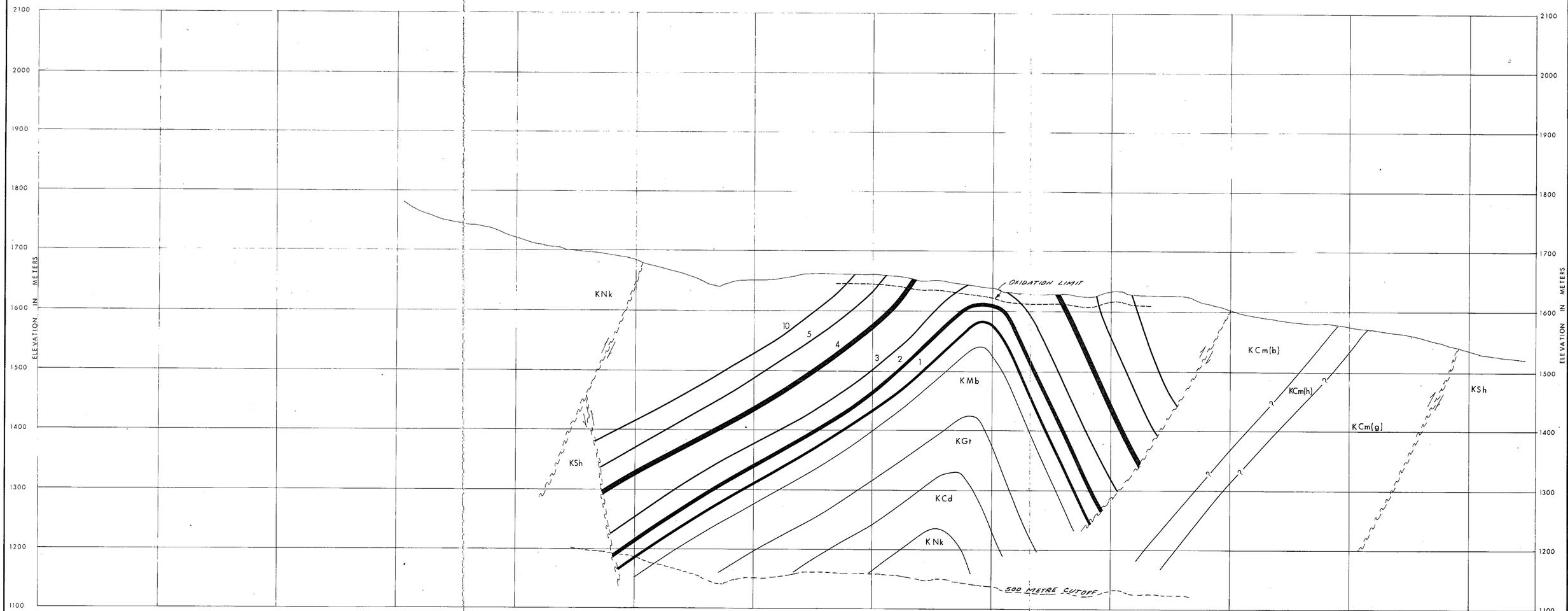
SAXON SOUTH CROSS SECTION

X7742

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept 77	DRAWING NUMBER:
APPR'D BY: I.D. GG	DATE: Oct. 77	SXON 77-0749-R01



SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X774N		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J	DATE: Sept 1977	DRAWING NUMBER: SXON 77-0749-R01
APPR'D BY: I.D. G.C.	DATE: Oct. 77.	



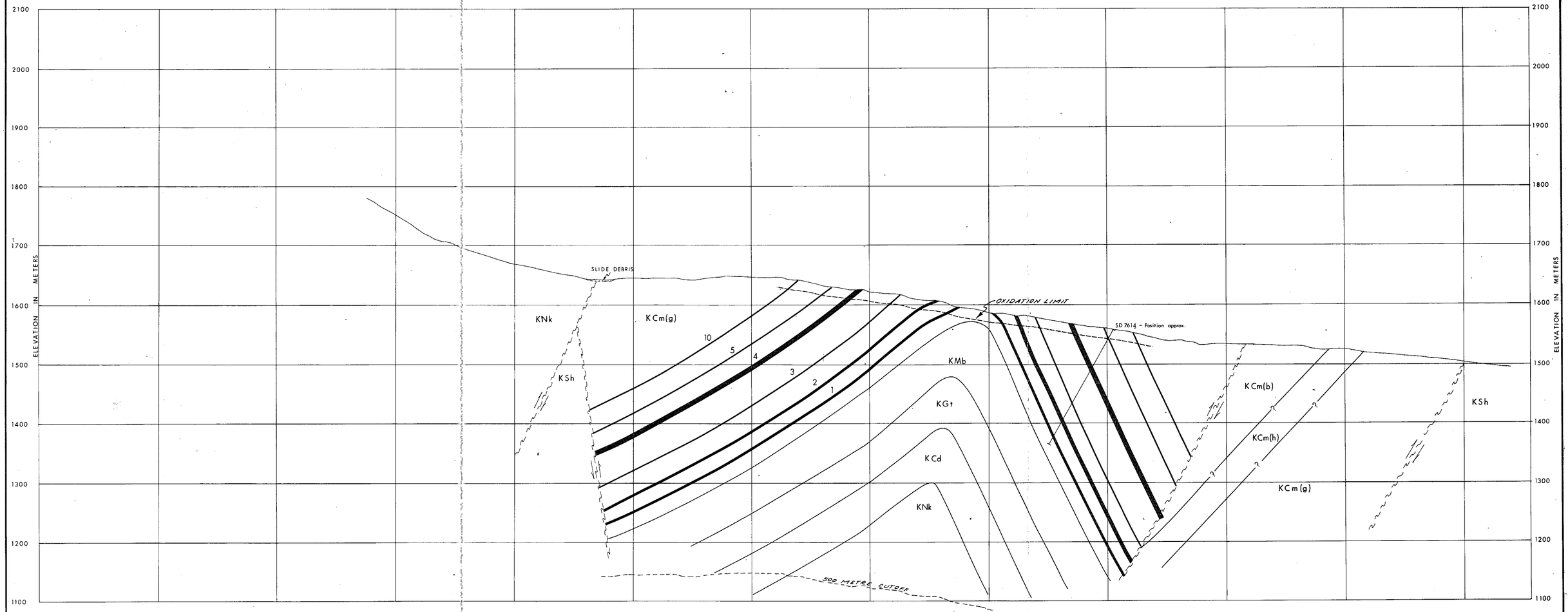
SAXON COAL LIMITED		
SAXON SOUTH CROSS SECTION X7740		
DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept. 77	DRAWING NUMBER:
APPR'D BY: I.D. G.G.	DATE: Oct. 77	SXON 77-0749-R01

SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7739

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept. 77	DRAWING NUMBER:
APPR'D BY: I.D. C.G.	DATE: Oct. '77	SXON 77-0749-R01

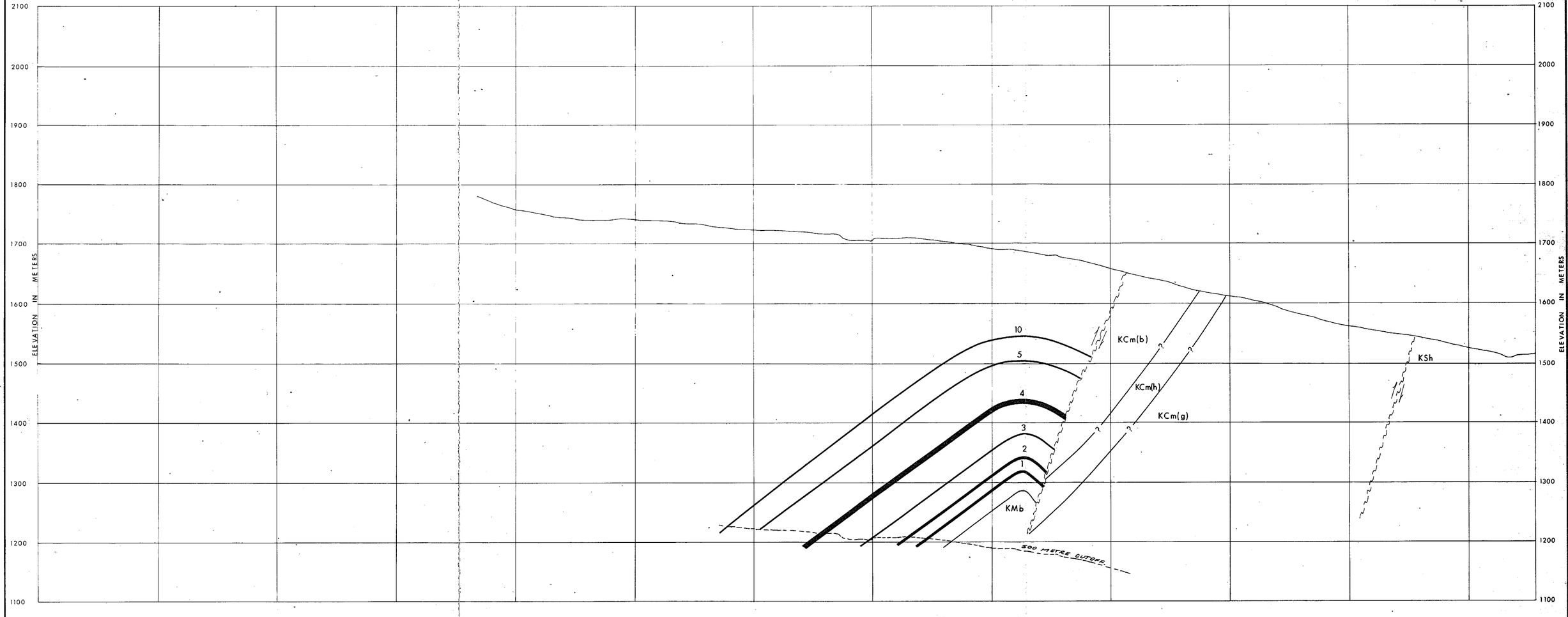


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7738

DRAWN BY: J.W.K.	DATE: JULY 4,77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept. '77	DRAWING NUMBER:
APP'D BY: J.D.G.	DATE: Oct. '77	SXON77-0749-R01



METRES 30 0 100 200 300 400 METRES

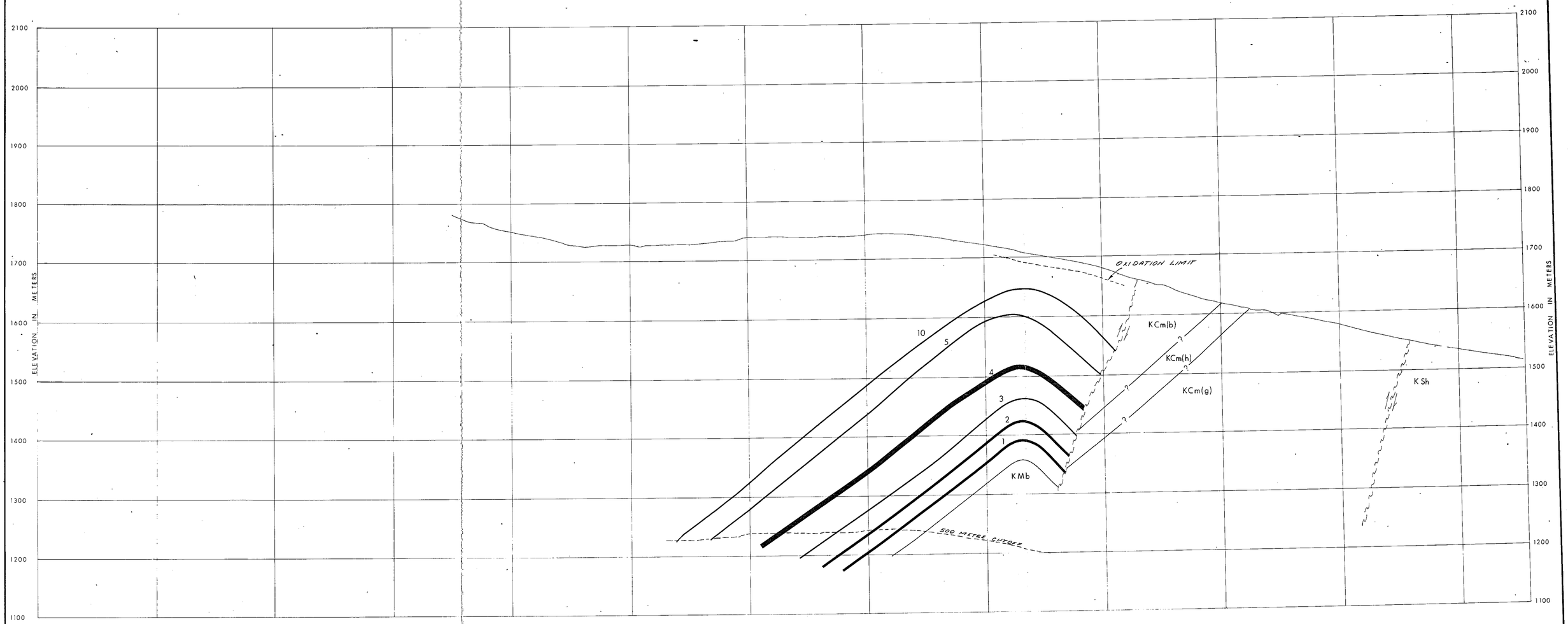
SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7745

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: I.D., G.G.	DATE: Oct '77	SXON 77-0749-R01

X-7628

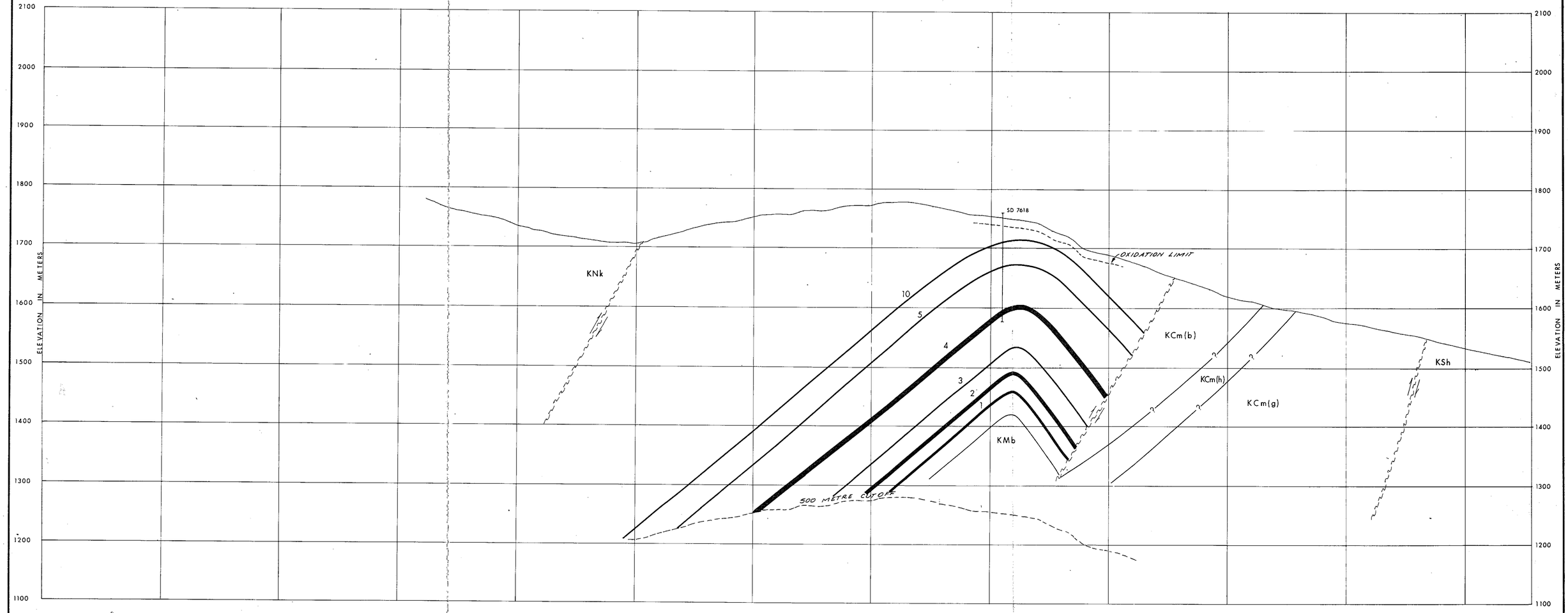


SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7744

DRAWN BY J.W.K	DATE: JULY 4, 77	SCALE: 1:2500	
PREP'D BY G.J.	DATE: SEPT. '77	DRAWING NUMBER:	
APPR'D BY J.D., G.C.	DATE: Oct. '77	SXON 77-0749-R01	

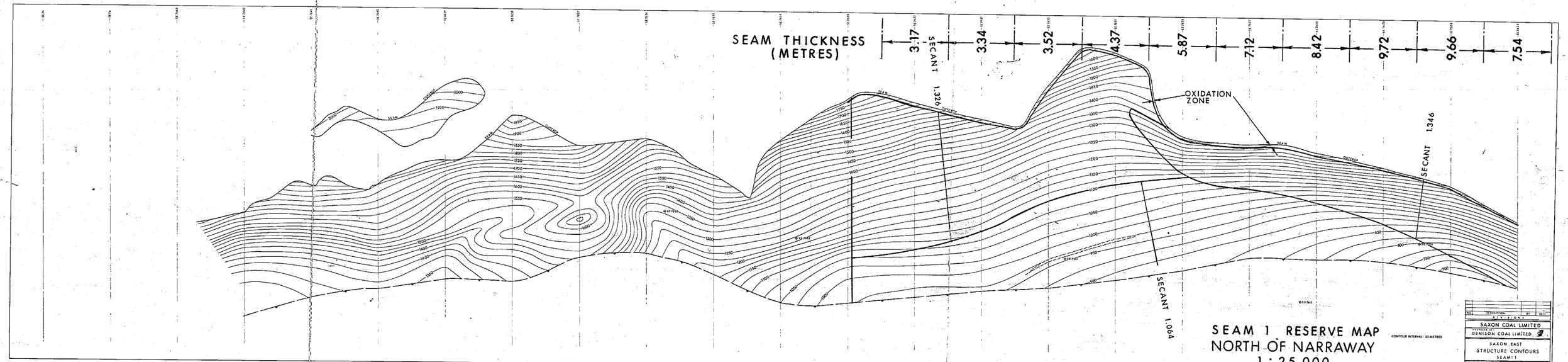


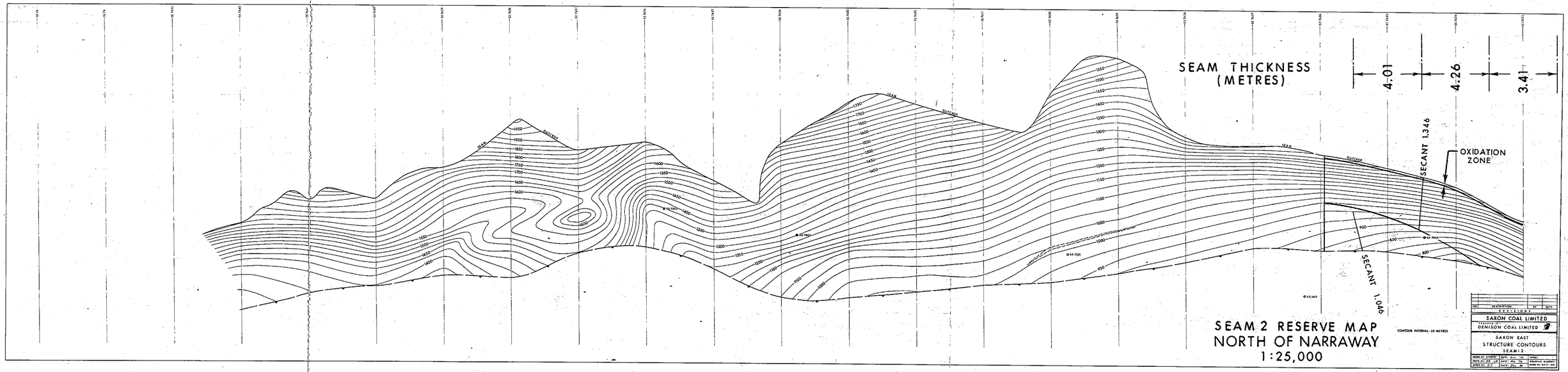
SAXON COAL LIMITED

SAXON SOUTH CROSS SECTION

X7743

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APP'D BY: J.D.C.C.	DATE: Oct. '77	SXON 77-0749-R01


SEAM THICKNESS
(METRES)
3.17
3.34
3.52
4.37
5.87
7.12
8.42
9.72
9.66
7.54
SECANT 1.320
SECANT 1.346
SECANT 1.064
OXIDATION
ZONE
SEAM
OUTCROP
CONTOUR INTERVAL: 25 METRES
SEAM 1 RESERVE MAP
NORTH OF NARRAWAY
1 : 25,000
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON EAST
STRUCTURE CONTOURS
SEAM 1



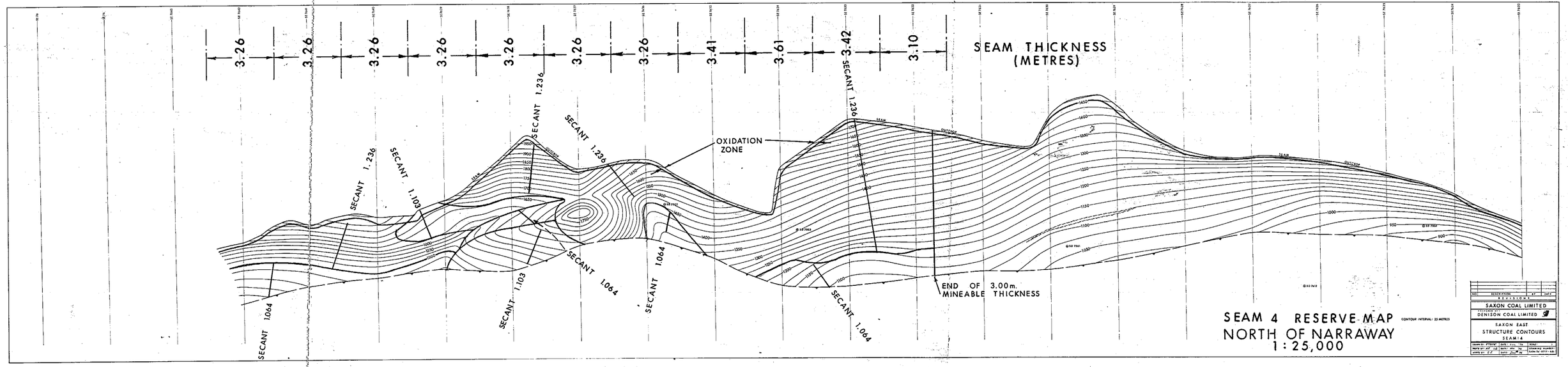
SEAM 2 RESERVE MAP
NORTH OF NARRAWAY
1:25,000

