PR-BULLMOOSE 77 (1) A

THE 1977 EXPLORATION PROGRAMME ON THE BULLMOOSE PROPERTY SUKUNKA RIVER AREA (93 P/4E, 93 P/3W)

COAL LICENCES #3022-3024
3029, 3033, 3038
3043, 3048, 3558

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FOR
TECK CORPORATION LIMITED
AND
BRAMEDA RESOURCES LIMITED

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FOR FURTHER ANALYTICAL DATA, REFER TO CONFIDENTIAL COAL ANALYSIS FILE

INTRODUCTION

During the period June 1, 1977 to September 30, 1977 Teck Corporation Ltd. under an option agreement with Brameda Resources Ltd., carried out an exploration program on the Bullmoose property located in the Sukunka coal area (Fig. 1). The program was essentially a continuation of the on-going evaluation of the Gates coal measures. It was designed to confirm previous reserves and further evaluate the stripping potential and coal quality. The program consisted of diamond drilling, aditing, seam trenching and detailed mapping.

An exploration camp was maintained throughout the programme and accommodated an average work force of thirty (30) men. Technical staff included three geologists, a mining engineer and a reclamation officer.

Road building and drill and adit site preparations under the supervision of the reclamation officer constituted a significant part of the programme. A total of 11.7 kilometres of new road was put in and existing access roads were upgraded.

Reclamation and forest abatement measures continued throughout the programme and were co-ordinated with the Reclamation Branch of the B.C. Ministry of Mines. A detailed report will be forthcoming in early February, 1978.

PROPERTY

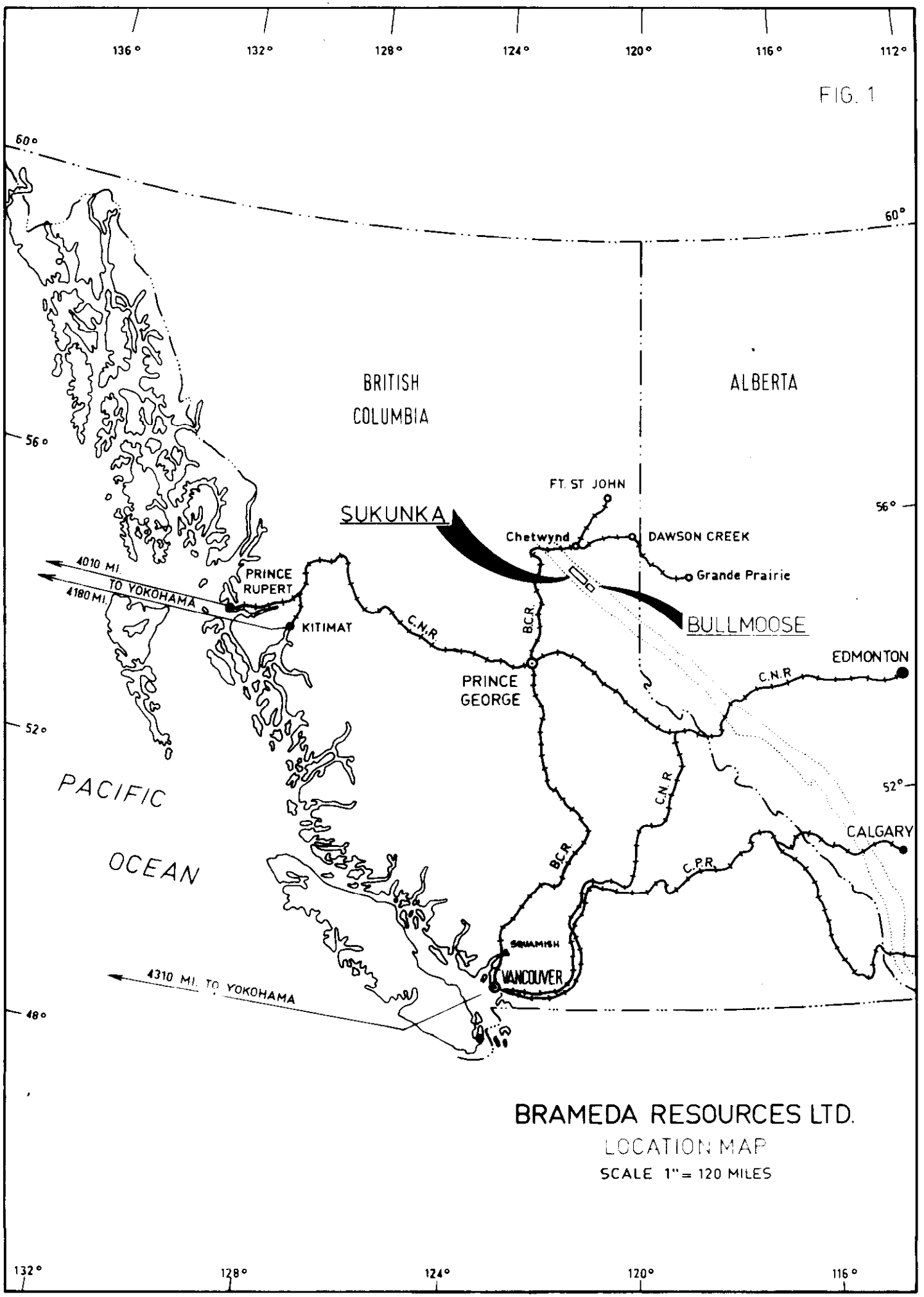
The Bullmoose property of Brameda Resources comprises five wholly owned coal licences (Fig. 2). Furthermore, Brameda Resources, under a renegotiated agreement with B.P. Canada Ltd. retains rights to portions of Gates coals in certain licences. Specifically, Brameda is entitled to all seams of Gates coal within certain licences to a depth of 500 feet to the floor of the bottom seam ("A" Seam).

DIAMOND DRILLING

The drilling contract was awarded to Connors Drilling of Vancouver and was set for 10,000 feet. Diamond drilling commenced on June 9 and was terminated September 12. Two drill rigs were used: a skid-mounted Longyear Super 38, and a Nodwell-mounted Boyles 20A. All drilling was HQ wireline except for forty-one (41) metres of NQ required to finish drill hole T-67. The two rigs were double shifted and averaged 12 metres per ten-hour shift, including moves.

Thirty-six (36) drill holes were completed for a total of 3,310.0 metres, of which 821.4 metres was for B.P. Canada Ltd. Twenty-one (21) holes were drilled in the South Fork area and fifteen (15) in the West Fork area, for an average hole depth of 91.9 metres (Fig. 3). Spacing of drill holes was based on a 300-metre grid and completed the drill program initiated in 1976.

FIG. 1

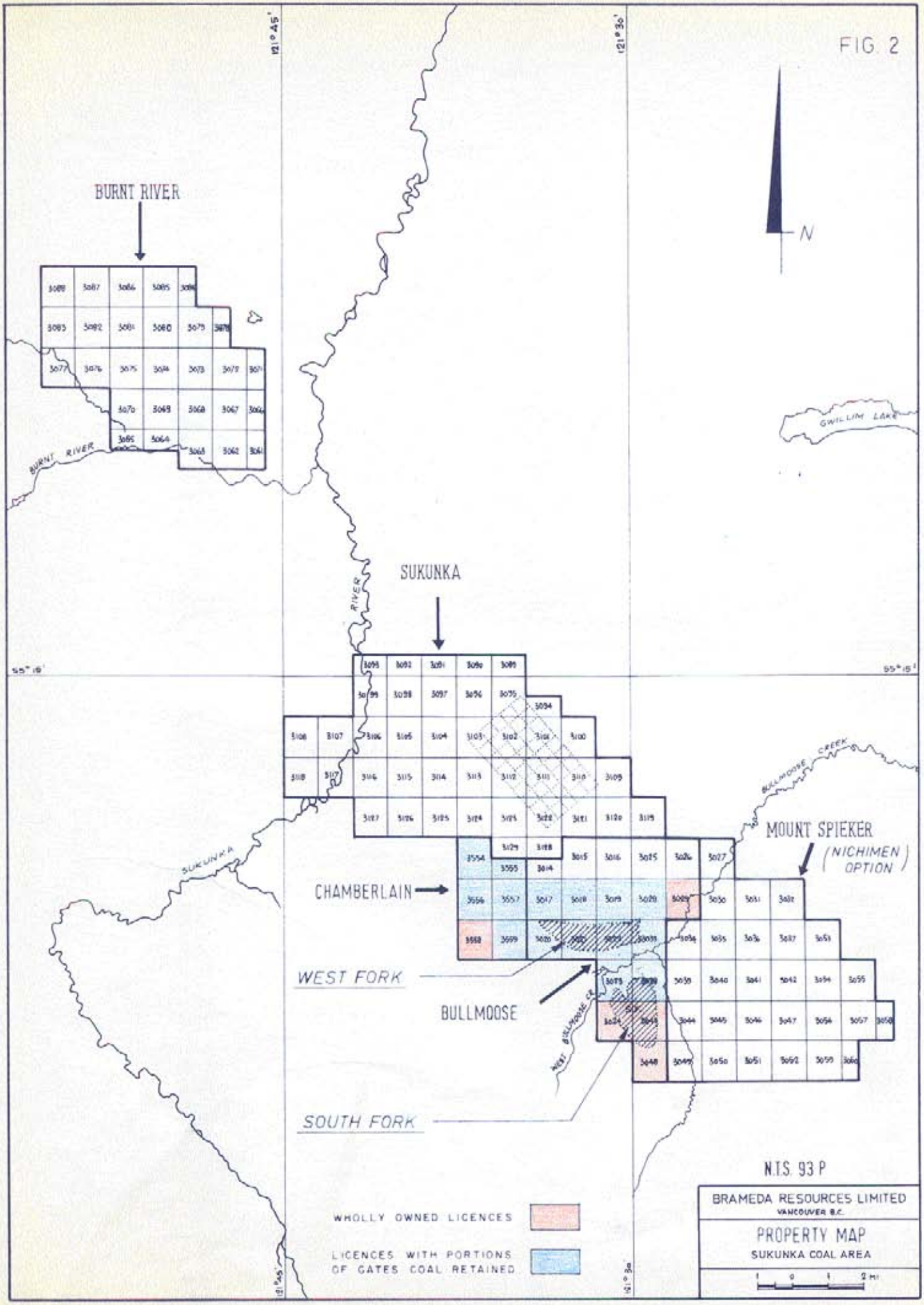


BRAMEDA RESOURCES LTD.

LOCATION MAP

SCALE 1" = 120 MILES

FIG. 2


BURNT RIVER
SUKUNKA
SUKUNKA RIVER
BURNT RIVER
GWILLIM LAKE
CHAMBERLAIN
MOUNT SPIEKER
(NICHIMEN OPTION)
BULLMOOSE CREEK
WEST FORK
BULLMOOSE
WEST BULLMOOSE CR.
SOUTH FORK
SUKUNKA
121° 45'
121° 30'
55° 15'
N
N.T.S. 93 P
WHOLLY OWNED LICENCES
LICENCES WITH PORTIONS OF GATES COAL RETAINED
BRAMEDA RESOURCES LIMITED
VANCOUVER B.C.
PROPERTY MAP
SUKUNKA COAL AREA
1 0 1 2 MI

SURVEYING

Surveying of drill holes, adit sites and coal trenches was carried out by McWilliam, Whyte, Goble and Associates of Prince George, B. C. (Figs. 4 and 5). Surveying of coal trenches was also done by Teck Corp. personnel and tied into the main survey. A conversion from N.T.S. to U.T.M. grid was made. Survey hubs were located in the Bullmoose Valley to facilitate control for future plant site location and related infrastructure.

Topographical surveying was done by Burnett Resources Ltd. of Vancouver using aerial photography done in September, 1976. New topographic maps on a scale of 1:5,000 were produced and used for detail mapping, trenching, and geological interpretation (Figs.12 and 13).

GEOLOGY

The 1977 program involved further exploration of the coal bearing Gates member of the Commotion Formation. More directly it centred on the South Fork and West Fork areas of the Bullmoose property. Because of the information available from previous reports regional geology need not be repeated (Fig. 6). Changes involving local geology as related to structure and stratigraphy were minimal.

Hand trenching was carried out as close to section lines as possible in order to give proper definition of the surface traces of the A, B, C, D, and E seams. Depth of overburden limited trenching in certain areas, especially in the West Fork area. In all 71 trenches were dug

for an average length of 7 metres. A backhoe was used to expose seams along the main access road but it had limited success due to the rough terrain.

Detailed surface mapping was updated and supplemented that done in previous years by Brameda geologists (Figs. 7 & 8). No new faults were encountered and a small thrust previously observed on the South Fork was trenched and mapped in detail. Structural cross-sections were constructed for the South Fork and West Fork areas and confirm the previous structural interpretation given. Structural contour maps were also made and again demonstrate the structural simplicity of this deposit (Figs. 11 & 12).

Isopach maps for each seam have been constructed using drilling and geophysical data (Figs. 9-9d, 10-10c)

GEOPHYSICAL LOGGING

Geophysical logging was carried out by B.P.B. Instruments of Calgary, Alberta. The logging unit was leased on a full-time basis necessitated by the fairly short time between hole completions.

Radiation logging consisted of gamma-ray, sidewall density and caliper. Detail density (LSD and BRO) and caliper logs were used in detailing coal seams and proved most valuable. In a few cases poor hole conditions made it impossible to run logs. Copies of geophysical logs are enclosed with this report.

CORE LOGGING AND SAMPLING

All drill cores were logged in detail and stratigraphic logs in columnar form were prepared on a scale of 1:200. Coal seams were described in detail and those having a thickness considered mineable (greater than .6 metres) were sampled. In most cases only coal sections were sampled but in others rock partings were included for the purpose of studying the effects of including them as part of a mining sequence. It should also be noted that selected coal sections were divided into plies and analyzed separately in order to gain more detailed information on coal quality.

Coal recoveries were very good and are summarized as follows:

A Seam	90.0%
B Seam	94.3%
C Seam	83.0%
D Seam	80.1%
E Seam	76.0%

All coal cores were shipped to Birtley Engineering in Calgary for proximate analysis. Proximate analysis was done on raw coal for ash, sulphur and F.S.I.

Compositing of each seam representing portions of the deposit was also done. Proximate analysis of composites was done for ash, volatile matter, fixed carbon, sulphur, F.S.I. and H.G.I. Washability studies were then carried out and the clean coal products were analyzed and tests were run for fluidity (Geisler plastometer) and dilation. Results of core analysis are shown in Appendix I. Stratigraphic logs are enclosed with the report under a separate cover.

ADITING AND BULK SAMPLING

During the 1977 programme six new adits were driven, and one adit driven during the fall of 1976 was re-opened. Five adits were in the South Fork area and two in the West Fork area (See Fig. 3)

The purpose of the adit program was threefold:

1. To obtain bulk samples for pilot wash plant studies;
2. To obtain clean coal products for coking tests;
3. To determine the extent of oxidation w.r.t. the depth of overburden.

The method of drivage was drill and blast with mucking done using a slusher. All equipment was air-powered; (air slusher, air ventilation fan, air drills, and auger). Site preparation was done with a D-6 bulldozer and a diesel powered front end loader was used to clear the coal on surface. Adits were driven on a two-shift basis using two miners per shift, plus a supervisor. Full seam samples were taken which amounted to between 8 and 10 tonnes.

A total of 260 metres of drivage, 70 metres of re-opening, and 25 metres of portal preparation was done. Average adit length was 43 metres and a total of 63 metric tonnes of samples were taken.

Adit sites were surveyed and adit profiles constructed (Figs.15-15d, 16-16b) After sampling was complete the adits were closed off and fully reclaimed. Coal samples were shipped to Birtley Engineering in Calgary for analysis. All results are enclosed under separate cover.

COAL QUALITY

With the exception of the "B" seam and the lower split of the "A" seam the Gates coals include varying amounts and thicknesses of rock bands. Generally, the discrete coal piles appear clean and include a majority of bright bands indicating a high amount of vitrainous components. These features combined with results from proximate analysis and washability tests suggest that most of the residual ash is inherent in nature. The "C" and "D" seams have a higher amount of residual ash after cleaning and is probably related to the fact that they contain a preponderance of thin shaley partings.

The effects of oxidation on coal quality have not been fully determined.

Proximate Analyses (Summary)

The following tabulation shows average proximate analyses of drill core samples composited from different holes for each seam. The samples are raw and are analysed on an air dried basis.

	RM %	Ash %	VM %	FC %	S %	F.S.I.
"A" Seam	1.27	10.80	23.45	64.47	0.43	6
"B" Seam	1.18	11.72	23.75	63.35	0.34	5½
"C" Seam	1.32	31.22	19.15	48.30	0.49	4
"D" Seam	1.33	46.90	16.80	35.16	0.42	1½
"E" Seam	1.75	18.95	24.05	55.25	0.66	7

The same samples after cleaning at 1.50 S.G. yielded the following results. Note the increase in the Free Swelling Index of the "C" and "D" Seams.

	RM %	Ash %	VM %	FC %	S %	F.S.I.
"A" Seam	0.65	6.77	24.10	68.47	0.39	6½
"B" Seam	0.86	7.48	24.03	67.62	0.31	5½
"C" Seam	1.07	11.67	23.45	63.80	0.58	6
"D" Seam	1.26	12.36	24.73	61.63	0.61	6
"E" Seam	1.05	5.95	27.05	65.95	0.64	7½

Bulk Plant Testing (Summary)

After washability tests were carried out on adit bulk samples and certain parameters established, bulk plant washing proceeded for each seam with the following results:

South Fork:

	Raw Coal		Clean Coal						
	Ash %	FSI	RM %	Ash %	VM %	FC %	S %	FSI	Overall Yield %
"A" Seam	28.8	3	1.1	6.8	21.4	70.7	0.5	6	67.9
"B" Seam	11.8	7	0.8	7.3	23.9	68.0	0.28	6½	83.3
"C" Seam	24.6	5	1.2	7.5	26.3	65.0	0.65	8	43.7
"D" Seam	43.8	3	0.9	7.4	27.1	64.6	0.6	8½	35.9
"E" Seam	25.8	5	0.7	7.6	28.0	63.7	0.56	7½	68.2

West Fork:

	Raw Coal		Clean Coal						
	Ash %	FSI	RM %	Ash %	VM %	FC %	S %	FSI	Overall Yield %
"A" Seam	19.7	6	1.4	7.3	25.0	66.3	0.53	7½	75.1
"B" Seam	14.6	6½	1.7	7.5	25.0	65.8	0.38	?	81.3

COAL RESERVES

Reserves for both the West Fork and South Fork were recalculated based on this years additional drill information. The geological definition of the various seams in the South Fork is regarded as sufficient to consider the calculated reserves of coal in place as final. In the West Fork area certain structural ambiguities as well as the changing character of the seams, will have to be clarified before a final reserve calculation can be made. However, the calculated reserves of coal in place is regarded as accurate insofar as available data is concerned and can be classed as "drill-indicated".

The method of reserve calculation takes into account the dip of the various seams in their respective reserve block. In the South Fork the reserve blocks are drawn on the structure contour map, each block occupying an area of fairly uniform dip. In the West Fork the reserve blocks are limited to areas where the "A" seam is under less than 152 metres of cover (Figs. 17-17d, 18-18d).

In each area the coal tonnages are measured from plans by the use of a planimeter.

For overburden calculations cross sections were used. The specific gravity of each seam was determined by Birtley Engineering and are as follows:

"A" Seam	1.34
"B" Seam	1.36
"C" Seam	1.46
"D" Seam	1.66
"E" Seam	1.48

Coal in Place

The summary of coal in place calculations are shown in Table I. The increase of some five million tons in the South Fork over last years figure is largely due to the inclusion of the "E" seam as well as corrections being made for dip. In the West Fork the extension of reserve blocks into areas of deeper overburden (152 metres) almost doubled last years figure.

Table I: Coal in Place (Summary)

South Fork (Metric Tons)

Block	"A" Seam	"B" Seam	"C" Seam	"D" Seam	"E" Seam	Total
I	2,909,286	4,443,327	1,110,464	429,628		8,892,705
II	3,575,407	6,596,774	2,291,536	2,243,431	507,159	15,214,307
III	2,579,690	5,018,364	1,636,402	1,756,896	704,645	11,695,997
IV	3,606,061	6,555,522	2,256,467	2,409,393	757,600	15,585,043
Total	12,670,444	22,613,987	7,294,869	6,839,348	1,969,404	51,388,052 M.T.

Table I: (Cont'd)

West Fork (Metric Tons)

Block	"A" Seam	"B" Seam	"C" Seam	"D" Seam	"E" Seam	Total
I	2,903,713	5,470,083	2,437,470	2,950,629		13,761,895
II	3,395,593	6,192,093	2,806,901	3,511,759		15,906,347
III	1,715,849	2,517,564				4,233,413
Total	8,015,155	14,179,740	5,244,371	6,462,388		33,901,654 M.T.
Total coal reserves - West and South Forks						85,289,706 M.T.

Clean Coal

Based on the results of bulk plant testing the reserves on a "clean coal basis" are as follows:

Table II:

South Fork

	Coal in place (M.T.)	Yield %	Clean Coal
"A" Seam	12,670,444	67.9	8,603,231
"B" Seam	22,613,987	83.3	18,837,451
"C" Seam	7,294,869	43.7	3,187,857
"D" Seam	6,839,348	35.9	2,455,325
"E" Seam	1,969,404	68.2	1,343,133
			34,426,997
West Fork			
"A" Seam	8,015,155	75.1	6,019,381
"B" Seam	14,179,740	81.3	11,528,129
"C" Seam	5,244,371	(43.7)	2,291,790
"D" Seam	6,462,388	(35.9)	2,319,997
			22,159,297
Total Clean Coal			56,586,294

Note that the yield figures for the "C" and "D" Seams in West Fork are projected from the results in South Fork.

Overburden Ratios

The total overburden ratio for the South Fork is 3.71 cubic metres of rock per metric tonne of coal; or 9.65 metric tonnes of rock per metric tonne of coal.

In the West Fork the overburden ratio would be nearly double the figure of 5.6 cubic metres rock per metric tonne of coal that was calculated last year.

RECOMMENDATIONS

1. Some fill-in drilling is required on both the South Fork and West Fork areas; more so on the South Fork.

2. This years program of seam tracing using hand trenches was not entirely successful due to the thick overburden present in some areas. Data on seam boundaries is lacking on portions of the South Fork and the whole southern periphery of the West Fork. A limited programme of seam tracing by bulldozer is therefore recommended; and in areas sensitive to environmental damage, rotary drilling would be implemented. The program should be designed to accommodate possible requirements in the current engineering study of the area.

A proposed plan of operations has been enclosed (Fig. 19).

Respectfully submitted,

B. I. McClymont

STATEMENT OF QUALIFICATIONS

I, Bruce I. McClymont, of the City of Vancouver in the Province of British Columbia, hereby certify that:

1. I am a graduate of the University of Alberta, Edmonton, with a degree in Geology, B.Sc. (1974).
2. I have practiced my profession as a geologist for three years.
3. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
4. I have been employed by Geophysical Engineering Ltd. for two years and I have spent two field seasons on the Bullmoose property.
5. This report is based on data from work carried out by myself and other geologists and engineers who have worked on the property.

Dated this 19th day of December 1977, in the City of Vancouver in the Province of British Columbia.

B. I. McClymont, P.Geol.

ENDORSEMENT

I, Ruben S. Verzosa, a geologist of Geophysical Engineering Limited, hereby endorse the report entitled "1977 Exploration Program on the Bullmoose Property" by Bruce I. McClymont as a true account of work performed on the Bullmoose coal property of Brameda Resources Ltd. during 1977, and, for all intents and purposes as if it were my own, and, to the best of my knowledge the said report complies with rules and regulations under the Coal Act.

R. S. Verzosa

Ruben S. Verzosa, P.Eng.

December 19, 1977

JUL 1977

CLIENT: TECK CORPORATION
CORE SAMPLES
RAW ANALYSIS

DATE:

LAB. NO.	IDENTIFICATION	R.M.%	ASH%	S.%	REMARKS
9081	T-64, A1 Seam	1.0	6.8	0.46	air dried basis
			6.9	0.46	dry basis
9082	T-64 A2 Seam	1.0	7.6	0.42	air dried basis
			7.7	0.42	dry basis
9083	T-64 B1 Seam	1.0	7.5	0.22	air dried basis
			7.6	0.22	dry basis
9084	T-64 B2 Seam	0.9	17.9	0.24	air dried basis
			18.1	0.24	dry basis
9085	T-64 C Seam	1.0	24.7	0.46	air dried basis
			24.9	0.46	dry basis
9086	T-64 D Seam	1.9	33.3	0.36	air dried basis
			33.9	0.37	dry basis
9087	T-65 B1 Seam	1.1	7.8	0.27	air dried basis
			7.9	0.27	dry basis
9088	T-65 B2 Seam	1.0	21.0	0.35	air dried basis
			21.2	0.35	dry basis
9089	T-65 C Seam	1.2	24.2	0.51	air dried basis
			24.5	0.52	dry basis
9090	T-65 A1 Seam	1.1	6.6	0.41	air dried basis
			6.7	0.41	dry basis

CLIENT: TECK CORPORATION
CORE SAMPLES
RAW ANALYSIS

DATE:

LAB. NO.	IDENTIFICATION	R.M.%	ASH%	S.%	REMARKS
9091	T-65, A2 Seam	1.1	19.6	0.78	air dried basis
			19.8	0.79	dry basis
9092	T-65 D Seam	1.2	47.9	0.34	air dried basis
			48.5	0.34	dry basis.
9093	T-66, AlSeam	1.1	7.4	0.45	air dried basis
			7.5	0.46	dry basis.
9094	T-66 A2 Seam	1.0	8.1	0.41	air dried basis
			8.2	0.41	dry basis
9095	T-66 Bl Seam	1.2	6.8	0.29	air dried basis
			6.9	0.29	dry basis.
9096	T-66 B2 Seam	1.1	19.6	0.40	air dried basis
			19.8	0.40	dry basis
9097	T-66 C Seam	1.2	22.1	0.53	air dried basis
			22.4	0.54	dry basis.
9098	~~T-66 C~~ T-66 'D' Seam	1.2	40.4	0.39	air dried basis
			40.9	0.39	dry basis
9099	T-68 Al Seam	1.1	5.8	0.48	air dried basis
			5.9	0.49	dry basis
9100	T-68 A2 Seam	1.0	27.7	0.66	air dried basis
			28.0	0.67	dry basis

CLIENT: TECK CORPORATION
CORE SAMPLES
RAW ANALYSIS

DATE:

LAB. NO.	IDENTIFICATION	R.M.%	ASH%	S.%	REMARKS
9101	T-68 B1 Seam	1.2	7.2	0.29	air dried basis
			7.3	0.29	dry basis
9102	T-68 B2 Seam	1.0	19.3	0.31	air dried basis
			19.5	0.31	dry basis
9103	T-68 C Seam	1.2	30.5	0.48	air dried basis
			30.9	0.49	dry basis
9104	T-68 D Seam	1.1	20.2	0.48	air dried basis
			20.4	0.49	dry basis
9105	T-70 A1 Seam	1.2	6.6	0.44	air dried basis
			6.7	0.45	dry basis
9106	T-70 A2 Seam	1.2	8.3	0.49	air dried basis
			8.4	0.50	dry basis
9107	T-70 B1 Seam	1.2	7.0	0.30	air dried basis
			7.1	0.30	dry basis
9108	T-70 B2 Seam	1.1	16.1	0.32	air dried basis
			16.3	0.32	dry basis
9109	T-70 C Seam	1.4	35.8	0.44	air dried basis
			36.3	0.45	dry basis

CLIENT: TECK MINING GROUP LTD. DATE: July, 1977

CORE SAMPLES

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9187	T - 67 - D	1.5	46.1	0.35	air dried basis
			46.8	0.36	dry basis
9188	T - 67 - E	0.5	23.4	0.49	a.d.b.
			23.5	0.49	d.b.
9189	T - 68 - D2 19.40-20.19 20.95-21.35	1.1	66.6	0.39	a.d.b.
			67.3	0.39	d.b.
9190	T - 69 - A1	0.8	6.3	0.36	a.d.b.
			6.4	0.36	d.b.
9191	T - 69 - A2	1.0	21.3	0.63	a.d.b.
			21.5	0.64	d.b.
9192	T - 69 - B1	1.1	7.6	0.32	a.d.b.
			7.7	0.32	d.b.
9193	T - 69 - B2	1.0	23.9	0.33	a.d.b.
			24.1	0.33	d.b.
9194	T - 69 - C	1.1	37.9	0.47	a.d.b.
			38.3	0.48	d.b.
9195	T - 69 - D	1.0	11.7	0.54	a.d.b.
			11.8	0.55	d.b.
9196	T - 69 - E	0.4	17.5	0.44	a.d.b.
			17.6	0.44	d.b.
9197	T - 71 - A1	0.9	7.3	0.32	a.d.b.
			7.4	0.32	d.b.
9198	T - 71 - A2 97.85-98.08	0.8	33.5	0.73	a.d.b.
			33.8	0.74	d.b.
9199	T - 71 - A2 98.08-98.40	0.9	12.1	0.48	a.d.b.
			12.2	0.48	d.b.
9200	T - 71 - A2 98.40-98.62	0.9	16.1	0.42	a.d.b.
			16.2	0.42	d.b.
9201	T - 71 - A2 98.62-99.15	0.8	14.8	0.63	a.d.b.
			14.9	0.64	d.b.
9202	T - 71 - B	0.9	11.5	0.24	a.d.b.
			11.6	0.25	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: July, 1977

CORE SAMPLES

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9203	T - 71 - C	1.0	27.1	0.48	air dried basis
			27.4	0.48	dry basis
9204	T - 71 - D	1.1	45.4	0.43	a.d.b.
			45.9	0.43	d.b.
9205	T - 71 - E	1.2	14.2	0.54	a.d.b.
			14.4	0.55	d.b.
9206	T - 72 - A2 105.61-106.56	0.8	10.3	0.47	a.d.b.
			10.4	0.47	d.b.
9207	T - 72 - B 94.82-95.32	0.8	16.0	0.36	a.d.b.
			16.1	0.36	d.b.
9208	T - 72 - B 95.32-96.62	1.0	20.0	0.24	a.d.b.
			20.2	0.24	d.b.
9209	T - 72 - B 96.62-97.62	1.0	9.9	0.17	a.d.b.
			10.0	0.17	d.b.
9210	T - 72 - B 97.62-98.82	1.1	7.5	0.27	a.d.b.
			7.6	0.27	d.b.
9211	T - 72 - B 98.82-99.34	1.0	6.5	0.32	a.d.b.
			6.6	0.32	d.b.
9212	T - 72 - C 69.70-70.40	1.1	12.9	0.48	a.d.b.
			13.0	0.49	d.b.
9213	T - 72 - C 70.40-70.85	1.2	59.8	0.32	a.d.b.
			60.5	0.32	d.b.
9214	T - 72 - C 70.85-71.20	0.9	26.3	0.46	a.d.b.
			26.5	0.46	d.b.
9215	T - 72 - D 44.78-44.98	1.0	16.6	0.64	a.d.b.
			16.8	0.65	d.b.
9216	T - 72 - D 44.98-45.48	0.9	51.1	0.49	a.d.b.
			51.6	0.49	d.b.
9217	T - 72 - D 45.48-45.80	0.8	22.9	0.79	a.d.b.
			23.1	0.80	d.b.
9218	T - 72 - D 45.80-46.10	1.0	63.1	0.68	a.d.b.
			63.7	0.69	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: July, 1977

CORE SAMPLES

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9219	T - 72 - E 21.59-22.19	0.9	6.6	0.64	air dried basis
			6.7	0.65	dry basis
9220	T - 72 - E 22.19-22.50	0.7	34.5	0.50	a.d.b.
			34.7	0.50	d.b.
9221	T - 73 - A1	1.0	6.9	0.49	a.d.b.
			7.0	0.49	d.b.
9222	T - 73 - A2	1.1	18.8	0.64	a.d.b.
			19.0	0.65	d.b.
9223	T - 73 - B	0.9	10.7	0.27	a.d.b.
			10.8	0.27	d.b.
9224	T - 73 - C1	1.3	17.8	0.54	a.d.b.
			18.0	0.55	d.b.
9225	T - 73 - C3	1.3	77.7	0.19	a.d.b.
			78.8	0.19	d.b.
9226	T - 73 - C3	1.1	16.5	0.54	a.d.b.
			16.7	0.55	d.b.
9227	T - 73 - D	1.2	52.5	0.36	a.d.b.
			53.1	0.36	d.b.
9228	T - 73 - E	1.2	14.0	1.10	a.d.b.
			14.2	1.11	d.b.
9229	T-75 ~~T - 73 -~~ A1	1.0	6.6	0.37	a.d.b.
			6.7	0.37	d.b.
9230	T - 75 - A2	1.0	8.2	0.65	a.d.b.
			8.3	0.66	d.b.
9231	T - 75 - B	1.1	10.4	0.35	a.d.b.
			10.5	0.35	d.b.
9232	T - 75 - C	1.3	28.5	0.40	a.d.b.
			28.9	0.41	d.b.
9233	T - 75 - D1	2.7	39.8	0.40	a.d.b.
			40.9	0.41	d.b.
9234	T - 75 - D2	2.4	11.0	0.46	a.d.b.
			11.3	0.47	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: July, 1977

CORE SAMPLES

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9235	T - 75 - D3	1.1	52.2	0.29	air dried basis
			52.8	0.29	dry basis
* 9236	T - 75 - E				
	Comp. of 1,2,3&4				
9237	A - 1 (T-72)	0.8	6.1	0.33	a.d.b.
	107.62-108.07		6.1	0.33	d.b.
9238	A - 1 (T-72)	0.9	7.9	0.36	a.d.b.
	108.07-108.47		8.0	0.36	d.b.
9239	A - 1 (T-72)	0.9	6.0	0.49	a.d.b.
	108.47-109.00		6.1	0.49	d.b.

* (T - 75 - E (Lab. No. 9236) - sample 4 of the composite has not been sent to us yet)

Birtley Engineering
Subsidiary of Great West Steel Industries

CLIENT: TECK MINING GROUP LTD. DATE: July, 1977

CORE SAMPLES

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9235	T - 75 - D3	1.1	52.2	0.29	air dried basis
			52.8	0.29	dry basis
* 9236	T - 75 - E Comp. of 1,2,3&4	1.2	32.8	0.42	air dried basis
			33.2	0.43	dry basis
9237	A - 1 107.62-108.07	0.8	6.1	0.33	a.d.b.
			6.1	0.33	d.b.
9238	A - 1 108.07-108.47	0.9	7.9	0.36	a.d.b.
			8.0	0.36	d.b.
9239	A - 1 108.47-109.00	0.9	6.0	0.49	a.d.b.
			6.1	0.49	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: August, 1977

CORE SAMPLE - RAW ANALYSIS

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9255	T-76, A-1	0.9	8.8	0.33	air dried basis
			8.9	0.33	dry basis
9256	T-76, A-2	1.0	23.6	0.75	a.d.b.
			23.8	0.76	d.b.
9257	T-76, B	1.0	12.1	0.44	a.d.b.
			12.2	0.44	d.b.
9258	T-76, C	1.0	40.5	0.38	a.d.b.
			40.9	0.38	d.b.
9259	T-76, D	1.1	51.2	0.36	a.d.b.
			51.8	0.36	d.b.
9260	T-76, E	1.6	20.0	0.52	a.d.b.
			20.3	0.53	d.b.
9261	T-72,D (44.45-44.78)	1.0	78.9	0.20	a.d.b.
			79.7	0.20	d.b.
9262	T-74, A-1	1.0	7.6	0.37	a.d.b.
			7.7	0.37	d.b.
9263	T-74, A-2	0.9	9.2	0.46	a.d.b.
			9.3	0.46	d.b.
9264	T-74, B	0.9	10.8	0.26	a.d.b.
			10.9	0.26	d.b.
9265	T-74, C	1.4	54.0	0.29	a.d.b.
			54.8	0.29	d.b.
9266	T-74, D	1.0	61.6	0.34	a.d.b.
			62.2	0.34	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: August, 1977

CORE SAMPLES RAW ANALYSIS

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9267	T-78, A-1	1.0	7.2	0.30	a.d.b.
			7.3	0.30	d.b.
9268	T-78, A-2	1.0	8.3	0.48	a.d.b.
			8.4	0.48	d.b.
9269	T-78, B	1.0	10.8	0.33	a.d.b.
			10.9	0.33	d.b.
9270	T-78, C	0.9	26.1	0.54	a.d.b.
			26.3	0.54	d.b.
9271	T-78, D	1.1	63.3	0.25	a.d.b.
			64.0	0.25	d.b.
9272	T-79, A-1	1.0	10.2	0.49	a.d.b.
			10.3	0.49	d.b.
9273	T-79, A-2	0.9	14.8	0.40	a.d.b.
			14.9	0.40	d.b.
9274	T-79, B	1.0	11.2	0.25	a.d.b.
			11.3	0.25	d.b.
9275	T-80, A-1	1.0	5.6	0.39	a.d.b.
			5.7	0.39	d.b.
9276	T-80, A-2	0.9	13.9	0.46	a.d.b.
			14.0	0.46	d.b.
9277	T-80, B	1.0	12.1	0.30	a.d.b.
			12.2	0.30	d.b.
9278	T-80, C	0.9	21.5	0.52	a.d.b.
			21.7	0.52	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: August, 1977

CORE SAMPLES RAW ANALYSIS

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9279	T-81, A-1	1.0	7.2	0.58	a.d.b.
			7.3	0.59	d.b.
9280	T-81, A-2 (42.43-43.25)	0.8	9.8	0.50	a.d.b.
			9.9	0.50	d.b.
9281	T-81, B	1.1	11.4	0.31	a.d.b.
			11.5	0.31	d.b.
9282	T-81, C	1.0	27.3	0.48	a.d.b.
			27.6	0.48	d.b.
9283	T-83, A-1	0.8	7.8	0.46	a.d.b.
			7.9	0.46	d.b.
9284	T-83, A-2 (31.05-32.03	0.7	12.8	0.51	a.d.b.
			12.9	0.51	d.b.
9285	T-83, B	0.8	13.7	0.29	a.d.b.
			13.8	0.29	d.b.

Birtley Engineering
Subsidiary of Great West Steel Industries

CLIENT: TECK MINING GROUP LTD. DATE: September 27, 1977

PROJECT: CORE SAMPLES (received September 21, 1977)

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	F.S.I.	REMARKS
9382	T-67, A-1	0.8	7.1	0.39	6	air dried basis
			7.2	0.39	--	dry basis
9383	T-67, A-2	0.8	18.1	0.53	6	a.d.b.
			18.2	0.53	--	d.b.
9384	T-67, B	0.9	11.1	0.22	5 1/2	a.d.b.
			11.2	0.22	--	d.b.
9385	T-67, C-1	0.9	49.0	0.43	5	a.d.b.
			49.4	0.43	--	d.b.
9386	T-84, A	0.8	18.6	0.41	6 1/2	a.d.b.
			18.8	0.41	--	d.b.
9387	T-84, B	1.0	13.5	0.33	6 1/2	a.d.b.
			13.6	0.33	--	d.b.
9388	T-84, C	1.0	15.3	0.43	6	a.d.b.
			15.5	0.43	--	d.b.
9389	T-84, D	0.8	27.5	0.50	5 1/2	a.d.b.
			27.7	0.50	--	d.b.
9390	T-84, E	1.0	26.0	0.73	7	a.d.b.
			26.3	0.74	--	d.b.
9391	T-86, A	0.7	29.6	0.88	3 1/2	a.d.b.
			29.8	0.89	--	d.b.
9392	T-86, A	0.9	5.3	1.33	5 1/2	a.d.b.
			5.3	1.34	--	d.b.
9393	T-96, A	1.0	21.0	0.39	5	a.d.b.
			21.2	0.39	--	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: September 27, 197

PROJECT: CORE SAMPLES (received September 21, 1977)

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	F.S.I.	REMARKS
9394	T-96, B	1.0	7.7	0.88	6	a.d.b.
			7.8	0.89	--	d.b.
9395	T-96, C	1.2	17.3	0.47	3	a.d.b.
			17.5	0.48	--	d.b.
9396	T-97, A	1.0	29.1	0.49	3 1/2	a.d.b.
			29.4	0.49	--	d.b.
9397	T-97, B-1	0.9	9.0	0.33	6	a.d.b.
			9.1	0.33	--	d.b.
9398	T-97, B-2	1.0	35.7	0.41	1 1/2	a.d.b.
			36.1	0.41	--	d.b.
9399	T-98, A	1.4	20.2	0.43	1	a.d.b.
			20.5	0.44	--	d.b.
9400	C SEAM SOUTH FORK 8 A ROOF	1.4	87.6	0.34	N.A.	a.d.b.
			88.8	0.34	--	d.b.

Birtley Engineering

Subsidiary of Great West Steel Industries

CLIENT: TECK MINING GROUP LTD. DATE: August 31, 1977

PROJECT: CORE SAMPLES (Rec'd August 29, 1977)

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9317	T-88 A SPLIT	0.9	54.8	0.26	air dried basis
			55.3	0.26	dry basis
9318	T-88 A-1	0.8	7.6	0.41	a.d.b.
			7.7	0.41	d.b.
9319	T-88 A-2	0.9	12.8	0.41	a.d.b.
			12.9	0.41	d.b.
9320	T-88 B	1.2	14.2	0.29	a.d.b.
			14.4	0.29	d.b.
9321	T-89 A	0.9	19.2	0.41	a.d.b.
			19.4	0.41	d.b.
9322	T-89 B-1	0.9	15.5	0.24	a.d.b.
			15.6	0.24	d.b.
9323	T-89 C	0.9	18.3	0.37	a.d.b.
			18.5	0.37	d.b.
9324	T-89 D (34.12-35.04)	0.9	13.9	0.58	a.d.b.
			14.0	0.59	d.b.
9325	T-89 D (37.66-38.11)	0.7	30.6	0.41	a.d.b.
			30.8	0.41	d.b.
9326	T-90 A	1.3	9.5	0.52	a.d.b.
			9.6	0.53	d.b.
9327	T-90 B	1.1	14.2	0.35	a.d.b.
			14.4	0.35	d.b.
9328	T-91 A	1.0	13.6	0.47	a.d.b.
			13.7	0.47	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: August 31, 1977

PROJECT: CORE SAMPLES (rec'd August 29, 1977)

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9329	T-91 B	1.0	13.0	0.23	a.d.b.
			13.1	0.23	d.b.
9330	T-91 C	1.2	17.7	0.37	a.d.b.
			17.9	0.37	d.b.
9331	T-92 A	1.0	29.2	0.35	a.d.b.
			29.5	0.35	d.b.
9332	T-92 B	0.9	13.7	0.39	a.d.b.
			13.8	0.39	d.b.
9333	T-92 C (49.07-50.68)	1.0	23.7	0.59	a.d.b.
			23.9	0.60	d.b.
9334	T-92 D (31.02-31.96)	1.0	30.5	0.41	a.d.b.
			30.8	0.41	d.b.
9335	T-94 A	1.7	13.5	0.52	a.d.b.
			13.7	0.53	d.b.
9336	T-95 A-1	0.9	10.0	0.35	a.d.b.
			10.1	0.35	d.b.
9337	T-95 A-2	0.8	14.2	0.57	a.d.b.
			14.3	0.57	d.b.
9338	T-95 B	0.8	8.7	0.45	a.d.b.
			8.8	0.45	d.b.
9339	T-95 C-1 (51.0-51.85)	0.9	54.3	0.35	a.d.b.
			54.8	0.35	d.b.
9340	T-95 C-2 (49.93-51.0)	0.9	18.0	0.54	a.d.b.
			18.2	0.54	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: August 31, 1977

PROJECT: CORE SAMPLES (rec'd August 29, 1977)

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	REMARKS
9341	T-95 D (28.20-29.65)	0.9	26.5	0.47	a.d.b.
			26.7	0.47	d.b.

Birtley Engineering
Subsidiary of Great West Steel Industries

CLIENT: TECK MINING GROUP LTD. DATE: October 17, 1977

PROJECT: CORE SAMPLES RECEIVED SEPTEMBER 28, 1977

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	F.S.I.	REMARKS
9431	T-85, A	0.6	11.3	0.47	5	air dried basis
			11.4	0.47	---	dry basis
9432	T-87, A	0.7	19.4	0.40	3	a.d.b.
			19.5	0.40	---	d.b.
9433	T-93, A	0.6	18.3	0.55	5 1/2	a.d.b.
			18.4	0.55	---	d.b.
9434	T-95, A	0.9	71.0	0.17	1/2	a.d.b.
			71.6	0.17	---	d.b.
9435	T-82, A-1	0.7	6.4	0.41	5 1/2	a.d.b.
			6.4	0.41	---	d.b.
9436	T-99, A-1	0.7	7.0	0.42	4 1/2	a.d.b.
			7.0	0.42	---	d.b.
9437	T-81, A-2 (41.80'-42.43')	1.0	73.5	0.53	0	a.d.b.
			74.2	0.54	---	d.b.
9438	T-82, A-2	0.7	13.9	0.42	4	a.d.b.
			14.0	0.42	---	d.b.
9439	T-83, A-2 (30.90'-31.05')	0.7	79.7	0.58	0	a.d.b.
			80.3	0.58	---	d.b.
9440	T-99, A-2 (43.96'-45.02')	0.6	13.3	0.49	5	a.d.b.
			13.4	0.49	---	d.b.
9441	T-99, A-2 (43.52'-43.96')	0.8	73.6	1.67	0	a.d.b.
			74.2	1.68	---	d.b.
9442	T-82, B	0.7	11.6	0.24	4 1/2	a.d.b.
			11.7	0.24	---	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: October 17, 1977

PROJECT: CORE SAMPLES RECEIVED SEPTEMBER 28, 1977

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	F.S.I.	REMARKS
9443	T-87, B	0.7	12.9	0.28	5 1/2	air dried basis
			13.0	0.28	---	dry basis
9444	T-93, B	0.6	18.0	0.35	4 1/2	a.d.b.
			18.1	0.35	---	d.b.
9445	T-99, B	0.7	10.5	0.33	5 1/2	a.d.b.
			10.6	0.33	---	d.b.
9446	T-61, C	0.8	25.6	0.49	2	a.d.b.
			25.8	0.49	---	d.b.
9447	T-92, C (50.68'=51.22')	0.7	67.7	0.29	1	a.d.b.
			68.2	0.29	---	d.b.
9448	T-99, C-1 (1209-1216)	0.8	61.4	0.39	1	a.d.b.
			61.9	0.39	---	d.b.
9449	T-99, C-2 (1080-1209)	0.6	16.7	0.56	4	a.d.b.
			16.8	0.56	---	d.b.
9450	T-85, B	1.2	15.2	0.35	1	a.d.b.
			15.4	0.35	---	d.b.
9451	T-92, D (3446-3497)	0.7	13.7	0.70	7 1/2	a.d.b.
			13.8	0.70	---	d.b.
9452	T-92, D (3196-3241)	0.9	63.8	0.30	1	a.d.b.
			64.4	0.30	---	d.b.
9453	T-95, D (2760-2806)	0.8	40.4	0.46	5 1/2	a.d.b.
			40.7	0.46	---	d.b.
9454	T-96, D (3236-3343)	0.8	35.3	0.35	2	a.d.b.
			35.6	0.35	---	d.b.

CLIENT: TECK MINING GROUP LTD. DATE: October 17, 1977

PROJECT: CORE SAMPLES RECEIVED SEPTEMBER 28, 1977

LAB. NO.	SAMPLE IDENTIFICATION	RM.%	ASH%	S%	F.S.I.	REMARKS
9527	T-95, D (3130 - 3203)	0.6	13.9	0.66	7	air dried basis
			14.0	0.66	---	dry basis
9528	T-83, A (5111 - 5131)	0.9	60.7	0.94	1	a.d.b.
			61.2	0.95	---	d.b.
9529	T-85, A (350 - 352.2)	0.8	53.0	0.63	1	a.d.b.
			54.4	0.63	---	d.b.
9530	T-75, C (9113 - 9210)	1.1	79.7	0.16	0	a.d.b.
			80.6	0.16	---	d.b.

Birtley Engineering

Subsidiary of Great West Steel Industries

CLIENT: TECK MINING GROUP LTD.

SAMPLE: CORE SAMPLES (received June 20, 1977)

LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	REMARKS
9081	T-64 A-1	6 1/2	9101	T-68 B-1	5	a.d.b.
9082	T-64 A-2	6	9102	T-68 B-2	2 1/2	a.d.b.
9083	T-64 B-1	7	9103	T-68 C	5 1/2	a.d.b.
9084	T-64 B-2	4 1/2	9104	T-68 D	6	a.d.b.
9085	T-64 C	6 1/2	9105	T-70 A-1	4 1/2	a.d.b.
9086	T-64 D	2	9106	T-70 A-2	6 1/2	a.d.b.
9087	T-65 B-1	7 1/2	9107	T-70 B-1	8	a.d.b.
9088	T-65 B-2	3 1/2	9108	T-70 B-2	5 1/2	a.d.b.
9089	T-65 C	4 1/2	9109	T-70 C	2 1/2	a.d.b.
9090	T-65 A-1	5 1/2				
9091	T-65 A-2	6				
9092	T-65 D	2 1/2				
9093	T-66 A-1	6 1/2				
9094	T-66 A-2	6 1/2				
9095	T-66 B-1	7				
9096	T-66 B-2	2				
9097	T-66 C	4				
9098	T-66 D	4 1/2				
9099	T-68 A-1	7				
9100	T-68 A-2	4 1/2				

a.d.b. = air dried basis

CLIENT: TECK MINING GROUP LTD.

SAMPLE: CORE SAMPLES (received July 21, 1977)

LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	REMARKS
9187	T-67 D	2	9207	T-72 B (94.82-95.32)	4	a.d.b.
9188	T-67 E	6	9208	T-72 B (95.32-96.62)	1 1/2	a.d.b.
9189	T-68 D-2 (19.40-20.19) (20.95-21.35)	1	9209	T-72 B (96.62-97.62)	6 1/2	a.d.b.
9190	T-69 A-1	6 1/2	9210	T-72 B (97.62-98.82)	6	a.d.b.
9191	T-69 A-2	5	9211	T-72 B (98.82-99.34)	8 1/2	a.d.b.
9192	T-69 B-1	6	9212	T-72 C (69.70-70.40)	3 1/2	a.d.b.
9193	T-69 B-2	2	9213	T-72 C (70.40-70.85)	1/2	a.d.b.
9194	T-69 C	3 1/2	9214	T-72-C 70.85-71.20)	7	a.d.b.
9195	T-69 D	8	9215	T-72 D (44.78-44.98)	7 1/2	a.d.b.
9196	T-69 E	8	9216	T-72 D (44.98-45.48)	1 1/2	a.d.b.
9197	T-71 A-1	5 1/2	9217	T-72 D (45.48-45.80)	5	a.d.b.
9198	T-71 A-2 (97.85-98.08)	3	9218	T-72 D (45.80-46.10)	1	a.d.b.
9199	T-71 A-2 (98.08-98.40)	4 1/2	9219	T-72 E (21.59-22.19)	6	a.d.b.
9200	T-71 A-2 (98.40-98.62)	3 1/2	9220	T-72 E (22.19-22.50)	4	a.d.b.
9201	T-72 A-2 (98.62-99.15)	6 1/2	9221	T-73 A-1	7 1/2	a.d.b.
9202	T-71-B	5 1/2	9222	T-73 A-2	6	a.d.b.
9203	T-71 C	5	9223	T-73 B	5 1/2	a.d.b.
9204	T-71 D	3	9224	T-73 C-1	8 1/2	a.d.b.
9205	T-71 E	7 1/2	9225	T-73 C-2	N.A.	
9206	T-72 A-2 (105.61-106.56)	7	9226	T-73 C-3	5	a.d.b.

a.d.b. = air dried basis

CLIENT: TECK MINING GROUP LTD. September 26, 1977

SAMPLE: CORE SAMPLES RECEIVED July 21, 1977

LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	REMARKS
9227	T-73 D	2				a.d.b.
9228	T-73 E	7 1/2				a.d.b.
9229	T-75 A-1	5				a.d.b.
9230	T-75 A-2	7				a.d.b.
9231	T-75 B	5				a.d.b.
9232	T-75 C	2				a.d.b.
9233	T-75 D-1	N.A.				a.d.b.
9234	T-75 D-2	1 1/2				a.d.b.
9235	T-75 D-3	1				a.d.b.
9236	T-75 E Comp. 1,2,3,4					a.d.b.
9237	T-72 A-1 (107.62-108.07)	5 1/2				a.d.b.
9238	T-72 A-1 (108.07-108.47)	5 1/2				a.d.b.
9239	T-72 A-1 (108.47-109.00)	7 1/2				a.d.b.

a.d.b. = air dried basis

CLIENT: TECK MINING GROUP LTD. September 26, 1977

SAMPLE: CORE SAMPLES (received July 29, 1977)

LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	REMARKS
9255	T-76 A-1	5	9275	T-80 A-1	6	a.d.b.
9256	T-76 A-2	5 1/2	9276	T-80 A-2	7 1/2	a.d.b.
9257	T-76 B	5	9277	T-80 B	6	a.d.b.
9258	T-76 C	3	9278	T-80 C	1 1/2	a.d.b.
9259	T-76 D	3	9279	T-81 A-1	6	a.d.b.
9260	T-76 E	6	9280	T-81 A-2 (42.43-43.25)	6 1/2	a.d.b.
9261	T-72 D (44.45-44.78)	0	9281	T-81 B	5 1/2	a.d.b.
9262	T-74 A-1	6	9282	T-81 C	3 1/2	a.d.b.
9263	T-74 A-2	5 1/2	9283	T-83 A-1	6	a.d.b.
9264	T-74 B	6	9284	T-83 A-2 (31.05-32.03)	6	a.d.b.
9265	T-74 C	1/2	9285	T-83 B	5 1/2	a.d.b.
9266	T-74 D	1				
9267	T-78 A-1	6				
9268	T-78 A-2	6 1/2				
9269	T-78 B	5 1/2				
9270	T-78 C	2				
9271	T-78 D	1				
9272	T-79 A-1	6 1/2				
9273	T-79 A-2	4				
9274	T-79 B	5				

a.d.b. = air dried basis

CLIENT: TECK MINING GROUP LTD. September 26, 1977

SAMPLE: CORE SAMPLES (received July 29, 1977)

LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	REMARKS
9255	T-76 A-1	5	9275	T-80 A-1	6	a.d.b.
9256	T-76 A-2	5 1/2	9276	T-80 A-2	7 1/2	a.d.b.
9257	T-76 B	5	9277	T-80 B	6	a.d.b.
9258	T-76 C	3	9278	T-80 C	1 1/2	a.d.b.
9259	T-76 D	3	9279	T-81 A-1	6	a.d.b.
9260	T-76 E	6	9280	T-81 A-2 (42.43-43.25)	6 1/2	a.d.b.
9261	T-72 D (44.45-44.78)	0	9281	T-81 B	5 1/2	a.d.b.
9262	T-74 A-1	6	9282	T-81 C	3 1/2	a.d.b.
9263	T-74 A-2	5 1/2	9283	T-83 A-1	6	a.d.b.
9264	T-74 B	6	9284	T-83 A-2 (31.05-32.03)	6	a.d.b.
9265	T-74 C	1/2	9285	T-83 B	5 1/2	a.d.b.
9266	T-74 D	1				
9267	T-78 A-1	6				
9268	T-78 A-2	6 1/2				
9269	T-78 B	5 1/2				
9270	T-78 C	2				
9271	T-78 D	1				
9272	T-79 A-1	6 1/2				
9273	T-79 A-2	4				
9274	T-79 B	5				

a.d.b. = air dried basis

CLIENT: TECK MINING GROUP LTD. September 26, 1977

SAMPLE: CORE SAMPLES (received August 29, 1977)

LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	LAB.NO.	SAMPLE IDENTIFICATION	F.S.I.	REMARKS
9317	T-88 A SPLIT	1/2	9337	T-95 A-2	6	a.d.b.
9318	T-88 A-1	6 1/2	9338	T-95 B	6 1/2	a.d.b.
9319	T-88 A-2	5 1/2	9339	T-95 C-1 (51.0-51.85)	3	a.d.b.
9320	T-88 B	3	9340	T-95 C-2 (49.93-51.0	5 1/2	a.d.b.
9321	T-89 A	5 1/2	9341	T-95 D (28.20-29.65)	6	a.d.b.
9322	T-89 B-1	4 1/2				
9323	T-89 C	4 1/2				
9324	T-89 D (34.12-35.04)	8				
9325	T-89 D (37.66-38.11)	2				
9326	T-90 A	3				
9327	T-90 B	3 1/2				
9328	T-91 A	7 1/2				
9329	T-91 B	5 1/2				
9330	T-91 C	5 1/2				
9331	T-92 A	5				
9332	T-92 B	5 1/2				
9333	T-92 C (49.07-50.68)	4 1/2				
9334	T-92 D (31.02-31.96)	4				
9335	T-94 A	1				
9336	T-95 A-1	7				

a.d.b. = air dried basis

CLIENT: TECK MINING GROUP LTD.

PROJECT: S.G. (BOTTLE METHOD) ON HEAD RAW SAMPLES October 12, 1977

LAB. NO.	ADIT NO.	SEAM		S.G.	
9133	2	C South Fork		1.46	air dried basis
9138	3	E South Fork		1.48	a.d.b.
9241	4	D South Fork		1.66	a.d.b.
9248	1	B South Fork		1.36	a.d.b.
9296	5	A (A-1 + A-2) South Fork		1.50	a.d.b.
9298	5	A (A-1 + A-2 + A SPLIT) South Fork		1.58	a.d.b.
9348	6	A West Fork		1.40	a.d.b.
9378		B West Fork		1.38	a.d.b.
			ASH%		
9540	5	A (A - SPLIT ROCK)	91.5	2.53	a.d.b.

CLIENT: TECK MINING GROUP LTD.

PROJECT: SOUTH FORK SAMPLES FOR PROXIMATE
(received September 28, 1977)

DATE: October 7, 1977

LAB.NO.	MOISTURE	ASH%	VOL%	FC.%	CALC. FACTORS
9519	1.0	56.5	14.1	28.4	air dried basis
A-2 Upper		57.1	14.2	28.7	dry basis
9520	0.5	13.9	22.4	63.2	a.d.b.
A-2 Lower		14.0	22.5	63.5	d.b.
9521	0.6	17.8	20.6	61.0	a.d.b.
A-1 Channel		17.9	20.7	61.4	d.b.

WEST FORK

SOUTH FORK

3017 3018 3019 3028 3020 3021 3022 3033 3023 3038 3039 3024 3043 3044 3048 3049

LEGEND

- DIAMOND DRILL HOLES previous programmes
- DIAMOND DRILL HOLES 1977 programme
- ADIT
- ACCESS ROADS previous programmes
- ACCESS ROADS 1977 programme
- BRIDGE

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FIG. 3

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

PR - BULLMOOSE 77(2) BA

BULLMOOSE PROJECT

DRILL HOLE & ADIT LOCATION

DEC. 1977

0 100 200 400 600 800 M
SCALE

595000

596000

6110000

6109000

6108000

6107000

6106000

55° 07' 30"

55° 06' 00"

121° 30' 00"

121° 29' 30"

T-14 TC-1288.96 GL-1288.84

T-03 TC-1378.74 GL-1378.36

T-42 TC-1404.36 GL-1403.99

T-30 TC-1422.50 GL-1421.87

T-43 TC-1421.06 GL-1420.70

T-59 TC-1468.08 GL-1467.72

T-65 TC-1466.96 GL-1466.94

T-64 TC-1459.94 GL-1459.33

T-82 TC-1437.98 GL-1437.15

T-52 TC-1513.34 GL-1512.67

T-54 TC-1481.71 GL-1481.22

T-77 TC-1490.37 GL-1489.98

T-55 TC-1550.49 GL-1549.96

T-53 TC-1563.65 GL-1563.19

T-68 TC-1525.71 GL-1525.39

T-80 TC-1490.07 GL-1489.64

T-70 TC-1516.72 GL-1516.32

T-58 TC-1602.23 GL-1601.71

T-56 TC-1616.89 GL-1616.35

T-71 TC-1606.13 GL-1605.70

T-72 TC-1610.75 GL-1610.30

T-79 TC-1542.34

T-73 TC-1676.24 GL-1675.99

T-74 TC-1620.16 GL-1619.58

T-75 TC-1672.44 GL-1672.94

T-35 TC-1736.46 GL-1735.80

T-76 TC-1685.16 GL-1684.71

T-78 TC-1643.71 GL-1643.06

Floor A Seam 1458.37

Roof A Seam 1461.30

Roof B Seam 1475.619

True North

Grid North

10° 14' 15"

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A

PR-BULLMOOSE 77 (2) FIG. 4

TECK CORPORATION LTD.

SOUTH FORK AREA

SCALE: 1:5000

REVISIONS

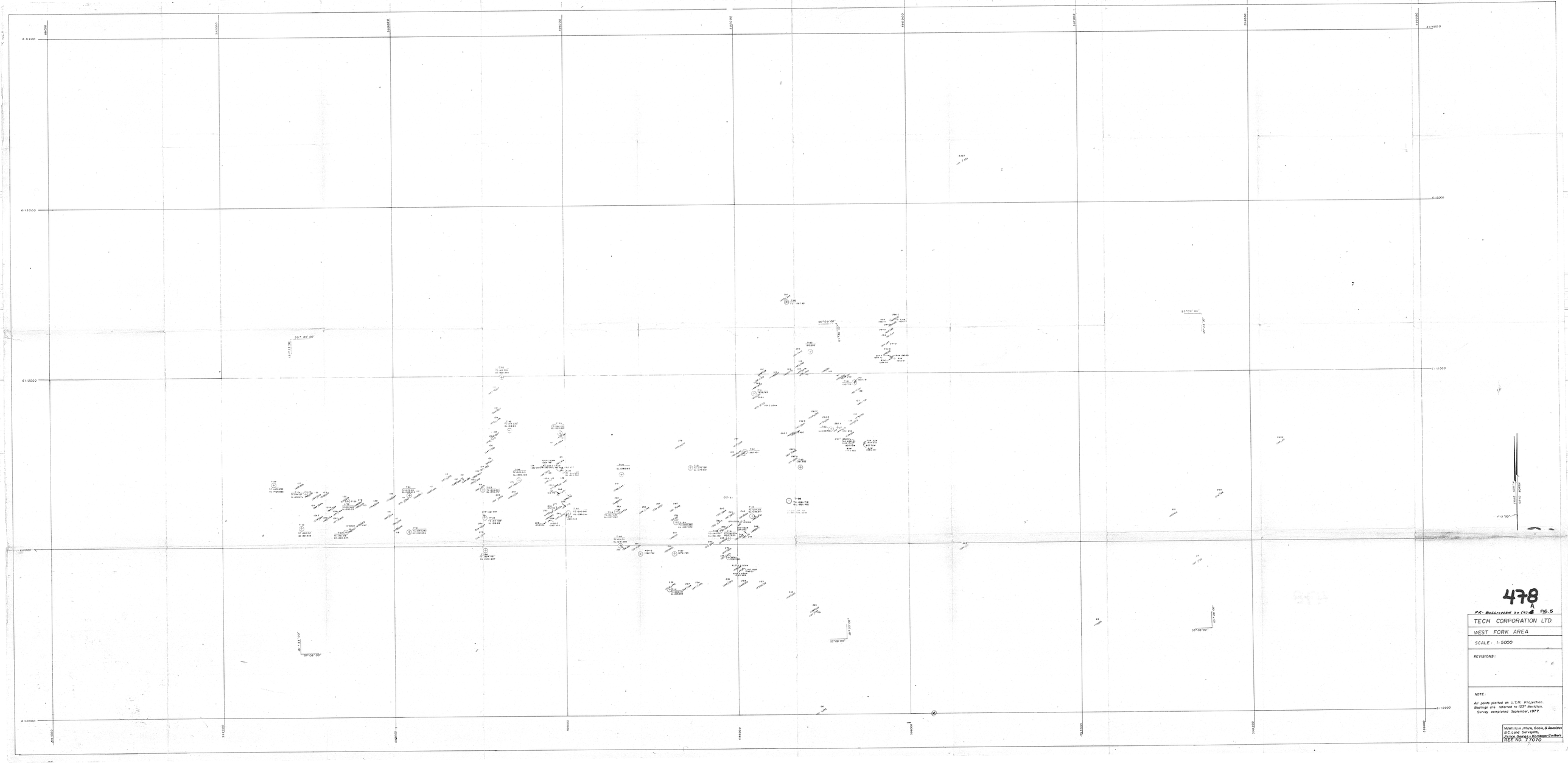
NOTE:

- All points plotted on U.T.M. Projection.
- Bearings are referred to 123° Meridian.

Survey completed September, 1977.

McWilliam, Whyte, Goble, & Assoc., B.C. Land Surveyors, Prince George - Kamloops - Smithers

REF. NO. 77070



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RE: BOUNDARY TO CL 18 FIG. 5

TECH CORPORATION LTD.

WEST FORK AREA

SCALE : 1: 5000

REVISIONS :

NOTE :

All points plotted on U.T.M. Projection.
Bearings are referred to 123° Meridian.
Survey completed September, 1977.

McMillan-Wyllie, Gibbs, & Associates
B.C. Land Surveyors,
Prince George - Penticton - Smithers
REF NO. 77070

121° 45'

121° 30'

55° 15'

SUKUNKA RIVER

SKEETER CREEK

CHAMBERLAIN CREEK

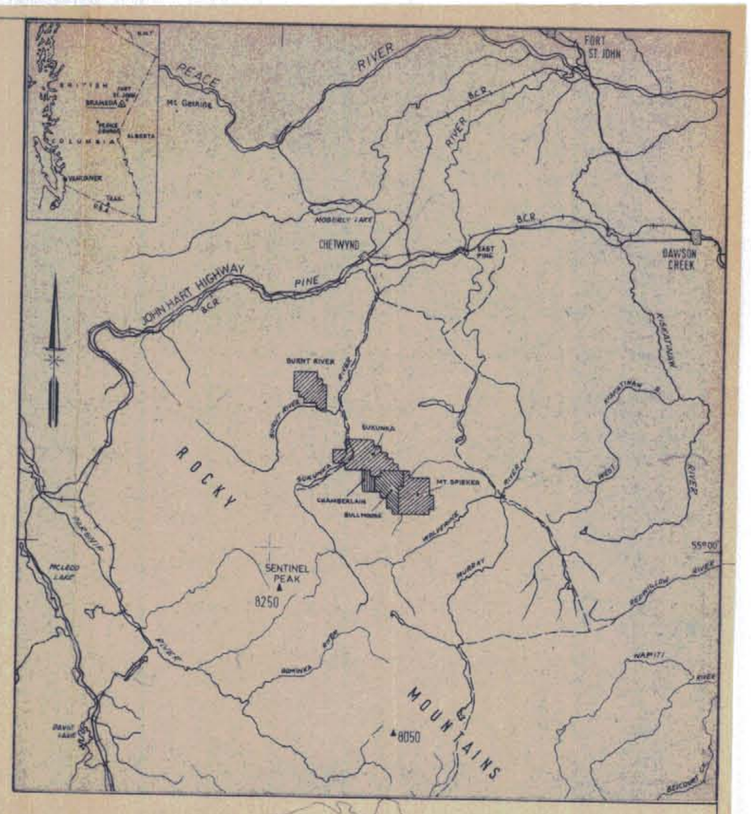
BULLMOOSE CREEK

SOUTH FORK

WEST FORK

Mount Chamberlain

Bullmoose Mountain



LEGEND

	FORMATION		DOMINANT LITHOLOGY
	hs	HASLER	SHALE, MUDSTONE
COMMOTION	cobc	BOULDER CREEK MEMBER	SANDSTONE, CONGLOMERATE
COMMOTION	coh	HULCROSS MEMBER	SHALE
COMMOTION	cog	GATES MEMBER	SANDSTONE, CONGLOMERATE
COMMOTION	cos	SUKUNKA MEMBER	SANDSTONE, SHALE
	mb	MOOSEBAR	MUDSTONE
GETHING	geu	UPPER SEQUENCE	SANDSTONE, SHALE, COAL
GETHING	gel	LOWER SEQUENCE	SANDSTONE, SHALE, CONGLOMERATE, COAL
GETHING (Undiff.)			
	cd	CADOMIN	CONGLOMERATE, SANDSTONE
	ni	NIKANASSIN ?	SANDSTONE, SHALE

- BEDDING, (FLAT, INCLINED, VERTICAL)
- GEOLOGICAL CONTACT
- THRUST FAULT
- ANTICLINE
- SYNCLINE, SHOWING DIRECTION OF PLUNGE
- PROPERTY BOUNDARY

BASE MAP CONSTRUCTED FROM NTS 93P/4E AND 93P/5W

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PR-BULLMOOSE 77 (2) A

TECK CORPORATION LIMITED

VANCOUVER, B.C.

GEOLOGY OF THE SUKUNKA AND BULLMOOSE COAL LICENSES OF BRAMEDA RESOURCES LTD.

SUKUNKA RIVER AREA, B.C.

LIARD M.D., B.C.

Compiled: R.S. Verzosa

DRAWN: R.S.V	DATE: DEC. 1976	REVISED:	DRAWING No. FIG. 6

SCALE 1:50000

T-14
WDH-3
WDH-13
T-41
WDH-4
'A' SEAM
'B' SEAM
T-83
'C' SEAM
T-99
WDH-5
T-42
T-30
T-43
T-44
WDH-14
WDH-7
'D' SEAM
WDH-6
T-81
T-59
T-65
T-64
T-82
T-52
'E' SEAM
T-45
T-47
T-29
T-68
T-80
T-66
T-67
T-77
T-54
T-55
T-53
T-27
T-69
T-70
T-58
T-56
T-71
T-72
T-79
T-57
T-28
T-73
T-74
T-75
T-76
T-78
BULLMOOSE CREEK
Cog
Cos
109 + 300
109 + 000
108 + 700
108 + 400
108 + 100
107 + 800
107 + 500
107 + 200
106 + 900
95 + 700
96 + 000
96 + 300
96 + 600
96 + 900
6 109 000
6 108 000
6 107 000
6 106 000
595 000
596 000
597 000
True NORTH
Grid NORTH
1°14'15"

LEGEND

COMMOTION FORMATION

Cog GATES MEMBER

Cos SUKUNKA MEMBER

- Dip & Strike
- Seam trace on surface
- Geological Contact
- x Seam Outcrop
- ⊙ Diamond Drill Hole
- Fault
- ⊕ Horizontal bedding

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PR-BULLMOOSE 77(2)(B)(A)

EXHIBIT 7

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA
SOUTH FORK AREA

SUBJECT
GEOLOGY

#13

Drawing No

	DSN	DAY	MO	YR
	DR			
	CH			
	APP			

0 50 100 200 300 400 M

SCALE

592 000
593 000
594 000
595 000
596 000
6113 000
6112 000
6111 000
6110 000
True NORTH
Grid NORTH
1°13'00"
152 Meters to floor of 'A' SEAM
'E' SEAM
'D' SEAM
'C' SEAM
'B' SEAM
'A' SEAM
T-96
T-92
T-95
T-93
T-22
T-35
T-21
T-32
T-63
T-62
T-61
T-60
T-86
T-11
T-89
T-26
T-25
T-84
T-23
T-36
T-90
T-91
T-94
T-85
T-34
T-31
T-98
T-33
T-24
T-97
T-88
WDH-2
T-87
T-20
1
2
3
4
5
6
7
8
9
10

LEGEND

- Dip & Strike
- Seam trace on surface
- x Seam Outcrop
- ○ Diamond Drill Hole
- Fault
- ⊕ Horizontal bedding
- Anticline

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FIG. 8

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED
PR-BULLMOOSE 77 (2) #A
BULLMOOSE PROJECT
AREA
WEST FORK AREA
SUBJECT
GEOLOGY
Drawing No.
DSN DAY MO. YR.
DR
CH
APP.
0 50 100 200 300 400 M.
SCALE

T-14

WDH-3
WDH-13 2.60
T-41 2.60
WDH-4
T-83 2.60
T-99 3.08
WDH-5 2.90
T-42 2.50
T-30 2.70
T-43 2.60
T-44 2.50
WDH-14
WDH-7
WDH-6
T-81 2.75
T-59 2.40
T-65 2.60
T-64 2.44
T-82 2.32
T-52 2.30
T-29 2.30
I-45 2.4
T-47 2.20
T-68 2.48
T-80 2.41
T-77
T-54 2.7
T-66 2.58
T-67 2.67
T-55 2.67
T-53 2.58
T-27 2.40
T-69 2.56
T-70 2.45
T-58 2.46
T-71 2.74
T-72 2.62
T-79 2.72
T-56 2.73
T-57 2.43
T-28 2.40
T-73 2.58
T-74 2.64
T-75 2.55
T-76 2.58
T-78 2.48

2.75 2.8 2.9 2.7 2.6 2.5 2.4 2.3 2.2 2.1 2.0

LABEL A

BULLMOOSE CREEK

SURFACE TRACE OF "A" SEAM

True NORTH
Grid NORTH
1°14'15"

6 109 000
6 108 000
6 107 000
6 106 000
595 000
596 000
597 000

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A
PR-BULLMOOSE 77(2)B FIG. 9

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA
SOUTH FORK AREA

SUBJECT
ISOPACH "A" SEAM

Drawing No.

	DAY	MO	YR
DSN			
DR			
CH			
APP			

0 50 100 200 300 400 M
SCALE

T-14

WDH-4

4.10 WDH-3

WDH-13 4.30

T-41 4.38

T-83 4.47

4.75

T-99 4.88

WDH-5 4.38

6 109 000

T-42 5.08

T-30 4.97

T-43 4.66

T-44 4.77

WDH-14

WDH-7

4.75

WDH-6

T-81 4.56

T-59 4.69

T-65 4.35

T-64 4.61

T-82 4.69

T-52 4.49

4.50 T-29

T-45 4.38

4.48 4.5 T-47

T-68 4.44

T-80 4.47

5.27 T-54

T-77

T-66

T-67 4.63

6 108 000

4.5

T-55 5.14

T-53 5.0

T-27 5.98

T-69 4.78

T-70 4.52

T-71 5.10

T-58 4.73

T-56 5.26

5.0

T-72 4.88

4.73 T-79

5.0

5.5

T-57 4.56

T-28 4.61

T-73 4.88

T-74 5.88

4.75

5.0

T-75 5.23

T-76 4.53

T-78 4.90

5.0

4.75

6 107 000

SURFACE TRACE OF "B" SEAM

True NORTH

Grid NORTH

1°14'15"

BULLMOOSE CREEK

595 000

596 000

597 000

6 106 000

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AR-BULLMOOSE 77(2)A FIG. 9a

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA
SOUTH FORK AREA

SUBJECT
ISOPACH "B" SEAM

Drawing No

	DAY	MO	YR.
DSN			
DR			
CH			
APP			

0 50 100 200 300 400 M.

SCALE

T-14

WDH-3

WDH-13

T-41

WDH-4

T-83

T-99
1.96

WDH-5

6 109 000

T-42

T-30
1.90

T-43
1.80

T-44

WDH-14

WDH-7

WDH-6

T-81
1.88

T-59
1.80

T-65
1.74

T-64
.64

T-82

T-52
1.90

1.90

T-29

T-45
1.60

T-47

1.60

T-68
1.78

T-80

T-77

T-54

T-66
1.66

T-67

1.70

6 108 000

1.80

T-55
2.0

T-53
1.70

T-27
1.70

T-69
1.90

T-70

1.90

T-58
1.60

T-71
1.73

T-56
1.80

T-72
1.78

T-79

1.70

1.60

T-57
1.57

T-28
1.57

T-73
1.83

T-74
1.60

6 107 000

1.70

1.80

1.90

T-75
1.41

T-76
2.07

T-78
1.63

2.0

1.90

1.80

1.70

SURFACE TRACE OF "C" SEAM

6 106 000

595 000

596 000

597 000

True NORTH

Grid NORTH

10°14'15"

BULLMOOSE CREEK

6 109 000

6 108 000

6 107 000

478

A

PR-BULLMOOSE 77(2) FIG. 9b

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA
SOUTH FORK AREA

SUBJECT
ISOPACH "C" SEAM

Drawing No		DAY	MO	YR
	DSN			
	DR			
	CH			
	APP			

0 50 100 200 300 400 M.

SCALE

T-14
WDH-3
WDH-13
T-41
WDH-4
T-83
T-99
WDH-5
T-42
T-30
T-43
T-44
WDH-14
WDH-7
6 109 000
6 109 000
True NORTH
Grid NORTH
1°14'15"
WDH-6
T-81
T-59
2.20
T-65
2.09
T-64
1.86
T-82
T-52
2.10
T-45
1.50
T-47
T-29
1.90
T-68
1.95
T-80
T-77
T-54
T-66
2.06
T-67
1.98
6 108 000
6 108 000
BULLMOOSE CREEK
T-55
T-53
2.0
T-27
2.10
T-69
1.62
T-70
T-58
2.07
T-71
2.10
T-56
T-72
1.56
T-79
T-57
2.33
T-28
2.0
T-73
1.84
T-74
1.86
6 107 000
6 107 000
T-75
1.95
T-76
1.75
T-78
2.04
SURFACE TRACE OF "D" SEAM
6 106 000
595 000
596 000
597 000

478

A

PR-BULLMOOSE 77 (2) FIG. 9c

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA
SOUTH FORK AREA

SUBJECT
ISOPACH "D" SEAM

Drawing No		DAY	MO	YR
	DSN			
	DR			
	CH			
	APP			

0 50 100 200 300 400 M
SCALE

T-14
WDH-3
WDH-13
T-41
WDH-4
T-83
T-99
WDH-5
T-42
T-30
T-43
T-44
WDH-14
WDH-7
WDH-6
T-81
T-59
T-65
T-64
T-82
T-52
1.10
T-45
T-47
1.30
T-29
T-68
T-80
T-77
T-54
T-66
T-67
1.32
T-55
T-53
T-27
1.10
T-69
1.32
T-70
T-58
T-71
1.14
T-56
T-72
1.22
T-79
T-57
T-28
1.18
T-73
1.24
T-74
T-75
1.46
T-76
1.40
T-78
1.10
1.20
1.30
1.40
SURFACE TRACE OF "E" SEAM
6 109 000
6 108 000
6 107 000
6 106 000
595 000
596 000
597 000
True NORTH
Grid NORTH
1°14'15"
BULLMOOSE CREEK

478
A
PR-BULLMOOSE 77(2) FIG. 9d

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA
SOUTH FORK AREA

SUBJECT
ISOPACH "E" SEAM

Drawing No.

	DSN	DAY	MO	YR
	DR			
	CH			
	APP			

0 50 100 200 300 400 M.
SCALE

592 000 | 593 000 | 594 000 | 595 000 | 596 000

6 113 000 | 6 112 000 | 6 111 000 | 6 110 000

True NORTH
Grid NORTH
1°13'00"

152 meter line to bottom of "A" seam

SURFACE TRACE OF "A" SEAM

T-89 1.82 | T-26 1.80 | T-25 1.70 | T-84 1.82 | T-23 1.90 | T-93 1.64 | T-22 1.80 | T-35 1.80 | T-21 1.72 | T-63 | T-86 1.12 | T-60 1.30 | T-61 1.40 | T-62 1.60 | T-11 1.50 | T-32 1.58 | T-31 2.00 | T-98 1.70 | T-33 2.30 | T-34 1.80 | T-24 1.80 | T-85 1.84 | T-36 1.70 | T-56 1.54 | T-92 1.84 | T-95 1.54 | T-90 2.28 | T-37 1.80 | T-91 2.25 | T-94 | T-97 2.20 | T-88 2.06 | WDH-2 2.60 | T-87 2.18 | WDH-1 2.60 | T-120

measured drill hole accuracy not here

measured drill hole accuracy not here

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PR-BULLMOOSE 77(2)-FIG. 10

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA: WEST FORK AREA

SUBJECT: ISOPACH "A" SEAM

Drawing No.

	DSN.	DAY	MO.	YR.
	DR.			
	CHK.			
	APP.			

0 50 100 200 300 400 M
SCALE

592 000
593 000
594 000
595 000
596 000
6 113 000
6 112 000
6 111 000
6 110 000

True NORTH
Grid NORTH
10°13' 00"

152 meter line to bottom of "A" seam

SURFACE TRACE OF "B" SEAM

T-89 4.56
T-26 4.20
T-25 3.90
T-90 4.48
T-37 4.00
T-91 4.16
T-84 3.49
T-23 3.80
T-36 4.00
T-94
T-93 4.08
T-92 3.36
T-95 2.82
T-96 2.32
T-22 4.30
T-85 5.12
T-35 3.60
T-34 4.00
T-88 4.55
WDH-2
T-87 4.32
T-24 3.80
T-21 3.58
T-31 3.80
T-33 3.80
T-97 4.56
WDH-1
T-98
T-86 1.72
T-60 1.70
T-61 2.10
T-11 2.70
T-62 3.10
T-32 2.09
T-63
T-12

Block I
Block II

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PR-BULLMOOSE 77 (2) Fig. 10a

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA
WEST FORK AREA

SUBJECT
ISOPACH "B" SEAM

Drawing No.

	DSN	DAY	MO	YR
	DR			
	CH			
	APP			

0 50 100 200 300 400 M
SCALE

592 000 | 593 000 | 594 000 | 595 000 | 596 000

6 113 000

6 112 000

6 111 000

6 110 000

True NORTH
Grid NORTH
1°13'00"

T-96 2.13
T-92 2.20
T-95 1.78
T-89 2.01
T-26 1.70
T-25 1.60
T-84 1.57
T-93
T-23 2.80
T-36 1.90
T-90
T-37
T-91 2.20
T-94
T-22 2.0
T-35 2.70
T-85
T-34 1.80
T-24 1.70
T-88
WDH-2
T-87
WDH-1
T-12
T-86
T-60
T-61
T-1 2.70
T-62
T-32 1.50
T-63
T-31 2.0
T-98
T-33
T-97

152 meter line to bottom of "A" seam

SURFACE TRACE OF "C" SEAM

Block I
Block II
Block III

478 A

PR-BULLMOOSE 77 (2) FIG. 10b

	TECK CORPORATION LIMITED BRAMEDA RESOURCES LIMITED
	BULLMOOSE PROJECT
AREA	WEST FORK AREA
SUBJECT	ISOPACH "C" SEAM
Drawing No.	DSN, DR, CH, APP — DAY, MO., YR.
SCALE	0 50 100 200 300 400 M.

592 000 | 593 000 | 594 000 | 595 000 | 596 000

6 113 000

6 112 000

6 111 000

6 110 000

True NORTH
Grid NORTH
19°13'00"

T-96 3.10
T-92 3.08
3.0 T-95
T-22 2.70
T-35 2.80
T-21 2.98
T-32 2.78
T-31 2.50
T-11
T-86
T-60
T-61
T-62
T-63
T-98
T-33
T-24
T-97
T-85
T-34
T-88
WDH-2
T-87
WDH-1
T-12
T-89 2.35
T-26 2.40
T-25 2.40
T-90
T-37
T-84 2.66
T-91
T-93
T-94
T-36
T-23 2.60

3.00
2.90
2.80
2.70
2.60
2.50
2.40

Block I
Block II
Block III

152 meter line to bottom of "A" seam

SURFACE TRACE OF "D" SEAM

478 A
AR-BULLMOOSE 77(2) FIG. 10C

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA
WEST FORK AREA

SUBJECT
ISOPACH "D" SEAM

Drawing No

	DSN	DAY	MO.	YR.
	DR			
	CH			
	APP			

0 50 100 200 300 400 M
SCALE

T-14

WDH-3
WDH-13 1320.68
T-41 1331.09
WDH-4 1334.84
1330
T-83 1343.78
1340
1350
T-99 1351.95
WDH-5 1358.43
1360
T-42 1370.96
T-30
T-43 1364.56
T-44 1364.8
WDH-14
WDH-7
1370
1380
1390
1400
WDH-6 1401.60
T-81 1404.32
T-59 1405.08
T-65 1402.12
T-64 1402.6
T-82 1401
1410
1420
T-52 1426.14
T-45 1426.96
1420.85
T-47
1430
1434.29
T-29
1440
T-68 1447.65
T-80 1444.93
T-77
T-54
T-66 1448.44
T-67 1447.83
1450
1460
1470
T-55 1502.55
T-53 1485.45
T-27 1486.20
T-69 1485.68
T-70 1467.92
1480
1490
1500
T-58 1525.25
T-71 1505.63
1510
T-56 1507.49
T-72 1508.27
T-79 1504.34
1520
1530
1540
1550
1560
1570
T-73 1640.32
T-74 1534.38
T-57 1603.09
T-28 1564.15
1580
1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700
1720
1740
1760
1780
1800
T-75 1630.42
T-76 1584.70
T-78 1570.47

6 109 000
6 108 000
6 107 000
6 106 000
595 000
596 000
597 000

TRUE NORTH
19 14 15

BULLMOOSE CREEK

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CONTOUR INTERVAL — 10 meters

A

PR-BULLMOOSE 7x2 FIG. 11

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA SOUTH FORK AREA

SUBJECT STRUCTURE CONTOUR OF THE 'A' SEAM FLOOR

Drawing No.

	DSN.	DAY	MO.	YR.
	DR.			
	CH.			
	APP.			

0 50 100 200 300 400 M.
SCALE

592 000 593 000 594 000 595 000 596 000

6 113 000

6 112 000

6 111 000

6 110 000

True NORTH
Grid NORTH
10°13'00"

BLOCK I

BLOCK II

BLOCK III

T-96 1232.7
T-92 1237.0
T-95 1233.8
T-89 1293.0
T-26 1307.3
T-25 1304.3
T-84 1277.2
T-23 1251.1
T-93 1247.5
T-22 1244.0
T-35 1232.4
T-36 1262.3
T-85 1263.4
T-34 1247.0
T-90 1327.3
T-37 1322.42
T-91 1296.3
T-94 1281.5
T-88 1252.4
T-24 1243.3
T-97 1246.9
WDH-2 1246.8
T-87 1249.1
WDH-1 1258.9
T-120
T-86 1322.5
T-60 1449.3
T-61 1415.18
T-11 1356.1
T-62
T-32 1282.5
T-21 1274.9
T-63 1250.0
T-31 1261.2
T-98 1245.2
T-33 1260.2

1240 1250 1260 1270 1280 1290 1300 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430 1440 1450 1460

CONTOUR INTERVAL – 10 metres

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MR-BULLMOOSE 77(E)12

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

AREA WEST FORK AREA

SUBJECT STRUCTURE CONTOUR OF THE 'A' SEAM FLOOR

Drawing No

	DSN	DAY	MO	YR
	DR			
	CH			
	APP			

0 50 100 200 300 400 M
SCALE

595 000

596 000

597 000

6 109 000

6 108 000

6 107 000

6 106 000

True NORTH

Grid NORTH

10°14'15"

WDH-3

WDH-4

WDH-5

WDH-6

WDH-7

WDH-11

T-14

T-83

T-99

T-42

T-43

T-44

T-81

T-59

T-65

T-82

T-52

T-45

T-47

T-54

T-66

T-57

T-68

T-80

T-77

T-55

T-70

T-58

T-56

T-71

T-72

T-79

T-57

T-73

T-74

T-75

T-78

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FIG. 13

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

RR-BULLMOOSE 77 (2) 88 A

BULLMOOSE PROJECT

AREA
SOUTH FORK AREA

SUBJECT
TOPOGRAPHIC MAP

Drawing No.