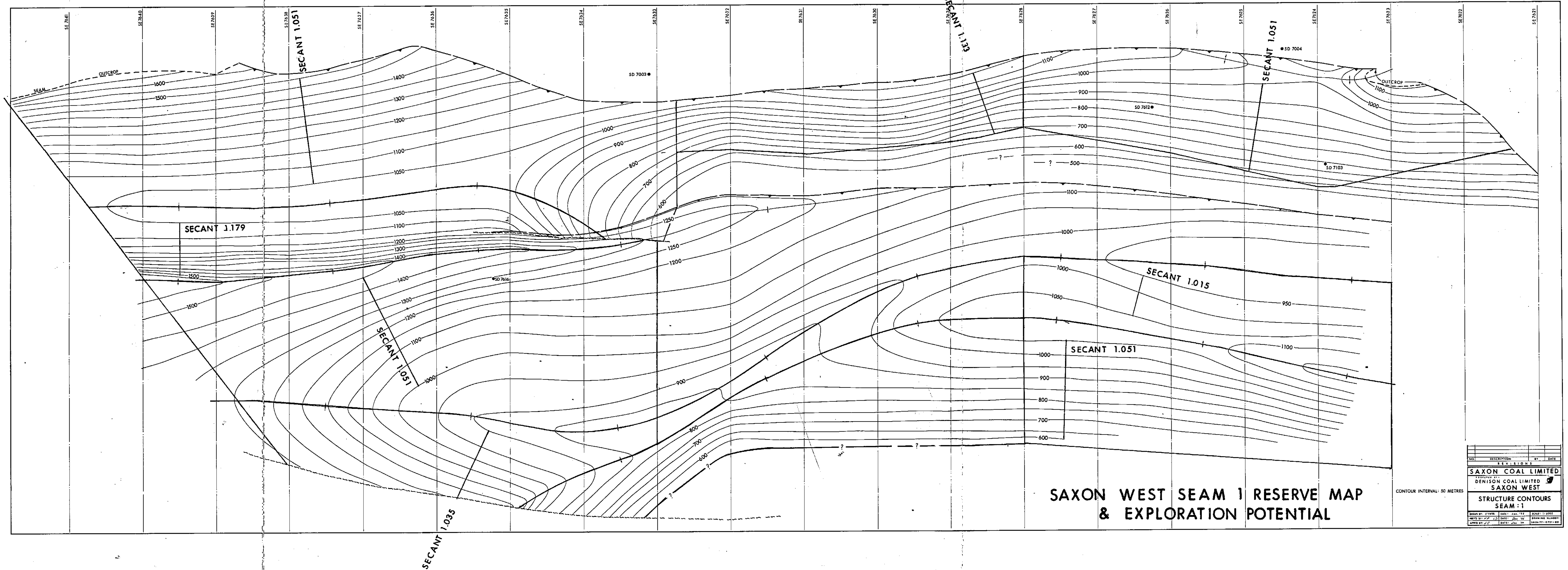
CONTOUR INTERVAL: 25 METRES

NO.	DESCRIPTION	BY	DATE
REVISIONS			

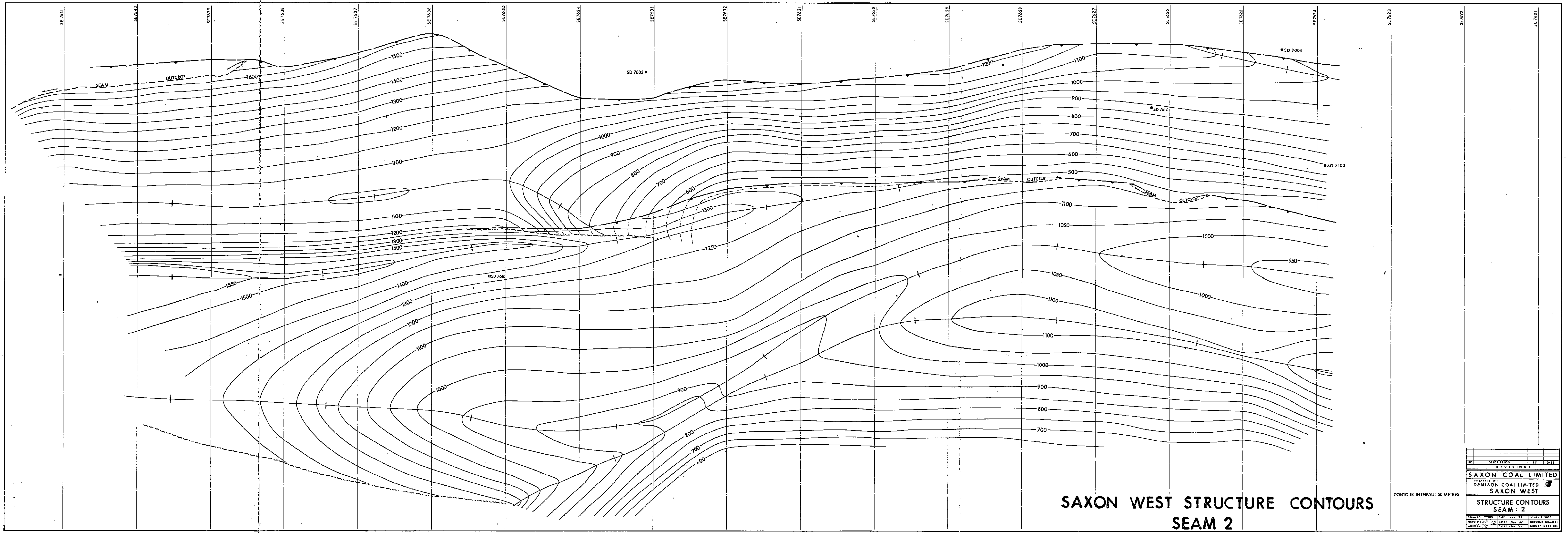
SAXON COAL LIMITED
PROPERTY OF
DENISON COAL LIMITED

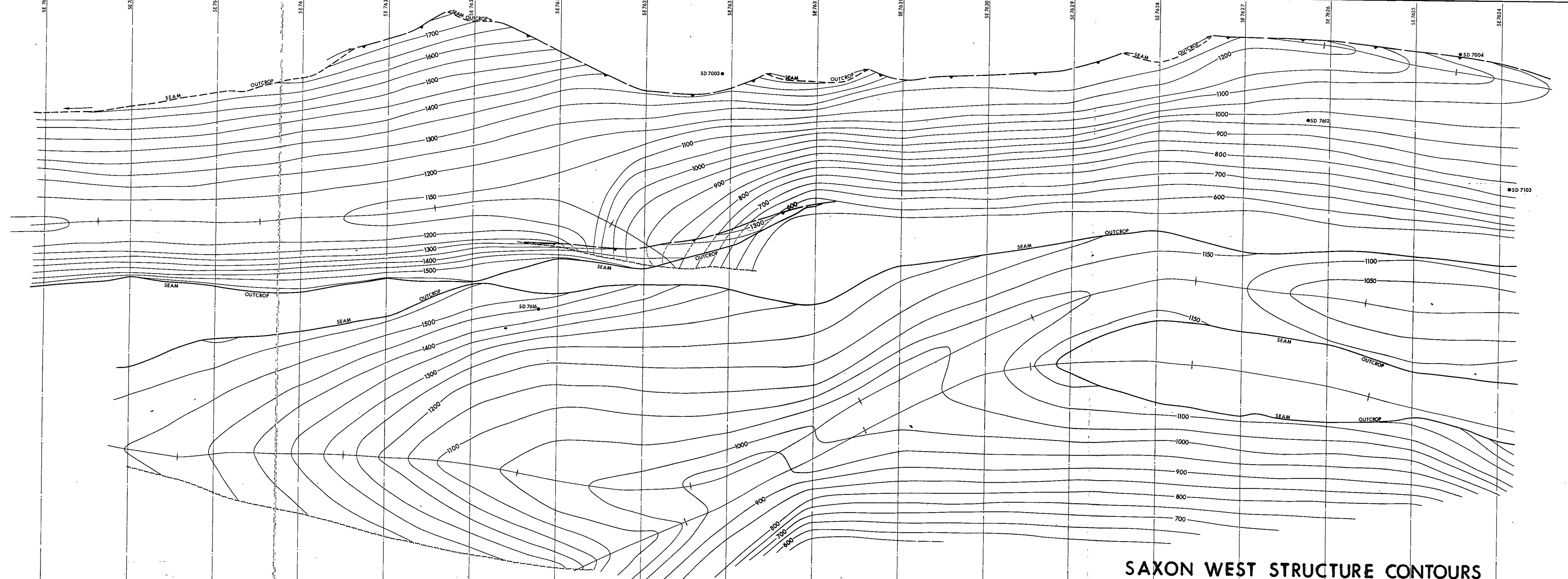
SAXON EAST
STRUCTURE CONTOURS
SEAM 2


SEAM THICKNESS (METRES)
3.26
3.26
3.26
3.26
3.26
3.26
3.26
3.41
3.61
3.42
3.10
SECANT 1.236
SECANT 1.236
SECANT 1.103
SECANT 1.236
SECANT 1.236
OXIDATION ZONE
SECANT 1.064
SECANT 1.103
SECANT 1.064
SECANT 1.064
SECANT 1.064
END OF 3.00m. MINEABLE THICKNESS
SEAM 4 RESERVE MAP
CONTOUR INTERVAL: 25 METRES
NORTH OF NARRAWAY
1:25,000
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON EAST
STRUCTURE CONTOURS
SEAM 4



SAXON WEST SEAM 1 RESERVE MAP
& EXPLORATION POTENTIAL
CONTOUR INTERVAL: 50 METRES
SECANT 1.051
SECANT 1.133
SECANT 1.179
SECANT 1.015
SECANT 1.035
OUTCROP
SEAM
SD 7003
SD 7004
SD 7612
SD 7103
SD 7616
NO.
DESCRIPTION
BY
DATE
REVISIONS
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON WEST
STRUCTURE CONTOURS
SEAM : 1
DATE: Jan. '77
SCALE: 1:5000
DRAWING NUMBER:


SAXON WEST STRUCTURE CONTOURS
SEAM 2
CONTOUR INTERVAL: 50 METRES
SEAM OUTCROP
SD 7003
SD 7004
SD 7612
SD 7103
SD 7616
NO.
DESCRIPTION
BY
DATE
REVISIONS
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON WEST
STRUCTURE CONTOURS
SEAM : 2
SCALE: 1:5000
DRAWING NUMBER:



SAXON WEST STRUCTURE CONTOURS

SEAM 4

CONTOUR INTERVAL: 50 METRES

NO	DESCRIPTION	BY	DATE
REVISIONS			

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
SAXON WEST

STRUCTURE CONTOURS
SEAM : 4

DRAWN BY [illegible]	DATE Jan. '77	SCALE 1:5000
PREP'D BY: NP / D	DATE: Dec 76	DRAWING NUMBER:
APP'D BY: JC	DATE: Jan '77	SXON 77-0721-R01

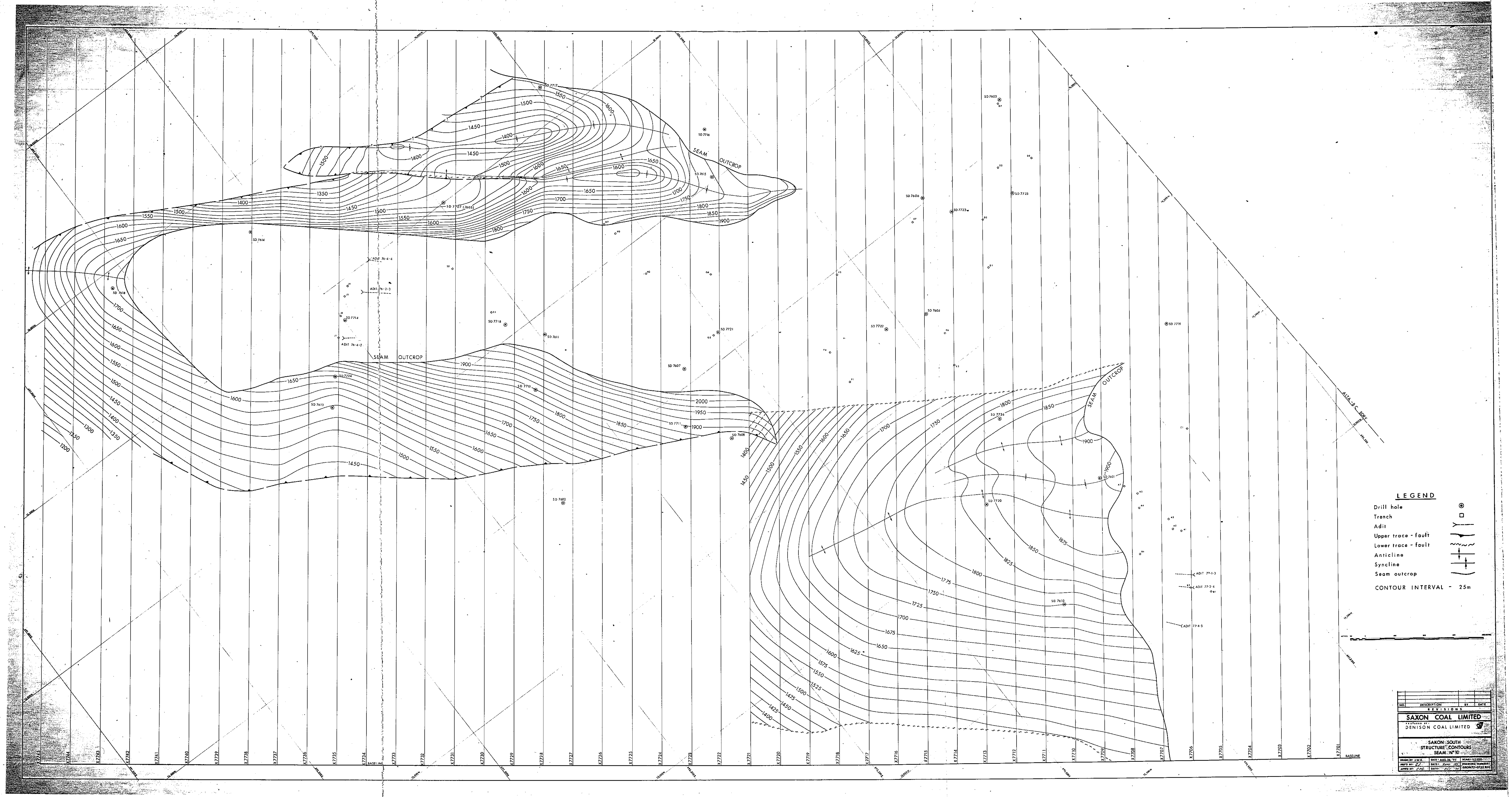
PR-SAXON 77 (2) A.

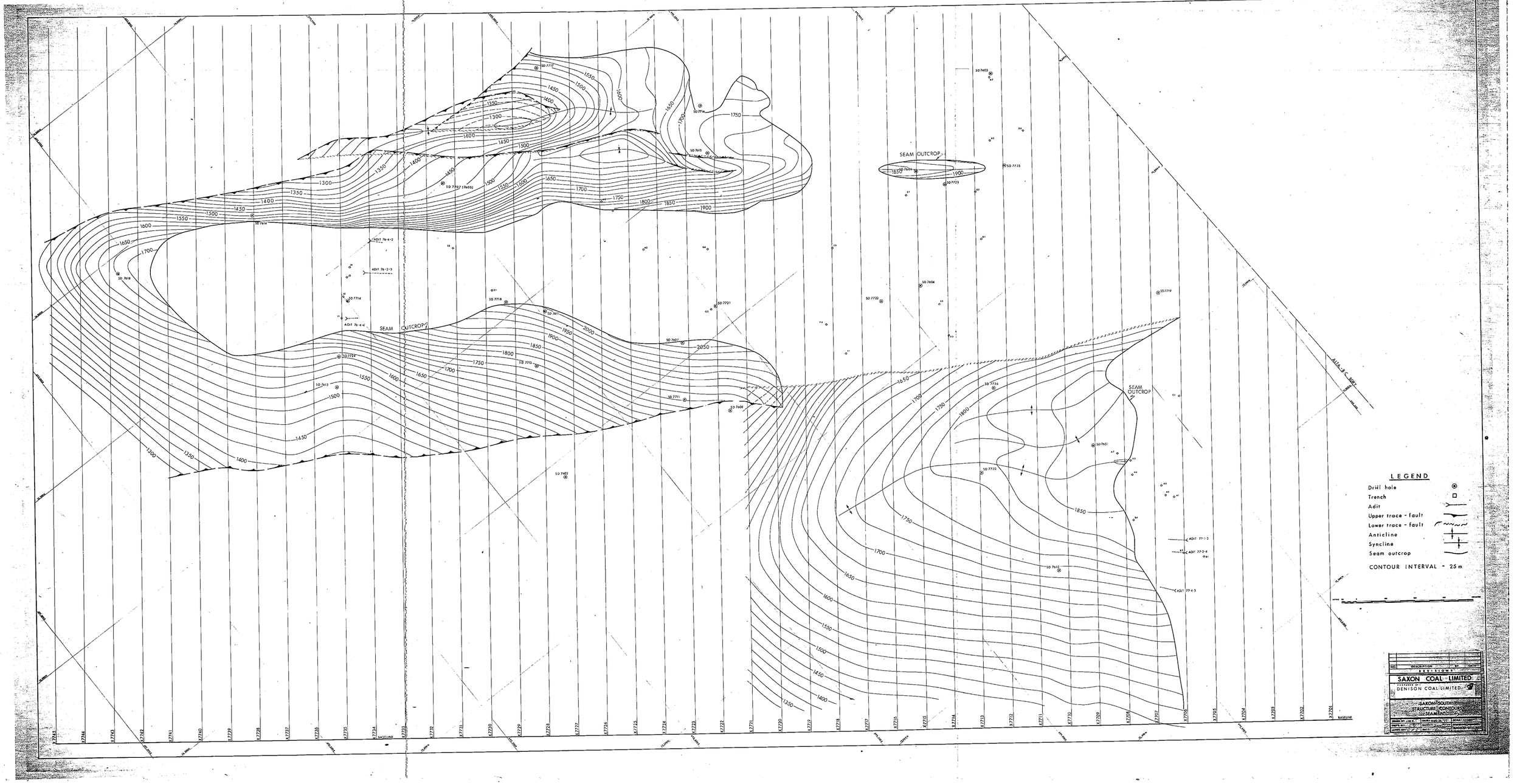
STRUCTURE CONTOURS.

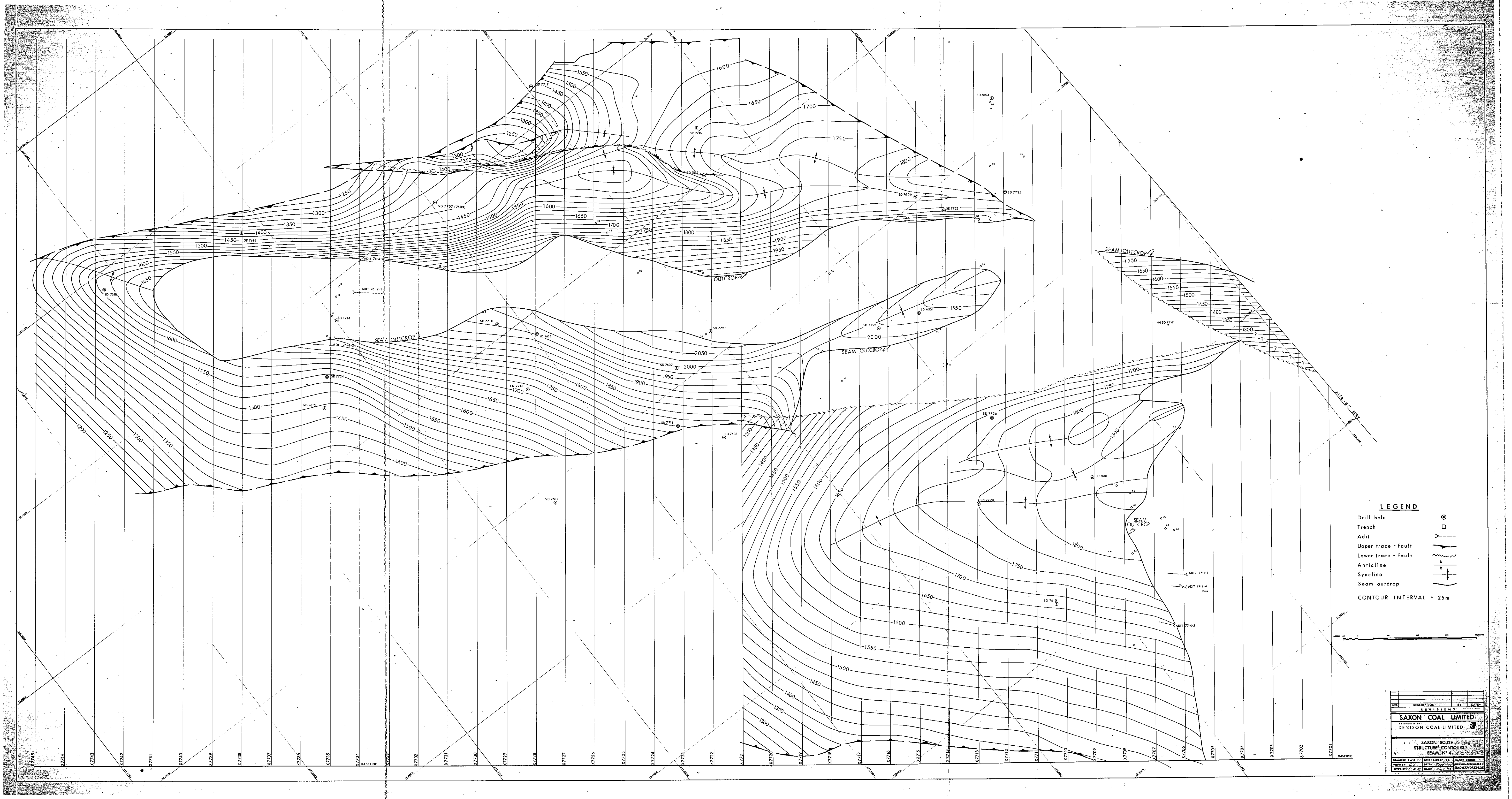
SOUTH + EAST + WEST SAXON

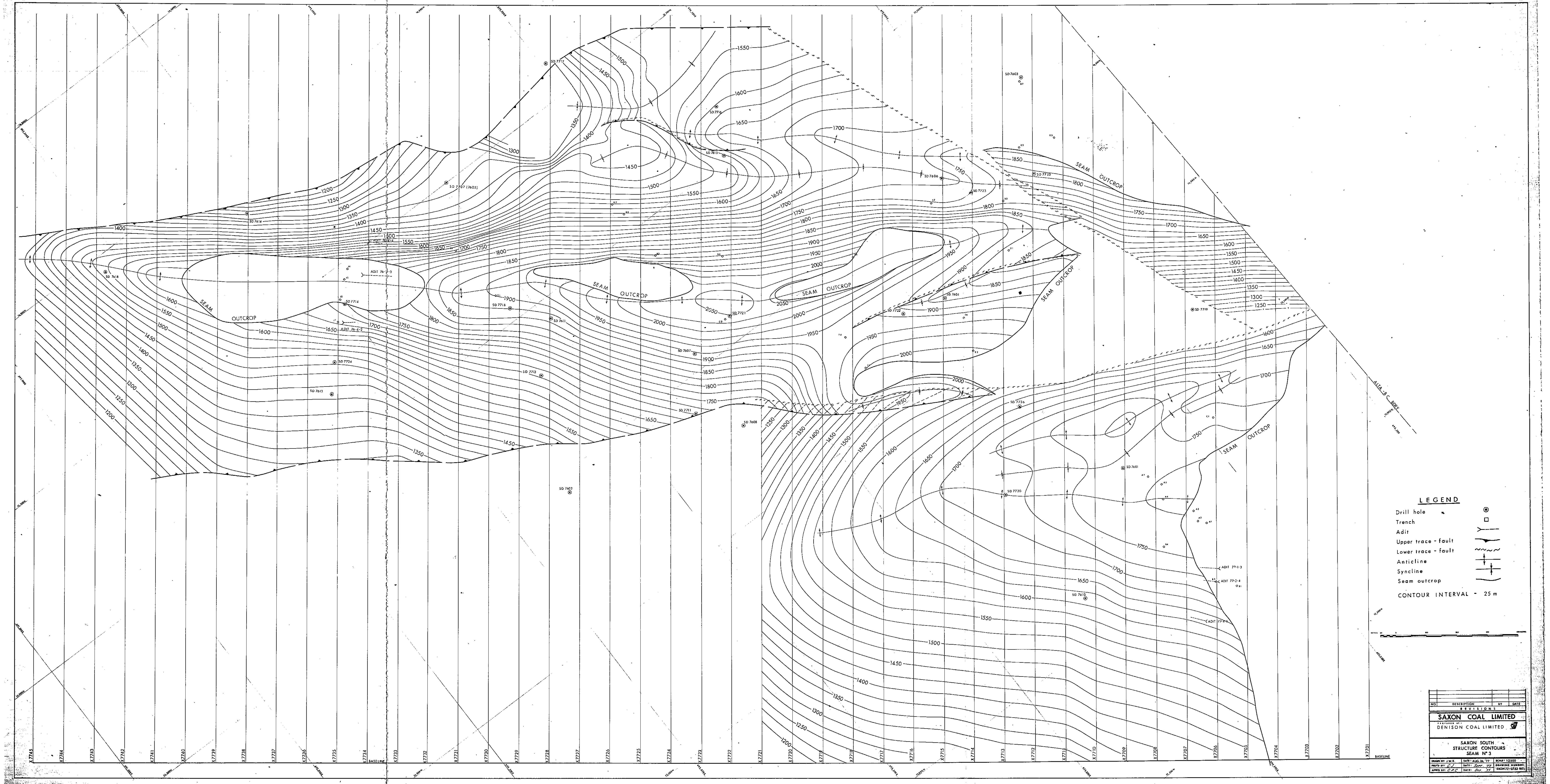
BOOK 2 OF 5

DENISON MINES LTD 1977

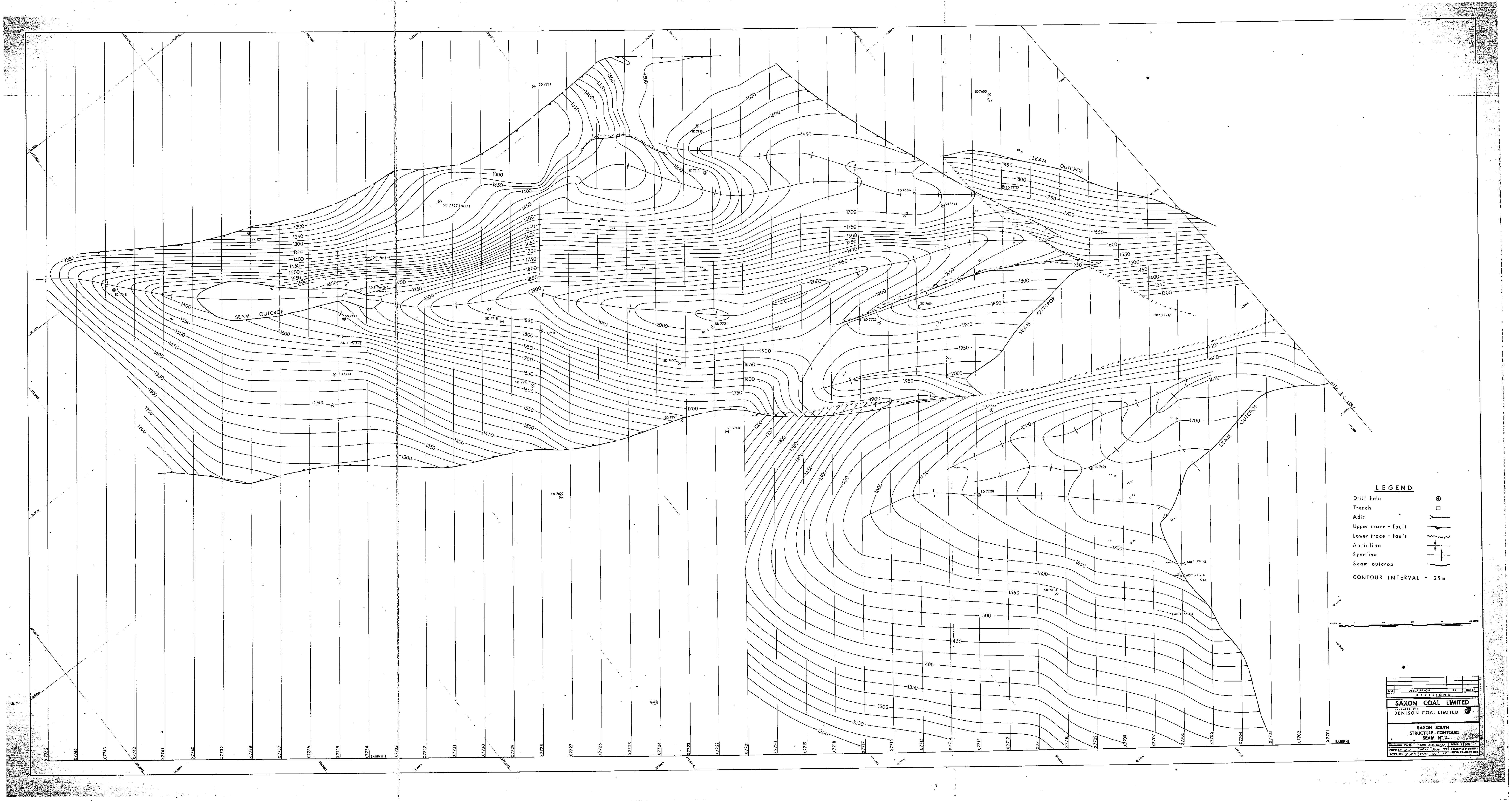

LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 25m
SEAM OUTCROP
BASELINE
NO. DESCRIPTION BY DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
SAXON SOUTH
STRUCTURE CONTOURS
SEAM Nº 10
DRAWN BY: J.W.K.
DATE: AUG. 26, '77
SCALE: 1:2500
PREP'D BY: C.J.
DATE: Sept '77
DRAWING NUMBER:
APP'D BY: C.P.G.
DATE: Oct '77

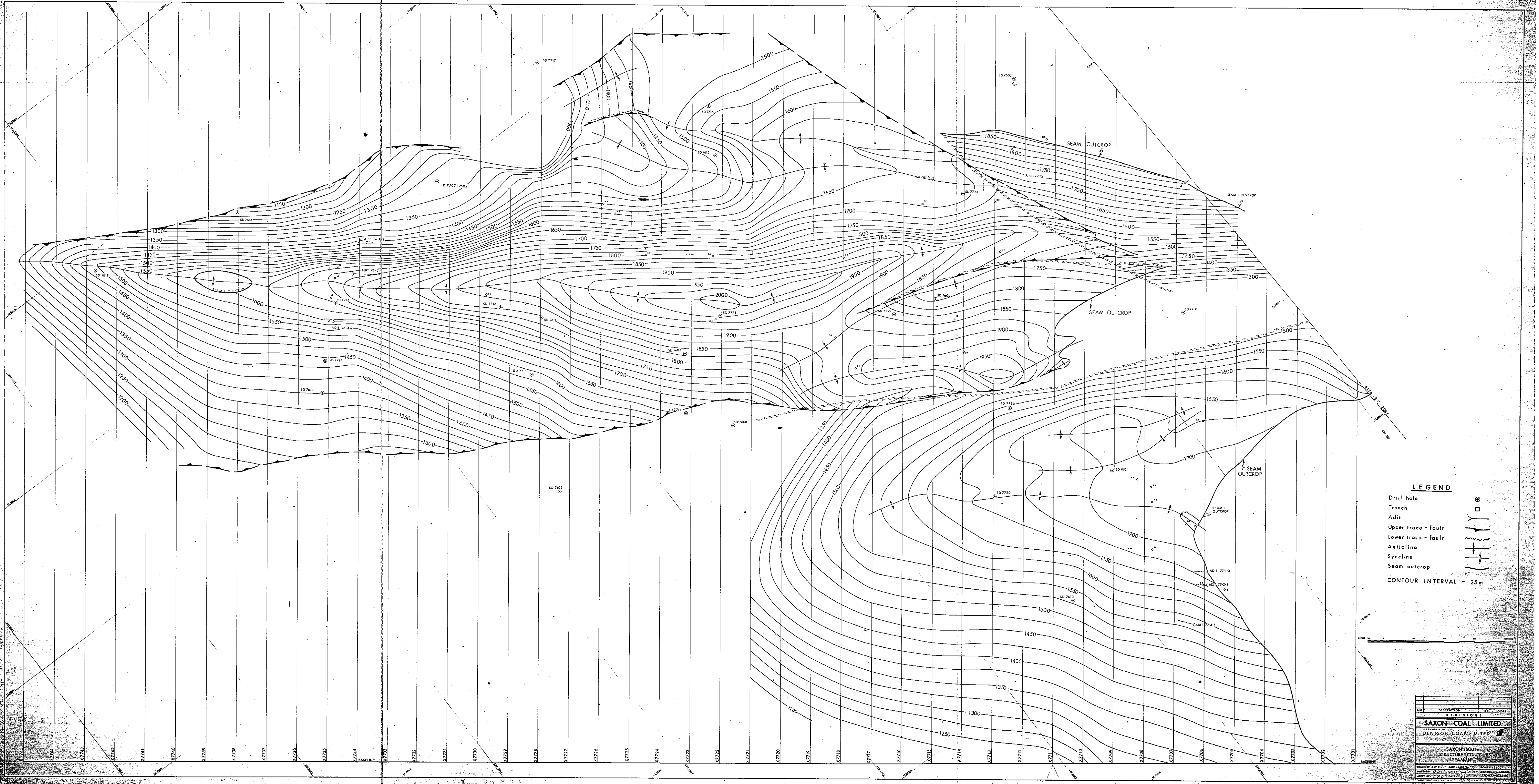

SEAM OUTCROP
SEAM OUTCROP
SEAM OUTCROP
ADIT 76-4-2
ADIT 76-2-3
ADIT 76-4-4
ADIT 77-1-3
ADIT 77-2-4
ADIT 77-4-5
BASELINE
LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 25 m
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON SOUTH
STRUCTURE CONTOURS
SEAM B


SEAM OUTCROP
OUTCROP
ADIT 76-4-4
ADIT 76-2-3
ADIT 76-4-2
ADIT 77-1-3
ADIT 77-2-4
ADIT 77-4-3
BASELINE
LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 25m
NO.
DESCRIPTION
BY
DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
SAXON SOUTH
STRUCTURE CONTOURS
SEAM Nº 4
DRAWN BY: J.W.K.
DATE: AUG.26,'77
SCALE: 1:2500
PREP'D BY: G.J.
DATE: Sept '77
DRAWING NUMBER:
APP'D BY: C.P.C.
DATE: Oct. '77
SXON77-0752-801



LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 25 m
SEAM OUTCROP
ALTA - B.C. BDRY
BASELINE
NO. DESCRIPTION BY DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
SAXON SOUTH
STRUCTURE CONTOURS
SEAM N° 3
DRAWN BY: J.W.K.
DATE: AUG. 26, '77
SCALE: 1:2500
PREP'D BY: C.J.
DATE: Sept. '77
DRAWING NUMBER:
SXON 77-0752 R01
APPR'D BY: C.P.C.
DATE: Oct. '77


SEAM OUTCROP
LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 25m
NO. DESCRIPTION BY DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
SAXON SOUTH
STRUCTURE CONTOURS
SEAM Nº 2
DRAWN BY: J.W.K.
DATE: AUG.26,'77
SCALE: 1:2500
PREP'D BY: G.J.
DATE: Sept. 77
APP'D BY: G.P.G.
DATE: Oct. 77
DRAWING NUMBER:
SXON77-0752 R01
BASELINE


SEAM OUTCROP
SEAM 1 OUTCROP
ALTA - B.C. BDRY
ADIT 76-4-2
ADIT 76-2
ADIT 76-4-4
ADIT 77-1-3
ADIT 77-2-4
ADIT 77-4-5
SD 7717
SD 7716
SD 7615
SD 7603
SD 7707 (7605)
SD 7614
SD 7618
SD 7714
SD 7718
SD 7611
SD 7721
SD 7606
SD 7723
SD 7725
SD 7604
SD 7722
SD 7719
SD 7724
SD 7607
SD 7613
SD 7713
SD 7711
SD 7608
SD 7726
SD 7602
SD 7601
SD 7720
SD 7610
BASELINE
X7745
X7744
X7743
X7742
X7741
X7740
X7739
X7738
X7737
X7736
X7735
X7734
X7733
X7732
X7731
X7730
X7729
X7728
X7727
X7726
X7725
X7724
X7723
X7722
X7721
X7720
X7719
X7718
X7717
X7716
X7715
X7714
X7713
X7712
X7711
X7710
X7709
X7708
X7707
X7706
X7705
X7704
X7703
X7702
X7701
LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 25 m
NO.
DESCRIPTION
BY
DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
SAXON SOUTH
STRUCTURE CONTOURS
SEAM No 1
DRAWN BY: J.W.K.
DATE: AUG. 26, '77
SCALE: 1:2500

PR-SAXON 77(2) A

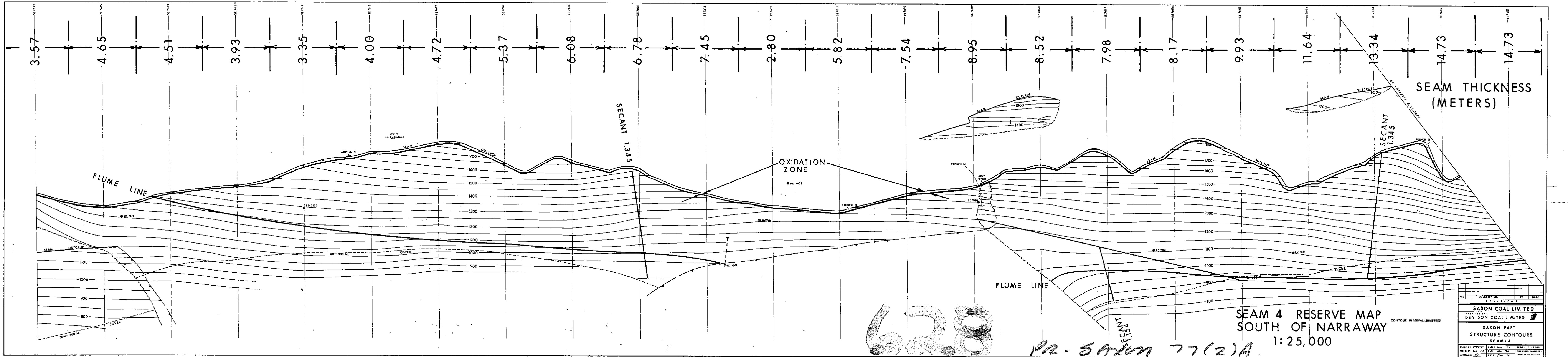
MINING SECTION ISOPACH

SAXON SOUTH

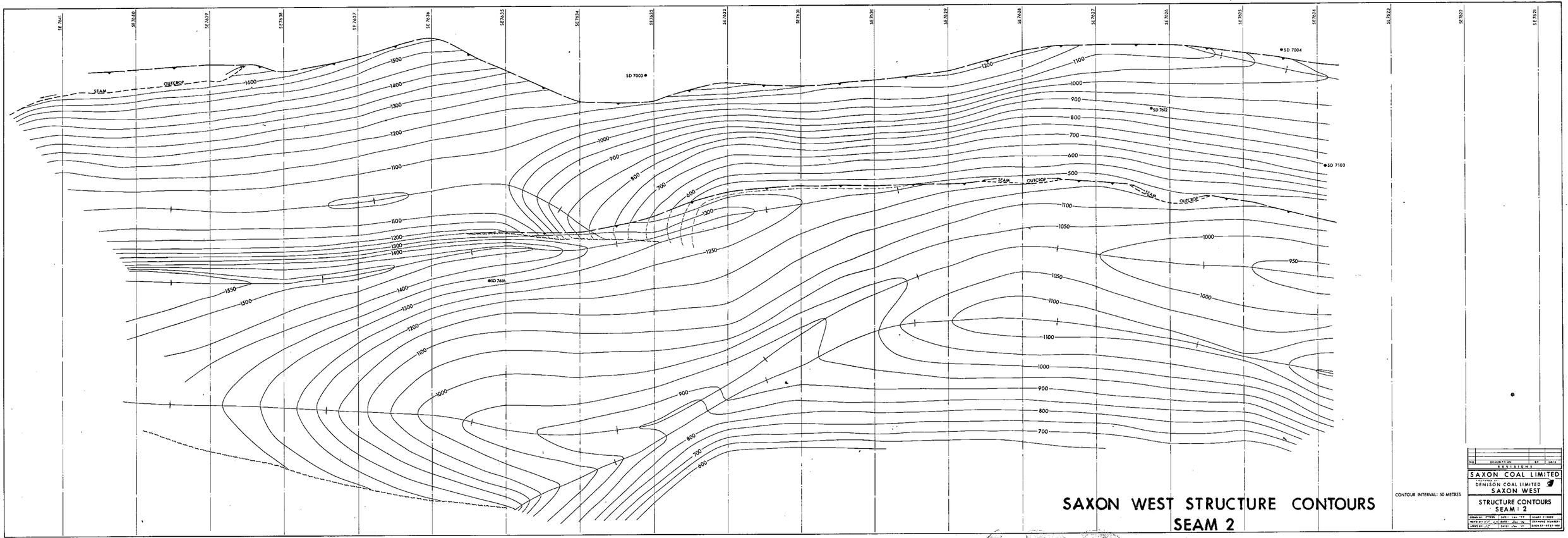
MAP OF SEAMS — 1, 2, 3, 4, 5 + 10

BOOK 3 OF 5

1977.



SEAM THICKNESS
(METERS)
3.57
4.65
4.51
3.93
3.35
4.00
4.72
5.37
6.08
6.78
7.45
2.80
5.82
7.54
8.95
8.52
7.98
8.17
9.93
11.64
13.34
14.73
14.73
FLUME LINE
SECANT 1.345
OXIDATION ZONE
FLUME LINE
SECANT 1.345
SECANT 1.154
SEAM 4 RESERVE MAP
SOUTH OF NARRAWAY
1:25,000
CONTOUR INTERVAL: 50 METRES
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON EAST
STRUCTURE CONTOURS
SEAM: 4
628
PR-SAXON 77(2)A



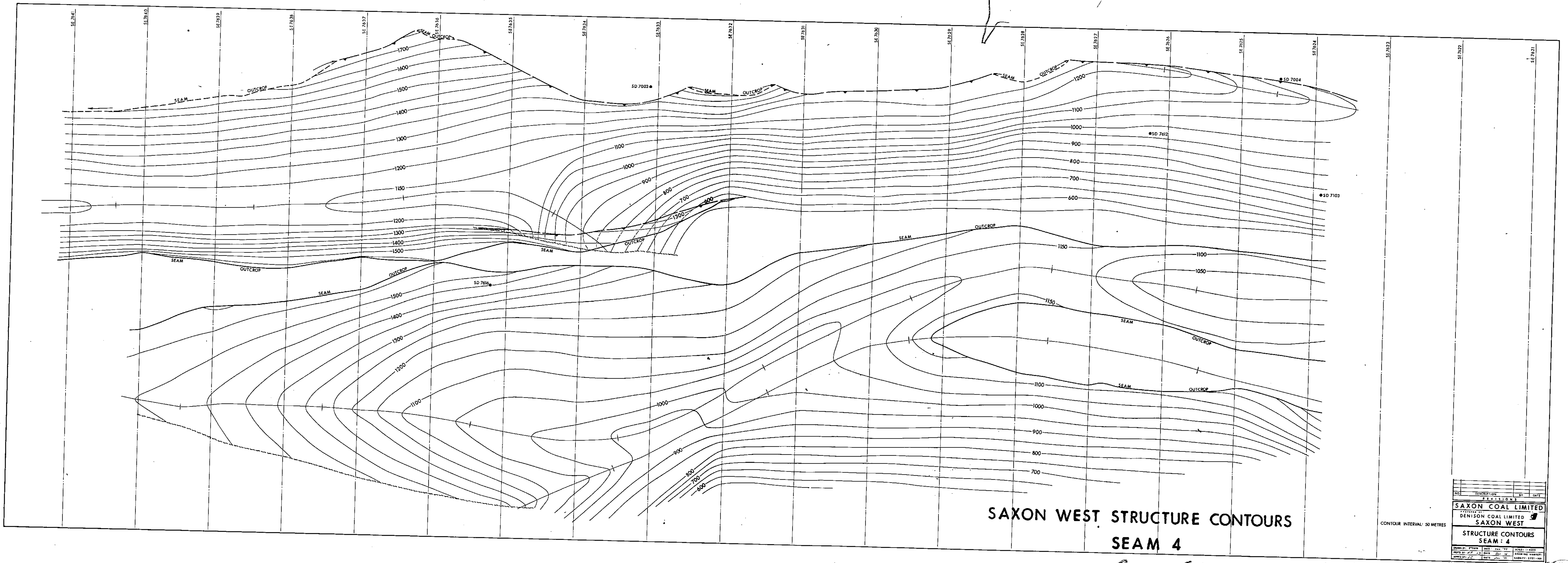
SAXON WEST STRUCTURE CONTOURS
SEAM 2

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON WEST
STRUCTURE CONTOURS
SEAM: 2

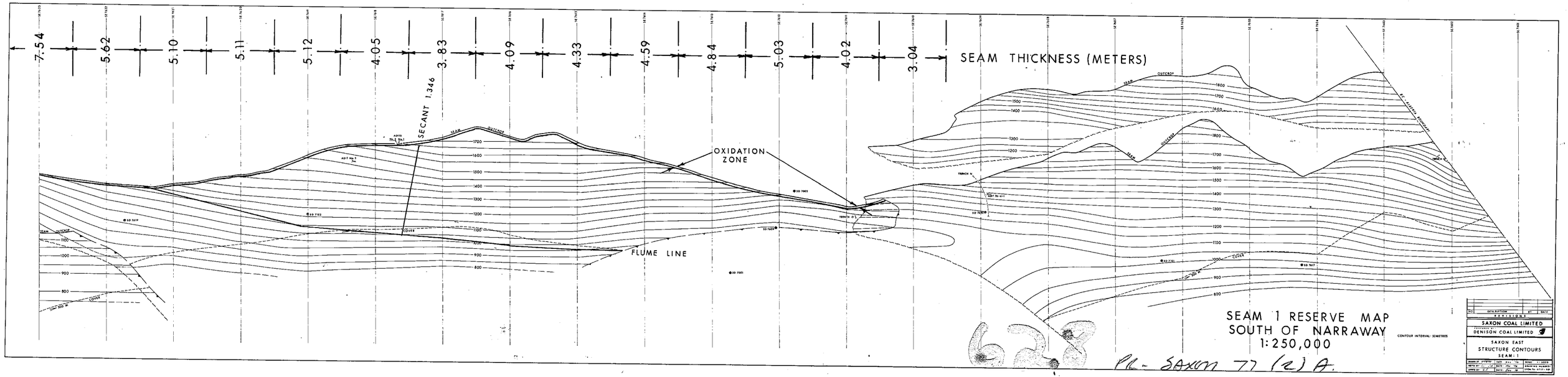
628

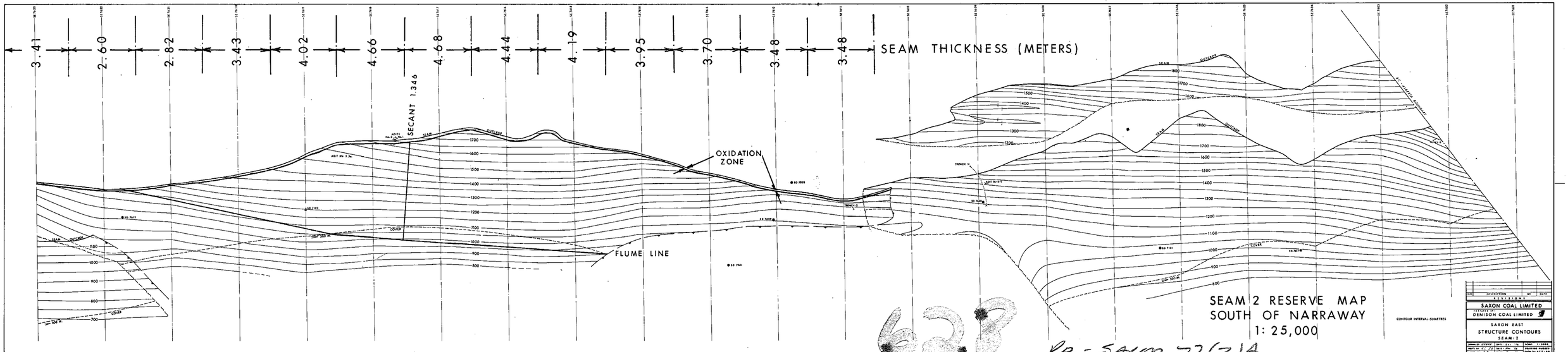
Pr-Saxon 77(2)A.

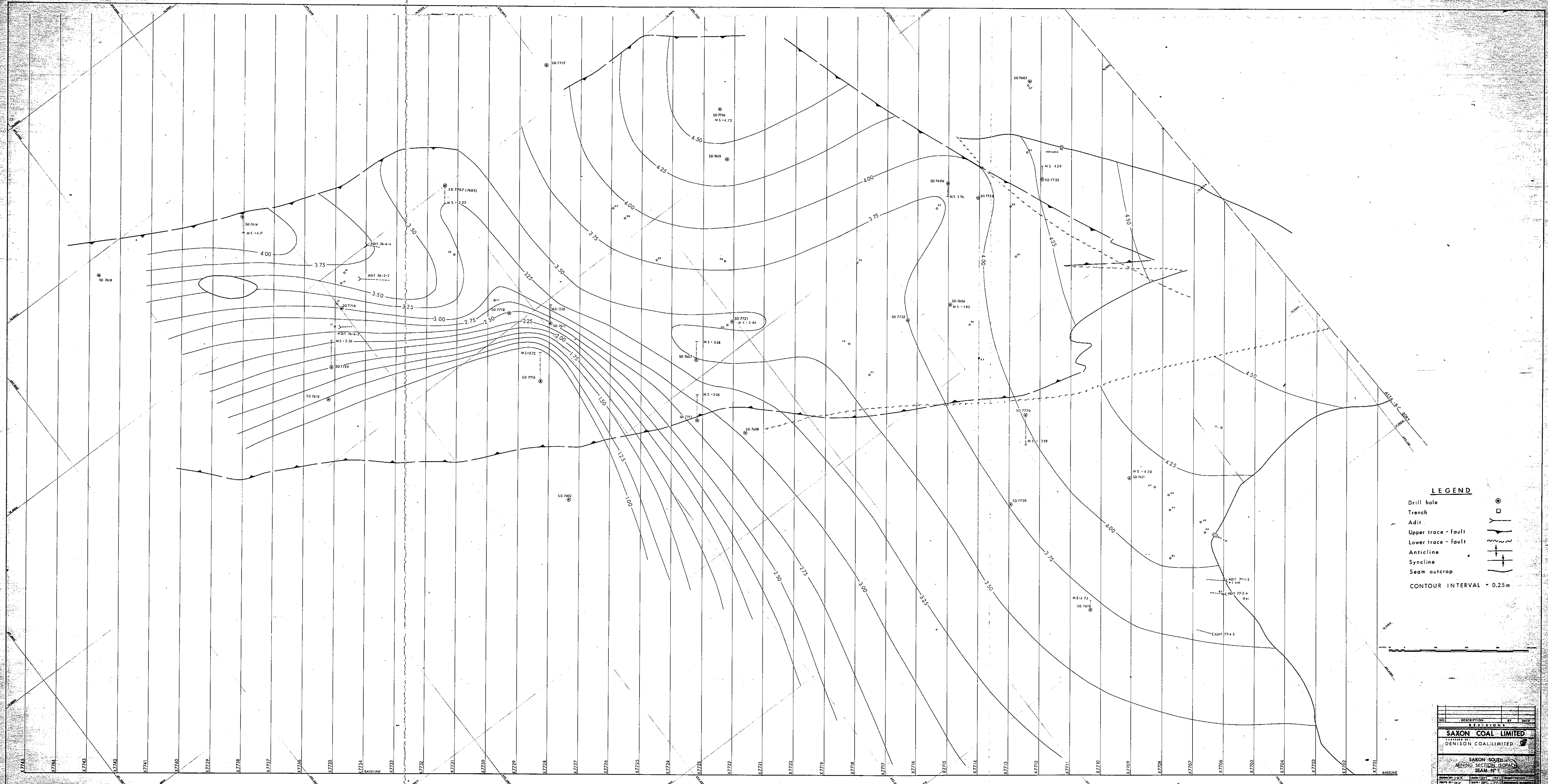


PR - SAXON 77(2)A.