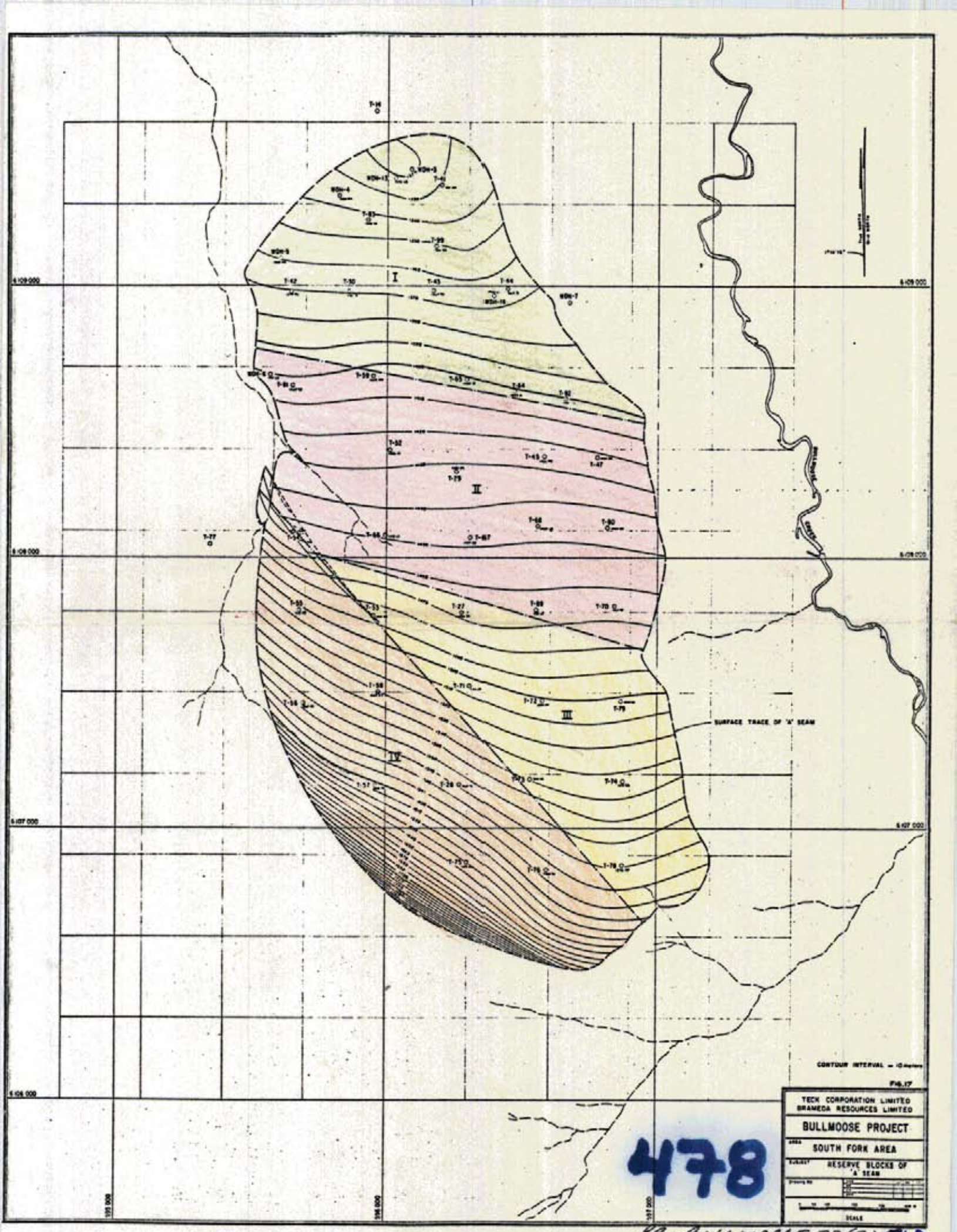
	DSN.	DAY	MO.	YR.
	DR.			
	CH.			
	APP.			

0 50 100 200 300 400 M.

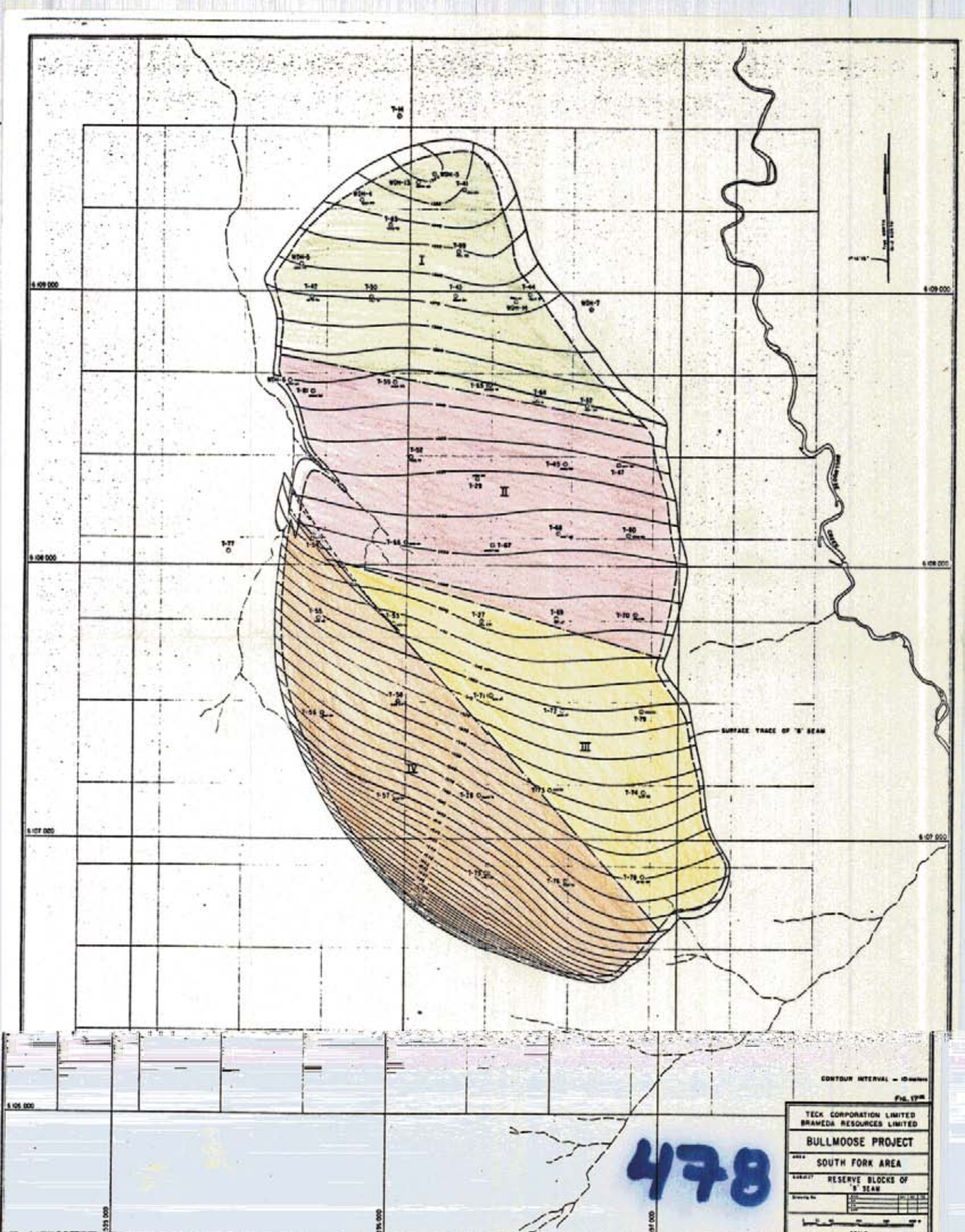
SCALE

592 000
593 000
594 000
595 000
596 000
6 113 000
6 112 000
6 111 000
6 110 000
True NORTH
Grid NORTH
1°13'00"
T-96
T-92
T-95
T-93
T-89
T-26
T-25
T-84
T-23
T-22
T-35
T-21
T-32
T-63
T-62
T-61
T-60
T-86
T-10
T-14
T-85
T-36
T-34
T-31
T-98
T-90
T-37
T-91
T-24
T-33
T-97
T-94
T-88
WDH-2
T-87
WDH-1
T-120
478
FIG. 14

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED
PR-BULLMOOSE 77 (2) #A
BULLMOOSE PROJECT
AREA
WEST FORK AREA
SUBJECT
TOPOGRAPHIC MAP #13
Drawing No.
DSN. DAY MO. YR.
DR.
CH.
APP.
0 50 100 200 300 400 M.
SCALE



PR-BULLMOOSE 77(2)



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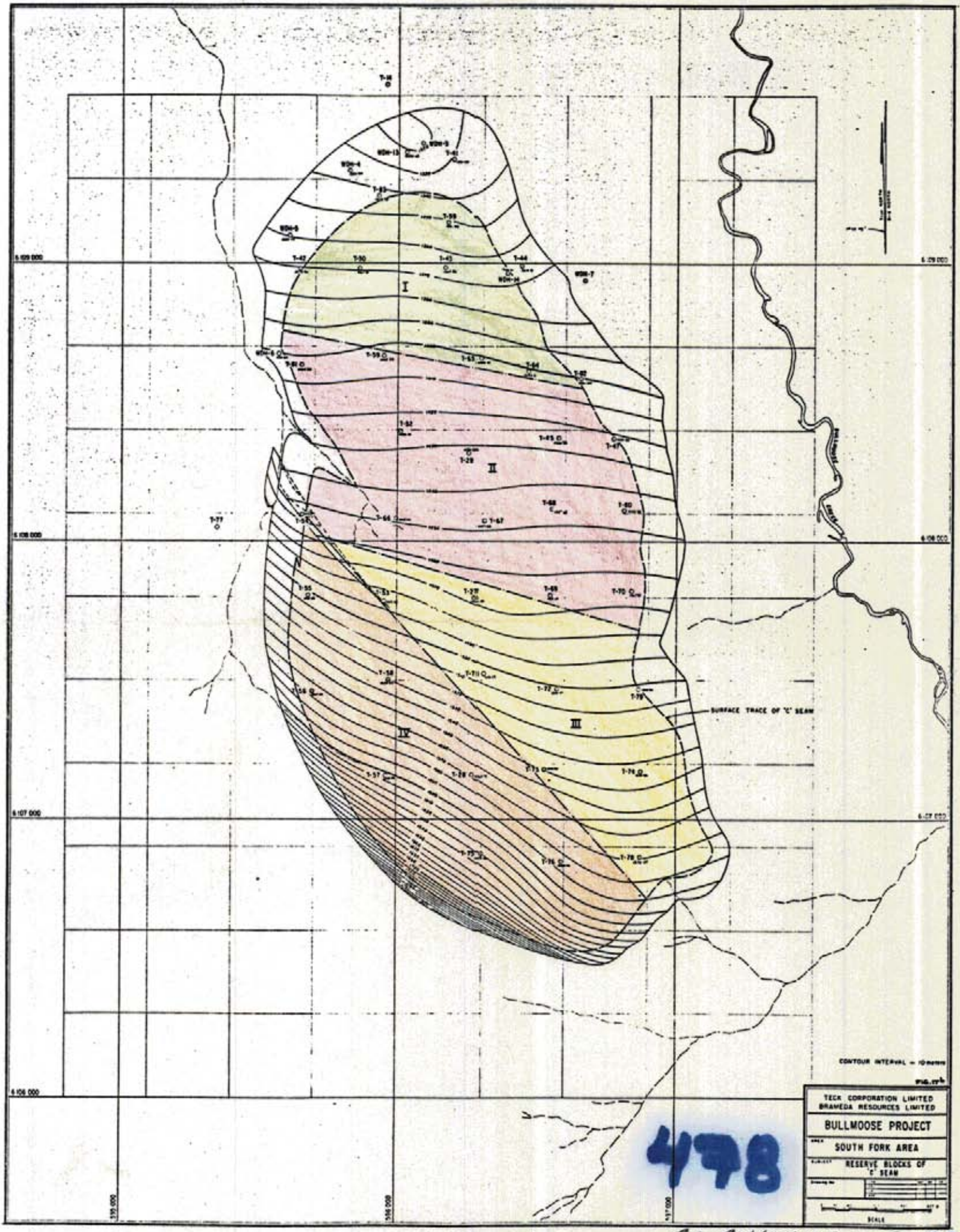
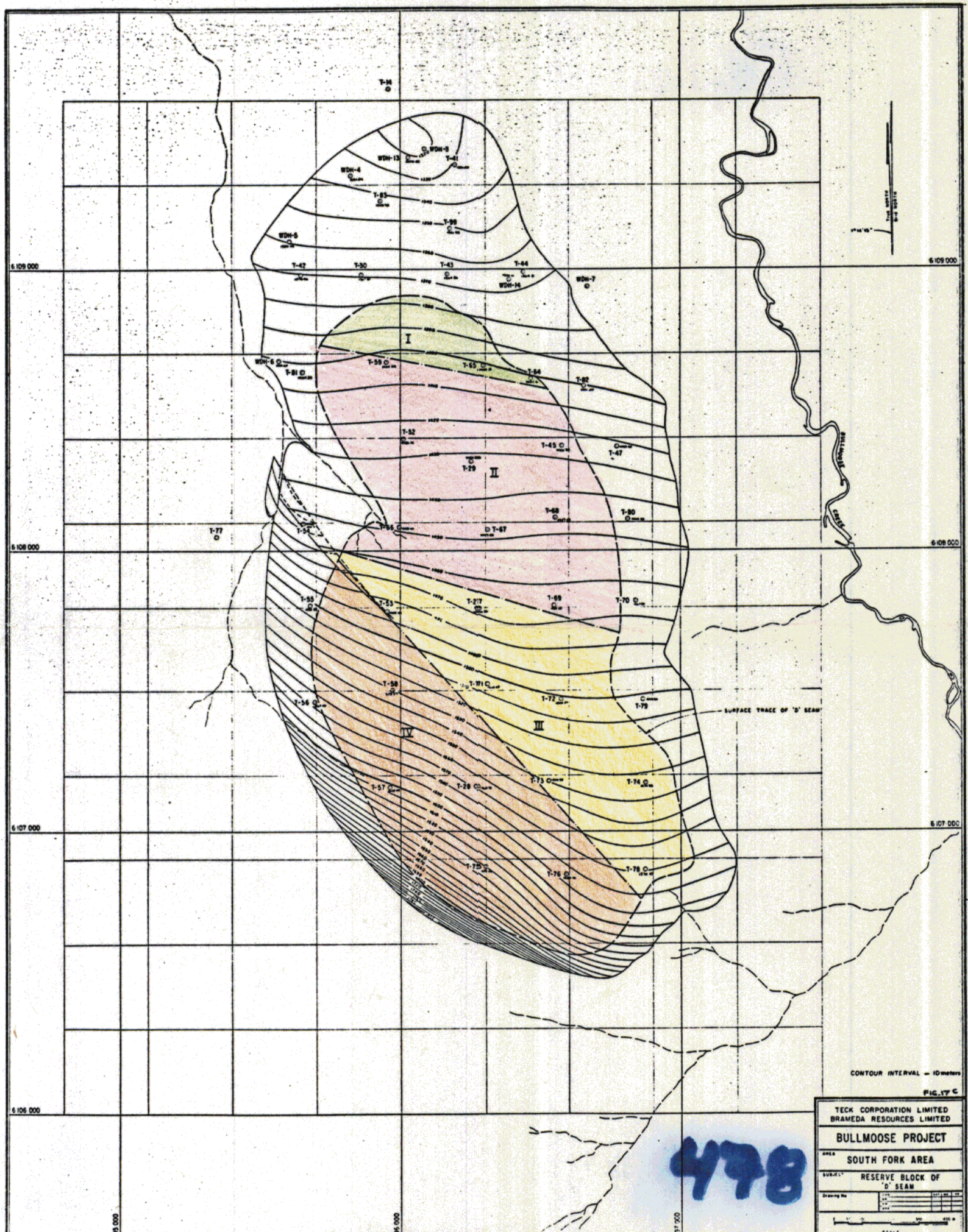
PR-BULLMOOSE 77(2)


I
II
III
IV
SURFACE TRACE OF 'C' SEAM
CONTOUR INTERVAL = 10 metres
TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED
BULLMOOSE PROJECT
SOUTH FORK AREA
RESERVE BLOCKS OF 'C' SEAM
SCALE
478
PR-BULLMOOSE 77(2)A



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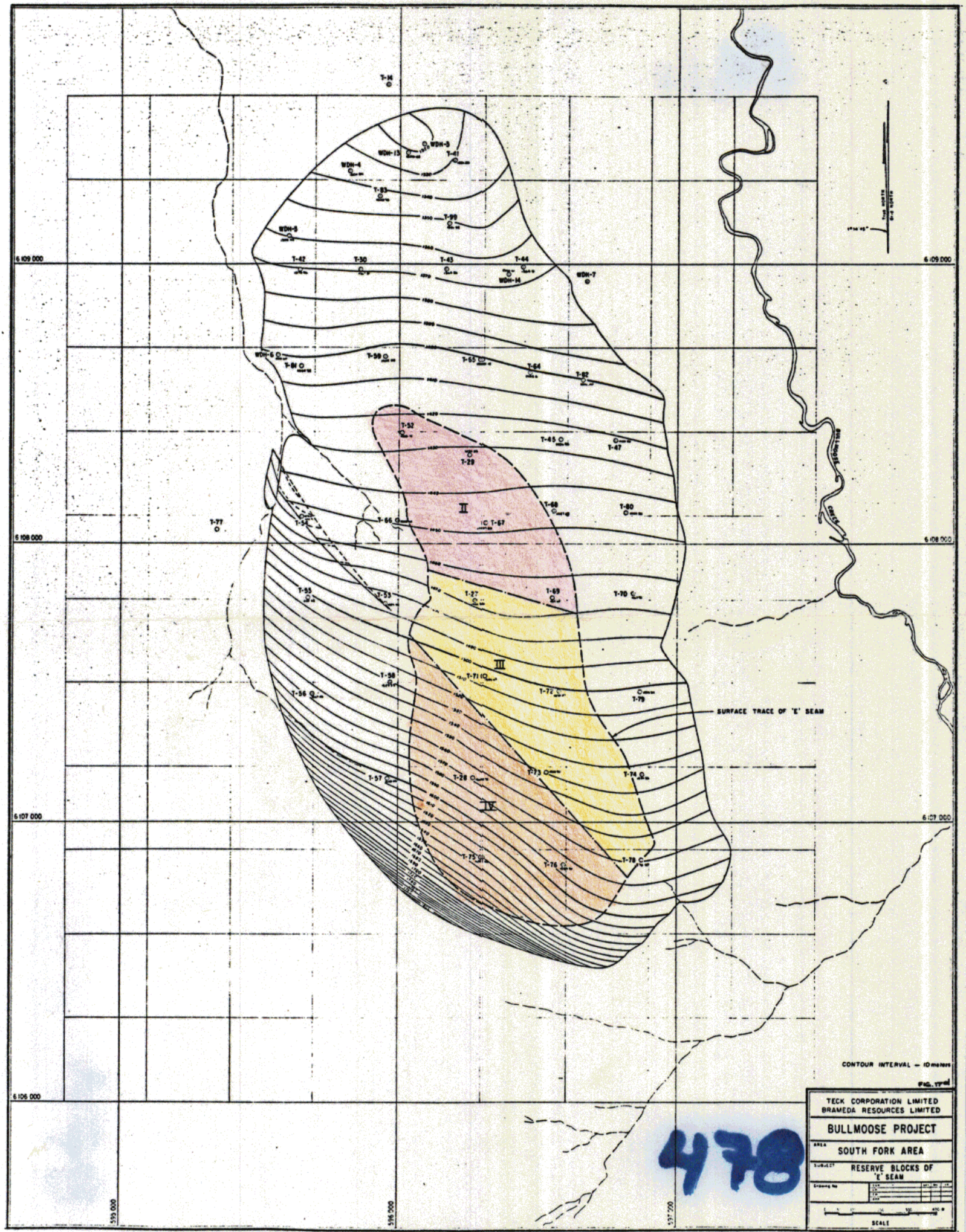
PR-BULLMOOSE 77(2)A


T-14
WDH-13
WDH-3
T-41
WDH-4
T-83
T-99
WDH-5
T-42
T-30
T-43
T-44
WDH-14
WDH-7
WDH-6
T-84
T-98
T-65
T-64
T-82
T-52
T-45
T-47
T-29
T-68
T-80
T-77
T-54
T-66
IC T-67
T-55
T-53
T-27
T-69
T-70
T-58
T-56
T-71
T-72
T-79
SURFACE TRACE OF 'E' SEAM
T-57
T-28
T-73
T-74
T-75
T-76
T-78
6 109 000
6 108 000
6 107 000
6 106 000
595 000
596 000
597 000
BULLMOOSE CREEK
CONTOUR INTERVAL — 10 meters
FIG. 17-d
TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED
BULLMOOSE PROJECT
AREA
SOUTH FORK AREA
SUBJECT
RESERVE BLOCKS OF 'E' SEAM
Drawing No.
SCALE
478
PR-BULLMOOSE 77 (2)

A - SEAM ADIT PROFILE

Scale - Horizontal : 1"200
Vertical : 1: 200

ADIT Nº 5

AZIMUTH OF ADIT HEADING : 151° 34'

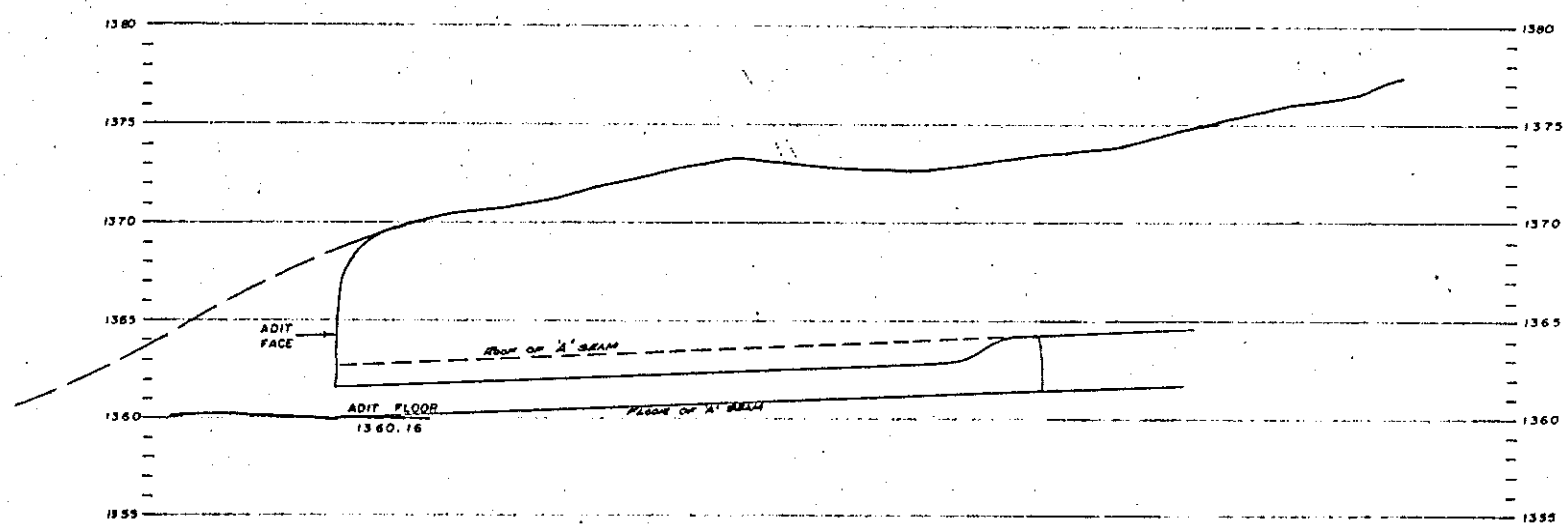


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FIG. 15

McWILLIAM, WHYTE, GOBLE, & ASSOCIATES,
B.C. LAND SURVEYORS,
PRINCE GEORGE - KAMLOOPS - SMITHERS

REF. NO. 77070

PR-BULLMOOSE 77 (2) B.A

B - SEAM ADIT PROFILE

Scale: Horizontal: 1:200
Vertical: 1:200

ADIT Nº 1

AZIMUTH OF ADIT: 239° 24'
HEADING

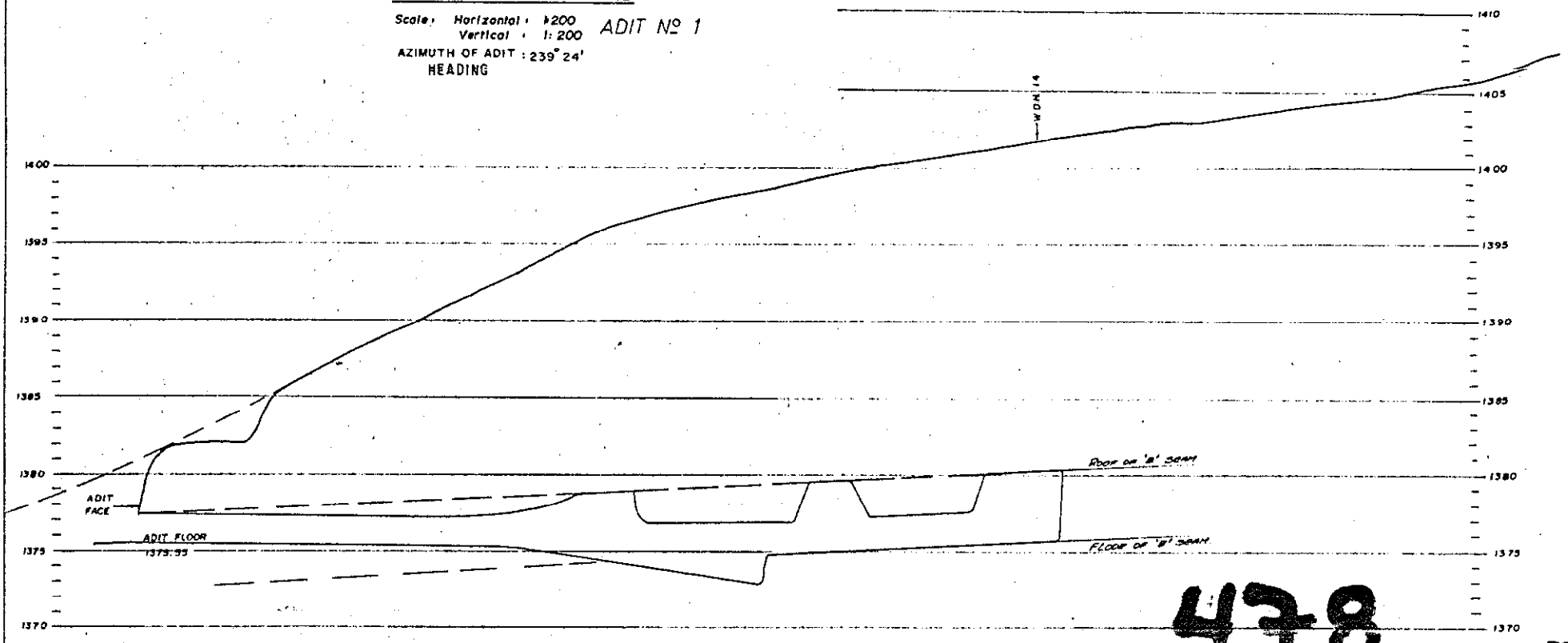

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FIG. 15

McWILLIAM, WHYTE, GOBLE, & ASSOCIATES,
B.C. LAND SURVEYORS,
PRINCE GEORGE - KAMLOOPS - SMITHERS.

REF. NO. 77D70

PR- BULLMOOSE 77 (2) #A

C SEAM ADIT PROFILE

Scale : Horizontal : 1:200
Vertical : 1:200

ADIT Nº 2

AZIMUTH OF ADIT HEADING : 233° 15'

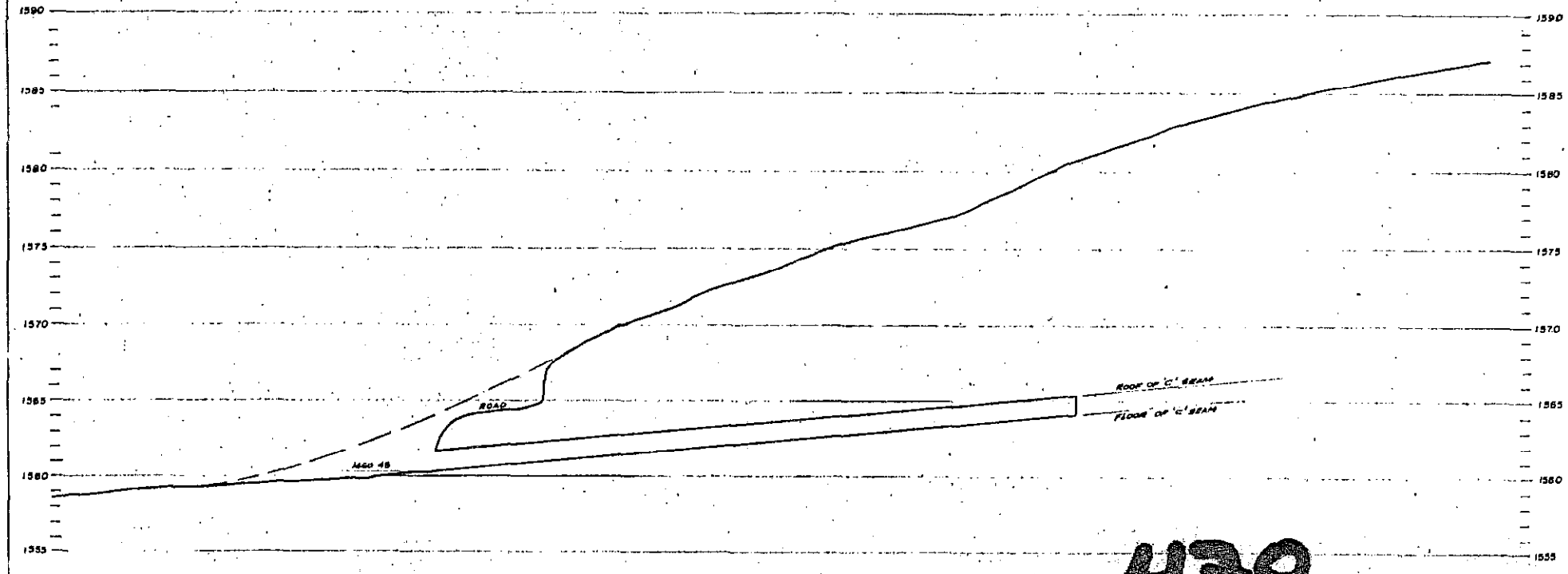

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FIG. 15b

McWILLIAM, WHYTE, GOBLE & ASSOCIATES,
B.C. LAND SURVEYORS,
PRINCE GEORGE - KAMLOOPS - SMITHERS.

REF. NO. 77070

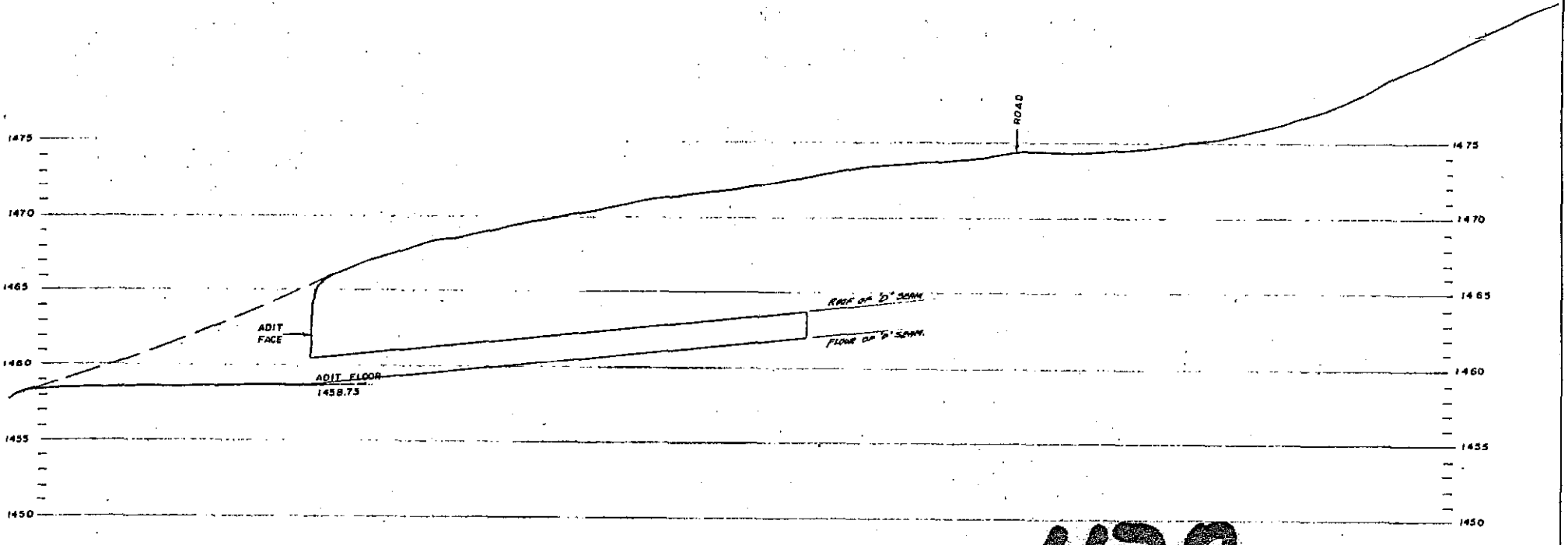
PR-BULLMOOSE 77(2) #A

D - SEAM ADIT PROFILE

Scale : Horizontal : 1: 200
Vertical : 1: 200

ADIT Nº 4

AZIMUTH OF ADIT : 213° 07'
HEADING



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A

PR - BULLMOOSE 77(2)

Fig. 18C

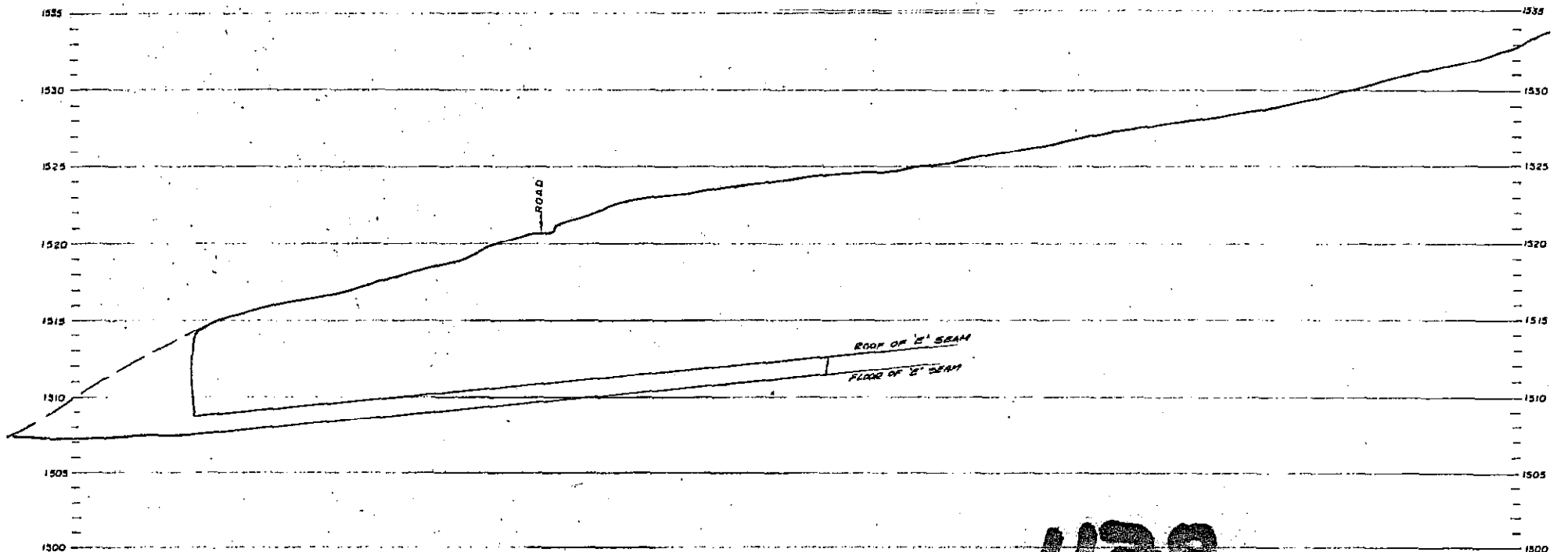
McWILLIAM, WHYTE, GOBLE, & ASSOCIATES,
B.C. LAND SURVEYORS,
PRINCE GEORGE - KAMLOOPS - SMITHERS.
REF. NO. 77070

E - SEAM ADIT PROFILE

Scale : Horizontal : 1:200
Vertical : 1:200

ADIT Nº 3

AZIMUTH OF ADIT : 207° 06'
HEADING



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PR - BULLMOOSE 77 (2) A

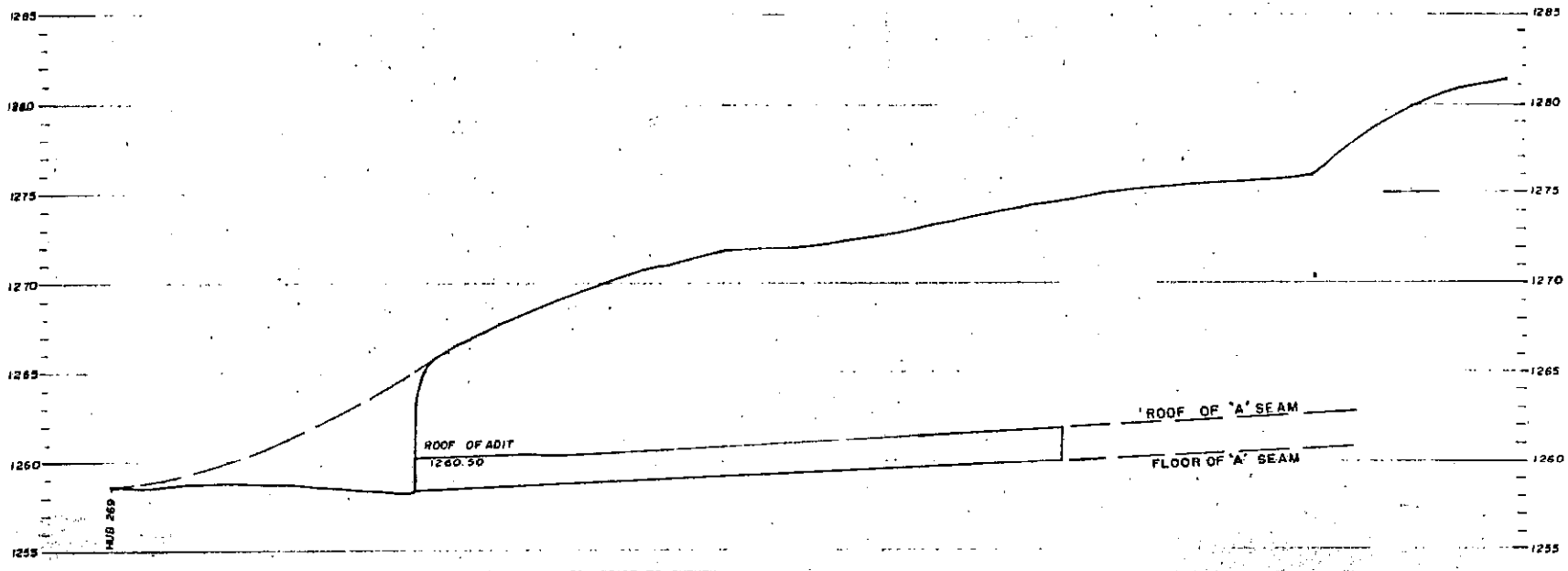
FIG. 15d

McWILLIAM, WHYTE, GOBLE & ASSOCIATES,
B.C. LAND SURVEYORS,
PRINCE GEORGE - KAMLOOPS - SMITHERS.

REF. NO. 77070

WEST FORK A-SEAM ADIT PROFILE

Scale: Horizontal : 1: 200
Vertical : 1: 200
AZIMUTH OF ADIT : 68°48'
HEADING



NOTE: ADIT RECLAIMED PRIOR TO SURVEY
FLOOR ELEVATION SUBJECT TO CHANGE - ASSUMED 2 METERS.

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FIG. 16

McWILLIAM, WHYTE, GOBLE, & ASSOCIATES,
B.C. LAND SURVEYORS,
PRINCE GEORGE - KAMLOOPS - SMITHERS.
REF. NO. 77070

A

PR-BULLMOOSE 77(e) A

WEST FORK B-SEAM ADIT PROFILE

Scale: Horizontal 1:200
Vertical 1:200

AZIMUTH OF ADIT HEADING : 66° 11'

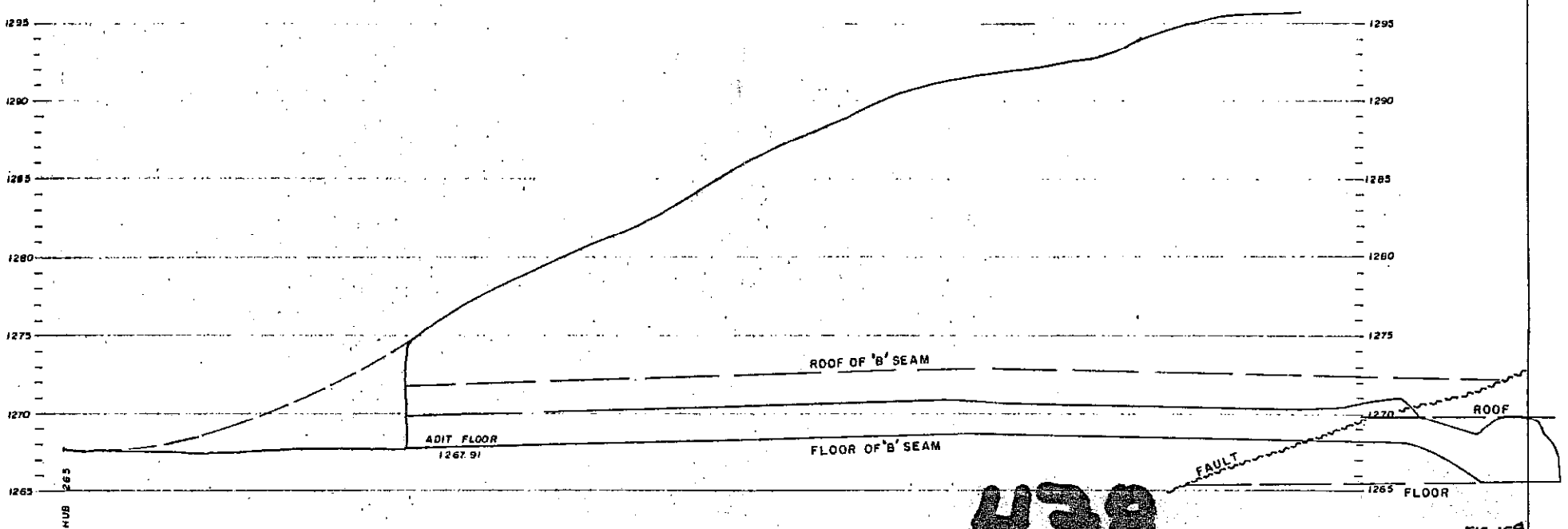

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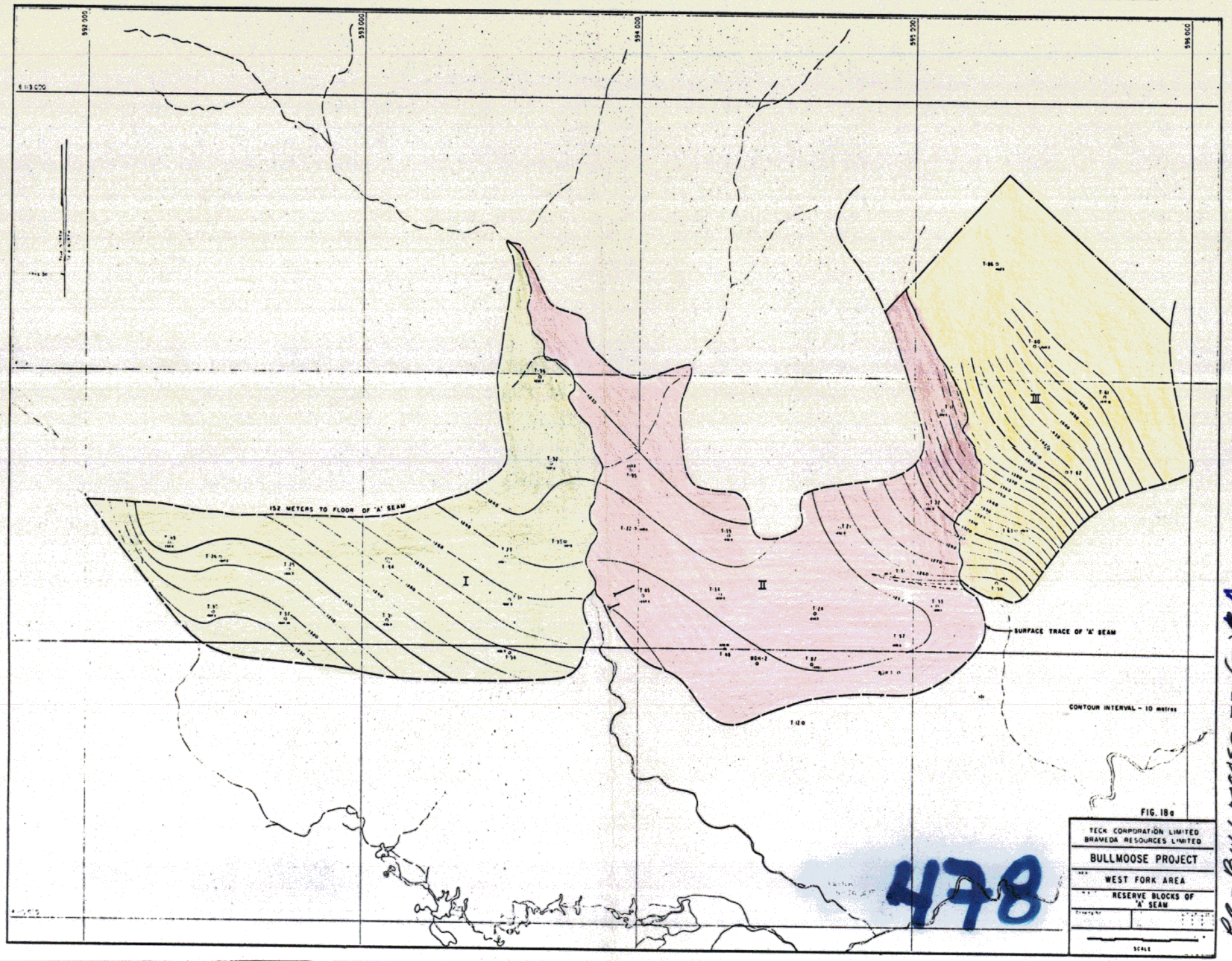
FIG. 16

McWILLIAM, WHYTE, GOBLE, & ASSOCIATES,
B.C. LAND SURVEYORS,
PRINCE GEORGE – KAMLOOPS – SMITHERS.
REF. NO. 77070

FR-BULLMOOSE 77(2) A



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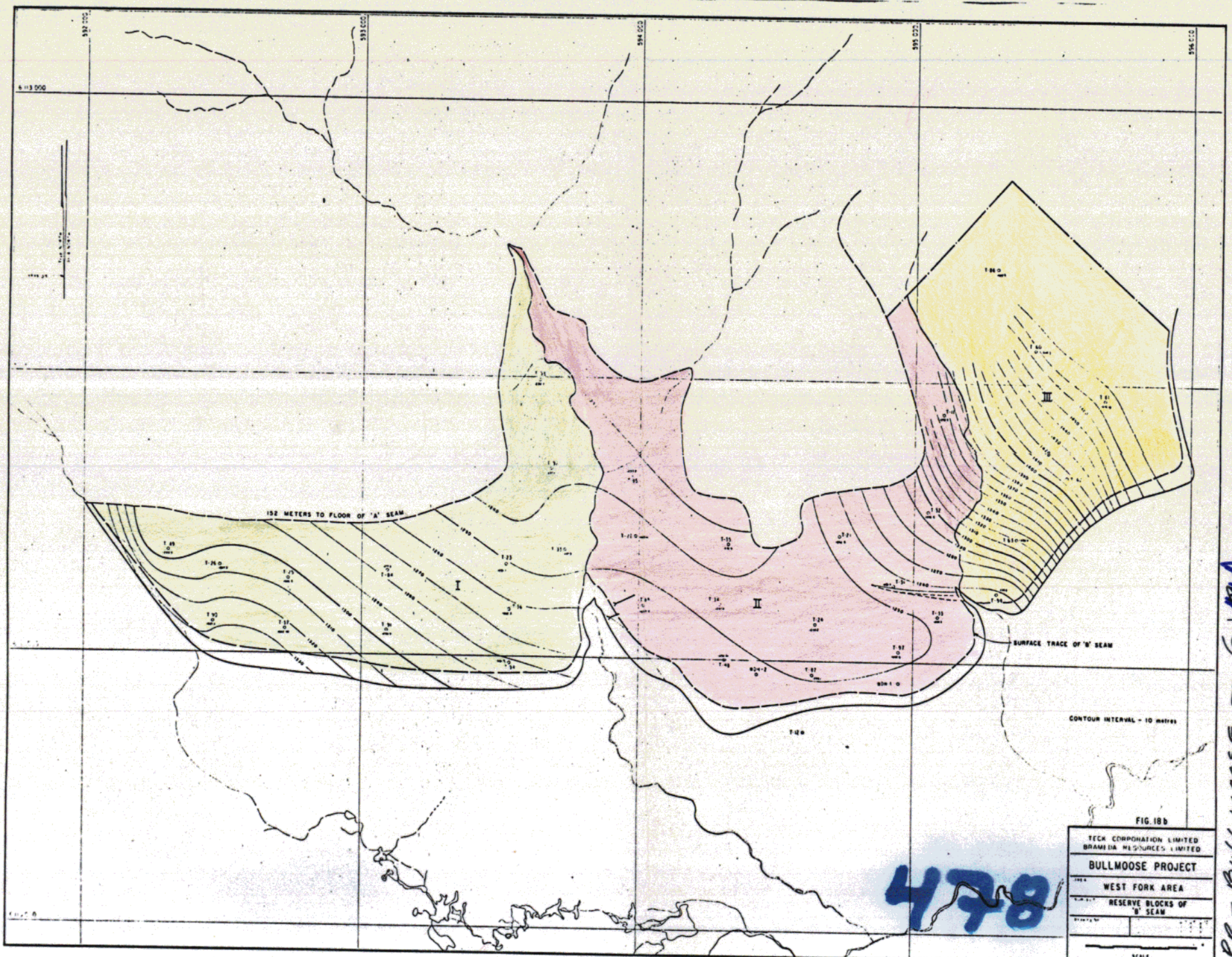
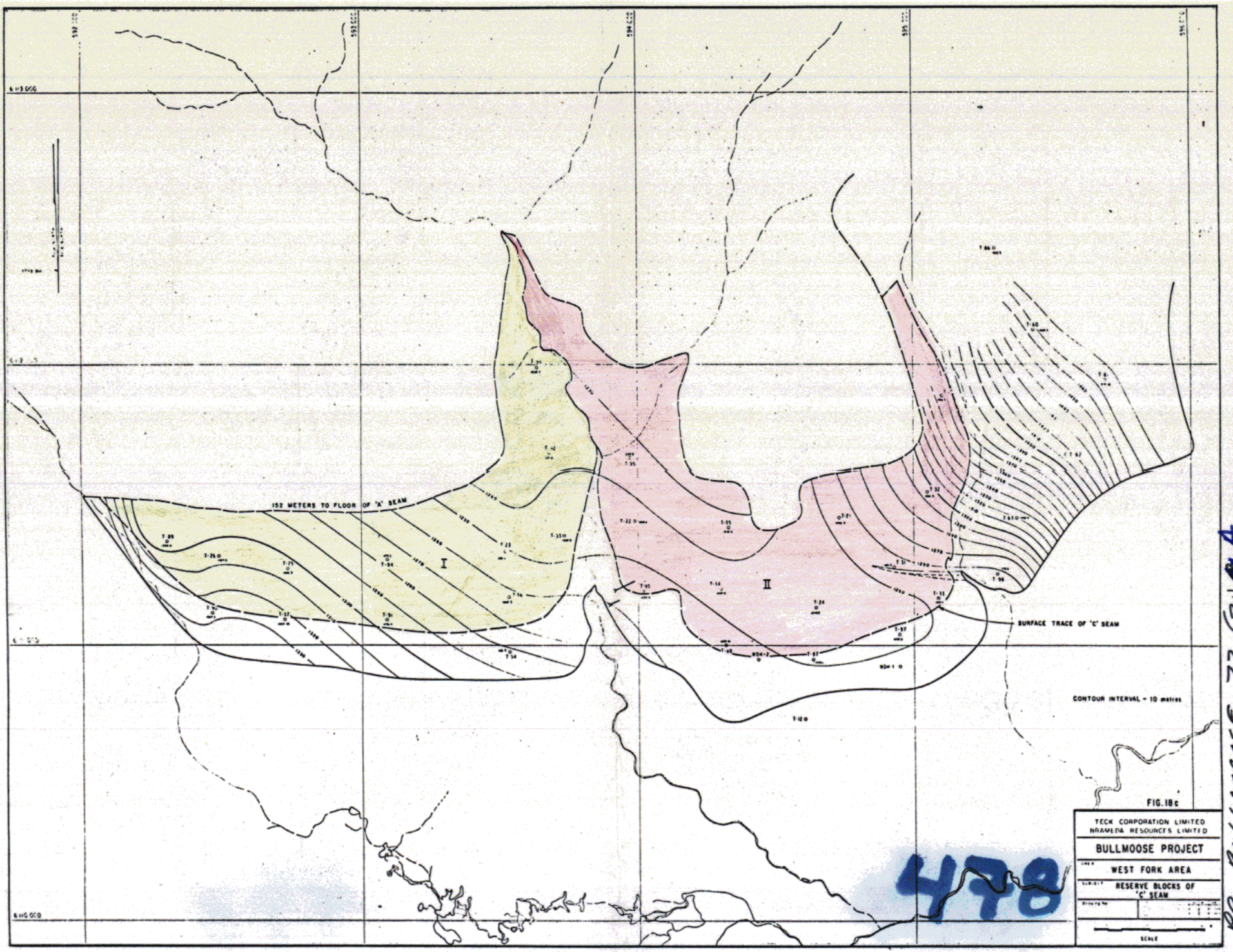
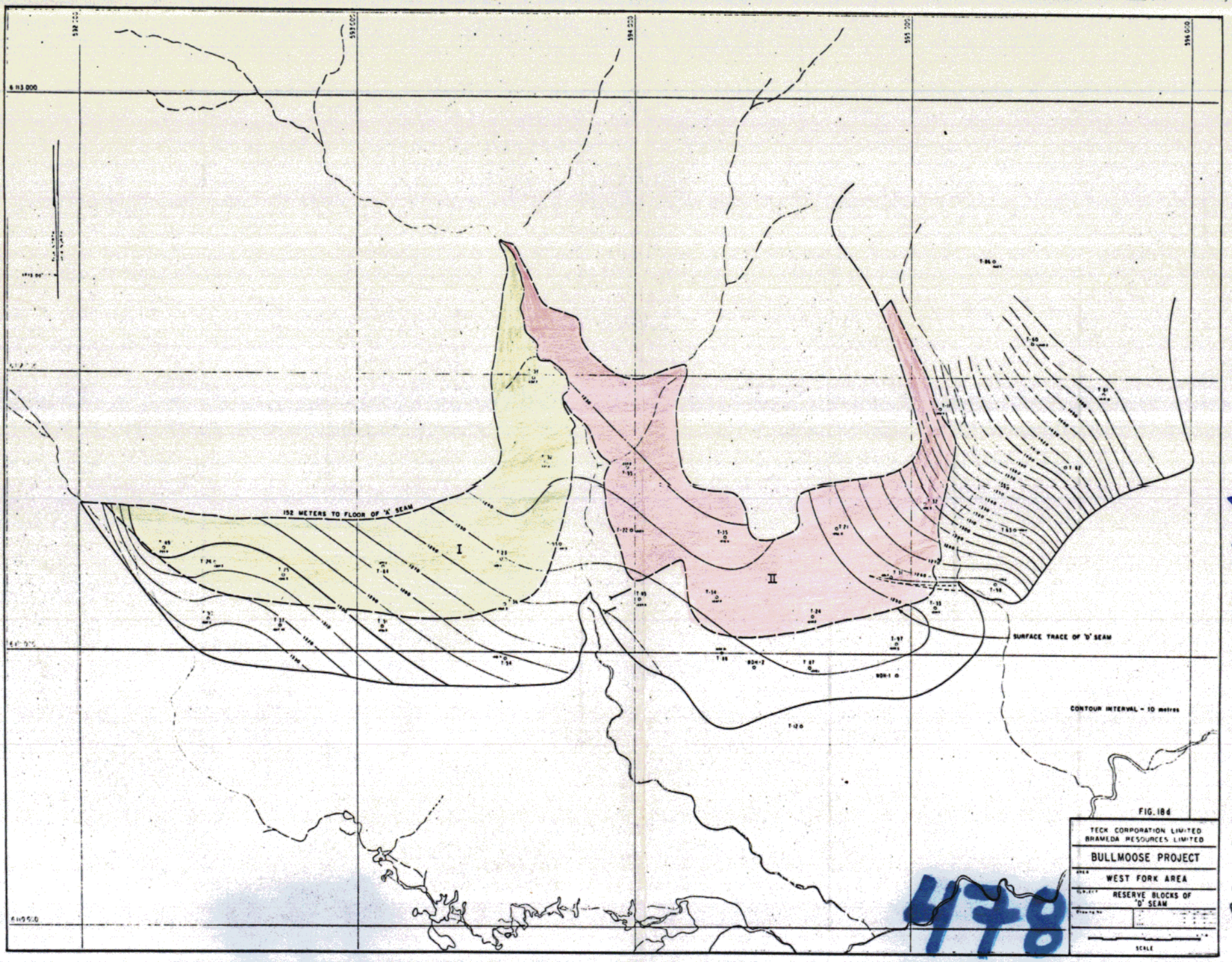
PR-BULLMOOSE 77 (2) 4A



PR-BULLMOOSE 77 (2) #8.A


152 METERS TO FLOOR OF 'A' SEAM
I
II
SURFACE TRACE OF 'C' SEAM
CONTOUR INTERVAL = 10 metres
FIG. 18c
TECK CORPORATION LIMITED
KRAMEDA RESOURCES LIMITED
BULLMOOSE PROJECT
WEST FORK AREA
RESERVE BLOCKS OF 'C' SEAM
SCALE
478
PR-BULLMOOSE 77 (2) 4A



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PR-BULLMOOSE 77(2) #4

3017 3018 3019 3028

'A' SEAM TRACE

WEST FORK

3020 3021 3022 3033

'A' SEAM TRACE

SOUTH FORK

3023 3038 3039

'A' SEAM TRACE

3024 3043 3044

3048 3049

LEGEND

- DIAMOND DRILL HOLES previous programmes
- DIAMOND DRILL HOLES 1977 programme
- ADIT
- ACCESS ROADS previous programmes
- ACCESS ROADS 1977 programme
- BRIDGE
- PROPOSED ADIT SITES
- PROPOSED DRILL HOLES
- PROPOSED SEAM TRACE

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PR- BULLMOOSE 77 (3) A FIG. 19

TECK CORPORATION LIMITED
BRAMEDA RESOURCES LIMITED

BULLMOOSE PROJECT

PROPOSED PLAN OF OPERATIONS FOR 1978

DEC. 1977

0 100 200 400 600 800 M.

SCALE

COAL 93-P-3

93 P/3W 1:50,000 CANADA EDITION 1 1:50,000 CANADA EDITION 1 93 P/3E

121°30' 25' 20' 121°15' 10' 05' 121°00'

55°15'

L K J I

BULLMOOSE MOUNTAIN 6692

3819 NATIONAL TRUST CO. LTD. AS TRUSTEE

R O C K Y

3025 3026 3027

3028 3029 3030 3031 3032 3394 3393 3392

3033 3034 3035 3036 3037 3053 3391 3390 3389

ADIT 2.4

M O U N T A I N

3038 3039 3040 3041 3042 3054 3055 3388 3387 3386 3385

E BRAMEDA RESOURCES LIMITED F QUINTETTE G H

3043 3044 3045 3046 3047 3056 3057 3058 3606 3605 3604 3384 3383

COAL

F O O T H I L L S LIMITED

3048 3049 3050 3051 3052 3059 3060 3404 3603 3602 3601 3600 3599

3405 3404 3401 3400 3399 3598 3597 3596 3595 3382

3403 3402 3398 3397 3396 3633 3381 3594 3593 3592

3395 3632

D C B A

3625

3630 3629 3624 3623 3622

3631 3628 3626 3627 3621 3620 3619 3618

TO WEST SEE MAP 93P/4

TO SOUTH SEE MAP 93I/14

182.27 182.31 182.34 182.38 182.42 182.46 182.50 182.54 182.57 182.61 182.64 182.68 182.72 182.76 182.80 182.84 182.87 182.91 182.94 182.98 183.02 183.06 183.09 183.13 183.17 183.21 183.25 183.29 183.32 183.36

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EXPLORATION AREA FOR 1977
1976 DRILLING
1977 DRILLING

BULLMOOSE CREEK

PEACE RIVER DISTRICT

BRITISH COLUMBIA

SCALE 1:50,000 ÉCHELLE

Miles 1 0 1 2 3 Miles
Metres 1000 500 0 1000 2000 3000 4000 Metres
Yards 1000 500 0 1000 2000 3000 4000 Yards

LEGEND

Drill hole	DDH	RDH
Proposed drill hole	o	
Shaft		
Adit	HAND	CAT
Trench or open cut		

Open pit or stripped area	OPN
Seam tracing	
Access road	
Exploration road	
Proposed exploration road	

PR-BULLMOOSE 77(2) 最A

COAL TITLES REFERENCE MAP 93-P-3

DEPARTMENT OF MINES AND PETROLEUM RESOURCES, VICTORIA, B.C.

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BRAMEDA RESOURCES LIMITED

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COAL 93-P-4

TO NORTH MAP 93P/5

CHETWYND - SUKUNKA 113(251)

MASTER EXPLORATIONS 3542 LTD. 3541

NATIONAL TRUST CO. LTD. AS TRUSTEE

BRAMEDA RESOURCES LIMITED AND TECK CORPORATION LIMITED

BRAMEDA RESOURCES LIMITED

TO EAST SEE MAP 93P/3

L K J I

E F G H

D C B A

ROCKY MOUNTAIN FOOTHILLS

MOUNTAIN FOOTHILLS

ROCKY MOUNTAINS

HART RANGES

ROCKY MOUNTAINS

3099 3098 3097 3096 3095 3094

3108 3107 3106 3105 3104 3103 3102 3101 3100

3118 3117 3116 3115 3114 3113 3112 3111 3110 3109

3127 3126 3125 3124 3123 3122 3121 3120

3129 3128 3015 3016

3554 3555 3014

3556 3557 3017 3018 3019

3558 3559 3020 3021 3022

3023

3024

182.27 182.31 182.34 182.38 182.42 182.46 182.50 182.54 182.57 182.61 182.64 182.68 182.72 182.76 182.80 182.84 182.87 182.91 182.94 182.98 183.02 183.06 183.09 183.13 183.17 183.21 183.25 183.29 183.32 183.36

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SUKUNKA RIVER

BRITISH COLUMBIA

SCALE 1:50,000 ÉCHELLE

Metres 1000 500 0 1000 2000 3000 4000 Metres

Feet 2000 1000 0 2000 4000 6000 8000 Feet

LEGEND

Drill hole	Open pit or stripped area
Proposed drill hole	Seam tracing
Shaft	Access road
Adit	Exploration road
Trench or open cut	Proposed exploration road

DCH RCH HAND CAT

COAL TITLES REFERENCE MAP 93-P-4

DEPARTMENT OF MINES AND PETROLEUM RESOURCES, VICTORIA, B.C.

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BRAMEDA RESOURCES LIMITED — EXPLORATION AREA FOR 1977

⊙ 1976 DRILLING • 1977 DRILLING

PR- BULLMOOSE 77(2) BA

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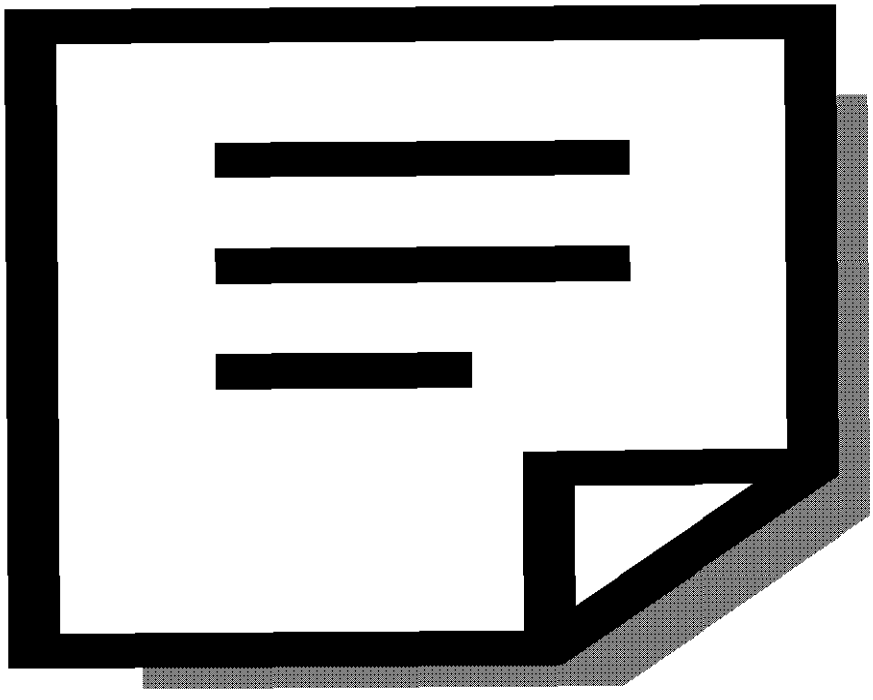

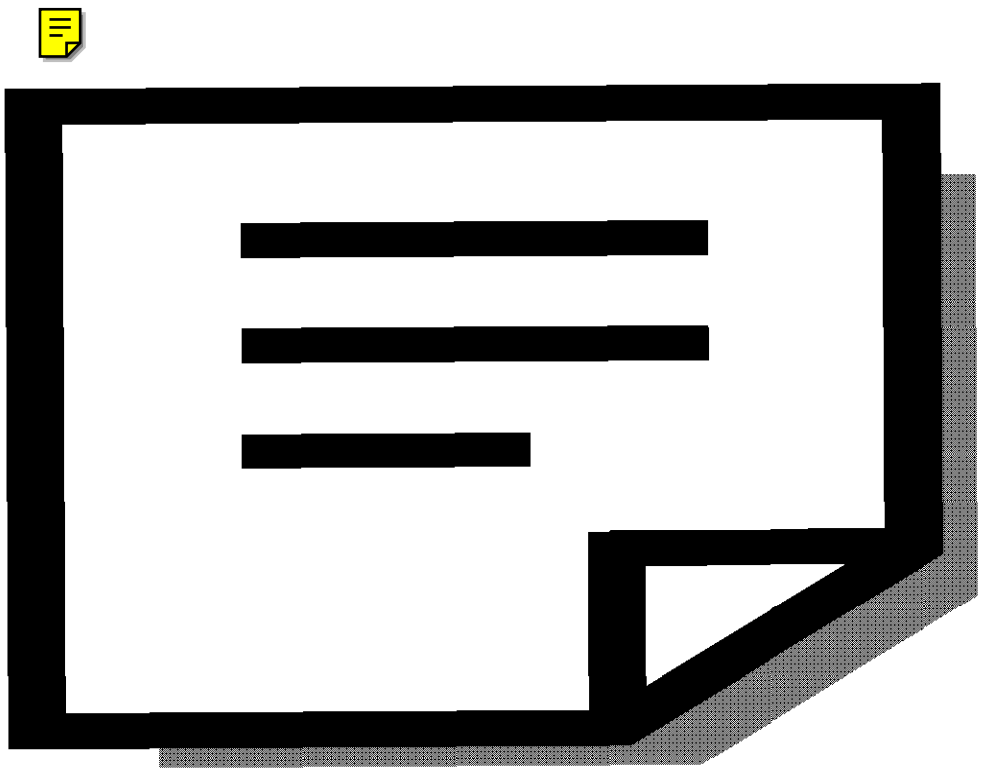

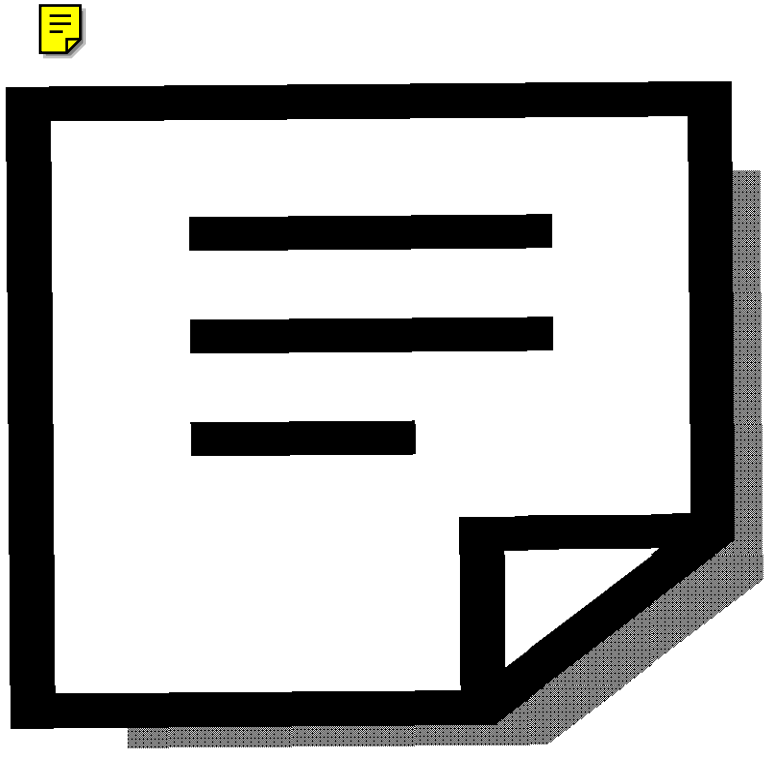

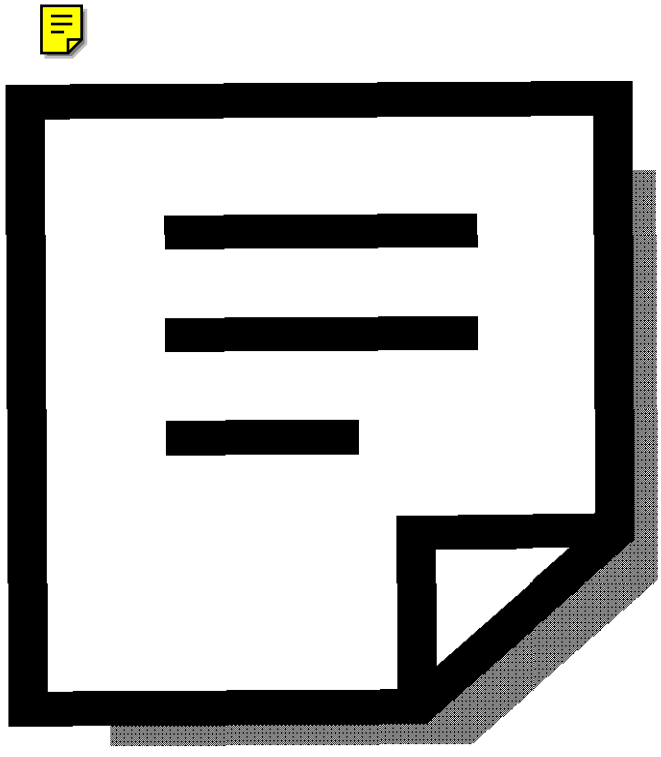

PR-BULLMOOSE 77(#)B

CONFIDEN[redacted]

CONFIDENTIAL

CORE ANALYSES

TO ACCOMPANY REPORT ENTITLED
"THE 1977 EXPLORATION PROGRAM
ON THE BULLMOOSE PROPERTY
SUKUNKA RIVER AREA (93 P/4E, 93 P/3W)"

BY: B. I. McClymont, P.Geol.

FOR: Teck Corporation Limited and
Brameda Resources Limited

DATED: December, 1977

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM A CORE COMPOSITE: HOLES T-64, 65 & 82
LAB. NO.: 9404

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
0.7	13.2	23.9	62.2	0.34	5	79	1.41	Air Dried Basis
	13.3	24.1	62.6	0.34	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	91.9	0.9	13.2	23.4	62.5	0.34	4 1/2	91.9	13.2	0.34	a.d.b.
	91.9		13.3	23.6	63.1	0.34	--	91.9	13.3	0.34	d.b.
65M x 0	8.1	0.4	10.8	24.6	64.2	0.43	7	100.0	13.0	0.35	a.d.b.
	8.1		10.8	24.7	64.5	0.43	--	100.0	13.1	0.35	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	60.0	4.2	6 1/2	60.0	4.2	a.d.b.
1.35-1.40	11.4	11.8	2	71.4	5.4	a.d.b.
1.40-1.45	5.7	17.6	1	77.1	6.3	a.d.b.
1.45-1.50	7.2	21.8	1	84.3	7.6	a.d.b.
1.50-1.60	6.9	26.7	1	91.2	9.1	a.d.b.
1.60-1.80	5.3	38.0	1	96.5	10.7	a.d.b.
+ 1.80	3.5	61.6	N.A.	100.0	12.5	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	75.3	7.7	6	75.3	7.7	a.d.b.
STAGE II	17.9	11.2	6	93.2	8.4	a.d.b.
STAGE III	4.4	20.8	3 1/2	97.6	8.9	a.d.b.
TAILS	2.4	59.8	1	100.0	10.2	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM A CORE COMPOSITE: HOLES T-64, 65 & 82

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1,

LAB. NO.: 9404

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
0.6	7.9	24.2	67.3	0.30	6	Air Dried Basis
	7.9	24.3	67.8	0.30	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
381	466	26	9	0.954

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM A CORE COMPOSITE: HOLES T-66, 67, 68 & 80
LAB. NO.: 9403

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.4	10.9	22.9	64.8	0.47	6 1/2	72	1.38	Air Dried Basis
	11.1	23.2	65.7	0.48	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	97.1	1.1	10.7	23.2	65.0	0.47	7	97.1	10.7	0.47	a.d.b.
	97.1		10.8	23.5	65.7	0.48	--	97.1	10.8	0.48	d.b.
65M x 0	2.9	1.0	18.8	22.2	58.0	0.67	6	100.0	10.9	0.48	a.d.b.
	2.9		19.0	22.4	58.6	0.68	--	100.0	11.0	0.49	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	74.4	4.7	7 1/2	74.4	4.7	a.d.b.
1.35-1.40	10.7	10.5	1 1/2	85.1	5.4	a.d.b.
1.40-1.45	5.3	15.8	1	90.4	6.0	a.d.b.
1.45-1.50	1.6	21.3	1	92.0	6.3	a.d.b.
1.50-1.60	1.4	26.7	1	93.4	6.6	a.d.b.
1.60-1.80	1.3	40.0	1	94.7	7.1	a.d.b.
+ 1.80	5.3	80.1	N.A.	100.0	10.9	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	45.0	6.6	7 1/2	45.0	6.6	a.d.b.
STAGE II	26.4	8.4	7 1/2	71.4	7.3	a.d.b.
STAGE III	10.5	15.6	7	81.9	8.3	a.d.b.
TAILS	18.1	67.1	1/2	100.0	19.0	a.d.b.

F.F. PARAMETERS: Pulp Density = 8%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM A CORE COMPOSITE: HOLES T-66, 67, 68 & 80

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1, 11 & 111

LAB. NO.: 9403

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
0.7	6.3	24.0	69.0	0.44	6 1/2	Air Dried Basis
	6.3	24.2	69.5	0.44	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
383	464	25	12	0.967

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM A CORE COMPOSITE: HOLES T-69, 70, 71, 72 & 79.
LAB. NO.: 9402

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.5	9.6	23.1	65.8	0.45	6 1/2	71	1.36	Air Dried Basis
	9.7	23.5	66.8	0.46	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	96.8	1.4	9.5	23.0	66.1	0.43	5 1/2	96.8	9.5	0.43	a.d.b.
	96.8		9.6	23.3	67.1	0.44	--	96.8	9.6	0.44	d.b.
65M x 0	3.2	1.2	10.8	23.4	64.6	0.55	7	100.0	9.5	0.43	a.d.b.
	3.2		10.9	23.7	65.4	0.56	--	100.0	9.6	0.44	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	70.8	4.7	7 1/2	70.8	4.7	a.d.b.
1.35-1.40	13.3	10.0	1 1/2	84.1	5.5	a.d.b.
1.40-1.45	5.7	14.6	1	89.8	6.1	a.d.b.
1.45-1.50	2.5	19.9	1	92.3	6.5	a.d.b.
1.50-1.60	2.3	25.8	1	94.6	7.0	a.d.b.
1.60-1.80	2.2	39.5	1	96.8	7.7	a.d.b.
+ 1.80	3.2	77.6	1/2	100.0	9.9	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	52.8	6.5	7	52.8	6.5	a.d.b.
STAGE II	20.8	7.1	7	73.6	6.7	a.d.b.
STAGE III	12.7	7.6	7	86.3	6.8	a.d.b.
TAILS	13.7	34.6	2	100.0	10.6	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM A CORE COMPOSITE : HOLES T-69, 70, 71, 72 & 79

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1, 11 & 111.

LAB. NO.: 9402

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
0.6	6.5	23.7	69.2	0.41	6 1/2	Air Dried Basis
	6.5	23.8	69.7	0.41	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
380	464	23	- 7	0.843

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM A CORE COMPOSITE: HOLES T-73, 74, 75, 76 & 78
LAB. NO.: 9401

HEAD RAW ANALYSIS								
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.5	9.5	23.9	65.1	0.47	7	68	1.36	Air Dried Basis
	9.6	24.3	66.1	0.48	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	96.3	1.3	9.4	24.1	65.2	0.46	7	96.3	9.4	0.46	a.d.b.
	96.3		9.5	24.4	66.1	0.47	--	96.3	9.5	0.47	d.b.
65M x 0	3.7	1.4	10.2	24.4	64.0	0.49	7	100.0	9.4	0.46	a.d.b.
	3.7		10.3	24.7	65.0	0.50	--	100.0	9.5	0.47	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	67.5	4.6	8	67.5	4.6	a.d.b.
1.35-1.40	17.0	9.7	1 1/2	84.5	5.6	a.d.b.
1.40-1.45	6.1	14.3	1	90.6	6.2	a.d.b.
1.45-1.50	2.0	20.3	1	92.6	6.5	a.d.b.
1.50-1.60	2.3	27.6	1	94.9	7.0	a.d.b.
1.60-1.80	1.9	41.6	1	96.8	7.7	a.d.b.
+ 1.80	3.2	75.2	1/2	100.0	9.9	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	63.0	6.3	7 1/2	63.0	6.3	a.d.b.
STAGE II	21.4	8.0	7 1/2	84.4	6.7	a.d.b.
STAGE III	10.3	13.3	6 1/2	94.7	7.4	a.d.b.
TAILS	5.3	56.2	1/2	100.0	10.0	a.d.b.

F.F. PARAMETERS: Pulp Density =
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM A CORE COMPOSITE : HOLES T-73, 74, 75, 76 & 77

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST I,II & III.

LAB. NO.: 9401

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
0.7	6.4	24.5	68.4	0.41	6	Air Dried Basis
	6.4	24.7	68.9	0.41	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
377	461	24	4	0.933

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM A CORE COMPOSITE: HOLES T-83, A-1 & A-2 + T-99, A-1 & A-2.
LAB. NO.: 9522

HEAD RAW ANALYSIS								
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
0.7	9.7	22.8	66.8	0.47	5	76	1.36	Air Dried Basis
	9.8	23.0	67.2	0.47	--	--	--	Dry Basis

SIZE & RAW ANALYSIS								CUMULATIVE			
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	WT.%	ASH%	S%	REMARKS
1/4"x65M	96.7	0.7	9.9	22.2	66.2	0.49	3 1/2	96.7	9.9	0.49	a.d.b.
	96.7		10.0	22.4	67.6	0.49	--	96.7	10.0	0.49	d.b.
65M x 0	3.3	0.6	11.5	23.5	64.5	0.46	5 1/2	100.0	10.0	0.49	a.d.b.
	3.3		11.6	23.5	64.9	0.46	--	100.0	10.1	0.49	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
				CUMULATIVE		
S.G. FRACTION	WT.%	ASH%	F.S.I.	WT.%	ASH%	REMARKS
-1.35	76.6	5.2	6 1/2	76.6	5.2	a.d.b.
1.35-1.40	8.3	12.3	1	84.9	5.9	a.d.b.
1.40-1.45	3.7	17.5	1	88.6	6.4	a.d.b.
1.45-1.50	3.2	21.7	1	91.8	6.9	a.d.b.
1.50-1.60	3.7	28.0	1	95.5	7.7	a.d.b.
1.60-1.80	2.2	40.9	1	97.7	8.5	a.d.b.
+ 1.80	2.3	67.1	N.A.	100.0	9.8	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
				CUMULATIVE		
PRODUCT	WT.%	ASH%	F.S.I.	WT.%	ASH%	REMARKS
STAGE I	62.9	7.7	7 1/2	62.9	7.7	a.d.b.
STAGE II	25.4	10.8	6	88.3	8.6	a.d.b.
STAGE III	8.0	18.2	4	96.3	9.4	a.d.b.
TAILS	3.7	67.4	N.A.	100.0	11.5	a.d.b.

F.F. PARAMETERS: Pulp Density =
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

N.A. = non agglomerating

Birtley Engineering

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM A CORE COMPOSITE T-83, A-1 & A-2 + T-99, A-1 & A-2

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1, 11 & 111

LAB. NO.: 9522

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
0.6	7.1	22.8	69.5	0.45	6	Air Dried Basis
	7.1	22.9	70.0	0.45	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
373	460	25	- 6	0.854

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM A CORE COMPOSITE: HOLES: T-83 + T-99 (Lab. No. 9522)
LAB. NO.: 9523 plus T-83, A-2 (30.90'-31.05')
T-99, A-2 (43.52'-43.96')

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
0.9	42.9	19.5	36.7	0.82	1 1/2	73	1.73	Air Dried Basis
	43.3	19.7	37.0	0.83	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	96.3	0.7	42.5	18.8	38.0	0.80	1 1/2	96.3	42.5	0.80	a.d.b.
	96.3		42.8	18.9	38.3	0.81	--	96.3	42.8	0.81	d.b.
65M x 0	3.7	0.8	47.1	21.8	30.3	0.84	2 1/2	100.0	42.7	0.80	a.d.b.
	3.7		47.5	22.0	30.5	0.85	--	100.0	43.0	0.81	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	40.2	5.4	6	40.2	5.4	a.d.b.
1.35-1.40	4.6	13.5	1 1/2	44.8	6.2	a.d.b.
1.40-1.45	2.1	19.0	1 1/2	46.9	6.8	a.d.b.
1.45-1.50	2.0	27.0	1 1/2	48.9	7.6	a.d.b.
1.50-1.60	2.2	30.3	1 1/2	51.1	8.6	a.d.b.
1.60-1.80	4.2	49.6	1	55.3	11.7	a.d.b.
+ 1.80	44.7	80.8	N.A.	100.0	42.6	a.d.b.

FROTH FLOTATION TEST: 65M x 0 N.S.S.						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I						a.d.b.
STAGE II						a.d.b.
STAGE III						a.d.b.
TAILS						a.d.b.

F.F. PARAMETERS: Pulp Density =
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

N.A. = non agglomerating

N.S.S. = not sufficient sample

Birtley Engineering
Subsidiary of Great West Steel Industries

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM A CORE COMPOSITE:

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50

T-83 + T-99 (LAB. No. 9522)
plus T-83, A-2 (30.90'-31.05')
T-99, A-2 (43.52'-43.96')

LAB. NO.: 9523

PROXIMATE						
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	REMARKS
0.6	7.8	22.6	69.0	0.45	5 1/2	Air Dried Basis
	7.8	22.7	69.5	0.45	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
381	467	23	- 9	0.812

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM A CORE COMPOSITE: HOLES T-81, A-1 & A-2.
LAB. NO.: 9524

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
0.9	8.3	22.4	68.4	0.53	6	75	1.35	Air Dried Basis
	8.4	22.6	69.0	0.53	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	95.3	0.7	8.4	22.3	68.6	0.49	5	95.3	8.4	0.49	a.d.b.
	95.3		8.5	22.5	69.0	0.49	--	95.3	8.5	0.49	d.b.
65M x 0	4.7	1.0	10.7	23.7	64.6	0.68	7	100.0	8.5	0.50	a.d.b.
	4.7		10.8	23.9	65.3	0.69	--	100.0	8.6	0.50	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	71.5	4.9	7	71.5	4.9	a.d.b.
1.35-1.40	14.9	11.1	1 1/2	86.4	6.0	a.d.b.
1.40-1.45	6.6	16.7	1	93.0	6.7	a.d.b.
1.45-1.50	3.1	21.8	1	96.1	7.2	a.d.b.
1.50-1.60	2.1	24.7	1	98.2	7.6	a.d.b.
1.60-1.80	0.8	28.1	1/2	99.0	7.8	a.d.b.
+ 1.80	1.0	67.5	N.A.	100.0	8.4	a.d.b.

FROTH FLOTATION TEST: 65M x 0 N.S.S.						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I						a.d.b.
STAGE II						a.d.b.
STAGE III						a.d.b.
TAILS						a.d.b.

F.F. PARAMETERS: Pulp Density =
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

N.A. = non agglomerating

N.S.S. = not sufficient sample

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM A CORE COMPOSITE T-81, A1 & A-2

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50

LAB. NO.: 9524

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
0.7	7.3	22.8	69.2	0.47	5 1/2	Air Dried Basis
	7.4	23.0	69.6	0.47	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
379	466	24	- 11	0.783

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM A CORE COMPOSITE: HOLES T-81 , A-1 & A-2 (Lab. No. 9524)
LAB. NO.: 9525 plus T-81, A-2 roof (41.80'-42.43')

HEAD RAW ANALYSIS								
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
0.9	40.0	16.0	43.1	0.52	1 1/2	N.S.S.	1.65	Air Dried Basis
	40.4	16.1	43.5	0.52	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	96.3	0.9	40.2	15.9	43.0	0.49	1 1/2	96.3	40.2	0.49	a.d.b.
	96.3		40.6	16.0	43.4	0.49	--	96.3	40.6	0.49	d.b.
65M x 0	3.7	1.0	28.3	19.7	51.0	0.76	4	100.0	39.8	0.50	a.d.b.
	3.7		28.	19.9	51.5	0.77	--	100.0	40.2	0.50	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	50.1	5.4	5 1/2	50.1	5.4	a.d.b.
1.35-1.40	5.1	15.9	1 1/2	55.2	6.4	a.d.b.
1.40-1.45	2.1	18.8	1 1/2	57.3	6.8	a.d.b.
1.45-1.50	1.1	23.5	1	58.4	7.1	a.d.b.
1.50-1.60	0.8	28.5	1	59.2	7.4	a.d.b.
1.60-1.80	1.0	48.5	1/2	60.2	8.1	a.d.b.
+ 1.80	39.8	89.3	N.A.	100.0	40.4	a.d.b.

FROTH FLOTATION TEST: 65M x 0 N.S.S.						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I						a.d.b.
STAGE II						a.d.b.
STAGE III						a.d.b.
TAILS						a.d.b.

F.F. PARAMETERS: Pulp Density =
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

N.A. = non agglomerating

N.S.S. = not sufficient sample

Birtley Engineering
Subsidiary of Great West Steel Industries

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM A CORE COMPOSITE; T-81, A-1 & A-2 (Lab. no. 9524) plus T-81, A-2 roof (41.80'-42.43')
ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50

LAB. NO.: 9525

PROXIMATE						
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	REMARKS
0.7	7.1	23.1	69.1	0.53	4 1/2	Air Dried Basis
	7.2	23.3	69.5	0.53	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
385	466	24	-23	0.183

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM B CORE COMPOSITE: HOLES T-83 & T-99
LAB. NO.: 9526

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.0	12.9	23.2	62.9	0.31	5 1/2	81	1.40	Air Dried Basis
	13.0	23.4	63.6	0.31	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	95.0	0.9	12.3	23.1	63.7	0.39	5 1/2	95.0	12.3	0.29	a.d.b.
	95.0		12.4	23.3	64.3	0.29	--	95.0	12.4	0.29	d.b.
65M x 0	5.0	1.1	13.0	24.6	61.3	0.38	7 1/2	100.0	12.3	0.29	a.d.b.
	5.0		13.1	24.9	62.0	0.38	--	100.0	12.4	0.29	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	61.7	4.2	7 1/2	61.7	4.2	a.d.b.
1.35-1.40	11.1	12.3	1 1/2	72.8	5.4	a.d.b.
1.40-1.45	7.1	18.7	1	79.9	6.6	a.d.b.
1.45-1.50	4.7	23.3	1	84.6	7.5	a.d.b.
1.50-1.60	5.9	27.1	1	90.5	8.8	a.d.b.
1.60-1.80	4.8	36.2	1	95.3	10.2	a.d.b.
+ 1.80	4.7	71.0	1/2	100.0	13.1	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE 1	74.1	8.1	7	74.1	8.1	a.d.b.
STAGE 11	13.7	11.1	7	87.8	8.6	a.d.b.
STAGE 111	4.8	23.1	5	92.6	9.3	a.d.b.
TAILS	7.4	60.2	N.A.	100.0	13.1	a.d.b.

F.F. PARAMETERS: Pulp Density =
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages 1 & 11 are froths at 30 sec. intervals
Stage 111 is froth for last 90 seconds.