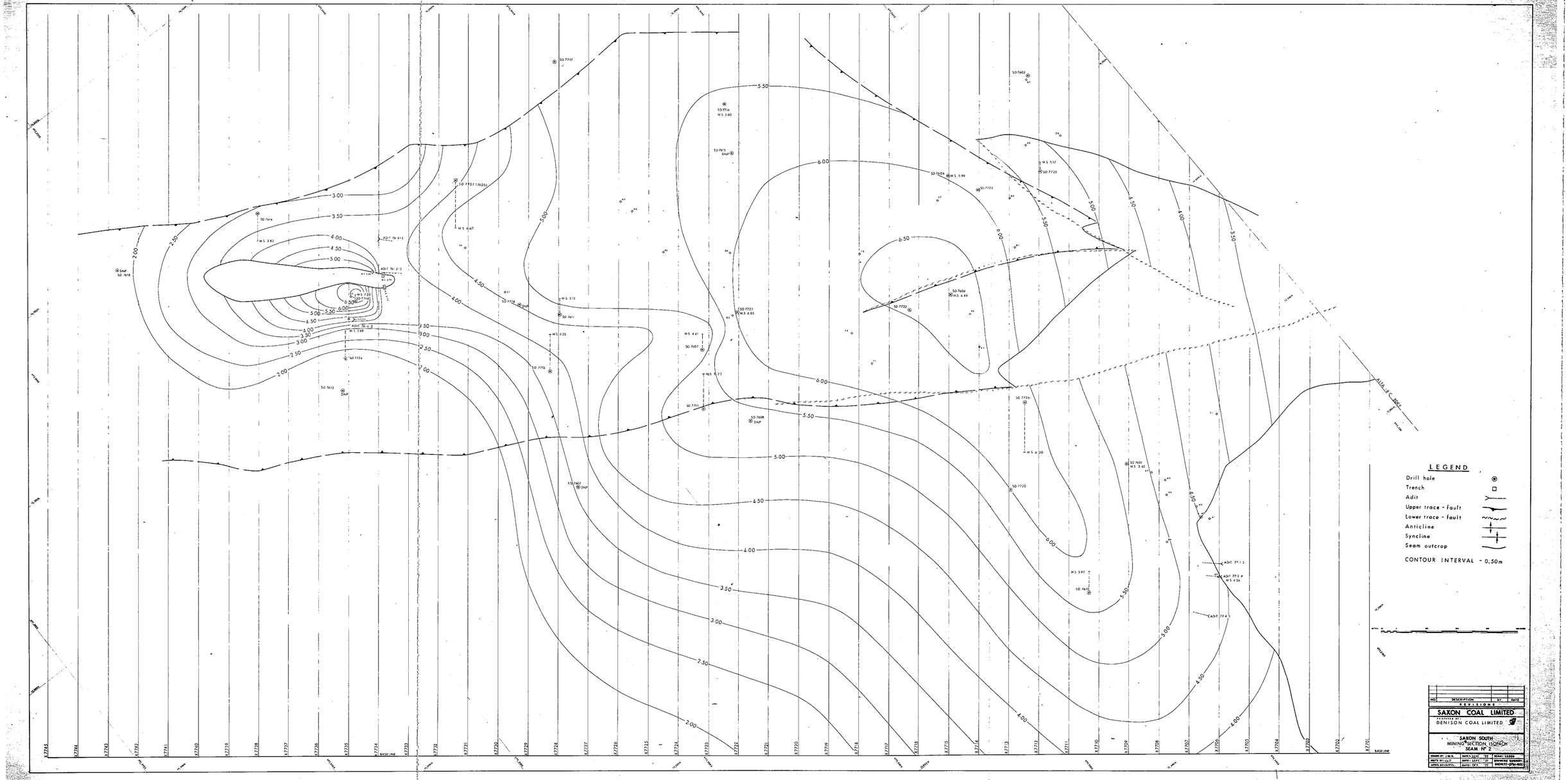
628

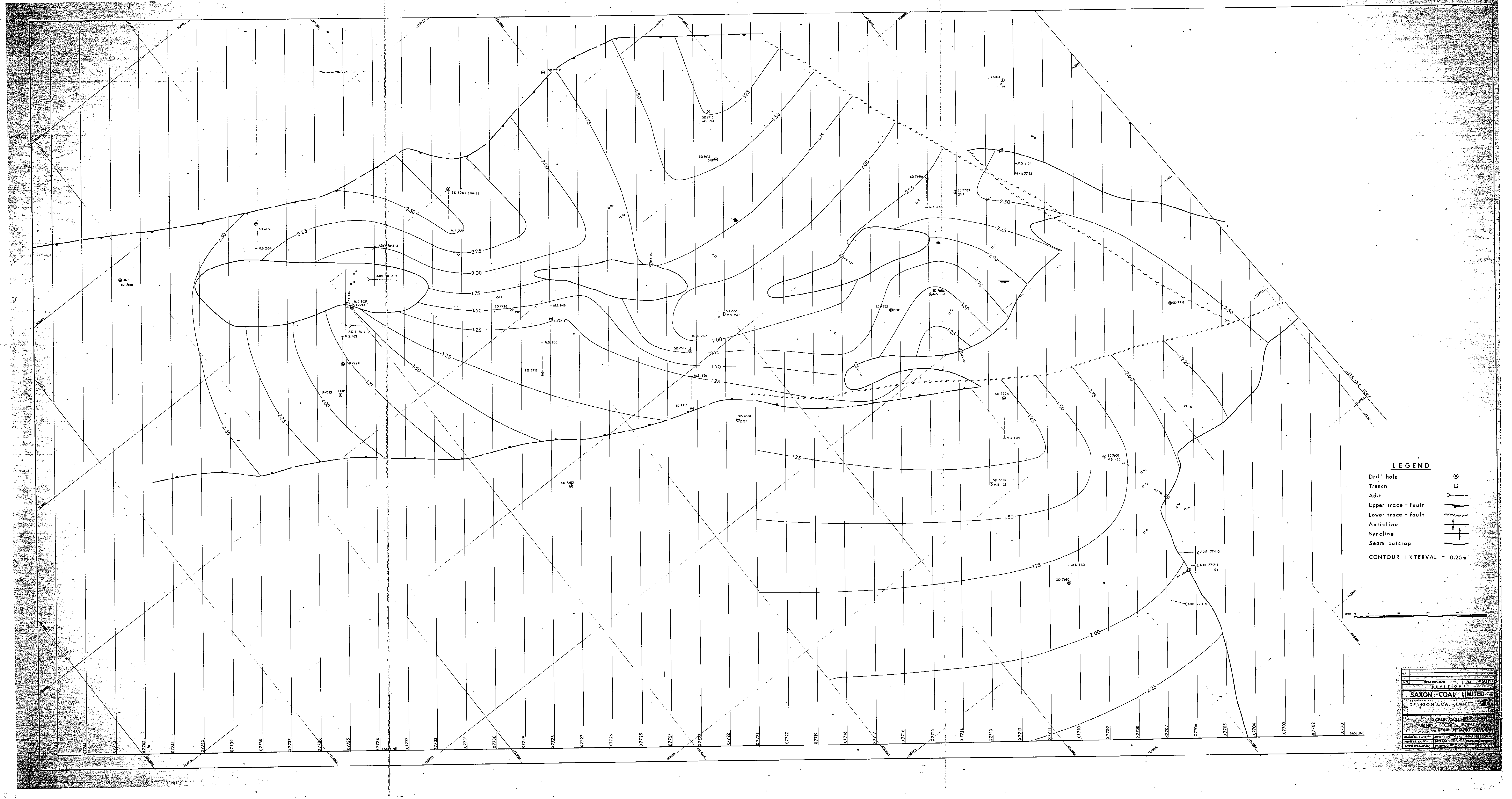

7.54
5.62
5.10
5.11
5.12
4.05
3.83
4.09
4.33
4.59
4.84
5.03
4.02
3.04
SEAM THICKNESS (METERS)
SECANT 1.346
OXIDATION ZONE
FLUME LINE
OUTCROP
COVER
SEAM 1 RESERVE MAP
SOUTH OF NARRAWAY
1:250,000
CONTOUR INTERVAL: 50METRES
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON EAST
STRUCTURE CONTOURS
SEAM: 1
PE- SAXON 77 (2) A.

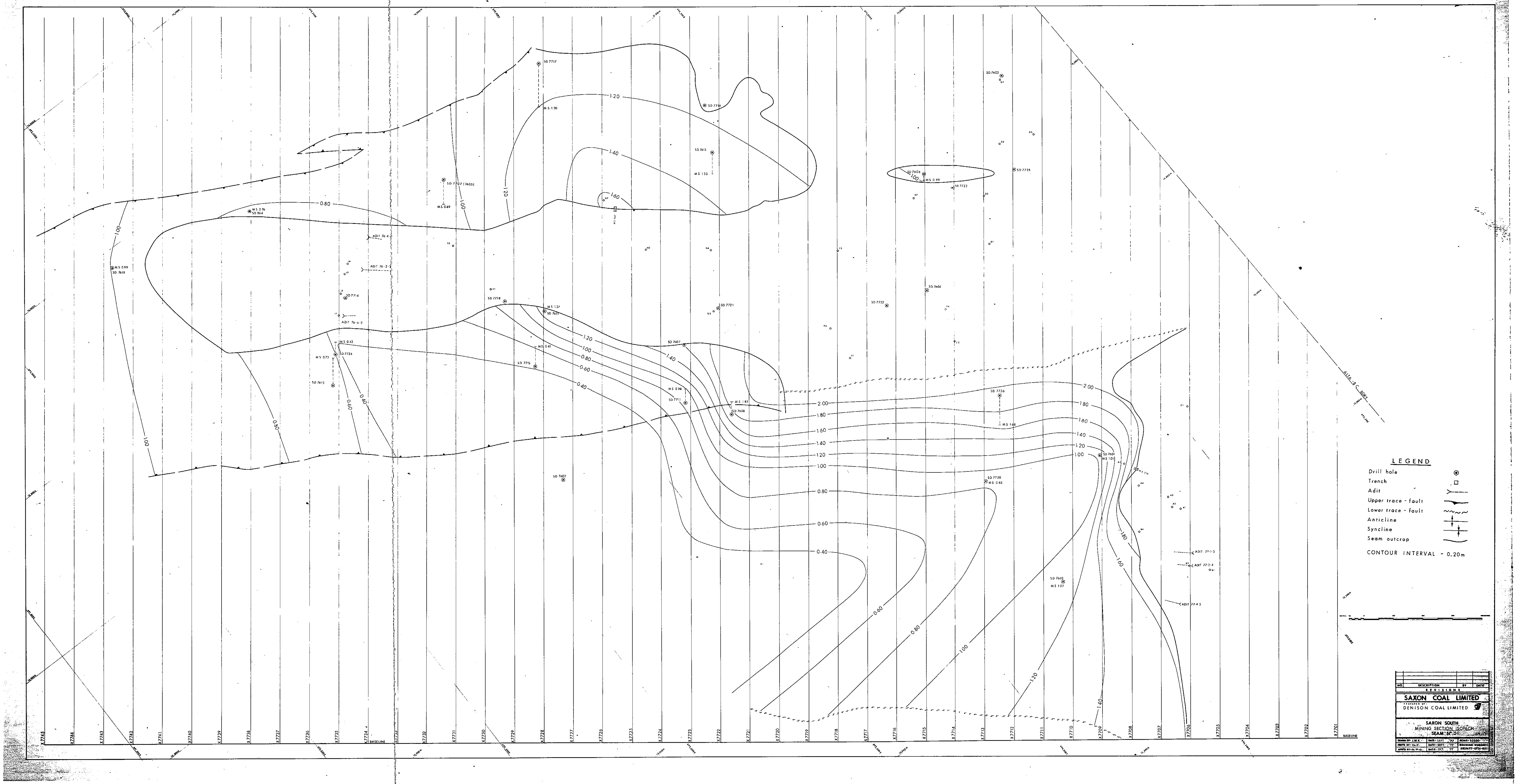

3.41
2.60
2.82
3.43
4.02
4.66
4.68
4.44
4.19
3.95
3.70
3.48
3.48
SEAM THICKNESS (METERS)
SECANT 1.346
OXIDATION ZONE
FLUME LINE
SEAM 2 RESERVE MAP
SOUTH OF NARRAWAY
1: 25,000
CONTOUR INTERVAL: 50METRES
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON EAST
STRUCTURE CONTOURS
SEAM: 2
628
PR-SAXON 77(2)A

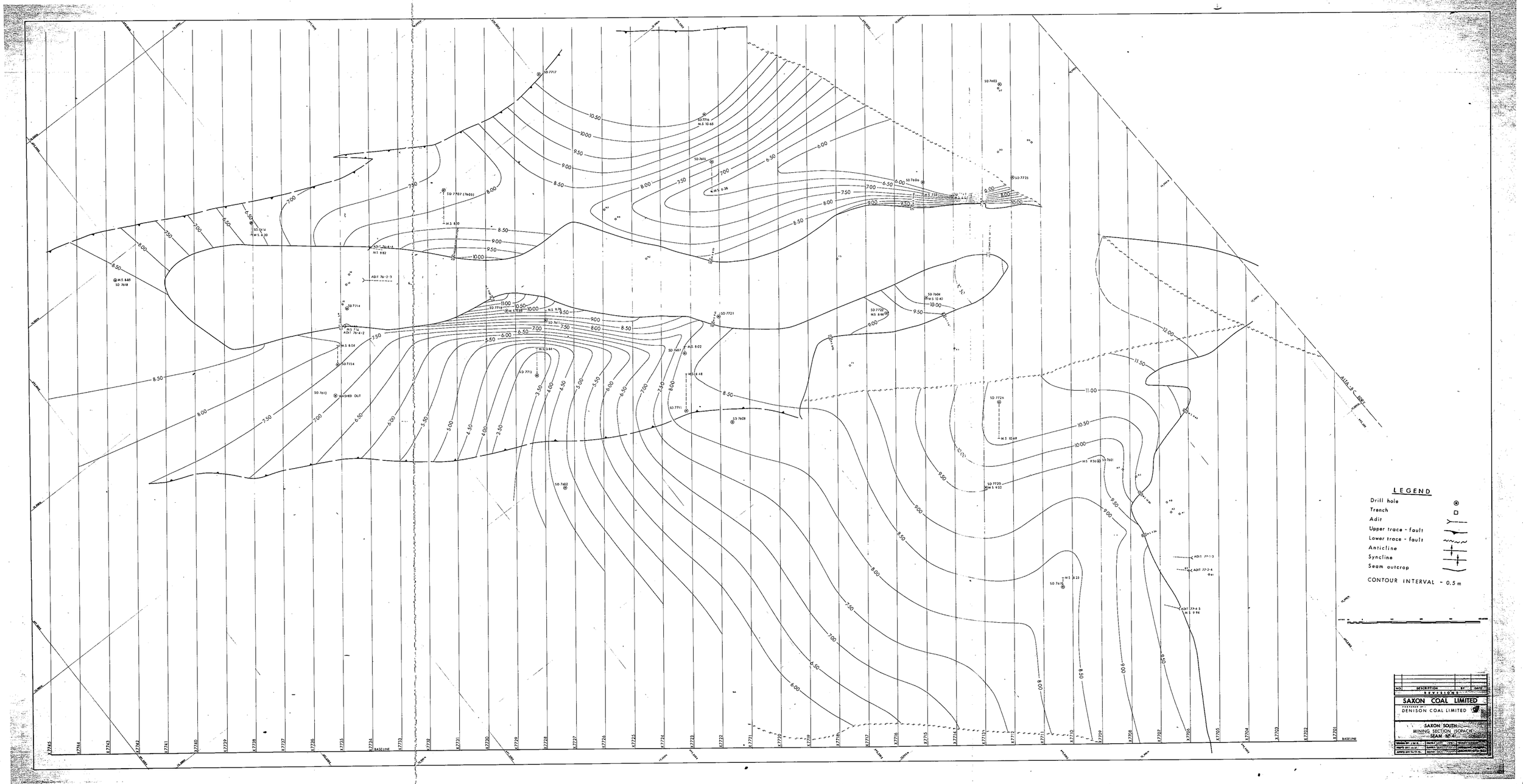


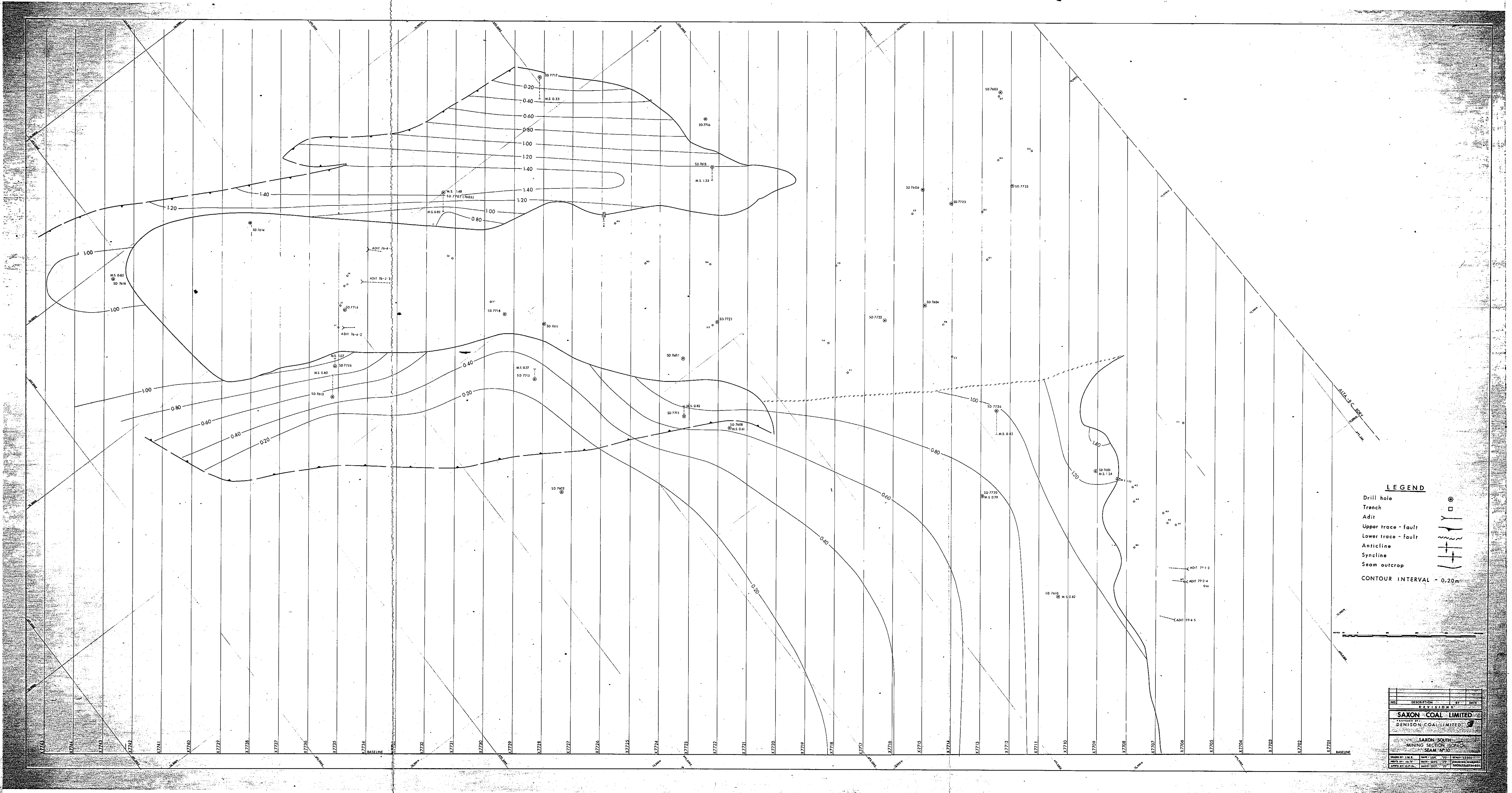
LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL = 0.25m
NO.
DESCRIPTION
BY
DATE
REVISIONS
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON SOUTH
MINING SECTION ISOPACH
SEAM N° 1
J.W.K.
SEPT. '77
SEPT. '77
OCT. '77
BASELINE


LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 0.50m
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON SOUTH
MINING SECTION ISOPACH
SEAM N° 2
BASELINE


LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 0.25m
NO.
DESCRIPTION
BY
DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
SAXON SOUTH
MINING SECTION ISOPACH
SEAM Nº 3
DATE: SEPT. '77
DATE: SEPT. '77
DATE: OCT. '77
BASELINE


LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 0.20m
0.40
0.60
0.80
1.00
1.20
1.40
1.60
1.80
2.00
BASELINE
X7701
X7702
X7703
X7704
X7705
X7706
X7707
X7708
X7709
X7710
X7711
X7712
X7713
X7714
X7715
X7716
X7717
X7718
X7719
X7720
X7721
X7722
X7723
X7724
X7725
X7726
X7727
X7728
X7729
X7730
X7731
X7732
X7733
X7734
X7735
X7736
X7737
X7738
X7739
X7740
X7741
X7742
X7743
X7744
X7745
NO.
DESCRIPTION
BY
DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
SAXON SOUTH
MINING SECTION ISOPACH
SEAM Nº 5
DRAWN BY: J.W.K.
DATE: SEPT. '77
SCALE: 1:2500
DATE: SEPT. '77
DRAWING NUMBER
DATE: OCT. '77
SXON77-0756-R01


LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 0.5 m
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON SOUTH
MINING SECTION SOPACH
SEAM No 4
REVISIONS
NO. DESCRIPTION BY DATE
BASELINE


LEGEND
Drill hole
Trench
Adit
Upper trace - fault
Lower trace - fault
Anticline
Syncline
Seam outcrop
CONTOUR INTERVAL - 0.20m
NO.
DESCRIPTION
BY
DATE
REVISIONS
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON SOUTH
MINING SECTION ISOPACH
SEAM Nº 10
DATE: SEPT. '77
SCALE: 1:2500
DATE: SEPT. '77
DRAWING NUMBER:
DATE: OCT. '77
BASELINE

PR-SAXON 77 (2) A

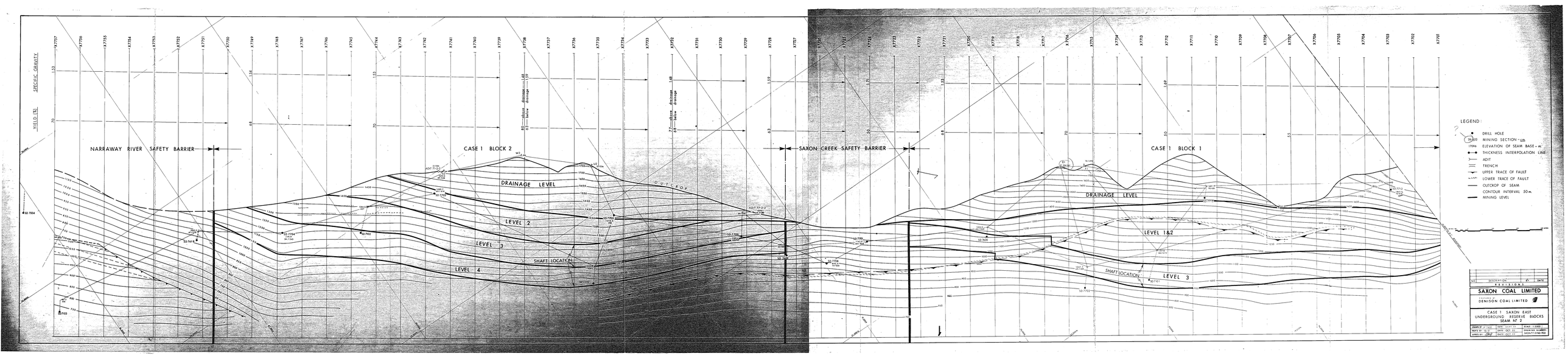
UNDERGROUND RESERVE BLOCKS

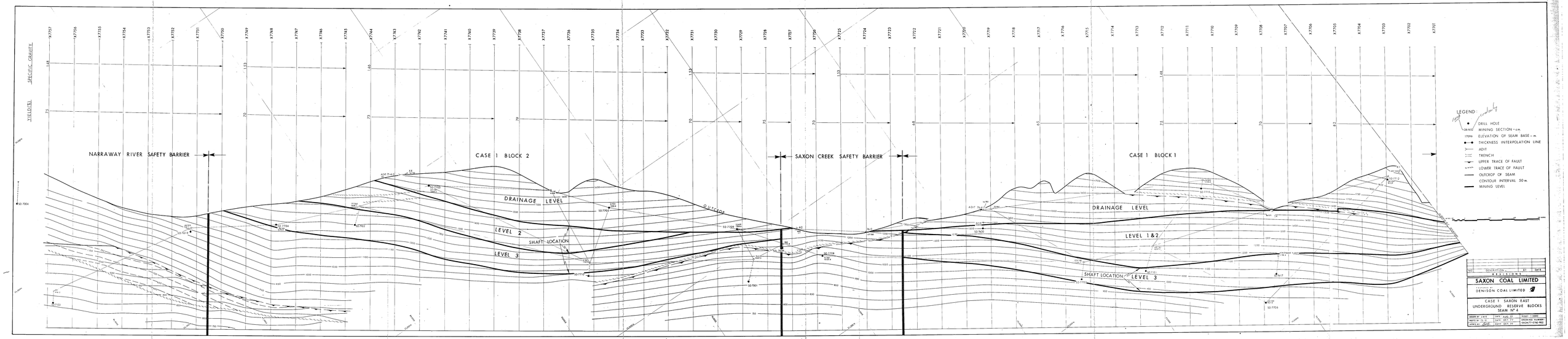
SAXON EAST

BOOK 4 OF 5

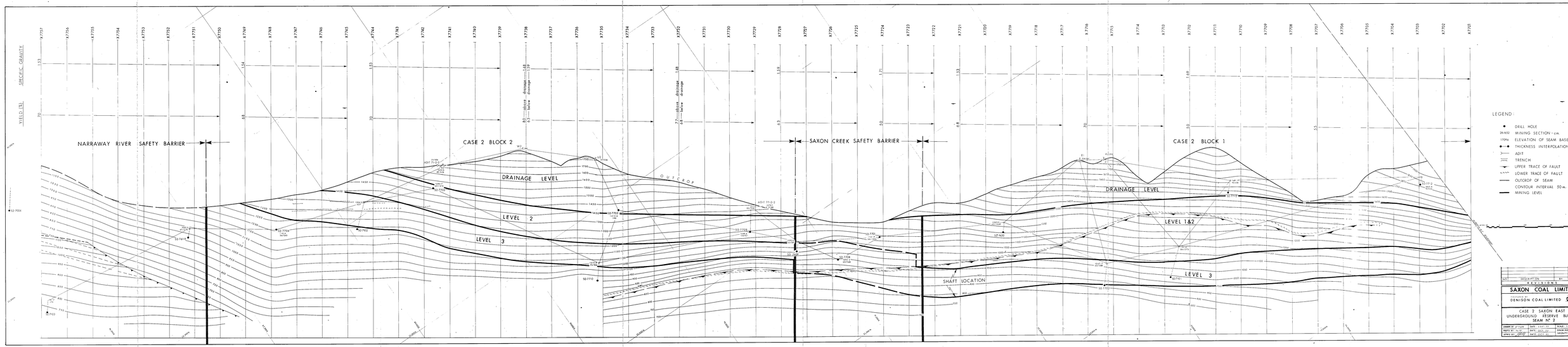
DENISON MINES LTD 1977

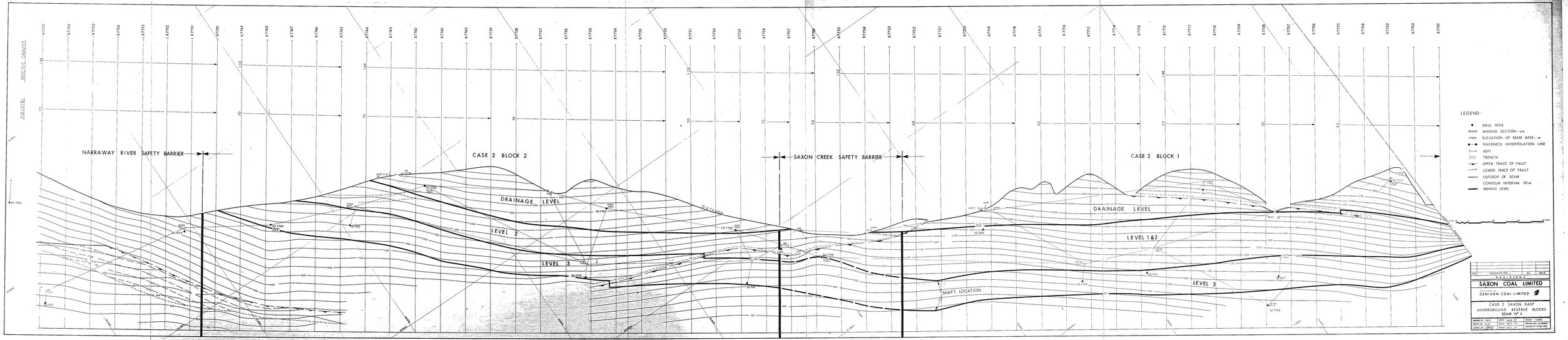

SPECIFIC GRAVITY
YIELD (%)
X7757
X7756
X7755
X7754
X7753
X7752
X7751
X7750
X7749
X7748
X7747
X7746
X7745
X7744
X7743
X7742
X7741
X7740
X7739
X7738
X7737
X7736
X7735
X7734
X7733
X7732
X7731
X7730
X7729
X7728
X7727
X7726
X7725
X7724
X7723
X7722
X7721
X7720
X7719
X7718
X7717
X7716
X7715
X7714
X7713
X7712
X7711
X7710
X7709
X7708
X7707
X7706
X7705
X7704
X7703
X7702
X7701
1.33
94
1.46
77
1.36
90
1.41 above drainage
1.57 below drainage
83 above drainage
65 below drainage
1.41
83
1.47
75
78
81
74
1.39
85
91
84
NARRAWAY RIVER SAFETY BARRIER
CASE 1 - BLOCK 2
SAXON CREEK SAFETY BARRIER
CASE 1 BLOCK 1
DRAINAGE LEVEL
LEVEL 2
LEVEL 3
LEVEL 4
SHAFT LOCATION
OUTCROP
LEVEL 1 & 2
LEVEL 3
SHAFT LOCATION
Coal - deeply weathered thickness not measured
ADIT 77-1-1
ADIT 71-1-1
SD 7004
SD 7619
SD 7103
SD 7704
SD 7102
SD 7703
SD 7705
SD 7709
SD 7710
SD 7609
SD 7701
SD 7708
SD 7620
SD 7702
SD 7101
SD 7715
SD 7712
ALBERTA - B.C. BOUNDARY
METRES 100 0 200 400 600 METRES
LEGEND:
DRILL HOLE
28/652 MINING SECTION - cm.
1709.6 ELEVATION OF SEAM BASE - m.
THICKNESS INTERPOLATION LINE
ADIT
TRENCH
UPPER TRACE OF FAULT
LOWER TRACE OF FAULT
OUTCROP OF SEAM
CONTOUR INTERVAL 50 m.
MINING LEVEL
NO. DESCRIPTION BY DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CASE 1 SAXON EAST
UNDERGROUND RESERVE BLOCKS
SEAM Nº 1
DRAWN BY: J.W.K. DATE: AUG. 77 SCALE: 1:5000
PREP'D BY: G.J. DATE: OCT. 77 DRAWING NUMBER
APPR'D BY: DATE: OCT. 77 SXON77-0742-R02


NARRAWAY RIVER SAFETY BARRIER
CASE 1 BLOCK 2
SAXON CREEK SAFETY BARRIER
CASE 1 BLOCK 1
DRAINAGE LEVEL
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 1&2
SHAFT LOCATION
OUTCROP
YIELD (%)
SPECIFIC GRAVITY
LEGEND :
DRILL HOLE
MINING SECTION - cm
ELEVATION OF SEAM BASE - m
THICKNESS INTERPOLATION LINE
ADIT
TRENCH
UPPER TRACE OF FAULT
LOWER TRACE OF FAULT
OUTCROP OF SEAM
CONTOUR INTERVAL 50 m.
MINING LEVEL
SAXON COAL LIMITED
DENISON COAL LIMITED
CASE 1 SAXON EAST
UNDERGROUND RESERVE BLOCKS
SEAM N° 2


NARRAWAY RIVER SAFETY BARRIER
CASE 1 BLOCK 2
SAXON CREEK SAFETY BARRIER
CASE 1 BLOCK 1
DRAINAGE LEVEL
LEVEL 2
LEVEL 3
SHAFT LOCATION
OUTCROP
LEVEL 1 & 2
SPECIFIC GROUTE
LEGEND
DRILL HOLE
MINING SECTION - cm.
ELEVATION OF SEAM BASE - m.
THICKNESS INTERPOLATION LINE
ADIT
TRENCH
UPPER TRACE OF FAULT
LOWER TRACE OF FAULT
OUTCROP OF SEAM
CONTOUR INTERVAL 50 m.
MINING LEVEL
SAXON COAL LIMITED
DENISON COAL LIMITED
CASE 1 SAXON EAST
UNDERGROUND RESERVE BLOCKS
SEAM N° 4

YIELD (%)
SPECIFIC GRAVITY
NARRAWAY RIVER SAFETY BARRIER
CASE 2 BLOCK 2
SAXON CREEK SAFETY BARRIER
CASE 2 BLOCK 1
DRAINAGE LEVEL
LEVEL 2
LEVEL 3
LEVEL 1 & 2
SHAFT LOCATION
OUTCROP
LEGEND:
DRILL HOLE
28/652 MINING SECTION – cm.
1709.6 ELEVATION OF SEAM BASE – m.
THICKNESS INTERPOLATION LINE
ADIT
TRENCH
UPPER TRACE OF FAULT
LOWER TRACE OF FAULT
OUTCROP OF SEAM
CONTOUR INTERVAL 50 m.
MINING LEVEL
METRES 100 0 200 400 600 METRES
ALBERTA-B.C. BOUNDARY
NO. DESCRIPTION BY DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CASE 2 SAXON EAST
UNDERGROUND RESERVE BLOCKS
SEAM N° 1
DRAWN BY: J.W.K.
DATE: AUG. 77
SCALE: 1:5000
PREP'D BY: G.J.
DATE: OCT. 77
DRAWING NUMBER:
SXON77-0742-R02
APPR'D BY:
DATE: OCT. 77


NARRAWAY RIVER SAFETY BARRIER
SAXON CREEK SAFETY BARRIER
CASE 2 BLOCK 2
CASE 2 BLOCK 1
DRAINAGE LEVEL
LEVEL 2
LEVEL 3
LEVEL 1&2
OUTCROP
SHAFT LOCATION
YIELD (%)
SPECIFIC GRAVITY
LEGEND :
DRILL HOLE
MINING SECTION - e.m.
ELEVATION OF SEAM BASE - m.
THICKNESS INTERPOLATION LINE
ADIT
TRENCH
UPPER TRACE OF FAULT
LOWER TRACE OF FAULT
OUTCROP OF SEAM
CONTOUR INTERVAL 50 m.
MINING LEVEL
SAXON COAL LIMITED
DENISON COAL LIMITED
CASE 2 SAXON EAST
UNDERGROUND RESERVE BLOCKS
SEAM N° 2


NARRAWAY RIVER SAFETY BARRIER
CASE 2 BLOCK 2
SAXON CREEK SAFETY BARRIER
CASE 2 BLOCK 1
DRAINAGE LEVEL
LEVEL 2
LEVEL 3
DRAINAGE LEVEL
LEVEL 1&2
LEVEL 3
SHAFT LOCATION
LEGEND:
DRILL HOLE
MINING SECTION - cm.
ELEVATION OF SEAM BASE - m.
THICKNESS INTERPOLATION LINE
ADIT
TRENCH
UPPER TRACE OF FAULT
LOWER TRACE OF FAULT
OUTCROP OF SEAM
CONTOUR INTERVAL 50 m.
MINING LEVEL
SAXON COAL LIMITED
DENISON COAL LIMITED
CASE 2 SAXON EAST
UNDERGROUND RESERVE BLOCKS
SEAM No 4

VOLUME II. PR-SAXON 77(2)A.

MAPS - CROSS SECTIONS.
SEAM CORRELATIONS.

BOOK 5 OF 5

SAXON COAL LTD. 1977.

PR-SAXON 77 (2) A.

SAXON COAL LIMITED

PRELIMINARY TERRAIN CLASSIFICATION of the SAXON AREA

TOPOGRAPHIC MAP FROM DEPT. OF ENERGY, MINES & RESOURCES
1: 50,000 SERIES
PHOTO REDUCED SCALE
1 — 100,000

D. WONG — October 28, 1976

DRWG NO. SXON 77-0733-R01

LEGEND

TERRAIN UNIT SYMBOLOGY*

Texture — g F^L - E — Qualifying Descriptor / Modifying Process / Surface Expression / Genetic Materials

Texture	o	blocky	Surface Expression	b	blanket
	r	rubbly		v	veneer
	g	gravelly		t	terraced
	f	fines		'	level
	b	boulder		f	fan
	k	cobble		r	ridged
	p	pebble			
	s	sand			
	ǀ	silt	Modifying Processes	E	channeled
	c	clay		S	soliflucted
Genetic Material	C	colluvial	Qualifying Descriptor	A	active
	F	fluvial		I	inactive
	L	lacustrine		G	glacial
	M	morainal			
	O	organic			
	R	bedrock			

Composite Units

Mb = R	roughly equal	[45-55% : 45-55%]
Mb / R	R less than Mb	[55-70% / 30-45%]
Mb // R	R considerably less than Mb	[70-90% // 10-30%]

On Site Symbols

G	gravel location
	meltwater channel
	cirque
	escarpment
	slump
	landslide scar
	snow avalanche chute

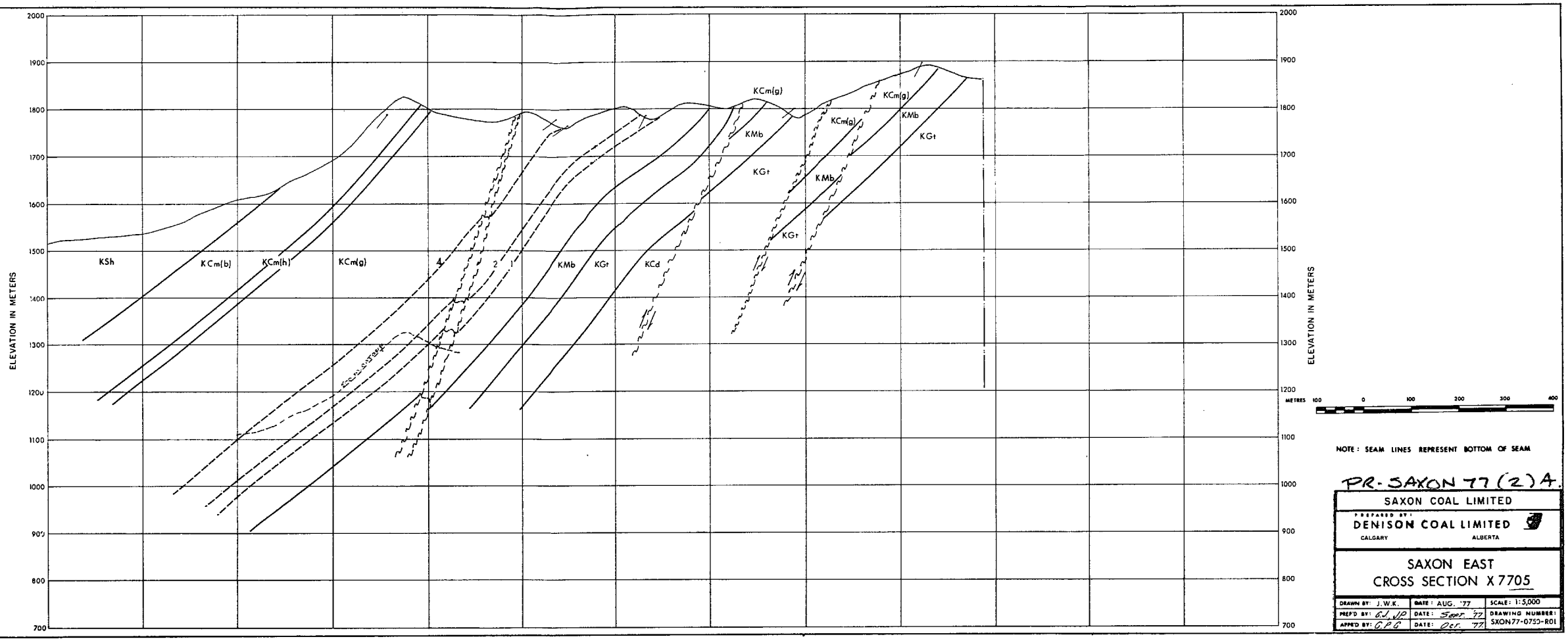
* After Terrain Classification System, E.E.U.C. Secretariat, May 1976

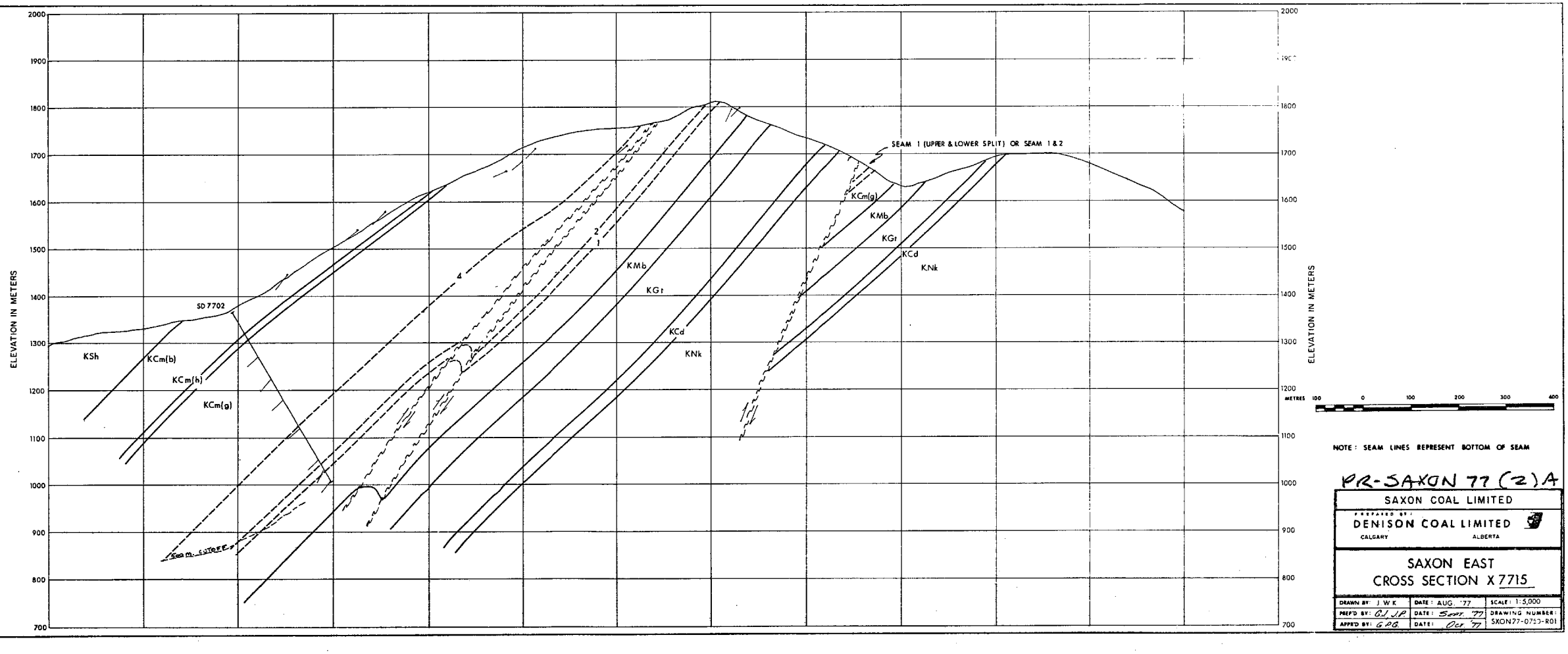
H A R T

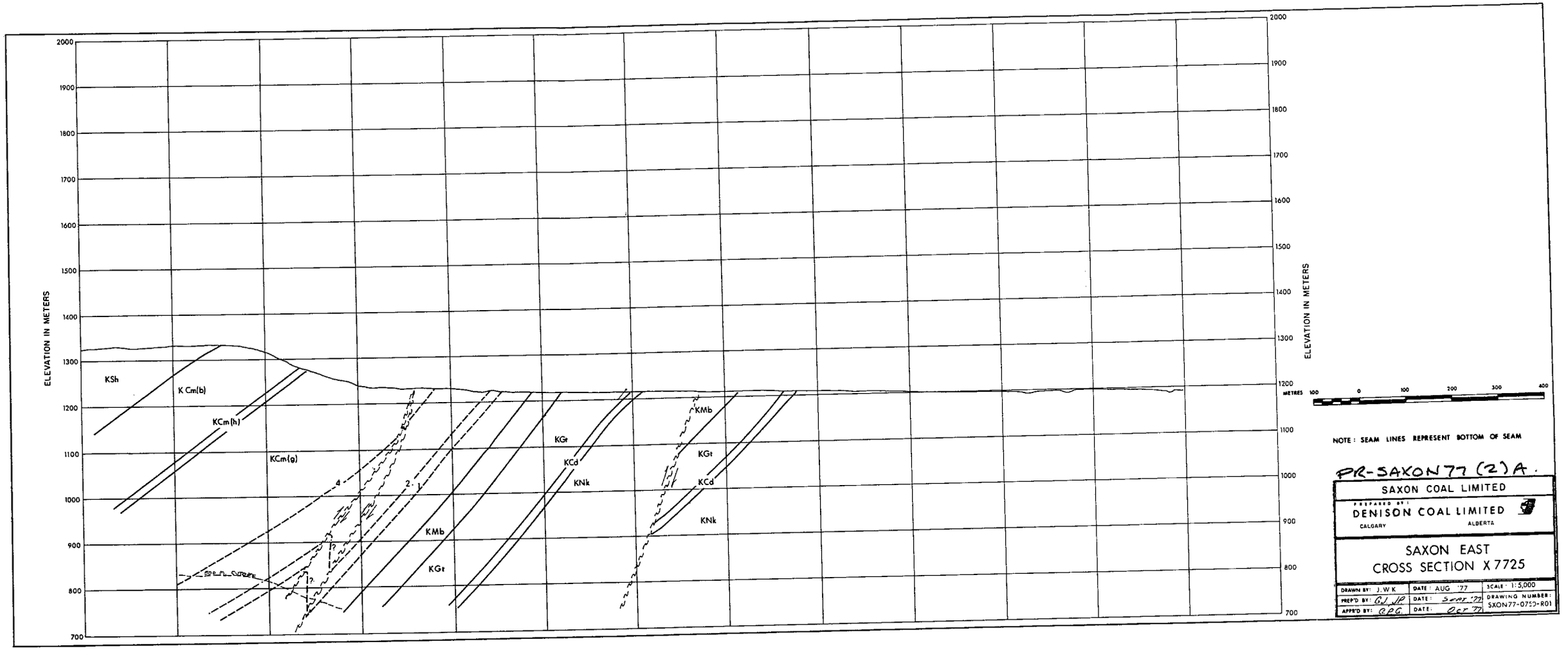
R O C K Y

M O U N T A I N


GEOLOGICAL LEGEND
KNk Nikanassin Fm.
KCd Cadomin Fm.
KGt Gething Fm.
KMb Moosebar Fm.
KCm(g) Gates Member
KCm(h) Hulcross Member
KCm(b) Boulder Creek Member
KSh Shaftesbury Fm.
Geological contact
Seam outcrop
Thrust fault
Outcrop strike and dip
Synclinal axis
Anticlinal axis
Drill hole location and no.
Trench location and no.
Adit location and no.
LITHOLOGICAL LEGEND
Conglomerate
Sandstone
Siltstone
Shale
Carbonaceous shale
METRES
ALBERTA - BC BOUNDARY
BASELINE
#62B
PR-SAXON 77 (2) A.
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
SAXON EAST
GEOLOGY
DRAWN BY: E.T., J.K.
DATE: AUG '77
SCALE: 1:5000
PREP'D BY: G.I. J.P.
DATE: Sept. '77
DRAWING NUMBER:
SXON 76-0706-R03
APPR'D BY: C.P.C.
DATE: Oct. '77


ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
KSh
KCm(b)
KCm(h)
KCm(g)
4
2
1
KMb
KGt
KCd
KCm(g)
KMb
KGt
KCm(g)
KMb
KGt
KCm(g)
KMb
KGt
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
PR-SAXON 77 (2) A.
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7705
DRAWN BY: J.W.K. DATE: AUG. '77 SCALE: 1:5,000
PREP'D BY: GJ JP DATE: Sept. 77 DRAWING NUMBER:
APP'D BY: GPG DATE: Oct. 77 SXON77-0755-R01


ELEVATION IN METERS
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
SD 7702
KSh
KCm(b)
KCm(h)
KCm(g)
4
2
1
KMb
KGt
KCd
KNk
SEAM 1 (UPPER & LOWER SPLIT) OR SEAM 1 & 2
KCm(g)
KMb
KGt
KCd
K.Nk
METRES 100 0 100 200 300 400
NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM
PR-SAXON 77 (2) A
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA
SAXON EAST
CROSS SECTION X 7715
DRAWN BY: J.W.K. DATE: AUG. '77 SCALE: 1:5,000
PREP'D BY: GJ JP DATE: Sept. '77 DRAWING NUMBER:
APP'D BY: GPG DATE: Oct. '77 SXON77-0755-R01



NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

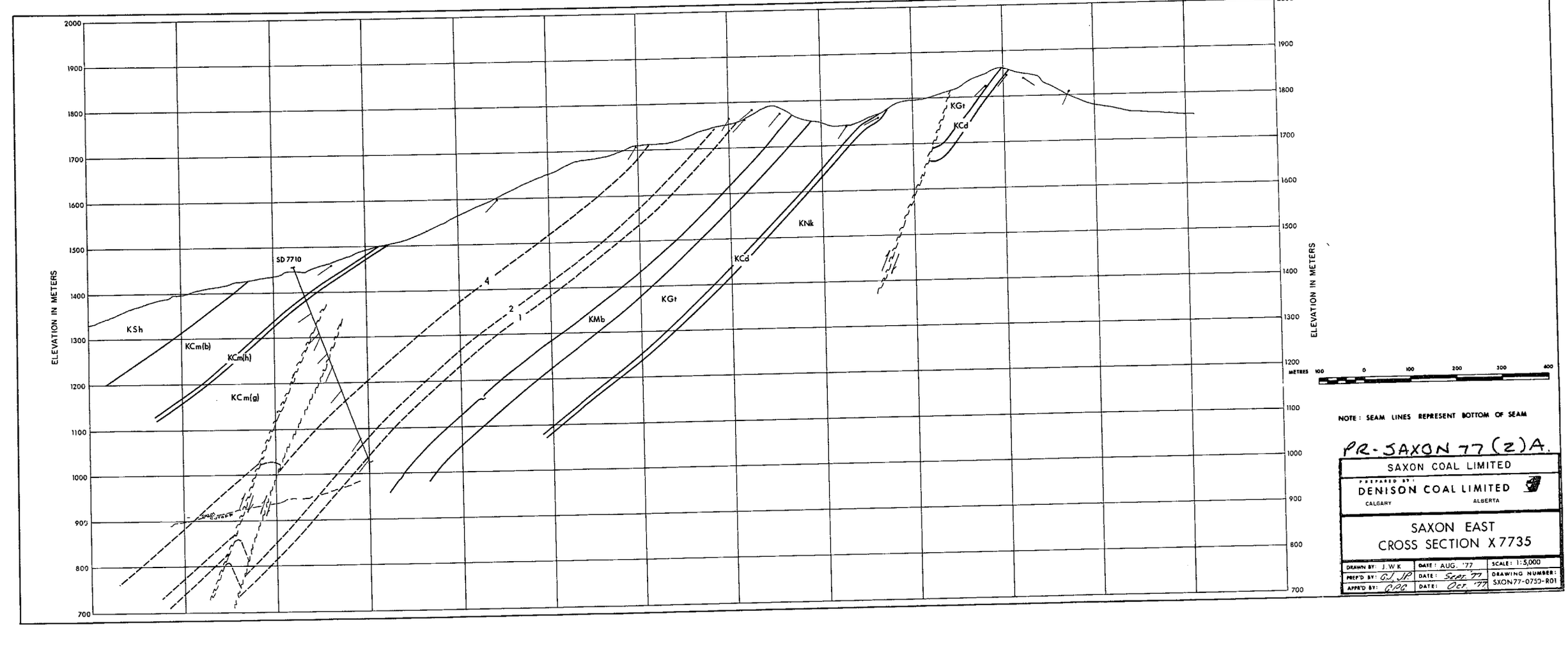
PR-SAXON 77 (2) A.