N.A. = non agglomerating

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM B CORE COMPOSITE: HOLES T-83 & T-99

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1, 11, & 111

LAB. NO.: 9526

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
0.7	7.6	23.8	67.9	0.27	5 1/2	Air Dried Basis
	7.7	24.0	68.3	0.27	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
369	457	27	19	0.982

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM B CORE COMPOSITE: HOLES T-81 only
LAB. NO.:9281

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.1	11.4	23.1	64.4	0.31	5 1/2	82	1.39	Air Dried Basis
	11.5	23.4	65.1	0.31	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	95.8	1.0	11.2	23.0	64.8	0.32	4	95.8	11.2	0.32	a.d.b.
	95.8		11.3	23.2	65.5	0.32	--	95.8	11.3	0.32	d.b.
65M x 0	4.2	1.1	14.6	24.5	59.8	0.35	6	100.0	11.3	0.32	a.d.b.
	4.2		14.8	24.8	60.4	0.35	--	100.0	11.4	0.32	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	62.0	3.9	5 1/2	62.0	3.9	a.d.b.
1.35-1.40	12.9	13.1	1 1/2	74.9	5.5	a.d.b.
1.40-1.45	10.4	19.8	1 1/2	85.3	7.2	a.d.b.
1.45-1.50	3.3	24.9	1	88.6	7.9	a.d.b.
1.50-1.60	3.8	27.9	1	92.4	8.7	a.d.b.
1.60-1.80	4.4	32.1	1	96.8	9.8	a.d.b.
+ 1.80	3.2	47.5	1/2	100.0	11.0	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	69.0	8.7	6	69.0	8.7	a.d.b.
STAGE II	17.5	13.0	4	86.5	9.6	a.d.b.
STAGE III	5.1	21.9	3	91.6	10.3	a.d.b.
TAILS	8.4	58.6	N.A.	100.0	14.3	a.d.b.

F.F. PARAMETERS: Pulp Density =
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

N.A. = non agglomerating

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM B CORE COMPOSITE T - 81 only

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1

LAB. NO.: 9281

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
0.8	8.1	23.5	67.6	0.26	4 1/2	Air Dried Basis
	8.2	23.7	68.1	0.25	---	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
376	465	27	-24	0.357

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM B CORE COMPOSITE: HOLES T-64, 65 & 82.
LAB. NO.: 9408

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
0.8	12.2	23.4	63.6	0.51	5 1/2	79	1.39	Air Dried Basis
	12.3	23.6	64.1	0.51	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	90.0	1.1	12.1	23.1	63.7	0.50	5	90.0	12.1	0.50	a.d.b.
	90.0		12.2	23.4	64.4	0.51	--	90.0	12.2	0.51	d.b.
65M x 0	10.0	1.2	11.9	23.9	63.0	0.51	6	100.0	12.1	0.50	a.d.b.
	10.0		12.0	24.2	63.8	0.52	--	100.0	12.2	0.51	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	66.6	4.3	7	66.6	4.3	a.d.b.
1.35-1.40	14.9	10.9	1	81.5	5.5	a.d.b.
1.40-1.45	5.9	18.5	1	87.4	6.4	a.d.b.
1.45-1.50	2.4	23.9	1	89.8	6.9	a.d.b.
1.50-1.60	2.0	31.1	1	91.8	7.4	a.d.b.
1.60-1.80	2.3	41.1	1	94.1	8.2	a.d.b.
+ 1.80	5.9	71.8	1/2	100.0	12.0	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	61.6	8.3	7	61.6	8.3	a.d.b.
STAGE II	22.5	11.4	5 1/2	84.1	9.1	a.d.b.
STAGE III	11.7	24.8	5 1/2	95.8	11.0	a.d.b.
TAILS	4.2	38.1	1/2	100.0	12.2	a.d.b.

F.F. PARAMETERS: Pulp Density = 7%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM B CORE COMPOSITE: HOLES T-64, 65, & 82

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST I, II, & III.

LAB. NO.: 9408

PROXIMATE						
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	REMARKS
0.9	7.2	23.5	68.4	0.47	6	Air Dried Basis
	7.3	23.7	69.0	0.47		Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
372	458	28	5	0.933

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM B CORE COMPOSITE: HOLES T-66, 67, 68 & 80
LAB. NO.: 9407

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.3	12.6	23.6	62.5	0.30	5 1/2	75.	1.39	Air Dried Basis
	12.8	23.9	63.3	0.30	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	95.4	1.0	12.6	23.5	62.9	0.30	5	95.4	12.6	0.30	a.d.b.
	15.4		12.7	23.7	63.6	0.30	--	95.4	12.7	0.30	d.b.
65M x 0	4.6	1.2	14.4	24.4	60.0	0.40	6	100.0	12.7	0.30	a.d.b.
	4.6		14.6	24.7	60.7	0.40	--	100.0	12.8	0.30	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	56.8	4.3	7 1/2	56.8	4.3	a.d.b.
1.35-1.40	8.4	11.0	1 1/2	65.2	5.2	a.d.b.
1.40-1.45	9.6	16.3	1	74.8	6.6	a.d.b.
1.45-1.50	8.4	20.1	1	83.2	8.0	a.d.b.
1.50-1.60	7.3	25.5	1	90.5	9.5	a.d.b.
1.60-1.80	6.3	32.9	1	96.8	10.9	a.d.b.
+ 1.80	3.2	62.6	1/2	100.0	12.6	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	62.5	9.0	7 1/2	62.5	9.0	a.d.b.
STAGE II	23.1	12.1	6 1/2	85.6	9.8	a.d.b.
STAGE III	8.5	19.3	4	94.1	10.7	a.d.b.
TAILS	5.9	60.1	N.A.	100.0	13.6	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM B CORE COMPOSITE : HOLES T-66, 67, 68 & 80

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1

LAB. NO.: 9407

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
1.0	8.4	23.9	66.7	0.29	4 1/2	Air Dried Basis
	8.5	24.1	67.4	0.29	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
371	452	23	-1	0.903

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM B CORE COMPOSITE: HOLES T-69, 70, 71, 72 & 79
LAB. NO.: 9406

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.4	11.1	24.0	63.5	0.31	6	77	1.39	Air Dried Basis
	11.3	24.3	64.4	0.31	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	94.6	1.3	11.1	23.7	63.9	0.31	5	94.6	11.1	0.31	a.d.b.
	94.6		11.2	24.0	64.8	0.31	--	94.6	11.2	0.31	d.b.
65M x 0	5.4	1.4	11.8	24.9	61.9	0.33	7	100.0	11.1	0.31	a.d.b.
	5.4		12.0	25.3	62.7	0.33	--	100.0	11.2	0.31	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	60.7	3.5	7 1/2	60.7	3.5	a.d.b.
1.35-1.40	9.9	9.7	1 1/2	70.6	4.4	a.d.b.
1.40-1.45	10.3	16.2	1	80.9	5.9	a.d.b.
1.45-1.50	4.4	19.4	1	85.3	6.6	a.d.b.
1.50-1.60	6.4	25.1	1	91.7	7.9	a.d.b.
1.60-1.80	4.7	32.4	1	96.4	9.1	a.d.b.
+ 1.80	3.6	58.1	1/2	100.0	10.8	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	66.9	7.2	7 1/2	66.9	7.2	a.d.b.
STAGE II	22.0	11.1	7 1/2	88.9	8.2	a.d.b.
STAGE III	5.8	20.4	4	94.7	8.9	a.d.b.
TAILS	5.3	59.5	1/2	100.0	11.6	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM B CORE COMPOSITE : HOLES T-69, 70, 71, 72 & 79

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1,11 & 111.

LAB. NO.: 9406

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
1.0	7.0	24.1	67.9	0.31	6	Air Dried Basis
	7.1	24.3	68.6	0.31	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
380	456	23	18	0.989

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM B CORE COMPOSITE: HOLES T-73, 74, 75, 76 & 78
LAB. NO.: 9405

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.5	10.1	25.2	63.2	0.32	5 1/2	74	1.38	Air Dried Basis
	10.3	25.6	64.1	0.32	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	95.9	1.3	10.4	25.2	63.1	0.30	5 1/2	95.9	10.4	0.30	a.d.b.
	95.9		10.5	25.5	64.0	0.30	--	95.9	10.5	0.30	d.b.
65M x 0	4.1	1.5	12.1	25.6	60.8	0.37	7	100.0	10.5	0.30	a.d.b.
	4.1		12.3	26.0	61.7	0.38	--	100.0	10.6	0.30	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	62.8	4.1	7 1/2	62.8	4.1	a.d.b.
1.35-1.40	11.3	11.1	2	74.1	5.2	a.d.b.
1.40-1.45	6.3	15.3	1 1/2	80.4	6.0	a.d.b.
1.45-1.50	4.3	18.8	1	84.7	6.6	a.d.b.
1.50-1.60	7.3	24.6	1	92.0	8.0	a.d.b.
1.60-1.80	5.2	31.6	1	97.2	9.3	a.d.b.
+ 1.80	2.8	53.6	1/2	100.0	10.5	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	58.3	7.2	7 1/2	58.3	7.2	a.d.b.
STAGE II	23.4	9.5	7	81.7	7.9	a.d.b.
STAGE III	12.2	16.1	6	93.9	8.9	a.d.b.
TAILS	6.1	58.5	1/2	100.0	12.0	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM B CORE COMPOSITE: HOLES T-73, 74, 75, 76 & 78

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1, 11 & 111.

LAB. NO.: 9405

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
0.8	6.6	25.4	67.2	0.25	6	Air Dried Basis
	6.7	25.6	67.7	0.25	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
380	457	25	14	0.975

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM C CORE COMPOSITE: HOLES T-64 & 65
LAB. NO.: 9412

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.3	23.6	20.8	54.3	0.57	5 1/2	69	1.47	Air Dried Basis
	23.9	21.1	55.0	0.58	--	--	--	Dry Basis

SIZE & RAW ANALYSIS								CUMULATIVE			
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	WT.%	ASH%	S%	REMARKS
1/4"x65M	94.8	1.1	23.9	20.7	54.3	0.56	4 1/2	94.8	23.9	0.56	a.d.b.
	94.8		24.2	20.9	54.9	0.57	--	94.8	24.2	0.57	d.b.
65M x 0	5.2	1.3	22.9	22.7	53.1	0.64	7	100.0	23.8	0.56	a.d.b.
	5.2		23.2	23.0	53.8	0.65	--	100.0	24.1	0.57	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M				CUMULATIVE		
S.G. FRACTION	WT.%	ASH%	F.S.I.	WT.%	ASH%	REMARKS
-1.35	49.0	6.6	7 1/2	49.0	6.6	a.d.b.
1.35-1.40	6.1	12.2	3 1/2	55.1	7.2	a.d.b.
1.40-1.45	12.0	22.6	1	67.1	10.0	a.d.b.
1.45-1.50	8.8	29.4	1	75.9	12.2	a.d.b.
1.50-1.60	5.0	31.9	1	80.9	13.4	a.d.b.
1.60-1.80	5.6	42.9	1	86.5	15.3	a.d.b.
+ 1.80	13.5	75.5	1/2	100.0	23.5	a.d.b.

FROTH FLOTATION TEST: 65M x 0				CUMULATIVE		
PRODUCT	WT.%	ASH%	F.S.I.	WT.%	ASH%	REMARKS
STAGE I	54.2	12.3	7 1/2	54.2	12.3	a.d.b.
STAGE II	21.9	16.9	7 1/2	76.1	13.6	a.d.b.
STAGE III	8.2	26.0	5	84.3	14.8	a.d.b.
TAILS	15.7	62.5	1/2	100.0	22.3	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM C CORE COMPOSITE : HOLES T-64 & 65

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1

LAB. NO.: 9412

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
1.2	12.5	23.2	63.1	0.56	6 1/2	Air Dried Basis
	12.7	23.5	63.8	0.57	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
368	457	22	- 5	0.854

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM C CORE COMPOSITE: HOLES T-66, 67 & 68
LAB. NO.: 9411

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.2	30.7	19.7	48.4	0.53	5 1/2	69	1.52	Air Dried Basis
	31.1	19.9	49.0	0.54	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	92.1	1.0	31.8	18.8	48.4	0.51	5	92.1	31.8	0.51	a.d.b.
	92.1		32.1	19.0	48.9	0.52	--	92.1	32.1	0.52	d.b.
65M x 0	7.9	1.3	25.1	22.1	51.5	0.61	5 1/2	100.0	31.3	0.52	a.d.b.
	7.9		25.4	22.4	52.2	0.62	--	100.0	31.6	0.53	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	46.2	5.2	8 1/2	46.2	5.2	a.d.b.
1.35-1.40	4.8	15.5	4	51.0	6.2	a.d.b.
1.40-1.45	8.7	23.4	1 1/2	59.7	8.7	a.d.b.
1.45-1.50	2.7	29.6	1	62.4	9.6	a.d.b.
1.50-1.60	5.9	34.3	1	68.3	11.7	a.d.b.
1.60-1.80	5.6	46.6	1	73.9	14.4	a.d.b.
+ 1.80	26.1	82.0	N.A.	100.0	32.0	a.d.b.

FROTH FLOTATION TEST: 65M x 0 N.S.S.*						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I						a.d.b.
STAGE II						a.d.b.
STAGE III						a.d.b.
TAILS						a.d.b.

F.F. PARAMETERS: Pulp Density =
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

* N.S.S. = not sufficient sample

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM C CORE COMPOSITE : HOLES T-66, 67 & 68

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50

LAB. NO.: 9411

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
1.0	9.8	24.5	64.7	0.63	7 1/2	Air Dried Basis
	9.9	24.7	65.4	0.64	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
374	455	26	44	1.026

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM C CORE COMPOSITE: HOLES T-69, 71 & 72
LAB. NO.: 9410

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.5	32.3	18.9	47.3	0.47	3 1/2	67	1.58	Air Dried Basis
	32.8	19.2	48.0	0.48	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	95.6	1.3	32.9	18.7	47.1	0.46	3	95.6	32.9	0.46	a.d.b.
	95.6		33.3	18.9	47.8	0.47	--	95.6	33.3	0.47	d.b.
65M x 0	4.4	1.1	25.6	21.2	52.1	0.73	6 1/2	100.0	32.6	0.47	a.d.b.
	4.4		25.9	21.4	52.7	0.74	--	100.0	33.0	0.48	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	34.9	5.8	8 1/2	34.9	5.8	a.d.b.
1.35-1.40	11.9	13.2	2 1/2	46.8	7.7	a.d.b.
1.40-1.45	6.0	18.3	1 1/2	52.8	8.9	a.d.b.
1.45-1.50	5.1	25.4	1	57.9	10.3	a.d.b.
1.50-1.60	5.4	34.4	1	63.3	12.4	a.d.b.
1.60-1.80	8.5	43.4	1/2	71.8	16.1	a.d.b.
+ 1.80	28.2	73.0	N.A.	100.0	32.1	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	47.7	12.5	8	47.7	12.5	a.d.b.
STAGE II	25.2	18.8	7 1/2	72.9	14.7	a.d.b.
STAGE III	9.6	29.9	4	82.5	16.4	a.d.b.
TAILS	17.5	65.9	N.A.	100.0	25.1	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM C CORE COMPOSITE : HOLES T-69, 71 & 72

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1

LAB. NO.: 9410

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
1.0	10.6	23.8	64.6	0.57	7	Air Dried Basis
	10.7	24.0	65.3	0.58	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
368	457	27	22	0.989

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM C CORE COMPOSITE: HOLES T-73, 74, 75, 76 & 78
LAB. NO.: 9409 Ratio 1 2 1.5 1.8 1.5

HEAD RAW ANALYSIS								
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.3	38.3	17.2	43.2	0.41	1	62	1.66	Air Dried Basis
	38.8	17.4	43.8	0.42	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	94.9	1.3	38.3	17.1	43.3	0.41	1	94.9	38.3	0.41	a.d.b.
	94.9		38.8	17.3	43.9	0.42	--	94.9	38.8	0.42	d.b.
65M x 0	5.1	1.3	33.8	18.8	46.1	0.53	2 1/2	100.0	38.1	0.42	a.d.b.
	5.1		34.2	19.0	46.8	0.54	--	100.0	38.6	0.43	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	27.2	7.4	7 1/2	27.2	7.4	a.d.b.
1.35-1.40	14.1	17.2	1	41.3	10.7	a.d.b.
1.40-1.45	8.0	22.6	1	49.3	12.7	a.d.b.
1.45-1.50	4.6	26.8	1	53.9	13.9	a.d.b.
1.50-1.60	6.4	34.3	1	60.3	16.0	a.d.b.
1.60-1.80	9.4	45.0	1/2	69.7	19.9	a.d.b.
+ 1.80	30.3	81.1	N.A.	100.0	38.5	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	42.4	14.4	7	42.4	14.4	a.d.b.
STAGE II	14.9	18.0	6	57.3	15.3	a.d.b.
STAGE III	8.8	26.5	2 1/2	66.1	16.8	a.d.b.
TAILS	33.9	67.1	N.A.	100.0	33.9	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM C CORE COMPOSITE: HOLES T-73, 74, 75, 76 & 78

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1

LAB. NO.: 9409

PROXIMATE						
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	REMARKS
1.1	13.8	22.3	62.8	0.56	3 1/2	Air Dried Basis
	14.0	22.5	63.5	0.57	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
368	455	23	- 23	---

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM D CORE COMPOSITE: HOLES T-66, 67 & 68
LAB. NO.: 9415

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.6	43.9	17.4	37.1	0.43	2	65	1.68	Air Dried Basis
	44.6	17.7	37.7	0.44	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	93.6	1.4	45.6	16.4	36.6	0.42	2	93.6	45.6	0.42	a.d.b.
	93.6		46.2	16.6	37.2	0.43	--	93.6	46.2	0.43	d.b.
65M x 0	6.4	1.5	27.2	22.1	49.2	0.68	7 1/2	100.0	44.4	0.44	a.d.b.
	6.4		27.6	22.4	50.0	0.69	--	100.0	45.0	0.45	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	29.7	5.2	8 1/2	29.7	5.2	a.d.b.
1.35-1.40	4.4	19.1	4	34.1	7.0	a.d.b.
1.40-1.45	3.6	23.4	2 1/2	37.7	8.6	a.d.b.
1.45-1.50	6.6	39.7	1	44.3	13.2	a.d.b.
1.50-1.60	4.3	41.3	1	48.6	15.7	a.d.b.
1.60-1.80	8.1	55.3	1	56.7	21.3	a.d.b.
+ 1.80	43.3	78.1	N.A.	100.0	45.9	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	52.5	12.3	8	52.5	12.3	a.d.b.
STAGE II	14.4	16.2	8	66.9	13.1	a.d.b.
STAGE III	8.9	28.9	5 1/2	75.8	15.0	a.d.b.
TAILS	24.2	66.1	1/2	100.0	27.2	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM D CORE COMPOSITE: HOLES T-66, 67 & 68

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST

LAB. NO.: 9415

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
1.1	13.2	24.8	60.9	0.56	7 1/2	Air Dried Basis
	13.3	25.1	61.6	0.57	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
368	458	29	51	1.031

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM D CORE COMPOSITE: HOLES T-69, 71 & 72
LAB. NO.: 9414

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
0.9	47.5	16.7	34.9	0.45	1	57	1.76	Air Dried Basis
	47.9	16.9	35.2	0.45	--	--	--	Dry Basis

SIZE & RAW ANALYSIS								CUMULATIVE			
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	WT.%	ASH%	S%	REMARKS
1/4"x65M	97.5	1.2	48.1	16.3	34.4	0.43	1	97.5	48.1	0.43	a.d.b.
	97.5		48.7	16.5	34.8	0.44	--	97.5	48.7	0.44	d.b.
65M x 0	2.5	1.3	36.9	19.4	42.4	0.64	4	100.0	47.8	0.44	a.d.b.
	2.5		37.4	19.7	42.9	0.65	--	100.0	48.4	0.45	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M				CUMULATIVE		
S.G. FRACTION	WT.%	ASH%	F.S.I.	WT.%	ASH%	REMARKS
-1.35	20.5	4.2	7 1/2	20.5	4.2	a.d.b.
1.35-1.40	4.8	10.3	3 1/2	25.3	5.4	a.d.b.
1.40-1.45	4.6	15.8	1 1/2	29.9	7.0	a.d.b.
1.45-1.50	3.6	21.6	1	33.5	8.5	a.d.b.
1.50-1.60	6.4	29.0	1	39.9	11.8	a.d.b.
1.60-1.80	9.3	42.0	1	49.2	17.5	a.d.b.
+ 1.80	50.8	76.1	N.A.	100.0	47.3	a.d.b.

FROTH FLOTATION TEST: 65M x 0				CUMULATIVE		
PRODUCT	WT.%	ASH%	F.S.I.	WT.%	ASH%	REMARKS
STAGE I	16.8	10.8	8	16.8	10.8	a.d.b.
STAGE II	5.2	15.4	7 1/2	22.0	11.9	a.d.b.
STAGE III	6.3	22.5	4 1/2	28.3	14.2	a.d.b.
TAILS	71.7	45.1	1 1/2	100.0	36.4	a.d.b.

F.F. PARAMETERS: Pulp Density = 7%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM D CORE COMPOSITE: HOLES T-69. 71 & 72

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1

LAB. NO.: 9414

PROXIMATE						
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	REMARKS
1.3	8.8	25.6	64.3	0.65	6	Air Dried Basis
	8.9	25.9	65.2	0.66	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
365	458	26	- 21	0.485

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM D CORE COMPOSITE: HOLES T-73, 74, 75 & 76
LAB. NO.: 9413

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
0.9	49.3	16.3	33.5	0.39	1	60	1.80	Air Dried Basis
	49.7	16.4	33.9	0.39	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	95.1	1.0	49.0	16.5	33.5	0.36	1	95.1	49.0	0.36	a.d.b.
	95.1		49.5	16.7	33.8	0.36	--	95.1	49.5	0.36	d.b.
65M x 0	4.9	1.3	37.0	19.7	42.0	0.68	3	100.0	48.4	0.38	a.d.b.
	4.9		37.5	20.0	42.5	0.69	--	100.0	48.9	0.38	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	27.7	7.3	7	27.7	7.3	a.d.b.
1.35-1.40	4.9	19.3	1 1/2	32.6	9.1	a.d.b.
1.40-1.45	4.2	27.5	1	36.8	11.2	a.d.b.
1.45-1.50	4.6	38.2	1	41.4	14.2	a.d.b.
1.50-1.60	5.8	44.8	1	47.2	18.0	a.d.b.
1.60-1.80	5.0	56.9	1/2	52.2	21.7	a.d.b.
+ 1.80	47.8	77.8	N.A.	100.0	48.5	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE 1	47.1	18.2	7 1/2	47.1	18.2	a.d.b.
STAGE 11	12.8	25.6	6 1/2	59.9	19.8	a.d.b.
STAGE 111	7.2	38.5	3	67.1	21.8	a.d.b.
TAILS	32.9	68.3	1/2	100.0	37.1	a.d.b.

F.F. PARAMETERS: Pulp Density = 10%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages 1 & 11 are froths at 30 sec. intervals
Stage 111 is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM D CORE COMPOSITE : HOLES T-73, 74, 75 & 76

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1

LAB. NO.: 9413

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
1.4	15.1	23.8	59.7	0.62	5	Air Dried Basis
	15.3	24.1	60.6	0.63	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
368	437	27	- 27	---

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM E CORE COMPOSITE: HOLES T-67, 69, 71 & 72
LAB. NO.: 9417

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
2.0	16.3	25.1	56.6	0.58	7 1/2	70	1.42	Air Dried Basis
	16.6	25.6	57.8	0.59	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	94.4	1.4	15.3	25.0	58.3	0.57	7 1/2	94.4	15.3	0.57	a.d.b.
	94.4		15.5	25.4	59.1	0.58	--	94.4	15.5	0.58	d.b.
65M x 0	5.6	1.3	24.6	22.3	51.8	0.71	7 1/2	100.0	15.8	0.58	a.d.b.
	5.6		24.9	22.6	52.5	0.72	--	100.0	16.0	0.59	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	70.2	4.2	8	70.2	4.2	a.d.b.
1.35-1.40	6.3	10.2	3	76.5	4.7	a.d.b.
1.40-1.45	3.6	14.4	1 1/2	80.1	5.1	a.d.b.
1.45-1.50	2.3	21.0	1	82.4	5.6	a.d.b.
1.50-1.60	2.3	28.9	1	84.7	6.2	a.d.b.
1.60-1.80	4.7	43.7	1	89.4	8.2	a.d.b.
+ 1.80	10.6	74.8	N.A.	100.0	15.2	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	20.1	11.6	7	20.1	11.6	a.d.b.
STAGE II	16.9	17.9	7	37.0	14.5	a.d.b.
STAGE III	12.6	23.4	4	49.6	16.7	a.d.b.
TAILS	50.4	33.6	N.A.	100.0	25.2	a.d.b.

F.F. PARAMETERS: Pulp Density = 5%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM E CORE COMPOSITE: HOLES T-67, 69, 71 & 72

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1, 11 & 111

LAB. NO.: 9417

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
1.0	5.8	27.2	66.0	0.57	7 1/2	Air Dried Basis
	5.9	27.5	66.6	0.58	--	Dry Basis

DILATATION TEST				
S.T.(°C)	M.D.T.(°C)	M.C.(%)	M.D.(%)	G.NO.
359	445	29	56	1.035

GIESELER PLASTOMETER TEST		
	DDPM	TEMP.(°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

CLIENT: TECK MINING GROUP LTD.
SAMPLE: SEAM E CORE COMPOSITE: HOLES T-73, 75 & 76
LAB. NO.:9416

				HEAD RAW ANALYSIS				
RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	H.G.I.	S.G.	REMARKS
1.5	21.6	23.0	53.9	0.75	7	64	1.45	Air Dried Basis
	21.9	23.4	54.7	0.76	--	--	--	Dry Basis

SIZE & RAW ANALYSIS											
SIZE FRACTION	WT.%	RM.%	ASH%	VM.%	FC.%	S%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	CUMULATIVE S%	REMARKS
1/4"x65M	93.9	1.3	21.3	23.8	53.6	0.74	6 1/2	93.9	21.3	0.74	a.d.b.
	93.9		21.6	24.1	54.3	0.75	--	93.9	21.6	0.75	d.b.
65M x 0	6.1	1.3	23.8	22.4	52.5	0.86	7	100.0	21.5	0.75	a.d.b.
	6.1		24.1	22.7	53.2	0.87	--	100.0	21.8	0.76	d.b.

SINK-FLOAT ANALYSIS: 1/4" x 65M						
S.G. FRACTION	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
-1.35	63.1	4.3	8	63.1	4.3	a.d.b.
1.35-1.40	6.3	10.5	3	69.4	4.9	a.d.b.
1.40-1.45	3.1	14.7	3	72.5	5.3	a.d.b.
1.45-1.50	2.0	20.5	3	74.5	5.7	a.d.b.
1.50-1.60	2.0	28.6	3	76.6	6.3	a.d.b.
1.60-1.80	3.8	42.8	1	80.4	8.0	a.d.b.
+ 1.80	19.6	78.3	N.A.	100.0	21.8	a.d.b.

FROTH FLOTATION TEST: 65M x 0						
PRODUCT	WT.%	ASH%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%	REMARKS
STAGE I	50.9	9.1	7 1/2	50.9	9.1	a.d.b.
STAGE II	18.0	13.3	7	68.9	10.2	a.d.b.
STAGE III	8.4	25.7	3 1/2	77.3	11.9	a.d.b.
TAILS	22.7	64.6	N.A.	100.0	23.8	a.d.b.

F.F. PARAMETERS: Pulp Density = 8%
Reagent Dosage - 4:1=Ker:MIBC, 0.48lb/T
Conditioning Time = 60 seconds
Stages I & II are froths at 30 sec. intervals
Stage III is froth for last 90 seconds.

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM E CORE COMPOSITE: HOLES T-73, 75 & 76

ANALYSIS OF CLEAN COAL PRODUCT
1/4" x 65M FLOAT @ 1.50 +65M x 0 ST 1, 11, & 111.

LAB. NO.: 9416

PROXIMATE				S%	F.S.I.	REMARKS
RM.%	ASH%	VM.%	FC.%			
1.1	6.1	26.9	65.9	0.72	7 1/2	Air Dried Basis
	6.2	27.2	66.6	0.73	--	Dry Basis

DILATATION TEST				
S.T. (°C)	M.D.T. (°C)	M.C. (%)	M.D. (%)	G.NO.
362	452	27	35	1.014

GIESELER PLASTOMETER TEST		
	DDPM	TEMP. (°C)
START		
MAXIMUM		
FINAL		
RANGE =		

S.T. = Softening Temperature

M.D.T. = Maximum Dilatation Temperature

M.C. = Maximum Contraction

M.D. = Maximum Dilatation

DDPM = Dial Division per minute

PR-BULLMOOSE 77(4)A.

BIRTLEY ENGINEERING (CANADA) LTD.

Subsidiary of Great West Steel Industries Ltd.

505 - 50th AVE. S.E. CALGARY, ALBERTA T2G 2B4 PHONE 403 - 253-8273

A REPORT TO TECK MINING GROUP LTD.
OF THE WASHABILITY AND PILOT PLANT WASHING
RESULTS OF BULK SAMPLES FROM SEAMS "C", "E",
"D", "B" AND "A" FROM THE BULLMOOSE PROJECT.

PR-BULLMOOSE 77 (4)A

PART I OF II

July/August, 1977

CONFIDENTIAL

Respectfully Submitted by:

Frank J Horvat

Frank J. Horvat

Manager

BIRTLEY ENGINEERING (CANADA) LTD.
Coal Science & Minerals Testing

REPORT NO.: CS-0110
Part 1 - South Fork

BIRTLEY ENGINEERING (CANADA) LTD.

Subsidiary of Great West Steel Industries Ltd.

505 - 50th AVE. S.E. CALGARY, ALBERTA T2G 2B4 PHONE 403 - 253-8273

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BIRTLEY ENGINEERING (CANADA) LTD.
Coal Science & Minerals Testing

REPORT NO.: CS-0110
Part 1 - South Fork

TABLE OF CONTENTS

BIRTLEY ENGINEERING (CANADA) LTD.

Subsidiary of Great West Steel Industries Ltd.

505 - 50th AVE. S.E. CALGARY, ALBERTA T2G 2B4 PHONE 403 - 253-8273

A REPORT TO TECK MINING GROUP LTD. OF THE WASHABILITY AND PILOT PLANT WASHING RESULTS OF BULK SAMPLES FROM SEAMS "C", "E", "D", "B" AND "A" FROM THE BULLMOOSE PROPERTY

July/August, 1977

INTRODUCTION

The bulk samples were delivered to the Coal Science and Minerals Testing plant site in Calgary, Alberta in 6 cubic yard bulk containers and in steel 45 gallon drums.

The containers were unloaded from the carrier by a mobile crane unit, emptied onto a steel 11 x 20 meter mixing pad, washed out and replaced on the carrier for return to the exploration camp.

SAMPLE PREPARATION

The detailed homogenizing procedures (Pages 3,4,&5) were used throughout the program. These procedures ensured that, within practical limits, representative samples of raw coal would be extracted for washability tests and the feed to the plant would be uniform and unsegregated as to ash content.

The value of this procedure for homogenizing the clean coal product can be readily appreciated with the assurance that when the coal is packaged the ash content does not vary significantly between barrels.

WASHABILITY

The washability work flowsheet, P 11, outlines in detail the test procedures. The analytical results for each seam are appropriately tabulated, with the Rosin-Rammler curve showing the average particle size of the raw coal, the Size and Gravity Distribution diagram giving a bird's-eye view of the screen and float-sink results with the classical washability curves rounding out the presentation.

The analysis of the simulated clean coal and reject products derived from the float-sink fractions finalize the washability portion of the reports for each seam.

PLANT WASHING

The pilot plant flowsheet, P 9, and a brief resume clarify the plant operation. The plant balance sheet summarizes schematically the wash results with individual performance for the heavy media, two-stage water cyclone and froth flotation circuits being detailed on their respective forms.

The clean coal analyses performed as described in the pilot plant analytical flowsheet, P 12, finalize the plant washing reports for each seam.

COAL SCIENCE & MINERALS TESTING DIVISION

SPECIAL PROCEDURES FOR HANDLING OF BULK SAMPLES

HEAD RAW PREPARATION

The order of preference for delivery bulk samples is: 1) bulk truck loads. 2) poly-lined jute bags or re-enforced plastic bags. 3) barrels. The coal is dumped onto a steel mixing plate (32' x 60') and subjected to a preliminary mixing by means of a small front end loader and placed in a conical heap in the centre of the plate. (The bucket capacity is about 1 1/2 drums of coal).

Four (4) sampling points (quandrants) are selected along the perimeter of this central pile identified for clarity as Sites #1, #2, #3, #4, (see attached sketch) from which is withdrawn successive bucket loads of coal and placed in "quarter" conical piles relative to the sampling sites. However, to minimize the possibility of bias, on the second sampling pass, coal withdrawn from Site #1 is placed in pile #2, coal withdrawn from Site #2 is placed in pile #3 and so on until the central pile has been transferred into the 4 quartered piles.

Now the coal from the quartered piles is returned to the central location by taking bucket loads successively from piles A, B, C and D to reform the central conical heap. Four (4) sampling sites are relocated and the whole procedure is repeated three (3) more times after which a head raw sample is extracted, by taking small increments from each of the "quartered" piles of such quantity that four (4) increments will fill two (2) - 45 gallon drums using a portable loading hopper. This hopper is designed in such a way that two (2) barrels are filled simultaneously by means of a splite chute. The quantity of sample extracted is dependent on the top size of the coal and must conform to ASTM specifications for sampling of coal.

CLEAN COAL PREPARATION (Clean Mix)

After a preliminary moisture reduction of the heavy media clean coal and the fines filter cake to the desired levels, the products are homogenized as follows:-

The heavy media clean coal is spread in a thin layer on the meticulously clean mixing plate. The filter cake is "seeded" over the surface of the coarse coal by means of the front end loader. This total mass is subjected to a preliminary mixing routine and a central conical heap formed.

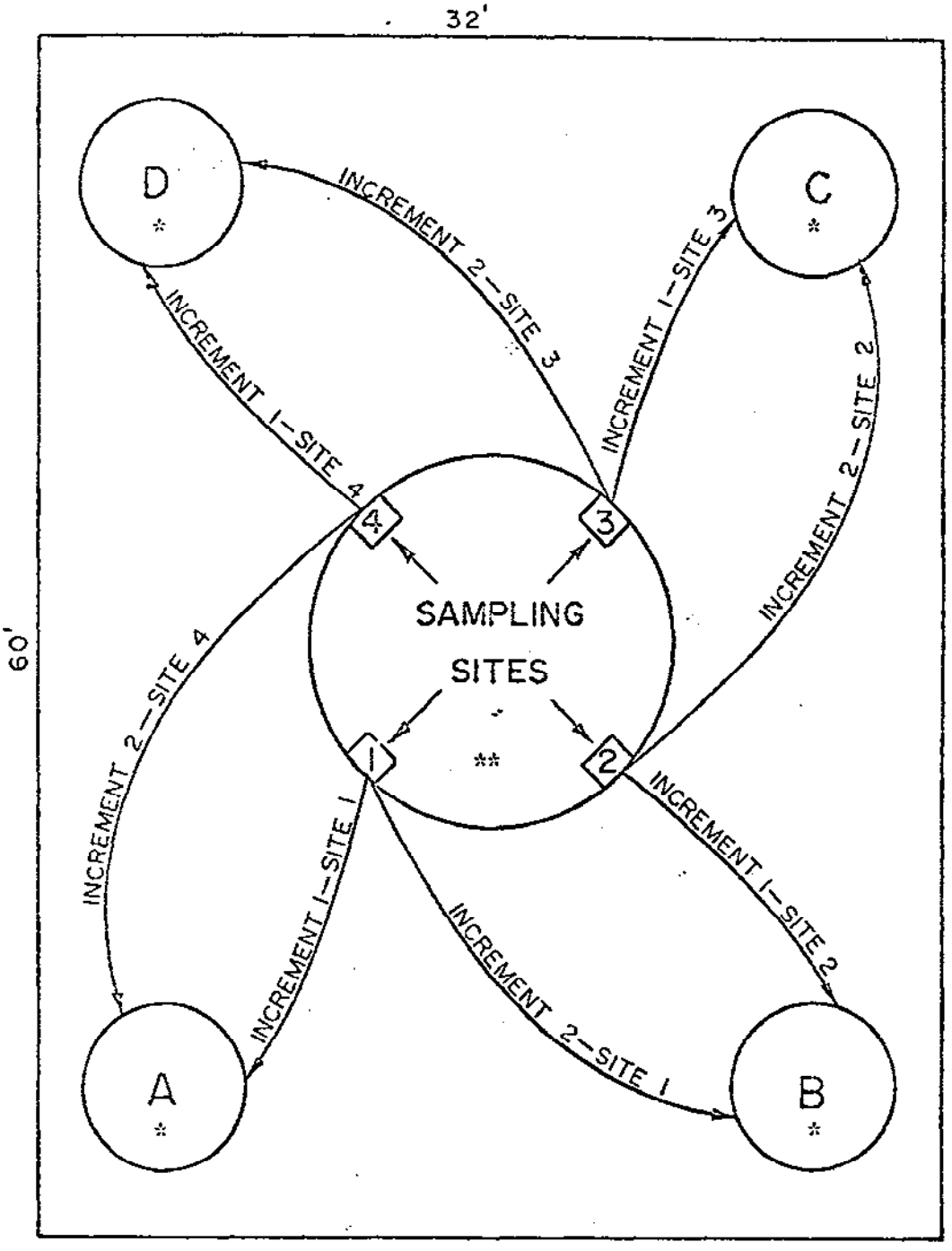
From this point on the procedures outlined for homogenizing the raw coal are strictly followed.

From the final four (4) quarters, double poly lined barrels are filled by exactly the same procedure as outlined for the raw coal sample extraction. The coal is tamped into the barrels so that each barrel contains about 180 kg including moisture.

During the barrel filling procedure, a minimum of 60 increments are taken from the bucket load quantities with a small square mouth shovel. Each increment is of such quantity that a minimum of 100 kg of coal are retained for analytical purposes.

Finally the plastic liners are tied off and an identifying tag affixed inside the drum. The lid, with a gasket, is firmly attached to seal the barrel and the barrel is stencilled as to contents and destination.

SCHEMATIC OF RAW AND CLEAN COAL HOMOGENIZATION



* "Quarter" Piles ** Central Pile

Continue moving increments until all of the central pile is transferred to the "Quarter" piles A,B,C, and D, i.e. increment 3, site 1 to C, increment 3, site 2 to D, increment 3, site 3 to A, increment 3, site 4 to B etc.

PILOT PLANT WASHING

Figure 1 is the flowsheet of the Coal Science & Minerals Testing pilot plant. Raw coal is dumped by a front end loader into a hopper at ground level, which has a heavy 2" square screen installed to ensure that the bucket elevator receiving the feed does not handle oversize material. The 2" oversize coal is crushed manually to pass the 2" screen, but "rock" is collected in barrels and reported as shale of the heavy media circuit. The bucket elevator discharges the minus 2" feed at a rate of 5 to 7 metric tons per hour into a rotary 3/4" screen of the third deck. The 3/4" oversize falls via a chute into a 5" x 8" jaw crusher where it is crushed to minus 3/4" and is recycled through the feed system. The 3/4" x 0 screen underflow is washed with water onto a 28 mesh sieve bend and slot screen for desliming.

The 3/4" x 28 mesh coal is the feed to the 14" DSM Heavy Media cone on the seond deck. The slurry of coal and correct medium is pumped to the cyclone from the mixing tube at a pressure of 9 to 10 psi. The overflow and underflow products are discharged onto a common, but split 28 mesh slot screen preceded by a 28 mesh sieve bend where the magnetite is washed off into the correct and dilute medium tanks directly below. Additional clean spray water and baffles across the clean coal stream ensure that a minimum of magnetite is retained on the clean coal product. The clean coal and shale are collected in barrels by means of individual chutes for weighing.

The dilute medium is pumped to a thickening cone on the third deck from where it is fed to a 30" magnetic separator. The recovered magnetite is sluiced back to the correct medium tank. The specific gravity of the medium is monitored manually, using a density meter, and adjusted for loss by adding cyclone grade magnetite directly to the correct medium tank.

The 28 mesh x 0 coal collected in the slimes tank ground level, is pumped to the thickening cone on the third deck. From this point it can be fed directly to the froth circuit, or as is usual, to the two-stage water-only cyclone system.

Coal to the 6" DSM water-only primary cyclone is pumped at a pulp density of 10% to 20% from the cyclone feed rank at a pressure of 20 psi, and a flow rate of 85 Imperial gallons per minute. A mechancially adjustable vortex finder facilitates settings for a desired ash content. The primary cyclone underflow with make-up water is fed to a similarily adjustable secondary 4" unit. The overflow is directed back to the primary cyclone feed tank with the underflow being the waste product.

The waste product is routed to the static thickener while the primary underflow is fed by gravity to a rapped 0.25 mm sieve bend. The seive bend is the water-only cyclone product at approximately 65 mesh oversize, and directed to the Eimco disc filter for dewatering.

The sieve bend underflow passes by gravity to the thickening cyclone feed tank, from where it is pumped to the 20° - 8" cyclone. This thickening cone serves a dual purpose: 1) it removes undesireable -325 mesh slimes from the flotation feed, 2) it provides a feed of proper density (15% - 25% solids) to the froth cells. The overflow with the -325 mesh slimes flows to the static thickener.

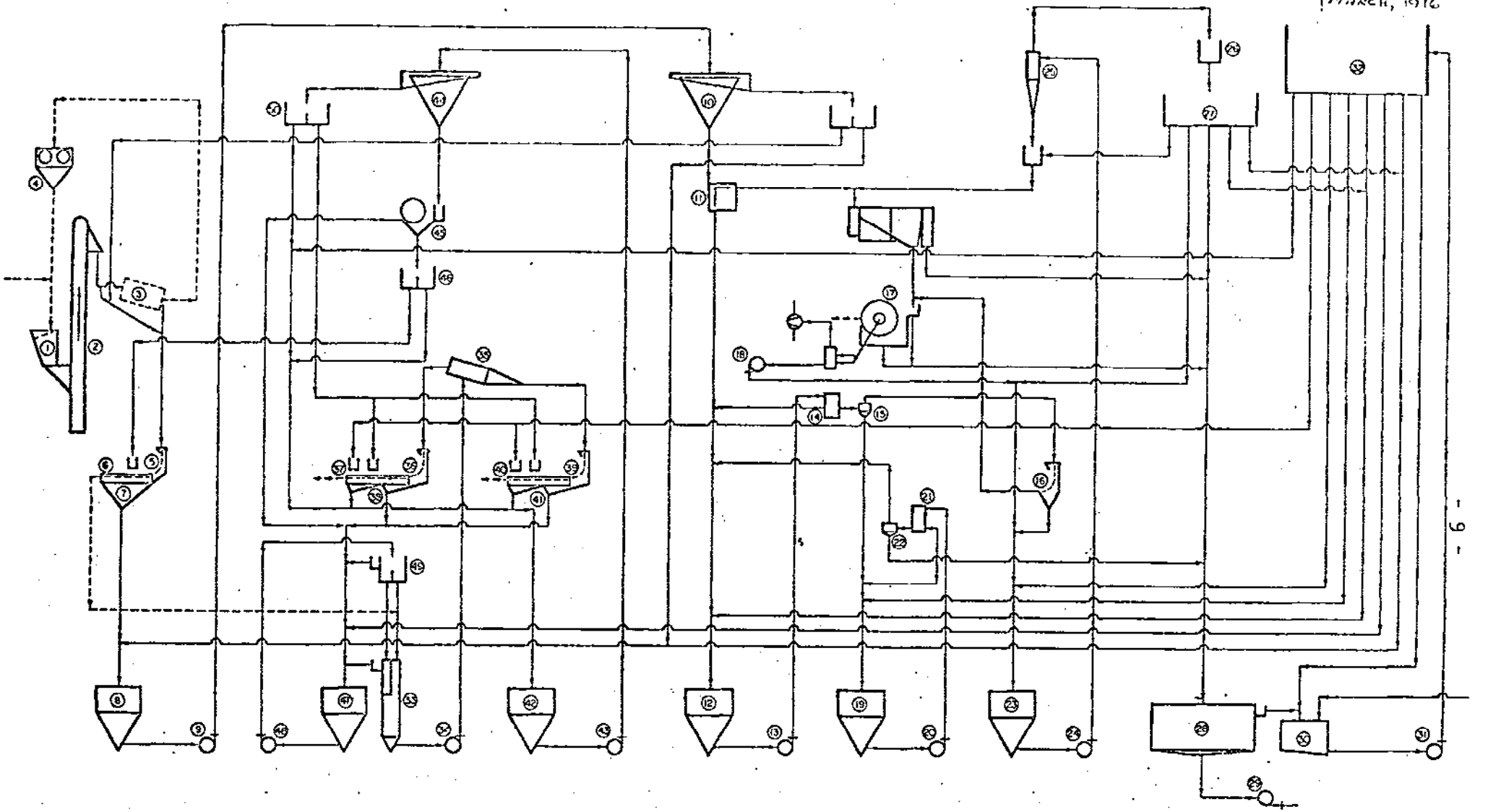
The flotation circuit consists of two (2) Birtley-Humboldt Multi-Wobble Cells in series. Since these cells were installed on September 12th, 1976, there appears to be a marked improvement in tailings ash contents, indicating excellent recovery of froth product. A rotary reagent feeder introduces 4:1 Kerosene:Methylisobutylcarbinol into the circuit at the feed entry point for better conditioning.

The tailings join the water-only cyclone underflow and thickener cone overflow to form the thickener tails. The froth enters the Eimco disc filter and is dewatered along with the sieve bend overflow to form the filter cake or fines product. This and the heavy media clean coal are combined to form the clean coal product or clean mix.

Each circuit is sampled for feed, product and waste in addition to the 0.25 mm sieve bend overflow and underflow, filter cake, thickening cyclone overflow and underflow and analysed for ash content. The primary water-only cyclone overflow product is screened at 65 mesh as the plus 65 mesh figure is used to calculate the yield of the water-only cyclone circuit.

The heavy media clean coal is "drained" of extraneous moisture before being combined and homogenized with the partially dried filter cake. This partial drying is accomplished by spreading the fines product on a pad, heated electrically at 20°C, and reducing the moisture content from 22 - 28% to less than 12%.

March, 1976

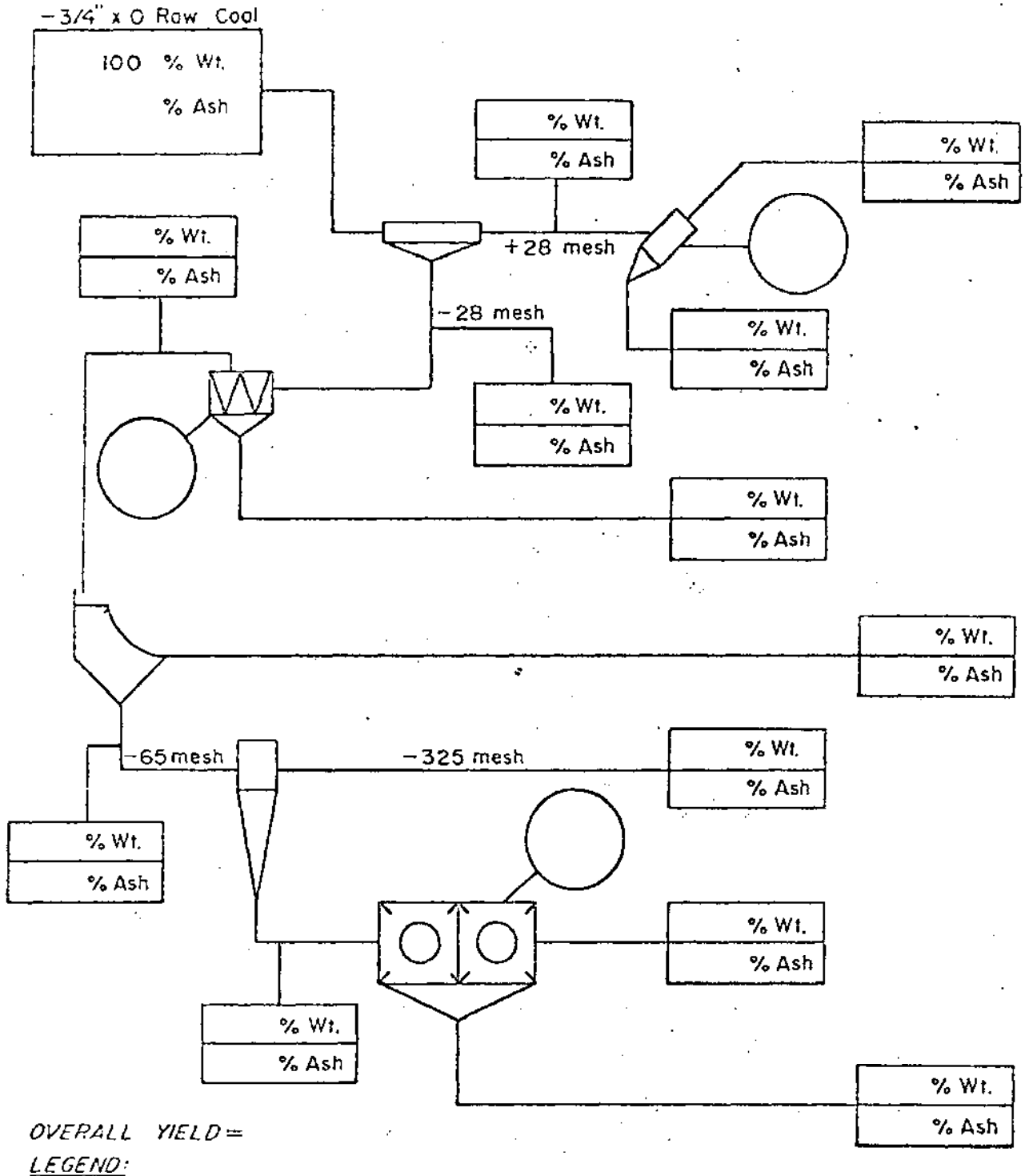


1. Feed Bin
2. Elevator
3. Rotary Screen
4. Jaw Crusher
5. Sieve Bend
6. Desliming Screen
7. Underflow Collector
8. 28M-O Raw Coal Collection Tank
9. Pump
10. Settling Cone
11. Diverter
12. Primary Water Only Cyclone Feed Tank
13. Pump
14. Distributor
15. Primary Water Only Cyclone
16. Sieve Bend
17. Vacuum Filter
18. Filtrate Water Pump
19. Secondary Water Only Cyclone Feed Tank
20. Pump
21. Distributor
22. Secondary Water Only Cyclone
23. Thickening Cyclone Feed Tank
24. Pump
25. Thickening Cyclone
26. Overflow Distributor
27. Head Box
28. Thickener
29. Waste Disposal Pump
30. Clarified Water Collection Tank
31. Clarified Water Pump
32. Clarified Water Head Box
33. Cyclone Feed Tank
34. Pump
35. D.S.M. Cyclone
36. Sieve Bend
37. C.C. Drain and Rinse Screen
38. Underflow Collector
39. Sieve Bend
40. Discard Drain and Rinse Screen
41. Underflow Collector
42. Dilute Medium Tank
43. Pump
44. Settling Cone
45. Magnetic Separator
46. Splitter Box
47. Correct Medium Tank
48. Pump
49. Distribution Box
50. Splitter Box

TEST PLANT FLOWSHEET

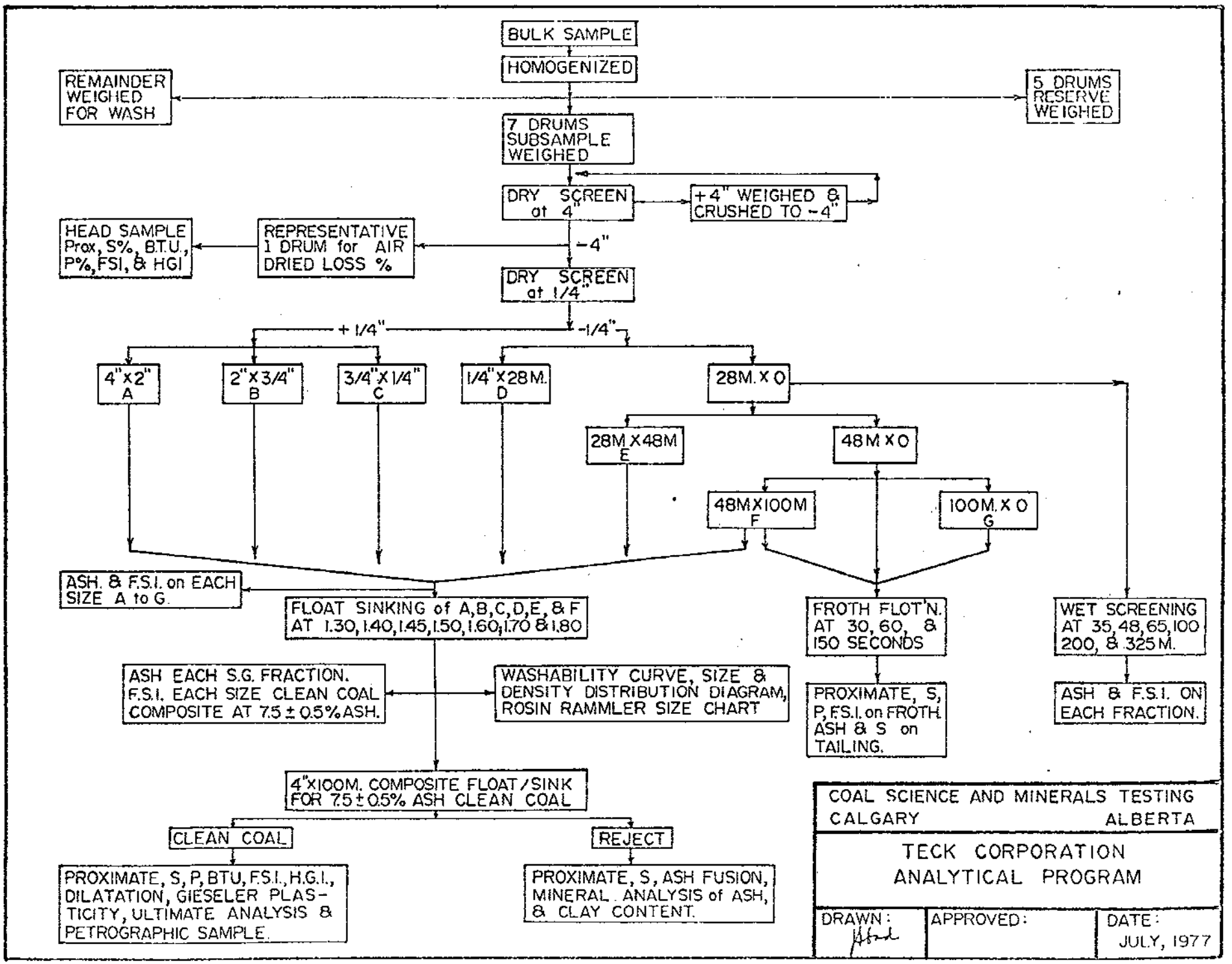
COAL SCIENCE & MINERALS TESTING

DIV OF BIRLEY [illegible]

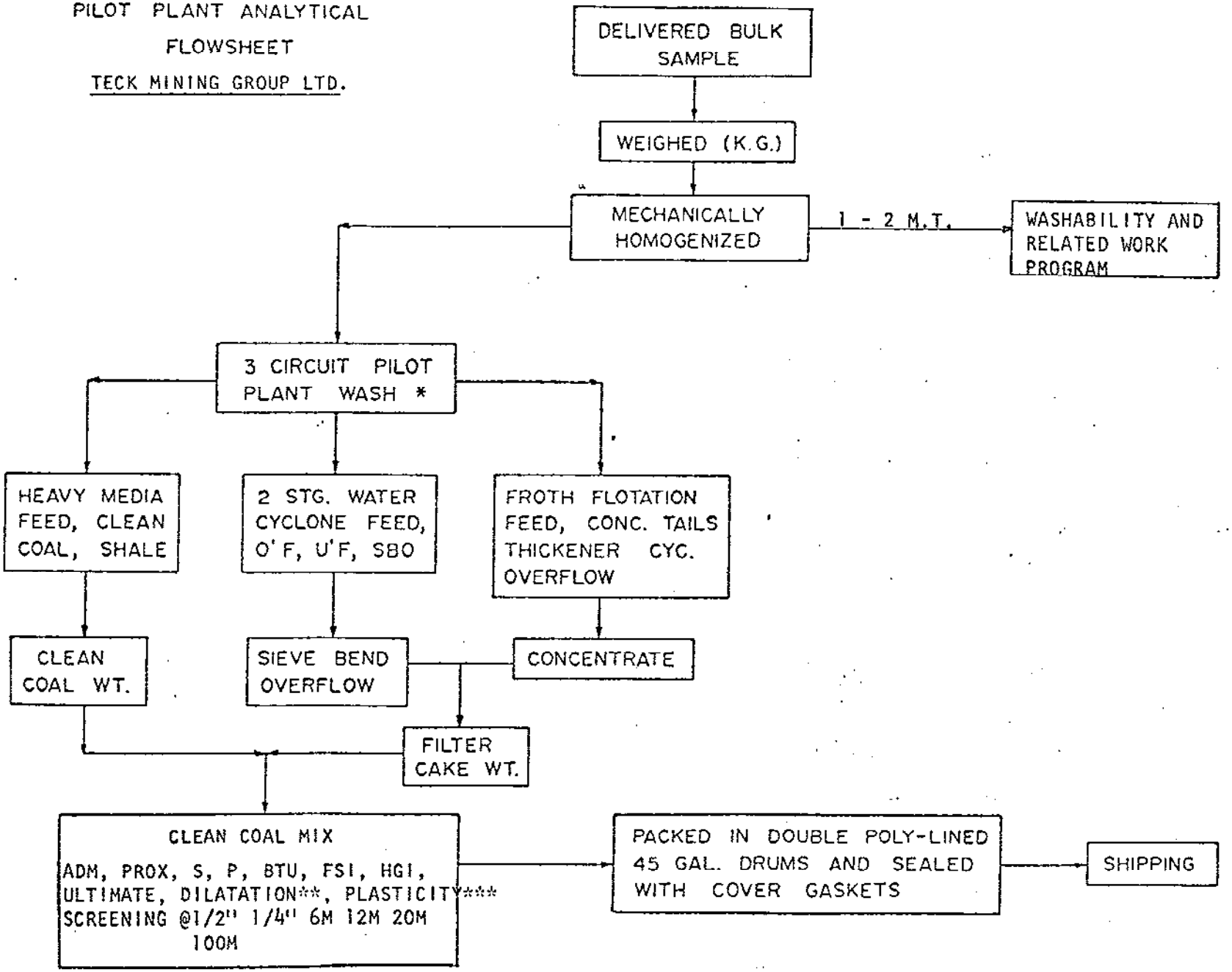


BIRTLEY ENGINEERING (CANADA) LTD.

Title	Date
TYPICAL PLANT BALANCE SHEET	
	Drawn


BULK SAMPLE
HOMOGENIZED
REMAINDER WEIGHED FOR WASH
5 DRUMS RESERVE WEIGHED
7 DRUMS SUBSAMPLE WEIGHED
DRY SCREEN at 4"
+4" WEIGHED & CRUSHED TO -4"
HEAD SAMPLE Prox, S%, B.T.U., P%, FSI, & HGI
REPRESENTATIVE 1 DRUM for AIR DRIED LOSS %
-4"
DRY SCREEN at 1/4"
+ 1/4"
-1/4"
4"X2" A
2"X3/4" B
3/4"X1/4" C
1/4"X28M. D
28M. X 0
28M X 48M E
48M X 0
48M X 100M F
100M. X 0 G
ASH. & F.S.I. on EACH SIZE A to G.
FLOAT SINKING of A, B, C, D, E, & F AT 1.30, 1.40, 1.45, 1.50, 1.60, 1.70 & 1.80
FROTH FLOT'N. AT 30, 60, & 150 SECONDS
WET SCREENING AT 35, 48, 65, 100 200, & 325 M.
ASH EACH S.G. FRACTION. F.S.I. EACH SIZE CLEAN COAL COMPOSITE AT 7.5 ± 0.5% ASH.
WASHABILITY CURVE, SIZE & DENSITY DISTRIBUTION DIAGRAM, ROSIN RAMMLER SIZE CHART
PROXIMATE, S, P, F.S.I. on FROTH. ASH & S on TAILING.
ASH & F.S.I. ON EACH FRACTION.
4"X100M. COMPOSITE FLOAT/SINK FOR 7.5 ± 0.5% ASH CLEAN COAL
CLEAN COAL
REJECT
PROXIMATE, S, P, BTU, F.S.I., H.G.I., DILATATION, GIESELER PLASTICITY, ULTIMATE ANALYSIS & PETROGRAPHIC SAMPLE.
PROXIMATE, S, ASH FUSION, MINERAL ANALYSIS of ASH, & CLAY CONTENT.
COAL SCIENCE AND MINERALS TESTING
CALGARY ALBERTA
TECK CORPORATION
ANALYTICAL PROGRAM
DRAWN:
APPROVED:
DATE: JULY, 1977

TYPICAL
PILOT PLANT ANALYTICAL
FLOWSHEET
TECK MINING GROUP LTD.



* ALL PLANT SAMPLES ANALYSED FOR ASH AND F. S. I.
** RUHR DILATOMETER
*** GIESLER PLASTOMETER

TECK MINING GROUP LTD.

ADIT# 2, "C" SEAM
LAB. NO. 9133

WASHABILITY RESULTS

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT No. 2 - "C" Seam

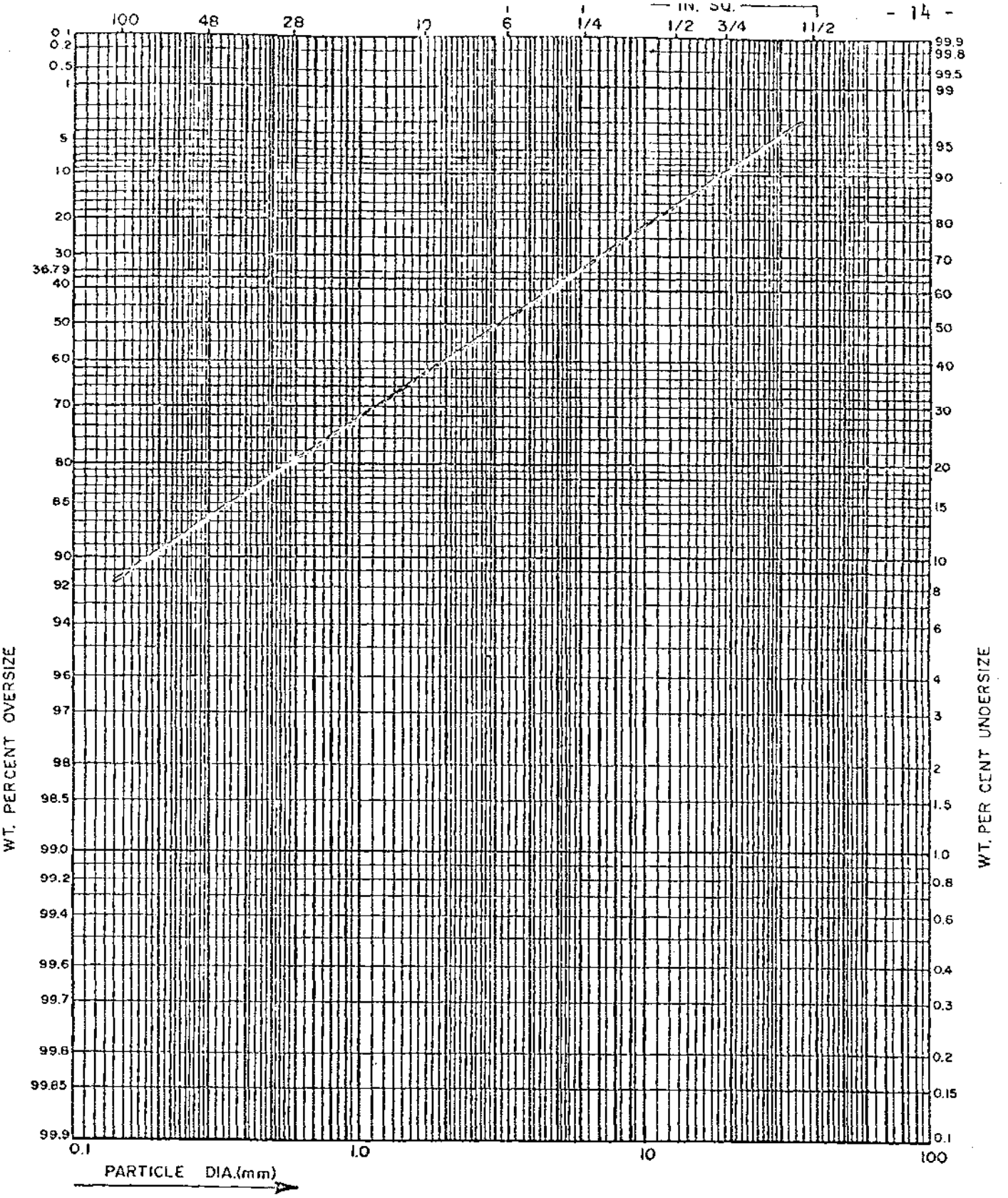
LAB. NO.: 9133 . DATE: July 8, 1977

HEAD RAW ANALYSIS										
ADL%	RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
3.0	0.5	24.6	22.6	52.3	0.70		11,613	5	72	air dried basis
	3.5	23.9	21.9	50.7	0.68		11,265	--	--	as rec'd basis
		24.7	22.7	52.6	0.70		11,671	--	--	dry basis

DRY SCREENING ANALYSIS: 4" x 0 HEAD SAMPLE					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
4" x 2"	2.4	66.9	1/2	2.4	66.9
2" x 3/4"	10.0	44.2	1/2	12.4	48.6
3/4" x 1/4"	20.6	30.0	3	33.0	37.0
1/4" x 28M	46.5	20.8	4	79.5	27.5
28M x 48M	6.7	17.4	7 1/2	86.2	26.7
48M x 100M	6.5	16.3	8	92.7	26.0
100M x 0	7.3	18.5	7	100.0	25.5

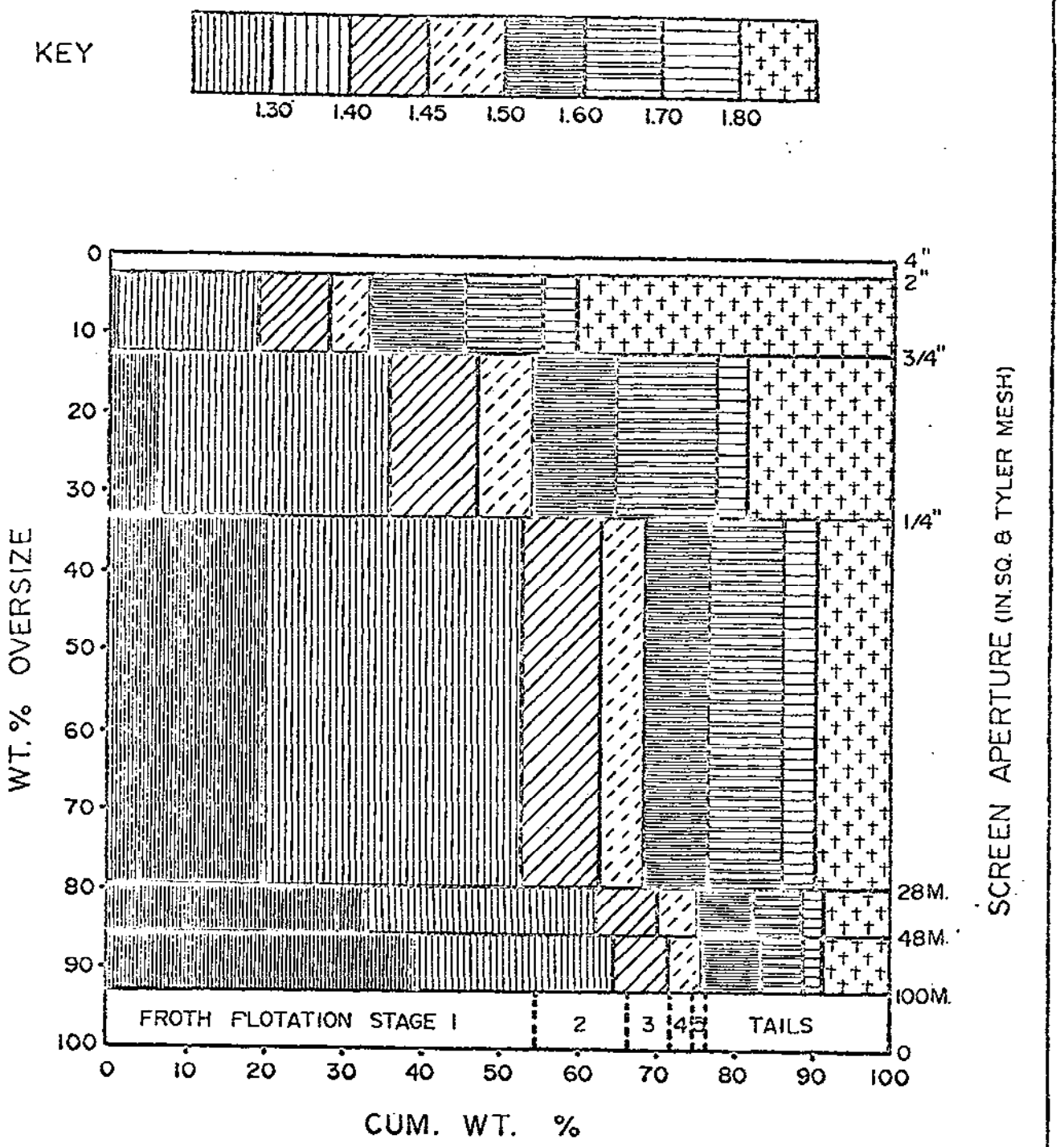
WT.% + 4" Material crushed to -4" = 0.7%

WET SCREENING ANALYSIS: 28 MESH x 0					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
28M x 35M	21.2	17.3	8	21.2	17.3
35M x 48M	16.3	17.4	7 1/2	37.5	17.3
48M x 65M	13.5	15.5	7 1/2	51.0	16.9
65M x 100M	11.1	15.6	8	62.1	16.6
100M x 200M	13.0	15.9	7	75.1	16.5
200M x 325M	6.0	16.7	8	81.1	16.5
325M x 0	18.9	24.5	3 1/2	100.0	18.0



BIRTLEY ENGINEERING

Project: ADIT No. 2, "C" SEAM BULLMOOSE PROJECT		
Client: TECK CORP.		Date: JULY, 1977
Title: ROSIN RAMMLER SIZE DISTRIBUTION		Drawn: J.A.



BIRTLEY ENGINEERING

BIRTLEY ENGINEERING (Canada) LTD. CALGARY ALBERTA			
TITLE	SIZE AND DENSITY DISTRIBUTION DIAGRAM		
CLIENT	TECK CORP.		
SAMPLE	ADIT No. 2 SEAM	DATE	JULY, 1977
LAB NO.	9133	DRWN	

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT No.2 - "C" Seam

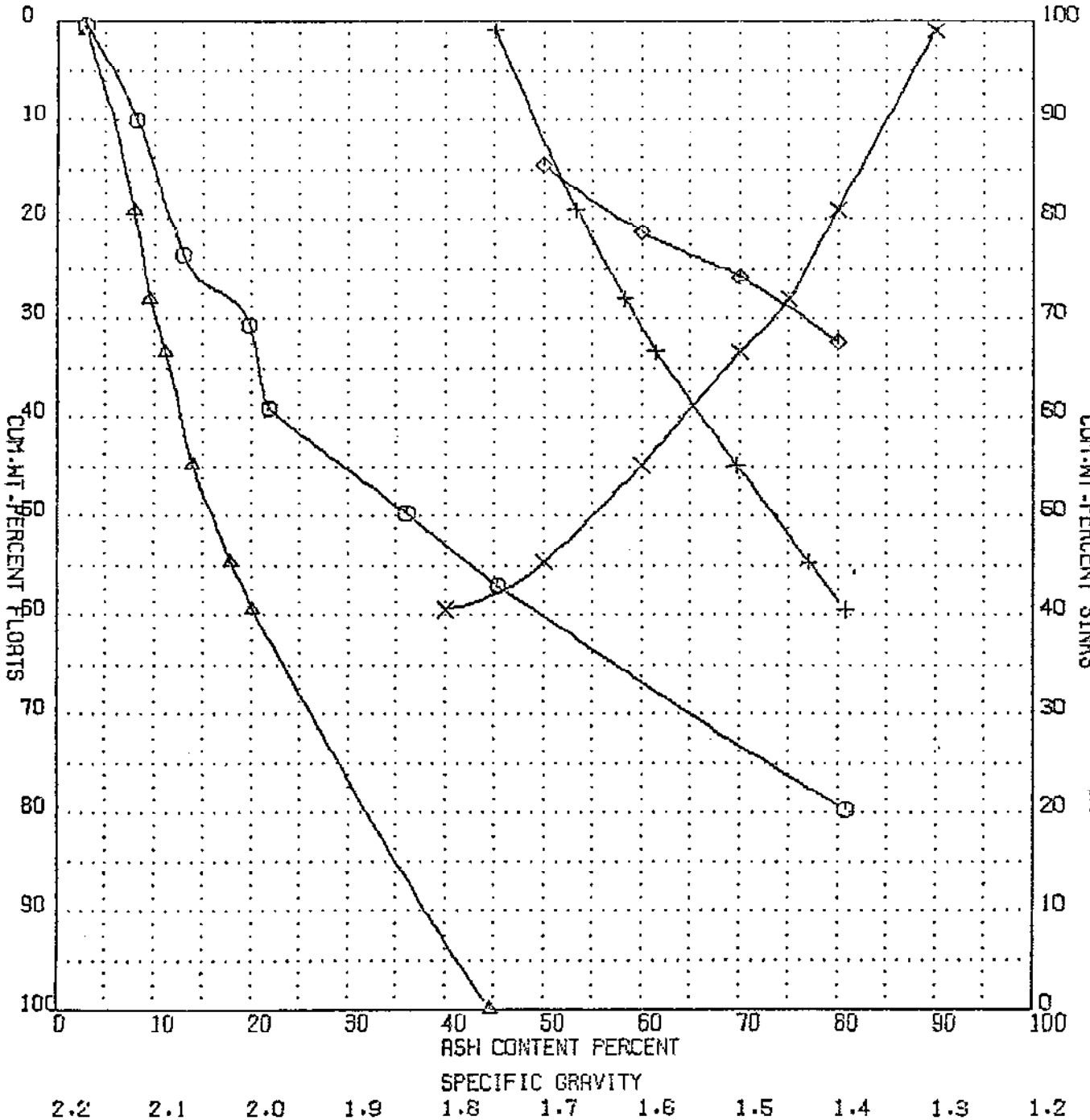
LAB. NO. 9133 DATE: July 8, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	4" x 2" (Wt% = 2.4)				2" x 3/4" (Wt% = 10.0)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30					1.0	3.0	1.0	3.0
1.30-1.40					18.1	8.2	19.1	7.9
1.40-1.45					8.9	12.9	28.0	9.5
1.45-1.50					5.4	19.8	33.4	11.2
1.50-1.60					11.5	21.8	44.9	13.9
1.60-1.70					9.8	36.0	54.7	17.9
1.70-1.80					4.8	45.3	59.5	20.1
+ 1.80					40.5	80.8	100.0	44.7

SINK FLOAT ANALYSES								
S.G. FRACTION	3/4" x 1/4" (Wt% = 20.6)				1/4" x 28M (Wt% = 46.5)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	5.8	3.6	5.8	3.6	19.9	2.7	19.9	2.7
1.30-1.40	29.6	8.5	35.4	7.7	32.9	8.5	52.8	6.3
1.40-1.45	10.9	15.9	46.3	9.6	9.5	16.1	62.3	7.8
1.45-1.50	7.1	20.8	53.4	11.1	5.8	21.6	68.1	9.0
1.50-1.60	10.2	28.4	63.6	13.9	8.7	28.5	76.8	11.2
1.60-1.70	13.9	35.9	77.5	17.8	9.9	36.1	86.7	14.0
1.70-1.80	3.9	48.8	81.4	19.3	3.5	47.6	90.2	15.3
+1.80	18.6	77.7	100.0	30.2	9.8	73.3	100.0	21.0

TECK MINING GROUP LTD ADIT NO.2 C SEAM LAB 9133 2 X 3/4

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

14/07/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--		SINK WT	+-0.1 DISTR		
S.G.	WT>	ASH>	WT>	CUM WT> ASH	ASH	WT>	ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4		5	6	7	8	9	10	11	12
1.30	1.00	3.00	.03		.03	1.00	3.00	44.63	99.00	45.09	1.30	0.00
1.40	18.10	8.20	1.48		1.51	19.10	7.93	43.15	80.90	53.34	1.40	32.40
1.45	8.90	12.90	1.15		2.66	28.00	9.51	42.00	72.90	58.34	1.50	25.80
1.50	5.40	19.80	1.07		3.73	33.40	11.17	40.93	66.40	61.46	1.60	21.30
1.60	11.50	21.80	2.51		6.24	44.90	13.89	38.43	55.50	69.74	1.70	14.60
1.70	9.80	36.00	3.53		9.77	54.70	17.85	34.90	45.50	77.04	1.80	0.00
1.80	4.80	45.30	2.17		11.94	59.50	20.07	32.72	40.60	80.80	1.90	0.00
9.99	40.50	80.80	32.72		44.66	100.00	44.66	0.00	.00	0.00	2.00	0.00

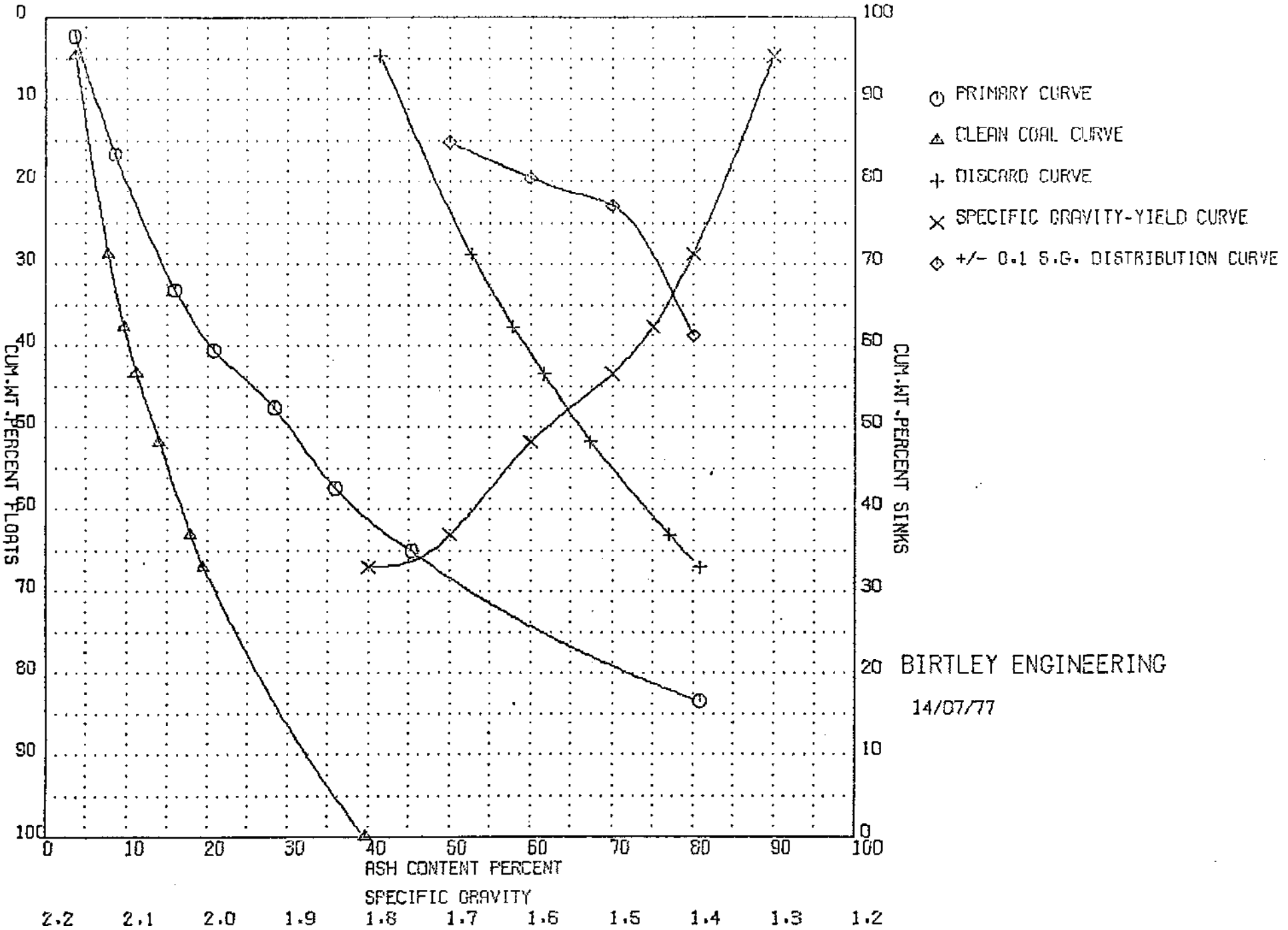
BIRTLEY ENGINEERING
14/07/77

.6	19.9	.6	19.8	9.6	19.8	2.0	18.9	4.0	13.5
1.6	18.0	1.6	16.2	10.7	16.2	4.0	14.2	6.0	14.8
2.6	15.3	1.9	14.4	11.7	14.4	5.0	14.4	8.0	15.7
4.0	13.9	2.2	13.3	12.3	13.3	6.0	13.3	10.0	17.1
4.4	12.2	2.8	11.0	13.9	11.0	8.0	11.0	0.0	0.0
7.2	10.0	3.6	9.1	15.4	9.1	10.0	9.1	0.0	0.0
9.1	8.6	4.0	8.1	16.2	8.1	12.0	8.1	0.0	0.0
16.2	4.1	8.9	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8155
PASS 2 8 83
PASS 3 7 71
PASS 4 7100
PASS 5 4 60

TECK MINING GROUP LTD ADIT NO.2 C SEAM LAB 9133 3/4 X 1/4

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

14/07/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT%	ASH%	WT% ASH	CUM WT% ASH	WT%	SINK WT ASH%	ASH%	WT%	ASH%	S.G.	WT%
1	2	3	4	5	6	7	8	9	10	11	12
1.30	4.72	3.60	.17	.17	4.72	3.60	39.50	95.28	41.46	1.30	0.00
1.40	24.10	8.50	2.05	2.22	28.83	7.70	37.46	71.17	52.63	1.40	38.76
1.45	8.88	15.90	1.41	3.63	37.70	9.63	36.04	62.30	57.86	1.50	22.96
1.50	5.78	20.80	1.20	4.83	43.49	11.11	34.84	56.51	61.65	1.60	19.63
1.60	8.31	28.40	2.36	7.19	51.79	13.89	32.48	48.51	67.38	1.70	15.23
1.70	11.32	35.90	4.06	11.26	63.11	17.83	28.42	36.89	77.04	1.80	0.00
1.80	3.91	45.30	1.77	13.03	67.02	19.44	26.65	32.98	80.80	1.90	0.00
9.99	32.98	80.80	26.65	39.67	100.00	39.67	0.00	.00	0.00	2.00	0.00

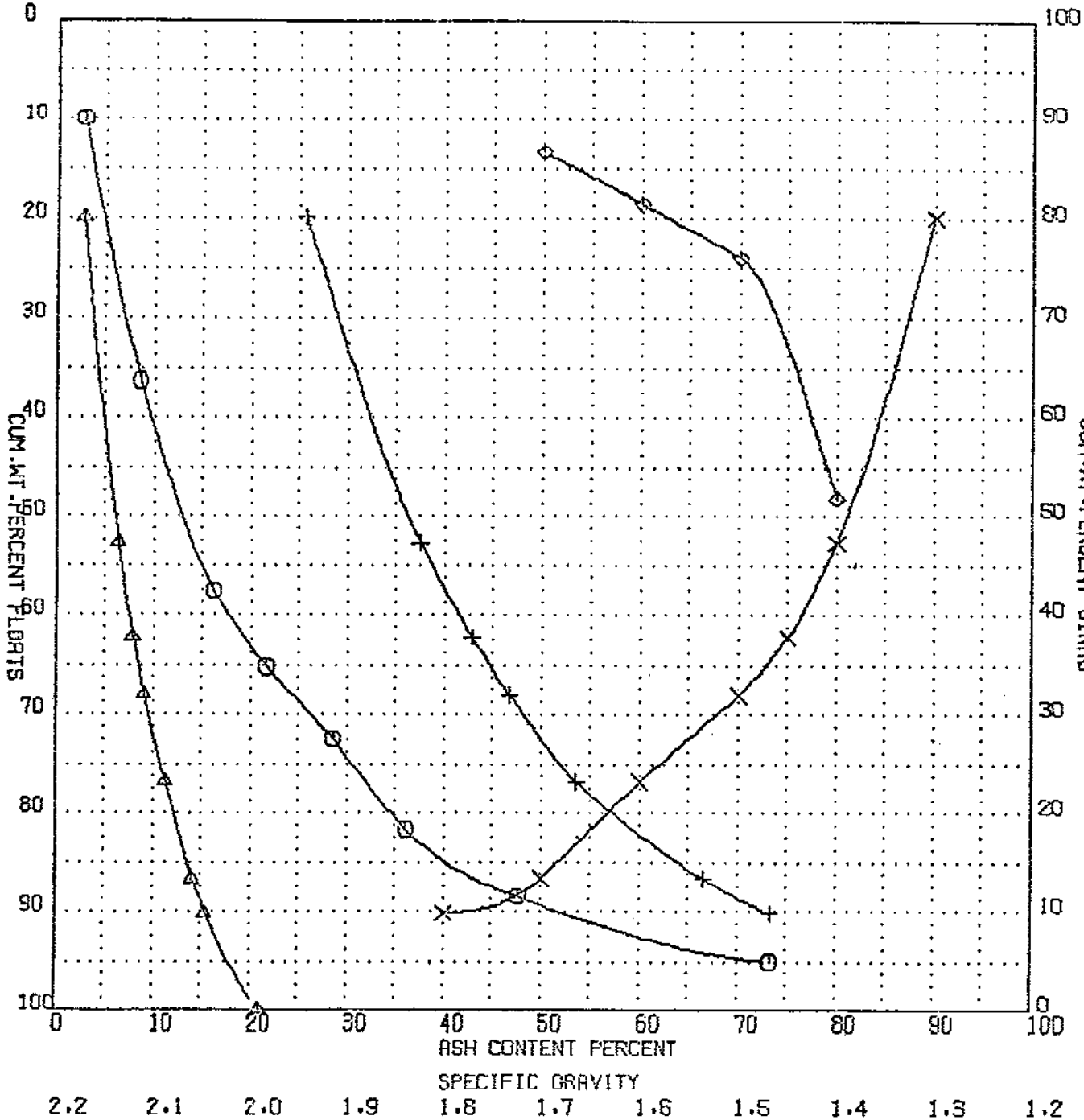
BIRTLEY ENGINEERING
14/07/77

	.7	19.5	.7	19.1	8.3	19.1	2.0	18.1	4.0	12.2	
	1.7	16.6	1.5	14.2	10.5	14.2	4.0	14.2	6.0	15.4	
	3.2	13.3	1.9	12.5	11.6	12.5	5.0	12.5	8.0	16.1	
	4.2	11.9	2.2	11.3	12.3	11.3	6.0	11.3	10.0	17.0	
	5.7	10.5	2.8	9.6	13.5	9.6	8.0	9.6	0.0	0.0	
	7.2	8.5	3.6	7.4	15.4	7.4	10.0	7.4	0.0	0.0	
	9.1	7.0	3.9	6.6	16.2	6.6	12.0	6.6	0.0	0.0	
	16.2	3.3	7.9	.0	0.0	.0	175.8	.0	0.0	0.0	

PASS	1	8	54
PASS	2	8	72
PASS	3	7	78
PASS	4	7	100
PASS	5	4	60

TECK MINING GROUP LTD ADIT NO.2 C SEAM LAB 9133 1/4 X 28M

THE CLASSICAL WASHABILITY CURVES



- PRIMARY CURVE
- CLEAN COAL CURVE
- DISCARD CURVE
- SPECIFIC GRAVITY-YIELD CURVE
- +/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

14/07/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR	
S.G.	WT>	ASH>	WTs CUM WT> ASH TT	ASH TT	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	19.90	2.70	.54	.54	19.90	2.70	20.48	80.10	25.57	1.30	0.00
1.40	32.90	8.50	2.90	3.33	52.80	6.31	17.69	47.20	37.47	1.40	48.20
1.45	9.50	16.10	1.53	4.86	62.30	7.81	16.16	37.70	42.85	1.50	24.00
1.50	5.80	21.60	1.25	6.12	68.10	8.98	14.90	31.90	46.72	1.60	18.60
1.60	8.70	28.50	2.48	8.60	76.80	11.19	12.42	23.90	53.55	1.70	13.40
1.70	9.90	36.10	3.57	12.17	86.70	14.04	8.85	13.20	66.54	1.80	0.00
1.80	3.50	47.60	1.67	13.84	90.20	15.34	7.18	9.80	73.30	1.90	0.00
9.99	9.80	73.30	7.18	21.02	100.00	21.02	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
14/07/77