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7725

DRAWN BY: J.W.K	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P	DATE: Sept. '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.C	DATE: Oct. '77	



NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

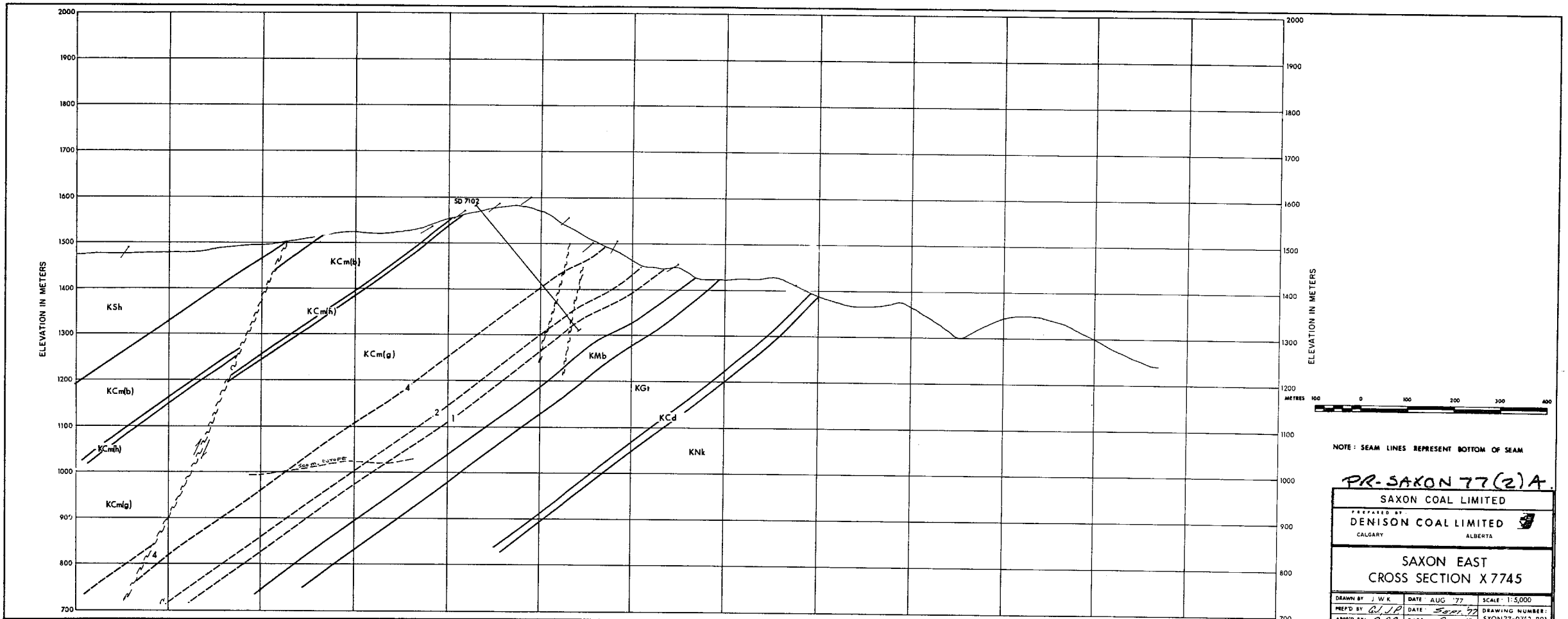
PR-SAXON 77 (2) A.

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7735

DRAWN BY: J.W.K	DATE: AUG. '77	SCALE: 1:5,000
PREP'D BY: G.J.P	DATE: Sept. '77	DRAWING NUMBER: SXON77-0750-R01
APPR'D BY: G.P.C	DATE: Oct. '77	



NOTE : SEAM LINES REPRESENT BOTTOM OF SEAM

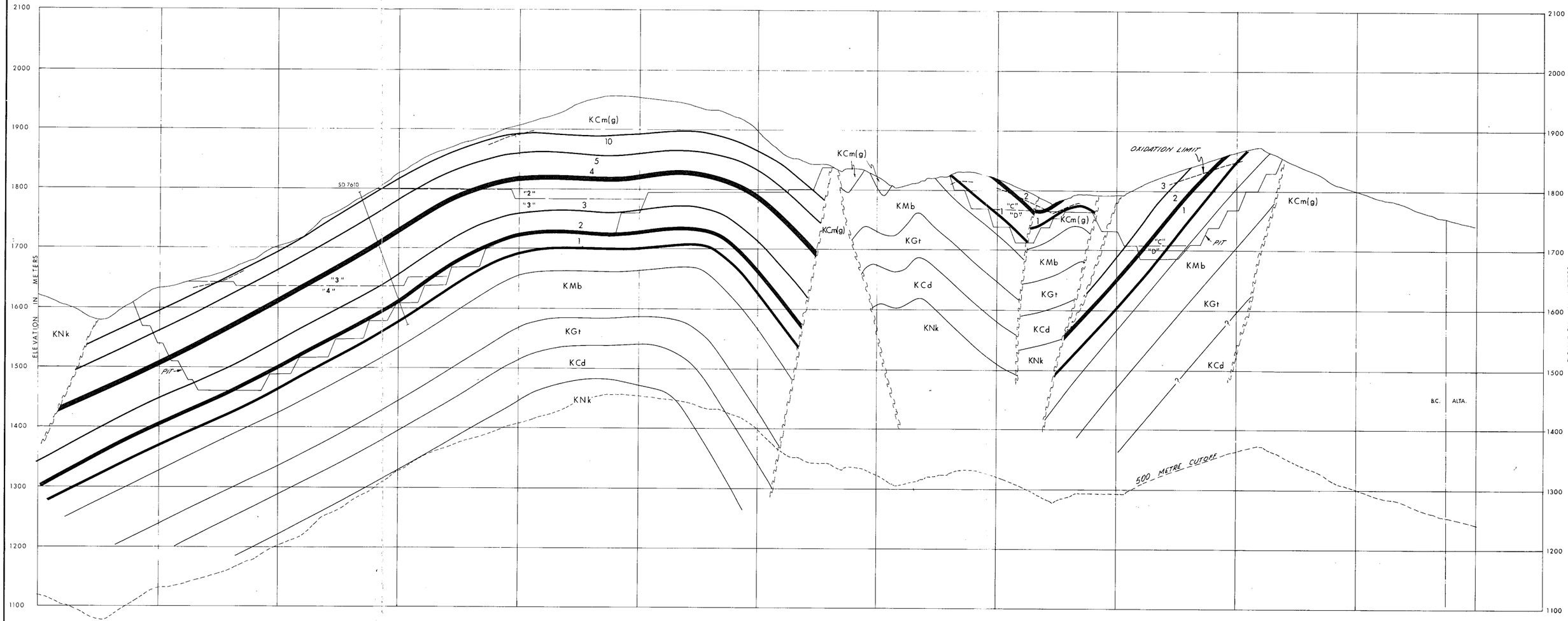
PR-SAXON 77(2)A.

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED
CALGARY ALBERTA

SAXON EAST
CROSS SECTION X 7745

DRAWN BY: J. W. K.	DATE: AUG '77	SCALE: 1:5,000
PREP'D BY: G.J.P.	DATE: Sept. '77	DRAWING NUMBER: SAXON77-0750-R01
APPR'D BY: G.P.G.	DATE: Oct. '77	



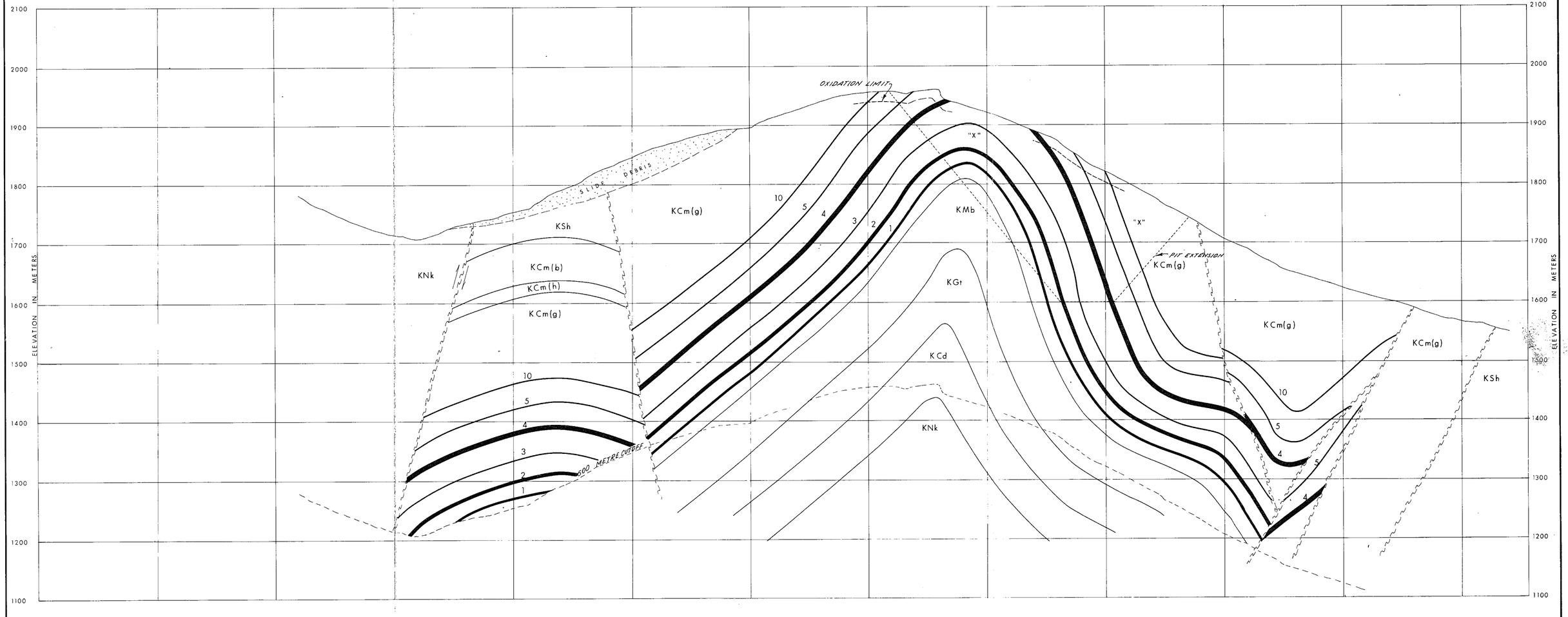
SAXON COAL LIMITED

PR-SAXON 77(2)A

SAXON SOUTH CROSS SECTION

X7710

DRAWN BY: J.W.K.	DATE: JULY 4, 77	SCALE: 1:2500
PREP'D BY: G.J.	DATE: Sept '77	DRAWING NUMBER:
APPR'D BY: I.D.	DATE: Oct. 77	SXON 77-0749-R01



SAXON COAL LIMITED

PR-SAXON 77(2)A-

SAXON SOUTH CROSS SECTION

X7730

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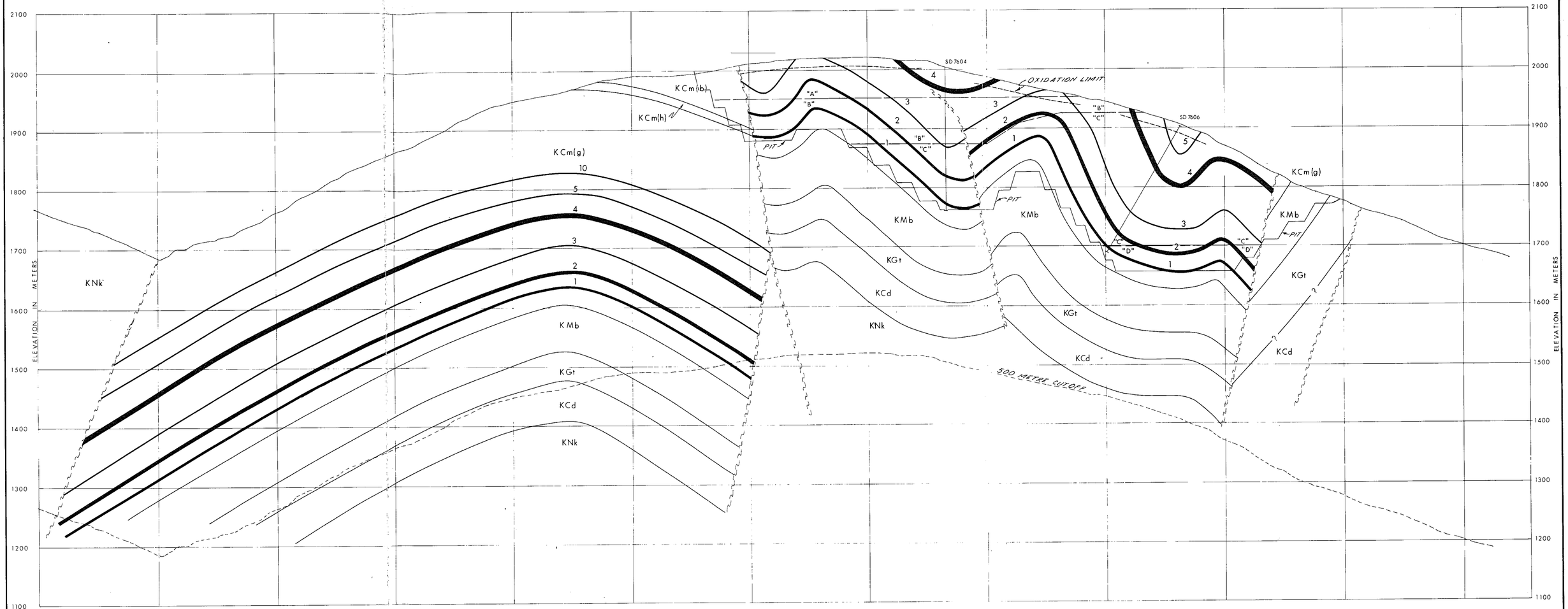
PREP'D BY: G.J.	DATE: SEPT '77	DRAWING NUMBER:
APP'D BY: G.P.S.	DATE: OCT. '77	SXON77-0749-R01



SAXON COAL LIMITED

PR-SAXON 77(2)A.

SAXON SOUTH CROSS SECTION

X7715

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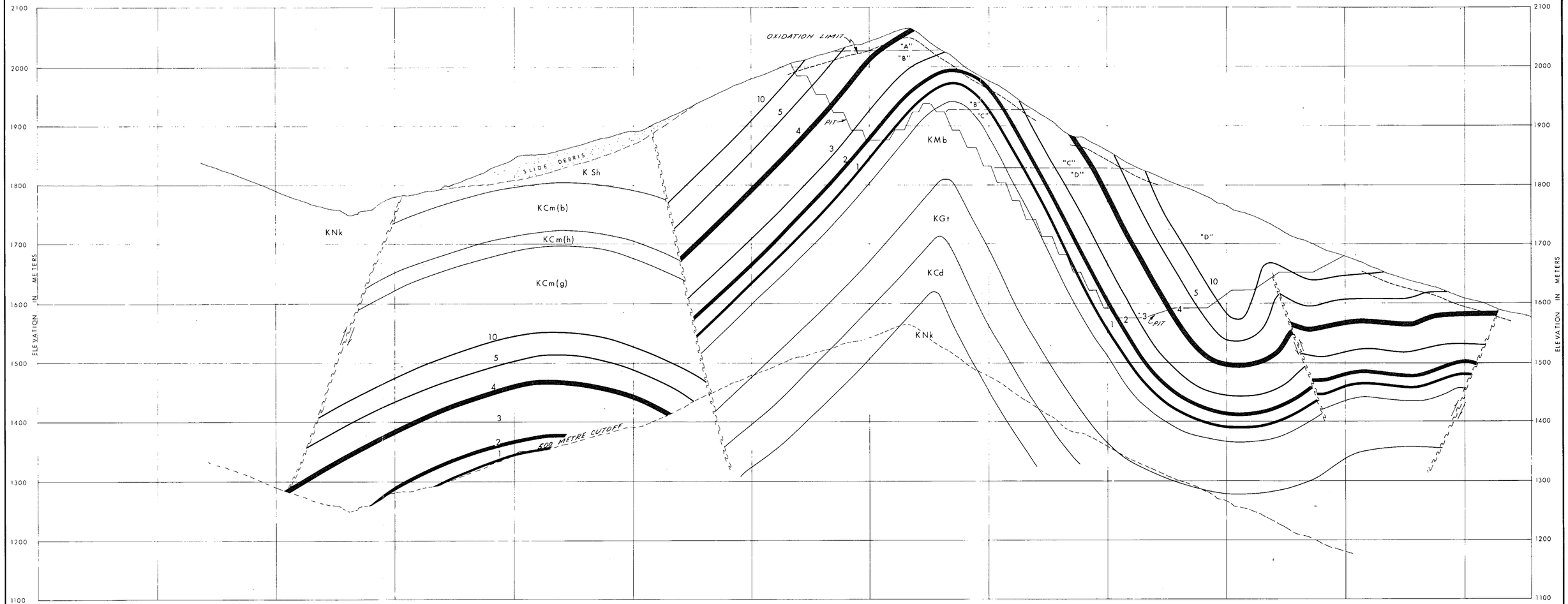
PREP'D BY G.J.	DATE Sept '77	DRAWING NUMBER
APP'R'D BY I.D.	DATE Oct. '77	SXON77-0749-R01



SAXON COAL LIMITED		
PR-SAXON 77 (2) A		
SAXON SOUTH CROSS SECTION		
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PREP'D BY: C.J.	DATE: Sept 77	DRAWING NUMBER:
APPR'D BY: I.D.	DATE: Oct 77	SXON 77-0749-R01


KCm(g)
KCm(h)
KCm(b)
KSh
KNk
KMb
KGt
KCd
GEOLOGICAL LEGEND
SEAM OUTCROP
APPROX. OUTCROP
INFERRED OUTCROP
OUTCROP STRIKE & DIP
DRILL HOLE LOCATION & NO.
ADIT LOCATION & NO.
TRENCH LOCATION & NO.
ANTICLINAL OR SYNCLINAL AXIS
THRUST FAULTS
KCm(g) GATES MEMBER
KCm(h) HILLCROSS MEMBER
KCm(b) BOULDER CREEK MEMBER
KNk NIKANASSIN FORMATION
KSh SHAFTSBURY FORMATION
CONGLOMERATE
SANDSTONE
SILTSTONE
SHALE
CARBONACEOUS SHALE
TOPOGRAPHIC LEGEND
ACCESS ROAD - ALL WEATHER
ACCESS TRAIL/LIMITED WEATHER
AIR STRIP
SEISMIC LINE, CUT LINE
TRENCH
ADIT
DRILL HOLE - ROTARY
DIAMOND
HORIZONTAL AND VERTICAL CONTROL
TRIG. STN.
IRON PIN
PHOTO CENTER
RIVER
STREAM
LAKE
SWAMP
CONTOURS
DEPRESSION CONTOUR
SURVEY NOTE
SCALE 1:2,000
CONTOUR INTERVAL 5 METRES
BASELINE
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON SOUTH GEOLOGY
NORTH END
SAXON SOUTH GEOLOGY
SOUTH END
SURVEY NOTE
SCALE 1:2,000
CONTOUR INTERVAL 5 METRES
TOPOGRAPHIC LEGEND
SEAM OUTCROP
APPROX. OUTCROP
INFERRED OUTCROP
STRIKE & DIP
DRILL HOLE
ADIT
TRENCH
ANTICLINAL / SYNCLINAL AXIS
FAULTS
GATES MEMBER
HILLCROSS MEMBER
BOULDER CREEK MEMBER
NIKANASSIN FORMATION
SHAFTSBURY FORMATION
CONGLOMERATE
SANDSTONE
SILTSTONE
SHALE
CARBONACEOUS SHALE
SAXON COAL LIMITED
DENISON COAL LIMITED
SAXON SOUTH GEOLOGY
SOUTH END

628

No.	DESCRIPTION	BY	DATE

REVISIONS

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

PR-SAXON 77 (2) A.

SAXON SOUTH DRILL HOLE CORRELATION

DRAWN BY: E. Toth	DATE: OCT. '77	SCALE: VERT. - 1:1000 HORIZ - NIL
PREP'D BY: B.W., E.T.	DATE: OCT. '77	DRAWING NUMBER:
APPR'D BY: G.P.G.	DATE: OCT. '77	SXON77-0754-R01

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NORTH~ WEST
7619
7704
7201
7703
7710
7705
7709
7001
7609
7708
7701
7620
7702
7101
7715
7706
7617
7712
DRILL HOLE NO.
SOUTH~ EAST
BOULDER CK. MEMBER
HULCROSS MBR
COMMOTION FORMATION
GATES MEMBER
COAL SEAM
MOOSEBAR FORMATION
GETHING FM.
5
4
3
2
1
10
UPPER
LOWER
COAL SEAM
LEGEND
COAL
CLAYSTONE
SILTY CLAYSTONE
CARBONACEOUS CLAYSTONE
SILTSTONE
SANDSTONE
CONGLOMERATE
FAULT BRECCIA
MISSING
FAULT
VERTICAL SCALE
0
10
20
30
40
50
METRES
No.
DESCRIPTION
BY
DATE
REVISIONS
SAXON COAL LIMITED
PREPARED BY:
DENISON COAL LIMITED
PR-SAXON 77(2) A.
SAXON EAST
DRILL HOLE CORRELATION
DRAWN BY: E. Toth
DATE: OCT. '77
PREP'D BY: B.W., E.T.
DATE: Oct '77
APPR'D BY: G.P.G., I.D.
DATE: Oct. '77
SCALE: VERT. 1:1000 HORIZ. NIL
DRAWING NUMBER:
SXON77-0755-R01
628

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)
- 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)
- ANTICLINE (Overturned), SYNCLINE (Overturned)
- ANTICLINE OR SYNCLINE (Arrow Indicates Plunge)
- ESCARPMENT
- FOSSIL LOCATION
- COAL ZONES - DEFINED, INFERRED, ASSUMED

MESOZOIC

UPPER CRETACEOUS

- KDu — DUNVEGAN FORMATION: Marine and non-marine sandstone and shale

LOWER CRETACEOUS — FORT ST. JOHN GROUP —

- KSh — SHAFTESBURY FORMATION: Marine shale. *North of the Wolverine River the Shaftesbury Fm. is differentiated into Hasler, Goodrich & Cruiser Formations.
- KCr — CRUISER FORMATION: Marine shale
- KGo — GOODRICH FORMATION: Fine-grained sandstone
- KHa — HASLER FORMATION: Dark marine shale
- KCm — COMMOTION FORMATION, Undifferentiated
- KCm(b) — COMMOTION FORMATION, Boulder Creek Member: conglomerate; coarse to fine-grained sandstone, shale; coal
- KCm(h) — COMMOTION FORMATION, Hulcross Member: dark marine shale
- KCm(g) — COMMOTION FORMATION, Gates Member: carbonaceous sandstone; shale; coal
- 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

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
- CAMPSITE
- CAMPGROUND, PUBLIC
- FOREST SERVICE LOOKOUT/STATION
- HORIZONTAL AND VERTICAL CONTROL
- RIVER
- STREAM
- LAKE
- SWAMP
- CONTOURS
- DEPRESSION CONTOUR
- PROPERTY BOUNDARY
- CROSS-SECTION LINES

CONTROL SURVEY NOTE

The Horizontal and Vertical Co-ordinates were established by White, Hosford & Impey Ltd. Horizontal distances were reduced to mean sea level, elevations were derived by Trig Levelling.
Horizontal Co-ordinates shown are converted B.C. Government Polyconic Rectangular Co-ordinates, based on Clarkes 1866 Spheroid. Bearings referred to the Meridian through 121°West. Co-ordinates derived from Trig station Quintette E (2374) Lat. 54°51'.30.33", Long. 120°52'.38.31", 25615.52 ft. North, 84813.80 ft. East. Elevations shown are above mean sea level (Geodetic) derived from Trig station Quintette E (2374) Elevation 5944 ft.

V W X Y Z

11 12 13 14 15 16

G H B A J I

NARRAWAY DENISON

SAXON EAST BASE MAP OUTLINE

SAXON SOUTH BASE MAP OUTLINE

T.N. 23° 05' Magnetic North

APPROXIMATE MEAN DECLINATION 1985
FOR CENTRE OF MAP
Annual Change decreasing 4.0'

LOCATION MAP

SAXON PROJECT
BRITISH COLUMBIA

SCALE 1:25,000

Miles 1 0 1 2
Kilometres 1 0 1 2 3

CONTOUR INTERVAL 25 METRES

NOTE: 25 Metre contour was interpolated from photogrammetric mapping, which was compiled from aerial photographs taken 1970 to 1974 and from 1:50,000 National Topographic Series maps.

PR-SAXON 77 (2) A.

#628

SAXON COAL LIMITED
PREPARED BY
DENISON COAL LIMITED

GEOLOGY

DRAWN BY: I. Toth	DATE: Jan '77	SCALE: 1: 25,000	
RECD BY: R.K. J.	DATE: Jan 77	DRAWING NUMBER:	
APP'D BY: G.	DATE: Jan 77	SXON/S-Dale-R03	

628

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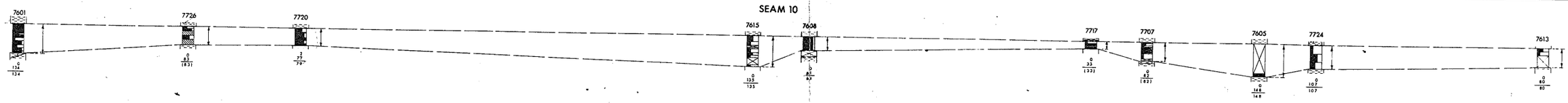

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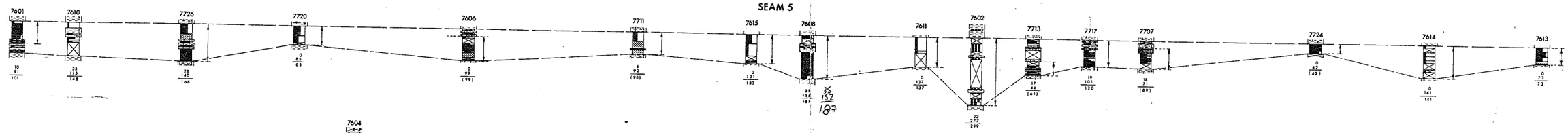

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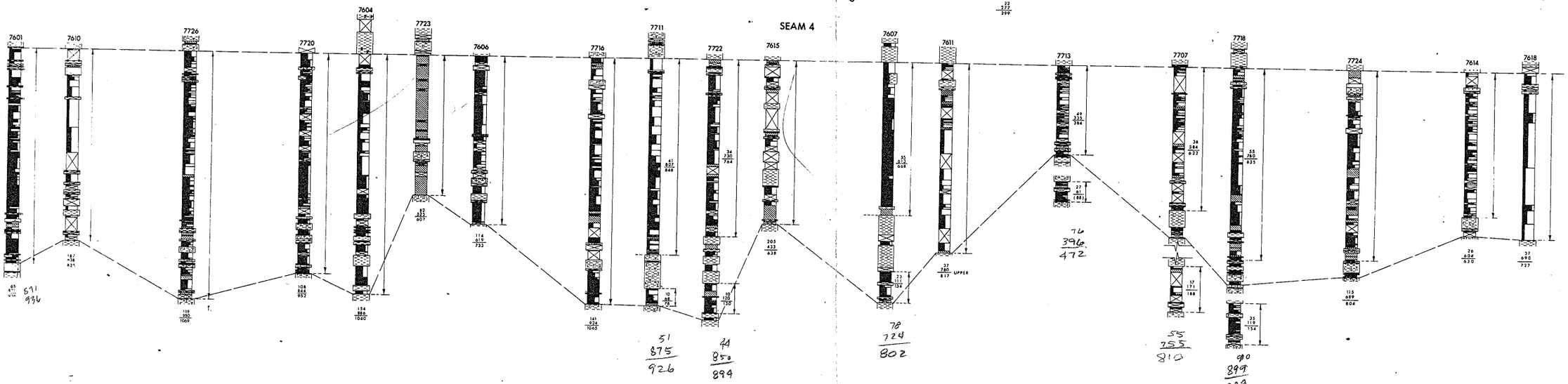

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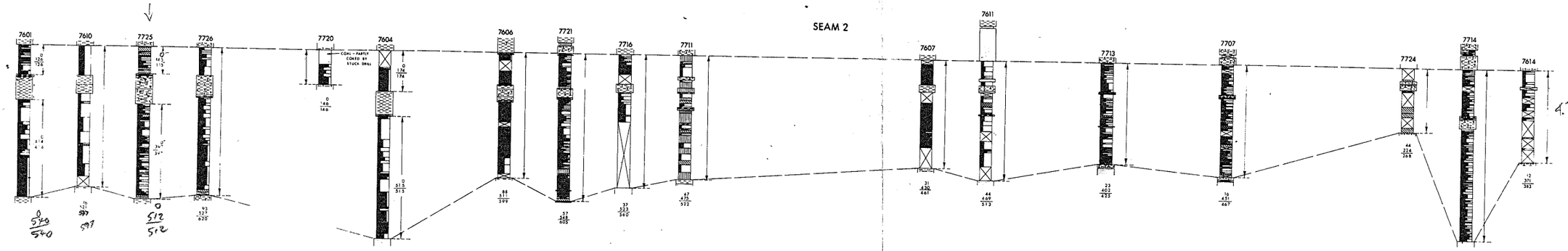

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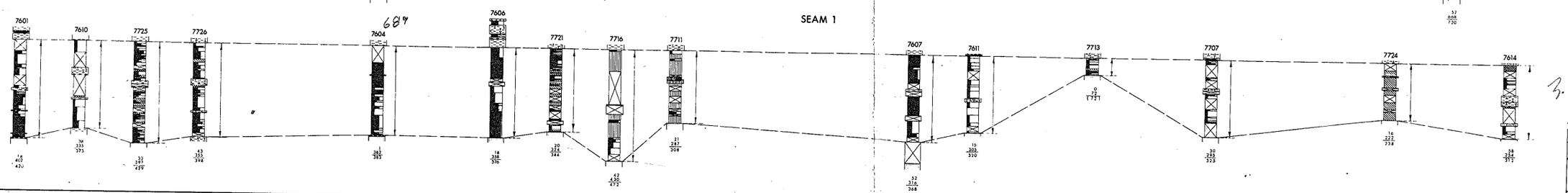


LEGEND

- SANDSTONE
- SILTSTONE
- SILTY CLAYSTONE
- CARBONACEOUS CLAYSTONE
- CLAYSTONE
- MISSING
- PLANT FOSSILS
- COAL & ROCK

COAL

- BRIGHT
- BRIGHT BANDED
- DULL & BRIGHT
- DULL BANDED
- DULL
- MISSING
- SHEARED
- PULVERIZED
- BONEY
- TONEY

THICKNESS IN CENTIMETRES
ROCK
COAL
TOTAL

MINING SECTION

PR-SAXON 77(2)A

SAXON COAL LIMITED

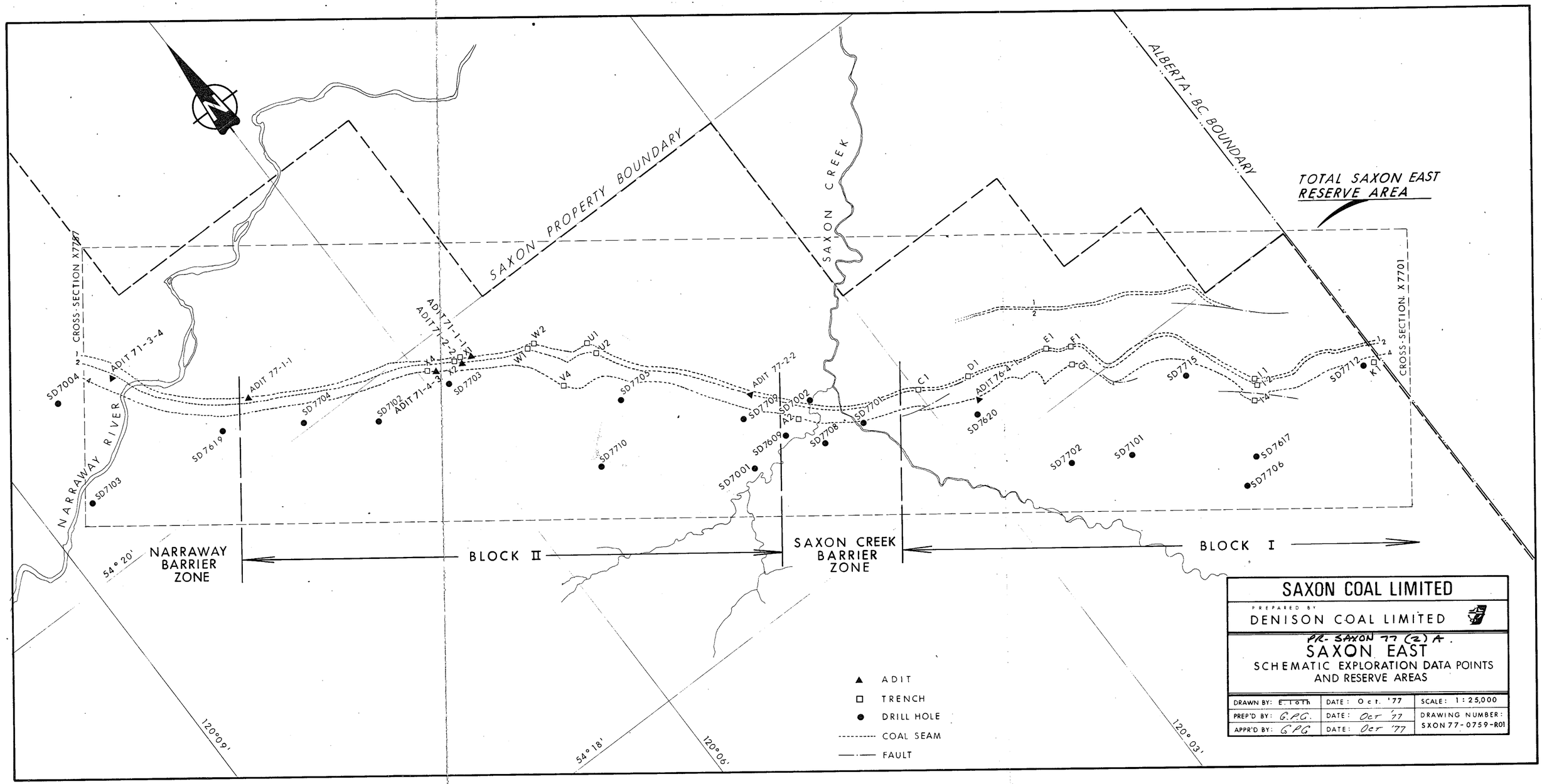
DENISON COAL N.L.

SAXON SOUTH
SEAM CORRELATION
SEAMS 1, 2, 3, 4, 5 & 10

DRN	OCT 1977	1:50	
CHD	Oct 77		
APP	Oct 77	SAXON 77-0757-R01	

PR-SAXON 77(2)A.

use to find coal only factor on total reserves (for South only)



SAXON COAL LIMITED

PREPARED BY
DENISON COAL LIMITED

PR-SAXON 77 (2) A.

SAXON EAST
SCHEMATIC EXPLORATION DATA POINTS AND RESERVE AREAS

DRAWN BY: E. Toth	DATE: Oct. '77	SCALE: 1:25,000
PREP'D BY: G.P.G.	DATE: Oct '77	DRAWING NUMBER: SXON 77-0759-R01
APPR'D BY: G.P.G.	DATE: Oct '77	

VOLUME III

YR- SAXON 77 (3) A

DRILL HOLES

STRATIGRAPHIC LOGS

BOOK 1 OF 1

DENISON MINES LTD.

1977

PR-SAXON 77(3)A

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SAXON COAL LIMITED

SAXON PROJECT FEASIBILITY STUDY

OCTOBER 1977

VOLUME III

GEOLOGY, RESERVES AND QUALITY

APPENDICES

PREFACE

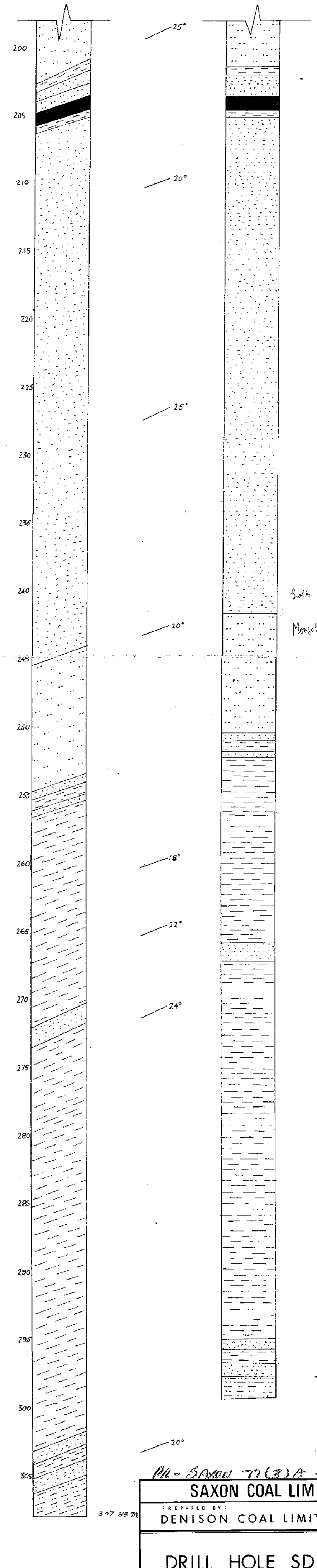
This volume of the 1977 Saxon Feasibility Study primarily contains the data obtained from the 1977 exploration programme. The results of the evaluation of this data have been presented in the preceding Volume II.

SAXON PROJECT FEASIBILITY STUDY

VOLUME III

GEOLOGY, RESERVES AND QUALITY: APPENDICES

CONTENTS



PR-SAXON 77(3)A.

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7609

DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON 77-0740-R01

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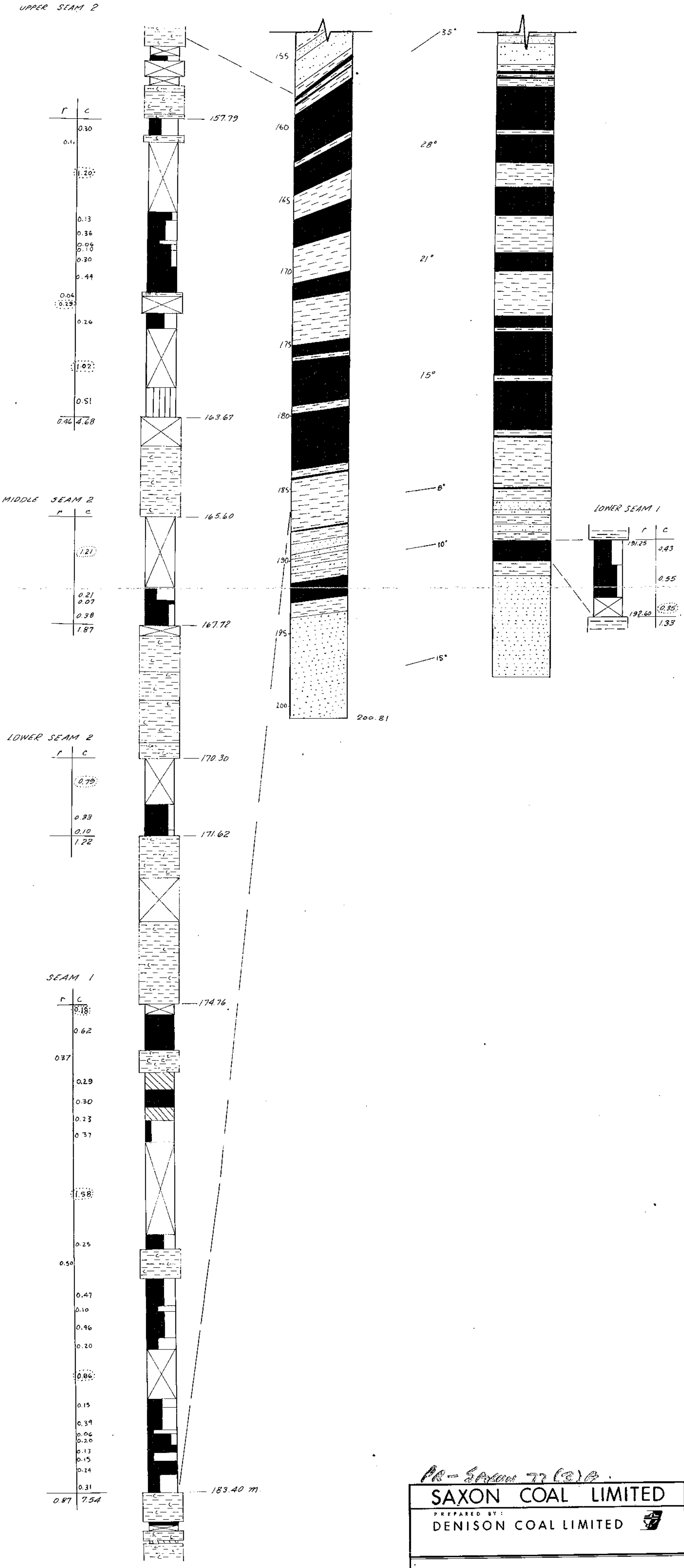
SD 7620



PB - Saxon 77 (3) 8.

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7620

DRAWN BY: J.W.K.	DATE: MAY, '77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER: SXON77-0740-R01
APPR'D BY:	DATE:	

628

PR - SAXON 77 (3)A.

SAXON COAL LIMITED

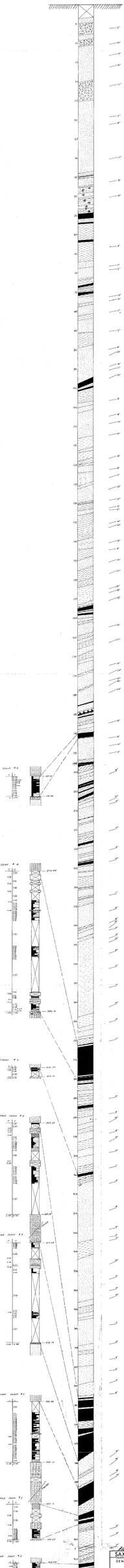
PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7701

DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON 77-0740-R01

628

SD 7702



SAXON COAL LIMITED
DENISON COAL LIMITED

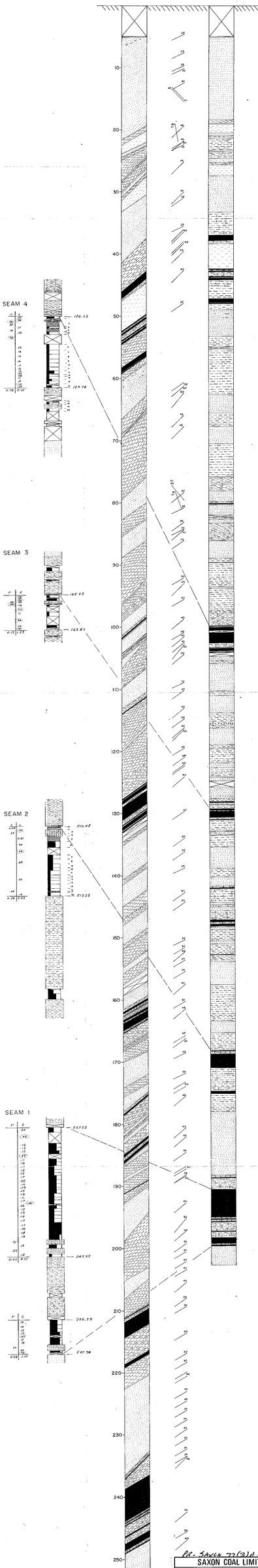
DRILL HOLE SD.7702

628

PR- SAXON 77(3)A.

SAXON COAL LIMITED		
PREPARED BY: DENISON COAL LIMITED		
DRILL HOLE SD 7703		
DRAWN BY: J.W.K.	DATE: MAY, '77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER: SXON77-0740-R01
APPR'D BY:	DATE:	

628



RE- SAXON 77(2)2.

SAXON COAL LIMITED

A SUBSIDIARY OF

DENISON COAL LIMITED

DRILL HOLE SD 7704

DRAWN BY: CT.	DATE: SEPT. 77	SCALE 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER: SAXON 77-0740-601
APPR'D BY:	DATE:	

628

No. SAXEN 77 (9)a.

SAXON COAL LIMITED

PREPARED BY

DENISON COAL LIMITED

DRILL HOLE SD 7705

DRAWN BY: FS	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SAXON 77-0740-B01

628

PR- SAXON 77 (3)A

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7706

DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON 77-0740-R01

628

PR-SAXON 77(3)A.

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7707

DRAWN BY: J.W.K.	DATE: MAY, '77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER: SXON77-0740-R01
APPR'D BY:	DATE:	

PA - SAXON 77 (3) A

SAXON COAL LIMITED		
PREPARED BY: DENISON COAL LIMITED		
DRILL HOLE SD 7708		
DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
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APPR'D BY:	DATE:	SXON 77-0740-R01

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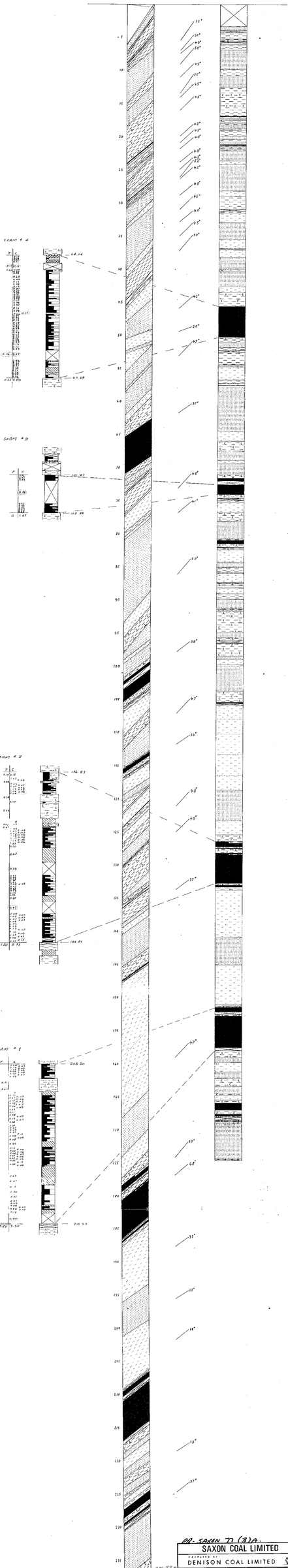

DR. SAXON 77 (3)A.

SAXON COAL LIMITED

PREPARED BY DENISON COAL LIMITED

DRILL HOLE SD 7709

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PREP'D BY:	DATE:	DRAWING NUMBER:
APP'D BY:	DATE:	SXON 77-0740-803

628

PR - SAXON 77(3)A

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7710

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PREP'D BY:	DATE:	DRAWING NUMBER:
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PR-SAXON 77(3)A

SAXON COAL LIMITED		
PREPARED BY: DENISON COAL LIMITED		
DRILL HOLE SD 7711		
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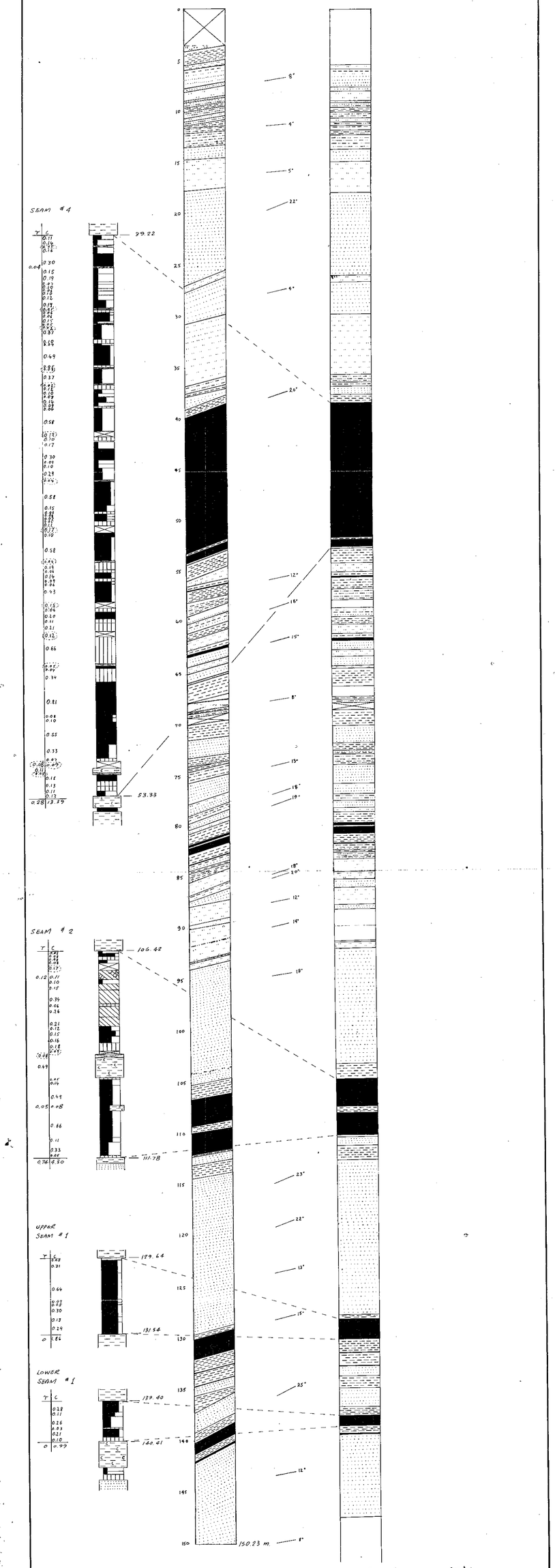
APPR'D BY:	DATE:	SXON 77-0740-R01

628



AP- SAXON 77(3)A

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7712

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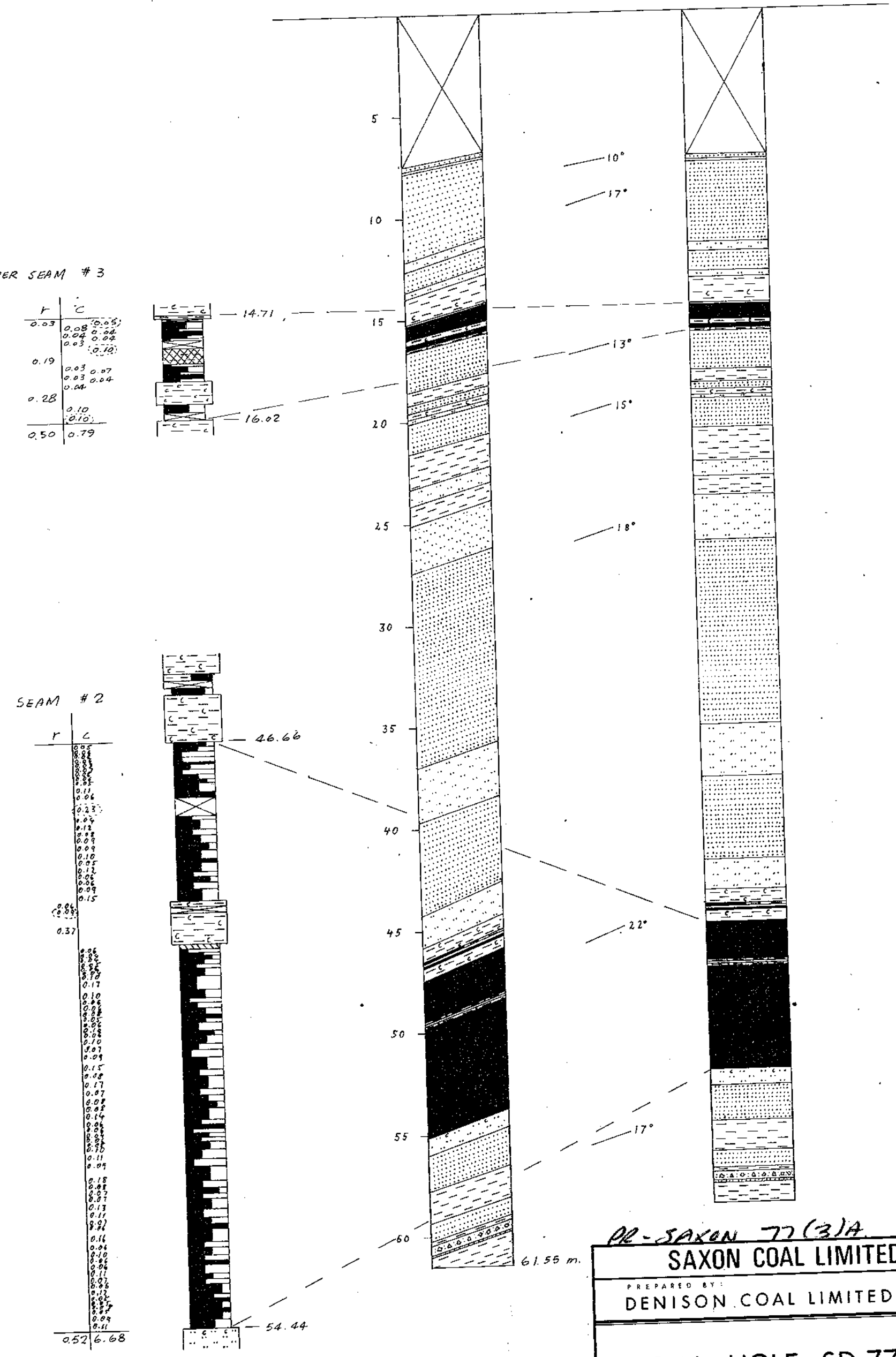
628



PR-SAXON 77(3)A

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7714

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PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON 77-0740-R01

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PR-SAXON 77(3)A.