.5	18.0	.5	16.0	5.1	16.0	2.0	16.0	4.0	10.4
1.7	12.7	1.3	9.4	7.5	9.4	4.0	9.4	6.0	15.2
3.2	8.5	1.6	7.5	8.6	7.5	5.0	7.5	8.0	16.3
4.3	7.0	1.8	6.4	9.3	6.4	6.0	6.4	10.0	17.3
5.7	5.5	2.2	4.6	10.7	4.6	8.0	4.6	0.0	0.0
7.2	3.7	2.8	2.7	13.3	2.7	10.0	2.7	0.0	0.0
9.5	2.3	3.1	2.0	14.7	2.0	12.0	2.0	0.0	0.0
14.7	1.0	4.2	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8141
PASS 2 8 36
PASS 3 7 95
PASS 4 7100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

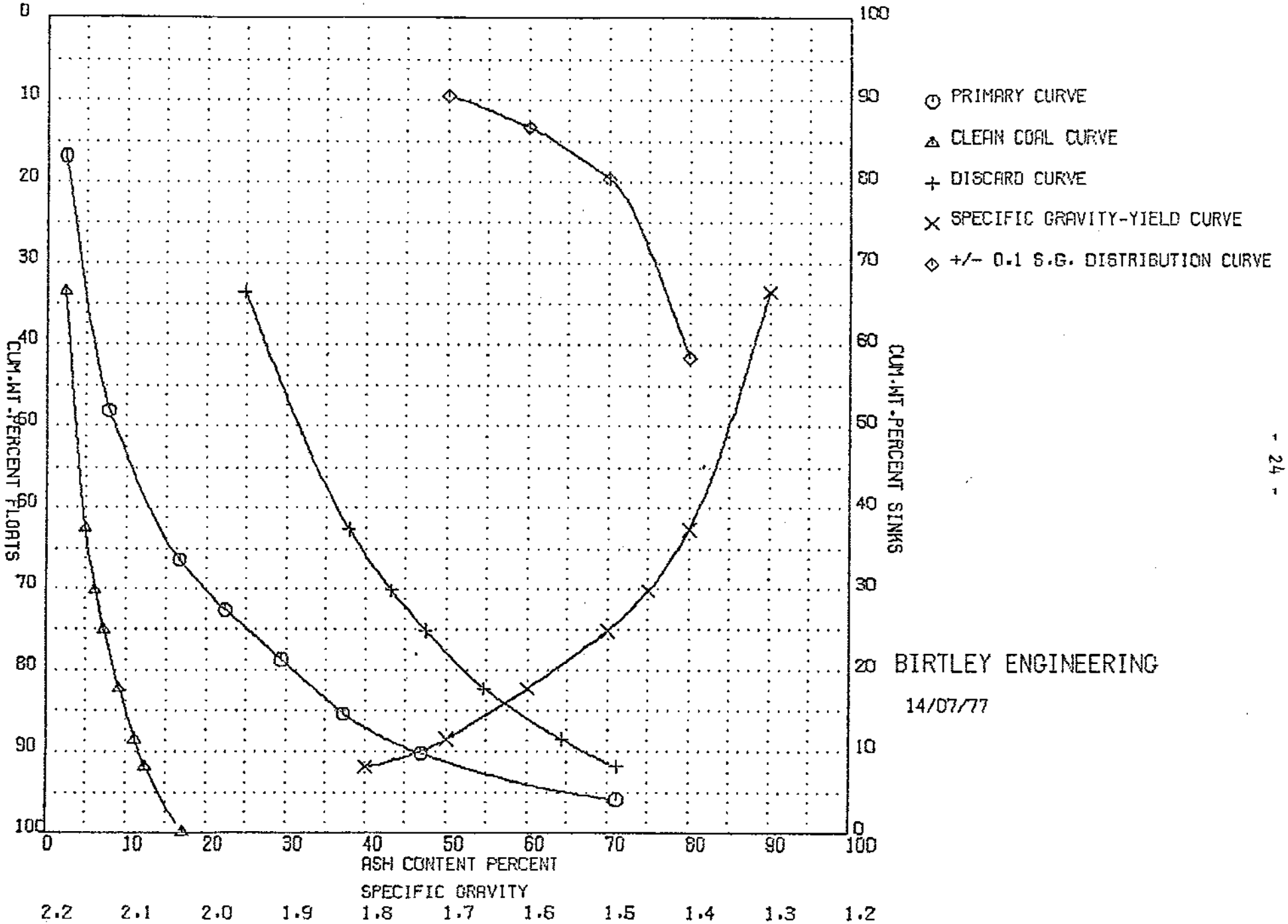
SAMPLE: ADIT No. 2 = "C" Seam

LAB. NO. 9133 DATE: July 8, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	28M x 48M (Wt% = 6.7)				48M x 100M (Wt% = 6.5)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	33.6	2.3	33.6	2.3	38.8	2.8	38.8	2.8
1.30-1.40	29.1	7.8	62.7	4.9	25.5	8.4	64.3	5.0
1.40-1.45	7.5	16.6	70.2	6.1	7.3	16.3	71.6	6.2
1.45-1.50	5.0	22.4	75.2	7.2	4.5	21.3	76.1	7.1
1.50-1.60	7.1	29.4	82.3	9.1	7.3	28.1	83.4	8.9
1.60-1.70	6.3	37.2	88.6	11.1	5.5	36.7	88.9	10.6
1.70-1.80	3.2	46.9	91.8	12.4	2.8	45.1	91.7	11.7
+1.80	8.2	71.1	100.0	17.2	8.3	67.6	100.0	16.3

TECK MINING GROUP LTD ADIT NO.2 C SEAM LAB 9133 28M X 48M

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

14/07/77

--DIRECT--					--CUM FLOATS--		--CUM SINKS--		+-0.1 DISTR	
S.G.	WT>	ASH>	WT> ASH IT	CUM WT> ASH II	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	33.60	2.30	.77	.77	33.60	2.30	16.40	66.40	24.69	1.30	0.00
1.40	29.10	7.80	2.27	3.04	62.70	4.85	14.13	37.30	37.87	1.40	41.60
1.45	7.50	16.60	1.25	4.29	70.20	6.11	12.88	29.80	43.23	1.50	19.60
1.50	5.00	22.40	1.12	5.41	75.20	7.19	11.76	24.80	47.43	1.60	13.40
1.60	7.10	29.40	2.09	7.50	82.30	9.11	9.67	17.70	54.66	1.70	9.50
1.70	6.30	37.20	2.34	9.84	88.60	11.10	7.33	11.40	64.31	1.80	0.00
1.80	3.20	46.90	1.50	11.34	91.80	12.35	5.83	8.20	71.10	1.90	0.00
9.99	8.20	71.10	5.83	17.17	100.00	17.17	0.00	.00	0.00	2.00	0.00

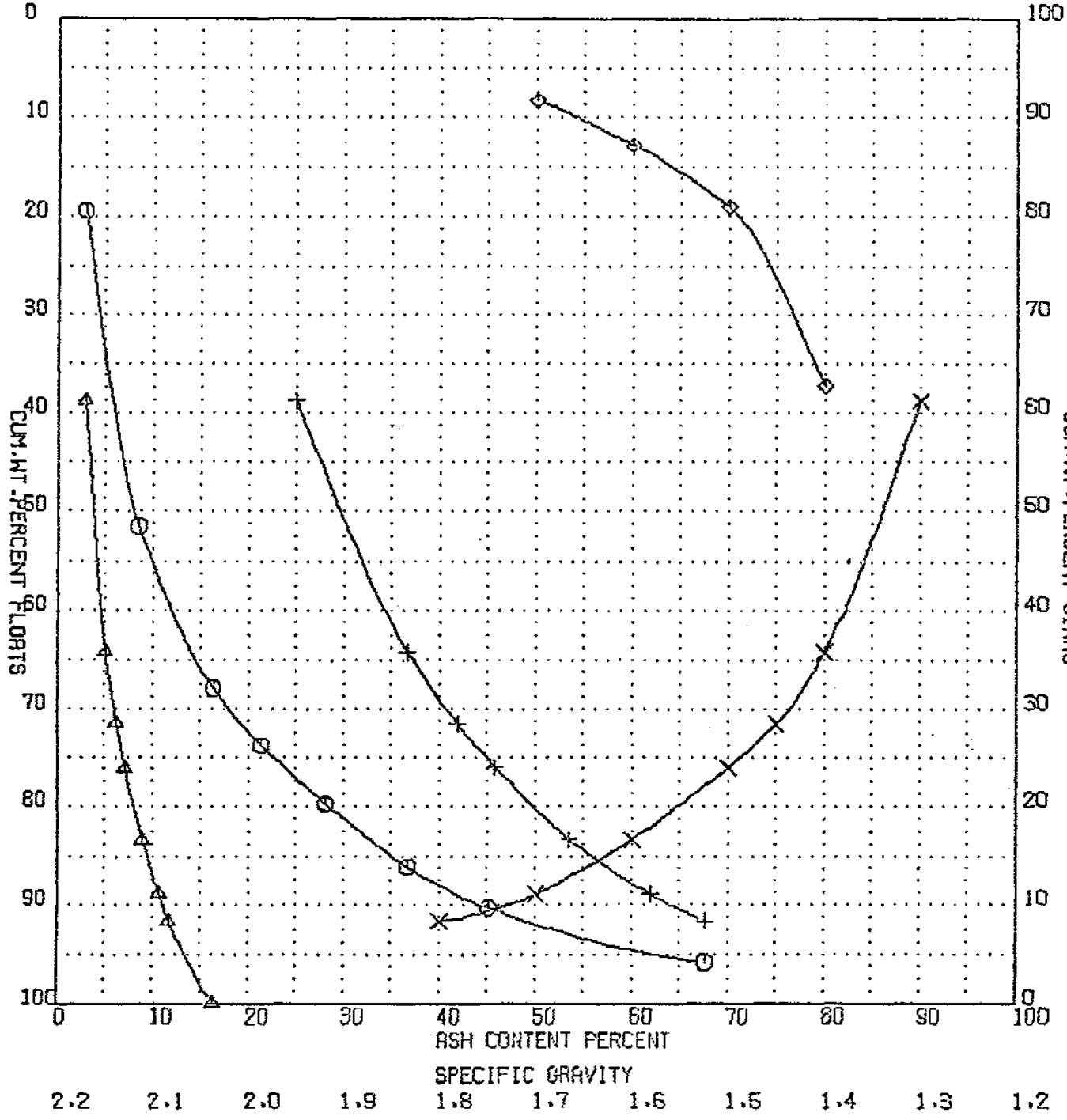
BIRTLEY ENGINEERING
14/07/77

.5	16.6	.5	13.3	4.0	13.3	2.0	13.3	4.0	11.7
1.6	10.4	1.0	7.5	7.6	7.5	4.0	7.5	6.0	16.1
3.3	6.7	1.2	6.0	8.6	6.0	5.0	6.0	8.0	17.3
4.5	5.5	1.4	5.0	9.5	5.0	6.0	5.0	10.0	18.1
5.9	4.3	1.8	3.5	10.0	3.5	8.0	3.5	0.0	0.0
7.4	2.9	2.2	2.3	12.0	2.3	10.0	2.3	0.0	0.0
9.4	2.0	2.5	1.6	14.2	1.6	12.0	1.6	0.0	0.0
14.2	.8	3.4	.0	0.0	.0	175.8	.0	0.0	0.0

PASS	1	8	37
PASS	2	8	29
PASS	3	7	92
PASS	4	7	100
PASS	5	4	60

TECK MINING GROUP LTD ADIT NO.2 C SEAM LAB 9133 48M X 100M

THE CLASSICAL WASHABILITY CURVES



- PRIMARY CURVE
- CLEAN COAL CURVE
- DISCARD CURVE
- SPECIFIC GRAVITY-YIELD CURVE
- +/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

14/07/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT>	ASH>	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	35.60	2.86	1.49	1.09	38.80	2.80	15.23	61.20	24.89	1.30	0.00
1.40	25.50	8.40	2.14	3.23	64.30	5.02	13.09	35.70	36.67	1.40	37.30
1.45	7.30	16.30	1.19	4.42	71.60	6.17	11.90	28.40	41.91	1.50	19.10
1.50	4.50	21.30	.96	5.38	76.10	7.07	10.94	23.90	45.79	1.60	12.80
1.60	7.30	28.10	2.05	7.43	83.40	8.91	8.89	16.40	53.57	1.70	8.30
1.70	6.50	36.70	2.42	9.45	86.90	10.63	6.87	11.10	61.92	1.80	0.00
1.80	2.80	45.10	1.26	10.71	91.70	11.68	5.61	8.30	67.60	1.90	0.00
9.99	8.30	67.60	5.61	16.32	100.00	16.32	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
14/07/77

.6	16.1	.6	12.2	5.0	12.2	2.0	15.2	4.0	12.5		
1.7	9.7	1.0	7.1	7.3	7.1	4.0	7.1	6.0	16.2		
3.3	6.4	1.2	5.7	8.4	5.7	5.0	5.7	8.0	17.4		
4.3	5.2	1.4	4.8	9.2	4.8	6.0	4.8	10.0	18.3		
5.6	4.1	1.8	3.3	10.7	3.3	8.0	3.3	0.0	0.0		
7.3	2.8	2.1	2.2	12.4	2.2	10.0	2.2	0.0	0.0		
9.0	1.9	2.3	1.7	13.5	1.7	12.0	1.7	0.0	0.0		
13.5	.8	3.3	.0	0.0	.0	175.8	.0	0.0	0.0		

PASS 1 8129
PASS 2 8 27
PASS 3 7 85
PASS 4 7100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT No. 2 - "C" Seam

LAB. NO.: 9133 DATE: July, 1977

FROTH FLOTATION TESTS

Pulp Density = 10% Reagent = 4:1=Kerosene:MIBC Dosage = 0.48 lb/T

Conditioning Time = 1 min. Stage I, II, III, IV, V are froths at 30, 60, 90, 120, 150 sec. respectively.

48 Mesh x 0 (Wt% = 13.8)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	58.3	1.1	9.3	26.1	63.5	0.58		8	58.3	9.3
STAGE II	14.1	0.9	12.4	25.5	61.2	0.66		7 1/2	72.4	9.9
STAGE III	4.5	0.9	16.3	24.9	57.9	0.60		6 1/2	76.9	10.3
STAGE IV	2.3	0.9	20.8	24.0	54.3	0.54		5 1/2	79.2	10.6
STAGE V	1.4	0.9	23.7	23.6	51.8	0.54		4 1/2	80.6	10.8
TAILS	19.4	--	43.1	--	--	--	--	2	100.0	17.1

48 Mesh x 100 Mesh (Wt% = 6.5)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	66.4	0.9	10.9	26.2	62.0	0.58		8 1/2	66.4	10.9
STAGE II	8.2	1.0	13.2	25.6	60.2	0.62		6 1/2	74.6	11.2
STAGE III	3.1	1.0	14.0	25.2	59.8	0.64		6 1/2	77.7	11.3
STAGE IV	1.7	0.9	14.9	25.1	59.1	0.62		5 1/2	79.4	11.3
STAGE V	1.2	0.9	15.8	25.0	58.3	0.55		5 1/2	80.6	11.4
TAILS	19.4	--	39.4	--	--	--	--	2	100.0	16.8

100 Mesh x 0 (Wt% = 7.3)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	54.6	0.8	9.0	26.4	63.8	0.62		8	54.6	9.0
STAGE II	12.2	0.8	11.0	25.8	62.4	0.60		8	66.8	9.4
STAGE III	4.9	0.8	14.2	25.2	59.8	0.64		7	71.7	10.4
STAGE IV	2.6	0.8	17.4	24.6	57.2	0.66		7	74.3	10.7
STAGE V	2.0	0.8	19.4	24.4	55.4	0.54		6	76.3	10.9
TAILS	23.7	--	44.3	--	--	--	--	1 1/2	100.0	18.8

CLIENT: TECK MINING GROUP LTD.

SAMPLE: "C" SEAM

LAB. NO.: 9133

F.S.I. OF COMPOSITE FLOATS OF SCREEN SIZES

FOR 7.5% ASH ± 0.5%

SCREEN SIZES	WT.%	S.G. OF COMPOSITE FLOATS	YIELD%	ASH%	F.S.I.
4" x 2"	0.0	---	---	---	---
2" x 3/4"	10.0	1.40	19.1	8.2	4
3/4" x 1/4"	20.6	1.40	35.4	7.7	6
1/4" x 28M	46.5	1.45	62.3	7.8	8
28M x 48	6.7	1.50	75.2	7.2	9
48M x 100	6.5	1.50	76.1	7.1	8 1/2

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT #2, "C" SEAM

LAB. NO.: 9133 DATE: July, 1977

LAB. NO.: 9139

ANALYSES OF 4" x 100Mesh FLOAT @1.45S.G. (Yield =56.1%) ✓									
PROXIMATE									
RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
0.9	7.9	25.5	65.7	0.66	0.18	14,123	7	75	a.d.b.
	8.0	25.7	66.3	0.67	0.18	14,251	---	--	d.b.

ULTIMATE ANALYSIS X							DILATATION TEST ✓				
H_2O%	C%	H%	N%	S%	ASH%	by diff. O%	S.T. °C.	M.D.T. °C	M.C. %	M.D. %	G.No.
0.92	80.36	4.89	1.03	0.66	7.88	4.26	350	461	23	120	1.102

NOTE: Sample of above float product prepared for Petrographic Analysis and Geisler Plastometer Test.

LAB. NO. 9140

ANALYSES OF 4" x100Mesh SINK @ 1.45 S.G. (WT.% = 43.9)										
PROXIMATE						ASH FUSION TEMPS. (°F) ✓				
RM.%	ASH%	VM.%	FC.%	S%		ATMOS.	IDT	ST	HT	FT
1.0	47.8	15.7	35.5	0.49	adb	OXID.	2650+	--	--	--
	48.3	15.9	35.8	0.49	db	REDUC	2450	2650+	--	--

MINERAL ANALYSIS OF ASH, % ✓											
SiO_2	Al_2O_3	TiO_2	CaO	MgO	MnO	Fe_2O_3	Na_2O	K_2O	P_2O_5	SO_3	Undetermined
65.48	23.68	1.17	1.40	0.83	--	1.96	0.57	1.90	0.87	1.76	-0.38

NOTE: Sample of above reject product also prepared for Clay Analysis

Lab. No. 9139 Date June 18, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: COMP. FLOATS @1.45

Starting Temperature °C: 320

Softening Temperature °C: 350

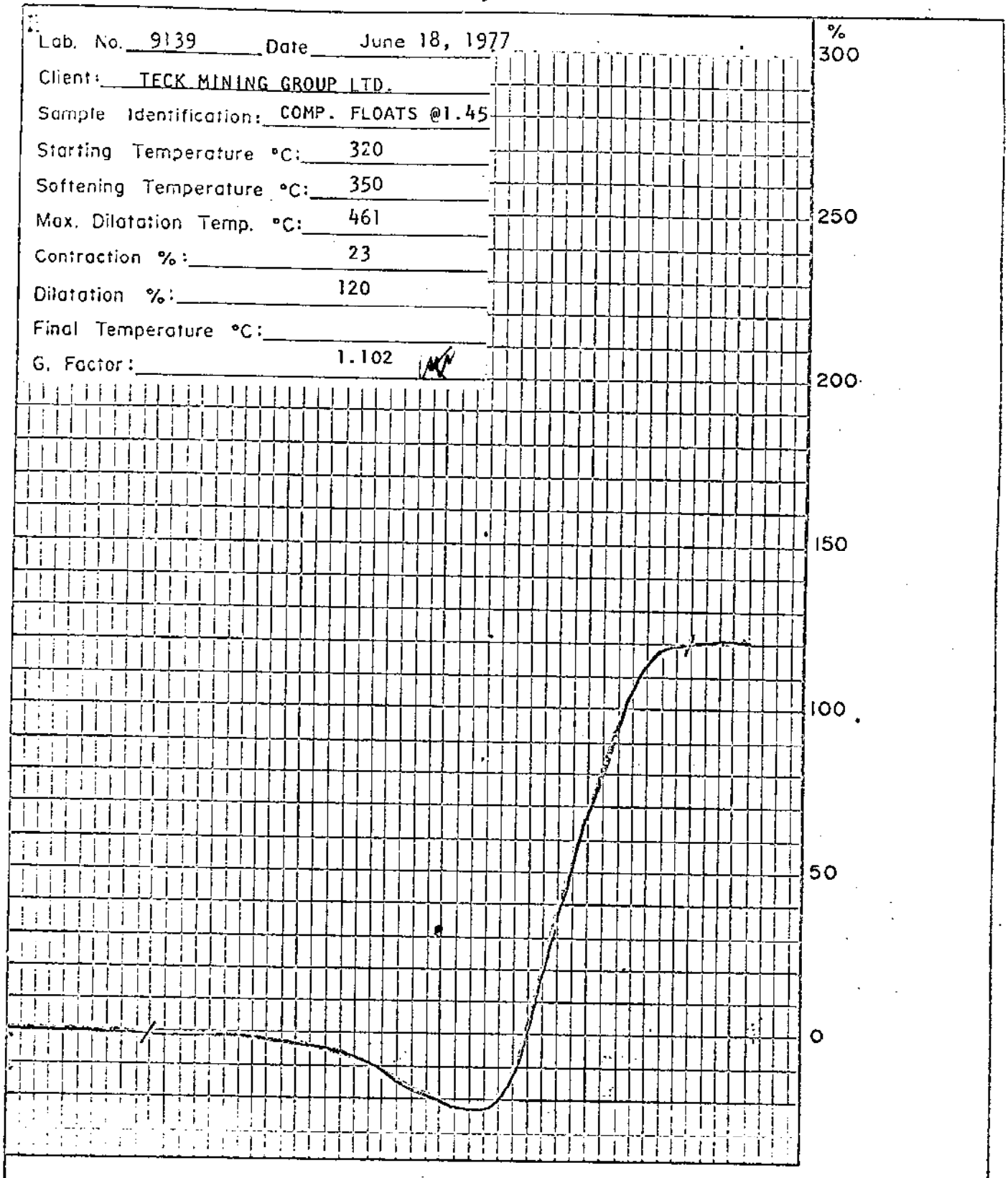
Max. Dilatation Temp. °C: 461

Contraction %: 23

Dilatation %: 120

Final Temperature °C:

G. Factor: 1.102 MF



BIRTLEY ENGINEERING (CANADA) LTD.

Title	Date
RUHR DILATOMETER TEST	
	Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT #2, "C" SEAM

DATE: July, 1977

LAB. NO.: 9139

ANALYSIS OF FLOATS @ 1.45 S.G. (YIELD = 56.1%)

GIESLER PLASTOMETER TEST

	DDPM	TEMP.°C
START	1	414
MAXIMUM	1355	462
FINAL	1	501
	RANGE	81

LAB. NO.: 9140

ANALYSIS OF SINKS @ 1.45 S.G. (WT.% = 43.9%)

CLAY SEPARATION BY FLOTATION

Material greater than 2 microns	79.7
Material less than 2 microns	20.3

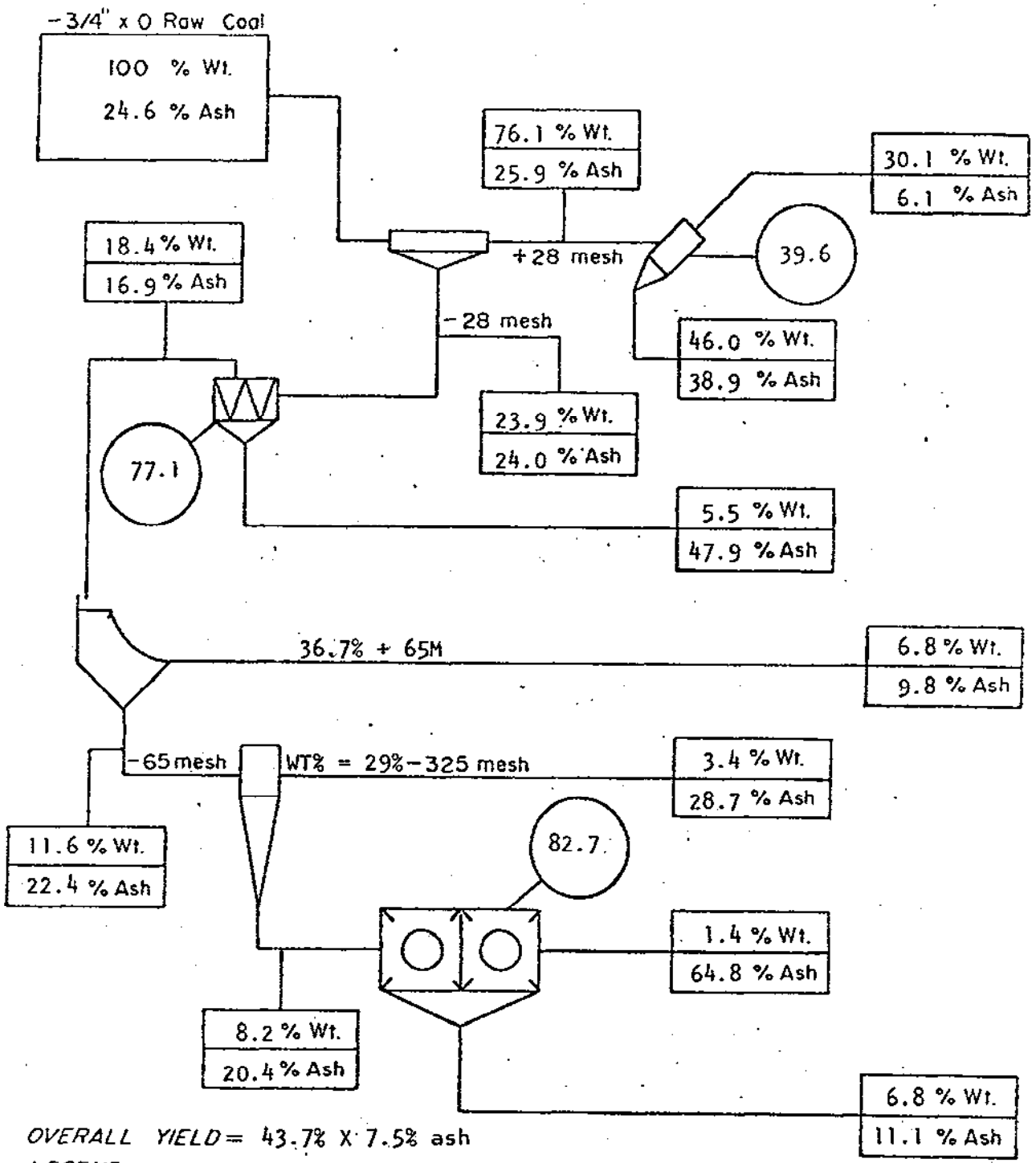
X-RAY DIFFRACTION ANALYSIS OF MATERIAL LESS THAN 2 MICRONS

Quartz	15
Feldspar	7
Calcite	Trace
Dolomite	Trace
Siderite	Trace
Kaolinite	38
Illite	40
Chlorite	Nil
Monmorillonite	Nil

TECK MINING GROUP LTD.

ADIT# 2, "C" SEAM
LAB. NO. 9132

PLANT WASHING RESULTS



OVERALL YIELD = 43.7% X 7.5% ash

LEGEND:

○ *CIRCUIT YIELD %*

Wt.
Ash

WEIGHT %

ASH CONTENT (AIR DRIED)

BIRTLEY ENGINEERING (CANADA) LTD.

Title	PLANT BALANCE FLOWSHEET PILOT PLANT WASH - ADIT 2, SEAM "C" TECK MINING GROUP LTD. LAB. NO. 9132	Date July, 1977 Drawn

BIRTLEY ENGINEERING (CANADA) LTD.

Coal Science & Minerals Testing Div.

TECK MINING GROUP LTD.

BULK WASHING DATA*

ADIT 2 SEAM C LAB. NO. 9132

DELIVERY DATE July 6, 1977 DATE OF WASH July 14, 1977

Raw Coal Analysis: ADM% 3.0 ASH% 24.6 FSI 5 HGI 72 ✓

Delivered Bulk Weight 7.900 Metric Tons

Washed Weight ** 6.591 Metric Tons

* All weight and analyses are on Air Dried Basis unless otherwise indicated.

** Does not include +2" oversize which weighed .126 M.T. and simulates breaker plant reject.

BULK WASHING DATA

HEAVY MEDIUM CIRCUIT

ADIT/SEAM NO. 2/C LAB. NO. 9132

1. S. G. of Separation 1.45
2. Feed Ash Content 25.9 % F.S.I. 4
3. Clean Coal Estimated Weight 1.595 M.T.
4. Clean Coal Analysis - Ash 6.1 % F.S.I. 8 1/2
5. Reject Estimated Weight 3.422 M.T.
6. Reject Analysis - Ash 38.9 % F.S.I. 2 1/2
7. Estimated 3/4" x 28M in Circuit 5.017 M.T. 76.1 Wt.%
8. Yield Clean Coal (Weighted): $\frac{3}{3+5}$ 31.8 %
9. Yield Clean Coal (Calculated Ash Balance) - $\frac{6-2}{6-4}$ 39.6 %

BULK WASHING DATA

WATER-ONLY CYCLONE CIRCUIT

ADIT/SEAM NO. 2/C LAB. NO. 9132

1. Vortex Finder Clearance(VCF) #2 = 5.715 #1 = 5.080 CM 2.25 2.00 INCHES

2. Feed Pressure #2 = 0.4 #1 = 1.4 KG/CM^2 5 20 P.S.I.

3. Feed Rate #2 = 5.8 #1 = 23.2 M^3/HR. 21.2 85.0 I.G./Min.

4. Feed Pulp Density 90 - 120 g/l. 9 - 12% Solids W/V

5. Sample Analysis

	SCREEN SIZE	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%	HEAD ASH%	HEAD FSI
FEED							24.0	6
O'FLOW	+65 Mesh	36.7	9.3	7	36.7	9.3	16.9	6 1/2
	65M x 0	63.3	21.3	6	100.0	16.9		
U'FLOW							47.9	2
S.B.O.							9.8	7
T.C.O.*							28.7	1/2

6. Yield - Total W.O. Cyclone Circuit = 77.1%

7. Estimated Yield of 28 x 65 Mesh Coal = 28.3%
(as % of 28 Mesh x 0 Feed)

8. Estimated 28M x 0 in circuit
(Plant Feed - HM Products) 1.574 MT 23.9 %

* Thickener Cyclone Overflow

BULK WASHING DATA

FROTH FLOTATION CIRCUIT

ADIT/SEAM NO. 2/C LAB. NO. 9132

1. Reagents: Kerosene:Methylisobutylcarbinol (MIBC)= 4:1

2. Feed Pulp Density 90 - 120 g/l 9 - 12 % Solids W/V

3. Sample Analysis:-

	ASH	F.S.I.
FEED	20.4	7 1/2
CONC.	11.1	8 1/2
TAILS	64.8	1

4. Impeller Type - Birtley-Humboldt Multi-Wobble.

5. Yield Calculated (Ash Balance) 82.7 %

6. Filter Cake (Sieve Bend O'Flow & Flotation Conc.)
Wt. Recovered 0.680 M.T.

7. Filter Cake - Ash% 10.5 F.S.I. 8

BULK WASHING DATA

ADIT/SEAM 2/C LAB. NO. 9132 DATE OF WASH July 14,1977

a) Raw Coal

Delivered Weight	= 7.900	M.T.
Ash %	= 24.6	
F.S.I.	= 5	
Estimated Washed Wt.	= 6.591	M.T.

b) Heavy Media Circuit

Estimated Proportion of +28 Mesh in Feed 76.1%

Effective S.G. = 1.45

Raw Feed	25.9	% Ash	4	F.S.I.
Clean Coal	6.1	% Ash	8 1/2	F.S.I.
Reject	38.9	% Ash	2 1/2	F.S.I.
Calculated Yield	39.6			
Weighed Yield	31.8			

c) Water-Only Cyclone Circuit

Raw Feed	24.0	% Ash	6	F.S.I.
Overflow	16.9	% Ash	6 1/2	F.S.I.
Underflow	47.9	% Ash	2	F.S.I.
Calculated Yield	77.1			
% of +65M in O/F	36.7			
Sieve Bend Overflow	9.8	% Ash	7	F.S.I.

d) Froth Flotation Circuit

Raw Feed	20.4	% Ash	7 1/2	F.S.I.
Concentrates	11.1	% Ash	8 1/2	F.S.I.
Tails	64.8	% Ash	1	F.S.I.
Calculated Yield	82.7			

TECK MINING GROUP LTD.

BULK WASHING DATA

BULK WASHING SUMMARY (Cont.)

ADIT 2/C LAB. NO. 9132

e) Clean Coal Mix Analyses a.d.b.

(i) Proximate

ADM% 5.6 RM.% 1.2 ASH 7.5 VM.% 26.3 FC.% 65.0

(ii) S.% 0.65 FSI 8 HGI 81 BTU/LB 14258 P% 0.11

(iii) Dilatation Test

S.T. 362°C MDT 458°C MC% 27 MD% 105 G. NO. 1.074

(iv) Gieseler Plastometer Test

	DDPM	TEMP. (°C)
START	1	420
MAXIMUM	665	462
FINAL	1	507
RANGE =		87

f) Clean Coal Mix Make-Up

H.M. CLEAN COAL	FINES FILTER CAKE	CLEAN COAL MIX		SHIPPED		IN STOCK	
M.T.	M.T.	BBLS.	M.T.	BBLS	M.T.	BBLS.	M.T.
1.595	0.680	12	2.275				

Lab. No. 9132 Date July 25, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: ADIT 2, SEAM C C.M.

Starting Temperature °C: 320

Softening Temperature °C: 362

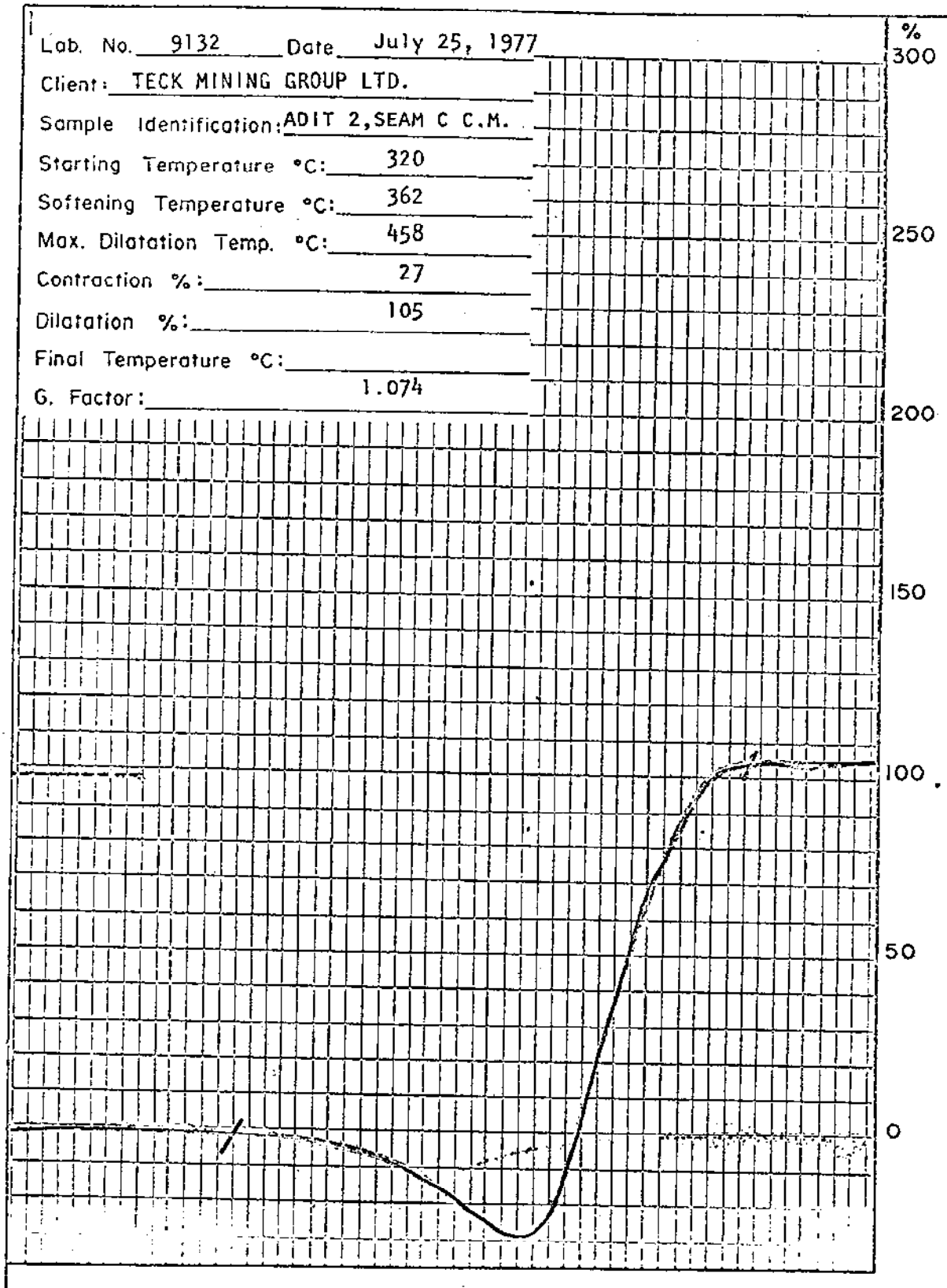
Max. Dilatation Temp. °C: 458

Contraction %: 27

Dilatation %: 105

Final Temperature °C:

G. Factor: 1.074



BIRTLEY ENGINEERING (CANADA) LTD.

Title	Date
RUHR DILATOMETER TEST	
	Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM "C"

CLEAN COAL ANALYSES August, 1977

INFORMATION REQUIRED FOR EMR COKING TESTS

LAB. NO.	ADM%	MOISTURE	ASH%	VOL.%	FC.%	S%	BTU/LB	F.S.I.	CALC. FACTORS
9132	5.6	1.2	7.5	26.3	65.0	0.65	14258	8	air dried basis
		6.7	7.1	24.8	61.4	0.61	13460	--	
			7.6	26.6	65.8	0.66	14431	--	dry basis

SIZE ANALYSIS		
SIZE FRACTION	WT.%	CUM. WT.%
+ 1/2"	1.8	1.8
1/2" x 1/4"	5.8	7.6
1/4" x 6M	13.5	21.1
6M x 12M	29.2	50.3
12M x 20M	11.9	62.2
20M x 100M	22.5	84.7
100M x 0	15.3	100.0

TECK MINING GROUP LTD.

ADIT#3, "E" SEAM
LAB. NO. 9138

WASHABILITY RESULTS

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT #, "E" SEAM

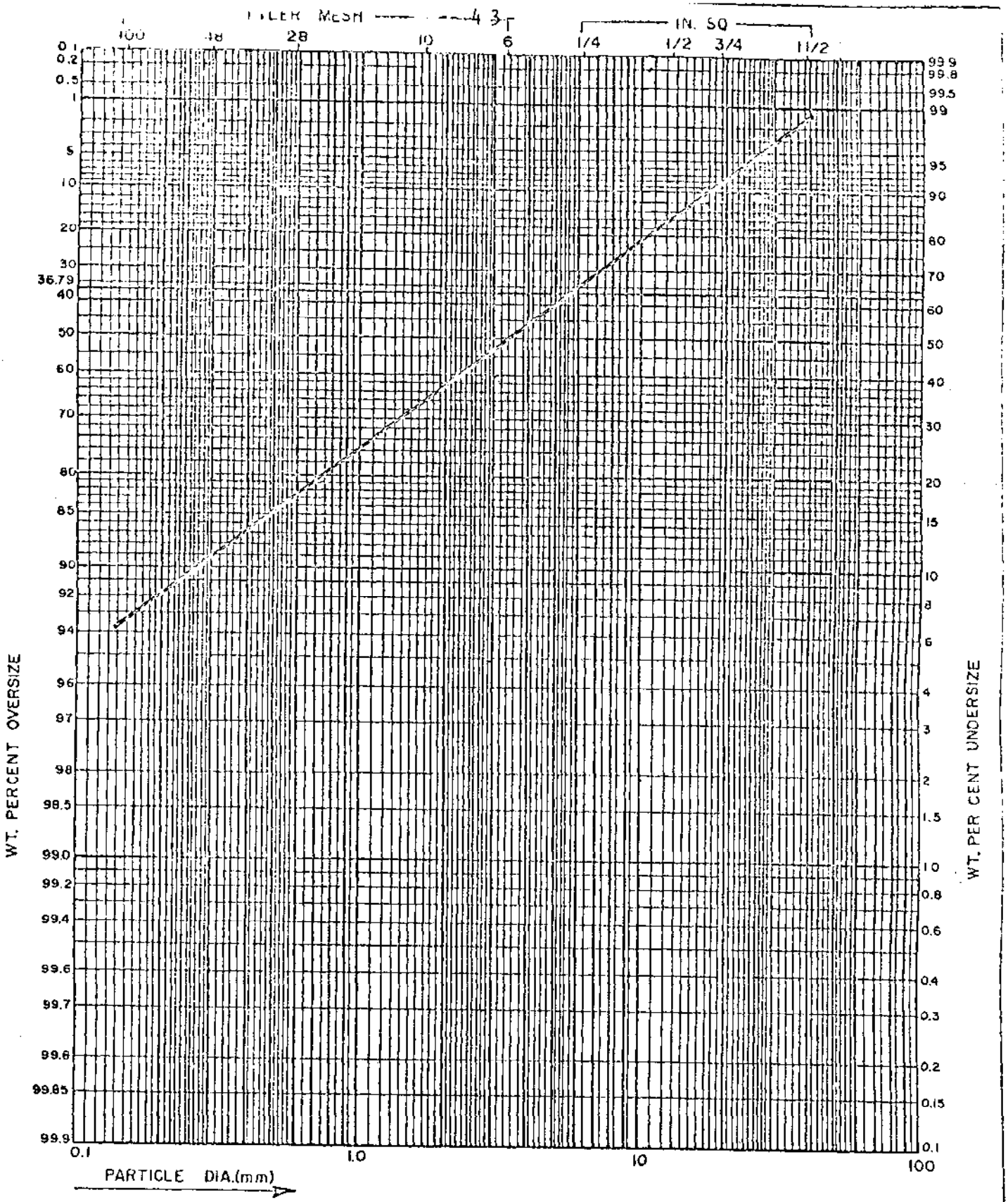
LAB. NO.: 9138 DATE: July, 1977

HEAD RAW ANALYSIS										
ADL%	RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
5.6	1.3	25.8	23.1	49.8	0.50	0.07	10854	5	68	air dried basis
	6.8	24.4	21.8	47.0	0.47	0.07	10246	--	--	as rec'd basis
		26.1	23.4	50.5	0.51	0.07	10997	--	--	dry basis

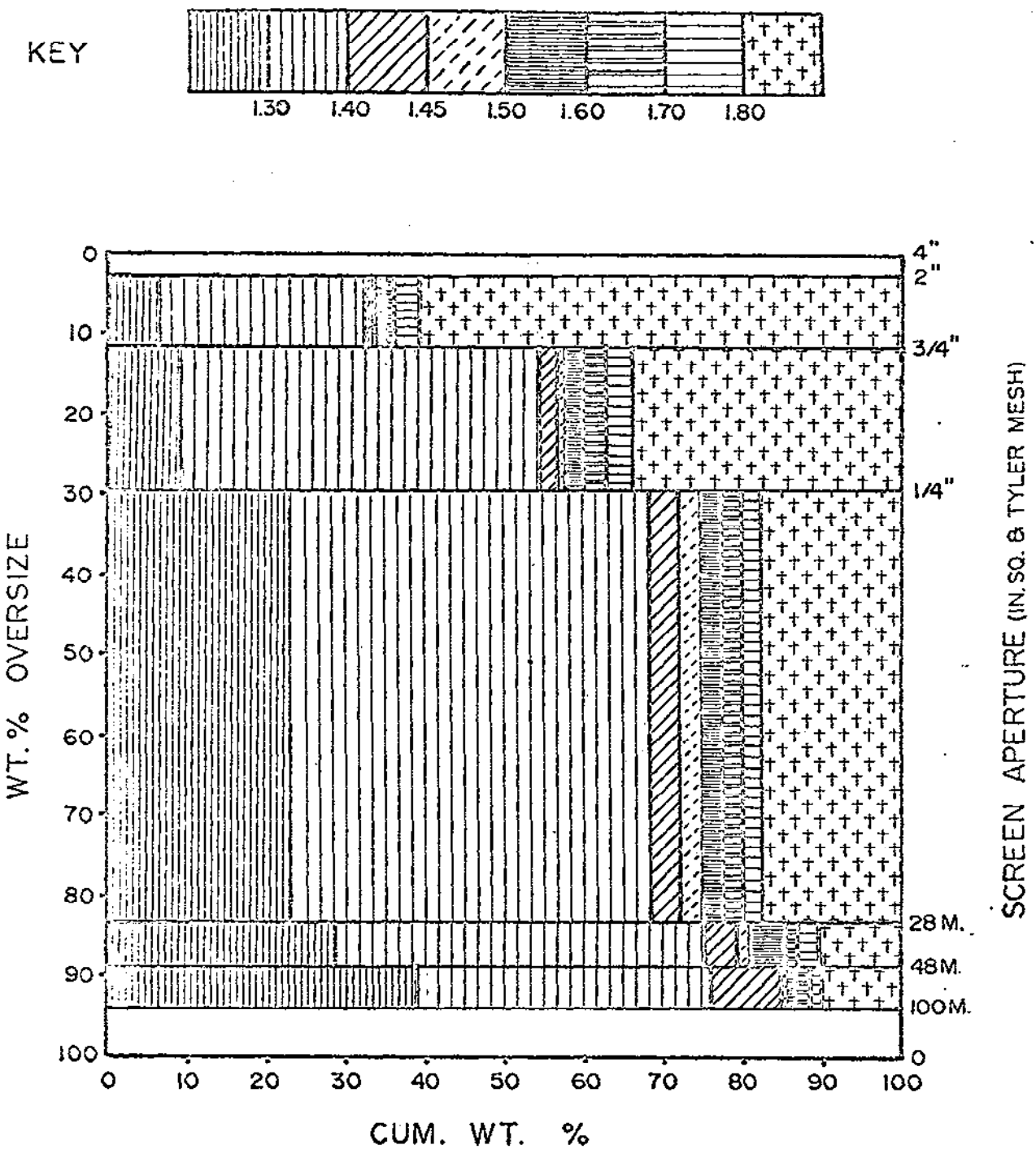
DRY SCREENING ANALYSIS: 4" x 0 HEAD SAMPLE					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
4" x 2"	2.4	70.4	1	2.4	70.4
2" x 3/4"	9.0	52.3	1 1/2	11.4	56.1
3/4" x 1/4"	18.2	32.0	5	29.6	41.3
1/4" x 28M	53.4	20.5	5 1/2	83.0	27.9
28M x 48M	6.0	16.3	7	89.0	27.1
48M x 100M	5.1	14.8	7 1/2	94.1	26.5
100M x 0	5.9	18.5	7 1/2	100.0	26.0

WT.% +.4" Material crushed to -4" = 1.3

WET SCREENING ANALYSIS: 28 MESH x 0					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
28M x 35M	24.6	18.1	7 1/2	24.6	18.1
35M x 48M	14.6	13.3	8	39.2	16.3
48M x 65M	13.2	14.3	8	52.4	15.8
65M x 100M	9.2	14.4	8	61.6	15.6
100M x 200M	11.9	15.6	8 1/2	73.5	15.6
200M x 325M	6.0	15.4	8 1/2	79.5	15.6
325M x 0	20.5	27.0	1	100.0	17.9



BIRTLEY ENGINEERING	Project: ADIT NO. 3, "E" SEAM BULLMOOSE PROJECT	
	Client: TECK CORP.	Date: JULY, 1977
	Title: ROSIN RAMMLER SIZE DISTRIBUTION	Drawn:



BIRTLEY ENGINEERING (Canada) LTD. CALGARY ALBERTA			
TITLE	SIZE AND DENSITY DISTRIBUTION DIAGRAM		
CLIENT	TECK CORP.		
SAMPLE	ADIT No. 3 SEAM E	DATE	JULY, 1977
LAB NO.	9138	DRWN	

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 3,"E" SEAM

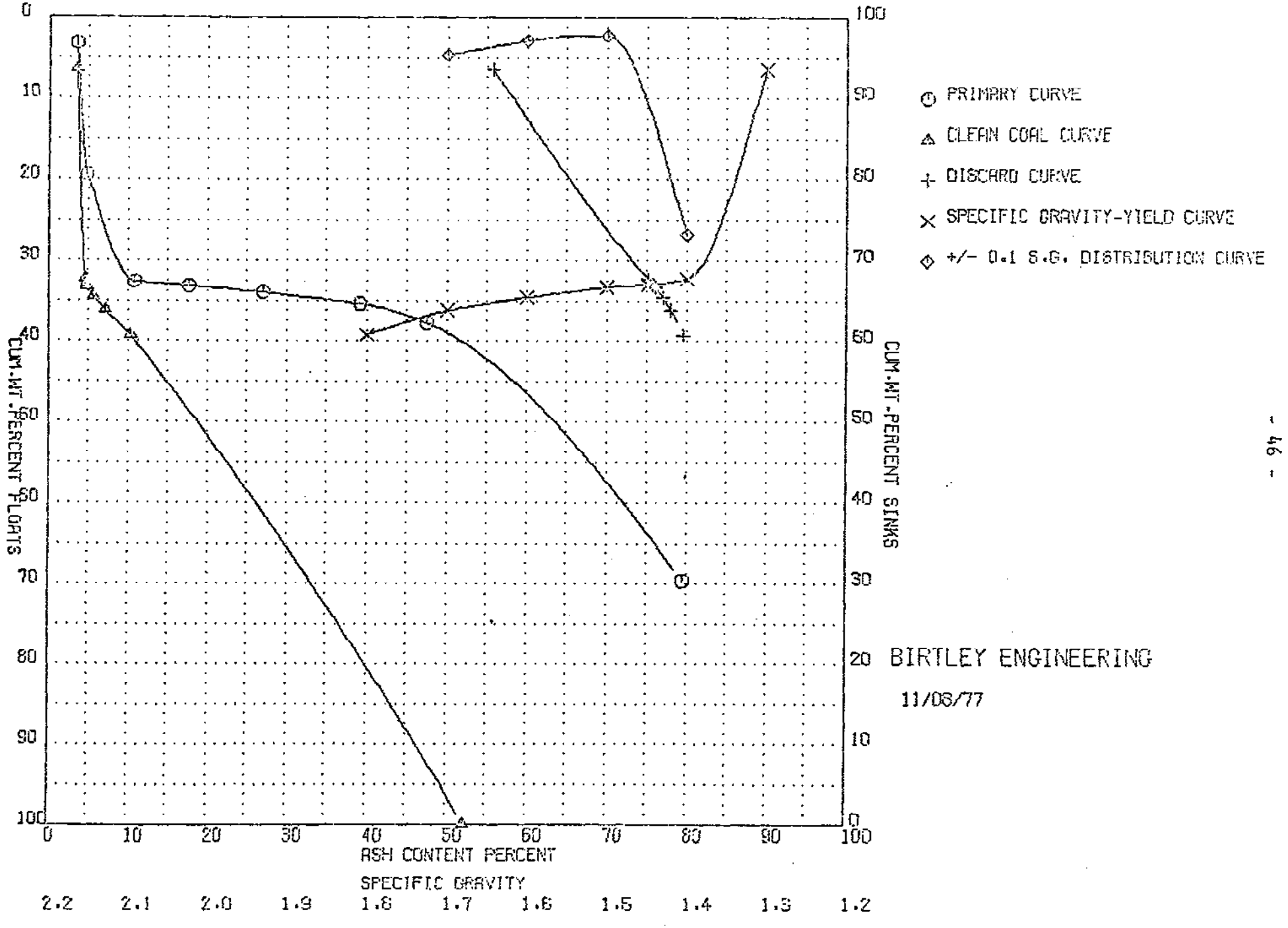
LAB. NO. 9138 DATE: July, 1977

SINK FLOAT ANALYSES								
	4" x 2"				2" x 3/4" (WT.% = 9.0)			
S.G. FRACTION	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30					6.5	3.5	6.5	3.5
1.30-1.40					25.8	4.8	32.3	4.5
1.40-1.45					0.7	10.8	33.0	4.7
1.45-1.50					0.3	17.6	33.3	4.8
1.50-1.60					1.3	27.0	34.6	5.6
1.60-1.70					1.6	39.1	36.2	7.1
1.70-1.80					3.1	47.5	39.3	10.3
+ 1.80					60.7	79.5	100.0	52.3

SINK FLOAT ANALYSES								
	3/4" x 1/4" (WT.% = 18.2)				1/4" x 28M (WT.% = 53.4)			
S.G. FRACTION	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	8.9	3.6	8.9	3.6	23.0	2.9	23.0	2.9
1.30-1.40	44.9	5.3	53.8	5.0	45.3	5.9	68.3	4.9
1.40-1.45	2.8	12.1	56.6	5.4	3.6	14.6	71.9	5.4
1.45-1.50	1.2	19.4	57.8	5.7	2.3	20.6	74.2	5.8
1.50-1.60	2.4	28.1	60.2	6.6	3.0	29.8	77.2	6.8
1.60-1.70	3.0	36.7	63.2	8.0	2.6	39.6	79.8	7.8
1.70-1.80	3.3	46.8	66.5	9.9	2.4	48.3	82.2	9.0
+1.80	33.5	75.9	100.0	32.0	17.8	75.1	100.0	20.8

TECK MINING GROUP LTD ADIT NO 3 E SEAM LAB NO 9138 2 X 3/4

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

11/08/77

						STEM WT						
S.G.	WT%	ASH%	ASH WT	ASHTT	WT%	ASH%	ASH%	WT%	ASH%	S.G.	WT%
1	2	3	4	5	6	7	8	9	10	11	12
1.30	4.50	3.50	.03	.23	5.50	3.50	52.07	93.50	55.69	1.36	6.00
1.40	25.50	4.90	1.14	1.47	32.30	4.64	50.93	47.30	75.80	1.40	26.00
1.45	.70	10.00	.09	1.54	33.00	4.67	50.76	47.50	75.75	1.50	2.33
1.50	.30	17.60	.05	1.59	33.33	4.79	50.71	26.90	76.02	1.60	2.00
1.60	1.30	27.00	.35	1.95	34.60	5.62	50.35	25.20	76.09	1.70	4.70
1.70	1.60	39.10	.63	2.57	36.20	7.10	40.73	63.00	77.05	1.80	6.00
1.80	3.10	47.50	1.47	4.04	39.30	10.20	40.26	60.50	79.50	1.90	9.00
0.00	60.70	79.50	48.26	52.30	100.00	52.30	0.00	.00	0.00	2.00	0.00

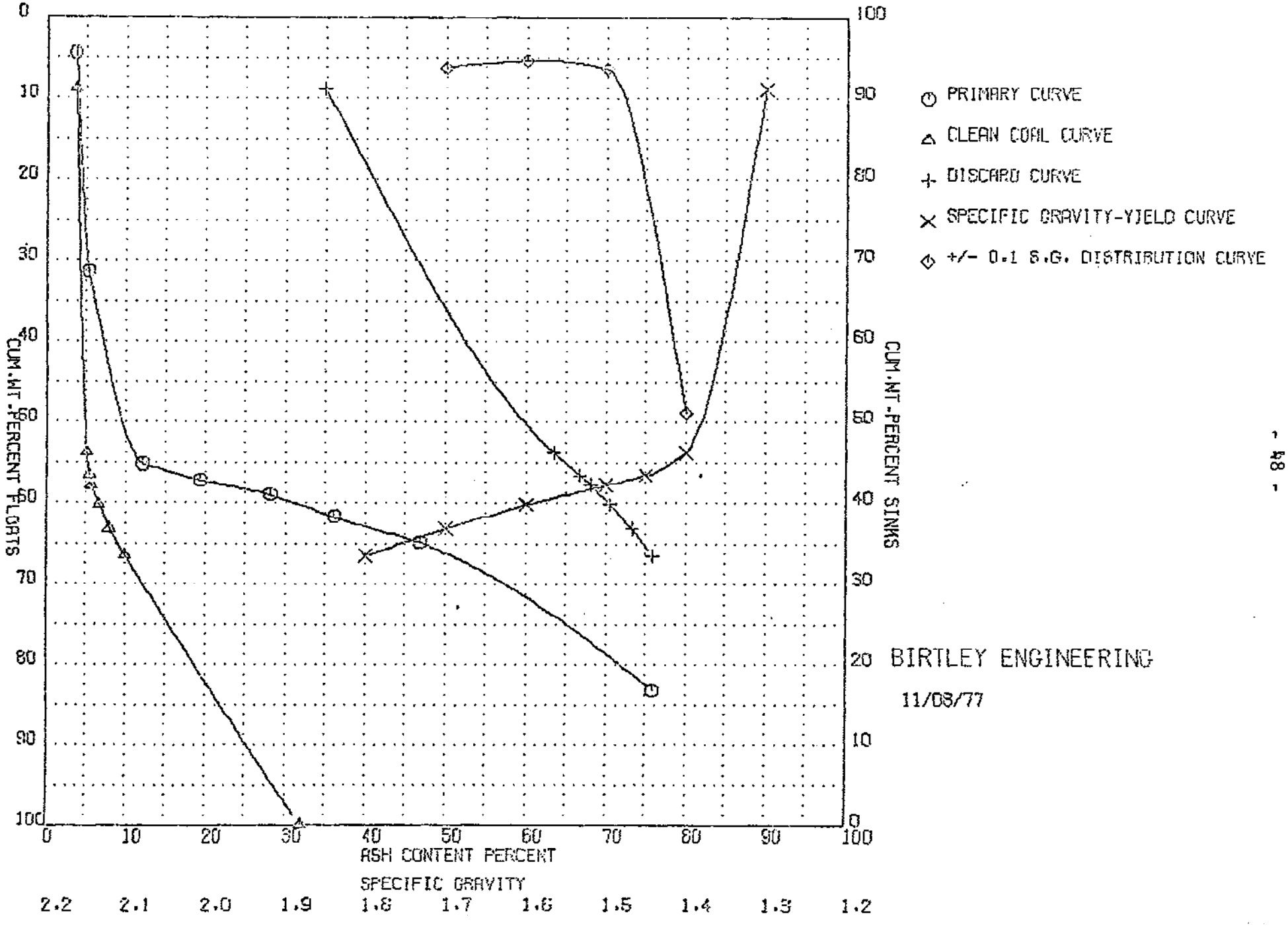
STOTLEY ENGINEERING
11/08/77

	.7	19.4	.2	58.7	11.1	18.7	2.0	18.7	4.0	14.6		
	1.0	16.1	.6	13.5	15.1	13.5	4.6	13.5	6.0	10.5		
	2.2	13.6	.0	13.4	15.2	13.4	5.0	13.4	8.0	13.4		
	3.5	13.4	1.2	13.3	15.3	13.3	6.0	13.3	10.0	10.1		
	5.4	13.2	1.1	13.1	15.4	13.1	9.0	13.1	0.0	0.0		
	7.5	12.9	1.4	12.8	15.6	12.8	10.0	12.9	0.0	0.0		
	9.5	12.5	2.1	12.1	15.9	12.1	12.0	12.1	0.0	0.0		
	15.0	0.1	10.5	.0	0.0	.0	176.3	.0	0.0	0.0		

PASS 1 8151
PASS 2 8 87
PASS 3 7 47
PASS 4 7150
PASS 5 4 60

TECK MINING GROUP LTD ADIT NO 3 E SEAM LAB NO 9138 3/4 X 1/4

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

11/08/77

[illegible]

1	2	3	4	5	6	7	8	9	10	11	12
1.30	[illegible]	[illegible]	.52	.32	[illegible]	[illegible]	31.60	[illegible]	36.77	1.30	[illegible]
1.40	44.[illegible]	5.30	[illegible]	2.70	[illegible]	[illegible]	20.30	[illegible]	63.42	1.45	48.90
1.45	[illegible]	12.1[illegible]	.24	3.[illegible]	55.[illegible]	[illegible].37	2[illegible].96	[illegible]	66.73	1.50	6.40
1.50	1.20	19.60	.53	3.27	57.[illegible]	[illegible]	2[illegible].73	72.50	68.68	1.60	5.40
1.60	2.60	23.10	.67	3.95	61.20	[illegible].55	2[illegible].05	[illegible]	70.49	1.70	4.30
1.70	2.[illegible]	36.10	1.79	5.03	63.20	7.06	26.97	56.50	73.29	1.80	0.00
1.80	2.30	44.90	1.64	6.57	66.50	[illegible]	25.43	53.60	75.00	1.90	0.00
0.90	32.50	75.00	25.43	32.00	100.00	32.00	0.00	.50	0.00	2.40	0.00

BIRTLEY ENGINEERING

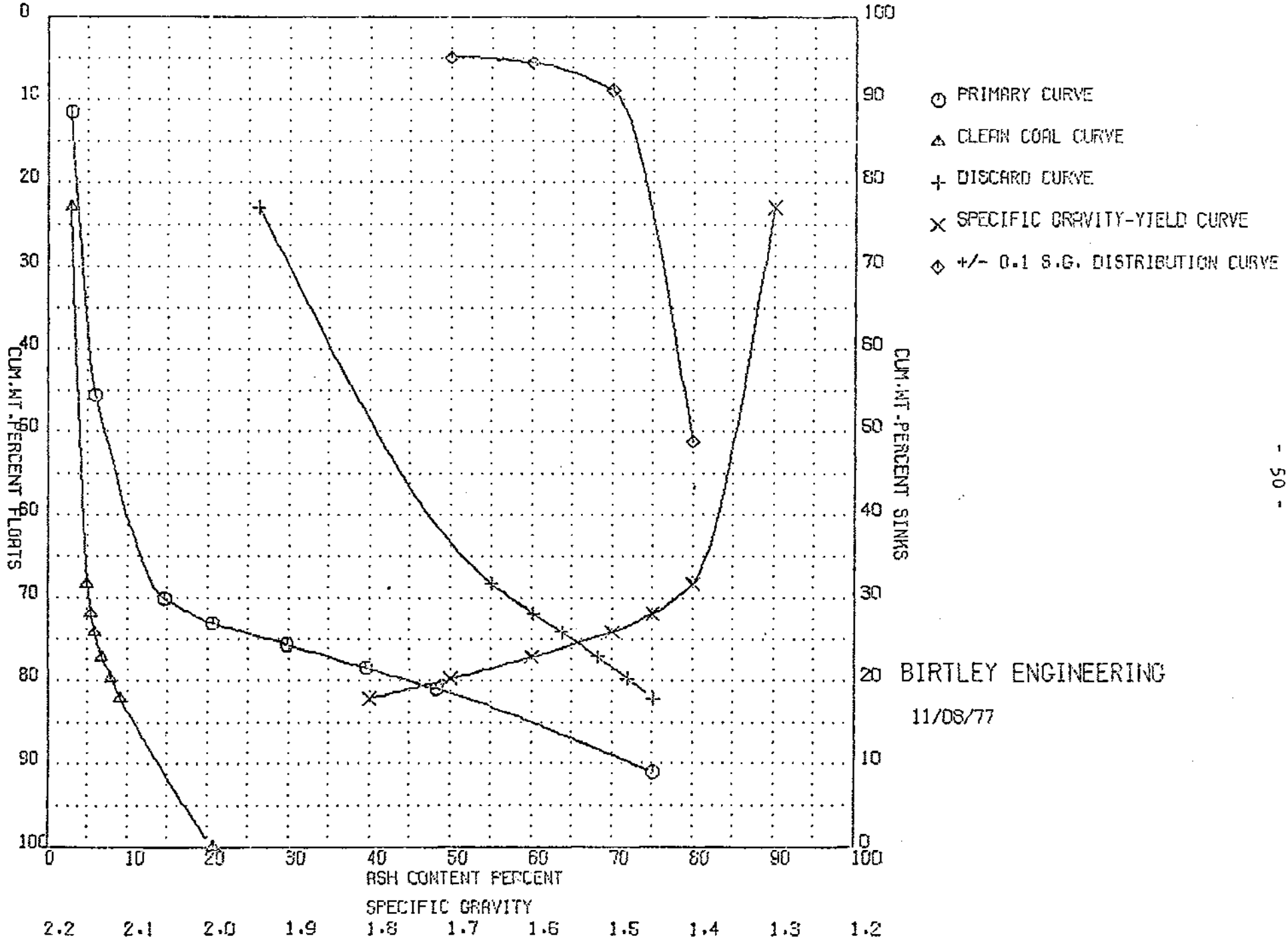
11/09/77

.7	19.1	.7	10.2	7.0	10.2	2.0	10.2	4.0	10.2
1.1	13.7	1.0	9.2	12.7	9.2	4.0	9.2	6.0	18.7
2.4	9.6	1.1	8.7	13.3	8.7	5.0	8.7	8.0	18.9
3.9	[illegible]	1.1	8.4	13.[illegible]	8.4	6.0	8.4	10.0	18.7
5.6	[illegible]	1.3	8.0	14.1	8.0	9.0	8.0	0.0	0.0
7.2	7.7	1.4	7.4	14.7	7.4	10.0	7.4	0.0	0.0
9.4	7.0	2.0	6.7	15.2	6.7	12.0	6.7	0.0	0.0
15.2	3.4	6.4	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 9.44
PASS 2 8.56
PASS 3 7.92
PASS 4 7.06
PASS 5 6.60

TECK MINING GROUP LTD ADIT NO 3 E SEAM LAB NO 9138 1/4 X 28M

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

11/08/77

--[illegible]-- [illegible] --[illegible] --[illegible]

S.G.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S.G.	[illegible]
1	2	3	4	5	6	7	8	9	10	11	12
1.30	23.[illegible]	2.00	[illegible]	.67	23.00	2.00	20.12	77.50	20.13	1.30	0.00
1.40	65.30	5.00	2.67	3.34	61.30	4.00	17.45	21.70	55.65	1.40	51.20
1.45	2.30	14.60	.53	3.87	71.90	5.33	16.92	28.70	60.23	1.50	6.00
1.55	5.30	20.60	.47	4.34	76.20	5.85	16.45	55.00	63.76	1.60	5.60
1.66	3.00	29.60	.[illegible]	5.23	77.20	6.79	15.56	22.00	68.23	1.70	5.00
1.70	2.50	30.60	1.03	6.26	79.80	7.35	14.53	20.00	71.02	1.80	0.00
1.80	2.40	40.30	1.36	7.62	82.20	9.03	13.37	17.50	75.10	1.90	0.00
9.30	17.80	73.10	12.67	20.79	100.00	20.73	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING

11/08/77

.4	17.7	.4	15.4	5.0	15.4	2.0	15.4	4.0	0.0
1.2	15.0	1.0	6.2	11.0	6.7	4.0	6.3	6.0	12.2
2.0	5.0	1.1	5.6	12.0	5.4	5.0	5.6	8.0	10.0
4.1	5.4	1.2	5.2	12.0	5.2	6.0	5.2	10.0	50.0
6.0	4.0	1.4	4.6	13.6	4.6	9.0	4.6	0.0	0.0
7.0	4.3	1.6	4.0	14.6	4.0	11.0	4.0	0.0	0.0
9.7	3.0	1.9	3.6	15.0	3.6	12.0	2.6	0.0	0.0
15.0	1.0	4.2	.0	8.0	.0	175.8	.0	0.0	0.0

PASS 1 5124
PASS 2 3 35
PASS 3 7 57
PASS 4 7100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

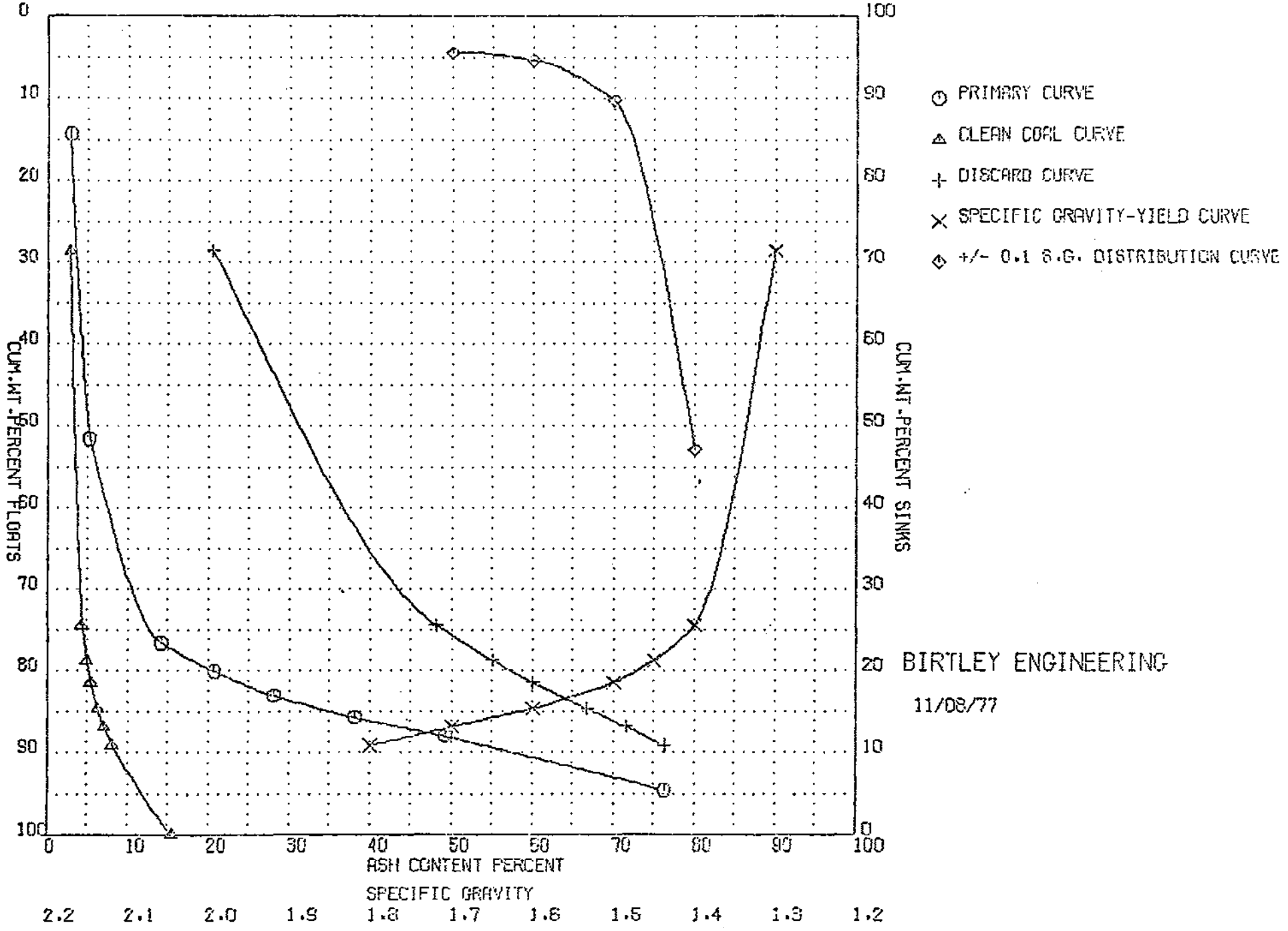
SAMPLE: ADIT 3, "E" SEAM

LAB. NO. 9138 DATE: July, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	28M x 48M (WT.%=6.0)				48M x 100M (WT.%=5.1)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	28.6	2.9	28.6	2.9	38.6	3.4	38.6	3.4
1.30-1.40	45.9	5.2	74.5	4.3	37.4	5.5	76.0	4.4
1.40-1.45	4.3	14.1	78.8	4.9	8.3	17.9	84.3	5.8
1.45-1.50	2.7	20.7	81.5	5.4	0.5	27.2	84.8	5.9
1.50-1.60	3.2	28.1	84.7	6.2	1.1	31.6	85.9	6.2
1.60-1.70	2.2	38.1	86.9	7.0	2.0	39.0	87.9	7.0
1.70-1.80	2.3	49.2	89.2	8.1	1.4	49.3	89.3	7.6
+1.80	10.8	76.3	100.0	15.5	10.7	75.1	100.0	14.8

TECK MINING GROUP LTD ADIT NO 3 E SEAM LAB NO 9133 28M X 48M

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

11/08/77

1	2	3	4	5	6	7	8	9	10	11	12
1.30	21.6	2.0%	.03	.83	21.60	0.00	14.06	21.70	20.53	1.30	0.00
1.30	45.00	5.20	0.00	3.22	71.50	4.33	13.27	35.50	47.14	1.40	52.30
1.00	4.30	11.10	.1	3.82	78.50	4.05	11.67	21.00	55.04	1.50	10.20
1.20	5.70	20.70	.04	4.38	91.50	5.33	11.11	18.50	60.05	1.60	5.40
1.20	3.20	24.10	.10	5.20	94.70	7.03	10.21	15.30	66.73	1.70	4.50
1.40	3.20	34.10	.14	6.12	30.00	7.04	9.37	13.10	71.04	1.80	0.00
1.20	3.50	41.20	1.13	7.25	39.20	7.13	9.24	10.00	74.30	1.90	0.00
3.40	14.00	74.20	3.04	15.49	100.00	15.49	0.00	.50	0.00	2.00	0.00

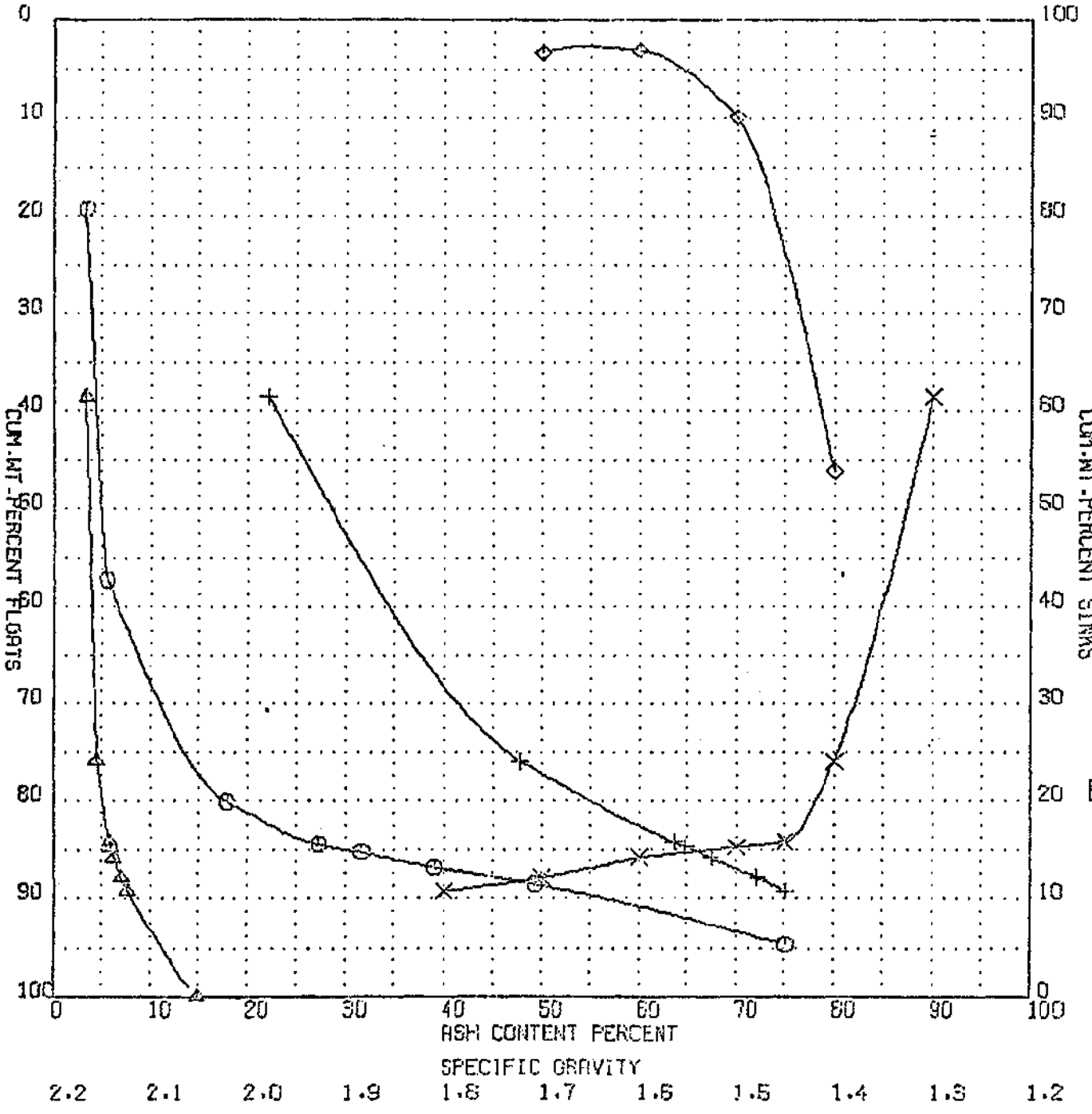
BARTLEY ENGINEERING
11/08/77

.4	17.1	.4	14.3	4.1	14.3	2.0	14.3	4.0	0.4
1.4	3.7	1.0	5.1	9.6	5.1	6.0	5.1	6.0	10.0
2.0	1.7	1.0	4.3	11.0	4.3	5.3	4.3	8.0	10.0
4.1	5.0	1.1	3.7	12.0	3.7	4.0	3.7	10.0	10.1
5.4	3.4	1.2	3.1	13.3	3.1	3.0	3.1	0.0	0.0
7.4	2.7	1.4	2.4	14.3	2.4	13.0	2.4	0.0	0.0
9.0	2.1	1.6	2.2	15.3	2.2	12.0	2.2	0.0	0.0
10.2	1.0	3.1	.0	0.0	.0	175.3	.0	0.0	0.0

PASS 1 4.44
PASS 2 4.05
PASS 3 7.11
PASS 4 7.50
PASS 5 4.40

TECK MINING GROUP LDD ADIT NO 3 E SEAM LAB NO 9138 46M X 100M

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

11/08/77

S.G.											
1	2	3	4	5	6	7	8	9	10	11	12
1.30	22.11	3.41	1.51	1.31	1.00	2.46	15.53	21.79	22.04	1.30	0.00
1.40	32.81	5.54	2.16	3.37	24.79	4.43	11.48	34.59	47.91	1.40	46.21
1.45	9.31	17.00	1.49	4.83	34.39	5.24	0.00	76.78	63.63	1.50	0.00
1.50	.51	27.29	.74	4.09	44.98	5.30	0.85	76.50	64.93	1.60	3.10
1.55	1.10	31.60	.95	5.34	51.58	6.22	0.51	74.70	67.42	1.70	3.41
1.70	0.31	39.00	.73	6.12	87.99	6.96	0.73	72.70	72.11	1.10	0.00
1.80	1.49	40.39	.69	6.31	90.31	7.32	0.04	70.50	75.10	1.91	0.00
0.00	17.71	75.10	1.44	14.66	169.00	14.24	0.00	.00	0.01	2.01	0.01

STRATEGY ENGINEERING
11/09/77

.7	16.1	.7	72.3	4.4	12.3	2.0	10.3	4.0	10.0
1.1	1.5	.9	4.9	2.4	4.9	4.0	4.9	6.0	10.0
3.6	5.9	1.2	3.1	12.7	3.1	6.0	3.1	8.0	10.4
5.4	3.1	1.3	3.0	13.0	3.1	6.0	3.1	10.0	10.3
6.3	2.1	1.2	2.9	13.5	2.9	8.0	2.9	0.0	0.0
7.2	2.6	1.4	2.4	14.4	2.4	10.0	2.4	0.0	0.0
8.3	2.3	1.5	2.1	15.0	2.1	12.0	2.1	0.0	0.0
15.0	1.1	3.0	.9	0.0	.5	175.8	.6	0.0	0.0

PASS 1 [illegible]
PASS 2 [illegible]
PASS 3 [illegible]
PASS 4 [illegible]
PASS 5 [illegible]

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT NO. 3, "E" Seam

LAB. NO.: 9138 DATE: July, 1977

FROTH FLOTATION TESTS

Pulp Density = 10% Reagent = 4:1=Kerosene:MIBC Dosage = 0.48 lb/T

Conditioning Time = 1 min. Stage I, II, III, IV, V are froths at 30, 60, 90, 120, 150 sec. respectively.

48 Mesh x 0 (WT% = 11.0)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	50.8	0.7	6.9	28.2	64.2	0.60		8 1/2	50.8	6.9
STAGE II	17.1	0.8	9.2	27.6	62.4	0.60		8 1/2	67.9	7.5
STAGE III	5.8	1.0	15.5	25.8	57.7	0.66		7	73.7	8.1
STAGE IV	2.5	1.0	22.3	24.4	52.3	0.68		7	76.2	8.6
STAGE V	2.5	1.0	27.0	22.8	49.2	0.72		5	78.7	9.2
TAILS	21.3	-	47.2	-	-	0.88		-	100.0	17.3

48 Mesh x 100 Mesh (WT% = 5.1)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	54.3	1.1	6.9	28.9	63.1	0.57		8 1/2	54.3	6.9
STAGE II	12.0	1.1	7.8	28.6	62.5	0.56		8 1/2	66.3	7.1
STAGE III	4.3	1.1	9.2	28.0	61.7	N.S.S.		7 1/2	70.6	7.2
STAGE IV	2.4	1.1	12.6	27.2	59.1	N.S.S.		7 1/2	73.0	7.4
STAGE V	1.5	1.1	13.5	27.1	58.3	0.62		7 1/2	74.5	7.5
TAILS	25.5	-	41.4	-	-	0.52		-	100.0	16.1

100 Mesh x 0 (WT% = 5.9)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	59.2	1.2	7.3	27.4	64.1	0.61		8	59.2	7.3
STAGE II	11.8	1.2	11.1	26.5	61.2	0.61		7	71.0	7.9
STAGE III	4.6	1.1	15.2	25.3	58.4	N.S.S.		6 1/2	75.6	8.4
STAGE IV	2.5	1.3	19.7	24.0	55.0	N.S.S.		5	78.1	8.7
STAGE V	1.5	1.4	24.9	22.9	50.8	0.81		2 1/2	79.6	9.0
TAILS	20.4	-	52.8	-	-	1.15		-	100.0	18.0

* N.S.S. - not sufficient sample

CLIENT: TECK MINING GROUP LTD.

SAMPLE: "E" SEAM

LAB. NO.: 9138

F.S.I. OF COMPOSITE FLOATS OF SCREEN SIZES
FOR 7.5% ASH ± 0.5%

SCREEN SIZES	WT.%	S.G. OF COMPOSITE FLOATS	YIELD%	ASH%	F.S.I.
4" x 2"		---	---	---	---
2" x 3/4"	9.0	1.70	36.2	7.1	6 1/2
3/4" x 1/4"	18.2	1.60	63.2	8.0	5
1/4" x 28M	53.4	1.70	79.8	7.8	6 1/2
28M x 48	6.0	1.70	86.9	7.0	8 1/2
48M x 100	5.1	1.80	89.3	7.6	8 1/2

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 3, "E" SEAM

LAB. NO.: 9138 DATE: July, 1977

LAB. NO.: 9252

ANALYSES OF 2" x 100Mesh FLOAT @ 1.60 S.G. (Yield = 70.6%)									
PROXIMATE									
RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
0.8	6.4	28.1	64.7	0.60	0.09	14376	7	68	a.d.b.
					0.09				
	6.5	28.3	65.2	0.60		14492	--	--	d.b.

ULTIMATE ANALYSIS							DILATATION TEST				
H_2O%	C%	H%	N%	S%	ASH%	by diff. O%	S.T. °C	M.D.T. °C	M.C. %	M.D. %	G.No.
0.94	80.85	4.93	1.04	0.60	6.36	5.28.	347	461	25	87	1.085

NOTE: Sample of above float product prepared for Petrographic Analysis and Geisler Plastometer Test.

LAB. NO.: 9253

ANALYSES OF 2" x 100Mesh SINK @ 1.60 S.G. (WT.% = 29.4)											
PROXIMATE						ASH FUSION TEMPERATURES (°F)					
RM.%	ASH%	VM.%	FC.%	S%		ATMOS.	I. DEF.	SOFT'NG	HEMIS.	FLUID	
1.2	70.2	11.6	17.0	0.34	adb	OXID'NG	2650 +	--	--	--	
	71.1	11.7	17.2	0.34	db	REDUCING	2630	2650 +	--	--	
MINERAL ANALYSIS OF ASH, %											
SiO_2	Al_2O_3	TiO_2	CaO	MgO	MnO	Fe_2O_3	Na_2O	K_2O	P_2O_5	SO_3	
69.5	21.4	0.9	0.5	0.4	0.01	1.6	0.4	3.3	0.2	0.8	

NOTE: Sample of above reject product also prepared for Clay Analysis

Lab. No. 9252 Date July, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: COMP. FLOATS-1.60

Starting Temperature °C: 320

Softening Temperature °C: 347

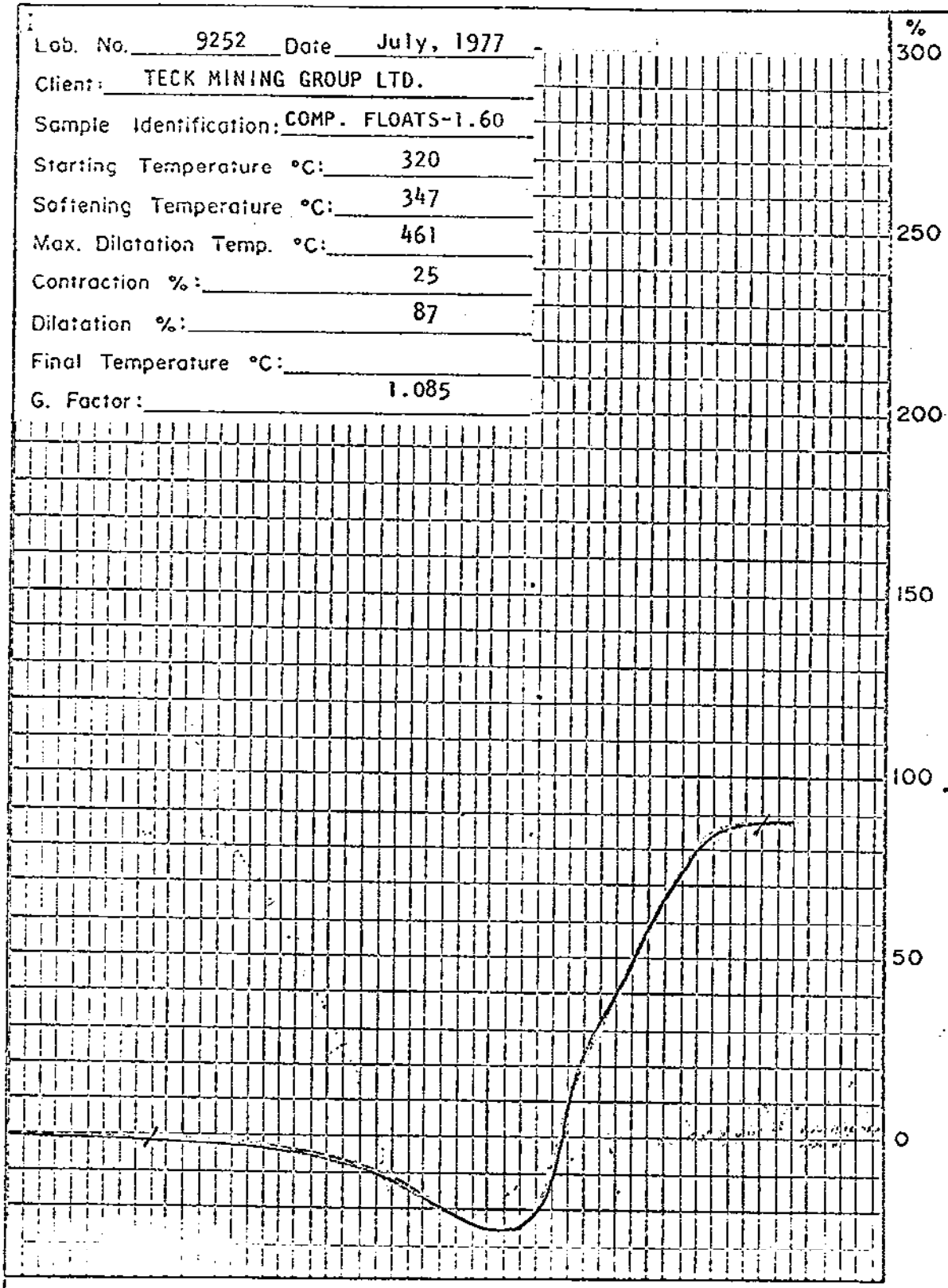
Max. Dilatation Temp. °C: 461

Contraction %: 25

Dilatation %: 87

Final Temperature °C:

G. Factor: 1.085



BIRTLEY ENGINEERING (CANADA) LTD.

Title

RUHR DILATOMETER TEST

Date

Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT #3, "E" SEAM

LAB. NO.: 9252

ANALYSIS OF 2" x 100 Mesh FLOAT @ 1.60 S.G. (Yield = 70.6%)

GIESLER PLASTOMETER TEST

	DDPM		TEMP.°C
START	1		411
MAXIMUM	2110		459
FINAL	1		401
		RANGE	90

LAB. NO.: 9253

ANALYSIS OF 2" x 100Mesh SINK @ 1.60 S.G. (WT.% = 29.4)

CLAY SEPARATION BY FLOTATION

Material greater than 2 microns	48.4
Material less than 2 microns	51.6

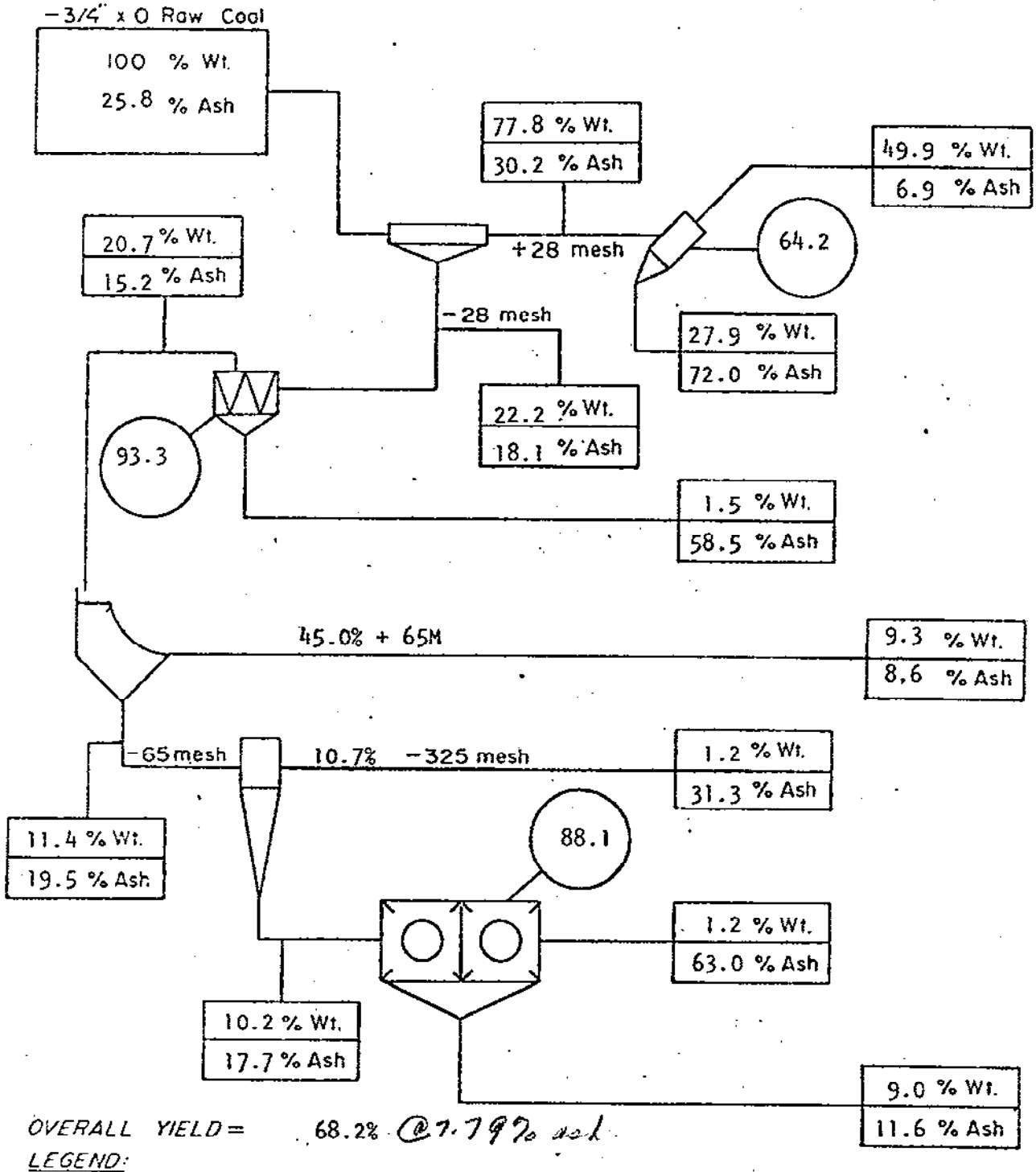
X-RAY DIFFRACTION ANALYSIS OF MATERIAL LESS THAN 2 MICRONS

Quartz	38
Feldspar	Trace
Calcite	Trace
Dolomite	Nil
Siderite	2
Kaolinite	34
Illite	26
Chlorite	Trace
Monmorillonite	Nil

TECK MINING GROUP LTD.

ADIT# 3, "E" SEAM
LAB. NO. 9137

PLANT WASHING RESULTS



OVERALL YIELD = 68.2% @7.79% ash

LEGEND:

○ *CIRCUIT YIELD %*

Wt. *WEIGHT %*

Ash *ASH CONTENT (AIR DRIED)*

BIRTLEY ENGINEERING (CANADA) LTD.

Title	Date
PLANT BALANCE FLOWSHEET PILOT PLANT WASH - ADIT 3, SEAM "E" TECK MINING GROUP LTD. LAB. NO. 9137	July, 1977
	Drawn

BIRTLEY ENGINEERING (CANADA) LTD.

Coal Science & Minerals Testing Div.

TECK MINING GROUP LTD.

BULK WASHING DATA*

ADIT 3 SEAM E LAB. NO. 9137

DELIVERY DATE July 14, 1977 DATE OF WASH July 27, 1977

Raw Coal Analysis: ADM 5.6 ASH% 25.8 FSI 5

Delivered Bulk Weight 7.375 Metric Tons

Washed Weight ** 5.869 Metric Tons

* All weight and analyses are on Air Dried Basis unless otherwise indicated.

** Does not include +2" oversize which weighed .173 M.T. and simulates breaker plant reject.

TECK MINING GROUP LTD.

BULK WASHING DATA

HEAVY MEDIUM CIRCUIT

ADIT/SEAM NO. 3/E LAB. NO. 9137

1. S. G. of Separation 1.61

2. Feed Ash Content 30.2 % F.S.I. 4

3. Clean Coal Estimated Weight 3.058 M.T.

4. Clean Coal Analysis - Ash 6.9 % F.S.I. 7 1/2

5. Reject Estimated Weight 1.510 M.T.

6. Reject Analysis - Ash 72.0 % F.S.I. 1/2

7. Estimated 3/4" x 28M in Circuit 4.568 M.T. 77.8 Wt.%

8. Yield Clean Coal (Weighted): 66.9 %

9. Yield Clean Coal (Calculated Ash Balance) - 64.2 %

TECK MINING GROUP LTD.

BULK WASHING DATA

WATER-ONLY CYCLONE CIRCUIT

ADIT/SEAM NO. 3/E LAB. NO. 9137

1. Vortex Finder Clearance(VCF) #2 = 3.810 #1 = 0 CM 1.50 0 INCHES

2. Feed Pressure #2 = 0.4 #1 = 1.4 KG/CM^2 5 20 P.S.I.

3. Feed Rate #2 = 5.8 #1 = 23.2 M^3/HR. 21.2 85.0 I.G./Min.

4. Feed Pulp Density 80 - 120 g/l. 8 - 12 Solids W/V

5. Sample Analysis

	SCREEN SIZE	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%	HEAD ASH%	HEAD FSI
FEED							18.1	6 1/2
O'FLOW	+65 Mesh	45.0	9.5	7 1/2	45.0	9.5	15.2	7
	65M x 0	55.0	19.6	7	100.0	15.1		
U'FLOW							58.5	1
S.B.O.							8.6	8 1/2
T.C.O.*							31.3	1/2

6. Yield - Total W.O. Cyclone Circuit = 93.3

7. Estimated Yield of 28 x 65 Mesh Coal = 42.0
(as % of 28 Mesh x 0 Feed)

8. Estimated 28M x 0 in circuit
(Plant Feed - HM Products) 1.301 MT 22.2 %

* Thickener Cyclone Overflow

TECK MINING GROUP LTD.

BULK WASHING DATA

FROTH FLOTATION CIRCUIT

ADIT/SEAM NO. 3/E LAB. NO. 9137

1. Reagents: Kerosene:Methylisobutylcarbinol (MIBC) = 4:1

2. Feed Pulp Density 90 - 130 g/l 9 - 13 % Solids W/V

3. Sample Analysis:-

	ASH	F.S.I.
FEED	17.7 .	7
CONC.	11.6	8
TAILS	63.0	1 1/2

4. Impeller Type - Birtley-Humboldt Multi-Wobble.

5. Yield Calculated (Ash Balance) 88.1 %

6. Filter Cake (Sieve Bend O'Flow & Flotation Conc.)
Wt. Recovered 0.981 M.T.

7. Filter Cake - Ash% 10.9 F.S.I. 8

TECK MINING GROUP LTD.

BULK WASHING DATA

ADIT/SEAM 3/E LAB. NO. 9137 DATE OF WASH July 27, 1977

a) Raw Coal

Delivered Weight	= 7.375	M.T.
Ash %	= 25.8	
F.S.I.	= 5	
Estimated Washed Wt.	= 5.869	M.T.

b) Heavy Media Circuit

Estimated Proportion of +28 Mesh in Feed 77.8%

Effective S.G. = 1.61

Raw Feed	30.2 %	Ash	4	F.S.I.
Clean Coal	6.9 %	Ash	7 1/2	F.S.I.
Reject	72.0 %	Ash	1/2	F.S.I.
Calculated Yield	64.2 %			
Weighed Yield	66.9 %			

c) Water-Only Cyclone Circuit

Raw Feed	18.1 %	Ash	6 1/2	F.S.I.
Overflow	15.2 %	Ash	7	F.S.I.
Underflow	58.5 %	Ash	1	F.S.I.
Calculated Yield	93.3 %			
% of +65M in O/F	45.0 %			
Sieve Bend Overflow	8.6 %	Ash	8 1/2	F.S.I.

d) Froth Flotation Circuit

Raw Feed	17.7 %	Ash	7	F.S.I.
Concentrates	11.6 %	Ash	8	F.S.I.
Tails	63.0 %	Ash	1 1/2	F.S.I.
Calculated Yield	88.1 %			

TECK MINING GROUP LTD.

BULK WASHING DATA

BULK WASHING SUMMARY (Cont.)

ADIT 3/SEAM "E" LAB. NO. 9137

e) Clean Coal Mix Analyses

(i) Proximate

ADM% 9.2 RM.% 0.7 ASH 7.6 VM.% 28.0 FC.% 63.7

(ii) S.% 0.56 FSI 7 1/2 HGI 70 BTU/LB 14,232 P% 0.08

(iii) Dilatation Test

S.T. 359°C MDT 461°C MC% 23 MD% 88° G. NO. 1.079

(iv) Gieseler Plastometer Test

	DDPM	TEMP.(°C)
START	1	414
MAXIMUM	1900	459
FINAL	1	501
RANGE =		87

f) Clean Coal Mix Make-Up

H.M. CLEAN COAL	FINES FILTER CAKE	CLEAN COAL MIX		SHIPPED		IN STOCK	
M.T.	M.T.	BBLS.	M.T.	BBLS	M.T.	BBLS.	M.T.
3.058	0.981	26	4.039				

Lab. No. 9137 Date August 3, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: CLEAN MIX , E SEAM

Starting Temperature °C: 320

Softening Temperature °C: 359

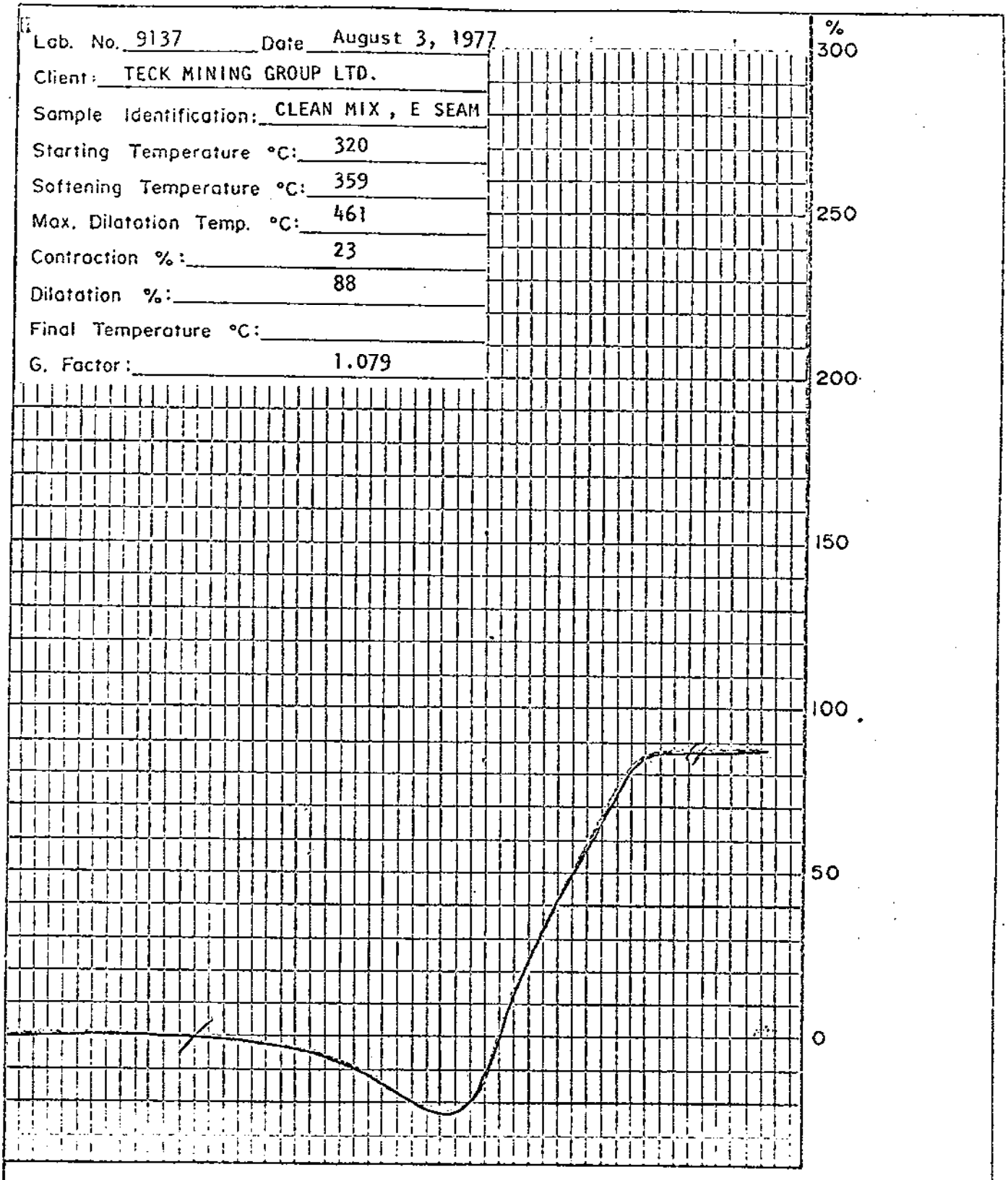
Max. Dilatation Temp. °C: 461

Contraction %: 23

Dilatation %: 88

Final Temperature °C:

G. Factor: 1.079



BIRTLEY ENGINEERING (CANADA) LTD.

Title	Date
RUHR DILATOMETER TEST	
	Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM "E"

CLEAN COAL ANALYSES August, 1977

INFORMATION REQUIRED FOR EMR COKING TESTS

LAB. NO.	ADM%	MOISTURE	ASH%	VOL.%	FC.%	S%	BTU/LB	F.S.I.	CALC. FACTORS
9137	9.2	0.7	7.6	28.0	63.7	0.56	14232	7 1/2	air dried basis
		9.8	6.9	25.4	57.9	0.51	12923	--	
			7.7	28.2	64.1	0.56	14332	--	dry basis

SIZE ANALYSIS		
SIZE FRACTION	WT.%	CUM. WT.%
+ 1/2"	1.1	1.1
1/2" x 1/4"	8.3	9.4
1/4" x 6M	15.9	25.3
6M x 12M	30.0	55.3
12M x 20M	9.5	64.8
20M x 100M	25.1	89.9
100M x 0	10.1	100.0

TECK MINING GROUP LTD.

ADIT# 4, "D" SEAM
LAB. NO. 9241

WASHABILITY RESULTS

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM "D" BULK

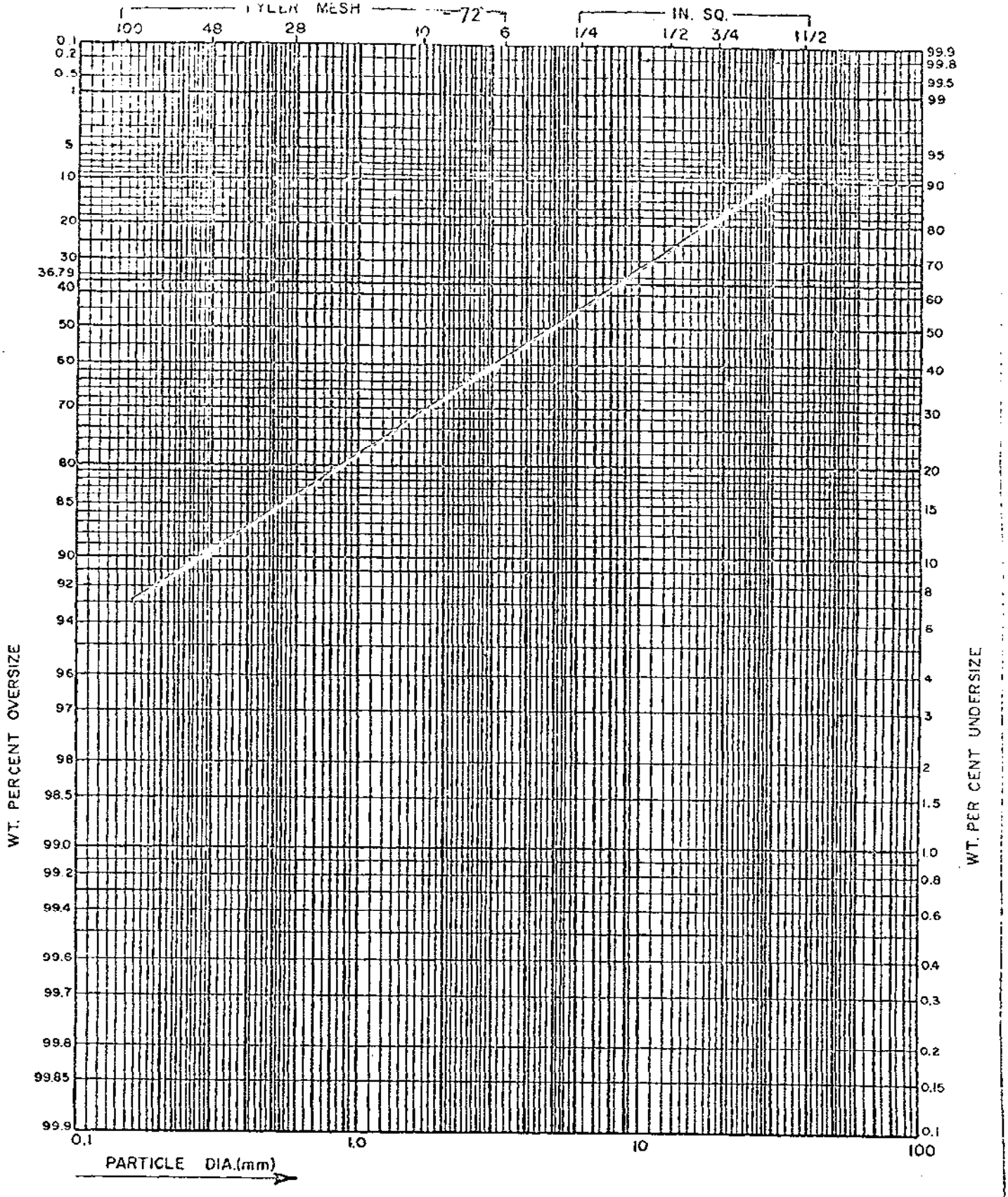
LAB. NO.: 9241 DATE: August, 1977

HEAD RAW ANALYSIS										
ADL%	RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
3.0	1.1	43.8	18.4	36.7	0.44	0.06	8268	3	68	air dried basis
	4.1	42.5	17.8	35.6	0.43	0.06	8020	-	--	as rec'd basis
		44.3	18.6	37.1	0.44	0.06	8360	-	--	dry basis

DRY SCREENING ANALYSIS: 4" x 0 HEAD SAMPLE					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
4" x 2"	4.7	72.5	1/2	4.7	72.5
2" x 3/4"	17.3	66.5	1/2	22.0	67.8
3/4" x 1/4"	20.7	57.6	1	42.7	62.8
1/4" x 28M	40.6	34.2	4	83.3	48.9
28M x 48M	6.5	21.0	6 1/2	89.8	46.9
48M x 100M	4.4	21.3	7	94.2	45.7
100M x 0	5.8	21.6	8	100.0	44.3

WT.% +4" Material crushed to -4" =

WET SCREENING ANALYSIS: 28 MESH x 0					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
28M x 35M	14.8	24.6	7 1/2	14.8	24.6
35M x 48M	15.2	17.8	7 1/2	30.0	21.2
48M x 65M	14.5	18.1	7	44.5	20.2
65M x 100M	11.1	19.4	7	55.6	20.0
100M x 200M	16.0	19.2	7 1/2	71.6	19.8
200M x 325M	6.6	20.0	8	78.2	19.8
325M x 0	21.8	30.0	1/2	100.0	22.1



DIRTLEY ENGINEERING

Project: BULK SAMPLE FROM ADIT No. 4, SEAM D
BULLMOOSE PROJECT

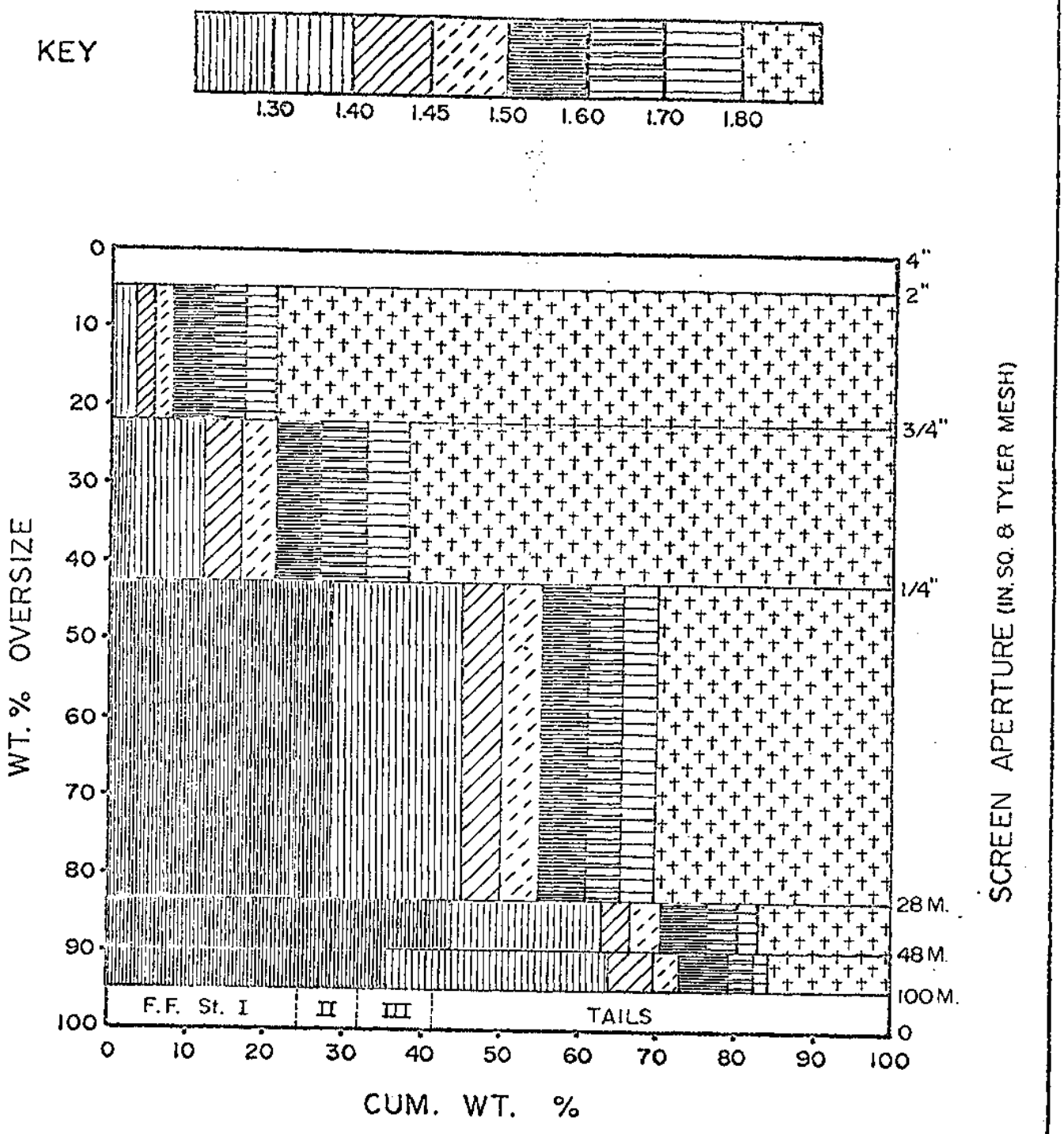
Client: TECK CORPORATION

Lab No. 9241

Date: AUG. 1977

Title: ROSIN RAMMLER SIZE DISTRIBUTION

Drawn: H.



BIRTLEY ENGINEERING (Canada) LTD. CALGARY ALBERTA			
TITLE	SIZE AND DENSITY DISTRIBUTION DIAGRAM		
CLIENT	TECK CORP.		
SAMPLE	ADIT No. 4 SEAM D	DATE	AUG. 1977
LAB NO.	9241	DRWN	

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM "D" Bulk

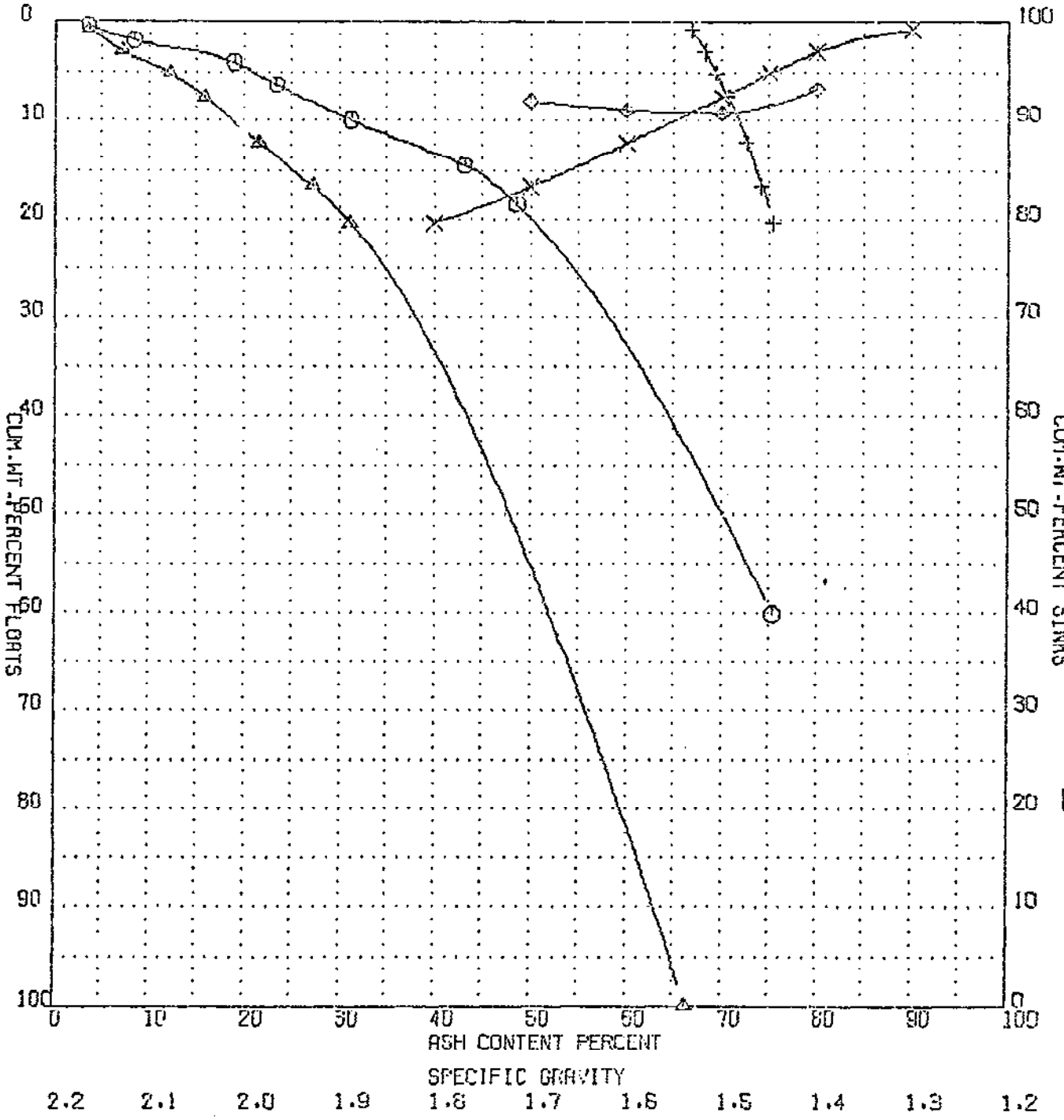
LAB. NO. 9241 DATE: August 9, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	2" X 3/4" (WT% = 17.3)				3/4" X 1/4" (WT% = 20.7)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	0.8	3.6	0.8	3.6	2.9	3.2	2.9	3.2
1.30-1.40	2.2	8.4	3.0	7.1	8.8	8.0	11.7	6.8
1.40-1.45	2.0	19.0	5.0	11.9	4.0	18.5	15.7	9.8
1.45-1.50	2.5	23.4	7.5	15.7	4.7	23.2	20.4	12.9
1.50-1.60	4.6	31.2	12.1	21.6	6.0	31.1	26.4	17.0
1.60-1.70	4.4	43.1	16.5	27.3	5.8	41.1	32.2	21.4
1.70-1.80	3.7	48.6	20.2	31.2	5.2	48.9	37.4	25.2
+ 1.80	79.8	75.4	100.0	66.5	62.6	75.7	100.0	56.8

SINK FLOAT ANALYSES								
S.G. FRACTION	1/4" X 28 M (WT% = 40.6)				28 M X 48 M (WT% = 6.5)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	27.8	3.0	27.8	3.0	43.1	3.2	43.1	3.2
1.30-1.40	16.7	8.3	44.5	5.0	19.4	7.8	62.5	4.6
1.40-1.45	5.4	17.4	49.9	6.3	4.6	17.0	67.1	5.5
1.45-1.50	4.5	23.8	54.4	7.8	3.3	21.9	70.4	6.2
1.50-1.60	6.2	31.3	60.6	10.2	6.0	29.5	76.4	8.1
1.60-1.70	4.7	41.0	65.3	12.4	3.6	39.1	80.0	9.5
1.70-1.80	4.1	48.4	69.4	14.5	2.6	46.7	82.6	10.6
+1.80	30.6	76.6	100.0	33.5	17.4	74.5	100.0	21.8

TECK MINING GROUP LTD SEAD D BULK LAB NO 9241 2 X 3/4

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

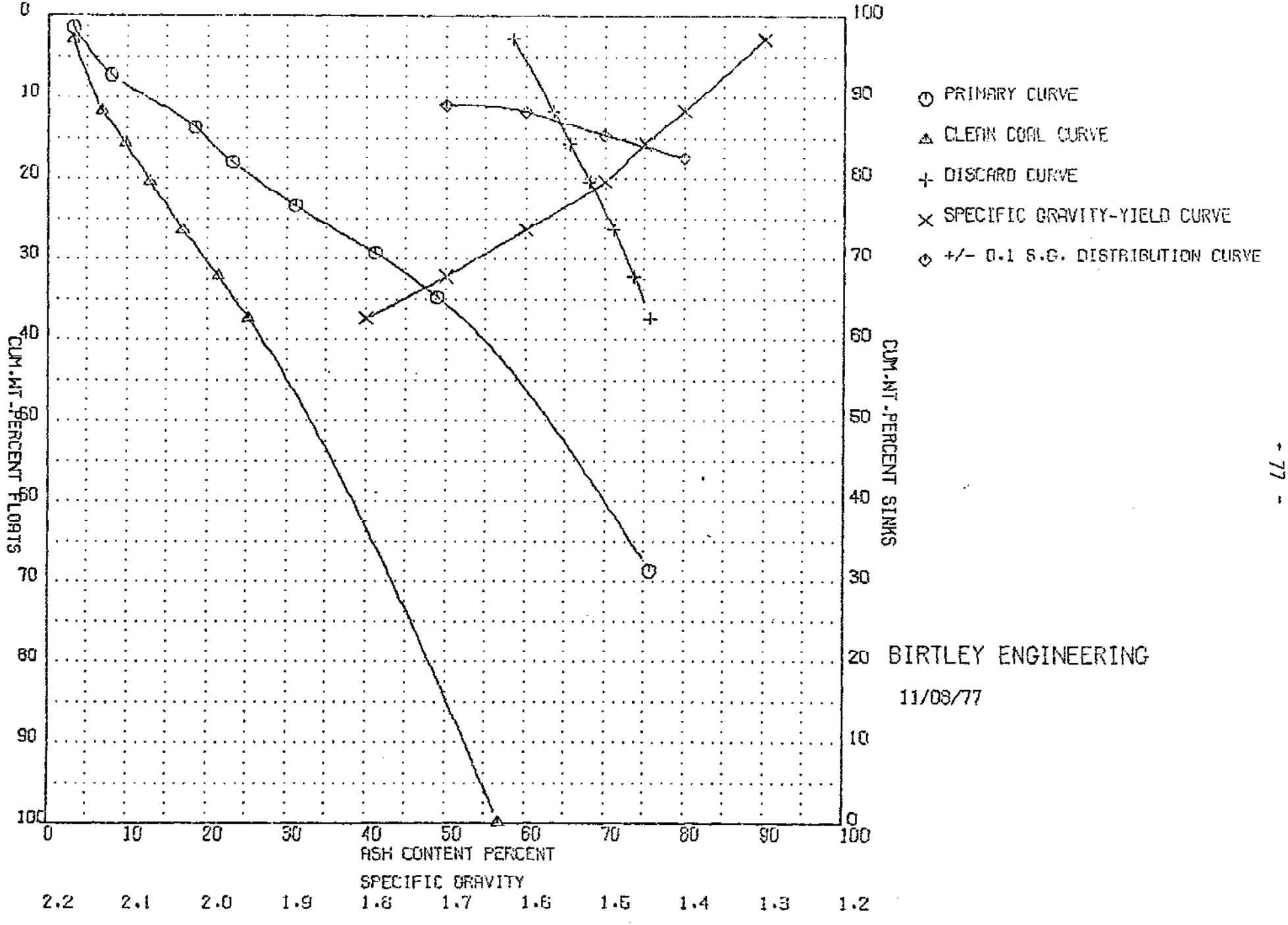
11/08/77

1	2	3	4	5	6	7	8	9	10	11	12
1.30	.00	3.40	.78	.03	.84	3.40	44.35	60.50	62.09	1.30	0.00
1.40	0.20	3.40	.38	.21	2.99	7.12	44.17	67.31	68.21	1.40	5.89
1.40	0.20	10.00	.42	.63	5.10	12.15	45.75	64.41	64.79	1.50	0.00
1.50	0.50	23.40	.39	1.21	7.68	16.00	45.17	62.52	71.69	1.60	0.00
1.60	4.50	31.20	1.13	2.65	12.28	21.56	43.74	67.52	72.65	1.70	0.00
1.70	4.31	43.10	1.09	4.54	16.67	27.23	41.84	63.33	74.21	1.80	0.00
1.80	3.64	43.60	1.19	6.33	20.36	31.11	39.05	59.64	75.40	1.90	0.00
0.00	77.64	25.40	60.15	66.38	145.00	64.38	0.00	.00	0.00	2.00	0.00

BARTLEY PROTOFFERING
11/08/77

.7	14.0	.7	19.0	13.4	19.0	2.0	19.0	6.0	19.0
1.7	19.4	1.4	19.4	13.6	19.4	4.0	19.4	6.0	19.1
2.8	19.0	2.5	19.0	13.0	19.0	5.0	19.0	8.0	19.2
4.7	18.7	3.3	18.5	14.1	18.5	6.0	18.5	10.0	19.4
6.2	18.0	4.3	17.6	14.5	17.5	9.6	17.5	0.0	0.0
8.5	17.1	5.4	16.7	14.0	16.7	13.0	16.7	0.0	0.0
9.7	16.2	6.2	15.9	15.1	15.9	12.8	15.9	0.0	0.0
15.1	5.0	13.2	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8143
PASS 2 [illegible]
PASS 3 7 17
PASS 4 7100
PASS 5 4 60


TECK MINING GROUP LTD SEAM D BULK LAB NO 9241 3/4 X 1/4
THE CLASSICAL WASHABILITY CURVES
CUM.WT.-PERCENT FLOATS
CUM.WT.-PERCENT SINKS
0
10
20
30
40
50
60
70
80
90
100
ASH CONTENT PERCENT
SPECIFIC GRAVITY
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
PRIMARY CURVE
CLEAN COAL CURVE
DISCARD CURVE
SPECIFIC GRAVITY-YIELD CURVE
+/- 0.1 S.G. DISTRIBUTION CURVE
BIRTLEY ENGINEERING
11/08/77

--[illegible]-- --CUM FLOATS-- --CUM SINKS-- +0.1 DIST

			IN CUM WT>			SINK WT					
S.G.	[illegible]	[illegible]	[illegible]	WT>	[illegible]	[illegible]	WT>	[illegible]	[illegible]	S.G.	WTS
1	2	3	4	5	6	7	8	9	10	11	12
1.30	[illegible]	3.20	[illegible]	.69	[illegible]	2.20	66.72	67.50	[illegible]	1.30	0.00
1.40	[illegible]	[illegible]	[illegible]	[illegible]	13.70	[illegible]	[illegible]	69.30	63.43	1.40	17.60
1.45	[illegible]	10.50	[illegible]	1.54	15.70	[illegible]	66.27	[illegible]	[illegible]	1.50	14.70
1.50	[illegible]	23.20	[illegible]	2.43	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.60	11.80
1.60	[illegible]	31.10	1.37	4.49	26.40	17.02	52.31	73.40	71.08	1.70	[illegible]
1.70	[illegible]	41.10	[illegible]	6.88	32.20	21.36	40.93	47.20	73.44	1.80	0.00
1.85	[illegible]	[illegible]	[illegible]	9.42	37.40	25.10	47.30	62.20	75.70	1.90	0.00
2.50	[illegible]	75.70	[illegible]	56.81	100.00	[illegible]	0.00	.00	0.00	2.00	0.00

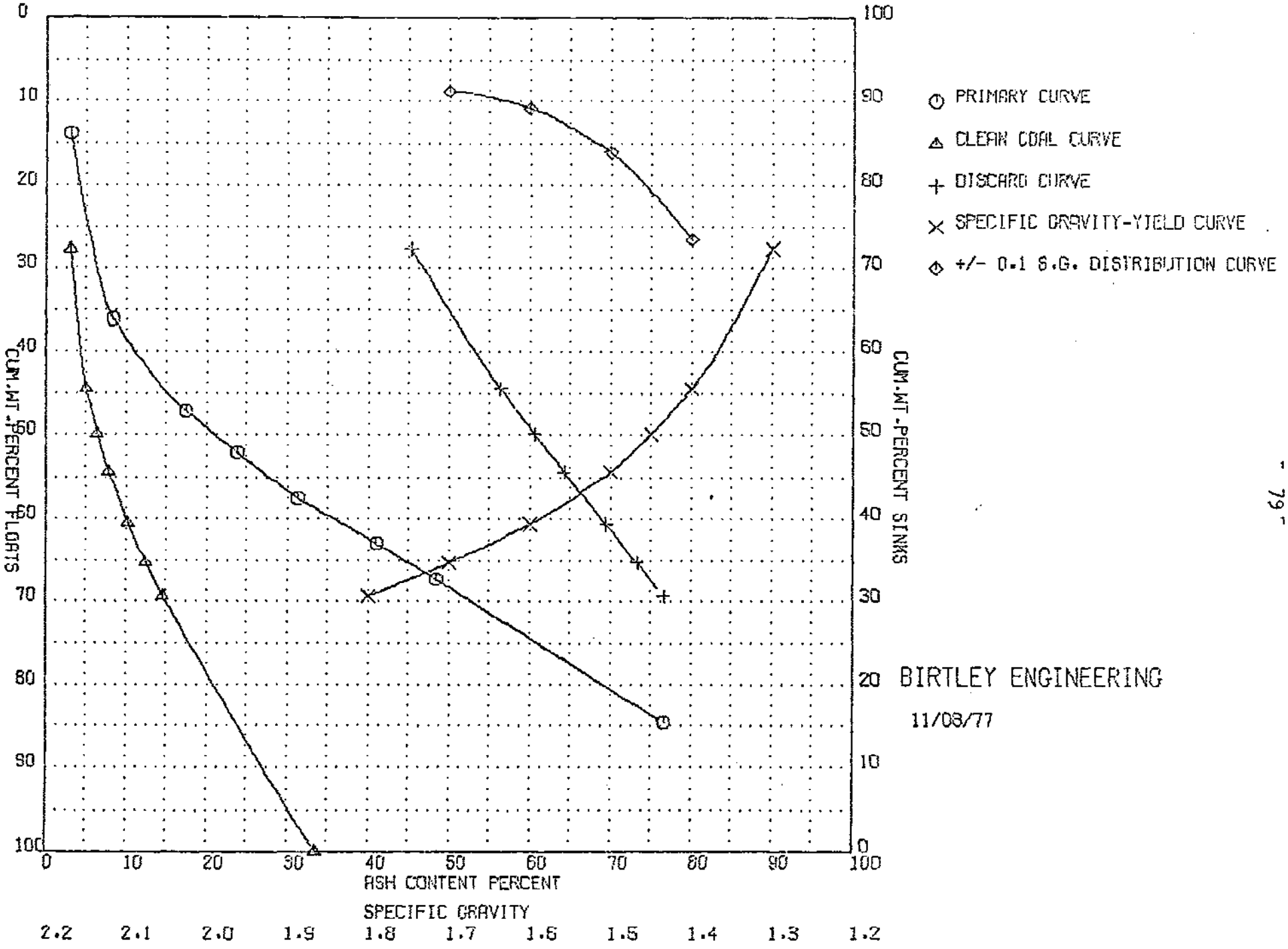
RIPLEY ENGINEERING
11/08/77

.4	[illegible]	.6	[illegible]	11.7	[illegible]	2.0	[illegible]	4.0	[illegible]
1.4	[illegible]	1.4	17.7	12.7	17.7	4.0	17.7	6.0	[illegible]
2.7	17.3	2.0	16.0	13.1	16.0	8.0	[illegible]	8.0	17.4
4.6	[illegible]	2.6	15.0	13.6	15.0	6.0	15.0	10.0	17.8
6.2	[illegible]	[illegible]	14.7	14.2	14.7	8.0	14.7	0.0	0.0
8.2	[illegible]	[illegible]	13.6	14.7	13.6	10.0	13.6	0.0	0.0
[illegible]	[illegible]	[illegible]	12.5	15.1	12.5	12.0	12.5	0.0	0.0
15.1	[illegible]	17.4	.0	[illegible]	.0	178.0	.0	0.0	0.0

PASS 1 [illegible]
PASS 2 [illegible]
PASS 3 [illegible]
PASS 4 [illegible]
PASS 5 [illegible]

TECK MINING GROUP LTD SEAM D BULK LAB NO 92411/4 X 28M

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

11/08/77

[illegible] DISTR

S.G.										S.G.	
1	2	3	4	5	6	7	8	9	10	11	12
[illegible]	27.[illegible]	3.[illegible]	.[illegible]	.83	27.50	[illegible]	32.60	[illegible]	45.27	1.30	0.00
1.[illegible]	[illegible]	[illegible]	1.[illegible]	2.22	[illegible].50	4.[illegible]	31.30	[illegible]	56.40	1.40	26.60
1.45	[illegible]	17.40	.[illegible]4	3.16	[illegible]	6.33	30.36	[illegible]	60.40	1.50	16.1[illegible]
1.50	4.5[illegible]	22.[illegible]	1.[illegible]7	4.23	[illegible].40	7.08	26.29	75.40	64.24	1.[illegible]	10.00
1.60	[illegible]	31.[illegible]	1.[illegible]4	6.17	[illegible].60	10.[illegible]	27.35	[illegible].40	69.42	1.70	8.00
1.70	4.7	41.00	1.[illegible]3	8.10	65.30	12.[illegible]0	25.42	[illegible].70	73.27	1.80	0.00
1.80	[illegible]	[illegible].40	1.[illegible]8	10.03	69.40	16.[illegible]3	23.44	[illegible].40	76.40	1.90	0.00
2.00	3[illegible]	76.[illegible]	23.[illegible]4	33.52	100.00	33.52	0.00	.00	0.00	2.00	0.00

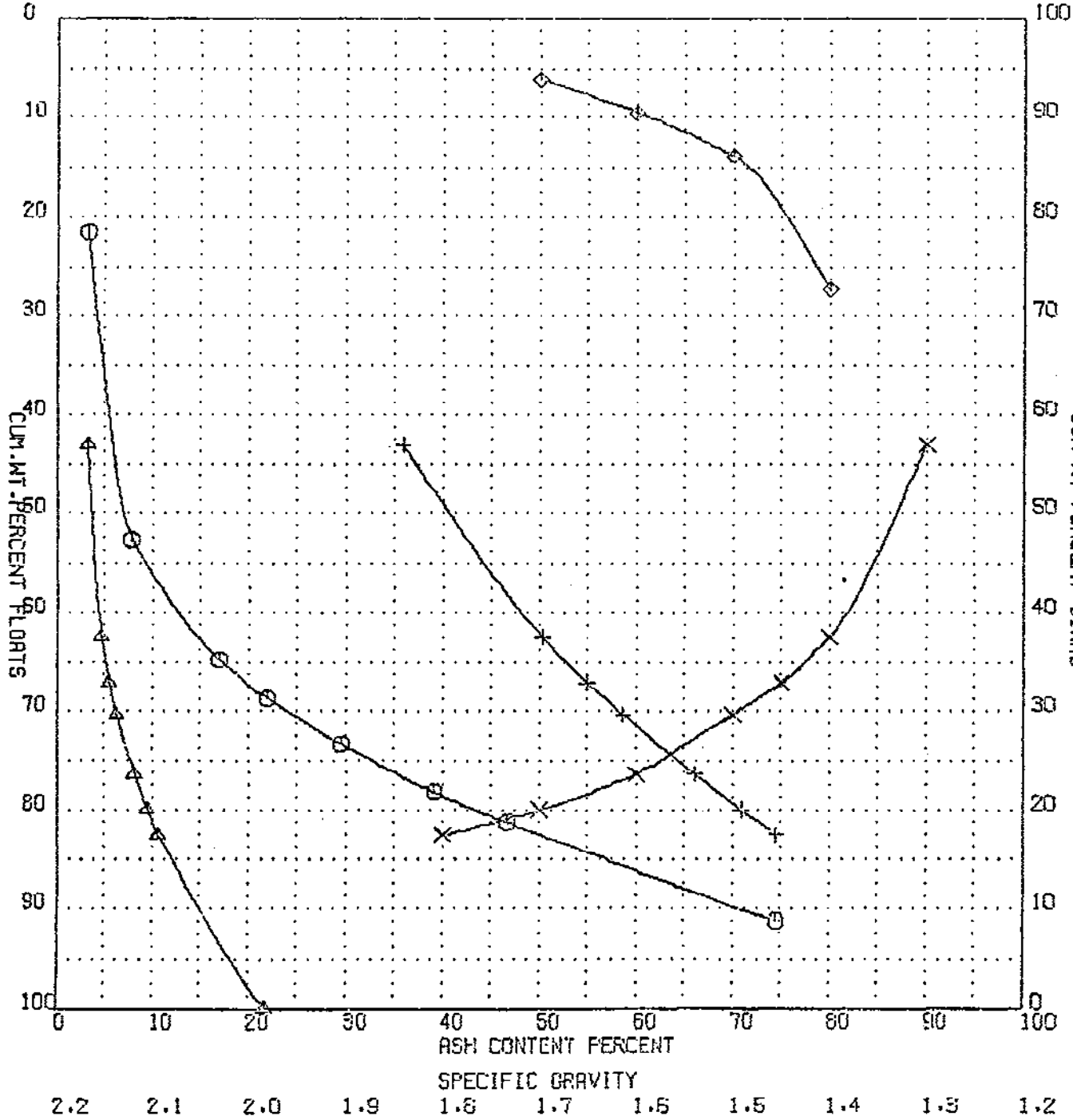
RIPLEY ENGINEERING
11/08/77

.6	17.[illegible]	[illegible]	14.[illegible]	9.1	14.4	2.0	14.4	4.0	14.7
1.7	12.[illegible]	1.[illegible]	11.1	11.3	11.1	4.0	11.1	6.0	14.8
3.5	[illegible]	1.3	10.[illegible]	12.1	10.[illegible]	5.0	13.[illegible]	8.0	17.3
4.[illegible]	[illegible]	1.[illegible]	9.1	12.[illegible]	9.1	6.0	[illegible].1	10.0	[illegible].2
5.3	[illegible]	2.[illegible]	7.9	13.0	7.9	9.0	7.0	0.0	0.0
[illegible].2	[illegible]	2.5	6.9	14.7	6.9	12.0	4.0	0.0	0.0
9.7	[illegible]	2.[illegible]	6.1	15.3	6.1	12.0	4.1	0.0	0.0
15.3	3.[illegible]	6.7	.[illegible]	[illegible]	.[illegible]	175.8	.0	0.0	0.0

PASS 1 [illegible]
PASS 2 [illegible]
PASS 3 [illegible]
PASS 4 [illegible]
PASS 5 [illegible]

TECK MINING GROUP LTD SEAM D BULK LAB NO 9241 28M X 48M

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

11/03/77

--[illegible]-- --[illegible]-- --CUM STKS-- 4-1.1 DISTR

S.G.	[illegible]	[illegible]	[illegible]	ASHTT	[illegible]	[illegible]	ASH>	[illegible]	[illegible]	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	[illegible]	[illegible]	[illegible]	1.35	43.10	[illegible]	20.37	[illegible]	36.00	1.30	0.00
1.40	[illegible]	7.00	1.1	2.89	62.50	[illegible]	15.86	[illegible]	53.22	1.40	27.30
1.45	[illegible]	17.00	[illegible]	3.67	67.10	[illegible]	19.08	22.00	54.05	1.50	13.90
1.50	[illegible]	21.00	[illegible]	4.40	70.40	[illegible]	17.35	[illegible]	58.63	1.60	9.60
1.60	[illegible]	29.50	1.77	6.17	76.40	[illegible]	15.58	23.60	66.04	1.70	6.20
1.70	[illegible]	39.10	1.71	7.57	80.00	9.47	14.19	20.50	70.09	1.80	0.00
1.80	[illegible]	46.70	[illegible]	8.79	82.60	10.66	12.96	17.70	74.60	1.90	0.00
[illegible]	[illegible]	74.50	[illegible]	21.75	100.00	21.75	0.00	.60	0.00	2.00	0.00

BIRTLEY ENGINEERING

11/08/77

.6	15.7?	.6	21.6?	7.2?	11.4	2.0	15.4?	6.0	14.5?	
1.4?	9.4?	.9?	7.6?	10.1	7.9?	4.0	7.6?	6.0?	17.2?	
3.4?	7.[illegible]	1.1	6.6	11.0?	4.6?	5.0	6.6?	9.0?	15.1?	
4.4?	6.2?	1.2	5.9	11.7	5.9?	6.0	5.9?	10.0	10.8?	
5.0?	5.2?	1.6	4.7	13.2?	4.7	8.0?	4.7	0.0	0.0	
7.9?	4.4?	1.3?	4.0	14.2?	4.0	10.0?	4.0	0.0	0.0	
9.2?	3.7	2.1?	3.5?	14.0?	3.5?	12.0	3.5?	0.0	0.0	
14.0?	1.7	4.4?	.0	0.0	.0	175.8	.0	0.0	0.0	

PASS 1 8142?
PASS 2 6 37?
PASS 3 7 77
PASS 4 71[illegible]
PASS 5 4 49?

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM "D" BULK

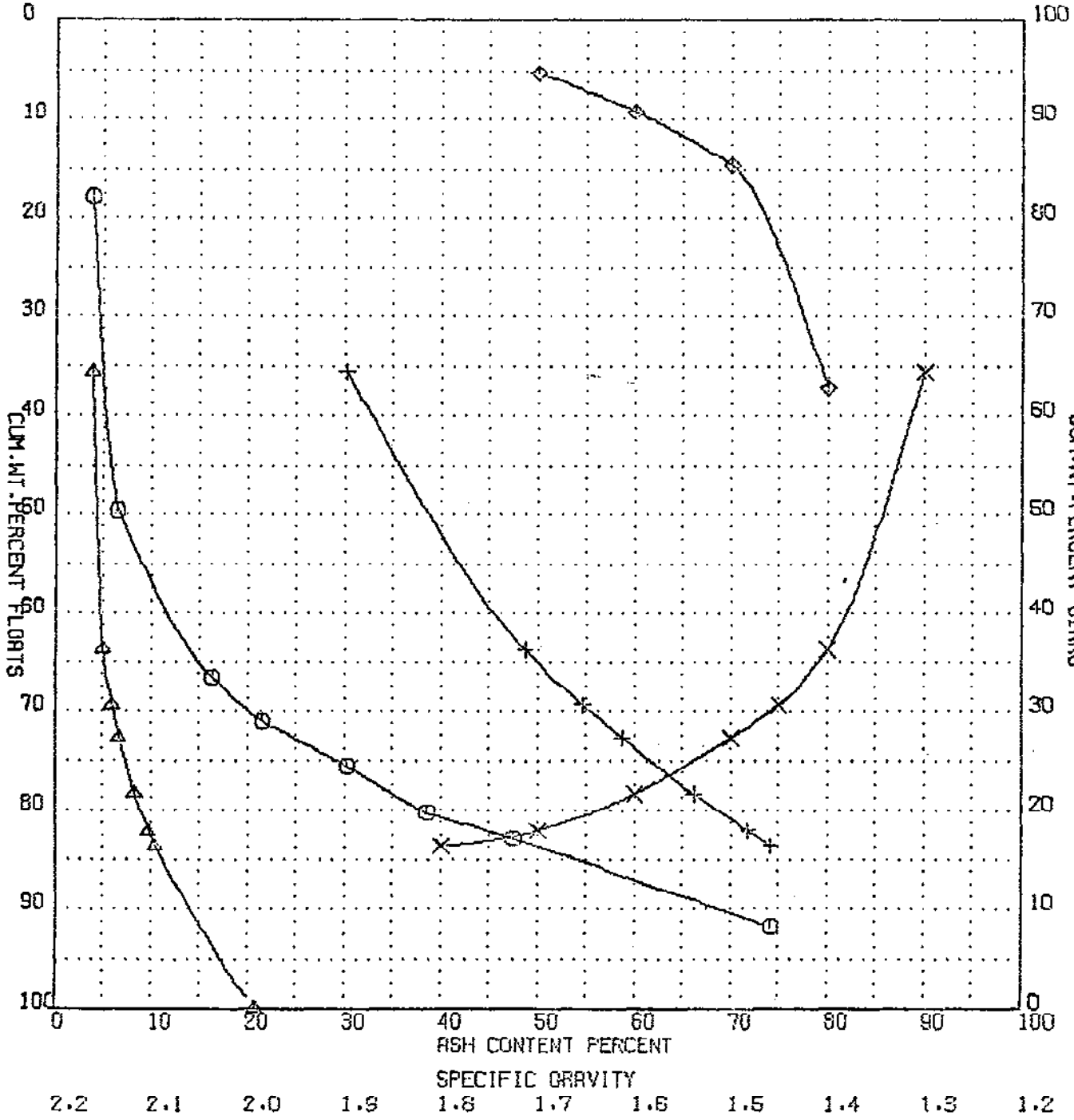
LAB. NO. 9241

DATE: August 9, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	48M x 100M (WT.% = 4.4)							
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	35.6	3.8	35.6	3.8				
1.30-1.40	28.2	6.4	63.8	4.9				
1.40-1.45	5.6	16.3	69.4	5.9				
1.45-1.50	3.4	21.5	72.8	6.6				
1.50-1.60	5.6	30.2	78.4	8.3				
1.60-1.70	3.7	38.6	82.1	9.6				
1.70-1.80	1.6	47.5	83.7	10.4				
+1.80	16.3	74.2	100.0	20.8				

TECK MINING GROUP LTD SEAM D BULK LAB NO 924148M X 100M

THE CLASSICAL WASHABILITY CURVES



- PRIMARY CURVE
- CLEAN COAL CURVE
- DISCARD CURVE
- SPECIFIC GRAVITY-YIELD CURVE
- +/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

11/03/77

1	2	3	4	5	6	7	8	9	10	11	12
1.37	3.45	3.30	1.05	1.35	39.60	3.90	10.42	44.40	31.16	1.30	0.00
1.40	9.20	6.40	1.00	3.16	69.40	7.05	17.62	56.50	48.47	1.60	37.20
1.45	5.61	16.30	.81	4.07	60.40	5.87	16.71	38.40	54.00	1.50	14.60
1.50	5.47	21.50	.93	4.86	72.80	6.60	15.97	37.50	58.73	1.60	9.30
1.55	5.60	31.30	1.09	6.49	76.40	8.28	14.28	21.40	66.12	1.70	5.30
1.70	3.71	34.60	1.13	7.92	82.10	9.65	12.85	37.60	71.01	1.90	0.00
1.80	1.60	47.50	.96	8.68	83.70	10.37	12.80	37.50	74.20	1.90	0.00
0.00	14.30	74.20	12.00	29.78	100.00	20.78	0.00	.00	11.00	2.00	0.00

.3	16.4	.3	12.0	6.0	12.0	2.6	10.0	4.0	12.6
1.3	11.1	1.0	7.2	5.7	7.2	4.0	5.2	6.0	17.1
3.3	6.7	1.2	6.1	10.0	6.1	5.0	4.1	5.0	15.1
4.3	5.5	1.3	5.4	11.7	5.4	4.0	5.4	10.0	10.0
5.1	4.6	1.7	4.3	13.2	4.3	2.0	4.2	0.0	0.0
7.7	4.0	1.9	3.6	14.6	3.6	10.0	3.6	0.0	0.0
9.5	2.1	2.1	3.2	14.0	3.2	12.0	3.2	4.0	0.0
14.2	1.6	4.2	.0	0.0	.0	17.8	.0	0.0	0.0

PASS 1 FLAG
PASS 2 F 33
PASS 3 F 55
PASS 4 FLOC
PASS 5 F 65

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM "D" Bulk

LAB. NO.: 9241 DATE: August , 1977

FROTH FLOTATION TESTS

Pulp Density = 10% Reagent = 4:1=Kerosene:MIBC Dosage = 0.48 lb/T

Conditioning Time = 1 min. Stage I, II, III are froths at 30, 60, and 150 sec. respectively.

48 Mesh x 0										
									CUMULATIVE	
PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	WT.%	ASH%
STAGE I	27.1	1.2	9.5	26.1	63.2	0.57	0.03	8	27.1	9.5
STAGE II	6.5	1.1	14.6	25.2	59.1	0.65	0.03	8	33.6	10.2
STAGE III	7.4	1.2	16.9	24.6	57.3	0.63	0.03	7	41.0	11.4
STAGE IV										
STAGE V										
TAILS	59.0	-	27.3	-	-	0.62	-	-	100.00	20.8

48 Mesh x 100 Mesh (WT% = 4.4)										
									CUMULATIVE	
PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	WT.%	ASH%
STAGE I	34.4	1.0	8.2	27.4	63.4	0.59	0.03	8 1/2	34.4	8.2
STAGE II	3.3	1.1	13.1	25.8	60.0	0.63	0.03	7 1/2	37.7	8.6
STAGE III	4.8	1.3	18.2	24.4	56.1	0.61	0.03	6	42.5	9.7
STAGE IV										
STAGE V										
TAILS	57.5	-	29.6	-	-	0.60	-	-	100.0	21.1

100 Mesh x 0 (WT% = 5.8)										
									CUMULATIVE	
PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	WT.%	ASH%
STAGE I	24.2	1.2	10.3	25.3	63.2	0.60	0.03	8	24.2	10.3
STAGE II	7.8	1.2	12.9	24.8	61.1	0.61	0.03	7 1/2	32.0	10.9
STAGE III	9.6	1.3	17.2	24.2	57.3	0.60	0.30	7	41.6	12.4
STAGE IV										
STAGE V										
TAILS	58.4	-	27.5	-	-	0.64	-	-	100.0	21.2

CLIENT: TECK MINING GROUP LTD.

SAMPLE: "D" SEAM

LAB. NO.: 9241

F.S.I. OF COMPOSITE FLOATS OF SCREEN SIZES
FOR 7.5% ASH ± 0.5%

SCREEN SIZES	WT.%	S.G. OF COMPOSITE FLOATS	YIELD%	ASH%	F.S.I.
4" x 2"	0.0	---	---	---	---
2" x 3/4"	17.3	1.40	3.0	7.1	7 1/2
3/4" x 1/4	20.7	1.40	11.7	6.8	7 1/2
1/4" x 28M	40.6	1.50	54.4	7.8	8
28M x 48	6.5	1.60	76.4	8.1	8 1/2
48M x 100	4.4	1.60	78.4	8.3	8 1/2

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM "D" Bulk

LAB. NO.: 9241 DATE: August, 1977

LAB. NO.: 9305

ANALYSES OF 4" x 100Mesh FLOAT @1.50S.G. (Yield =39.4%)									
PROXIMATE				S%	P%	BTU/LB	F.S.I.	H.G.I.	
RM.%	ASH%	VM.%	FC.%						
1.0	8.4	26.8	63.8	0.65	0.05	14050	8	77	a.d.b.
	8.5	27.1	64.4	0.66	0.05	14192	-	--	d.b.

ULTIMATE ANALYSIS							DILATATION TEST				
H_2O%	C%	H%	N%	S%	ASH%	by diff. O%	S.T. °C.	M.D.T. °C	M.C. %	M.D. %	G.No.
0.95	79.27	4.81	1.08	0.65	8.38	4.86	362	461	26	123	1.085

NOTE: Sample of above float product prepared for Petrographic Analysis and Geisler Plastometer Test.

LAB. NO.: 9306

ANALYSES OF 4" x100Mesh SINK @ 1.50 S.G. (WT% = 60.6)											
PROXIMATE				S%	ASH FUSION TEMPS (°F)						
RM.%	ASH%	VM.%	FC.%			ATMOS	IDT	ST	HT	FT	
1.0	66.5	12.1	20.4	0.31	adb	OXIDIZING	2650+	—	—	—	
	67.2	12.2	20.6	0.31	db	REDUCING	2650+	—	—	—	

MINERAL ANALYSIS OF ASH, %											
SiO_2	Al_2O_3	TiO_2	CaO	MgO	MnO	Fe_2O_3	Na_2O	K_2O	P_2O_5	SO_3	Undetermined
67.74	24.07	1.24	0.70	0.79	--	1.59	0.65	1.96	0.39	0.59	0.28

NOTE: Sample of above reject product also prepared for Clay Analysis

Lab. No. 9305 Date August, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: COMP. FLOATS @ 1.50

Starting Temperature °C: 320

Softening Temperature °C: 362

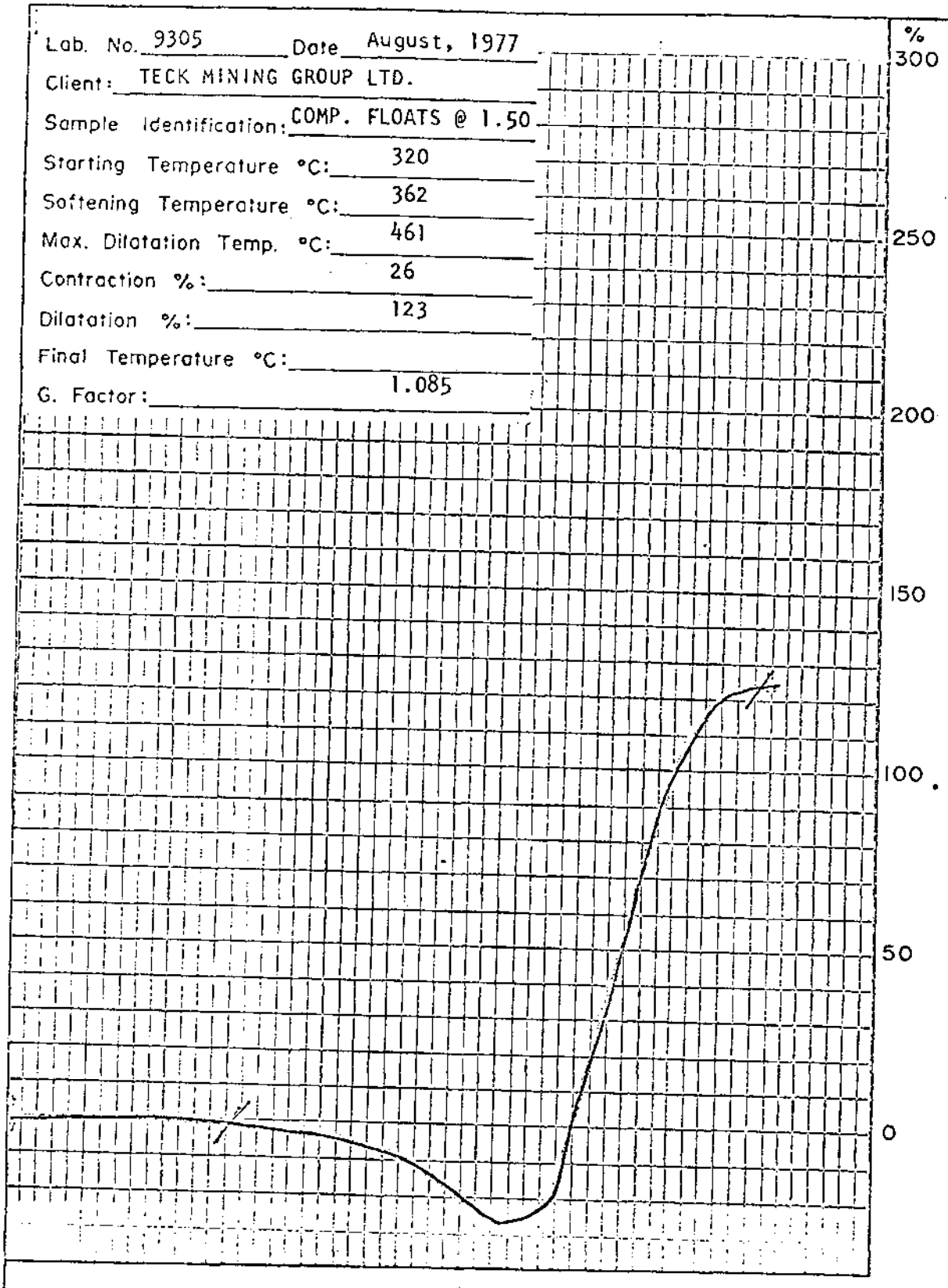
Max. Dilatation Temp. °C: 461

Contraction %: 26

Dilatation %: 123

Final Temperature °C:

G. Factor: 1.085



BIRTLEY ENGINEERING (CANADA) LTD.

Title

RUHR DILATOMETER TEST

Date

Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT4, "D" SEAM

LAB. NO: 9305

ANALYSIS OF 4" x 100Mesh FLOAT @ 1.50 S.G. (YIELD = 39.4%)

GIESELER PLASTOMETER TEST

	DDPM	TEMP.°C
START	1	414
MAXIMUM	1325	471
FINAL	1	504
	RANGE =	90

LAB. NO.: 9306

ANALYSIS OF 4" x 100Mesh SINK @ 1.50 S.G. (WT.%=60.6)

CLAY SEPARATION BY FLOTATION

Material greater than 2 microns	73.0
Material less than 2 microns	27.0

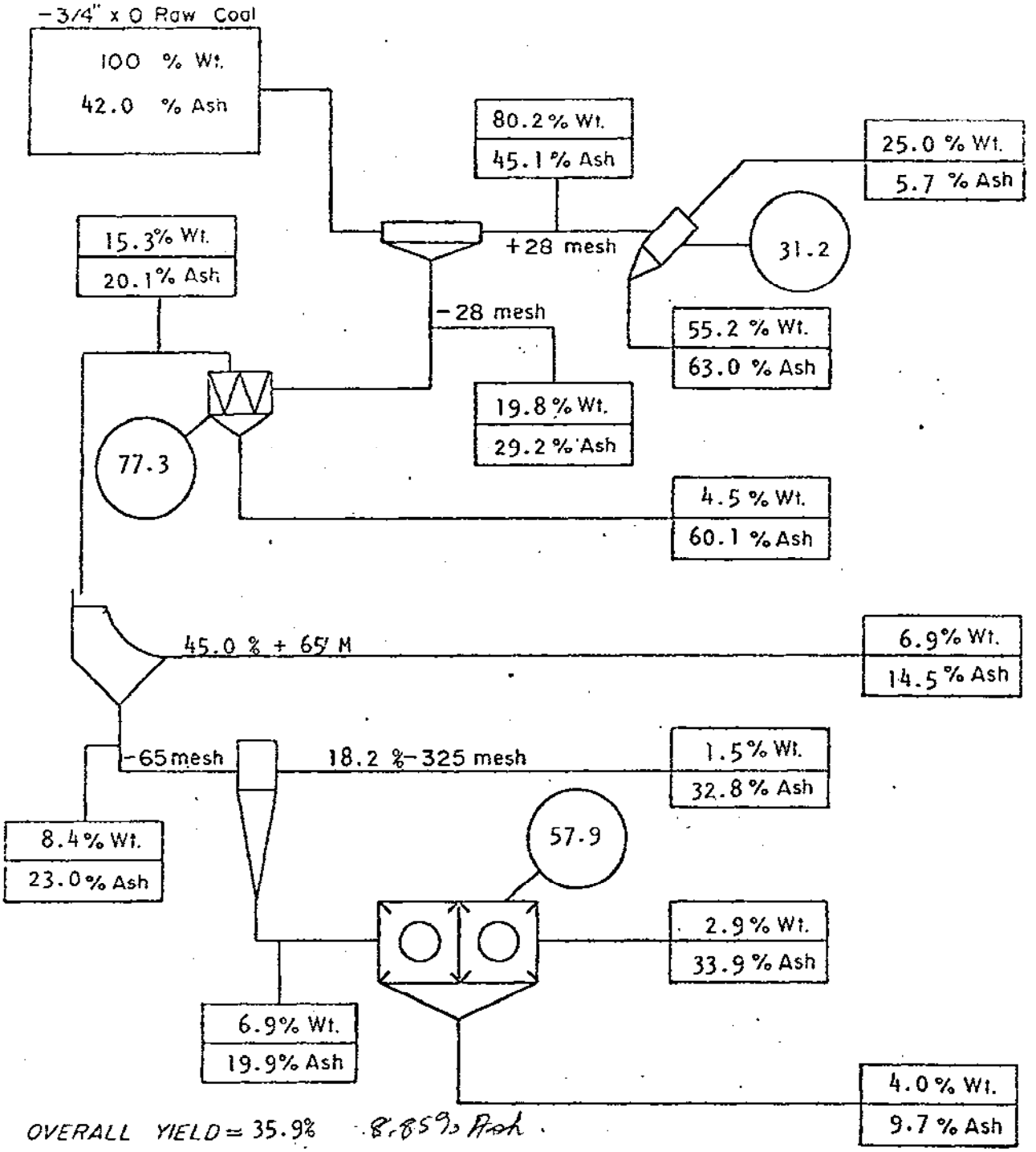
X-RAY DIFFRACTION ANALYSIS OF MATERIAL LESS THAN 2 MICRONS

Quartz	16
Feldspar	Nil
Calcite	1
Dolomite	1
Siderite	Nil
Kaolinite	46
Illite	31
Chlorite	1
Montmorillonite	1
Mixed Layer Clays	3

TECK MINING GROUP LTD.

ADIT# 4, "D" SEAM
LAB. NO. 9240

PLANT WASHING RESULTS



BIRTLEY ENGINEERING (CANADA) LTD.

Title: PLANT BALANCE FOOWSHEET PILOT PLANT WASH - ADIT 4, SEAM "D" BULK TECK CORP LAB NO.9240	Date: August, 1977 Drawn:

BIRTLEY ENGINEERING (CANADA) LTD.

Coal Science & Minerals Testing Div.

TECK MINING GROUP LTD.

BULK WASHING DATA*

ADIT 4 SEAM D LAB. NO. 9240

DELIVERY DATE July 22, 1977 DATE OF WASH August 8, 1977

Raw Coal Analysis: ADM 3.0 ASH% 43.8 FSI 3 HGI 68

Delivered Bulk Weight 10.108 Metric Tons

Washed Weight ** 7.188 Metric Tons

* All weight and analyses are on Air Dried Basis unless otherwise indicated.

** Does not include 216 KG. of +2" rock oversize which simulates breaker plant reject.

BULK WASHING DATA

HEAVY MEDIUM CIRCUIT

ADIT/SEAM NO. 4/D LAB. NO. 9240

1. S. G. of Separation 1.46
2. Feed Ash Content 45.1 % F.S.I. 3 1/2
3. Clean Coal Estimated Weight 1.337 M.T.
4. Clean Coal Analysis - Ash 5.7 % F.S.I. 8 1/2
5. Reject Estimated Weight 4.425 M.T.
6. Reject Analysis - Ash 63.0 % F.S.I. 1
7. Estimated 3/4" x 28M in Circuit 5.762 M.T. 80.2 Wt.%
8. Yield Clean Coal (Weighted): - 23.2 %
9. Yield Clean Coal (Calculated Ash Balance) - 31.2 %

BULK WASHING DATA

WATER-ONLY CYCLONE CIRCUIT

ADIT/SEAM NO. 4/D LAB. NO. 9240

1. Vortex Finder Clearance (VCF) #2 = 3.810 #1 = 2.540 CM 1.50 1.00 INCHES

2. Feed Pressure #2 = 0.4 #1 = 1.4 KG/CM^2 5 20 P.S.I.

3. Feed Rate #2 = 5.8 #1 = 23.2 M^3/HR. 21.2 85.0 I.G./Min.

4. Feed Pulp Density 80 - 120 g/l. 8 - 12 Solids W/V

5. Sample Analysis

	SCREEN SIZE	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%	HEAD ASH%	HEAD FSI
FEED							29.2	5 1/2
O'FLOW	+65 Mesh	45.0	14.5	8	38.0	14.5	20.1	7 1/2
	65M x 0	55.0	23.4	7 1/2	100.0	19.4		
U'FLOW							60.1	1 1/2
S.B.O.							14.5	8
T.C.O.*							32.8	1/2

6. Yield - Total W.O. Cyclone Circuit = 77.3

7. Estimated Yield of 28 x 65 Mesh Coal = 34.8
(as % of 28 Mesh x 0 Feed)

8. Estimated 28M x 0 in circuit
(Plant Feed - HM Products) 1.426 MT 19.8 %

* Thickener Cyclone Overflow

BULK WASHING DATA

FROTH FLOTATION CIRCUIT

ADIT/SEAM NO. 4/D LAB. NO. 9240

1. Reagents: Kerosene:Methylisobutylcarbinol (MIBC)

2. Feed Pulp Density 80 - 120 g/l 8 - 12 % Solids W/V

3. Sample Analysis:-

	ASH	F.S.I.
FEED	19.9	7 1/2
CONC.	9.7	8 1/2
TAILS	33.9	5 1/2

4. Impeller Type - Birtley-Humboldt Multi-Wobble.

5. Yield Calculated (Ash Balance) 57.9 %

6. Filter Cake (Sieve Bend O'Flow & Flotation Conc.)
Wt. Recovered 0.550 M.T.

7. Filter Cake - Ash% 12.5 F.S.I. 8 1/2

BULK WASHING DATA

ADIT/SEAM 4/D LAB. NO. 9240 DATE OF WASH August 8, 1977

a) Raw Coal

Delivered Weight	= 10.108	M.T.
Ash %	= 43.8	
F.S.I.	= 3	
Estimated Washed Wt.	= 7.188	M.T.

b) Heavy Media Circuit

Estimated Proportion of +28 Mesh in Feed 80.2 %

Effective S.G. = 1.46 .

Raw Feed	45.1 %	Ash	3 1/2	F.S.I.
Clean Coal	5.7 %	Ash	8 1/2	F.S.I.
Reject	63.0 %	Ash	1	F.S.I.
Calculated Yield	31.2 %			
Weighed Yield	23.2 %			

c) Water-Only Cyclone Circuit

Raw Feed	29.2 %	Ash	5 1/2	F.S.I.
Overflow	20.1 %	Ash	7 1/2	F.S.I.
Underflow	60.1 %	Ash	1 1/2	F.S.I.
Calculated Yield	77.3 %			
% of +65M in O/F	45.0 %			
Sieve Bend Overflow	14.5 %	Ash	8	F.S.I.

d) Froth Flotation Circuit

Raw Feed	19.9 %	Ash	7 1/2	F.S.I.
Concentrates	9.7 %	Ash	8 1/2	F.S.I.
Tails	33.9 %	Ash	5 1/2	F.S.I.
Calculated Yield	57.9			

TECK MINING GROUP LTD.

BULK WASHING DATA

BULK WASHING SUMMARY (Cont.)

ADIT 4/D LAB. NO. 9240

e) Clean Coal Mix Analyses a.d.b.

(i) Proximate

ADM% 11.2 RM.% 0.9 ASH% 7.4 VM.% 27.1 FC.% 64.6

(ii) S.% 0.60 FSI 8 1/2 HGI 75 BTU/LB 14.132 P% 0.04

(iii) Dilatation Test

S.T. 360°C M.D.T. 461°C MC% 25 MD% 164 G. NO. 1.099

(iv) Giesler Plastometer Test

	DDPM	TEMP.(%C)
START	1	411
MAXIMUM	1805	468
FINAL	1	504
	RANGE =	93

f) Clean Coal Mix Make-Up

H.M. CLEAN COAL	FINES FILTER CAKE	CLEAN COAL MIX		SHIPPED		IN STOCK	
M.T.	M.T.	BBLS.	M.T.	BBLS.	M.T.	BBLS.	M.T.
1.337	0.550	10	1.887				

Lab. No. 9240 Date Aug. 15, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: CLEAN MIX, D SEAM

Starting Temperature °C: 320

Softening Temperature °C: 360

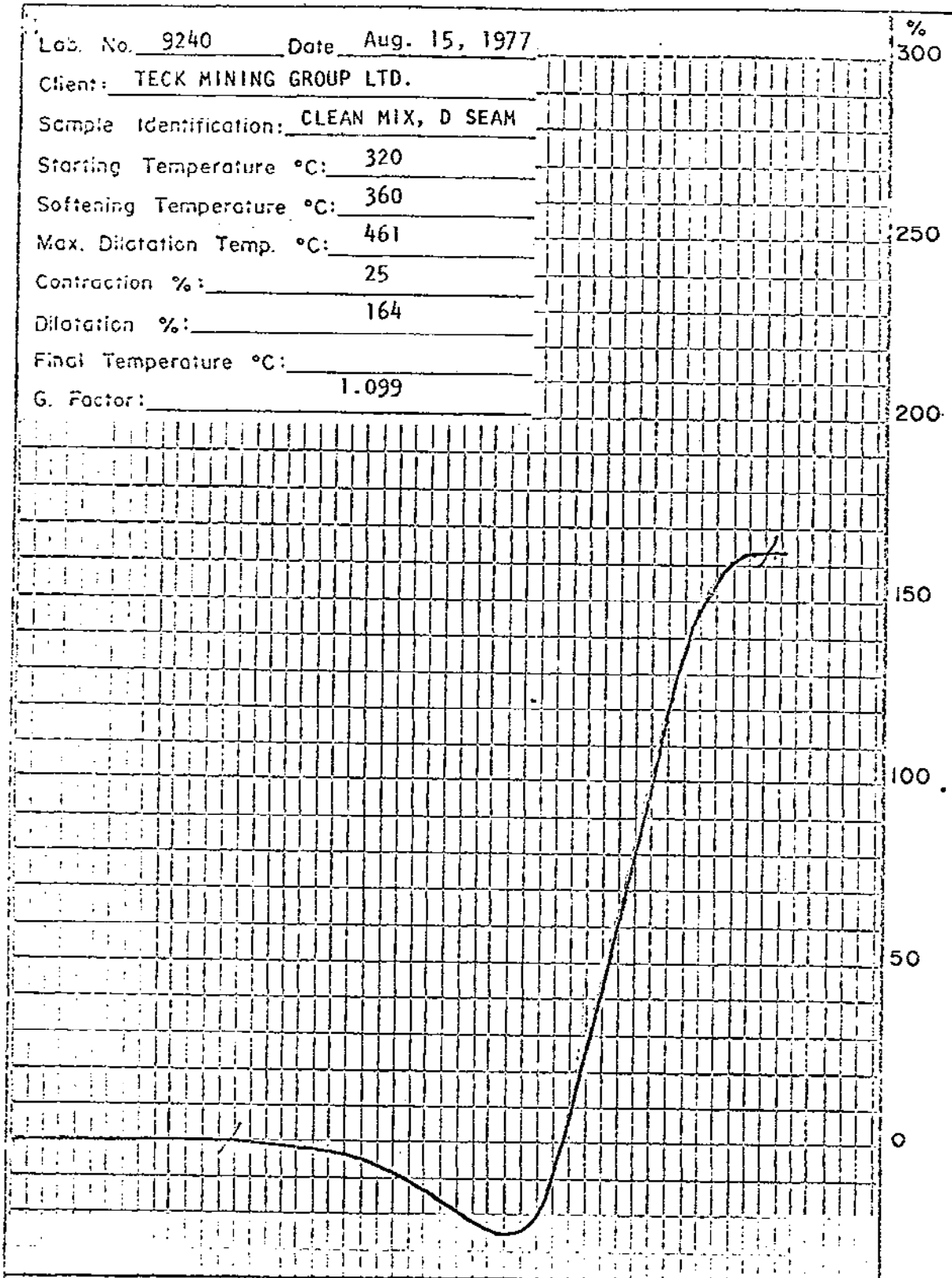
Max. Dilatation Temp. °C: 461

Contraction %: 25

Dilatation %: 164

Final Temperature °C:

G. Factor: 1.099



BIRTLEY ENGINEERING (CANADA) LTD.

Title	Date
RUHR DILATOMETER TEST	
	Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM "D"

CLEAN COAL ANALYSES August, 1977

INFORMATION REQUIRED FOR EMR COKING TESTS

LAB. NO.	ADM%	MOISTURE	ASH%	VOL.%	FC.%	S%	BTU/LB	F.S.I.	CALC. FACTORS
9240	11.2	0.9	7.4	27.1	64.6	0.60	14132	8 1/2	air dried basis
		12.0	6.6	24.1	57.3	0.53	12549	--	
			7.5	27.3	65.2	0.61	14260	--	dry basis

SIZE ANALYSIS		
SIZE FRACTION	WT.%	CUM. WT.%
+ 1/2"	0.2	0.2
1/2" x 1/4"	0.2	0.4
1/4" x 6M	16.3	16.7
6M x 12M	29.5	46.2
12M x 20M	10.2	56.4
20M x 100M	32.7	89.1
100M x 0	10.9	100.0

TECK MINING GROUP LTD.

ADIT# 1, "B" SEAM
LAB. NO. 9248

WASHABILITY RESULTS

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT #1, "B" SEAM

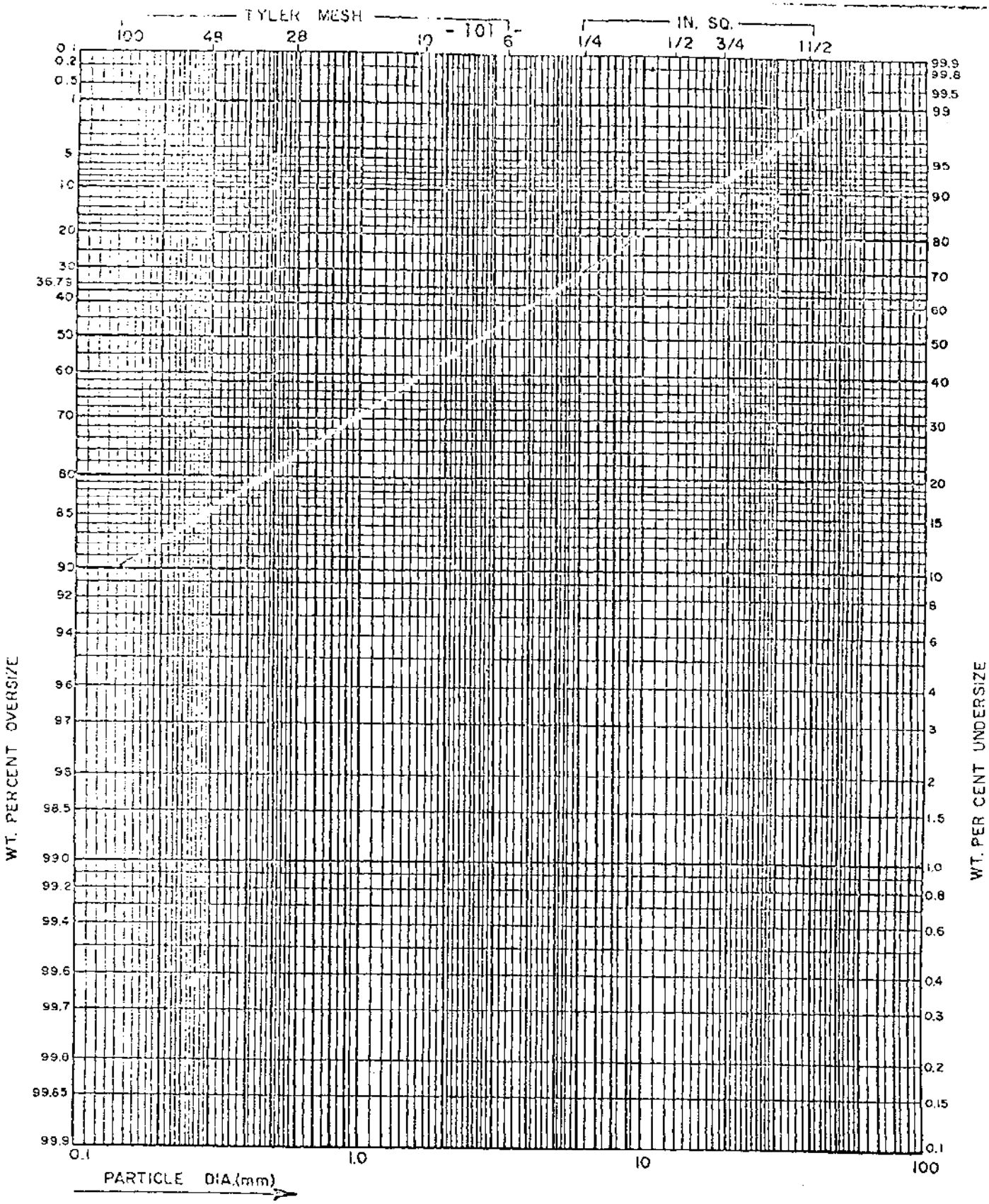
LAB. NO.: 9248 DATE: August, 1977

HEAD RAW ANALYSIS										
ADL%	RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
2.5	1.1	11.8	23.9	63.2	0.27	0.04	13445	7	82	air dried basis
	3.6	11.5	23.3	61.6	0.26	0.04	13109	---	--	as rec'd basis
		11.9	24.2	63.9	0.27	0.04	13595	---	--	dry basis

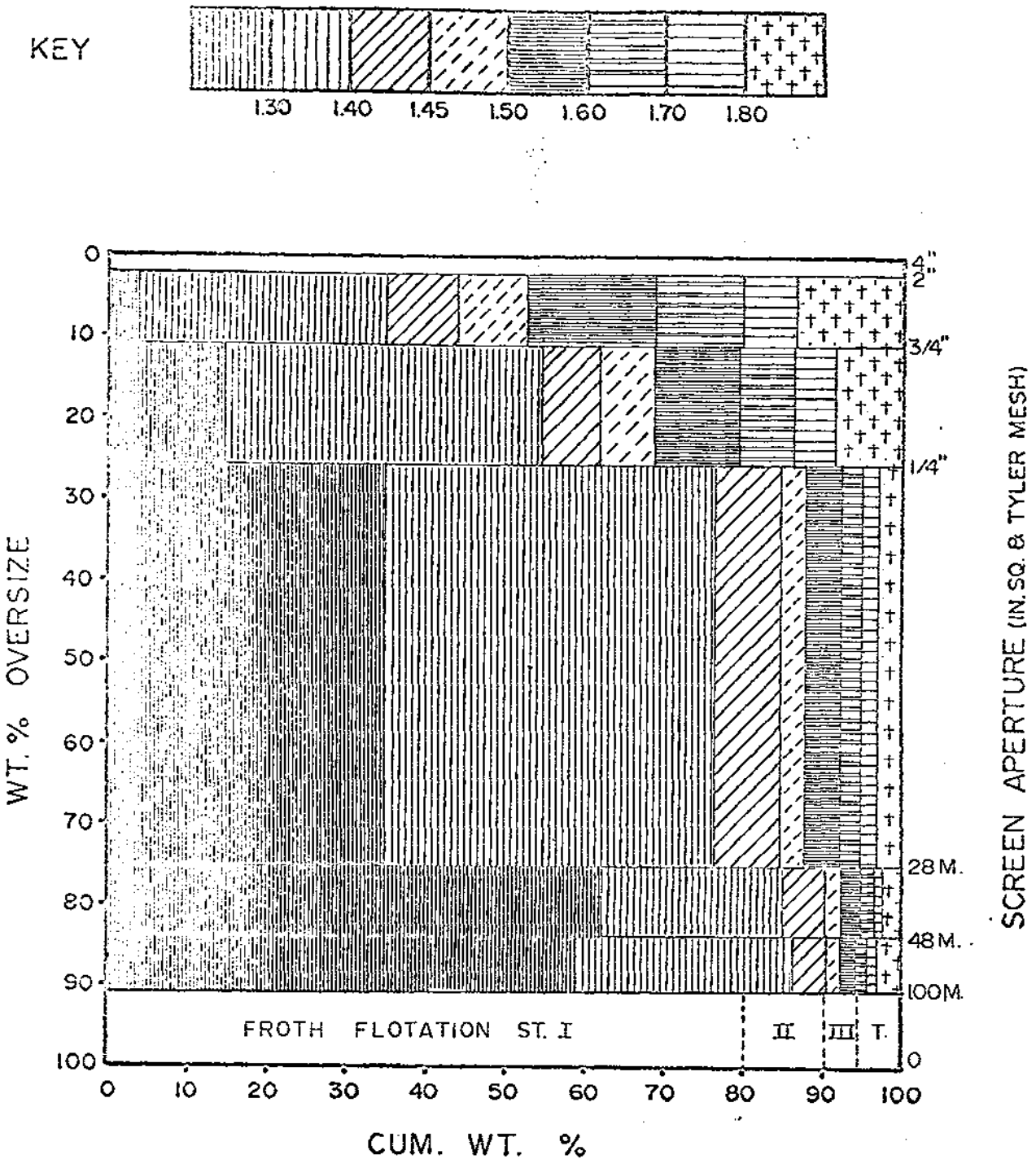
DRY SCREENING ANALYSIS: 4" x 0 HEAD SAMPLE					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
4" x 2"	1.8	19.1	3	1.8	19.1
2" x 3/4"	9.2	22.3	2	11.0	21.8
3/4" x 1/4"	14.9	18.3	3 1/2	25.9	19.8
1/4" x 28M	49.4	10.4	4 1/2	75.3	13.6
28M x 48M	8.4	6.9	8	83.7	13.0
48M x 100M	7.3	6.9	8	91.0	12.5
100M x 0	9.0	9.9	7 1/2	100.0	12.2

WT.% + 4" Material crushed to -4" = 0.2

WET SCREENING ANALYSIS: 28 MESH x 0					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
28M x 35M	19.2	6.7	8	19.2	6.7
35M x 48M	15.5	7.0	7 1/2	34.7	6.8
48M x 65M	13.3	7.5	8 1/2	48.0	7.0
65M x 100M	10.6	7.4	8 1/2	58.6	7.1
100M x 200M	16.7	8.6	8 1/2	75.3	7.4
200M x 325M	6.6	11.5	8 1/2	81.9	7.8
325M x 0	18.1	13.2	4 1/2	100.0	8.7



DIRTLEY ENGINEERING	Project: BULK SAMPLE FROM ADIT NO. 1, SEAM B BULLMOOSE PROJECT	
	Client: TECK CORPORATION Lab.No. 9248	Date: AUG. 1977
	Title: ROSIN RAMMLER SIZE DISTRIBUTION	Drawn:



BIRTLEY ENGINEERING (Canada) LTD. CALGARY ALBERTA				
TITLE	SIZE AND DENSITY DISTRIBUTION DIAGRAM			
CLIENT	TECK CORP.			
SAMPLE	ADIT No. 1 SEAM B	DATE	AUG. 1977	
LAB NO.	9248	DRWN	A.	