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7713

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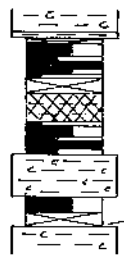
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON-77-0740-R01

628

UPPER SEAM # 3

r	c
0.03	0.08 (0.05)
	0.04 0.04
	0.03 (0.10)
0.19	
	0.03 0.07
	0.03 0.04
	0.04
0.28	
	0.10
	(0.10)
0.50	0.79



14.71

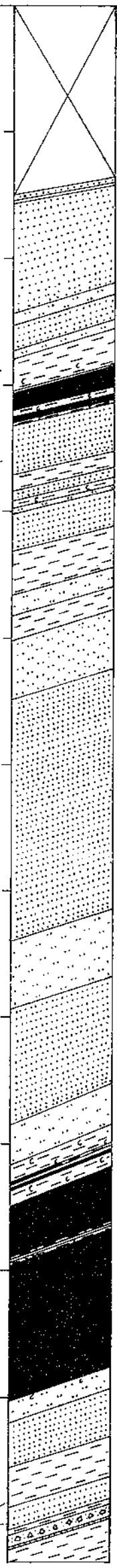
16.02

SEAM # 2

r	c
	0.05
	0.08
	0.08
	0.05
	0.05
	0.05
	0.11
	0.06
	(0.23)
	0.04
	0.12
	0.08
	0.09
	0.09
	0.10
	0.05
	0.11
	0.06
	0.06
	0.09
	0.15
0.86	
(0.89)	
0.37	
	0.06
	0.04
	0.05
	0.08
	0.10
	0.17
	0.10
	0.06
	0.04
	0.05
	0.05
	0.08
	0.10
	0.07
	0.09
	0.15
	0.08
	0.17
	0.07
	0.08
	0.08
	0.14
	0.06
	0.04
	0.04
	0.10
	0.11
	0.09
	0.18
	0.08
	0.07
	0.07
	0.13
	0.11
	0.07
	0.08
	0.16
	0.06
	0.10
	0.06
	0.06
	0.11
	0.07
	0.06
	0.12
	0.08
	0.09
	0.11
0.52	6.68

46.66

54.44



61.55 m.

10°

17°

13°

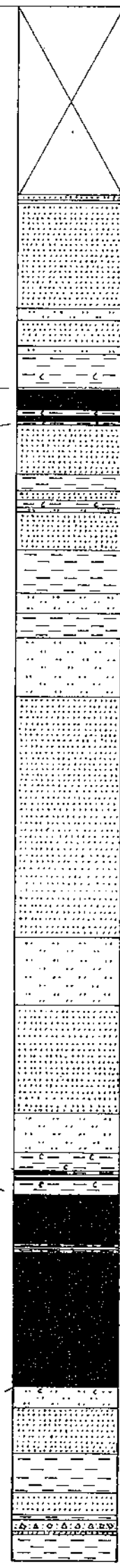
15°

18°

22°

17°

60



SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7714

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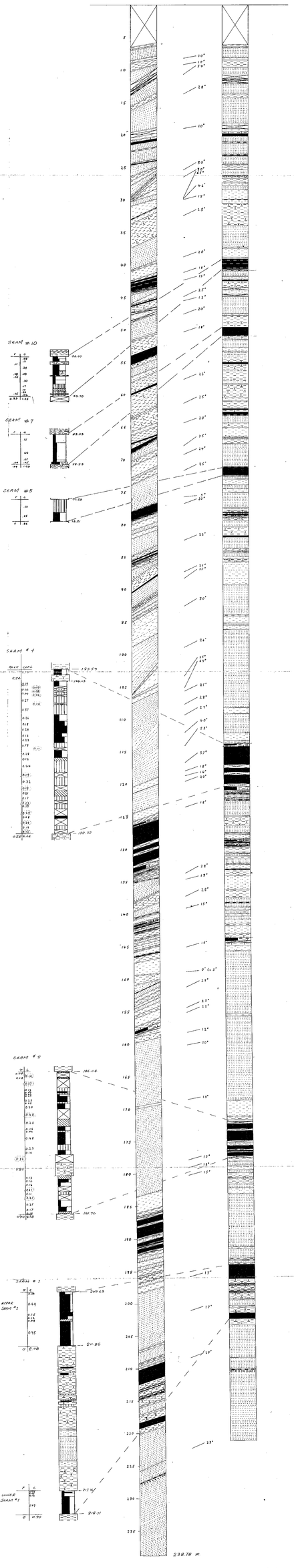
PREP'D BY:	DATE :	DRAWING NUMBER:
APPR'D BY:	DATE :	SXON 77-0740-R01

628



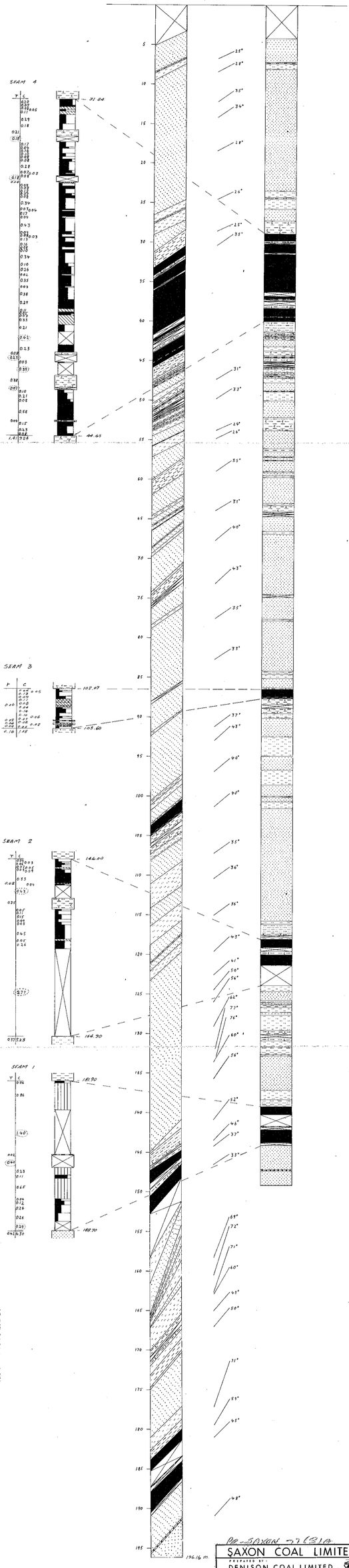
SAXON COAL LIMITED

PREPARED BY

DENISON COAL LIMITED

DRILL HOLE SD 7715

DRAWN BY	E.T.	DATE SEPT 77	SCALE 1:200, 1:50
REVD BY		DATE	DRAWING NUMBER
APPD BY		DATE	SKON 77-0740-601



Re-SAXON 77-631A

SAXON COAL LIMITED

PREPARED BY:

DENISON COAL LIMITED

DRILL HOLE SD 7716

DRAWN BY: ET	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREPD BY:	DATE:	DRAWING NUMBER:
APPD BY:	DATE:	SAXON 77-0740-R01

628

PR - SAXON 77 (3) A

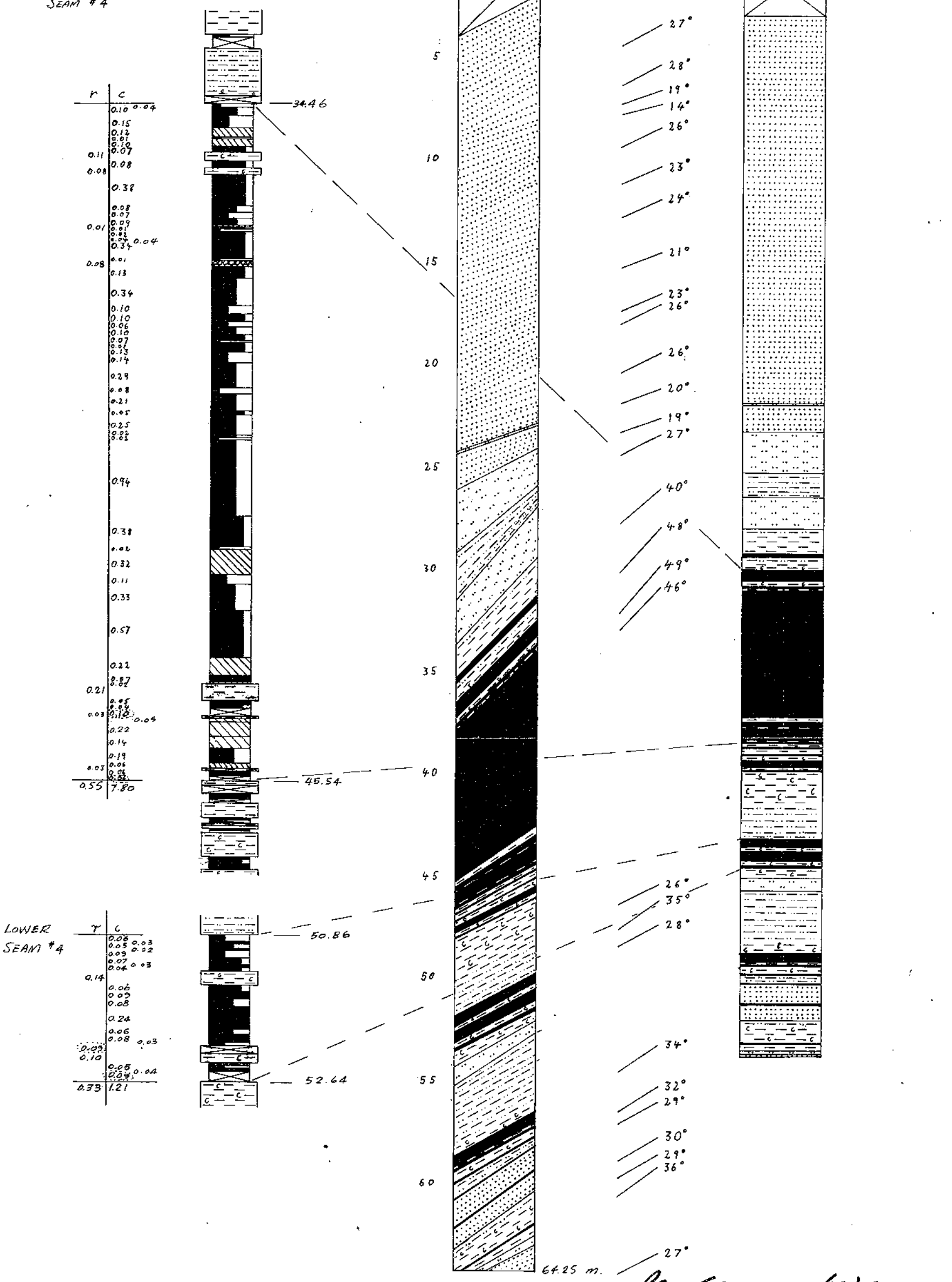
SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7717

DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON-77-0740-R01

628



Re - SAXON 77(3)A.

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7718

DRAWN BY: E.T.	DATE : SEPT. 77	SCALE : 1:200, 1:50
PREP'D BY:	DATE :	DRAWING NUMBER:
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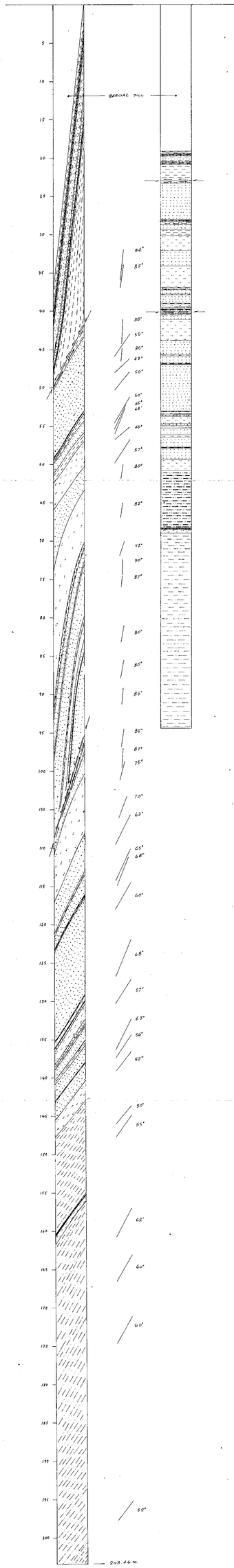
628



RE - SAXON 77-(2)D

SAXON COAL LIMITED

PREPARED BY

DENISON COAL LIMITED

DRILL HOLE SD 7719

DRAWN BY: CT	DATE: SEPT. 77	SCALE 1:200, 1:50
PROJ BY:	DATE:	DRAWING NUMBER:
APPD BY:	DATE:	SXON-77-0740-R01

628

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7720

DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON-77-0740-R01

PR. SAXON 77 (3) A.

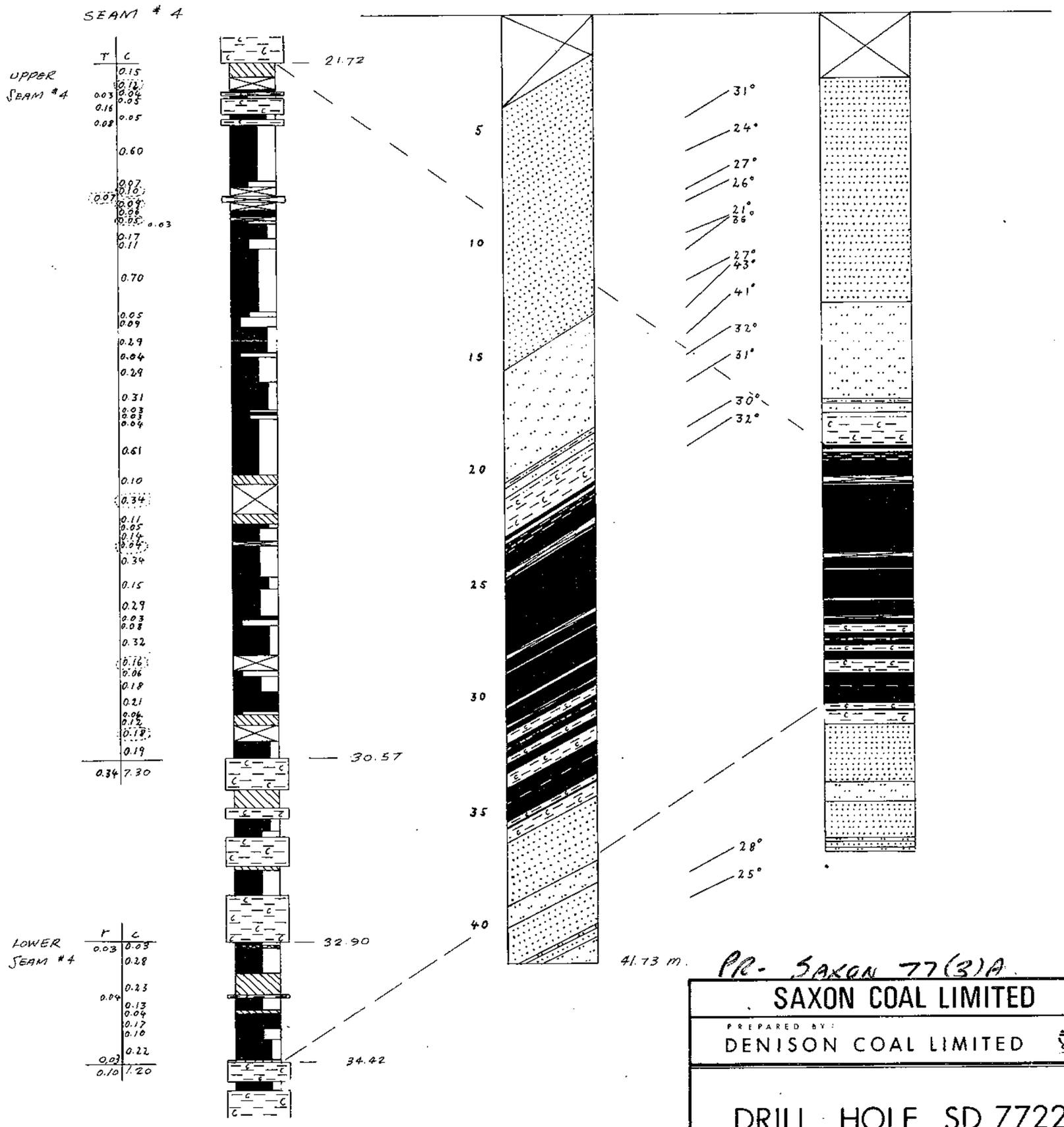
SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7721

DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON-77-0740-R01

628



PR- SAXON 77(3)A.

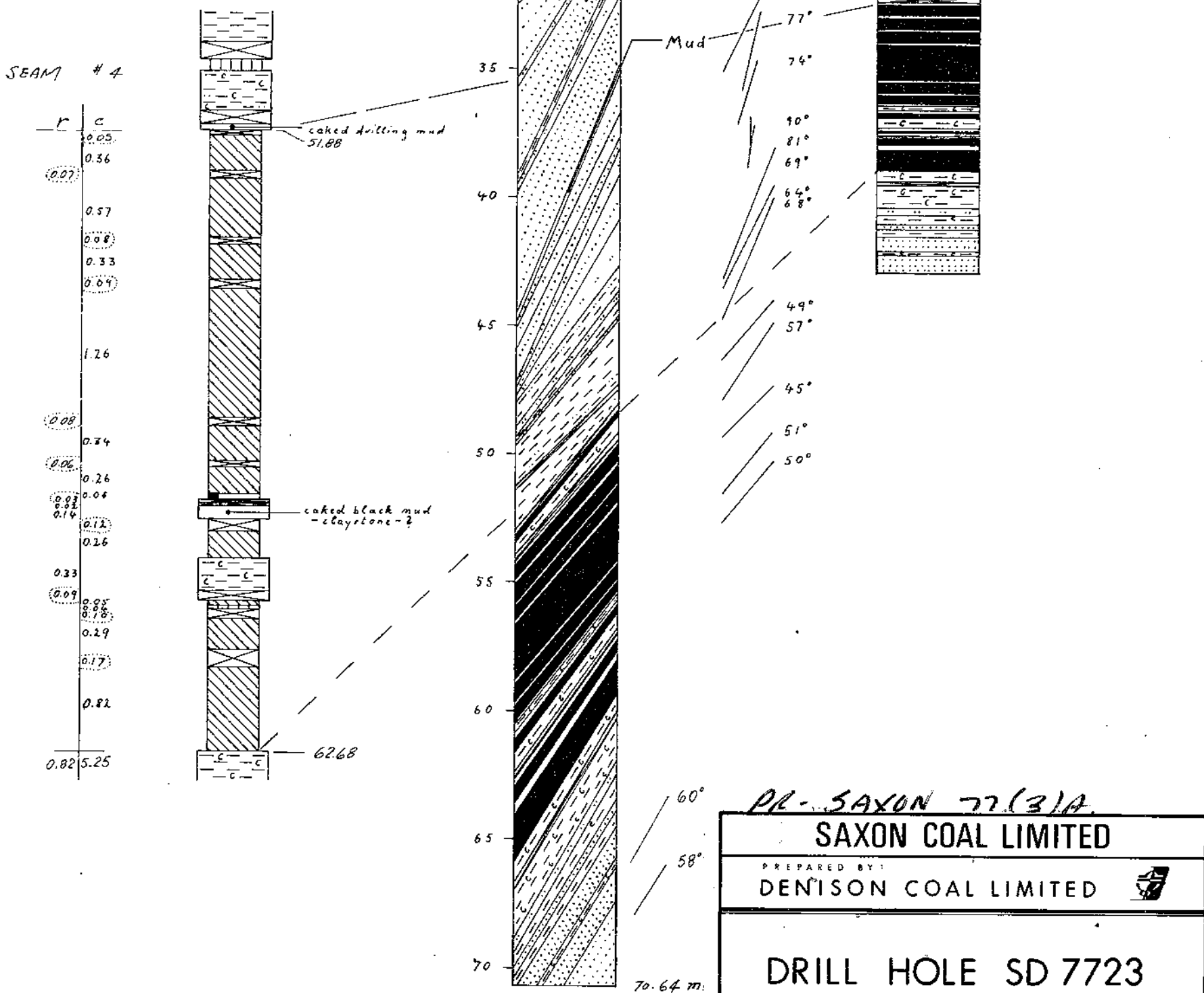
SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7722

DRAWN BY: E.T	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON 77-0740-R01

628



PL - SAXON 77(3)A

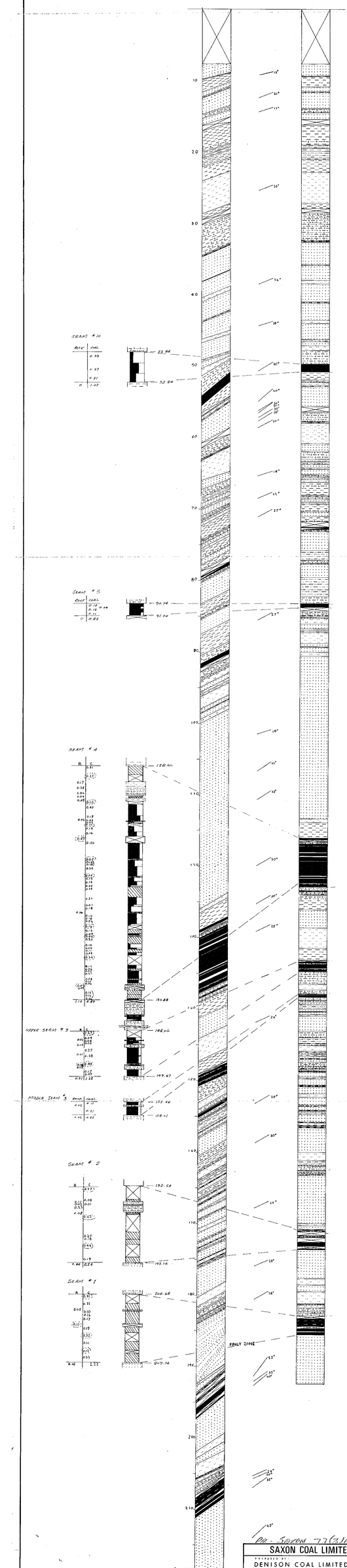
SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7723

DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON 77-0740-R01

628



Dn Saxon -77(3)10.

SAXON COAL LIMITED

PREPARED BY:

DENISON COAL LIMITED

DRILL HOLE SD 7724

DRAWN BY: ETC.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APP'D BY:	DATE:	SXON-77-0740-601

628

SAXON COAL LIMITED		
PREPARED BY: DENISON COAL LIMITED		
DRILL HOLE SD 7725		
DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON-77-0740-R01

SAXON COAL LIMITED

PREPARED BY:
DENISON COAL LIMITED

DRILL HOLE SD 7726

DRAWN BY: E.T.	DATE: SEPT. 77	SCALE: 1:200, 1:50
PREP'D BY:	DATE:	DRAWING NUMBER:
APPR'D BY:	DATE:	SXON-77-0740-R01