Birtley Engineering
Subsidiary of Great West Steel Industries

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT #1, "B" SEAM

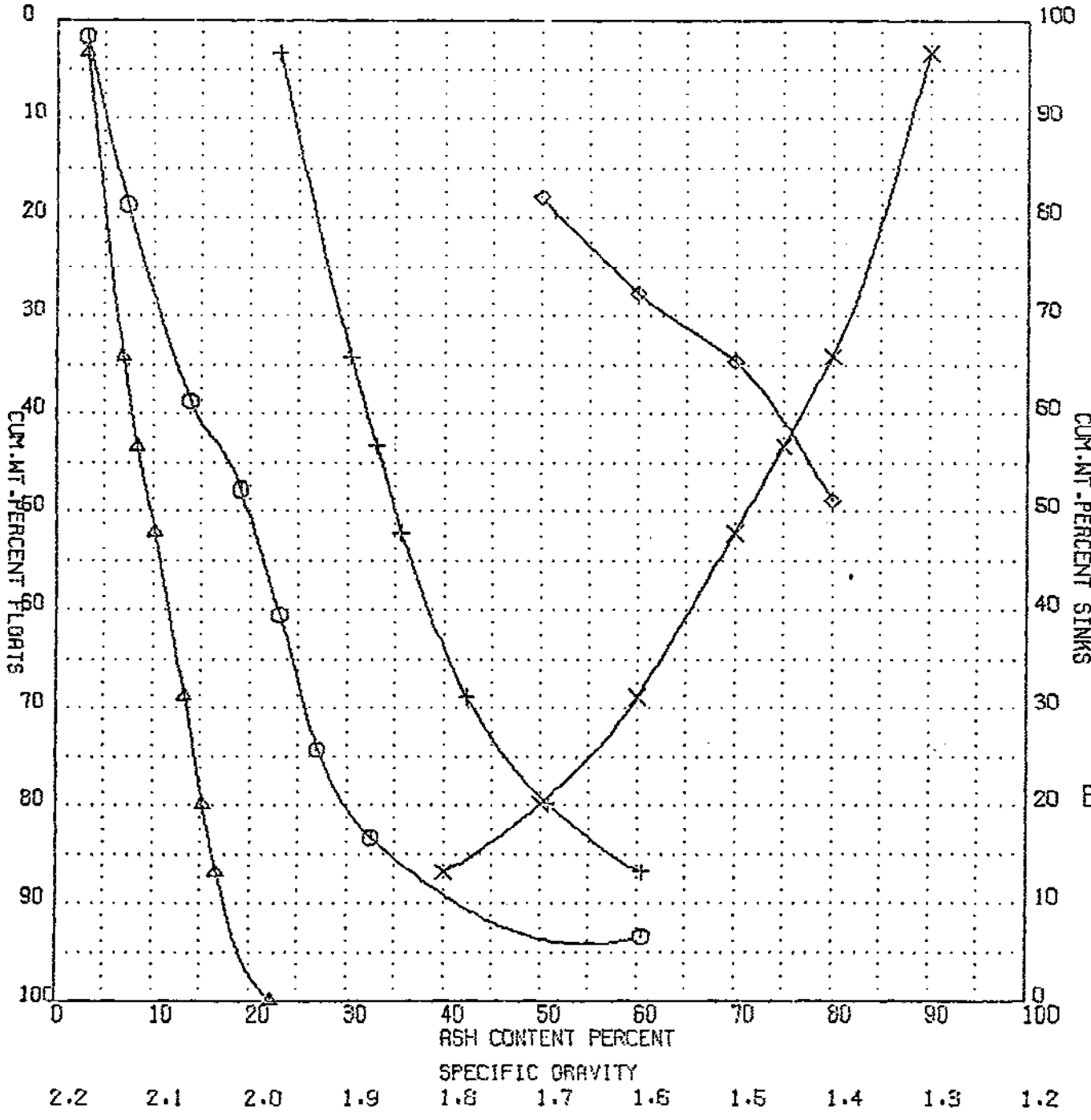
LAB. NO. 9248 DATE: August 9, 1977

SINK FLOAT ANALYSES								
	2" X 3/4" (WT% = 9.2)				3/4" X 1/4" (WT% =14.9)			
S.G. FRACTION	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	3.3	3.1	3.3	3.1	13.9	2.7	13.9	2.7
1.30-1.40	30.9	7.3	34.2	6.9	39.8	7.3	53.7	6.1
1.40-1.45	9.2	13.8	43.4	8.4	8.2	14.8	61.9	7.3
1.45-1.50	8.8	19.0	52.2	10.2	6.8	19.3	68.7	8.5
1.50-1.60	16.7	23.0	68.9	13.3	10.6	24.3	79.3	10.6
1.60-1.70	11.0	26.9	79.9	15.1	7.1	29.3	86.4	12.1
1.70-1.80	7.0	32.5	86.9	16.5	4.7	36.6	91.1	13.4
+ 1.80	13.1	60.5	100.0	22.3	8.9	60.4	100.0	17.6

SINK FLOAT ANALYSES								
	1/4" X 28M (WT% = 49.4)				28M X 48M (WT% = 8.4)			
S.G. FRACTION	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	34.5	2.0	34.5	2.0	62.0	1.8	62.0	1.8
1.30-1.40	41.7	5.5	76.2	3.9	22.8	5.9	84.8	2.9
1.40-1.45	7.6	13.1	83.8	4.7	5.5	13.0	90.3	3.5
1.45-1.50	3.5	18.4	87.3	5.3	2.3	18.3	92.6	3.9
1.50-1.60	5.2	24.4	92.5	6.4	2.4	24.5	95.0	4.4
1.60-1.70	2.4	31.6	94.9	7.0	1.3	32.1	96.3	4.8
1.70-1.80	1.6	39.1	96.5	7.5	0.8	38.4	97.1	5.1
+1.80	3.5	63.2	100.0	9.5	2.9	61.2	100.0	6.7

TECK MINING GROUP LTD ADIT NO 1 B SEAM LAB NO 9248 2 X 3/4

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

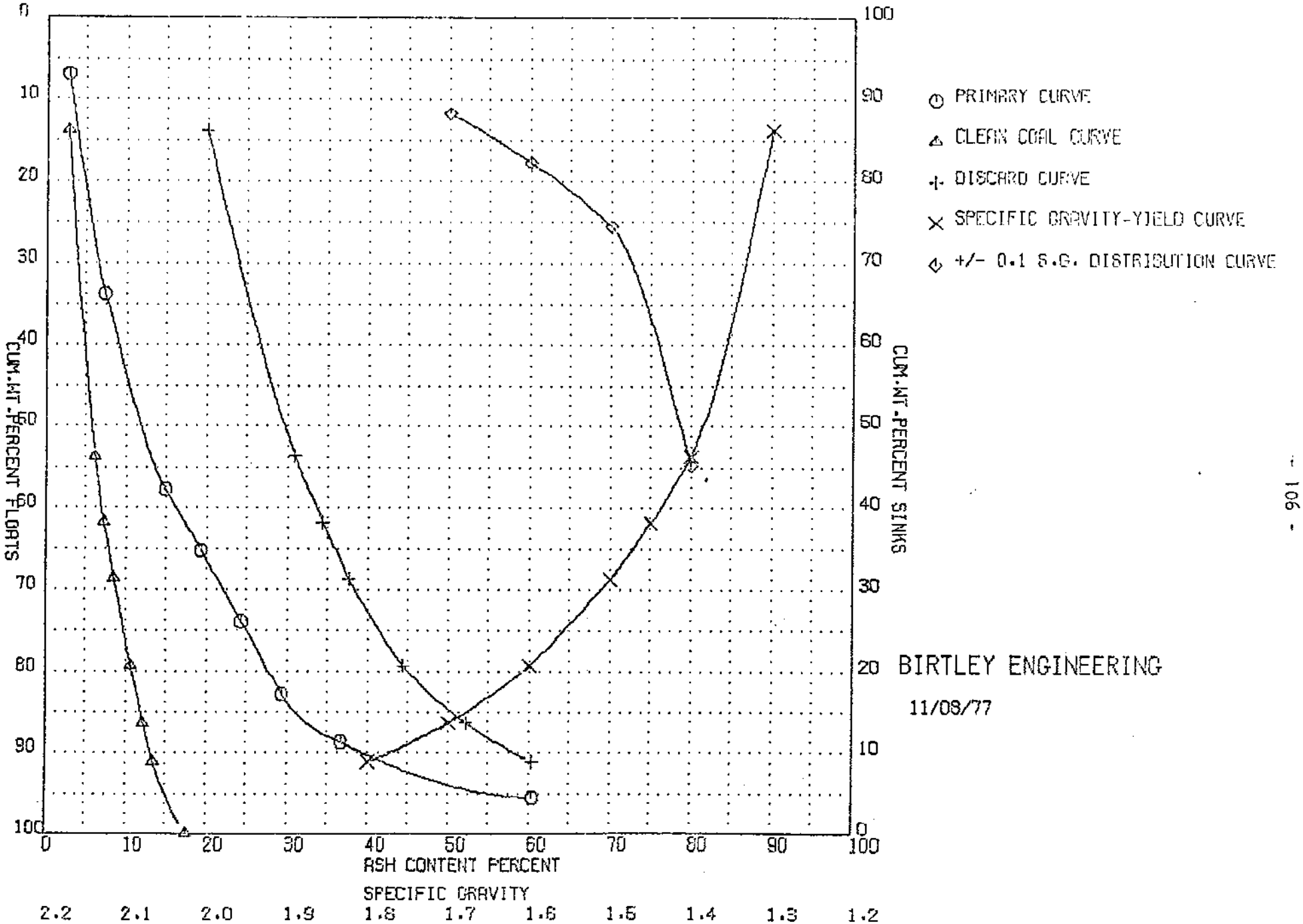
11/08/77

	1	2	3	4	5	6	7	8	9	10	11	12
1	1.30	3.34	5.13	1.19	.13	9.34	3.13	22.20	66.79	92.06	1.30	0.00
2	1.46	32.59	7.34	3.06	2.36	34.20	4.30	13.94	65.33	32.31	1.46	48.00
3	1.45	3.20	13.30	1.07	3.63	43.40	4.26	13.67	66.63	32.09	1.50	34.71
4	1.56	6.80	19.00	1.67	5.39	52.20	3.36	13.00	77.83	35.67	1.60	27.76
5	1.60	14.70	23.00	3.04	9.14	66.90	13.27	13.16	91.71	42.21	1.70	13.00
6	1.70	11.00	26.00	2.06	12.10	79.90	15.16	13.20	96.10	53.75	1.80	0.00
7	1.80	7.00	32.50	2.08	14.37	96.90	16.64	7.93	53.51	46.50	1.90	0.00
8	0.90	13.10	66.50	7.03	22.30	106.30	22.21	0.00	.30	0.00	2.30	0.00

DISTINCT ENGINEERING
11/09/77

	.6	10.3	.6	10.3	6.6	10.3	2.0	10.3	4.0	10.3
	1.5	10.3	1.7	13.3	6.1	13.3	4.8	13.3	6.0	13.1
	2.8	12.3	3.3	11.3	6.6	11.3	5.8	11.3	8.6	14.5
	3.9	10.6	2.6	9.7	7.1	9.1	4.8	9.6	10.0	14.4
	4.6	7.0	3.7	6.3	8.5	6.3	3.6	6.3	8.0	8.1
	5.4	5.1	3.6	4.9	10.1	4.7	10.8	4.9	8.0	8.0
	6.5	3.3	3.3	2.6	12.1	2.1	12.0	3.6	8.0	8.3
	12.1	1.3	4.5	.5	8.6	.7	175.8	.3	8.0	8.0

PASS 1 7114
PASS 2 8 34
PASS 3 7 25
PASS 4 7100
PASS 5 4 60


TECK MINING GROUP LTD ADIT NO 1 B SEAM LAB NO 9248 3/4 X 1/4
THE CLASSICAL WASHABILITY CURVES
CUM.WT-PERCENT FLOATS
CUM.WT-PERCENT SINKS
ASH CONTENT PERCENT
SPECIFIC GRAVITY
2.2 2.1 2.0 1.9 1.8 1.7 1.6 1.5 1.4 1.3 1.2
PRIMARY CURVE
CLEAN COAL CURVE
DISCARD CURVE
SPECIFIC GRAVITY-YIELD CURVE
+/- 0.1 S.G. DISTRIBUTION CURVE
BIRTLEY ENGINEERING
11/08/77

1	2	3	4	5	6	7	8	9	10	11	12
1.30	12.50	2.70	.00	.38	17.40	3.20	17.13	34.50	52.35	1.30	0.00
1.40	32.50	7.30	0.01	3.28	54.75	.11	14.28	46.30	30.35	1.40	54.80
1.45	4.20	14.30	1.01	4.45	61.00	7.25	12.26	58.70	36.30	1.50	25.30
1.50	4.80	19.30	1.01	5.81	54.70	1.15	11.75	70.50	37.55	1.60	17.70
1.60	17.00	24.30	2.13	8.34	72.30	10.67	6.18	80.50	44.33	1.70	11.00
1.70	7.10	29.30	2.18	10.40	80.60	12.11	7.10	73.60	52.17	1.80	0.00
1.80	4.70	34.60	1.72	12.14	91.10	13.37	5.32	8.60	60.40	1.90	0.00
2.00	0.00	60.40	5.28	17.50	100.00	17.45	1.00	.50	1.00	2.00	0.00

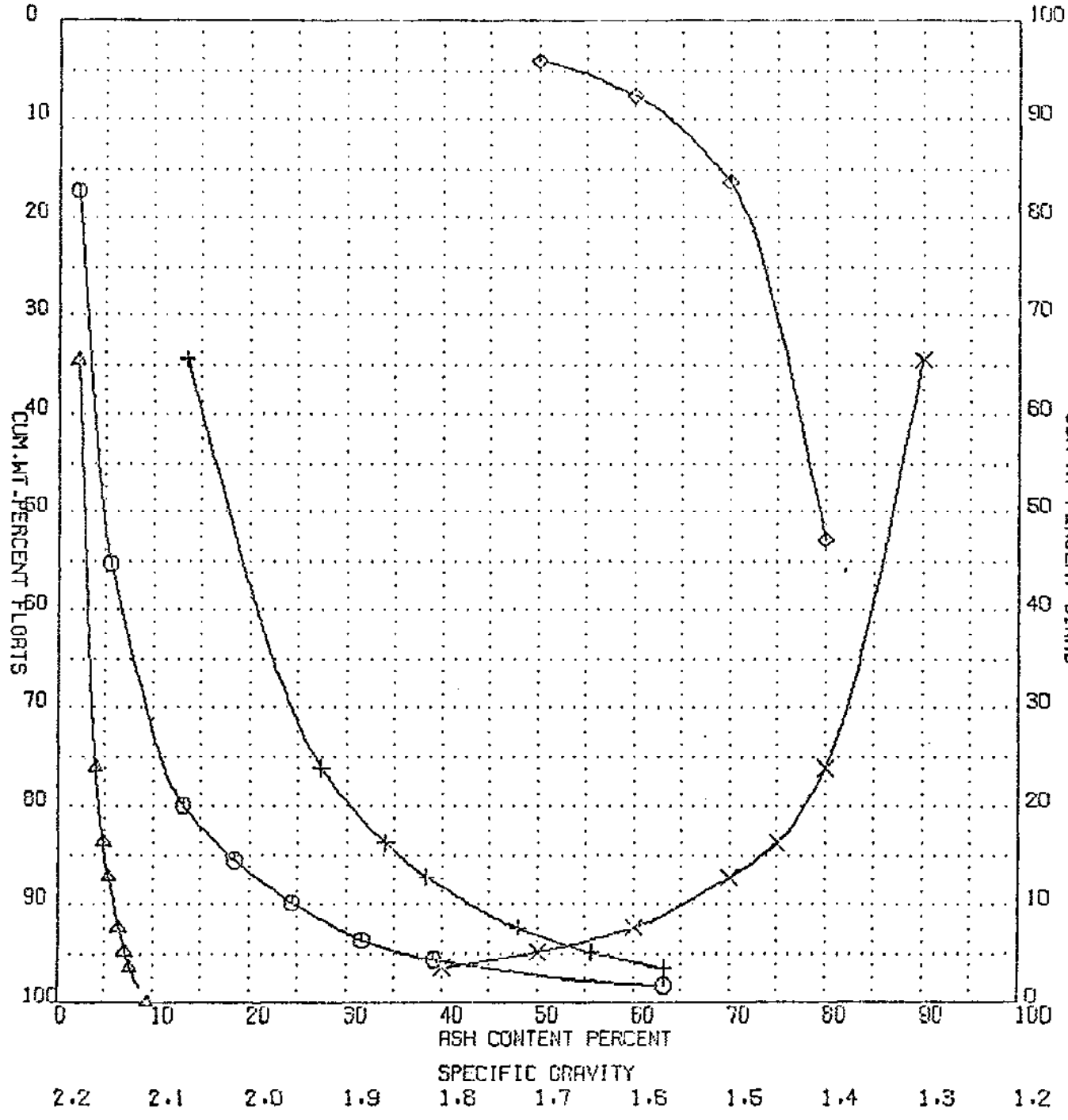
STOTLER CONTRACTING
11/09/77

.5	16.6	.5	32.2	2.0	17.2	2.0	17.2	4.0	0.0
1.5	13.2	1.2	9.3	6.2	6.3	4.0	6.3	5.0	14.0
3.0	8.4	3.6	7.4	6.0	7.4	5.3	7.6	9.0	12.6
3.0	6.6	1.7	5.3	7.6	5.3	5.0	4.3	10.0	17.6
4.0	5.2	2.1	4.1	5.0	4.1	4.0	4.1	0.0	0.1
5.0	3.4	2.4	2.7	10.6	2.7	12.0	2.7	0.0	0.0
7.5	2.3	3.2	1.8	12.1	1.8	12.0	1.8	0.0	0.1
12.1	.0	3.5	.0	5.6	.0	175.5	.0	0.0	0.0

PASS 1 [illegible]
PASS 2 [illegible]
PASS 3 7.00
PASS 4 7.00
PASS 5 4.00

TECK MINING GROUP LTD ADIT NO 1 B SEAM LAB NO 9246 1/4 X 28M

THE CLASSICAL WASHABILITY CURVES



- PRIMARY CURVE
- CLEAN COAL CURVE
- DISCARD CURVE
- SPECIFIC GRAVITY-YIELD CURVE
- +/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

11/08/77

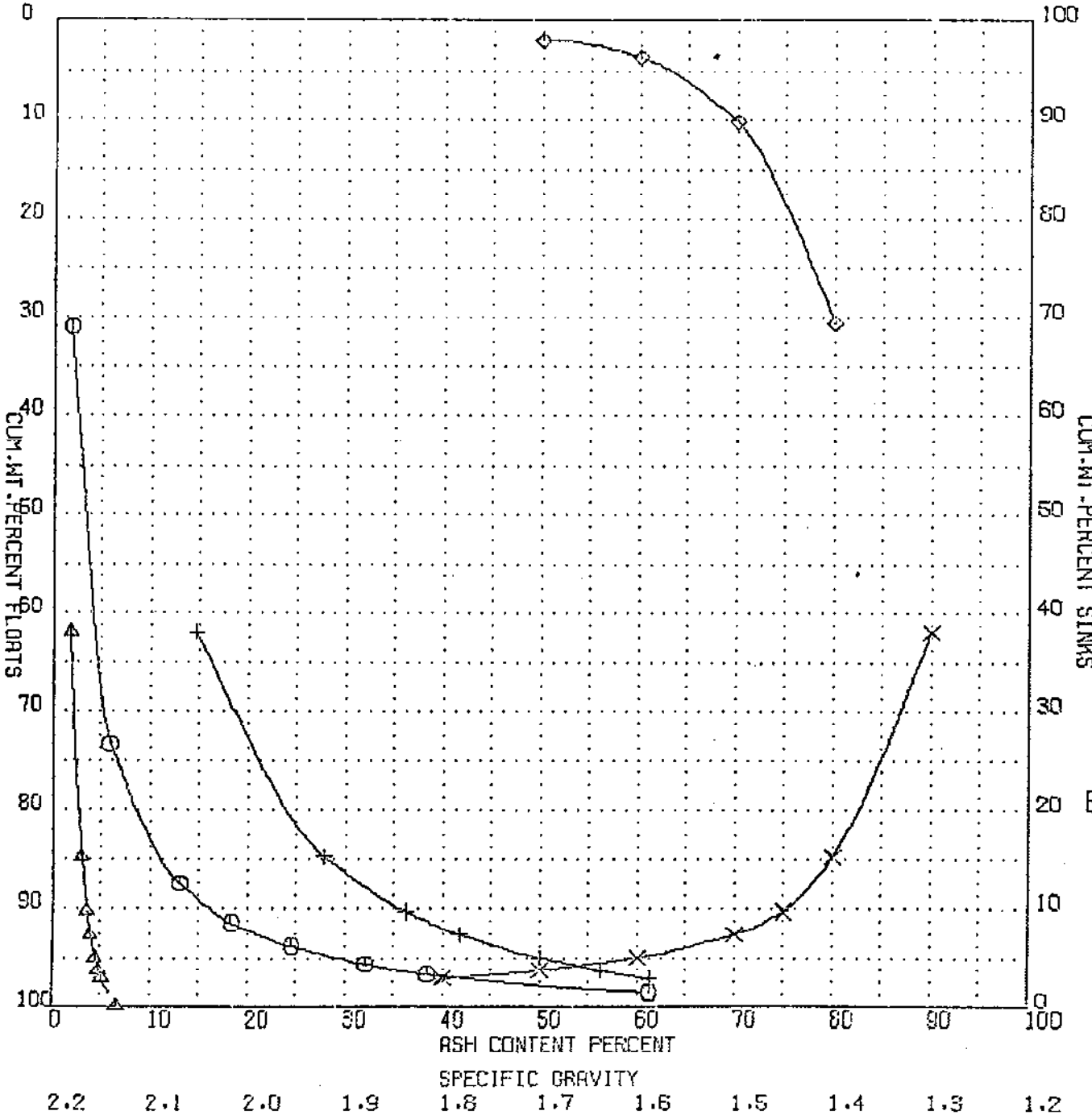
1	2	3	4	5	6	7	8	9	10	11	12
1.30	3.50	2.00	.43	.85	10.50	2.00	4.90	25.00	13.63	1.30	0.00
1.40	61.70	5.60	2.09	2.98	70.30	3.00	6.50	53.50	27.33	1.40	52.00
1.45	3.60	13.10	1.50	3.98	82.50	4.75	5.51	36.00	30.00	1.50	10.30
1.50	3.51	19.60	.46	4.62	87.30	5.50	4.86	19.50	32.31	1.60	7.60
1.60	5.20	24.40	1.37	5.09	92.50	6.37	3.60	7.50	47.05	1.70	4.00
1.70	5.40	31.60	.76	5.65	96.90	7.01	2.84	5.50	55.64	1.80	0.00
1.80	1.60	39.10	.63	7.28	96.50	7.54	2.21	3.50	63.30	1.90	0.00
9.90	3.50	63.20	2.31	9.49	100.00	9.49	0.00	.00	0.00	2.00	0.00

.4	10.6	.4	13.1	2.7	13.1	2.0	13.1	6.0	0.4
1.1	5.0	.0	4.3	6.5	4.5	4.0	7.5	6.0	14.7
2.6	4.6	.0	3.2	6.0	3.2	5.0	3.2	0.0	10.5
3.7	2.0	.1	2.5	7.7	3.5	4.0	3.5	10.0	10.2
4.0	2.6	.3	1.5	9.1	1.5	6.0	1.5	0.0	0.0
6.3	1.2	.4	1.0	11.1	1.2	10.0	1.2	0.0	0.0
7.0	.0	.5	.7	12.6	.7	12.0	.7	0.0	0.0
12.6	.4	.9	.0	0.0	.0	176.8	.0	0.0	0.0

PASS 1 0.00
PASS 2 0.14
PASS 3 7.00
PASS 4 7100
PASS 5 6.60

TECK MINING GROUP LTD ADIT NO 1 B SEAM LAB NO 9246 28M X 48M

THE CLASSICAL WASHABILITY CURVES



- PRIMARY CURVE
- CLEAN COAL CURVE
- DISCARD CURVE
- SPECIFIC GRAVITY-YIELD CURVE
- +/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

11/08/77

--OBJECT--			--CUM FLOATS--		--CUM STATS--		+-0.1 DIST>			
S.G.	WT>	ASH>	ASH IT	ASHTT	WT>	ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	62.00	1.00	1.12	1.12	62.00	1.00	5.57	50.50	14.75	1.30	0.00
1.40	22.00	5.00	1.25	2.46	84.00	2.00	4.22	35.50	27.22	1.40	30.50
1.45	5.50	13.00	.52	3.18	90.30	3.52	3.51	8.50	36.17	1.50	10.20
1.50	3.30	18.20	.72	3.60	92.60	3.80	3.03	7.20	41.32	1.60	3.70
1.65	3.40	24.50	.99	4.19	95.00	4.41	2.59	5.30	49.09	1.70	2.10
1.70	1.30	32.10	.42	4.66	96.30	4.79	2.08	3.30	56.27	1.80	0.80
1.80	.60	33.40	.21	4.91	97.10	5.06	1.77	2.00	61.00	1.90	2.00
0.00	2.50	61.20	1.27	6.68	100.00	6.49	0.00	.60	0.00	2.00	0.00

RTDT_CY CUMINFFNTMS
01/09/77

.4	13.0	.4	7.4	2.0	7.6	2.0	9.4	6.0	13.0
1.2	5.2	.6	3.0	5.6	3.0	4.0	2.0	6.0	10.0
2.6	2.6	.7	1.0	7.2	1.0	5.0	1.0	8.0	10.3
3.7	1.7	.8	1.5	8.2	1.5	6.0	1.5	10.3	10.6
4.0	1.2	.6	1.0	10.2	1.0	7.0	1.0	0.0	0.0
6.4	.0	1.0	.7	11.2	.7	10.0	.7	0.0	0.0
7.7	.7	1.2	.6	12.2	.6	12.0	.6	0.0	0.0
12.2	.2	1.2	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 6.19
PASS 2 4.09
PASS 3 7.03
PASS 4 71.88
PASS 5 4.40

CLIENT: TECK MINING GROUP LTD. - 112 -

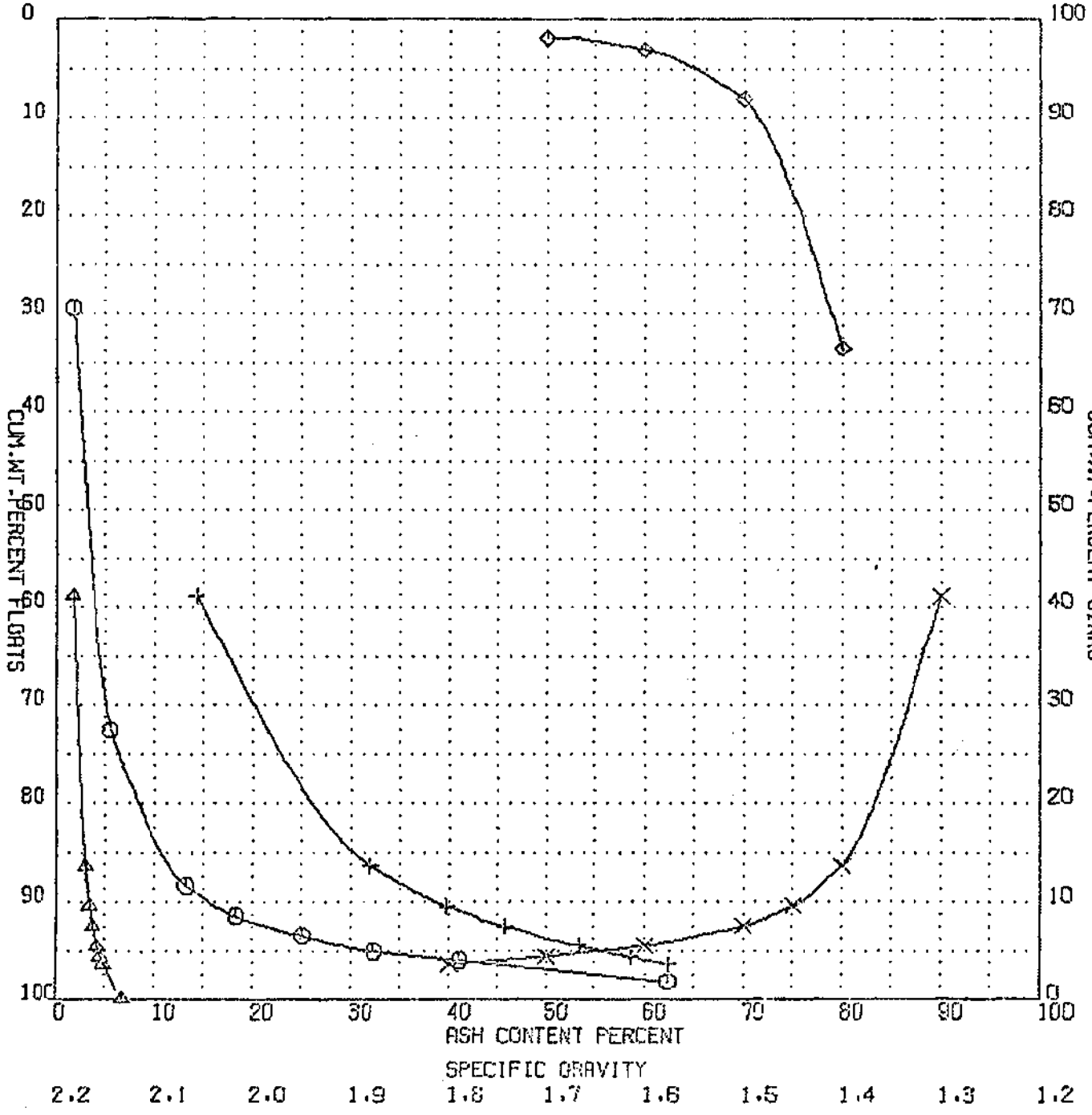
SAMPLE: ADIT #1, "B" SEAM

LAB. NO. 9248 DATE: August 9, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	48M X 100M (WT% = 7.3)							
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	58.9	1.7	58.9	1.7				
1.30-1.40	27.5	5.5	86.4	2.9				
1.40-1.45	4.0	13.2	90.4	3.4				
1.45-1.50	2.1	18.3	92.5	3.7				
1.50-1.60	2.0	25.1	94.5	4.2				
1.60-1.70	1.1	32.3	95.6	4.5				
1.70-1.80	0.8	41.0	96.4	4.8				
+1.80	3.6	62.4	100.0	6.9				

TECK MINING GROUP LTD ADIT NO 1 B SEAM LAB NO 924S 48M X 100M

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

11/08/77

1	2	3	4	5	6	7	8	9	10	11	12
1.30	58.9	1.20	1.00	1.06	5	1.70	5.86	41.70	14.35	1.30	0.00
1.40	27.5	6.50	1.01	2.51	3	2.01	4.34	53.20	21.26	1.40	33.60
1.45	4.00	13.30	.03	3.04	90.00	3.36	3.82	0.20	39.75	1.50	6.10
1.50	2.10	14.30	.20	3.43	92.50	3.70	3.63	7.50	45.75	1.50	3.10
1.60	2.00	25.10	.00	3.93	96.50	4.16	2.93	5.50	53.27	1.70	1.90
1.70	1.10	32.30	.06	4.28	95.50	4.40	2.57	4.70	52.61	1.90	0.00
1.80	.80	41.00	.03	4.61	96.60	4.70	2.25	3.20	62.40	1.90	0.00
2.00	2.60	62.40	2.05	4.86	50.00	4.96	2.00	.50	0.00	2.00	0.00

.3	14.1	.3	0.3	2.0	2.2	2.0	2.2	4.0	17.2	
1.1	5.5	.5	2.7	6.4	2.7	4.0	2.7	4.0	10.4	
2.4	2.2	.7	1.9	7.0	1.9	5.0	1.9	5.0	10.4	
3.7	1.7	.7	1.5	9.2	1.5	6.0	1.5	10.0	10.4	
5.0	1.3	.9	1.1	10.7	1.1	9.0	1.1	0.0	0.0	
6.5	1.5	.9	.0	11.7	.9	12.0	.0	0.0	0.0	
8.2	.7	1.0	.7	12.6	.7	12.0	.7	0.0	0.0	
12.5	.4	1.4	.0	0.0	.0	175.8	.0	0.0	0.0	

PASS 1 5.31
PASS 2 5.10
PASS 3 7.05
PASS 4 7.00
PASS 5 4.00

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT # 1, "B" SEAM

LAB. NO.: 9248 DATE: August, 1977

FROTH FLOTATION TESTS

Pulp Density = 10% Reagent = 4:1=Kerosene:MIBC Dosage = 0.48 lb/T

Conditioning Time = 1 min. Stage I, II, III, IV, V are froths at 30, 60, 90, 120, 150 sec. respectively.

48 Mesh x 0 (WT.% = 16.3)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	81.8	0.9	5.4	25.4	68.3	0.60		8 1/2	81.8	5.4
STAGE II	10.5	0.9	8.1	24.9	66.1	0.34		7	92.3	5.7
STAGE III	3.0	0.8	17.9	24.4	56.9	0.25		5 1/2	95.3	6.1
STAGE IV										
STAGE V										
TAILS	4.7	--	61.8	--	--	0.14	--	--	100.0	8.7

48 Mesh x 100 Mesh (WT.% = 7.3)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	84.4	1.5	5.6	25.5	67.4	0.73		8 1/2	84.4	5.6
STAGE II	8.4	0.8	6.6	25.4	67.2	0.37		8	92.8	5.7
STAGE III	3.9	0.8	8.4	25.2	65.6	0.30		6 1/2	96.7	5.8
STAGE IV										
STAGE V										
TAILS	3.3	--	49.2	--	--	0.12	--	--	100.0	7.2

100 Mesh x 0 (WT.% + 9.0)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	80.2	1.0	5.1	25.3	68.6	0.61		8 1/2	80.2	5.1
STAGE II	10.4	0.9	8.6	24.4	66.1	0.33		7 1/2	90.6	5.5
STAGE III	3.3	0.8	19.9	24.1	55.2	0.31		5 1/2	93.9	6.0
STAGE IV										
STAGE V										
TAILS	6.1	--	57.5	--	--	0.10	--	--	100.0	9.1

CLIENT: TECK MINING GROUP LTD.

SAMPLE: "B" SEAM

LAB. NO.: 9248

F.S.I. OF COMPOSITE FLOATS OF SCREEN SIZES

FOR 7.5% ASH ± 0.5%

SCREEN SIZES	WT.%	S.G. OF COMPOSITE FLOATS	YIELD%	ASH%	F.S.I.
4" x 2"		---	---	---	---
2" x 3/4"		1.40	34.2	6.9	4 1/2
3/4" x 1/4		1.45	61.9	7.3	5
1/4" x 28M		1.80	96.5	7.5	5 1/2
28M x 48		+ 1.80	100.0	6.7	7 1/2
48M x 100		+ 1.80	100.0	6.9	7 1/2

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT # 1, "B" SEAM

LAB. NO.: 9248 DATE: August, 1977

LAB. NO.: 9307

ANALYSES OF 4" x 100Mesh FLOAT @1.60 S.G. (Yield =88.2%)									
PROXIMATE				S%	P%	BTU/LB	F.S.I.	H.G.I.	
RM.%	ASH%	VM.%	FC.%						
0.8	7.4	23.9	67.9	0.35	0.05	14232	6 1/2	87	a.d.b.
	7.5	24.1	68.4	0.35	0.05	14347	--	--	d.b.

ULTIMATE ANALYSIS							DILATATION TEST				
H_2O%	C%	H%	N%	S%	ASH%	by diff. O%	S.T. °C.	M.D.T. °C	M.C. %	M.D. %	G.No.
0.79				0.35	7.41		377	464	22	33	1.021

NOTE: Sample of above float product prepared for Petrographic Analysis and Geisler Plastometer Test.

LAB. NO.: 9308

ANALYSES OF 4" x100Mesh SINK @ 1.60 S.G. (WT.% = 11.8)										
PROXIMATE				S%		ASH FUSION TEMPS. (°F)				
RM.%	ASH%	VM.%	FC.%			ATMOS.	IDT	ST	HT	FT
0.8	45.8	20.7	32.7	0.21	adb	OXID.	2220	2260	2290	2330
	46.2	20.9	32.9	0.21	db	REDUC.	2200	2240	2280	2310

MINERAL ANALYSIS OF ASH, %											
SiO_2	Al_2O_3	TiO_2	CaO	MgO	MnO	Fe_2O_3	Na_2O	K_2O	P_2O_5	SO_3	Undetermined
49.40	19.82	1.29	15.67	4.06	--	3.83	0.89	0.95	0.33	0.75	3.01

NOTE: Sample of above reject product also prepared for Clay Analysis

Lab. No. 9307 Date August, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: COMP. FLOATS @ 1.60

Starting Temperature °C: 320

Softening Temperature °C: 377

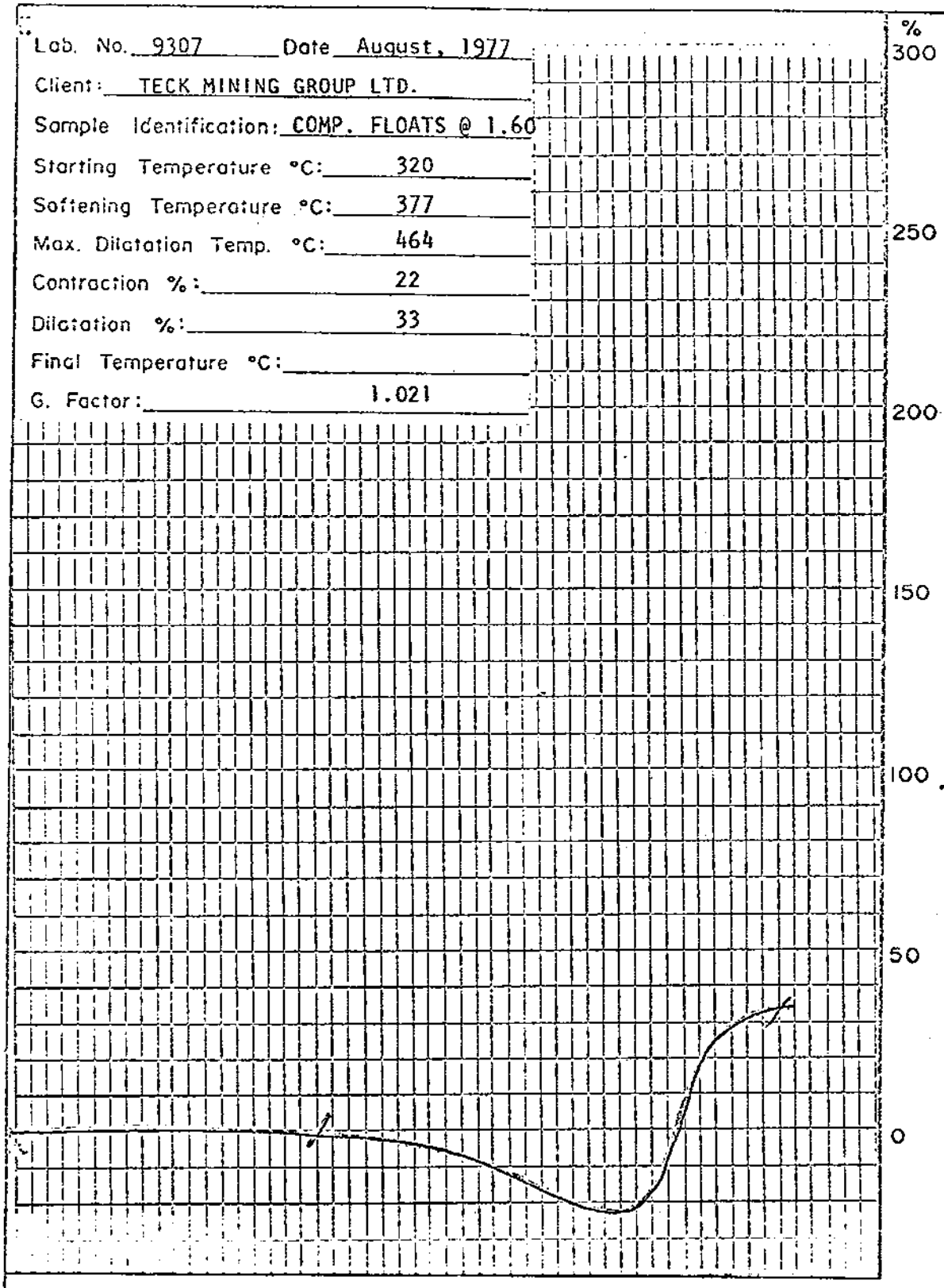
Max. Dilatation Temp. °C: 464

Contraction %: 22

Dilatation %: 33

Final Temperature °C:

G. Factor: 1.021



BIRTLEY ENGINEERING (CANADA) LTD.

Title

RUHR DILATOMETER TEST

Date

Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT #1, SEAM "B"

LAB. NO.: 9307

ANALYSIS OF 4" x 100 Mesh FLOAT @ 1.60 S.G. (YIELD = 88.2%)

GIESLER PLASTOMETER TEST

	DDPM		TEMP.°C
START	1		423
MAXIMUM	172		471
FINAL	1		504
		RANGE	81

LAB. NO.: 9308

ANALYSIS OF 4" x 100Mesh SINK @ 1.60 S.G. (WT.% = 11.8)

CLAY SEPARATION BY FLOTATION

Material greater than 2 microns	85.5
Material less than 2 microns	14.5

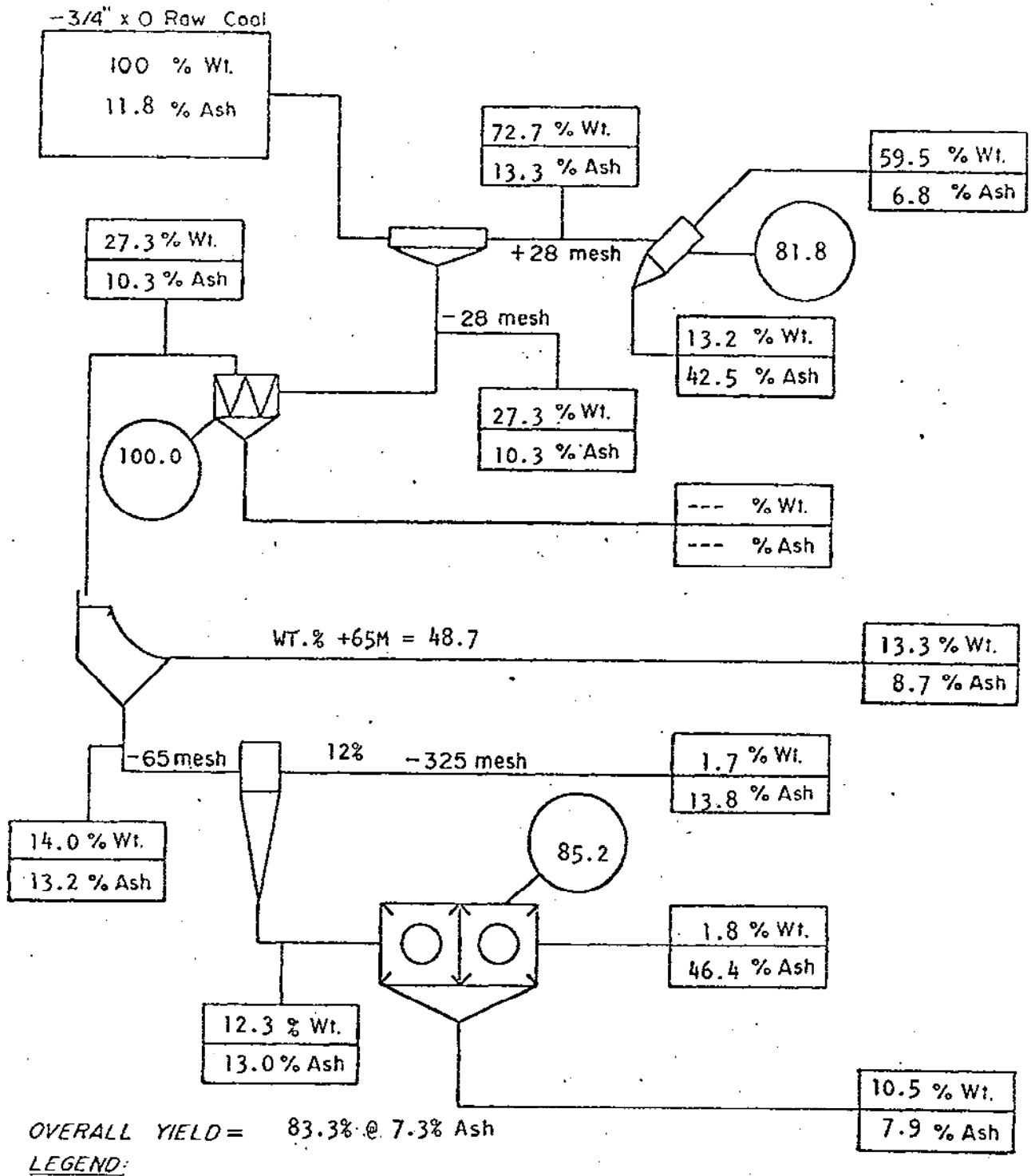
X-RAY DIFFRACTION ANALYSIS OF MATERIAL LESS THAN 2 MICRONS

Quartz	13
Feldspar	Nil
Calcite	Nil
Dolomite	6
Siderite	Nil
Kaolinite	52
Illite	26
Chlorite	Nil
Monmorillonite	Nil
Mixed Layer Clays	3

TECK MINING GROUP LTD.

ADIT# 1, "B" SEAM
LAB. NO. 9247

PLANT WASHING RESULTS



BIRTLEY ENGINEERING (CANADA) LTD.

Title	PLANT BALANCE FLOWSHEET PILOT PLANT WASH - ADIT 1, "B" SEAM BULK TECK MINING GROUP LTD. LAB. NO. 9247	Date August, 1977 Drawn

BIRTLEY ENGINEERING (CANADA) LTD.

Coal Science & Minerals Testing Div.

TECK MINING GROUP LTD.

BULK WASHING DATA*

ADIT 1 SEAM B LAB. NO. 9247

DELIVERY DATE July 25 & 26, 1977 DATE OF WASH August 10, 1977

Raw Coal Analysis: ADM 2.5 ASH% 11.8 FSI 7 HGI 82

Delivered Bulk Weight 11.045 Metric Tons

Washed Weight ** 8.667 Metric Tons

* All weight and analyses are on Air Dried Basis unless otherwise indicated.

** DOES NOT INCLUDE 32 KG. OF +2" ROCK OVERSIZE which simulates breaker plant reject.

TECK MINING GROUP LTD.

BULK WASHING DATA

HEAVY MEDIUM CIRCUIT

ADIT/SEAM NO. 1/B LAB. NO. 9247

1. S. G. of Separation 1.53

2. Feed Ash Content 13.3 % F.S.I. 4 1/2

3. Clean Coal Estimated Weight 5.064 M.T.

4. Clean Coal Analysis - Ash 6.8 % F.S.I. 5 1/2

5. Reject Estimated Weight 1.239 M.T.

6. Reject Analysis - Ash 42.5 % F.S.I. 1

7. Estimated 3/4" x 28M in Circuit 6.303 M.T. 72.7 Wt.%

8. Yield Clean Coal (Weighted): ____ 80.3 %

9. Yield Clean Coal (Calculated Ash Balance) - ____ 81.8 %

TECK MINING GROUP LTD.

BULK WASHING DATA

WATER-ONLY CYCLONE CIRCUIT **

ADIT/SEAM NO. 1/B LAB. NO. 9247

1. Vortex Finder Clearance(VCF) -- CM -- INCHES

2. Feed Pressure -- KG/CM^2 -- P.S.I.

3. Feed Rate -- $M^3/HR.$ -- I.G./Min.

4. Feed Pulp Density -- g/l. -- Solids W/V

5. Sample Analysis

	SCREEN SIZE	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%	HEAD ASH%	HEAD FSI
FEED							10.3	7 1/2
O'FLOW	+65 Mesh	48.7	8.7	8	48.7	8.7	10.3	7 1/2
	65M x 0	51.3	11.2	7 1/2	100.0	10.0		
U'FLOW							--	--
S.B.O.							8.7	8
T.C.O.*							13.8	4

6. Yield - Total W.O. Cyclone Circuit = 100.0

7. Estimated Yield of 28 x 65 Mesh Coal = 48.7
(as % of 28 Mesh x 0 Feed)

8. Estimated 28M x 0 in circuit
(Plant Feed - HM Products) 2.364 MT 17.3 %

* Thickener Cyclone Overflow

** WATER CYCLONE CIRCUIT BYPASSED WATER FEED DIRECTED TO .25 mm SIEVE BEND

Birtley Engineering
Subsidiary of Great West Steel Industries

TECK MINING GROUP LTD.

BULK WASHING DATA

FROTH FLOTATION CIRCUIT

ADIT/SEAM NO. 1/B LAB. NO. 9247

1. Reagents: Kerosene:Methylisobutylcarbinol (MIBC)

2. Feed Pulp Density 80 - 120 g/l 8 - 12 % Solids W/V

3. Sample Analysis:-

	ASH	F.S.I.
FEED	13.0	8 1/2
CONC.	7.9	8 1/2
TAILS	46.4	2 1/2

4. Impeller Type - Birtley-Humboldt Multi-Wobble.

5. Yield Calculated (Ash Balance) 86.8 %

6. Filter Cake (Sieve Bend O'Flow & Flotation Conc.)
Wt. Recovered 1.607 M.T.

7. Filter Cake - Ash% 8.2 F.S.I. 8

TECK MINING GROUP LTD.

BULK WASHING DATA

ADIT/SEAM 1/B LAB. NO. 9247 DATE OF WASH August 10, 1977

a) Raw Coal

Delivered Weight	= 11.045	M.T.
Ash %	= 11.8	
F.S.I.	= 7	
Estimated Washed Wt.	= 8.667	M.T.

b) Heavy Media Circuit

Estimated Proportion of +28 Mesh in Feed 72.7%

Effective S.G. = 1.53

Raw Feed	13.3 %	Ash	4 1/2	F.S.I.
Clean Coal	6.8 %	Ash	5 1/2	F.S.I.
Reject	42.5 %	Ash	1	F.S.I.
Calculated Yield	81.8 %			
Weighed Yield	80.3 %			

c) Water-Only Cyclone Circuit

Raw Feed	10.3 %	Ash	7 1/2	F.S.I.
Overflow	10.3 %	Ash	7 1/2	F.S.I.
Underflow	-- %	Ash	--	F.S.I.
Calculated Yield	100.0 %			
% of +65M in O/F	48.7 %			
Sieve Bend Overflow	8.7 %	Ash	8	F.S.I.

d) Froth Flotation Circuit

Raw Feed	13.0 %	Ash	8 1/2	F.S.I.
Concentrates	7.9 %	Ash	8 1/2	F.S.I.
Tails	46.4 %	Ash	2 1/2	F.S.I.
Calculated Yield	86.8 %			

TECK MINING GROUP LTD.

BULK WASHING DATA

BULK WASHING SUMMARY (Cont.)

ADIT 1 SEAM "B" LAB. NO. 9247

e) Clean Coal Mix Analyses a.d.b.

(i) Proximate

ADM% 9.4 RM.% 0.8 ASH% 7.3 VM.% 23.9 FC.% 68.0

(ii) S.% 0.28 FSI 6 1/2 HGI 79 BTU/LB 14262 P% 0.034

(iii) Dilatation Test

S.T. 371°C M.D.T. 458°C MC% 21 MD% 40 G. NO. 1.034

(iv) Giesler Plastometer Test

	DDPM	TEMP. (%C)
START	1	423
MAXIMUM	692	477
FINAL	1	513
	RANGE =	90

F) Clean Coal Mix Make-Up

H.M. CLEAN COAL	FINES FILTER CAKE	CLEAN COAL MIX		SHIPPED		IN STOCK	
M.T.	M.T.	BBLS.	M.T.	BBLS.	M.T.	BBLS.	M.T.
5.064	1.607		6.671				

Lab. No. 9247 Date Aug. 15, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: CLEAN MIX, B SEAM

Starting Temperature °C: 320

Softening Temperature °C: 371

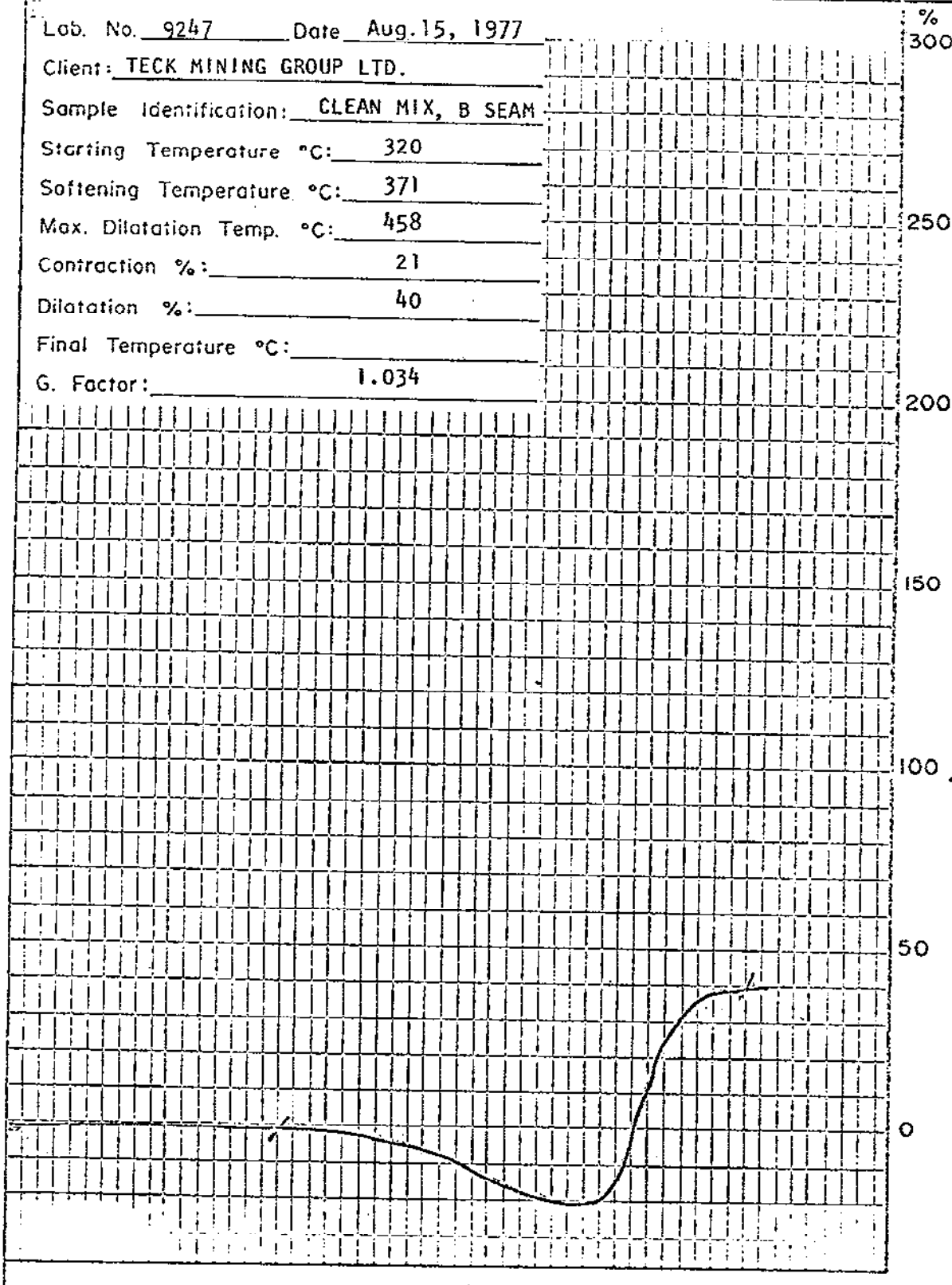
Max. Dilatation Temp. °C: 458

Contraction %: 21

Dilatation %: 40

Final Temperature °C:

G. Factor: 1.034



BIRTLEY ENGINEERING (CANADA) LTD.

Title

RUHR DILATOMETER TEST

Date

Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM "B"

CLEAN COAL ANALYSES August, 1977

INFORMATION REQUIRED FOR EMR COKING TESTS

LAB. NO.	ADM%	MOISTURE	ASH%	VOL.%	FC.%	S%	BTU/LB	F.S.I.	CALC. FACTORS
9247	9.4	0.8	7.3	23.9	68.0	0.28	14262	6 1/2	air dried basis
		10.1	6.6	21.7	61.6	0.25	12921	--	
			7.4	24.1	68.5	0.28	14377	--	dry basis

SIZE ANALYSIS		
SIZE FRACTION	WT.%	CUM. WT.%
+ 1/2"	2.1	2.1
1/2" x 1/4"	8.6	10.7
1/4" x 6M	15.2	25.9
6M x 12M	27.3	53.2
12M x 20M	10.5	63.7
20M x 100M	26.8	90.5
100M x 0	9.5	100.0

TECK MINING GROUP LTD.

COMPOSITE OF A1 AND A2 SEAMS
LAB. NO. 9296

WASHABILITY RESULTS

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE A1 + A2 SEAMS

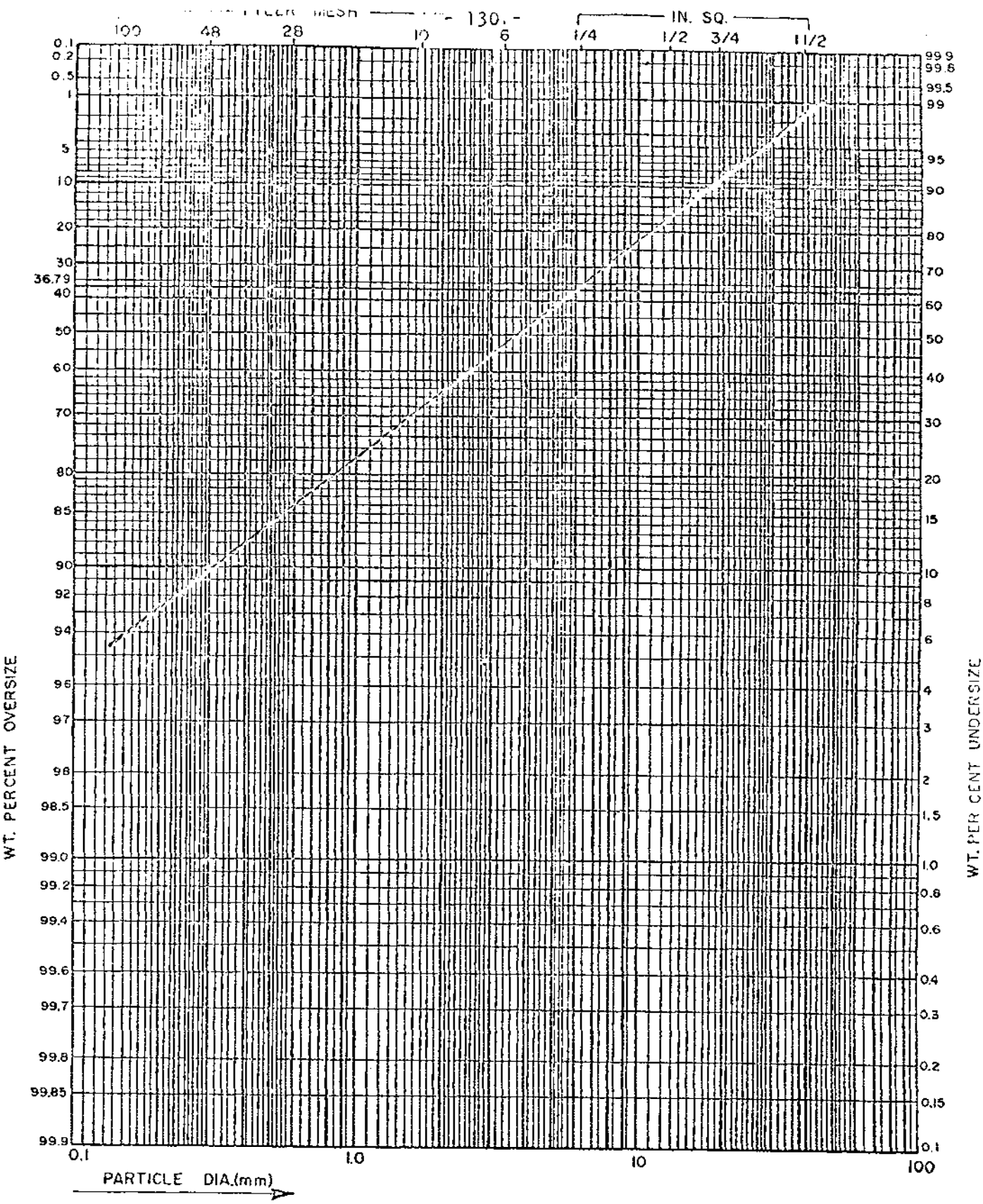
LAB. NO.: 9296 DATE: August 15, 1977

HEAD RAW ANALYSIS										
ADL%	RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
3.3	1.7	28.8	18.5	51.0	0.44	0.014	10596	3	81	air dried basis
	4.9	27.8	17.9	49.4	0.43	0.014	10246	--	--	as rec'd basis
		29.3	18.8	51.9	0.45	0.014	10779	--	--	dry basis

DRY SCREENING ANALYSIS: 4" x 0 HEAD SAMPLE					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
4" x 2"	3.2	63.6	1/2	3.2	63.6
2" x 3/4"	9.5	43.9	1/2	12.7	48.9
3/4" x 1/4"	18.7	34.4	1 1/2	31.4	40.3
1/4" x 28M	50.9	24.0	3	82.3	30.2
28M x 48M	7.8	20.2	3 1/2	90.1	29.3
48M x 100M	5.2	20.7	4	95.3	28.9
100M x 0	4.7	27.8	2 1/2	100.0	28.8

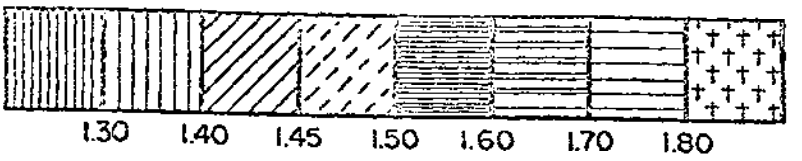
WT.% + 4" Material crushed to -4" = 1.3

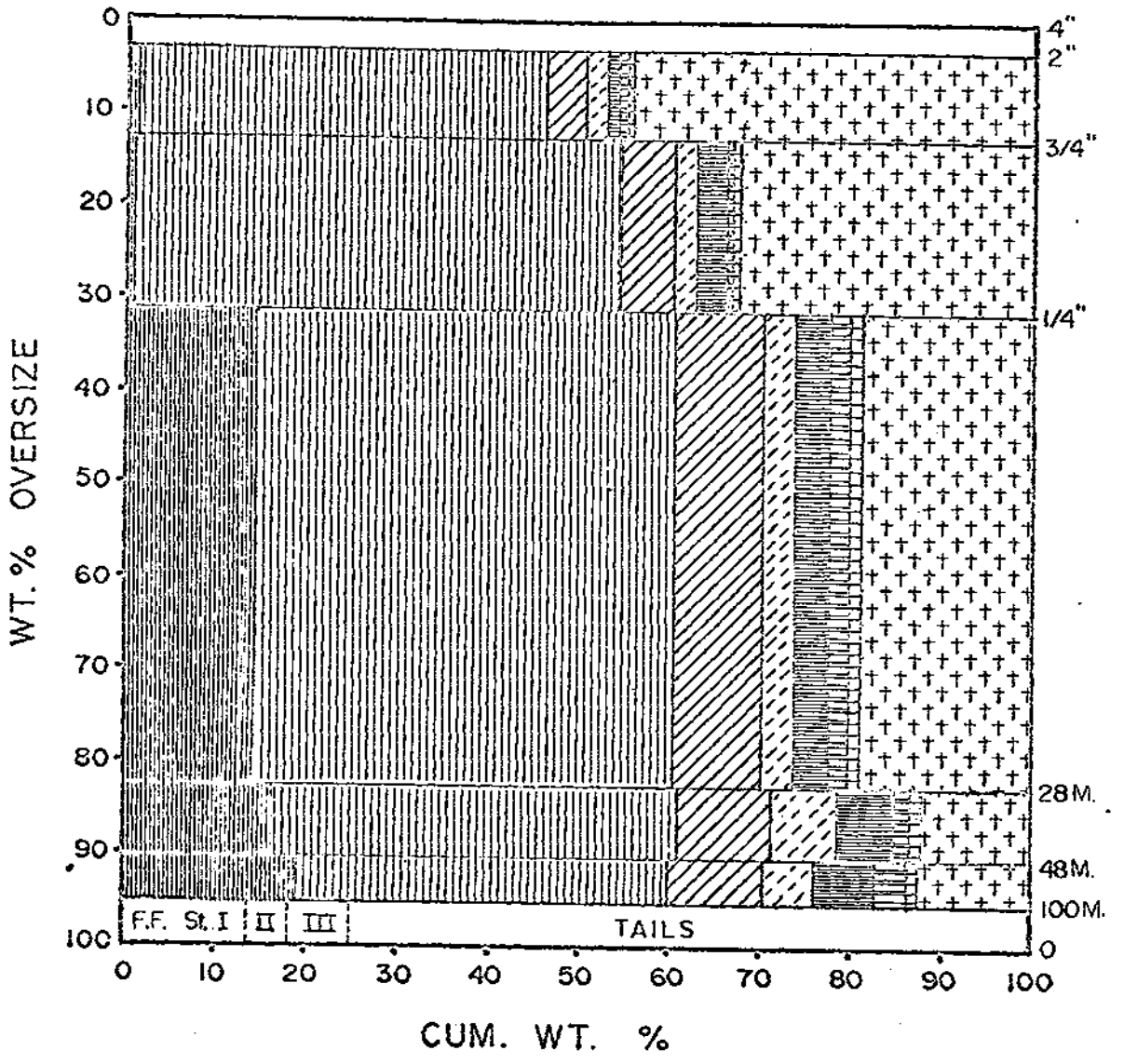
WET SCREENING ANALYSIS: 28 MESH x 0					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
28M x 35M	10.0	13.7	7 1/2	10.0	13.7
35M x 48M	15.4	13.3	7 1/2	25.4	13.5
48M x 65M	11.7	13.6	7 1/2	37.1	13.5
65M x 100M	9.8	15.0	7 1/2	46.9	13.8
100M x 200M	16.0	18.6	7 1/2	62.9	15.0
200M x 325M	7.5	27.7	6 1/2	70.4	16.4
325M x 0	29.6	40.4	N.A.	100.0	23.5



DIETIGER ENGINEERING	Project: BULK SAMPLE FROM ADIT NO. 5, SEAM A (1+2) BULLMOOSE PROJECT	
	Client: TECK CORPORATION Lab. No. 9296	Date: AUG. 1977
	Title: ROSIN RAMMLER SIZE DISTRIBUTION	Drawn: A.

KEY





BIRTLEY ENGINEERING (Canada) LTD. CALGARY ALBERTA			
TITLE	SIZE AND DENSITY DISTRIBUTION DIAGRAM		
CLIENT	TECK CORP.		
SAMPLE	ADIT No. 5 SEAM A 1+2	DATE	AUG. 1977
LAB NO.	9296	DRWN	

Birtley Engineering

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE A1 + A2 SEAMS

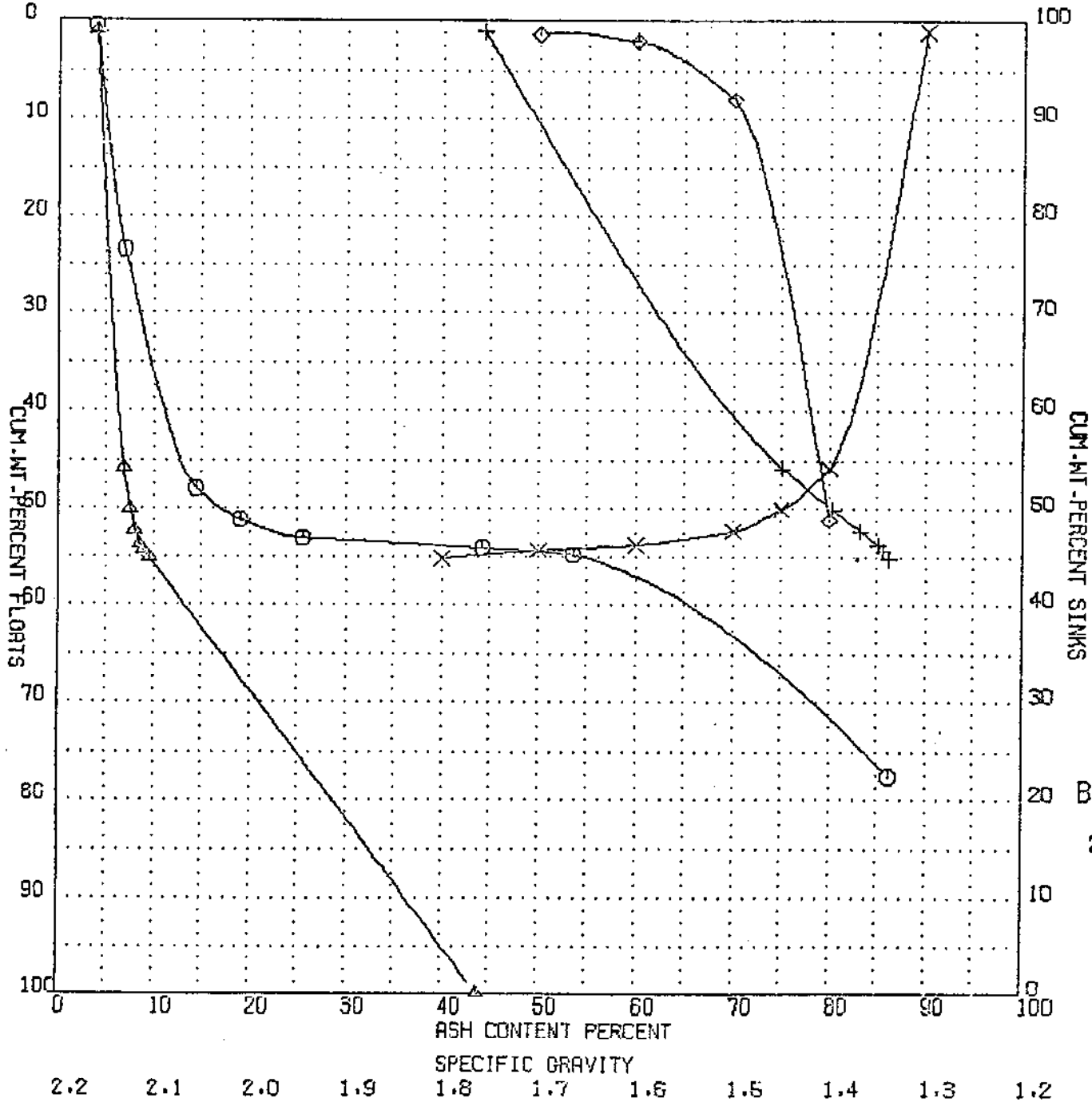
LAB. NO. 9296 DATE: August, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	2" X 3/4" (WT% = 9.5)				3/4" X 1/4" (WT% = 18.7)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	1.1	3.9	1.1	3.9	0.7	3.5	0.7	3.5
1.30-1.40	44.7	6.9	45.8	6.8	53.3	7.0	54.0	7.0
1.40-1.45	4.3	14.4	50.1	7.5	6.1	14.8	60.1	7.8
1.45-1.50	2.2	19.0	52.3	8.0	2.5	21.2	62.6	8.3
1.50-1.60	1.5	25.5	53.8	8.5	2.8	26.6	65.4	9.1
1.60-1.70	0.6	44.2	54.4	8.8	1.3	37.3	66.7	9.6
1.70-1.80	0.8	53.6	55.2	9.5	1.3	47.2	68.0	10.3
+ 1.80	44.8	86.2	100.0	43.9	32.0	84.1	100.0	33.9

SINK FLOAT ANALYSES								
S.G. FRACTION	1/4" X 28M (WT% = 50.9)				28M X 48M (WT% = 7.8)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	14.2	3.2	14.2	3.2	15.9	4.8	15.9	4.8
1.30-1.40	46.4	6.4	60.6	5.7	45.2	6.8	61.1	6.3
1.40-1.45	9.7	13.6	70.3	6.7	10.3	14.3	71.4	7.4
1.45-1.50	3.6	20.0	73.9	7.4	7.3	17.8	78.7	8.4
1.50-1.60	3.7	25.9	77.6	8.3	4.9	28.1	83.6	9.6
1.60-1.70	2.0	37.8	79.6	9.0	2.4	35.8	86.0	10.3
1.70-1.80	1.5	47.8	81.1	9.7	1.9	48.5	87.9	11.1
+1.80	18.9	82.5	100.0	23.5	12.1	78.2	100.0	19.2

TECK MINING GROUP LTD. ADIT 5, COM A1 AND A2 SEAMS LAB NO 9296 2X3/4

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

29/08/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR	
S.G.	WT>	ASH>	WT> ASH	CUM WT> ASH	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	1.10	3.90	.04	.04	1.10	3.90	43.82	98.90	44.30	1.30	0.00
1.40	44.70	6.90	3.68	3.13	45.80	6.83	40.73	54.20	75.15	1.40	51.20
1.45	4.30	14.40	.42	3.75	50.10	7.48	40.11	49.90	80.38	1.50	8.00
1.50	2.20	19.00	.42	4.16	52.30	7.96	39.69	47.70	83.22	1.60	2.10
1.60	1.50	25.50	.38	4.55	53.80	8.45	39.31	46.20	85.09	1.70	1.40
1.70	.60	44.20	.27	4.81	54.40	8.85	39.05	45.60	85.63	1.80	0.00
1.80	.80	53.60	.43	5.24	55.20	9.49	38.62	44.80	86.20	1.90	0.00
9.99	44.80	86.20	38.62	43.86	100.00	43.86	0.00	.00	0.00	2.00	0.00

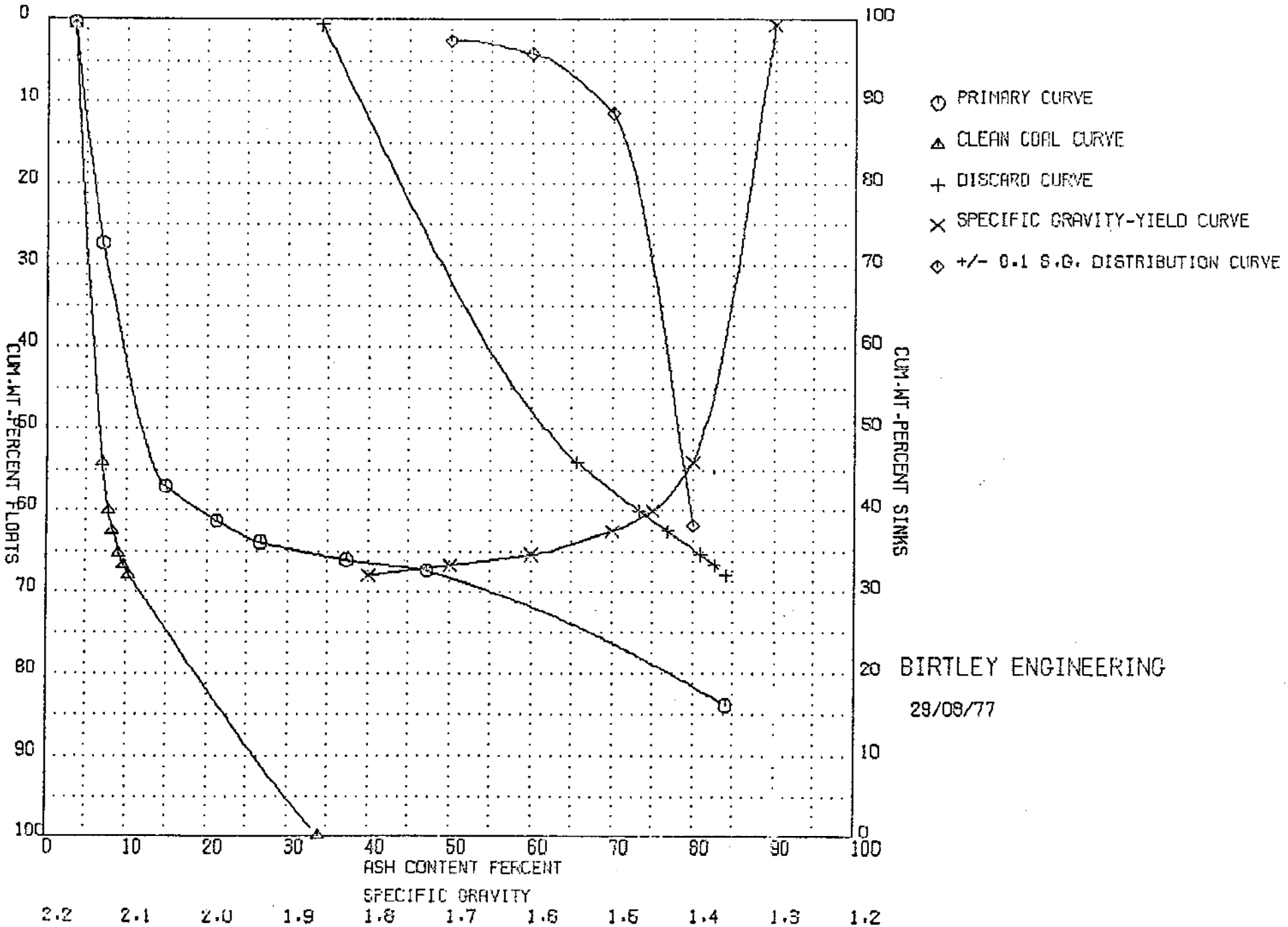
BIRTLEY ENGINEERING
09/08/77

.8	19.0	.8	19.8	8.0	19.8	2.0	10.8	4.0	9.8
1.4	15.3	1.4	10.8	15.0	10.8	4.0	10.8	6.0	18.4
2.9	10.4	1.5	10.0	16.1	10.0	5.0	10.0	8.0	19.6
3.8	9.8	1.6	9.5	16.6	9.5	6.0	9.5	10.0	19.7
5.1	9.4	1.7	9.2	17.0	9.2	8.0	9.2	0.0	0.0
8.8	9.2	1.8	9.1	17.1	9.1	10.0	9.1	0.0	0.0
10.7	9.0	1.9	9.0	17.2	9.0	12.0	9.0	0.0	0.0
17.2	4.5	8.8	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8164
PASS 2 8 79
PASS 3 7 83
PASS 4 7100
PASS 5 4 60

TECK MINING GROUP LTD. ADIT 5, COM A1 AND A2 SEAMS LAB NO 9296 3/4X1/4

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

29/08/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DIST?		
S.G.	WT>	ASH>	WT>	CUM WT> ASH TT	ASHTT	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12	
1.30	.70	3.50	.02	.02	.70	3.50	33.92	99.30	34.16	1.30	0.00	
1.40	53.30	7.00	3.73	3.76	54.00	6.95	30.19	46.70	65.63	1.40	61.90	
1.45	6.10	14.80	.90	4.66	60.10	7.75	29.29	39.90	73.40	1.50	11.40	
1.50	2.50	21.20	.53	5.19	62.60	8.29	28.76	37.40	76.89	1.60	4.10	
1.60	2.80	26.60	.74	5.93	65.40	9.07	28.01	34.60	80.96	1.70	2.60	
1.70	1.30	37.30	.48	6.42	66.70	9.62	27.53	33.30	82.66	1.80	0.00	
1.80	1.30	47.20	.61	7.03	68.00	10.34	26.91	32.00	84.10	1.90	0.00	
9.99	32.00	84.10	26.91	33.94	100.00	33.94	0.00	.00	0.00	2.00	0.00	

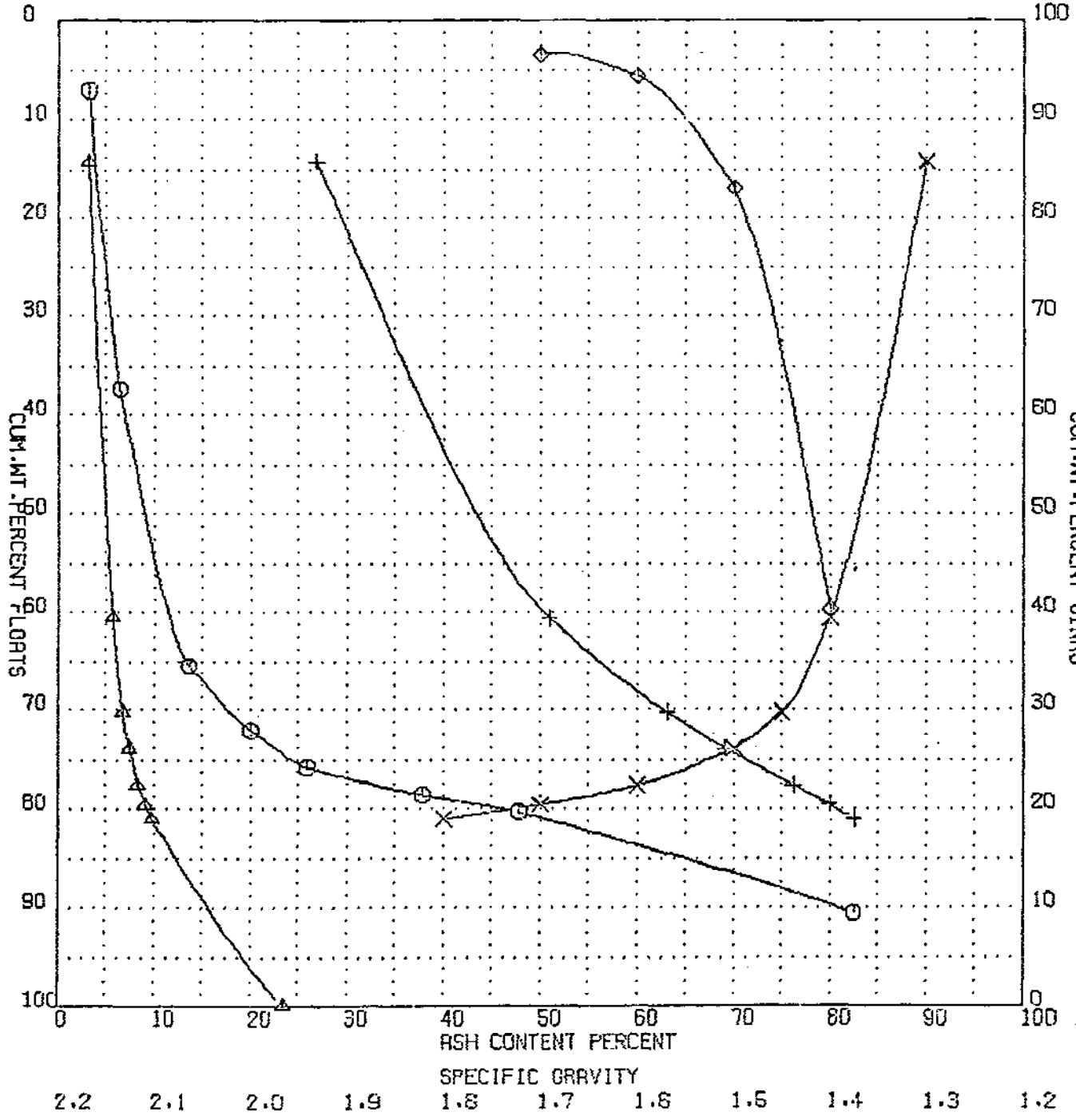
BIRTLEY ENGINEERING
09/08/77

.7	19.9	.7	19.9	6.8	19.9	2.0	10.9	4.0	7.6
1.4	14.5	1.4	9.2	13.1	9.2	4.0	9.2	6.0	17.7
3.0	8.6	1.6	8.0	14.7	8.0	5.0	8.0	8.0	19.2
4.2	7.7	1.7	7.5	15.4	7.5	6.0	7.5	10.0	19.5
5.3	7.2	1.9	6.9	16.2	6.9	8.0	6.9	0.0	0.0
7.5	6.8	1.9	6.7	16.5	6.7	10.0	6.7	0.0	0.0
9.4	6.5	2.1	6.4	16.8	6.4	12.0	6.4	0.0	0.0
16.8	3.2	6.8	.0	0.0	.0	175.8	.0	0.0	0.0

PASS	1	8	161
PASS	2	8	60
PASS	3	7	99
PASS	4	7	100
PASS	5	4	60

TECK MINING GROUP LTD. ADIT 5, COM A1 AND A2 SEAMS LAB NO 9296 1/4X28M

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE
CLEAN COAL CURVE
DISCARD CURVE
SPECIFIC GRAVITY-YIELD CURVE
+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

29/08/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR	
S.G.	WT>	ASH>	WT> CUM WT> ASH TT	ASHTT	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	14.20	3.20	.45	.45	14.20	3.20	23.03	85.80	26.84	1.30	0.00
1.40	44.40	6.40	2.07	3.42	60.60	5.65	20.06	39.40	50.92	1.40	59.70
1.45	9.70	13.60	1.32	4.74	70.30	6.75	18.74	29.70	63.11	1.50	17.00
1.50	3.60	20.00	.72	5.46	73.90	7.39	18.02	26.10	69.06	1.60	5.70
1.60	3.70	25.90	.96	6.42	77.60	8.28	17.07	22.40	76.19	1.70	3.50
1.70	2.00	37.80	.76	7.18	79.60	9.02	16.31	20.40	79.95	1.80	0.00
1.80	1.50	47.80	.72	7.89	81.10	9.73	15.59	18.90	82.50	1.90	0.00
9.99	18.90	82.50	15.59	23.49	100.00	23.49	0.00	0.00	0.00	2.00	0.00

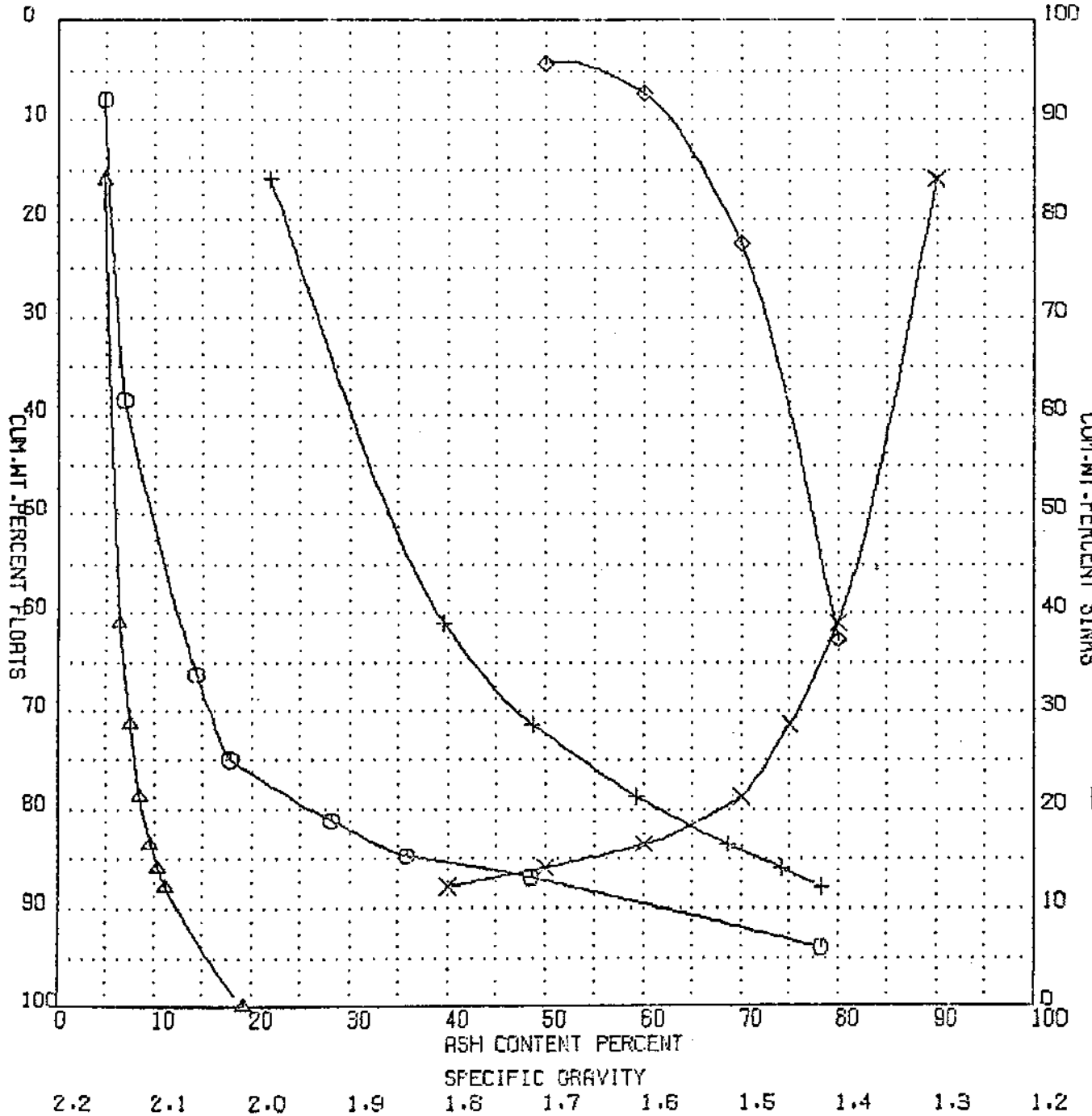
BIRTLEY ENGINEERING
29/08/77

.6	18.6	.6	17.2	5.4	17.2	2.0	17.2	4.0	8.1
1.3	12.5	1.1	7.9	10.2	7.9	4.0	7.9	6.0	16.6
2.7	6.9	1.3	5.9	12.6	5.9	5.0	5.9	8.0	18.9
4.0	5.6	1.5	5.2	13.8	5.2	6.0	5.2	10.0	19.3
5.2	4.9	1.7	4.5	15.2	4.5	8.0	4.5	0.0	0.0
7.6	4.3	1.8	4.1	16.0	4.1	10.0	4.1	0.0	0.0
9.6	3.9	1.9	3.8	16.5	3.8	12.0	3.8	0.0	0.0
16.5	1.9	4.7	0.0	0.0	0.0	175.8	0.0	0.0	0.0

PASS 1 8158
PASS 2 8 40
PASS 3 7111
PASS 4 7100
PASS 5 4 60

TECK MINING GROUP LTD ADIT 5, COM A1 AND A2 SEAMS LAB NO 9296 28MX48M

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

29/08/77

--DIRECT--					--CUM FLOATS--		--CUM SINKS--		+-0.1 DISTO	
S.G.	WT>	ASH>	WT> ASH TT	CUM WT> ASHTT	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	15.90	4.80	.76	.76	15.90	4.80	18.47	84.10	21.96	1.30	0.00
1.40	45.20	6.80	3.07	3.84	61.10	6.28	15.39	38.90	39.57	1.40	62.80
1.45	10.30	14.30	1.47	5.31	71.40	7.44	13.92	28.60	48.67	1.50	22.50
1.50	7.30	17.80	1.30	6.61	78.70	8.40	12.62	21.30	59.25	1.60	7.30
1.60	4.90	28.10	1.38	7.99	83.60	9.55	11.24	16.40	68.55	1.70	4.30
1.70	2.40	35.80	.86	8.85	86.00	10.29	10.38	14.00	74.17	1.80	0.00
1.80	1.90	48.50	.92	9.77	87.90	11.11	9.46	12.10	78.20	1.90	0.00
9.99	12.10	78.20	9.46	19.23	100.00	19.23	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
29/08/77

1.0	18.4	1.0	16.8	4.4	16.8	2.0	14.8	4.0	7.4
1.4	12.3	1.3	7.8	7.9	7.8	4.0	7.8	6.0	15.5
2.9	6.8	1.5	5.7	9.7	5.7	5.0	5.7	8.0	18.5
3.6	5.0	1.7	4.3	11.8	4.3	6.0	4.3	10.0	19.1
5.6	3.8	1.9	3.3	13.7	3.3	8.0	3.3	0.0	0.0
7.2	3.0	2.1	2.8	14.8	2.8	10.0	2.8	0.0	0.0
9.7	2.6	2.2	2.4	15.6	2.4	12.0	2.4	0.0	0.0
15.6	1.2	3.8	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8146
PASS 2 8 28
PASS 3 7112
PASS 4 7100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

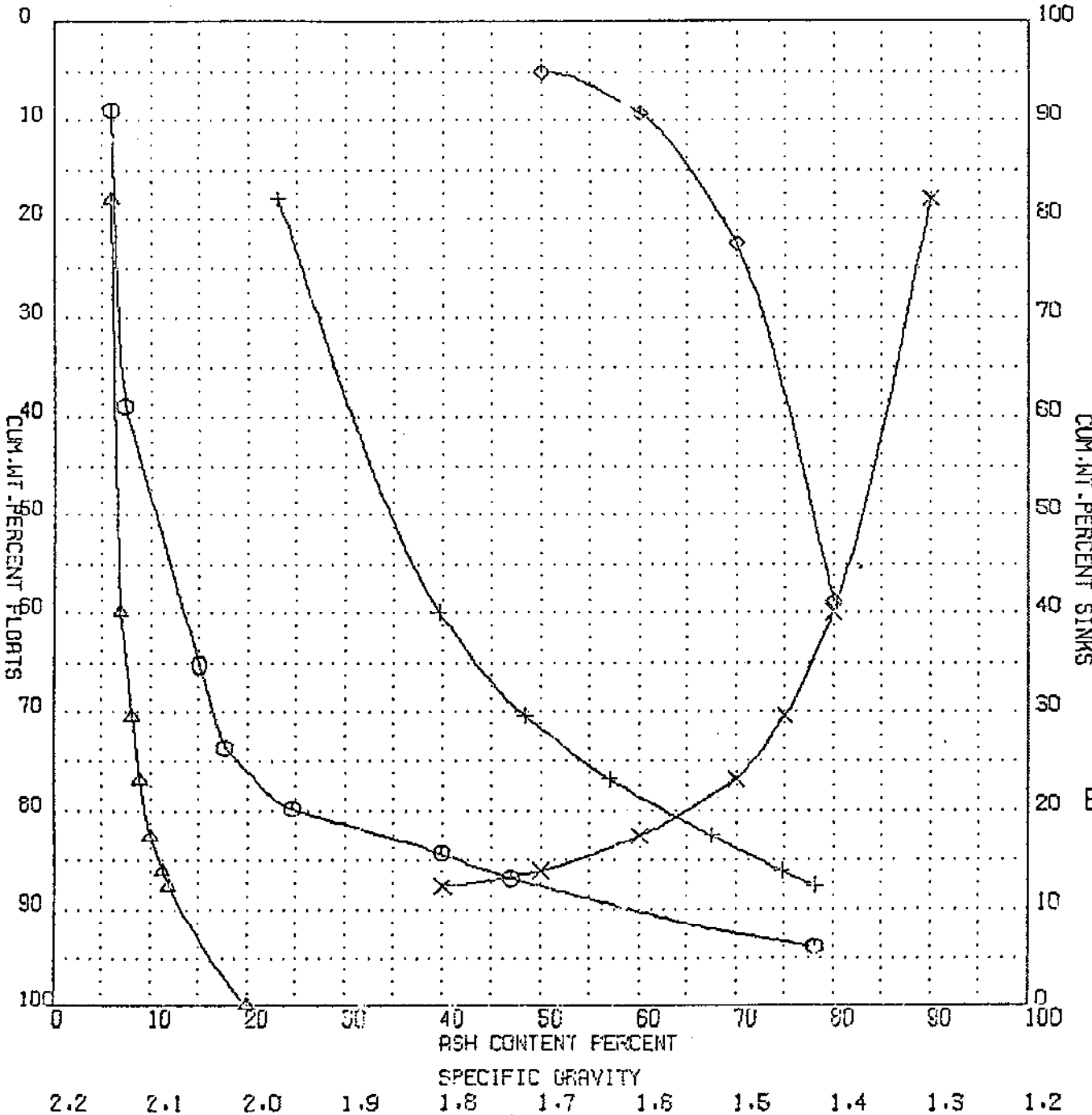
SAMPLE: ADIT 5, COMPOSITE A1 + A2 SEAMS

LAB. NO. 9296 DATE: August, 1977

SINK FLOAT ANALYSES								
	48M X 100M (WT% = 5.2)							
S.G. FRACTION	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	18.0	5.9	18.0	5.9				
1.30-1.40	42.0	7.3	60.0	6.9				
1.40-1.45	10.5	15.0	70.5	8.1				
1.45-1.50	6.4	17.6	76.9	8.9				
1.50-1.60	5.7	24.6	82.6	10.0				
1.60-1.70	3.6	39.9	86.2	11.2				
1.70-1.80	1.5	47.0	87.7	11.8				
+1.80	12.3	78.1	100.0	20.0				

TECK MINING GROUP LTD ADIT 5, COM A1 AND A2 SEAMS LAB NO 9296 48MX100M

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

29/06/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DIST		
S.G.	WT%	ASH%	WT% CUM ASH TT	ASH% CUM ASHTT	WT%	ASH%	SINK WT ASH%	WT%	ASH%	S.G.	WT%
1	2	3	4	5	6	7	8	9	10	11	12
1.30	18.00	5.90	1.06	1.06	18.00	5.90	18.92	82.00	23.07	1.30	0.00
1.40	42.00	7.30	3.07	4.13	60.00	6.88	15.85	40.00	39.63	1.40	58.90
1.45	10.50	15.00	1.58	5.70	70.50	8.09	14.28	29.50	48.39	1.50	22.60
1.50	6.40	17.60	1.13	6.83	76.90	8.88	13.15	23.10	56.93	1.60	9.30
1.60	5.70	24.60	1.40	8.23	82.60	9.97	11.75	17.40	67.52	1.70	5.10
1.70	3.60	39.90	1.44	9.67	86.20	11.22	10.31	13.80	74.72	1.80	0.00
1.80	1.50	47.00	.71	10.37	87.70	11.83	9.61	12.30	78.10	1.90	0.00
9.99	12.30	78.10	9.61	19.98	100.00	19.98	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
29/08/77

1.2	18.2	1.2	16.4	4.6	16.4	2.0	14.4	4.0	8.2
1.5	12.2	1.4	8.0	7.9	8.0	4.0	8.0	6.0	15.5
3.0	7.0	1.6	5.9	9.7	5.9	5.0	6.9	8.0	18.1
3.5	5.3	1.8	4.6	11.4	4.6	6.0	4.6	10.0	19.0
4.9	4.1	2.0	3.5	13.5	3.5	8.0	3.5	0.0	0.0
8.0	3.1	2.2	2.8	14.9	2.8	10.0	2.9	0.0	0.0
9.4	2.6	2.4	2.5	15.6	2.5	12.0	2.5	0.0	0.0
15.6	1.2	4.0	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8144
PASS 2 8 28
PASS 3 7110
PASS 4 7100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE A1 + A2 SEAMS

LAB. NO.: 9296 DATE: August, 1977

FROTH FLOTATION TESTS

Pulp Density = 10% Reagent = 4:1=Kerosene:MIBC Dosage = 0.48 lb/T

Conditioning Time = 1 min. Stage I, II, III, IV, V are froths at 30, 60, and 150 sec. respectively.

48 Mesh x 0 (WT% = 9.9)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	11.0	1.1	10.8	23.4	64.7	0.52	0.01	3 1/2	11.0	10.8
STAGE II	2.2	1.3	17.7	21.9	59.1	0.42	0.02	2 1/2	13.2	12.0
STAGE III	3.5	1.2	21.3	21.0	56.5	0.51	0.03	2 1/2	16.7	13.9
TAILS	83.3	--	25.4	--	--	0.50	--	--	100.0	23.5

48 Mesh x 100 Mesh (WT% = 5.2)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	7.9	0.9	11.7	23.3	64.1	0.46	0.01	3 1/2	7.9	11.7
STAGE II	3.0	1.0	16.7	22.1	60.2	0.43	0.02	3	10.9	13.1
STAGE III	5.1	1.0	20.1	21.4	57.5	0.43	0.02	3	16.0	15.4
TAILS	84.0	--	22.0	--	--	0.52	--	--	100.0	20.9

100 Mesh x 0 (WT% = 4.7)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	12.8	0.9	10.7	23.6	64.8	0.46	0.02	3 1/2	12.8	10.7
STAGE II	5.0	1.0	17.9	21.9	59.2	0.43	0.02	2 1/2	17.8	12.7
STAGE III	6.8	1.0	22.9	21.1	55.0	0.48	0.03	2	24.6	15.5
TAILS	75.4	--	30.2	--	--	0.42	--	--	100.0	26.6

CLIENT: TECK MINING GROUP LTD.

SAMPLE: COMPOSITE "A1" AND A2" SEAMS

LAB. NO.: 9296

F.S.I. OF COMPOSITE FLOATS OF SCREEN SIZES

FOR 7.5% ASH ± 0.5%

SCREEN SIZES	WT.%	S.G. OF COMPOSITE FLOATS	YIELD%	ASH%	F.S.I.
4" x 2"	0.0	---	---	---	---
2" x 3/4"	9.5	1.45	50.1	7.5	3
3/4" x 1/4"	18.7	1.45	60.1	7.8	2 1/2
1/4" x 28M	50.9	1.50	73.9	7.8	5 1/2
28M x 48	7.8	1.45	71.4	7.4	7 1/2
48M x 100	5.2	1.45	70.5	8.1	5 1/2

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE A1 + A2 SEAMS

LAB. NO.: 9296 DATE: August, 1977

LAB. NO.: 9309

ANALYSES OF 4" x 100Mesh FLOAT @1.45S.G. (Yield =66.2%)									
PROXIMATE				S%	P%	BTU/LB	F.S.I.	H.G.I.	
RM.%	ASH%	VM.%	FC.%						
0.9	7.1	22.3	69.7	0.28	0.01	14336	5	76	a.d.b.
	7.2	22.5	70.3	0.28	0.01	14466	--	--	d.b.

ULTIMATE ANALYSIS							DILATATION TEST				
H_2O%	C%	H%	N%	S%	ASH%	by diff. 0%	S.T. °C	M.D.T. °C	M.C. %	M.D. %	G.No.
0.91	82.24	4.53	1.07	0.28	7.08	3.89	389	485	19	--	--

NOTE: Sample of above float product prepared for Petrographic Analysis and Geisler Plastometer Test.

LAB. NO.: 9310

ANALYSES OF 4" x100Mesh SINK @ 1.45 S.G. (WT.% = 33.8%)										
PROXIMATE				S%		ASH FUSION TEMPS (°F)				
RM.%	ASH%	VM.%	FC.%			ATMOS.	I.D.T.	S.T.	H.T.	F.T.
1.0	66.4	11.4	21.2	0.57	adb	OXID.	2440	2600	2650	2650+
	67.1	11.5	21.4	0.58	db	REDUC.	2340	2500	2540	2650+

MINERAL ANALYSIS OF ASH, %											
SiO_2	Al_2O_3	TiO_2	CaO	MgO	MnO	Fe_2O_3	Na_2O	K_2O	P_2O_5	SO_3	Undetermined
68.44	17.57	0.79	1.12	1.62		3.27	0.49	3.25	0.17	1.16	2.12

NOTE: Sample of above reject product also prepared for Clay Analysis

Lab. No. 9309 Date August, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: COMP. FLOATS @ 1.45

Starting Temperature °C: 320

Softening Temperature °C: 389

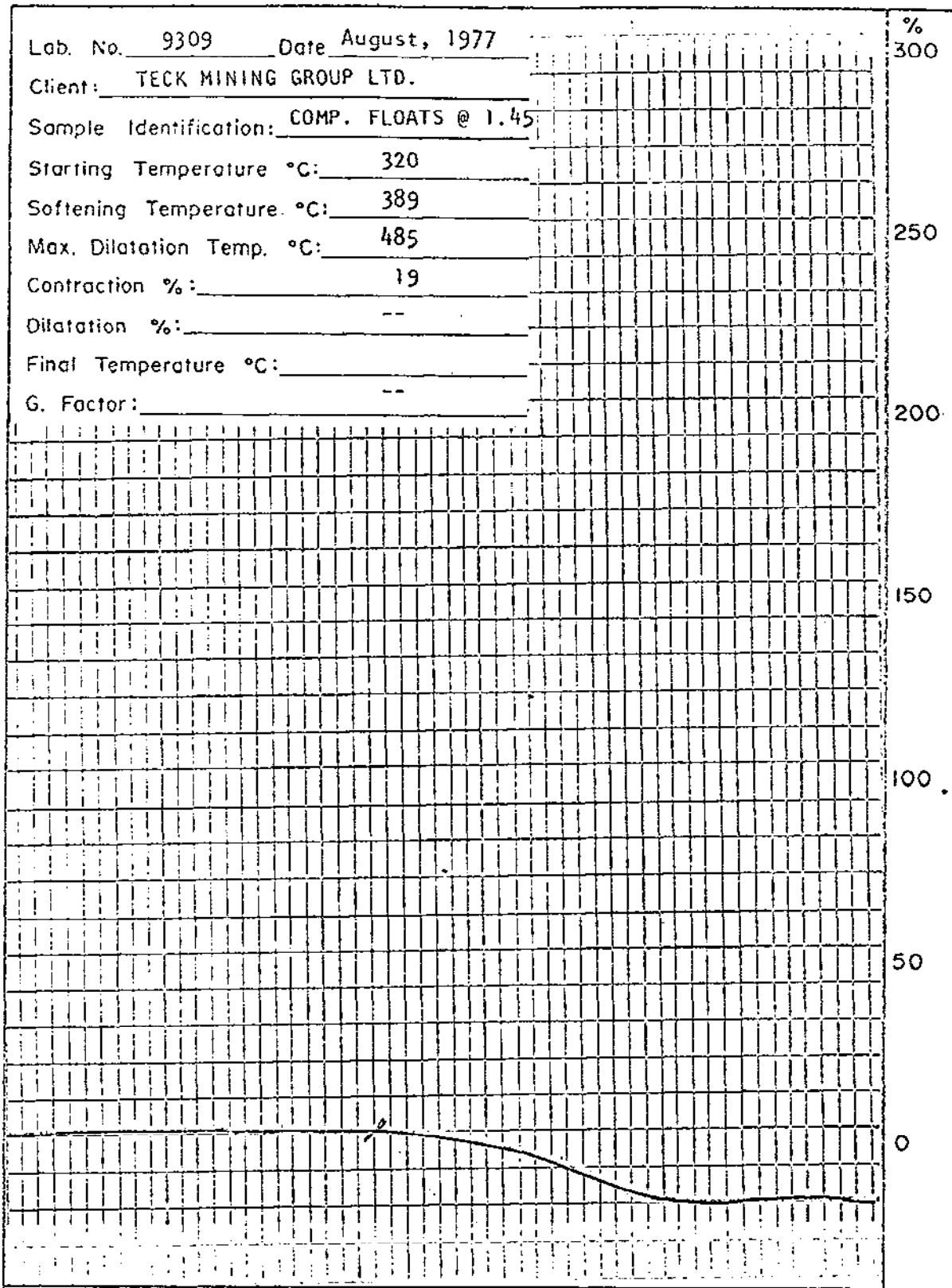
Max. Dilatation Temp. °C: 485

Contraction %: 19

Dilatation %: --

Final Temperature °C:

G. Factor: --



BIRTLEY ENGINEERING (CANADA) LTD.

Title	Date
RUHR DILATOMETER TEST	
	Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE A1 + A2 SEAMS

LAB. NO.: 9309

ANALYSIS OF 4" x 100Mesh FLOAT @ 1.45 S.G. (YIELD = 66.2%)

GIESLER PLASTOMETER TEST

	DDPM	TEMP.°C
START	1	441
MAXIMUM	6	468
FINAL	1	492
	RANGE	51

LAB. NO.: 9310

ANALYSIS OF 4" x 100Mesh SINK @ 1.45 S.G. (WT.% = 33.8%)

CLAY SEPARATION BY FLOTATION

Material greater than 2 microns	77.3
Material less than 2 microns	22.7

X-RAY DIFFRACTION ANALYSIS OF MATERIAL LESS THAN 2 MICRONS

Quartz	26
Feldspar	Nil
Calcite	Nil
Dolomite	1
Siderite	1
Kaolinite	24
Illite	47
Chlorite	1
Montmorillonite	Nil

TECK MINING GROUP LTD.

COMPOSITE OF A1, A2 AND A SPLIT
LAB. NO. 9298

WASHABILITY RESULTS

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE SEAM A1 + A2 + A SPLIT

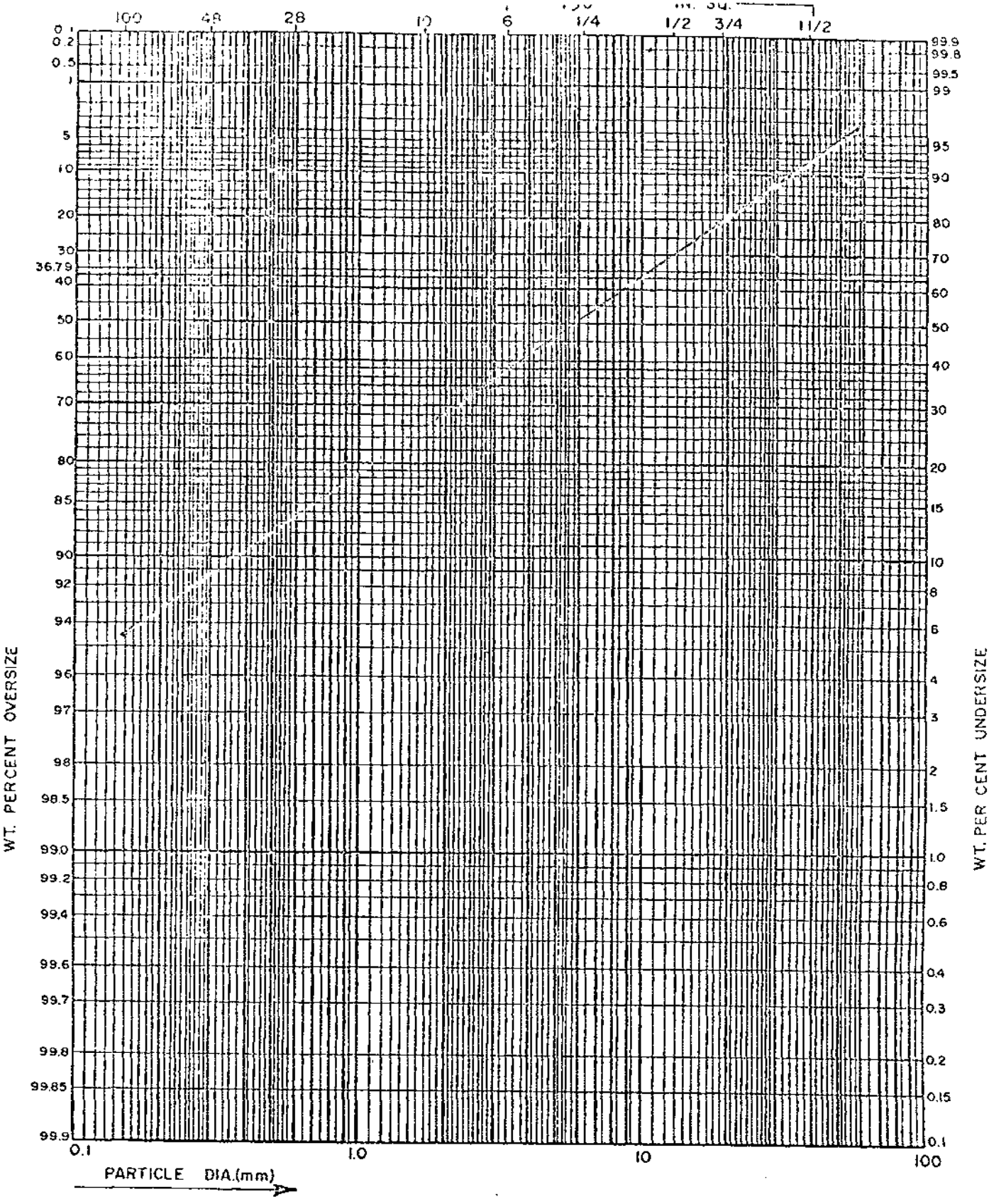
LAB. NO.: 9298 DATE: August, 1977

HEAD RAW ANALYSIS										
ADL%	RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
3.2	1.2	38.6	16.4	43.8	0.48		9169	2	75	air dried basis
	4.4	37.4	15.9	42.3	0.46		8876	--	--	as rec'd basis
		39.1	16.6	44.3	0.49		9280	--	--	dry basis

DRY SCREENING ANALYSIS: 4" x 0 HEAD SAMPLE					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
4" x 2"	12.9	82.9	N.A.	12.9	82.9
2" x 3/4"	13.0	59.7	1/2	25.9	71.3
3/4" x 1/4"	18.0	38.3	1 1/2	43.9	57.7
1/4" x 28M	41.8	24.9	2 1/2	85.7	41.7
28M x 48M	5.6	20.2	4 1/2	91.3	40.4
48M x 100M	5.4	18.9	5	96.7	39.2
100M x 0	3.3	25.8	3	100.0	38.8

WT.% + 4" Material crushed to -4" = 7.4

WET SCREENING ANALYSIS: 28 MESH x 0					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
28M x 35M	5.8	11.2	7	5.8	11.2
35M x 48M	19.8	14.2	6 1/2	25.6	13.5
48M x 65M	16.1	14.3	7	41.7	13.8
65M x 100M	11.6	15.0	7	53.3	14.1
100M x 200M	16.0	17.4	7 1/2	69.3	14.8
200M x 325M	6.4	25.2	6 1/2	75.7	15.7
325M x 0	24.3	44.3	N.A.	100.0	22.7



BIRTLEY ENGINEERING

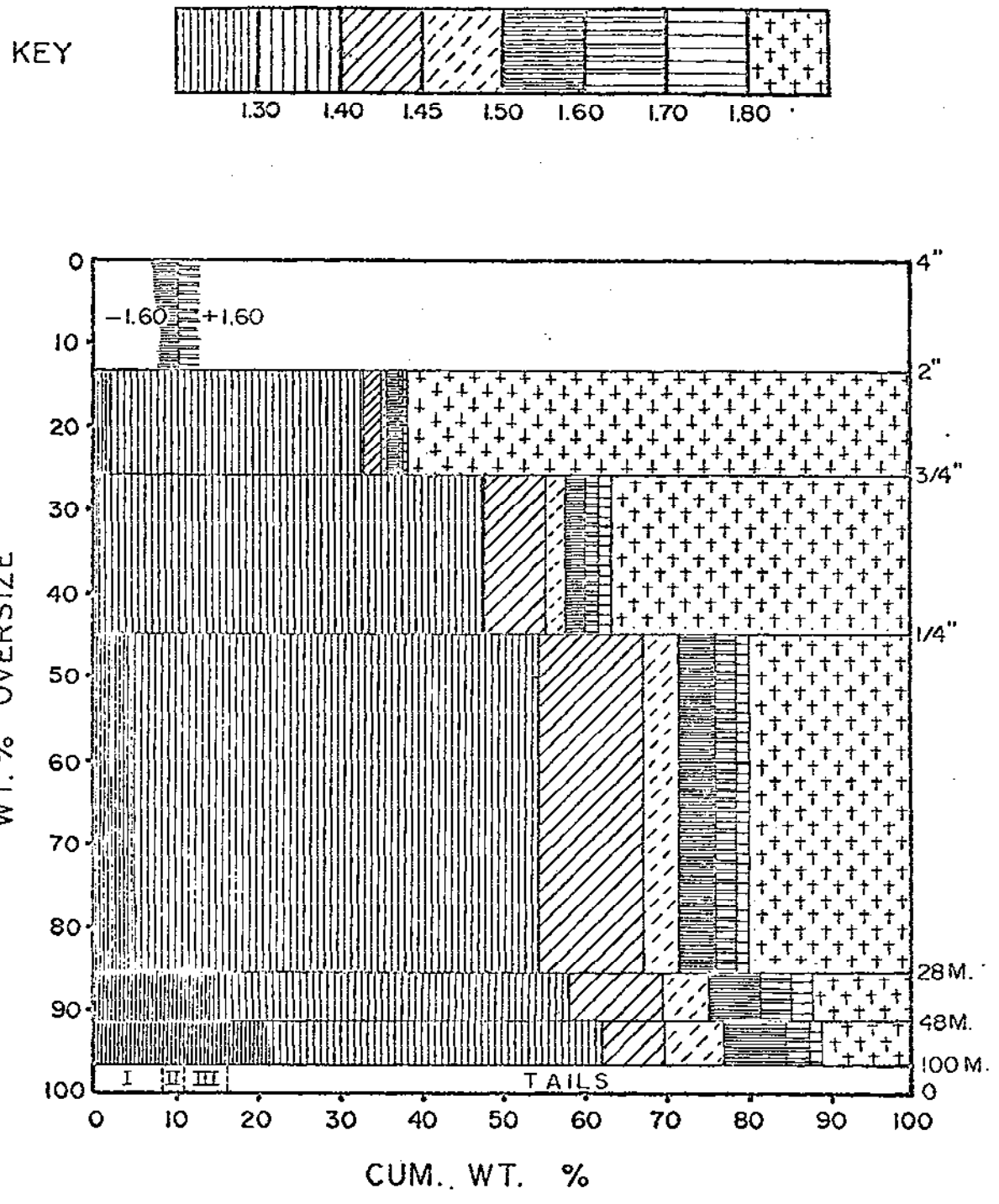
Project: BULK SAMPLE FROM ADIT NO. 5, SEAM A (1+2+ Split)
BULLMOOSE PROJECT

Client: TECK CORPORATION
Lab No. 9298

Date: AUGUST, 1977

Title: ROSIN RAMMLER SIZE DISTRIBUTION

Drawn: J.



BIRTLEY ENGINEERING (Canada) LTD. CALGARY ALBERTA			
TITLE	SIZE AND DENSITY DISTRIBUTION DIAGRAM		
CLIENT	TECK CORP.		
SAMPLE	ADIT No. 5 SEAM A	DATE	AUG. 1977
LAB NO.	9298	DRWN	A.

NOTE: 'A' Seam is made up of A-1, A-2, and A-Split.

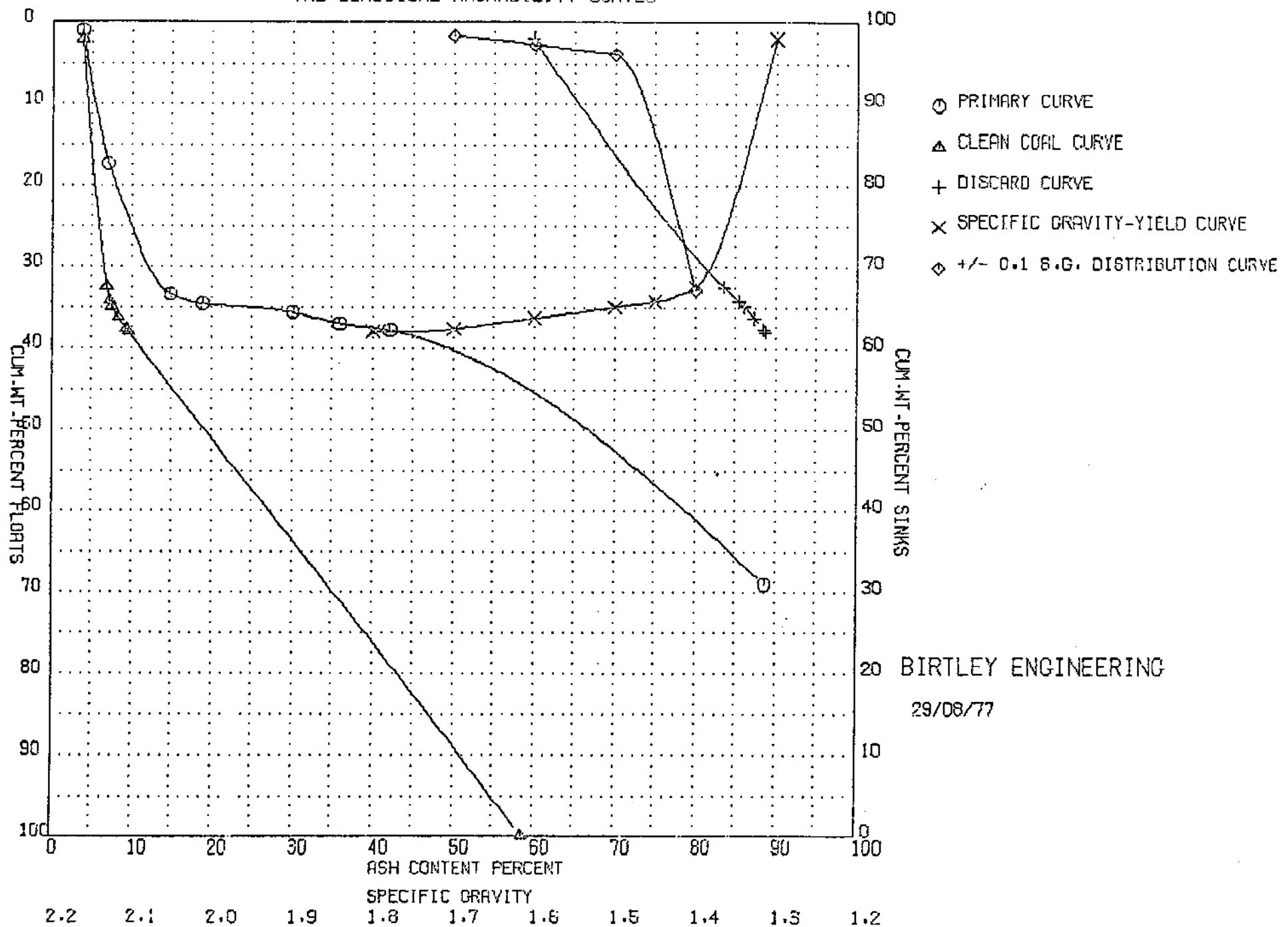
CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE SEAMS A1 + A2 + A SPLIT

LAB. NO. 9298 DATE: August, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	4" x 2" (WT.% = 12.9)				2" x 3/4" (WT.% = 13.0)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30					2.1	3.8	2.1	3.8
1.30-1.40					30.7	7.0	32.8	6.8
1.40-1.45					1.8	14.8	34.6	7.2
1.45-1.50					0.7	18.9	35.3	7.4
1.50-1.60	10.2	7.3	10.2	7.3	1.4	35.9	36.7	8.3
1.60-1.70	89.8	91.0	100.0	82.5	0.4	35.9	37.1	8.6
1.70-1.80					0.3	42.1	37.4	8.9
+ 1.80					62.6	88.7	100.0	58.8

SINK FLOAT ANALYSES								
S.G. FRACTION	3/4" x 1/4" (WT.% =18.0)				1/4" x 28M (WT.% = 41.8)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	0.7	3.9	0.7	3.9	5.1	3.4	5.1	3.4
1.30-1.40	47.0	8.3	47.7	8.2	49.4	6.6	54.5	6.3
1.40-1.45	7.1	13.2	54.8	8.9	13.1	12.9	67.6	7.6
1.45-1.50	2.8	18.0	57.6	9.3	4.1	17.4	71.7	8.1
1.50-1.60	2.4	25.9	60.0	10.0	4.4	25.1	76.1	9.1
1.60-1.70	1.6	37.6	61.6	10.7	2.3	35.5	78.4	9.9
1.70-1.80	1.2	49.2	62.8	11.4	1.4	47.4	79.8	10.6
+1.80	37.2	84.9	100.0	38.8	20.2	80.0	100.0	24.6


TECK MINING GROUP LTD SEAMS A1 AND A2 AND ASPLIT LAB NO 9298 2X3/4
THE CLASSICAL WASHABILITY CURVES
CUM.WT.-PERCENT FLOATS
CUM.WT.-PERCENT SINKS
ASH CONTENT PERCENT
SPECIFIC GRAVITY
PRIMARY CURVE
CLEAN COAL CURVE
DISCARD CURVE
SPECIFIC GRAVITY-YIELD CURVE
+/- 0.1 S.G. DISTRIBUTION CURVE
BIRTLEY ENGINEERING
29/08/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTO	
S.G.	WT>	ASH>	WT> CUM ASH TT	WT> CUM ASHTT	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	2.08	3.80	.08	.08	2.08	3.80	58.54	97.92	59.78	1.30	0.00
1.40	30.40	7.00	2.13	2.21	32.48	6.80	56.41	67.52	83.54	1.40	32.87
1.45	1.78	14.80	.26	2.47	34.26	7.21	56.15	65.74	85.40	1.50	3.86
1.50	.69	18.90	.13	2.60	34.95	7.44	56.02	65.05	86.11	1.60	2.77
1.60	1.39	30.10	.42	3.02	36.34	8.31	55.60	63.66	87.33	1.70	1.68
1.70	1.39	35.90	.50	3.52	37.72	9.32	55.10	62.28	88.48	1.80	0.00
1.80	.30	42.10	.13	3.64	38.02	9.58	54.98	61.98	88.70	1.90	0.00
9.99	61.98	88.70	54.98	58.62	100.00	58.62	0.00	.00	0.00	2.00	0.00

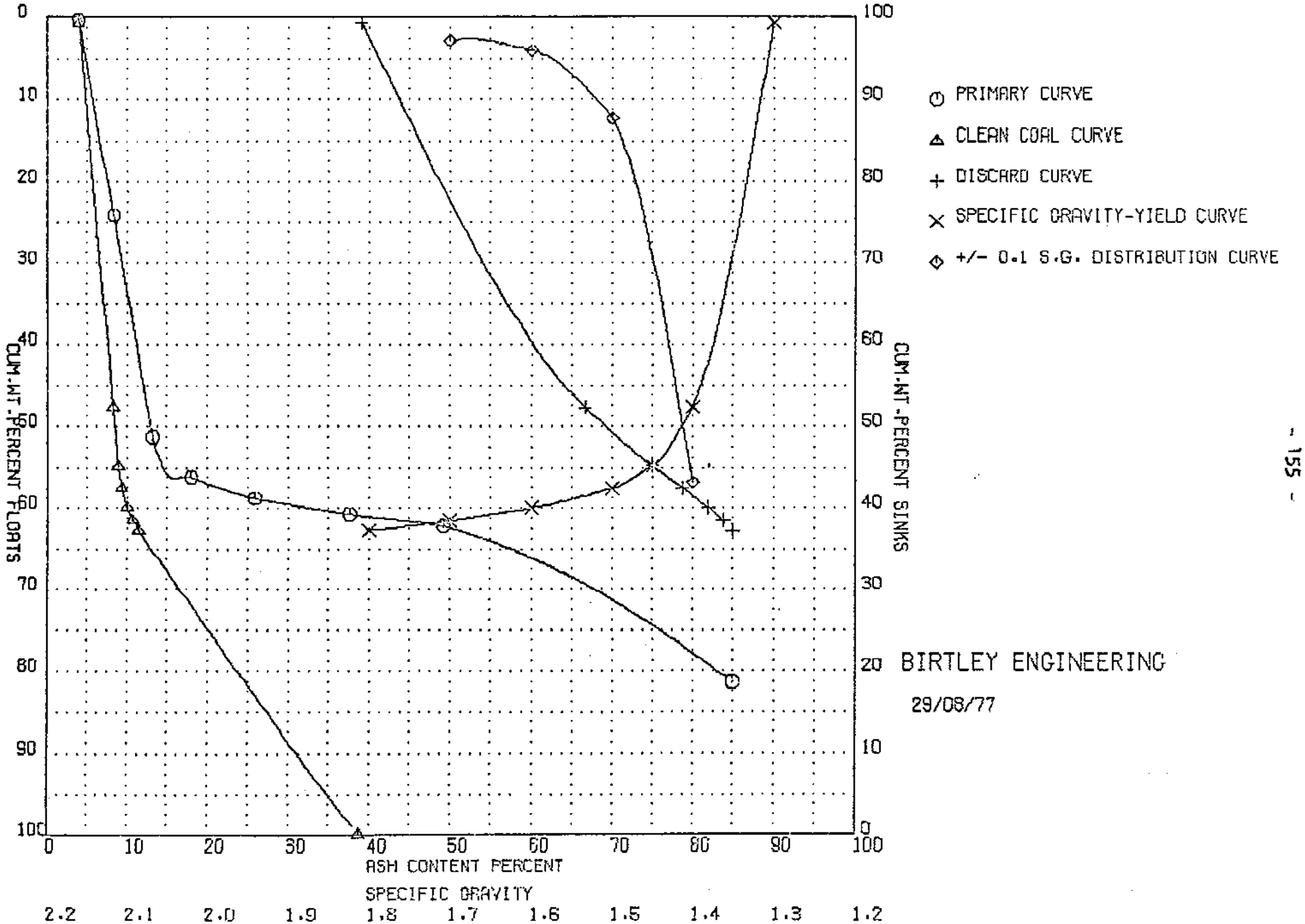
BIRTLEY ENGINEERING
29/08/77

.8	19.8	.8	19.6	12.0	19.6	2.0	10.6	4.0	13.4
1.4	16.5	1.4	13.5	16.7	13.5	4.0	13.5	6.0	19.2
3.0	13.3	1.4	13.1	17.1	13.1	5.0	13.1	8.0	19.4
3.8	13.1	1.5	13.0	17.2	13.0	6.0	13.0	10.0	19.7
6.0	12.9	1.7	12.7	17.5	12.7	8.0	12.7	0.0	0.0
7.2	12.6	1.9	12.5	17.7	12.5	10.0	12.5	0.0	0.0
8.4	12.4	1.9	12.4	17.7	12.4	12.0	12.4	0.0	0.0
17.7	6.2	11.7	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8169
PASS 2 8109
PASS 3 7 57
PASS 4 7100
PASS 5 4 60

TECK MINING GROUP LTD SEAMS A1 AND A2 AND SPLIT LAB NO 9298 3/4X1/4

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

29/08/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR	
S.G.	WT>	ASH>	WT> CUM ASH	WT> CUM ASHTT	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	.70	3.90	.03	.03	.70	3.90	38.74	99.30	39.01	1.30	0.00
1.40	47.00	8.30	3.90	3.93	47.70	8.24	34.84	52.30	66.61	1.40	56.90
1.45	7.10	13.20	.94	4.87	54.80	8.88	33.90	45.30	75.00	1.50	12.30
1.50	5.80	18.00	.50	5.37	57.60	9.32	33.40	42.40	78.77	1.60	4.00
1.60	2.40	25.90	.62	5.99	60.00	9.99	32.77	40.00	81.94	1.70	2.80
1.70	1.60	37.60	.40	6.59	61.60	10.70	32.17	38.40	83.78	1.80	0.00
1.80	1.20	49.20	.59	7.18	62.80	11.44	31.58	37.20	84.90	1.90	0.00
9.99	37.20	84.90	31.58	38.77	100.00	38.77	0.00	.00	0.00	2.00	0.00

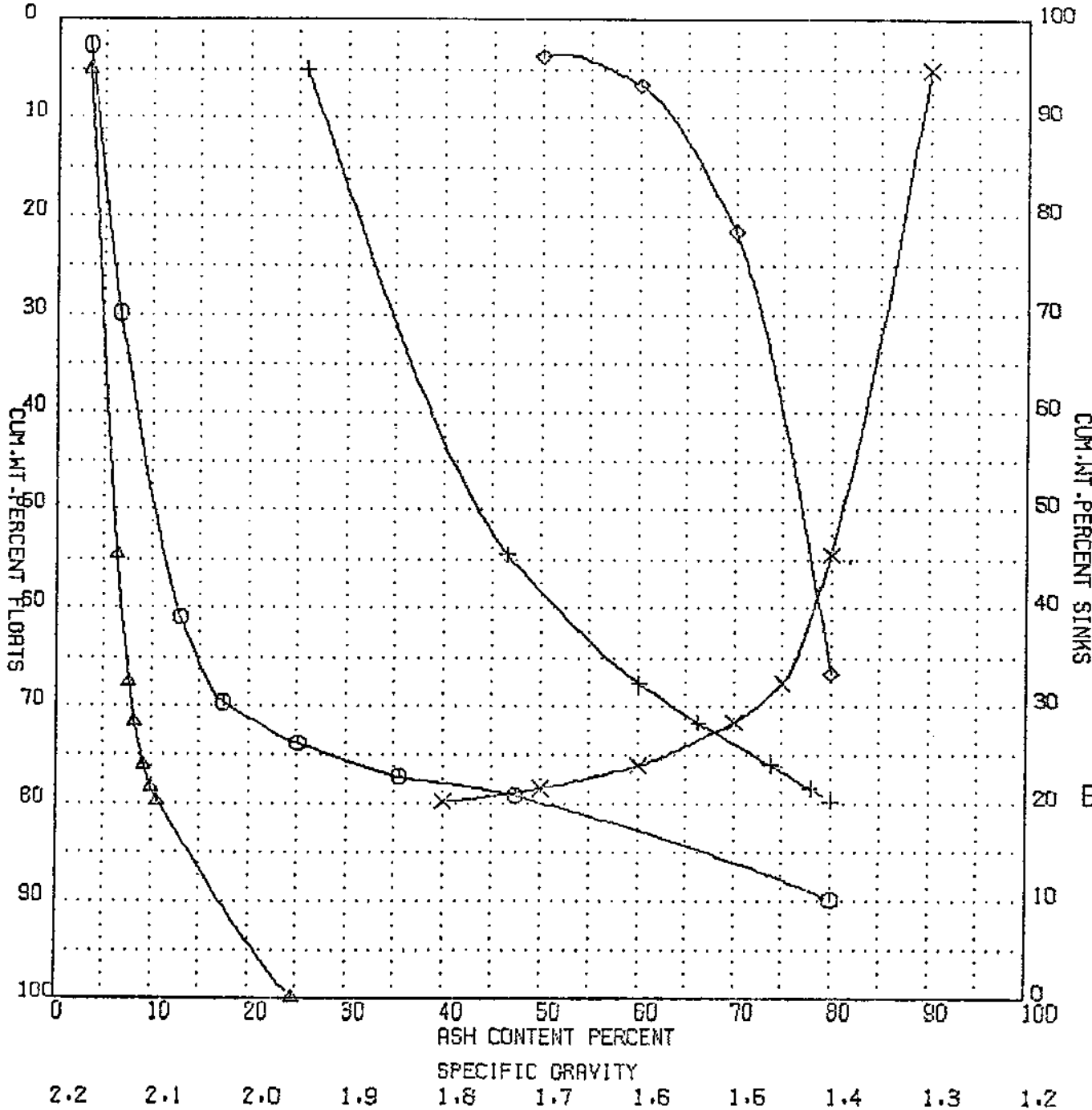
BIRTLEY ENGINEERING
09/08/77

.8	19.9	.8	19.9	7.8	19.9	2.0	19.9	4.0	8.6
1.7	15.2	1.6	10.5	13.3	10.5	4.0	10.5	6.0	17.5
2.6	9.8	1.8	9.0	15.0	9.0	5.0	9.0	8.0	19.2
3.6	8.8	1.9	8.5	15.8	8.5	6.0	8.5	10.0	19.4
5.2	8.2	2.0	8.0	16.4	8.0	8.0	8.0	0.0	0.0
7.5	7.8	2.1	7.7	16.8	7.7	10.0	7.7	0.0	0.0
9.8	7.6	2.3	7.4	17.0	7.4	12.0	7.4	0.0	0.0
17.0	3.7	7.8	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8161
PASS 2 8 69
PASS 3 7 91
PASS 4 7100
PASS 5 4 60

TECK MINING GROUP LTD SEAMS A1 AND A2 AND SPLIT LAB NO 9298 1/4X28M

THE CLASSICAL WASHABILITY CURVES



- PRIMARY CURVE
- CLEAN COAL CURVE
- DISCARD CURVE
- SPECIFIC GRAVITY-YIELD CURVE
- +/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

29/08/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> CUM ASH	WT> CUM ASHTT	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	5.10	3.40	.17	.17	5.10	3.40	24.41	94.90	25.72	1.30	0.00
1.40	49.40	6.60	3.26	3.43	54.50	6.30	21.15	45.50	46.48	1.40	66.60
1.45	13.10	12.90	1.69	5.12	67.60	7.58	19.46	32.40	60.06	1.50	21.60
1.50	4.10	17.40	.71	5.84	71.70	8.14	18.74	28.30	66.23	1.60	6.70
1.60	4.40	25.10	1.10	6.94	76.10	9.12	17.64	23.90	73.81	1.70	3.70
1.70	2.30	35.50	.82	7.76	78.40	9.90	16.82	21.40	77.89	1.80	0.00
1.80	1.40	47.40	.66	8.42	79.80	10.55	16.16	20.20	80.00	1.90	0.00
9.99	20.20	80.00	16.16	24.58	100.00	24.58	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
29/08/77

.7	19.5	.7	19.0	5.1	19.0	2.0	10.0	4.0	6.7
1.3	14.0	1.3	9.1	9.3	9.1	4.0	9.1	6.0	15.7
2.6	7.8	1.5	6.5	12.0	6.5	5.0	6.5	8.0	18.7
3.5	6.1	1.6	5.7	13.2	5.7	6.0	5.7	10.0	19.3
5.0	5.2	1.8	4.8	14.8	4.8	8.0	4.8	0.0	0.0
7.1	4.6	2.0	4.3	15.6	4.3	10.0	4.3	0.0	0.0
9.5	4.2	2.1	4.0	16.0	4.0	12.0	4.0	0.0	0.0
16.0	2.0	4.9	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8153
PASS 2 8 42
PASS 3 7108
PASS 4 7100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

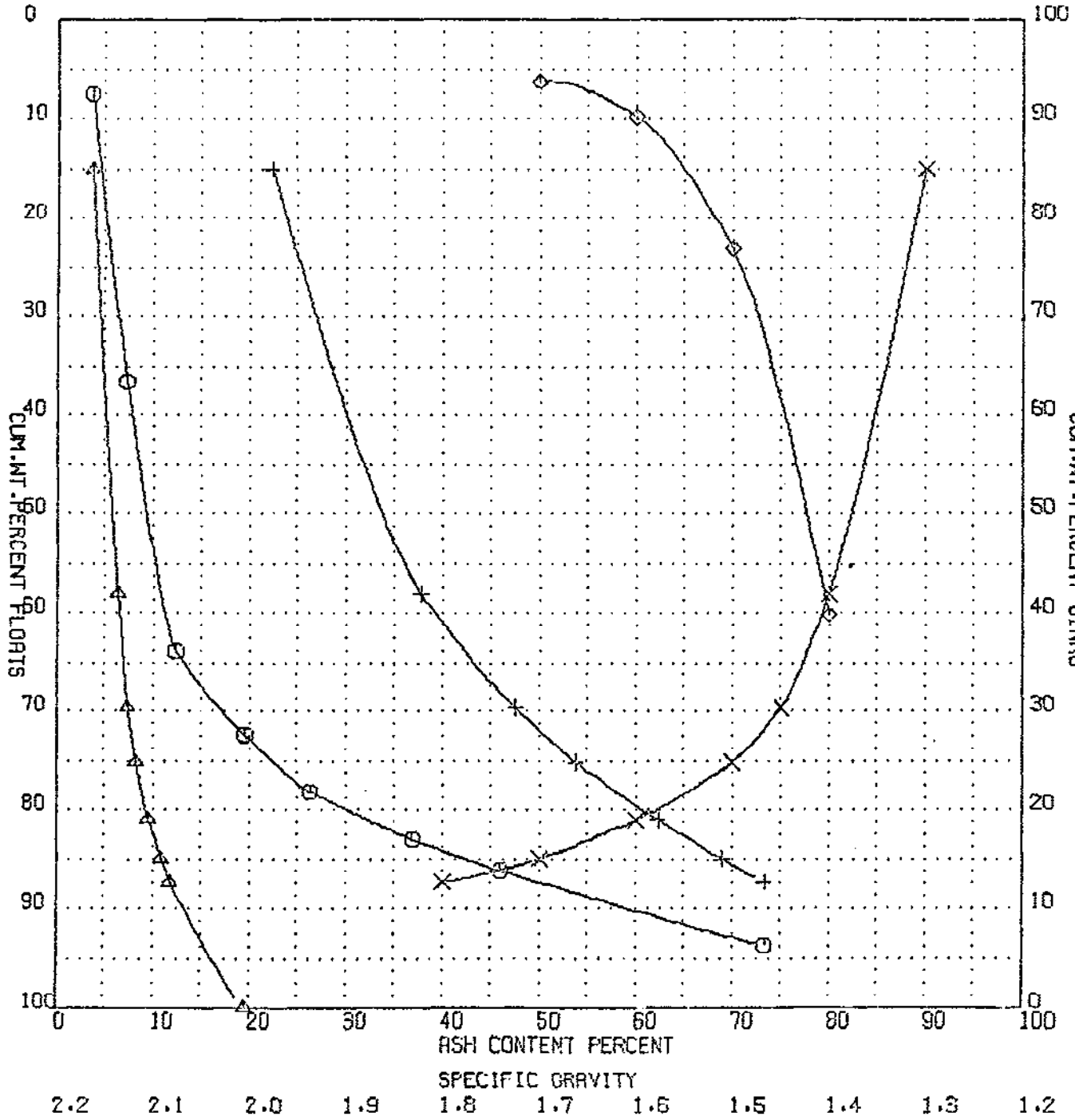
SAMPLE: ADIT 5, COMPOSITE SEAMS A1 + A2 + A SPLIT

LAB. NO. 9298 DATE: August, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	28M x 48M (WT.% = 5.6)				48M x 100M (WT.% = 5.4)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	15.0	3.6	15.0	3.6	21.1	4.4	21.1	4.4
1.30-1.40	43.1	7.3	58.1	6.3	41.1	7.1	62.2	6.2
1.40-1.45	11.6	12.4	69.7	7.4	7.5	13.3	69.7	6.9
1.45-1.50	5.5	19.5	75.2	8.2	7.3	16.7	77.0	7.9
1.50-1.60	5.9	26.3	81.1	9.6	6.9	22.3	83.9	9.1
1.60-1.70	3.9	36.9	85.0	10.8	3.3	33.5	87.2	10.0
1.70-1.80	2.4	45.9	87.4	11.8	1.5	44.0	88.7	10.6
+1.80	12.6	73.3	100.0	19.5	11.3	79.2	100.0	18.3

TECK MINING GROUP LTD SEAMS A1 AND A2 AND SPLIT LAB NO 9298 28MX48M

THE CLASSICAL WASHABILITY CURVES



PRIMARY CURVE

CLEAN COAL CURVE

DISCARD CURVE

SPECIFIC GRAVITY-YIELD CURVE

+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

29/08/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> ASH	CUM WT> TT ASH	TT	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5		6	7	8	9	10	11	12
1.30	15.00	3.60	.54	.54	15.00	3.60	18.99	85.00	22.34	1.30	0.00	
1.40	43.10	7.30	3.15	3.69	58.10	6.34	15.84	41.00	37.80	1.40	60.20	
1.45	11.60	12.40	1.44	5.12	69.70	7.35	14.40	30.30	47.53	1.50	23.00	
1.50	5.50	19.50	1.07	6.20	75.20	8.24	13.33	24.80	53.74	1.60	9.80	
1.60	5.90	26.30	1.55	7.75	81.10	9.55	11.78	18.90	62.31	1.70	6.30	
1.70	3.90	36.90	1.44	9.19	85.00	10.81	10.34	15.00	68.92	1.80	0.00	
1.80	2.40	45.90	1.10	10.29	87.40	11.77	9.24	12.20	73.30	1.90	0.00	
9.99	12.60	73.30	9.24	19.53	100.00	19.53	0.00	.00	0.00	2.00	0.00	

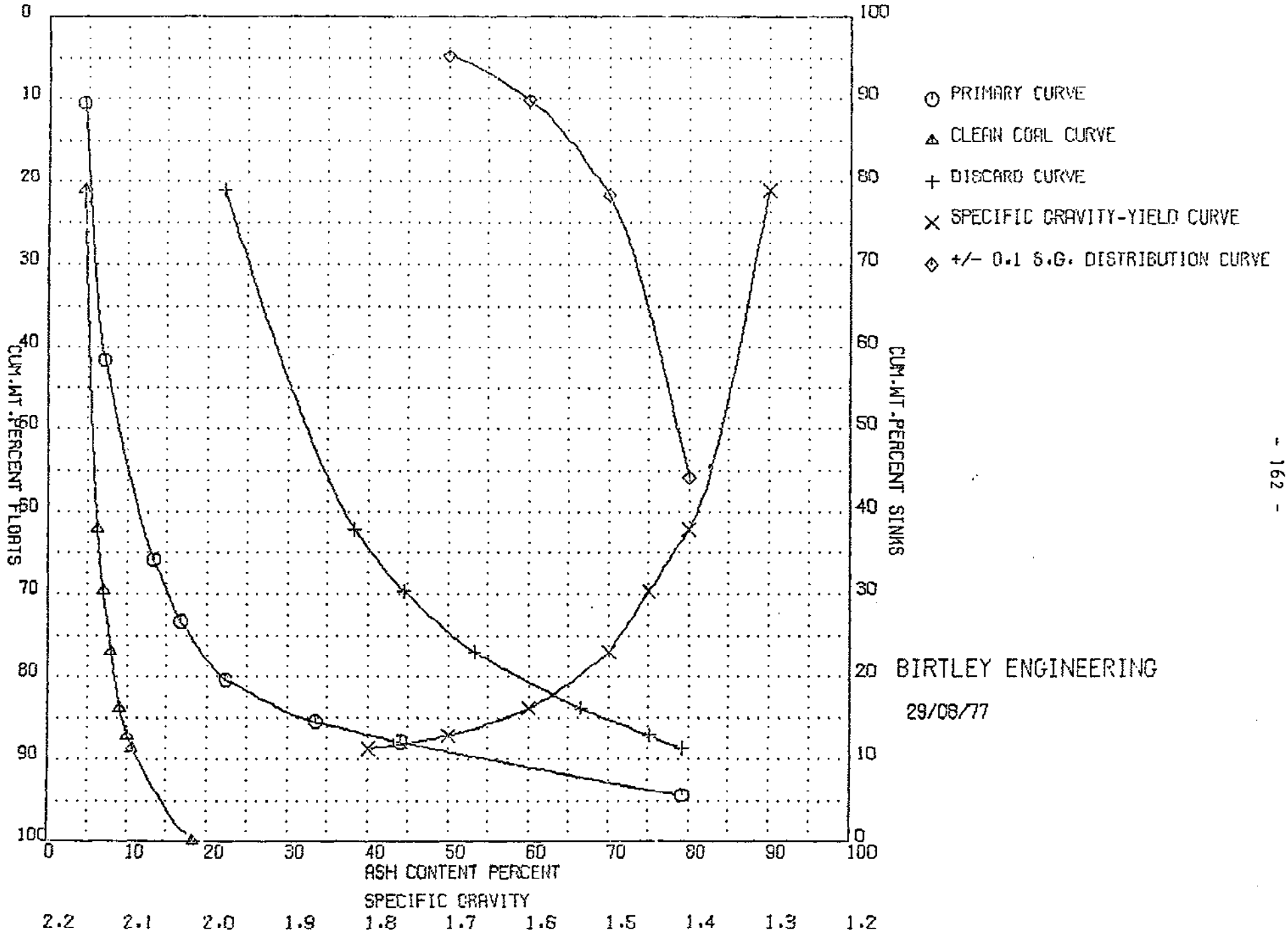
BIRTLEY ENGINEERING
29/08/77

.7	18.5	.7	17.0	4.5	17.0	2.0	17.0	4.0	8.0
1.5	12.7	1.3	8.4	7.6	8.4	4.0	8.4	6.0	15.4
2.5	7.2	1.5	6.1	9.5	6.1	5.0	6.1	8.0	18.0
3.9	5.5	1.6	5.0	10.7	5.0	6.0	5.0	10.0	18.7
5.3	4.4	1.9	3.8	12.5	3.8	8.0	3.8	0.0	0.0
7.4	3.4	2.2	3.0	13.8	3.0	10.0	3.0	0.0	0.0
9.2	2.9	2.4	2.5	14.7	2.5	12.0	2.5	0.0	0.0
14.7	1.3	3.9	.0	0.0	.0	175.8	.0	0.0	0.0

PASS	1	8	39
PASS	2	8	31
PASS	3	7	01
PASS	4	7	00
PASS	5	4	60

TECK MINING GROUP LTD SEAMS A1 AND A2 AND SPLIT LAB 9298 48MX100M

THE CLASSICAL WASHABILITY CURVES



BIRTLEY ENGINEERING

29/08/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--		+-0.1 DISTO			
S.G.	WT>	ASH>	WT> CUM ASH TT	WT> CUM ASHTT	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	21.10	4.40	.03	.93	21.10	4.40	17.39	78.90	22.04	1.30	0.00
1.40	41.10	7.10	2.92	3.85	62.20	6.18	14.47	37.80	38.28	1.40	55.90
1.45	7.50	13.30	1.00	4.84	69.70	6.95	13.47	30.30	44.47	1.50	21.70
1.50	7.30	16.70	1.22	6.06	77.00	7.87	12.25	23.00	53.28	1.60	10.20
1.60	6.90	22.30	1.54	7.60	83.90	9.06	10.72	16.10	66.55	1.70	4.80
1.70	3.30	33.50	1.11	8.71	87.20	9.99	9.61	12.80	75.07	1.80	0.00
1.80	1.50	44.00	.46	9.37	88.70	10.56	8.95	11.30	79.20	1.90	0.00
9.99	11.30	79.20	8.95	18.32	100.00	18.32	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
29/08/77

.9	17.9	.9	15.8	4.4	15.8	2.0	15.8	4.0	8.8
1.4	11.7	1.2	7.6	7.7	7.6	4.0	7.6	6.0	15.7
2.7	6.8	1.4	6.1	8.9	6.1	5.0	6.1	8.0	18.0
3.3	5.3	1.6	4.6	10.7	4.6	6.0	4.6	10.0	19.0
4.5	3.9	1.8	3.2	13.3	3.2	8.0	3.2	0.0	0.0
6.7	2.9	2.0	2.6	15.0	2.6	10.0	2.6	0.0	0.0
8.8	2.4	2.1	2.3	15.8	2.3	12.0	2.3	0.0	0.0
15.8	1.1	3.7	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8149
PASS 2 8 27
PASS 3 7114
PASS 4 7100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE SEAMS A1 + A2 + A SPLIT

LAB. NO.: 9298 DATE: August, 1977

FROTH FLOTATION TESTS

Pulp Density = 10% Reagent = 4:1=Kerosene:MIBC Dosage = 0.48 lb/T

Conditioning Time = 1 min. Stage I, II, III, IV, V are froths at 30, 60, 90, ~~120~~, 150 sec. respectively.

48 Mesh x 0										
									CUMULATIVE	
PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	WT.%	ASH%
STAGE I	13.5	0.9	7.3			0.46	0.01		13.5	7.3
STAGE II	2.7	1.0	13.5			0.48	0.02		16.2	8.3
STAGE III	3.2	1.1	17.7			0.45	0.02		19.4	9.9
STAGE IV										
STAGE V										
TAILS	80.6	--	23.9	--	--	0.48	--	--	100.0	21.2

48 Mesh x 100 Mesh										
									CUMULATIVE	
PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	WT.%	ASH%
STAGE I	17.4	0.8	6.0			0.50	0.01		17.4	6.0
STAGE II	2.7	1.0	12.4			0.45	0.01		20.1	6.9
STAGE III	3.6	1.0	16.8			0.47	0.02		23.7	8.4
STAGE IV										
STAGE V										
TAILS	76.3	--	21.6	--	--	0.46	--	--	100.0	18.5

100 Mesh x 0										
									CUMULATIVE	
PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	WT.%	ASH%
STAGE I	8.0	0.9	8.6			0.44	0.01		8.0	8.6
STAGE II	3.1	1.1	12.3			0.48	0.02		11.1	9.6
STAGE III	4.9	1.0	17.0			0.46	0.02		16.0	11.9
STAGE IV										
STAGE V										
TAILS	84.0	--	28.3	--	--	0.49	--	--	100.0	25.7

CLIENT: TECK MINING GROUP LTD.

SAMPLE: COMPOSITE "A1" , "A2" AND A SPLIT

LAB. NO.: 9298

F.S.I. OF COMPOSITE FLOATS OF SCREEN SIZES
FOR 7.5% ASH ± 0.5%

SCREEN SIZE	WT.%	S.G. OF COMPOSITE FLOATS	YIELD%	ASH%	F.S.I.
4" x 2"	12.9	1.60	10.2	7.3	3 1/2
2" x 3/4"	13.0	1.50	35.3	7.4	3
3/4" x 1/4	18.0	1.45	47.7	8.2	3
1/4" x 28M	41.8	1.45	67.6	7.6	5
28M x 48	5.6	1.45	69.7	7.4	6
48M x 100	5.4	1.50	77.0	7.9	7

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE SEAMS A1 + A2 + A SPLIT

LAB. NO.: 9298 DATE: August, 1977

LAB. NO.: 9311

ANALYSES OF 4" x 100Mesh FLOAT @ 1.45 S.G. (Yield = 59.9%)									
PROXIMATE									
RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
1.0	7.7	22.4	68.9	0.51	Trace	14208	5	76	a.d.b.
	7.8	22.6	69.6	0.52		14352	--	--	d.b.

ULTIMATE ANALYSIS							DILATATION TEST				
H_2O%	C%	H%	N%	S%	ASH%	by diff. O%	S.T. °C	M.D.T. °C	M.C. %	M.D. %	G.No.
1.04	81.49	4.52	0.99	0.51	7.71	4.27	386	481	20	--	--

NOTE: Sample of above float product prepared for Petrographic Analysis and Geisler Plastometer Test.

LAB. NO.: 9312

ANALYSES OF 4" x100Mesh SINK @ 1.45 S.G. (WT.% = 40.1)										
PROXIMATE						ASH FUSION TEMPS (°F)				
RM.%	ASH%	VM.%	FC.%	S%		ATMOS.	I.D.T.	S.T.	H.T.	F.T.
1.4	68.4	10.3	19.9	0.53	adb	OXID.	2480	2600	2640	2650+
	69.4	10.4	20.2	0.54	db	REDUC.	2370	2540	2590	2620

MINERAL ANALYSIS OF ASH, %											
SiO_2	Al_2O_3	TiO_2	CaO	MgO	MnO	Fe_2O_3	Na_2O	K_2O	P_2O_5	SO_3	Undetermined
71.68	16.63	0.84	1.01	1.59	--	3.33	0.40	3.02	0.10	0.47	-0.93

NOTE: Sample of above reject product also prepared for Clay Analysis

Lab. No. 9311 Date August, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: COMP. FLOATS @ 1.45

Starting Temperature °C: 320

Softening Temperature °C: 386

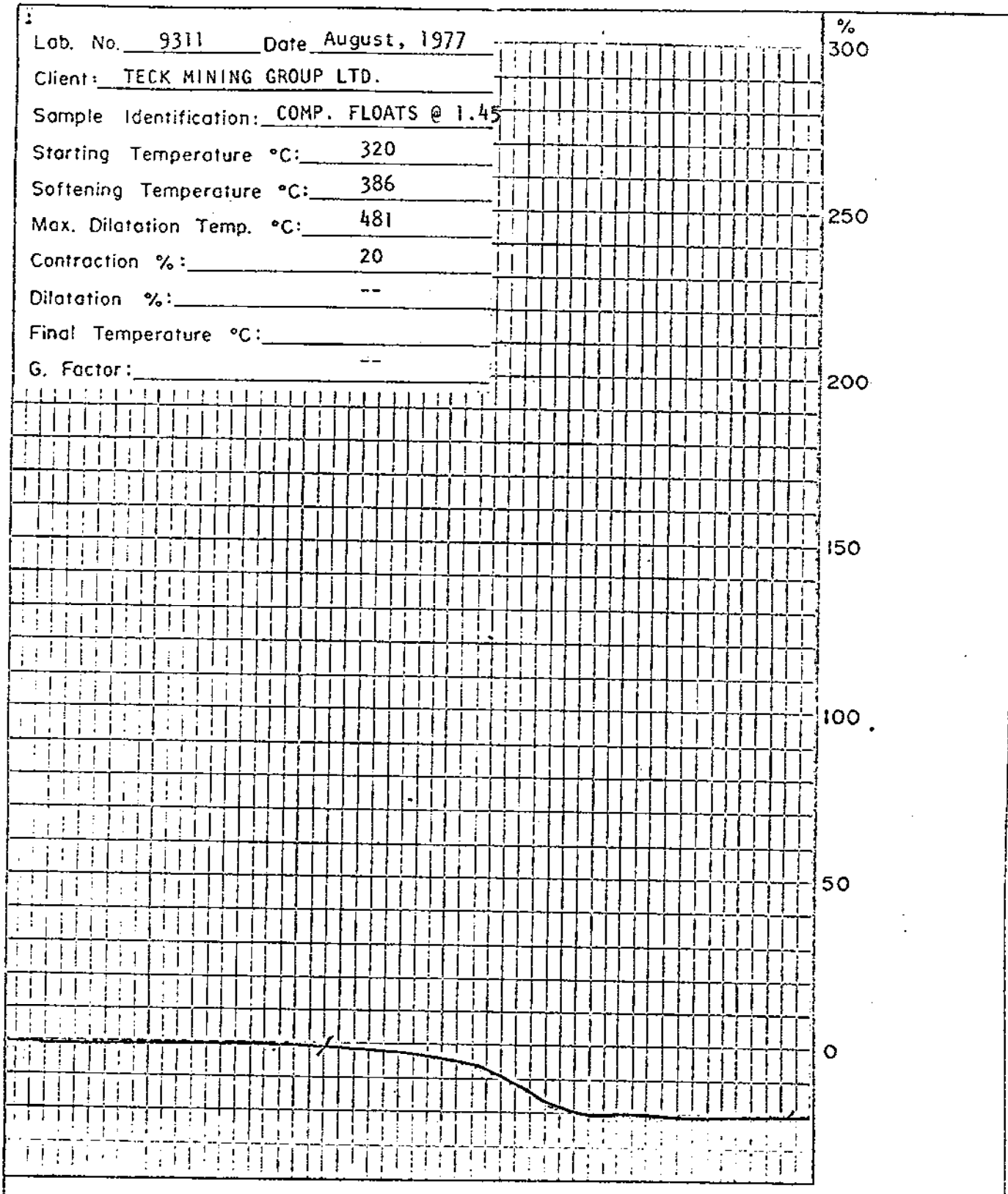
Max. Dilatation Temp. °C: 481

Contraction %: 20

Dilatation %: --

Final Temperature °C:

G. Factor: --



BIRTLEY ENGINEERING (CANADA) LTD.

Title

RUHR DILATOMETER TEST

Date

Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 5, COMPOSITE SEAMS A1 + A2 + A SPLIT

LAB. NO.: 9311

ANALYSIS OF 4" x 100Mesh FLOAT @ 1.45 S.G. (YIELD = 59.9%)

GIESLER PLASTOMETER TEST

	DDPM	TEMP.°C
START	1	438
MAXIMUM	7	469
FINAL	1	492
	RANGE	54

LAB. NO.: 9312

ANALYSIS OF 4" x 100Mesh SINK @ 1.45 S.G. (WT.% = 40.1)

CLAY SEPARATION BY FLOTATION

Material greater than 2 microns	78.2
Material less than 2 microns	21.8

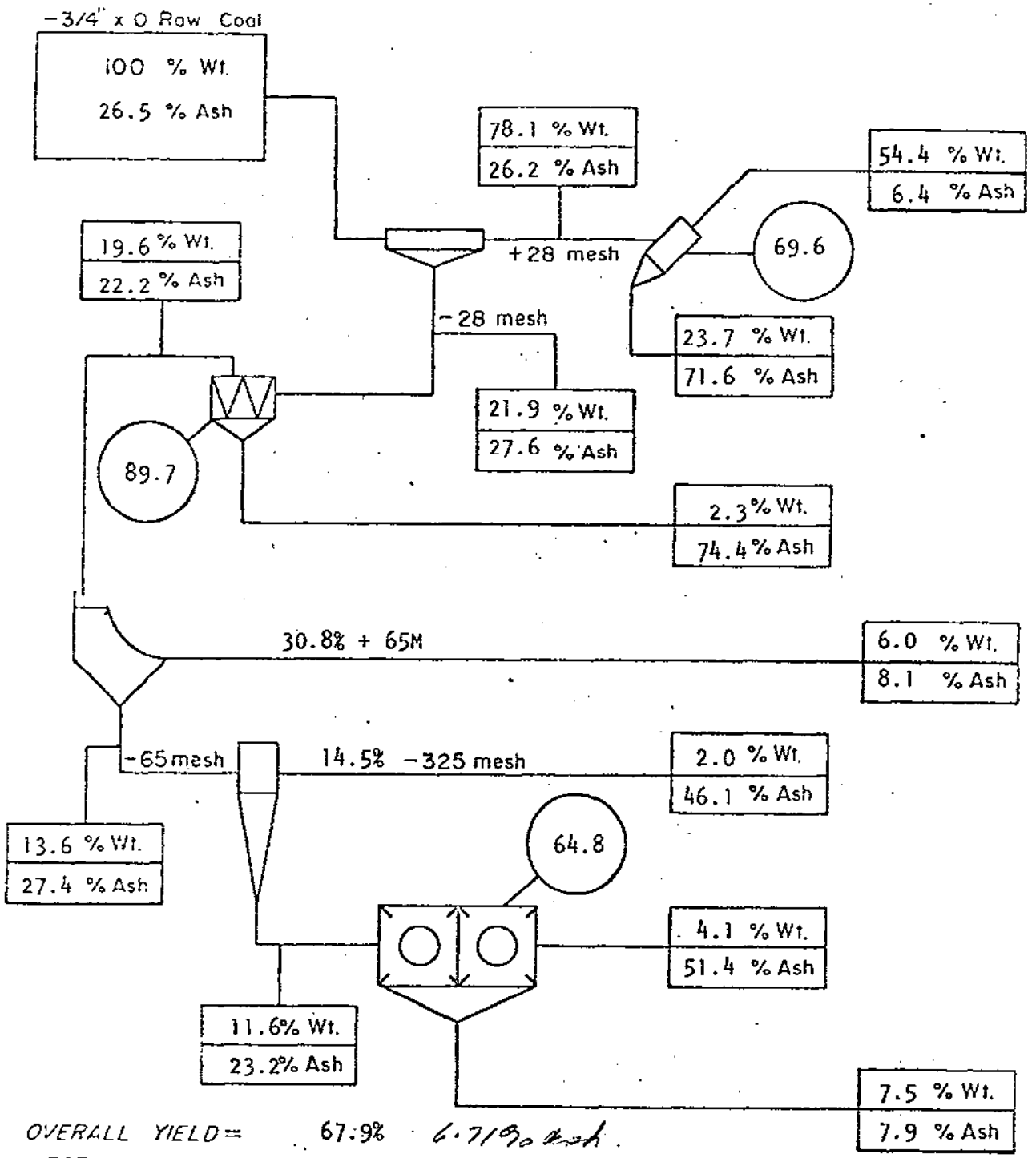
X-RAY DIFFRACTION ANALYSIS OF MATERIAL LESS THAN 2 MICRONS

Quartz	22
Feldspar	1
Calcite	Trace
Dolomite	Trace
Siderite	Trace
Kaolinite	29
Illite	47
Chlorite	1
Montmorillonite	Nil

TECK MINING GROUP LTD.

COMPOSITE OF A1 AND A2 SEAMS
LAB. NO. 9297

PLANT WASHING RESULTS



BIRTLEY ENGINEERING (CANADA) LTD.

Title	PLANT BALANCE SHEET TECK MINING GROUP LTD. ADIT #5, "A" SEAM A1 and A2 LAB. NO. 9297	Date August, 1977 Drown

BIRTLEY ENGINEERING (CANADA) LTD.

Coal Science & Minerals Testing Div.

TECK MINING GROUP LTD.

BULK WASHING DATA*

ADIT 5 SEAM "A" LAB. NO. 9297

DELIVERY DATE August 8, 1977 DATE OF WASH August 17, 1977

Raw Coal Analysis: ADM 3.3 ASH% 28.8 FSI 3 HGI 81

Delivered Bulk Weight ** 8.701 Metric Tons

Washed Weight *** 4.663 Metric Tons

* All weight and analyses are on Air Dried Basis unless otherwise indicated.

** Does not include 3.227 M.T. of "A" split sample rec'd on August 3, 1977

*** Does not include 121 K.G. of +2" rock oversize which simulates breaker plant reject.

BULK WASHING DATA

HEAVY MEDIUM CIRCUIT

ADIT/SEAM NO. 5/A LAB. NO. 9297

1. S. G. of Separation 1.45
2. Feed Ash Content 26.2 % F.S.I. 3
3. Clean Coal Estimated Weight 2.395 M.T.
4. Clean Coal Analysis - Ash 6.4 % F.S.I. 5 1/2
5. Reject Estimated Weight 1.247 M.T.
6. Reject Analysis - Ash 71.6 % F.S.I. 1/2
7. Estimated 3/4" x 28M in Circuit 3.642 M.T. 78.1 Wt.%
8. Yield Clean Coal (Weighted): 65.8 %
9. Yield Clean Coal (Calculated Ash Balance) - 69.6 %

BULK WASHING DATA

WATER-ONLY CYCLONE CIRCUIT

ADIT/SEAM NO. 5/A LAB. NO. 9297

1. Vortex Finder Clearance (VCF) #2 = 5.08 #1 = 2.54 CM 2 1 INCHES

2. Feed Pressure #2 = 0.4 #1 = 1.4 KG/CM^2 5 20 P.S.I.

3. Feed Rate #2 = 5.8 #1 = 23.2 $M^3/HR.$ 21.2 85.0 I.G./Min.

4. Feed Pulp Density 90-130 g/l. 9-13 Solids W/V

5. Sample Analysis

	SCREEN SIZE	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%	HEAD ASH%	HEAD FSI
FEED							27.6	5
O'FLOW	+65 Mesh	30.8	10.5	4	30.8	10.5	22.2	5 1/2
	65M x 0	69.2	27.4	3 1/2	100.0	22.2		
U'FLOW							74.4	1/2
S.B.O.							8.1	7 1/2
T.C.O.*							46.1	N.A.

6. Yield - Total W.O. Cyclone Circuit = 89.7

7. Estimated Yield of 28 x 65 Mesh Coal = 27.6
(as % of 28 Mesh x 0 Feed)

8. Estimated 28M x 0 in circuit
(Plant Feed - HM Products) 1.021 MT 21.9 %

* Thickener Cyclone Overflow

BULK WASHING DATA

FROTH FLOTATION CIRCUIT

ADIT/SEAM NO. 5/A LAB. NO. 9297

1. Reagents: Kerosene:Methylisobutylcarbinol (MIBC)

2. Feed Pulp Density 80-110 g/l 8-11 % Solids W/V

3. Sample Analysis:-

	ASH	F.S.I.
FEED	232	5 1/2
CONC.	79	7 1/2
TAILS	514	2

4. Impeller Type - Birtley-Humboldt Multi-Wobble.

5. Yield Calculated (Ash Balance) 648 %

6. Filter Cake (Sieve Bend O'Flow & Flotation Conc.)
Wt. Recovered 0.763 M.T.

7. Filter Cake - Ash% 8.0 F.S.I. 7 1/2

BULK WASHING DATA

ADIT/SEAM 5/A LAB. NO. 9297 DATE OF WASH August 17, 1977

a) Raw Coal

Delivered Weight	= 8.701	M.T.
Ash %	= 2	
F.S.I.	= 3	
Estimated Washed Wt.	= 4.663	M.T.

b) Heavy Media Circuit

Estimated Proportion of +28 Mesh in Feed 78.1%

Effective S.G. = .

Raw Feed	26.2 %	Ash	3	F.S.I.
Clean Coal	6.4 %	Ash	5 1/2	F.S.I.
Reject	71.6 %	Ash	1/2	F.S.I.
Calculated Yield	69.6 %			
Weighed Yield	65.8 %			

c) Water-Only Cyclone Circuit

Raw Feed	27.6 %	Ash	5	F.S.I.
Overflow	22.2 %	Ash	5 1/2	F.S.I.
Underflow	74.4 %	Ash	1/2	F.S.I.
Calculated Yield	89.7 %			
% of +65M in O/F	30.8 %			
Sieve Bend Overflow	8.1 %	Ash	7 1/2	F.S.I.

d) Froth Flotation Circuit

Raw Feed	23.2 %	Ash	5 1/2	F.S.I.
Concentrates	7.9 %	Ash	7 1/2	F.S.I.
Tails	51.4 %	Ash	2	F.S.I.
Calculated Yield	64.8 %			

TECK MINING GROUP LTD.

BULK WASHING DATA

BULK WASHING SUMMARY (Cont.)

ADIT 5, Seam A1 + A2 LAB. NO. 9297

e) Clean Coal Mix Analyses a.d.b.

(i) Proximate

ADM% 7.8 RM.% 1.1 ASH% 6.8 VM.% 21.4 FC.% 70.7

(ii) S.% 0.50 FSI 6 HGI 74 BTU/LB 14345 P% 0.01

(iii) Dilatation Test

S.T. 374°C M.D.T. 461°C MC% 21 MD% - 18 G. NO. 0.42

(iv) Giesler Plastometer Test

	DDPM	TEMP.(°C)
START	1	438
MAXIMUM	10	471
FINAL	1	498
	RANGE =	60

f) Clean Coal Mix Make-Up

H.M. CLEAN COAL	FINES FILTER CAKE	CLEAN COAL MIX		SHIPPED		IN STOCK	
M.T.	M.T.	BBLS.	M.T.	BBLS.	M.T.	BBLS.	M.T.
2.395	0.763	18	3.158	2	351	16	2807

Lab. No. 9297 Date August, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: CLEAN MIX , A SEAM

Starting Temperature °C: 320

Softening Temperature °C: 374

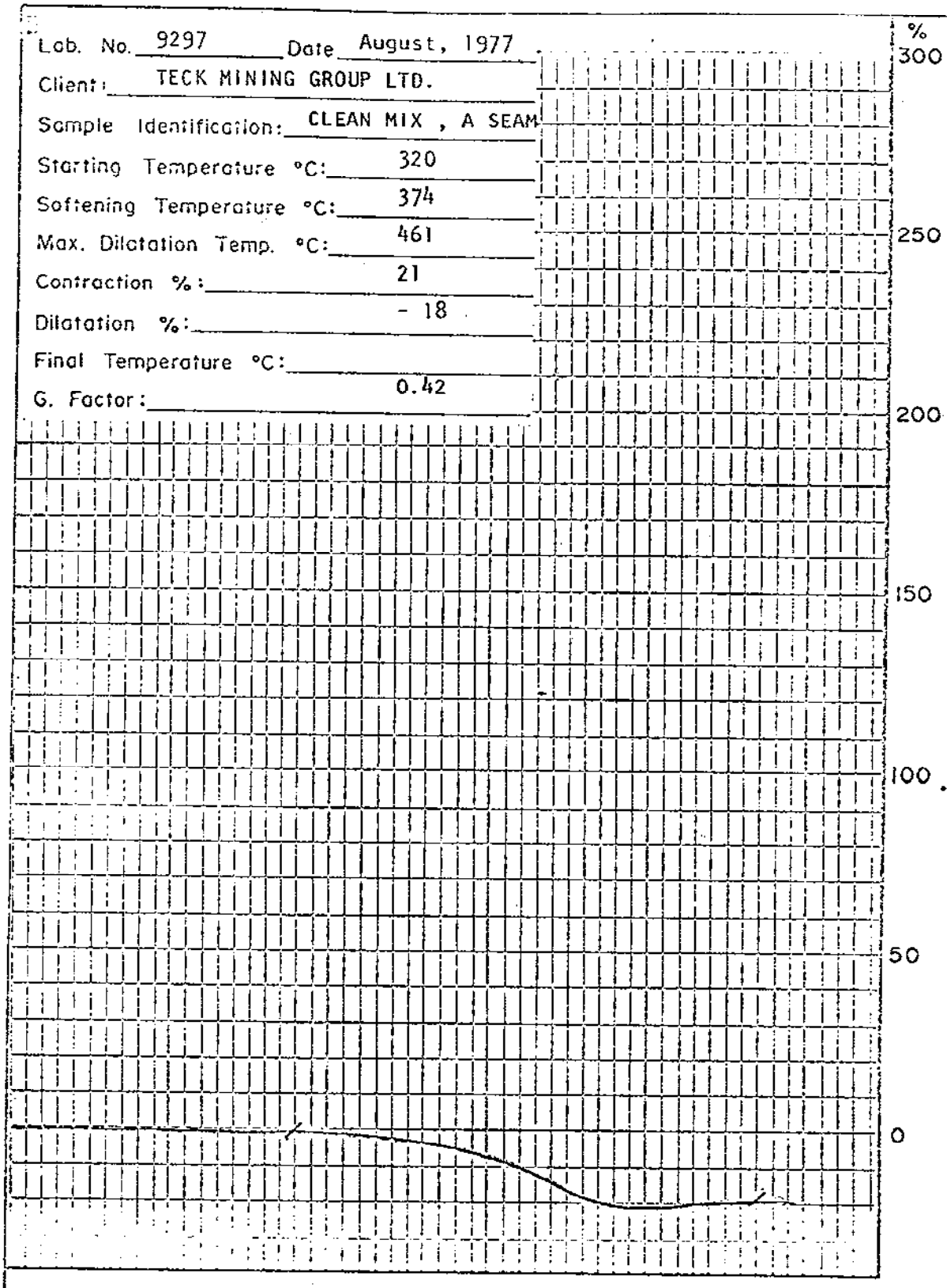
Max. Dilatation Temp. °C: 461

Contraction %: 21

Dilatation %: - 18

Final Temperature °C:

G. Factor: 0.42



BIRTLEY ENGINEERING (CANADA) LTD.

Title

RUHR DILATOMETER TEST

Date

Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: SEAM A(1 + 2), ADIT 5

CLEAN COAL ANALYSES August, 1977

INFORMATION REQUIRED FOR EMR COKING TESTS

LAB. NO.	ADM%	MOISTURE	ASH%	VOL.%	FC.%	S%	BTU/LB	F.S.I.	CALC. FACTORS
9297	7.8	1.1	6.8	21.4	70.7	0.50	14345	6	a.d.b.
		8.8	6.3	19.7	65.2	0.46	13226	--	
			6.9	21.6	71.5	0.51	14505	--	d.b.

SIZE ANALYSIS		
SIZE FRACTION	WT.%	CUM. WT.%
+ 1/2"	4.6	4.6
1/2" x 1/4"	14.9	19.5
1/4" x 6M	15.1	34.6
6M x 12M	24.8	59.4
12M x 20M	9.4	68.8
20M x 100M	23.6	92.4
100M x 0	7.6	100.0

GWS

BIRTLEY ENGINEERING (CANADA) LTD.

Subsidiary of Great West Steel Industries Ltd.

505 - 50th AVE. S.E. CALGARY, ALBERTA T2G 2B4 PHONE 403 - 253-8273

A REPORT TO TECK MINING GROUP LTD.
OF THE WASHABILITY AND PILOT PLANT WASHING
RESULTS OF BULK SAMPLES FROM
B SEAM - WEST FORK AND ADIT 6, A SEAM - WEST FORK
PR-BULLMOOSE 77(4)A.
PART II OF II

October, 1977

CONFIDENTIAL

Respectfully Submitted by:

Frank J Horvat

Frank J. Horvat, Manager

BIRTLEY COAL AND MINERALS TESTING

REPORT NO: CS-0110
Part 2 - West Fork

TABLE OF CONTENTS

"B" SEAM - WEST FORK

LAB. NO.: 9378

WASHABILITY RESULTS

CLIENT: TECK MINING GROUP LTD.

SAMPLE: B SEAM - WEST FORK

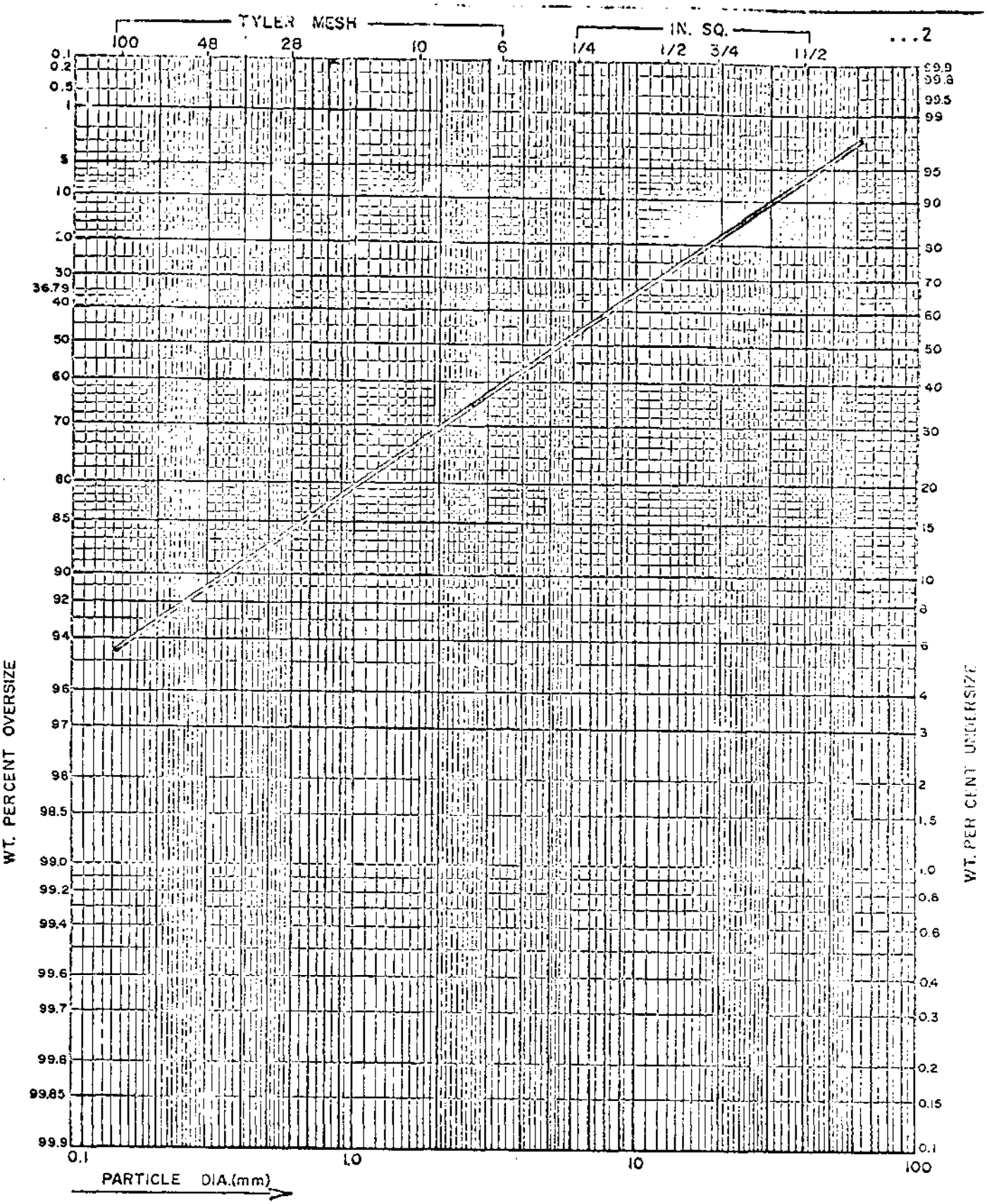
LAB. NO.: 9378 DATE: September, 1977

HEAD RAW ANALYSIS										
ADL%	RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
4.2	1.3	14.6	23.9	60.2	0.33	0.08	12776	6 1/2	73	air dried basis
	5.4	14.0	22.9	57.7	0.32	0.08	12439	--	--	as rec'd basis
		14.8	24.2	61.0	0.33	0.08	12944	--	--	dry basis

DRY SCREENING ANALYSIS: 4" x 0 HEAD SAMPLE					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
4" x 2"	5.1	40.3	1	5.1	40.3
2" x 3/4"	17.4	24.1	1 1/2	22.5	27.8
3/4" x 1/4"	19.4	17.0	2	41.9	22.8
1/4" x 28M	44.0	9.9	6	85.9	16.2
28M x 48M	5.0	7.8	7 1/2	90.9	15.7
48M x 100M	4.0	8.0	7	94.9	15.4
100M x 0	5.1	11.8	6	100.0	15.2

WT.% +4" Material crushed to -4" = 1.0

WET SCREENING ANALYSIS: 28 MESH x 0					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
28M x 35M	20.0	7.8	7 1/2	20.0	7.8
35M x 48M	20.3	7.4	7 1/2	40.3	7.6
48M x 65M	11.5	7.9	7 1/2	51.8	7.7
65M x 100M	11.3	8.4	7 1/2	63.1	7.8
100M x 200M	15.7	9.8	7	78.8	8.2
200M x 325M	6.4	12.4	7	85.2	8.5
325M x 0	14.8	16.5	2 1/2	100.0	9.7



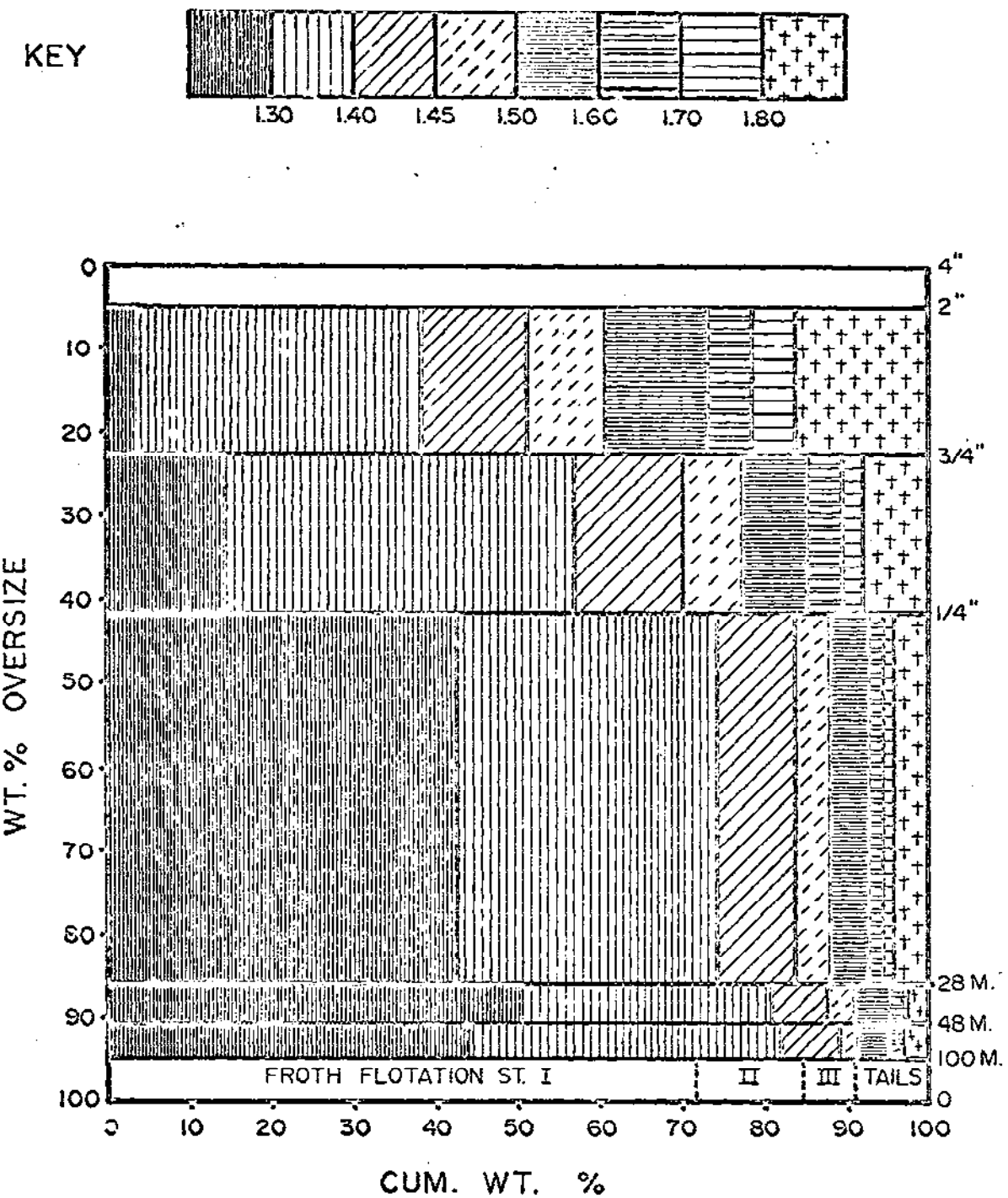
Project: "B" SEAM, WEST FORK BULK SAMPLE

Client: TECK CORPORATION

Date: SEPT, 1977

Title: ROSIN RAMMLER SIZE DISTRIBUTION

Drawn:



BIRTLEY ENGINEERING (Canada) LTD. CALGARY ALBERTA			
TITLE	SIZE AND DENSITY DISTRIBUTION DIAGRAM		
CLIENT	TECK CORPORATION		
SAMPLE	"B" Seam - W.F.	DATE	SEPT., 1977
LAB NO.	9378	DRWN	

CLIENT: TECK MINING GROUP LTD.

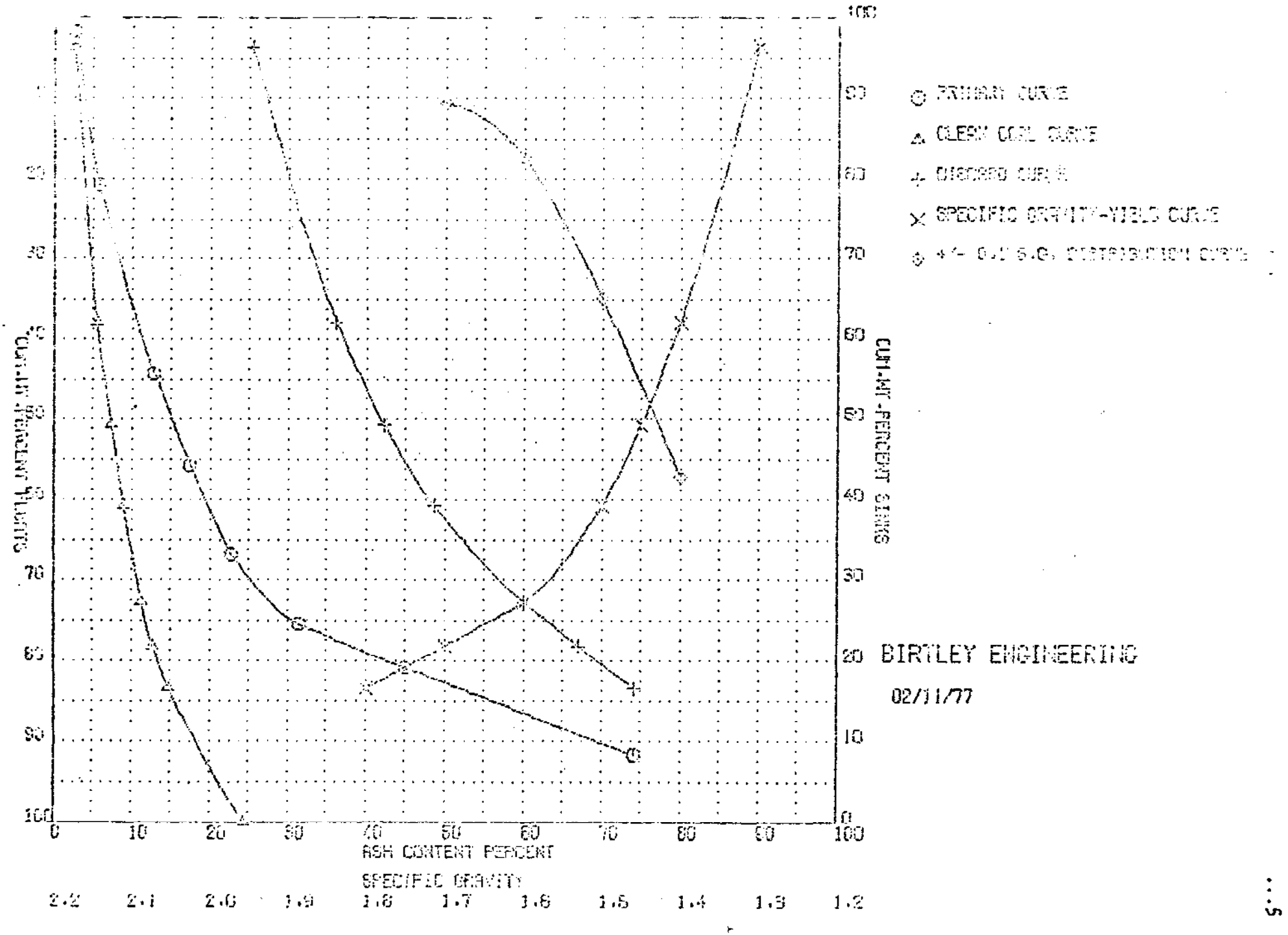
SAMPLE: B SEAM - WEST FORK

LAB. NO. 9378

DATE: September, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	2"x3/4" (WT.%=17.4)				3/4"x1/4" (WT.%=19.4)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	3.6	2.6	3.5	2.6	14.1	3.1	14.1	3.1
1.30-1.40	34.3	5.8	37.9	5.5	42.6	6.4	56.7	5.6
1.40-1.45	12.9	12.8	50.8	7.4	13.4	14.9	70.1	7.4
1.45-1.50	10.0	17.4	60.8	9.0	7.0	19.4	77.1	8.5
1.50-1.60	12.0	22.7	72.8	11.3	7.7	24.7	84.8	9.9
1.60-1.70	5.4	31.4	78.2	12.7	4.2	32.0	89.0	11.0
1.70-1.80	5.3	45.0	83.5	14.7	2.6	42.7	91.6	11.9
+ 1.80	16.5	74.1	100.0	24.5	8.4	69.2	100.0	16.7

SINK FLOAT ANALYSES								
S.G. FRACTION	1/4" x 28M (WT.%=44.0)				28Mx48M (WT.%=5.0)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	42.2	2.5	42.2	2.5	50.0	1.9	50.0	1.9
1.30-1.40	31.4	5.9	73.6	4.0	30.7	4.9	80.7	3.0
1.40-1.45	9.7	13.3	83.3	5.0	6.4	12.1	87.1	3.7
1.45-1.50	4.4	18.2	87.7	5.7	3.8	16.6	90.9	4.2
1.50-1.60	4.7	23.9	92.4	6.6	4.4	23.8	95.3	5.1
1.60-1.70	2.1	32.3	94.5	7.2	1.2	32.1	96.5	5.5
1.70-1.80	1.3	41.7	95.8	7.7	0.5	40.8	97.0	5.7
+1.80	4.2	68.9	100.0	10.2	3.0	67.2	100.0	7.5



BIRTLEY ENGINEERING

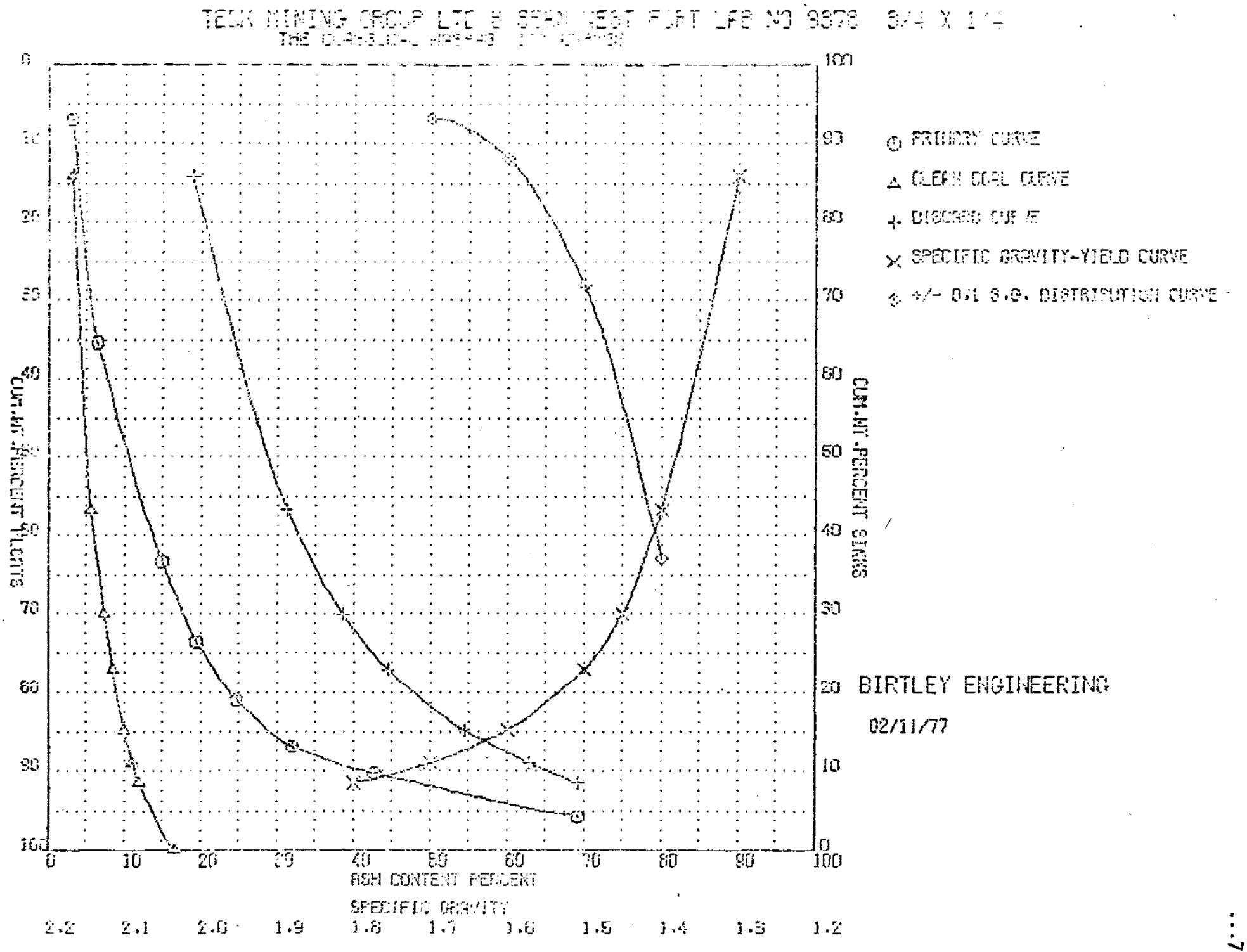
02/11/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> CUM WT> ASH TT	ASHTT	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	3.60	2.60	.09	.09	3.60	2.60	24.41	96.40	25.32	1.30	0.00
1.40	34.30	5.80	1.09	2.08	37.90	5.50	22.42	62.10	36.11	1.40	57.20
1.45	12.90	12.80	1.45	3.73	50.80	7.35	20.77	49.20	42.22	1.50	34.90
1.50	10.00	17.40	1.74	5.47	60.80	9.00	19.03	39.20	48.55	1.60	17.40
1.60	12.00	22.70	2.72	8.20	72.80	11.26	16.31	27.20	59.95	1.70	10.70
1.70	5.40	31.40	1.70	9.89	78.20	12.65	14.61	21.80	67.03	1.80	0.00
1.80	5.30	45.00	2.39	12.28	83.50	14.71	12.23	16.50	74.10	1.90	0.00
9.99	16.50	74.10	12.23	24.51	100.00	24.51	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
02/11/77

.5	19.6	.5	19.3	5.1	19.3	2.0	19.3	4.0	8.6
1.2	15.9	1.1	12.4	7.2	12.4	4.0	12.4	6.0	13.0
2.6	11.1	1.5	9.8	8.4	9.8	5.0	9.8	8.0	16.5
3.5	8.8	1.8	7.8	9.7	7.8	6.0	7.8	10.0	17.9
4.5	6.6	2.3	5.4	12.0	5.4	8.0	5.4	0.0	0.0
6.3	4.9	2.5	4.4	13.4	4.4	10.0	4.4	0.0	0.0
9.0	3.8	2.9	3.3	14.8	3.3	12.0	3.3	0.0	0.0
14.8	1.7	4.9	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8142
PASS 2 8 43
PASS 3 7 97
PASS 4 7100
PASS 5 4 60


TECK MINING GROUP LTD # SEAM WEST PORT LAB NO 9878 3/4 X 1/4
THE CLASSICAL WASHABILITY GRAPHS
CUM.WT.PERCENT SINKS
CUM.WT.PERCENT FLOATS
ASH CONTENT PERCENT
SPECIFIC GRAVITY
2.2 2.1 2.0 1.9 1.8 1.7 1.6 1.5 1.4 1.3 1.2
PRIMARY CURVE
CLEAN COAL CURVE
DISCARD CURVE
SPECIFIC GRAVITY-YIELD CURVE
+/- 0.1 S.G. DISTRIBUTION CURVE
BIRTLEY ENGINEERING
02/11/77

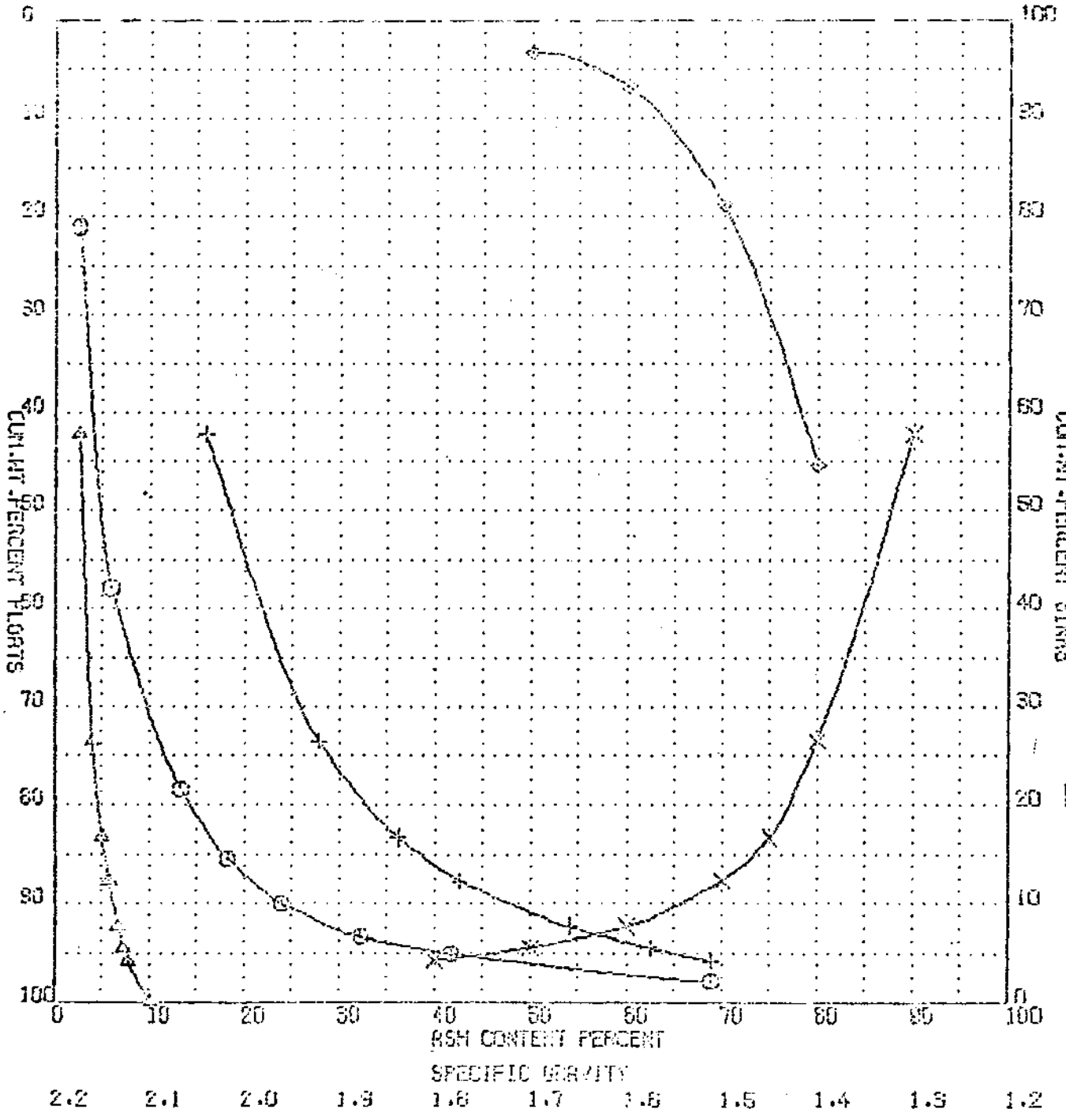
--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> ASH	CUM WT> TT ASH	TT	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12	
1.30	14.10	3.10	.44	.44	14.10	3.10	16.25	85.90	18.92	1.30	0.00	
1.40	42.60	6.40	2.73	3.16	56.70	5.58	13.52	43.30	31.23	1.40	63.00	
1.45	13.40	14.90	2.00	5.16	70.10	7.36	11.53	29.90	38.55	1.50	28.10	
1.50	7.00	19.40	1.26	6.52	77.10	8.45	10.17	22.90	44.41	1.60	11.90	
1.60	7.70	24.70	1.90	8.42	84.80	9.93	8.27	15.90	54.39	1.70	6.80	
1.70	4.20	32.00	1.34	9.76	89.00	10.97	6.92	11.00	62.94	1.80	0.00	
1.80	2.60	42.70	1.11	10.87	91.60	11.87	5.81	8.40	69.20	1.90	0.00	
9.99	8.40	69.20	5.81	16.69	100.00	16.69	0.00	.00	0.00	2.00	0.00	

BIRTLEY ENGINEERING
02/11/77

.6	18.6	.6	17.2	3.8	17.2	2.0	17.2	4.0	7.4
1.3	14.9	1.1	8.7	6.2	8.7	4.0	8.7	6.0	14.4
3.0	7.3	1.5	6.0	7.7	6.0	5.0	6.0	8.0	17.6
3.9	5.3	1.7	4.6	8.9	4.6	6.0	4.6	10.0	18.6
4.9	3.8	2.0	3.0	10.9	3.0	8.0	3.0	0.0	0.0
6.4	2.6	2.2	2.2	12.6	2.2	10.0	2.2	0.0	0.0
8.5	1.9	2.4	1.7	13.8	1.7	12.0	1.7	0.0	0.0
13.8	.8	3.3	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8132
PASS 2 8 27
PASS 3 7100
PASS 4 7100
PASS 5 4 60

TECK MINING GROUP LTD 5 SEAM WEST PORT LAB NO 9578 1/4 X 28M



PRIMARY CURVE
CLEAN COAL CURVE
DISCARD CURVE
SPECIFIC GRAVITY-YIELD CURVE
+/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

02/11/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--		+-0.1 DISTR			
S.G.	WT>	ASH>	WT> CUM ASH	WT> CUM ASH	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	42.20	2.50	1.06	1.06	42.20	2.50	9.18	57.80	15.88	1.30	0.00
1.40	31.40	5.90	1.85	2.91	73.60	3.95	7.33	26.40	27.76	1.40	45.50
1.45	9.70	13.30	1.29	4.20	83.30	5.04	6.04	16.70	36.16	1.50	18.80
1.50	4.40	18.20	.80	5.00	87.70	5.70	5.24	12.30	42.58	1.60	6.80
1.60	4.70	23.90	1.12	6.12	92.40	6.63	4.11	7.60	54.13	1.70	3.40
1.70	2.10	32.30	.68	6.80	94.50	7.20	3.44	5.50	62.47	1.80	0.00
1.80	1.30	41.70	.54	7.34	95.80	7.66	2.89	4.20	68.90	1.90	0.00
9.99	4.20	68.90	2.89	10.24	100.00	10.24	0.00	.00	0.00	2.00	0.00

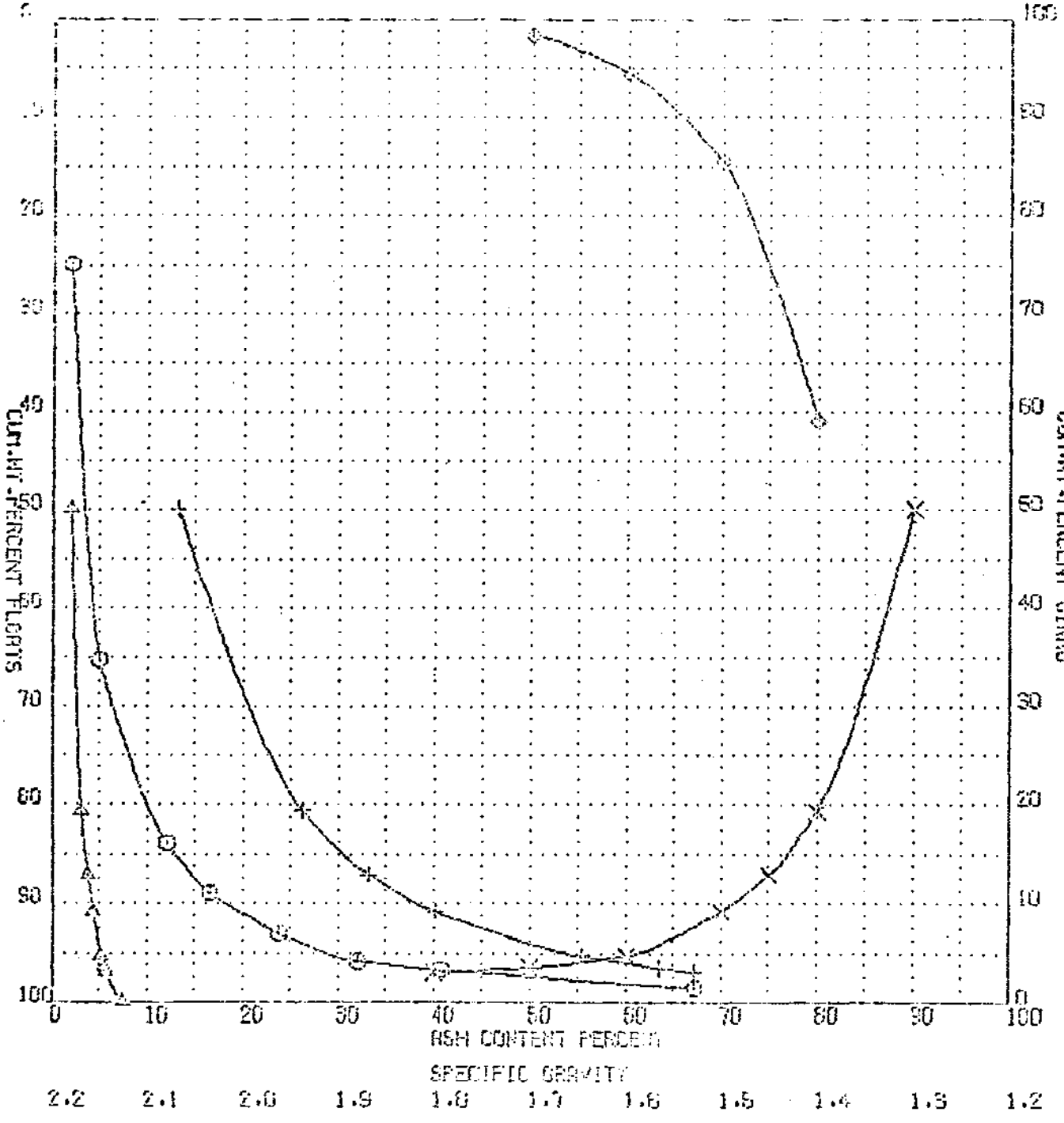
BIRTLEY ENGINEERING
02/11/77

.5	15.8	.5	11.6	3.2	11.6	2.0	11.6	4.0	10.9
1.2	8.4	.8	5.3	5.6	5.3	4.0	5.3	6.0	16.2
2.7	4.3	1.0	3.3	7.2	3.3	5.0	3.3	8.0	18.6
3.6	2.9	1.1	2.5	8.5	2.5	6.0	2.5	10.0	19.3
4.8	2.0	1.3	1.5	10.8	1.5	8.0	1.5	0.0	0.0
6.5	1.3	1.4	1.1	12.5	1.1	10.0	1.1	0.0	0.0
8.3	1.0	1.5	.8	13.8	.8	12.0	.8	0.0	0.0
13.8	.4	2.0	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8132
PASS 2 8 15
PASS 3 7106
PASS 4 7100
PASS 5 4 60

TECK MINING GROUP LTD @ SEAL WEST PORT LAB NO 3878 28% Y 45%

THE CUMULATIVE WASHABILITY CURVE



- PRIMARY CURVE
- CLEAN COAL CURVE
- DISCARD CURVE
- SPECIFIC GRAVITY-YIELD CURVE
- +/- 0.1 S.G. DISTRIBUTION CURVE

BIRTLEY ENGINEERING

02/11/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> ASH	CUM WT> TT ASH	TT	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12	
1.30	50.00	1.90	.95	.95	50.00	1.90	6.56	50.50	13.12	1.30	0.00	
1.40	30.70	4.90	1.50	2.45	80.70	3.04	5.06	19.30	26.21	1.40	40.90	
1.45	6.40	12.10	.77	3.23	87.10	3.71	4.28	12.90	33.20	1.50	14.60	
1.50	3.80	16.60	.43	3.86	90.90	4.25	3.65	9.10	40.14	1.60	5.60	
1.60	4.40	23.80	1.05	4.91	95.30	5.15	2.61	4.70	55.43	1.70	1.70	
1.70	1.20	32.10	.39	5.29	96.50	5.48	2.22	3.50	63.43	1.80	0.00	
1.80	.50	40.80	.20	5.50	97.00	5.67	2.02	3.50	67.20	1.90	0.00	
9.99	3.00	67.20	2.02	7.51	100.00	7.51	0.00	.00	0.00	2.00	0.00	

BIRTLEY ENGINEERING
02/11/77

.4	15.0	.4	10.0	2.6	10.0	2.0	10.0	4.0	11.8		
1.0	6.9	.6	3.9	5.2	3.9	4.0	3.9	6.0	17.1		
2.4	3.2	.7	2.6	6.6	2.6	5.0	2.6	8.0	18.9		
3.3	2.2	.8	1.8	8.0	1.8	6.0	1.8	10.0	19.7		
4.8	1.4	1.0	.9	11.1	.9	8.0	.9	0.0	0.0		
6.4	.8	1.1	.7	12.7	.7	10.0	.7	0.0	0.0		
8.2	.7	1.1	.6	13.4	.6	12.0	.6	0.0	0.0		
13.4	.3	1.5	.0	0.0	.0	175.8	.0	0.0	0.0		

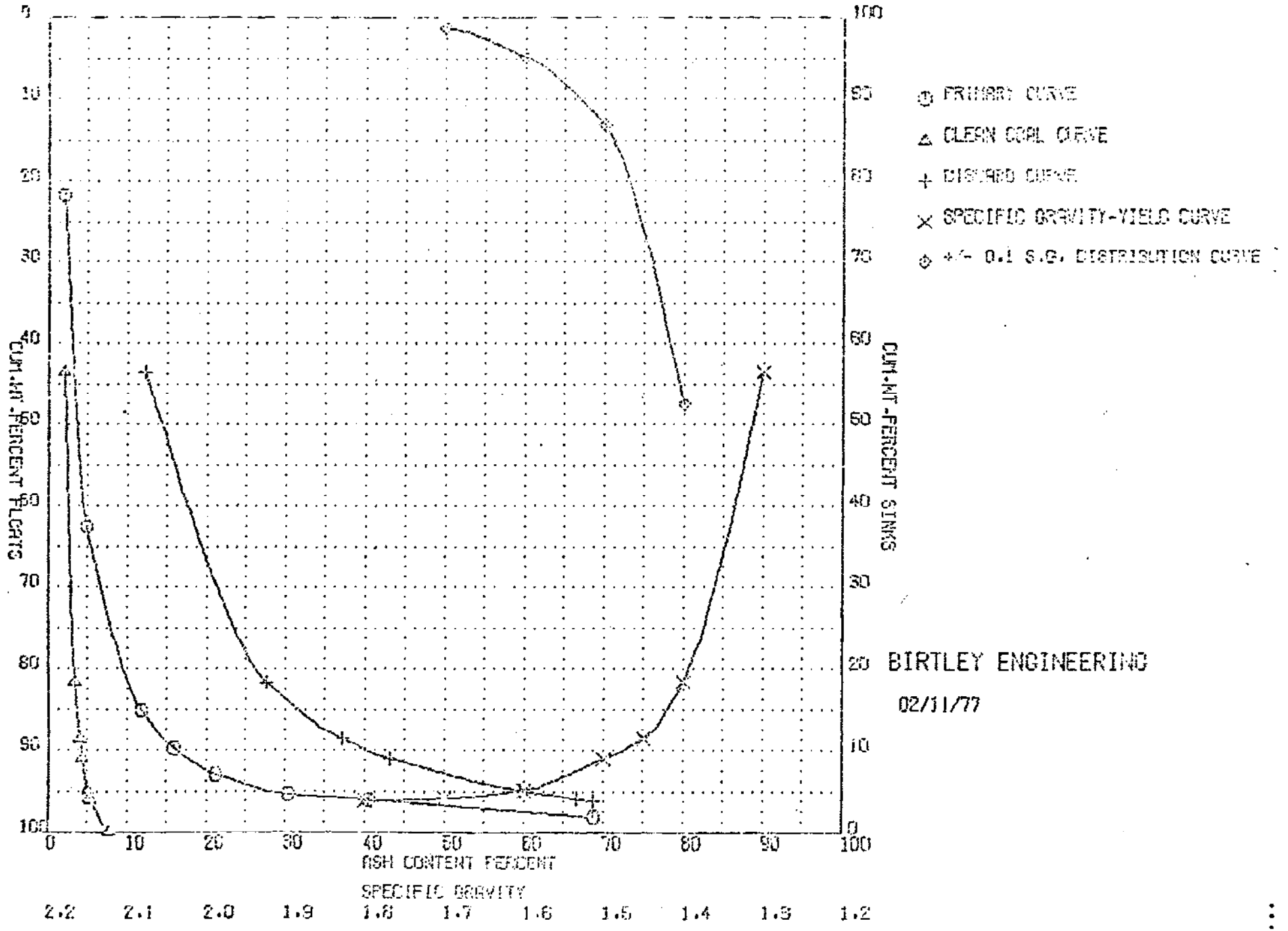
PASS 1 8130
PASS 2 8 11
PASS 3 /108
PASS 4 /100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

SAMPLE: B SEAM - WEST FORK

LAB. NO. 9378 DATE: September, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	48Mx100M (WT.%=4.0)							
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	43.6	2.0	43.6	2.0				
1.30-1.40	38.1	4.8	81.7	3.3				
1.40-1.45	6.9	11.8	88.6	4.0				
1.45-1.50	2.5	15.9	91.1	4.3				
1.50-1.60	3.8	21.2	94.9	5.0				
1.60-1.70	1.0	30.4	95.9	5.2				
1.70-1.80	0.3	40.5	96.2	5.3				
+1.80	3.8	68.8	100.0	7.8				



BIRTLEY ENGINEERING

02/11/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> ASH	CUM WT> ASH	TT	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12	
1.30	43.60	2.00	.97	.87	43.60	2.00	6.89	56.40	12.21	1.30	0.00	
1.40	38.10	4.80	1.83	2.70	81.70	3.31	5.06	18.30	27.63	1.40	47.50	
1.45	6.90	11.80	.81	3.52	88.60	3.97	4.24	11.40	37.22	1.50	13.20	
1.50	2.50	15.90	.40	3.91	91.10	4.29	3.85	8.90	43.21	1.60	4.80	
1.60	3.80	21.20	.81	4.72	94.90	4.97	3.04	5.10	52.61	1.70	1.30	
1.70	1.00	30.40	.30	5.02	95.90	5.24	2.74	4.10	66.73	1.80	0.00	
1.80	.30	40.50	.12	5.14	96.20	5.35	2.61	3.80	68.80	1.90	0.00	
9.99	3.80	68.80	2.61	7.76	100.00	7.76	0.00	.00	0.00	2.00	0.00	

BIRTLEY ENGINEERING
02/11/77

.4	15.6	.4	11.3	2.4	11.3	2.0	11.3	4.0	10.5		
1.0	7.5	.7	3.7	5.5	3.7	4.0	3.7	6.0	17.4		
2.4	3.0	.9	2.3	7.4	2.3	5.0	2.3	8.0	19.0		
3.2	2.0	.9	1.8	8.6	1.8	6.0	1.8	10.0	19.7		
4.2	1.4	1.0	1.0	11.9	1.0	8.0	1.0	0.0	0.0		
6.1	.9	1.0	.8	13.3	.8	10.0	.8	0.0	0.0		
8.1	.8	1.1	.8	13.8	.8	12.0	.8	0.0	0.0		
13.8	.4	1.6	.0	0.0	.0	175.8	.0	0.0	0.0		

PASS 1 8133
PASS 2 8 11
PASS 3 7113
PASS 4 7100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

SAMPLE: B SEAM - WEST FORK

LAB. NO.: 9378 DATE: September, 1977

FROTH FLOTATION TESTS

Pulp Density = 10% Reagent = 4:1=Kerosene:MIBC Dosage = 0.48 lb/T

Conditioning Time = 1 min. Stage I, II, III, IV, V are froths at 30, 60, 90, 120, 150 sec. respectively.

48 Mesh x 0 (WT.%=9.1)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	72.9	0.7	5.3	26.5	67.5	0.47	0.07	7 1/2	72.9	5.3
STAGE II	13.1	0.9	6.9	26.1	66.1	0.44	0.07	6 1/2	86.0	5.5
STAGE III	5.4	1.0	14.3	25.1	59.6	0.51	0.09	4	91.4	6.1
STAGE IV										
STAGE V										
TAILS	8.6	--	51.7	--	--	1.10	--	--	100.0	10.0

48 Mesh x 100 Mesh (WT.%=4.0)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	76.3	0.8	5.7	26.7	66.8	0.39	0.07	7 1/2	76.3	5.7
STAGE II	13.2	0.8	6.1	26.5	66.6	0.45	0.07	5 1/2	89.5	5.8
STAGE III	5.4	0.9	9.2	26.0	63.9	0.46	0.08	4 1/2	94.9	6.0
STAGE IV										
STAGE V										
TAILS	5.1	--	47.7	--	--	0.84	--	--	100.0	8.1

100 Mesh x 0 (WT.%=5.1)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	71.8	0.8	5.3	26.3	67.6	0.38	0.06	7 1/2	71.8	5.3
STAGE II	12.7	0.9	8.4	25.5	65.2	0.48	0.08	6 1/2	84.5	5.8
STAGE III	6.5	1.0	19.1	24.7	55.2	0.59	0.10	2 1/2	91.0	6.7
STAGE IV										
STAGE V										
TAILS	9.0	--	60.8	--	--	1.20	--	--	100.0	11.6

CLIENT: TECK MINING GROUP LTD.

SAMPLE: B SEAM - WEST FORK

LAB. NO.: 9378 DATE: September, 1977

COMPOSITE CLEAN COAL

SCREEN SIZE	WT.%	S.G. OF COMP. FLOATS	YIELD %	ASH%	F.S.I.
4" x 2"	5.1	--	--	--	--
2"x3/4"	17.4	1.45	50.8	7.4	3 1/2
3/4"x1/4"	19.4	1.45	70.1	7.4	3 1/2
1/4"x28M	44.0	1.80	95.8	7.7	5 1/2
28Mx48M	5.0	(RAW)	100.0	7.5	7 1/2
48Mx100M	4.0	(RAW)	100.0	7.8	7

CLIENT: TECK MINING GROUP LTD.

SAMPLE: B SEAM - WEST FORK

LAB. NO.: 9378 DATE: September, 1977

9420

ANALYSES OF 4" x 100Mesh FLOAT @ 1.60 S.G. (Yield = 87.2%)									
PROXIMATE				S%	P%	BTU/LB	F.S.I.	H.G.I.	
RM.%	ASH%	VM.%	FC.%						
0.9	7.8	25.1	66.2	0.33	0.20	13910	5	70	a.d.b.
	7.9	25.3	66.8	0.33	0.20	14036	--	--	d.b.

ULTIMATE ANALYSIS							DILATATION TEST				
H_2O%	C%	H%	N%	S%	ASH%	by diff. O%	S.T. °C	M.D.T. °C	M.C. %	M.D. %	G.No.
0.85	80.03	4.49	0.87	0.33	7.79	5.64	383	461	23	- 20	0.430

NOTE: Sample of above float product prepared for Petrographic Analysis and Geisler Plastometer Test.

9421

ANALYSES OF 4" x100Mesh SINK @ 1.60 S.G. (WT.%=12.8)										
PROXIMATE				S%		ASH FUSION TEMPS (°F)				
RM.%	ASH%	VM.%	FC.%			ATMOS.	I.D.T.	S.T.	H.T.	F.T.
0.9	56.3	15.8	27.0	0.25	adb	OXID.	2310	2400	2490	2560
	56.8	15.9	27.3	0.25	db	REDUC.	2280	2390	2440.	2540

MINERAL ANALYSIS OF ASH, %											
SiO_2	Al_2O_3	TiO_2	CaO	MgO	MnO	Fe_2O_3	Na_2O	K_2O	P_2O_5	SO_3	Undetermined
65.62	17.20	1.82	5.46	2.16	—	2.43	0.53	1.28	0.40	1.83	1.27

NOTE: Sample of above reject product also prepared for Clay Analysis

Lab. No. 9378 Date Sept, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: FLOATS @ 1.60

Starting Temperature °C: 320

Softening Temperature °C: 383

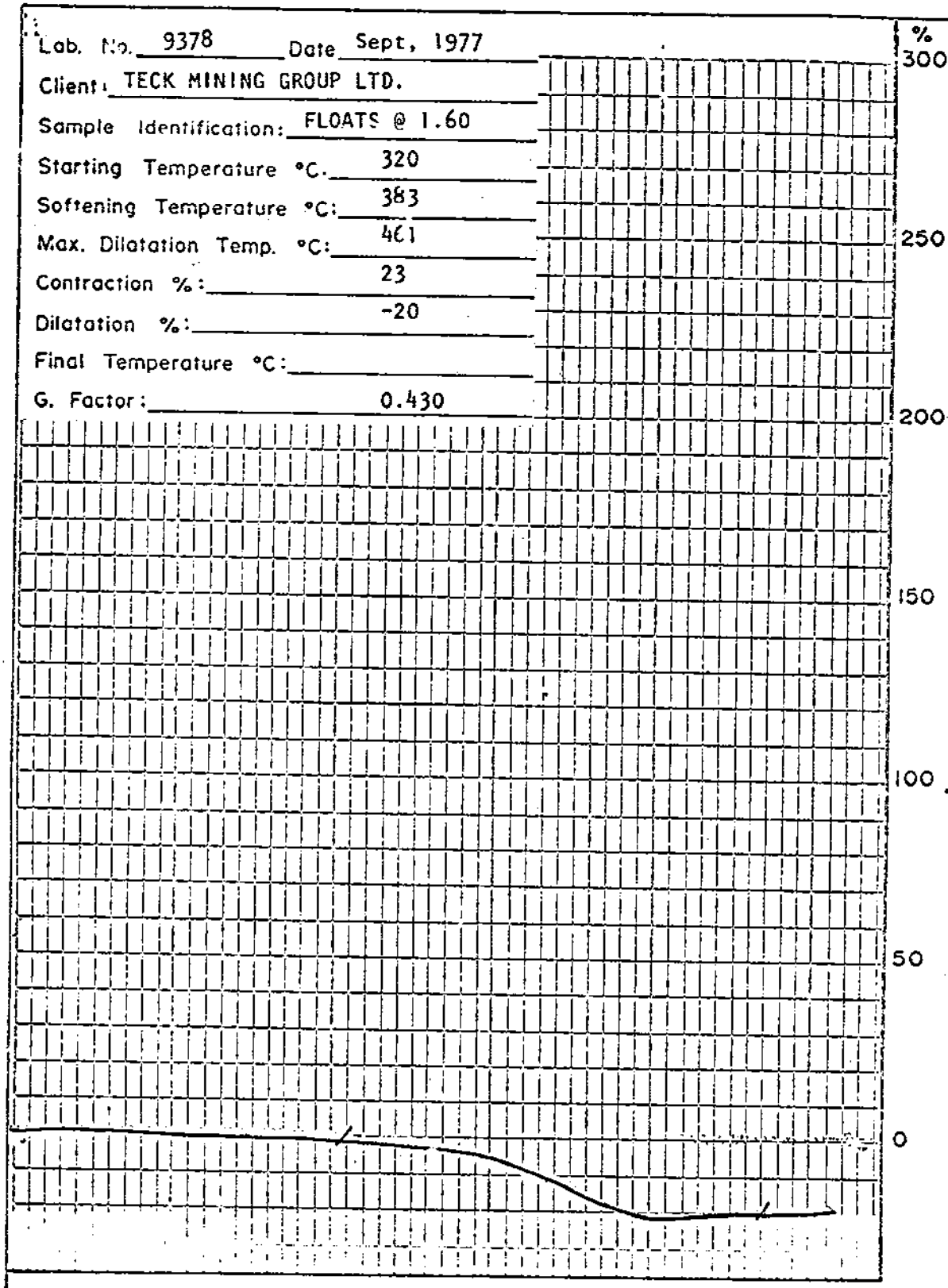
Max. Dilatation Temp. °C: 461

Contraction %: 23

Dilatation %: -20

Final Temperature °C:

G. Factor: 0.430



BIRTLEY ENGINEERING (CANADA) LTD.

Title

RUHR DILATOMETER TEST

Date

Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: "B" SEAM - WEST FORK

LAB. NO.: 9378

ANALYSIS OF 4" x 100 Mesh FLOAT @ 1.60 s.g. (Yield = 87.2%)

LAB. NO. 9420

GIESELER PLASTOMETER TEST

	DDPM	TEMP.(°C)
START	1	429
MAXIMUM	23	462
FINAL	1	489
		RANGE = 60

ANALYSIS OF 4" x 100 Mesh SINK @ 1.60 s.g. (Yield = 12.8%)

LAB. NO. 9421

CLAY SEPARATION BY FLOTATION

Material less than 2 microns	10.5%
Material greater than 2 microns	89.5%

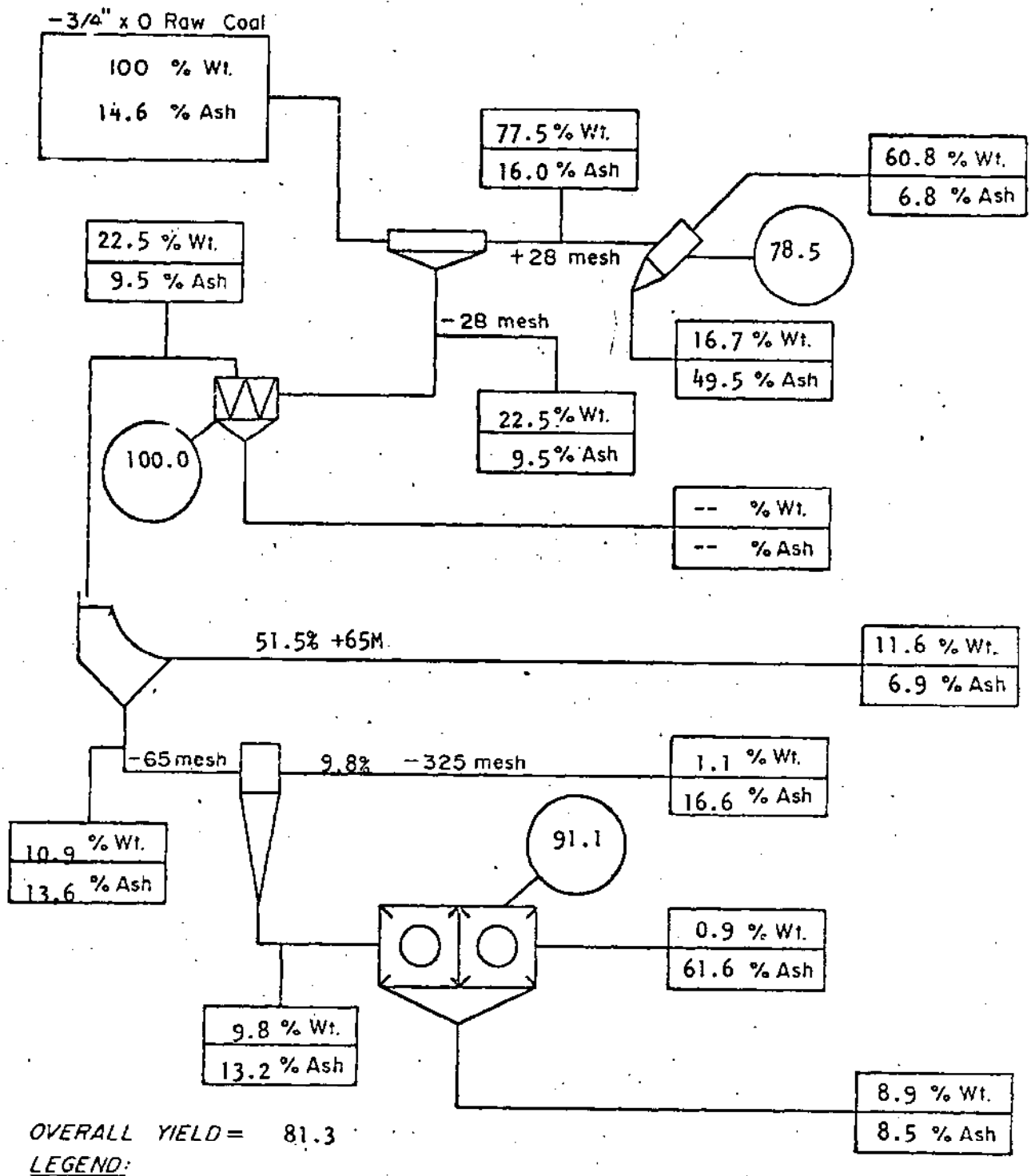
X-RAY DIFFRACTION ANALYSIS OF MATERIAL LESS THAN 2 MICRONS

Quartz	18
Feldspar	3
Dolomite	2
Siderite	2
Pyrite	Trace
Kaolinite	38
Illite	35
Chlorite	2
Montmorillonite	Trace

"B" SEAM - WEST FORK

LAB. NO.: 9377

PILOT PLANT WASHING RESULTS



OVERALL YIELD = 81.3

LEGEND:

○ *CIRCUIT YIELD %*

Wt. *WEIGHT %*

Ash *ASH CONTENT (AIR DRIED)*

BIRTLEY. ENGINEERING (CANADA) LTD.

Title	PLANT BALANCE FLOWSHEET PLANT WASH - "B" SEAM, WEST FORK BULK TECK MINING GROUP LTD. LAB. NO. 9377	Date September, 1977 Drawn

BIRTLEY ENGINEERING (CANADA) LTD.

Coal Science & Minerals Testing Div.

TECK MINING GROUP LTD.

BULK WASHING DATA*

XXXX SEAM "B" - WEST FORK LAB. NO. 9377

DELIVERY DATE September 16, 1977 DATE OF WASH September 22, 1977

Raw Coal Analysis: ADM 4.2 ASH% 14.6 FSI 6 1/2

Delivered Bulk Weight 7.982 Metric Tons

Washed Weight** 5.791 Metric Tons

* All weight and analyses are on Air Dried Basis unless otherwise indicated.

** Does not include 26 KG of +2" rock oversize.

BULK WASHING DATA

HEAVY MEDIUM CIRCUIT

~~XXXX~~/SEAM NO. "B" - WEST FORK LAB. NO. 9377

1. S. G. of Separation 1.53
2. Feed Ash Content 16.0 % F.S.I. 3 1/2
3. Clean Coal Estimated Weight 3.521 M.T.
4. Clean Coal Analysis - Ash 6.8 % F.S.I. 5
5. Reject Estimated Weight 0.965 M.T.
6. Reject Analysis - Ash 49.5 % F.S.I. 1
7. Estimated 3/4" x 28M in Circuit 4.486 M.T. 77.5 Wt.%
8. Yield Clean Coal (Weighted): 78.5 %
9. Yield Clean Coal (Calculated Ash Balance) - 78.5 %

BULK WASHING DATA

WATER-ONLY CYCLONE CIRCUIT **

SEAM NO. "B" SEAM-WEST FORK LAB. NO. 9377

1. Vortex Finder Clearance(VCF) _____ CM _____ INCHES

2. Feed Pressure _____ KG/CM^2 _____ P.S.I.

3. Feed Rate _____ $M^3/HR.$ _____ I.G./Min.

4. Feed Pulp Density _____ g/l. _____ Solids W/V

5. Sample Analysis

	SCREEN SIZE	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%	HEAD ASH%	HEAD FSI
FEED							9.5	7
O'FLOW	+65 Mesh	51.5	6.5	8	51.5	9.7	9.5	7
	65M x 0	48.5	13.2	7	100.0			
U'FLOW							---	---
S.B.O.							6.9	8
T.C.O.*							16.6	1

6. Yield - Total W.O. Cyclone Circuit = 100.0

7. Estimated Yield of 28 x 65 Mesh Coal = 51.5
(as % of 28 Mesh x 0 Feed)

8. Estimated 28M x 0 in circuit
(Plant Feed - HM Products) 1.305 MT 22.5 %

* Thickener Cyclone Overflow

** Water Cyclone Underflow was plugged off to allow total -28M material to go directly into the sieve bend.

BULK WASHING DATA

FROTH FLOTATION CIRCUIT

~~XXXX~~/SEAM NO. "8" SEAM - WEST FORK LAB. NO. 9377

1. Reagents: Kerosene:Methylisobutylcarbinol (MIBC)

2. Feed Pulp Density 90 - 120 g/l 9 - 12 % Solids W/V

3. Sample Analysis:-

	ASH	F.S.I.
FEED	13.2	6 1/2
CONC.	8.5	7 1/2
TAILS	61.6	1/2

4. Impeller Type - Birtley-Humboldt Multi-Wobble.

5. Yield Calculated (Ash Balance) 91.1 %

6. Filter Cake (Sieve Bend O'Flow & Flotation Conc.)
Wt. Recovered 0.828 M.T.

7. Filter Cake - Ash% 8.2 F.S.I. 7 1/2

BULK WASHING DATA

WEST
~~XXXX~~/SEAM "B" SEAM - FORK LAB. NO. 9377 DATE OF WASH Sept. 22, 1977

a) Raw Coal

Delivered Weight	= 7.982	M.T.
Ash %	= 14.6	
F.S.I.	= 6 1/2	
Estimated Washed Wt.	= 5.791	M.T.

b) Heavy Media Circuit

Estimated Proportion of +28 Mesh in Feed 77.5%

Effective S.G. = 1.53

Raw Feed	16.0 %	Ash	3 1/2	F.S.I.
Clean Coal	6.8 %	Ash	5	F.S.I.
Reject	49.5 %	Ash	1	F.S.I.
Calculated Yield	78.5 %			
Weighed Yield	78.5 %			

c) Water-Only Cyclone Circuit

Raw Feed	9.5 %	Ash	7	F.S.I.
Overflow	9.5 %	Ash	7	F.S.I.
Underflow	-- %	Ash	--	F.S.I.
Calculated Yield	100.0 %			
% of +65M in O/F	51.5 %			
Sieve Bend Overflow	6.9 %	Ash	8	F.S.I.

d) Froth Flotation Circuit

Raw Feed	13.2 %	Ash	6 1/2	F.S.I.
Concentrates	8.5 %	Ash	7 1/2	F.S.I.
Tails	61.6 %	Ash	1/2	F.S.I.
Calculated Yield	91.1			

TECK MINING GROUP LTD.

BULK WASHING DATA

BULK WASHING SUMMARY (Cont.)

XXXX "B" SEAM - WEST FORK LAB. NO. 9377

e) Clean Coal Mix Analyses a.d.b.

(i) Proximate

ADM% 9.5 RM.% 1.7 ASH% 7.5 VM.% 25.0 FC.% 65.8

(ii) S.% 0.38 FSI HGI 69 BTU/LB 13926 P% .073

(iii) Dilatation Test

S.T. 389 M.D.T. 459 MC% 24 MD% -1 G. NO. 0.918

(iv) Giesler Plastometer Test

	DDPM	TEMP. (%C)
START	1	429
MAXIMUM	22	465
FINAL	1	489
	RANGE =	60

f) Clean Coal Mix Make-Up

H.M. CLEAN COAL	FINES FILTER CAKE	CLEAN COAL MIX		SHIPPED		IN STOCK	
M.T.	M.T.	BBLS.	M.T.	BBLS.	M.T.	BBLS.	M.T.
3.521	0.828	26	4.349				

Lab. No. 9377 Date Sept. 30, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: CLEAN MIX

Starting Temperature °C: 320

Softening Temperature °C: 389

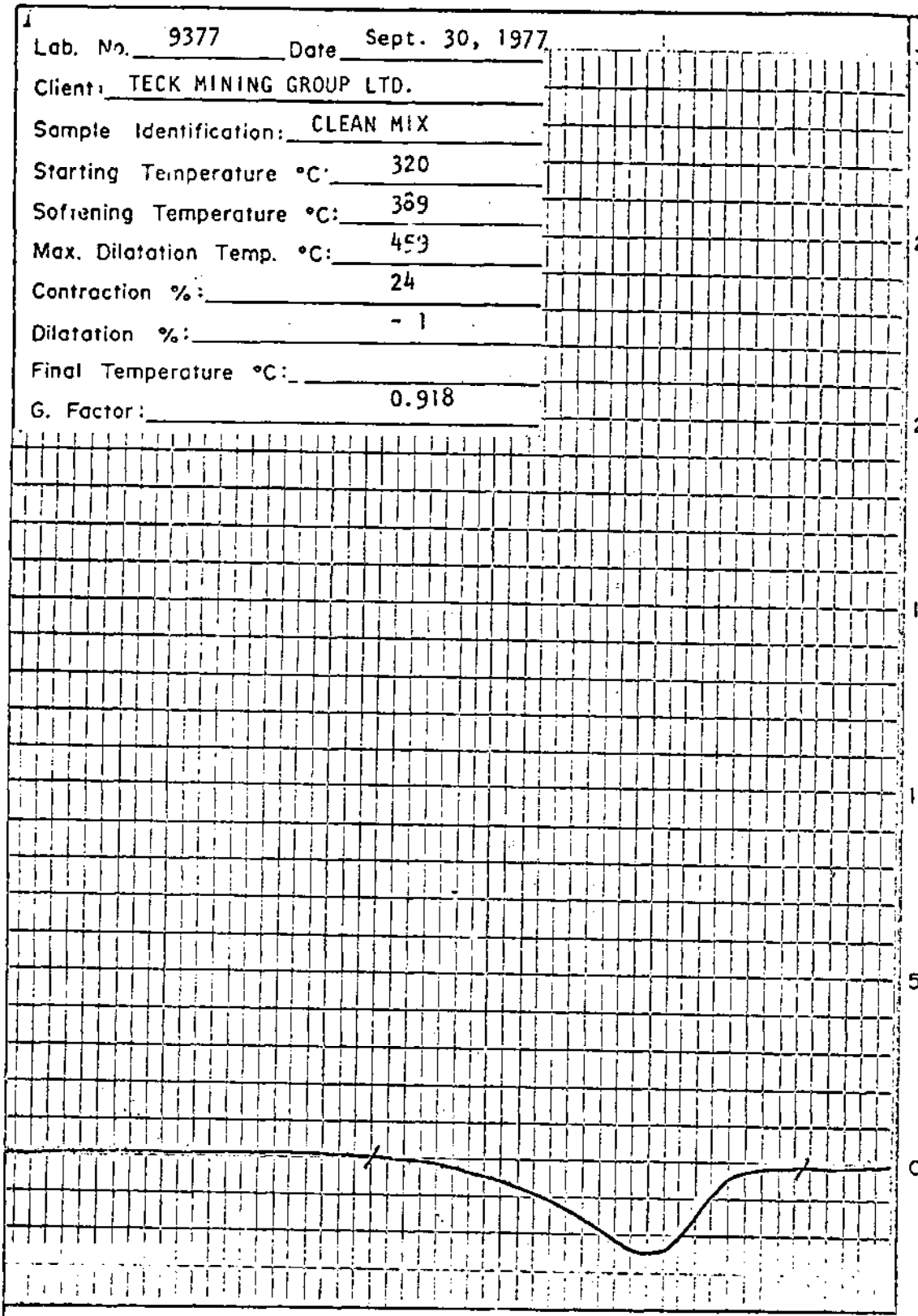
Max. Dilatation Temp. °C: 459

Contraction %: 24

Dilatation %: - 1

Final Temperature °C:

G. Factor: 0.918



BIRTLEY ENGINEERING (CANADA) LTD.

Title

RUHR DILATOMETER TEST

Date

Drawn

CLIENT: TECK MINING GROUP

SAMPLE: CLEAN COAL ANALYSES OF "B" SEAM, WEST FORK

LAB. NO.: 9377

ADM%	RM%/%TOTAL MOISTURE	ASH%	VOL.	FC.%	S%	B.T.U.	F.S.I.	CALC. FACTORS
9.5	1.7	7.5	25.0	65.8	0.38	13926	6	air dried basis
	11.0	6.8	22.6	59.6	0.34	12603	---	as received basis
		7.6	25.4	67.0	0.39	14167	---	dry basis

SIZE ANALYSIS		
SIZE FRACTION	WT.%	WT.%
3/4" x 1/2"	6.5	6.5
1/2" x 1/4"	17.7	24.2
1/4" x 6M	18.9	43.1
6M x 12M	26.1	69.2
12M x 20M	7.3	76.5
20M x 100M	17.6	94.1
100M x 0	5.9	100.0

ADIT 6, "A" SEAM - WEST FORK

LAB. NO.: 9348

WASHABILITY RESULTS

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 6, "A" SEAM, WEST FORK AREA

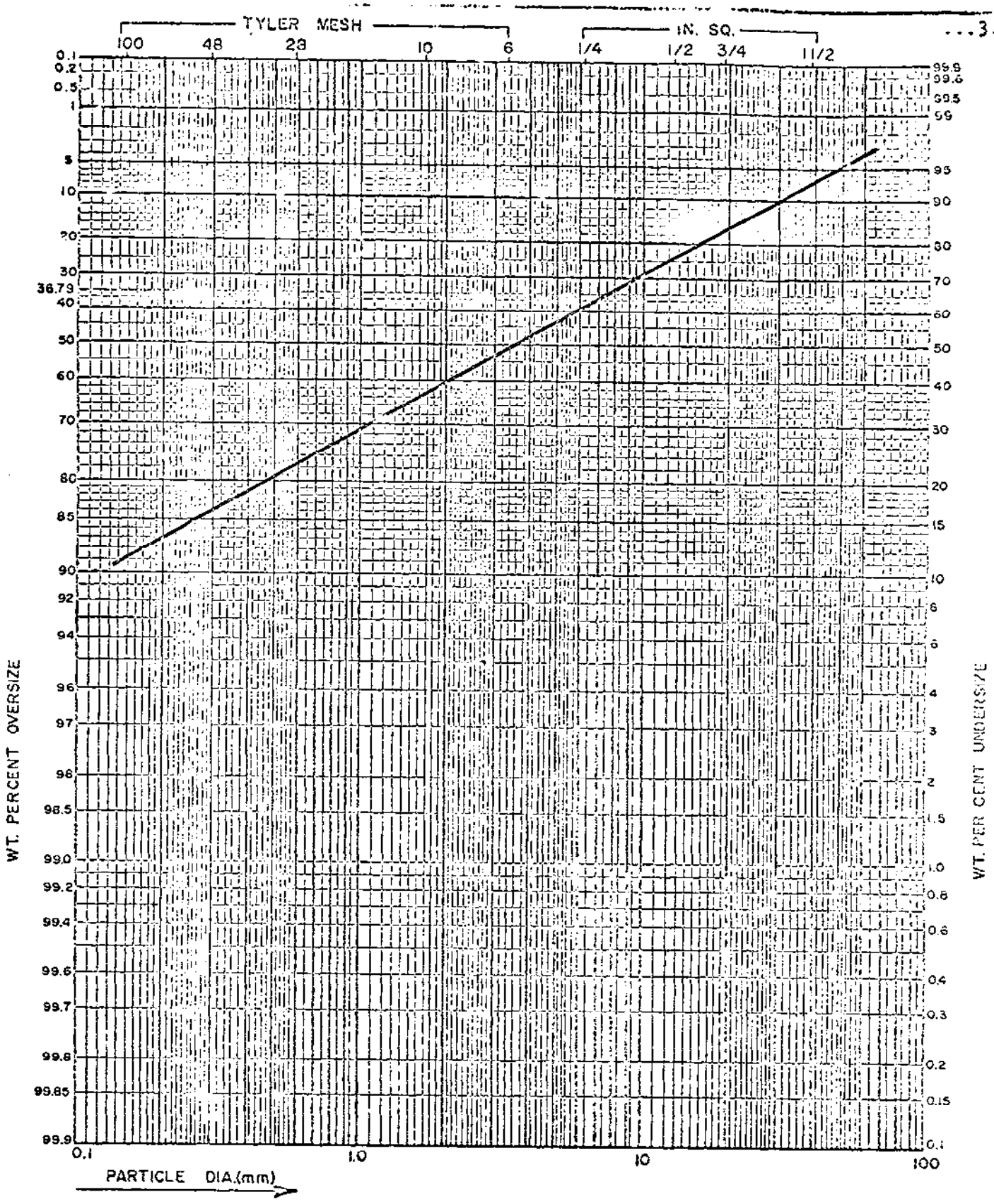
LAB. NO.: 9348 DATE: September, 1977

HEAD RAW ANALYSIS										
ADL%	RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
1.9	0.8	19.7	22.2	57.3	0.50	0.01	12310	6	68	air dried basis
	2.7	19.3	21.8	56.2	0.49	0.01	12076	--	--	as rec'd basis
		19.9	22.4	57.7	0.50	0.01	12409	--	--	dry basis

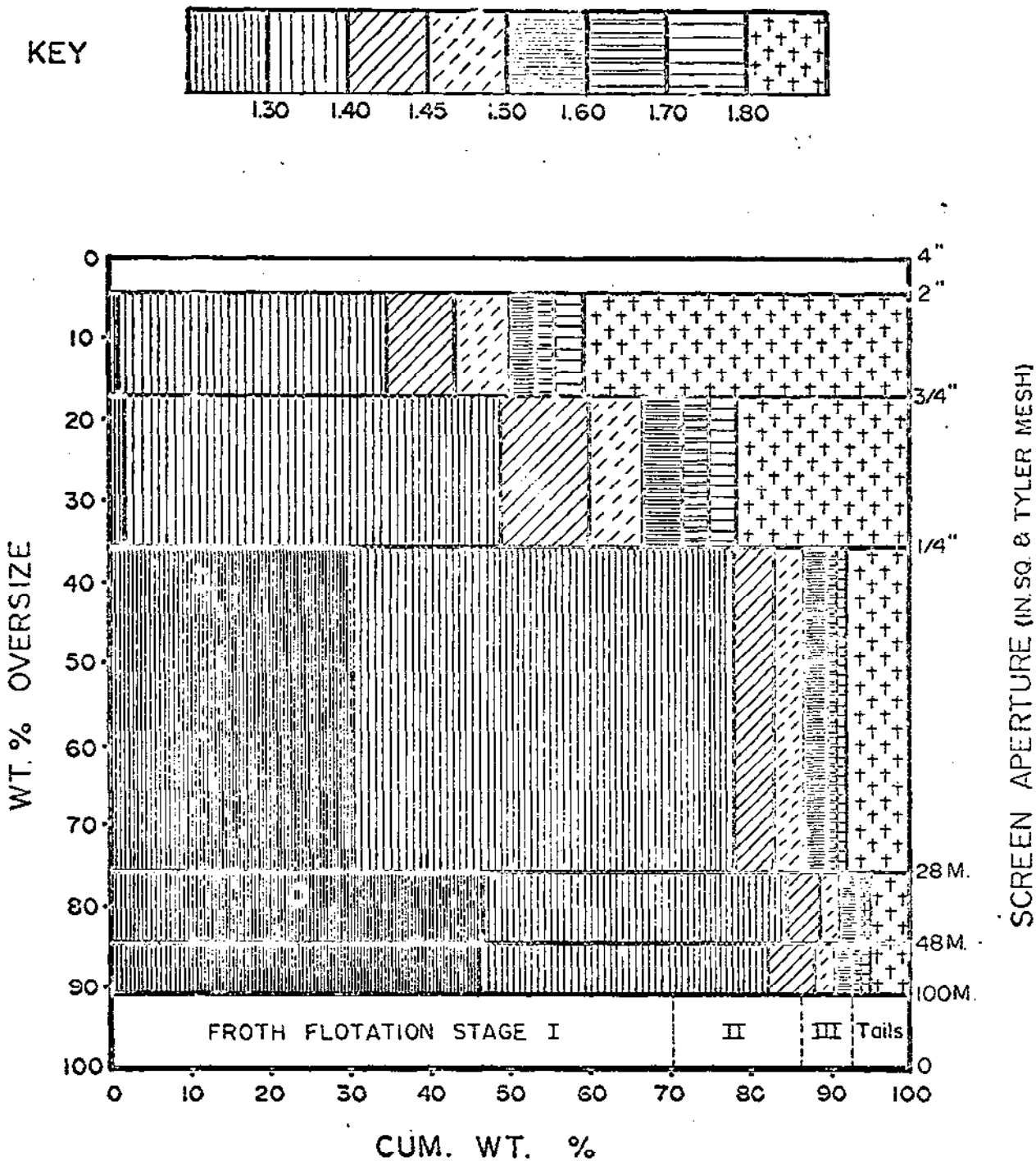
DRY SCREENING ANALYSIS: 4" x 0 HEAD SAMPLE					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
4" x 2"	4.3	59.5	1	4.3	59.5
2" x 3/4"	12.5	37.9	1	16.8	43.4
3/4" x 1/4"	18.7	26.9	1 1/2	35.5	34.7
1/4" x 28M	39.9	13.7	6	75.4	23.6
28M x 48M	8.4	9.7	8	83.8	22.2
48M x 100M	7.1	9.4	8 1/2	90.9	21.2
100M x 0	9.1	11.2	7 1/2	100.0	20.3

WT.% + 4" Material crushed to -4" = 0.6%

WET SCREENING ANALYSIS: 28 MESH x 0					
SIZE FRACTION	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%
28M x 35M	22.0	9.6	8	22.0	9.6
35M x 48M	16.8	8.5	8	38.8	9.1
48M x 65M	13.2	8.6	8 1/2	52.0	9.0
65M x 100M	11.6	8.7	8	63.6	8.9
100M x 200M	14.0	9.3	8 1/2	77.6	9.0
200M x 325M	5.9	10.3	8	83.5	9.1
325M x 0	16.5	16.5	4	100.0	10.3



Project: ADIT 6- "A" SEAM, WEST FORK		
Client: TECK CORPORATION		Date: SEPT, 1977
Title: ROSIN RAMMLER SIZE DISTRIBUTION		Drawn:



BIRTLEY ENGINEERING (Canada) LTD. CALGARY ALBERTA			
TITLE	SIZE AND DENSITY DISTRIBUTION DIAGRAM		
CLIENT	TECK CORPORATION		
SAMPLE	ADIT 6-A SEAM	DATE	SEPT., 1977
LAB NO.	9348	DRWN	

Birtley Engineering
Subsidiary of Great West Steel Industries

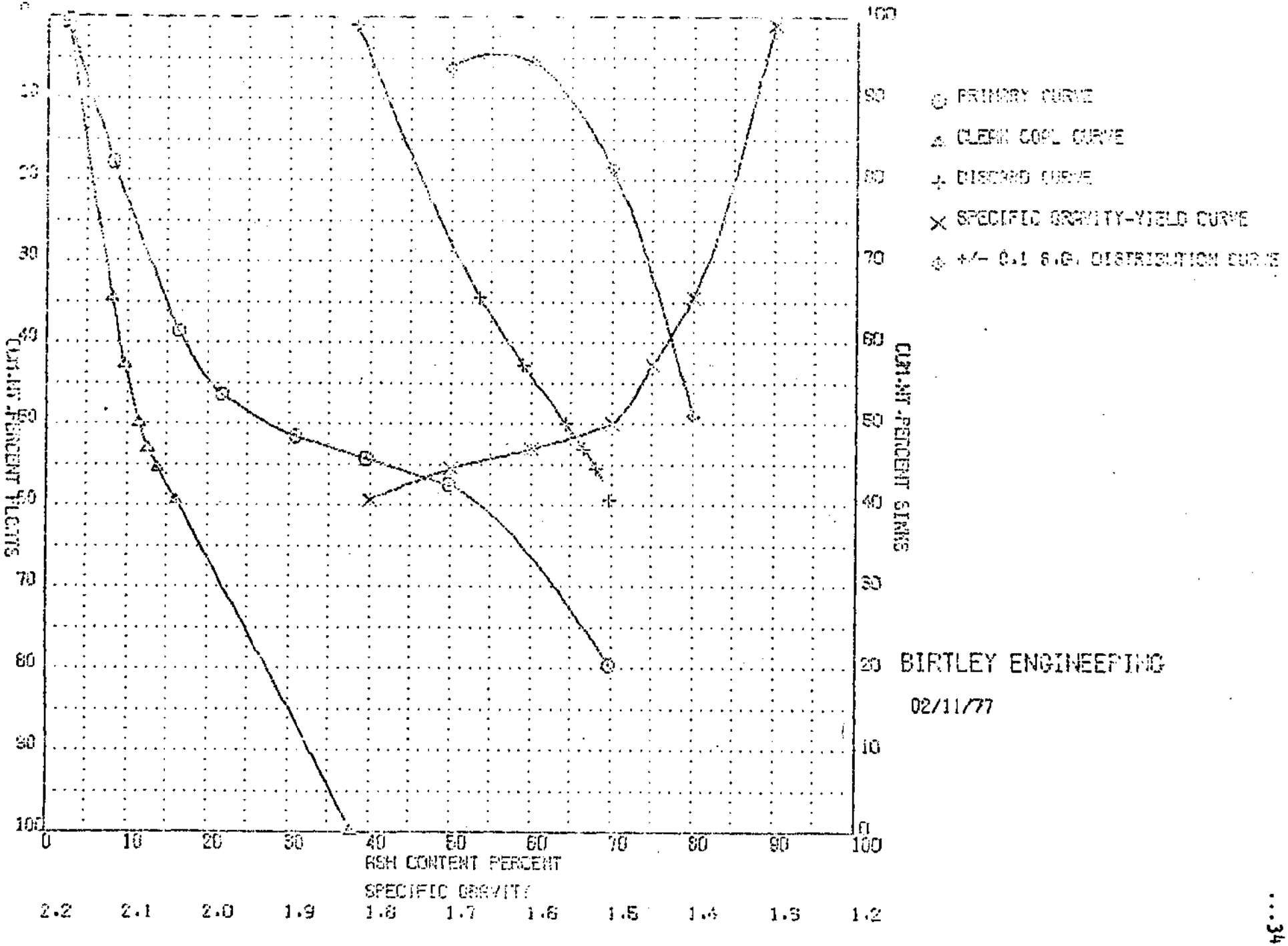
CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 6, "A" SEAM, WEST FORK AREA

LAB. NO. 9348 DATE: September, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	2" x 3/4" (WT.%=12.5)				3/4" x 1/4" (WT.% = 18.7)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	1.0	2.6	1.0	2.6	2.0	3.4	2.0	3.4
1.30-1.40	33.5	8.2	34.5	8.0	46.4	7.4	48.4	7.2
1.40-1.45	8.3	16.4	42.8	9.7	11.6	14.5	60.0	8.6
1.45-1.50	7.2	21.8	50.0	11.4	6.6	20.4	66.6	9.8
1.50-1.60	3.1	30.9	53.1	12.5	5.1	27.5	71.7	11.1
1.60-1.70	2.4	39.5	55.5	13.7	2.8	39.5	74.5	12.1
1.70-1.80	3.9	49.8	59.4	16.1	3.4	49.2	77.9	13.8
+ 1.80	40.6	69.7	100.0	37.9	22.1	70.0	100.0	26.2

SINK FLOAT ANALYSES								
S.G. FRACTION	1/4" x 28M (WT.% = 39.9)				28M x 48M (WT.% = 8.4)			
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	30.2	2.8	30.2	2.8	46.3	2.2	46.3	2.2
1.30-1.40	47.2	7.8	77.4	5.8	37.6	6.5	83.9	4.1
1.40-1.45	4.9	15.7	82.3	6.4	4.4	15.3	88.3	4.7
1.45-1.50	3.6	21.2	85.9	7.1	2.6	20.6	90.9	5.1
1.50-1.60	3.1	29.0	89.0	7.8	2.4	26.3	93.3	5.7
1.60-1.70	1.4	40.3	90.4	8.3	1.0	37.0	94.3	6.0
1.70-1.80	1.5	48.3	91.9	9.0	1.0	44.5	95.3	6.4
+1.80	8.1	70.3	100.0	13.9	4.7	71.7	100.0	9.5

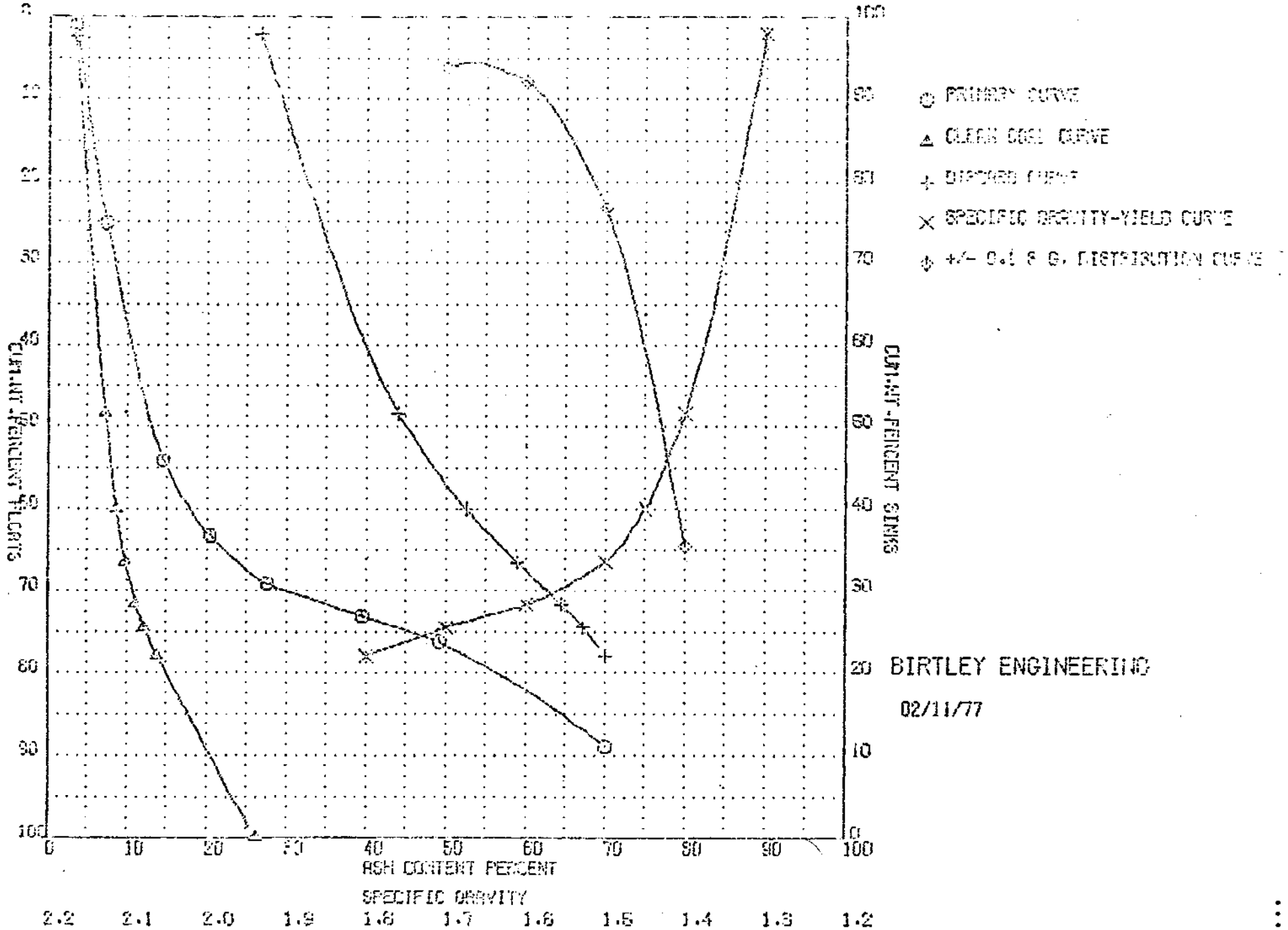

PRIMARY CURVE
CLEAN COAL CURVE
DISCARD CURVE
SPECIFIC GRAVITY-YIELD CURVE
+/- 0.1 S.G. DISTRIBUTION CURVE
CUM. IN PERCENT FLOATS
CUM. IN PERCENT SINKS
ASH CONTENT PERCENT
SPECIFIC GRAVITY
0 10 20 30 40 50 60 70 80 90 100
2.2 2.1 2.0 1.9 1.8 1.7 1.6 1.5 1.4 1.3 1.2
BIRTLEY ENGINEERING
02/11/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> ASH TT	ASHTT	WT>	ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	1.00	2.60	.03	.03	1.00	2.60	37.82	99.00	38.21	1.30	0.00
1.40	33.50	8.20	2.75	2.77	34.50	8.04	35.08	65.50	53.55	1.40	49.00
1.45	8.30	16.40	1.36	4.13	42.80	9.66	33.72	57.20	58.94	1.50	18.60
1.50	7.20	21.80	1.57	5.70	50.00	11.41	32.15	50.00	64.29	1.60	5.50
1.60	3.10	30.90	.96	6.66	53.10	12.55	31.19	46.90	66.50	1.70	6.30
1.70	2.40	39.50	.95	7.61	55.50	13.71	30.24	44.50	67.96	1.80	0.00
1.80	3.90	49.80	1.94	9.55	59.40	16.08	28.30	40.40	69.70	1.90	0.00
9.99	40.60	69.70	28.30	37.85	100.00	37.85	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
02/11/77

.5	19.9	.5	19.8	7.6	19.8	2.0	19.8	4.0	10.2
1.6	16.5	1.6	13.1	10.7	13.1	4.0	13.1	6.0	16.3
3.3	12.3	1.9	11.4	11.8	11.4	5.0	11.4	8.0	18.9
4.4	10.7	2.3	10.0	12.9	10.0	6.0	10.0	10.0	18.7
6.2	9.7	2.5	9.4	13.3	9.4	8.0	9.4	0.0	0.0
7.9	9.1	2.7	8.9	13.6	8.9	10.0	8.9	0.0	0.0
10.0	8.5	3.2	8.1	13.9	8.1	12.0	8.1	0.0	0.0
13.9	4.1	7.6	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8134
PASS 2 8 70
PASS 3 7 62
PASS 4 7100
PASS 5 4 60

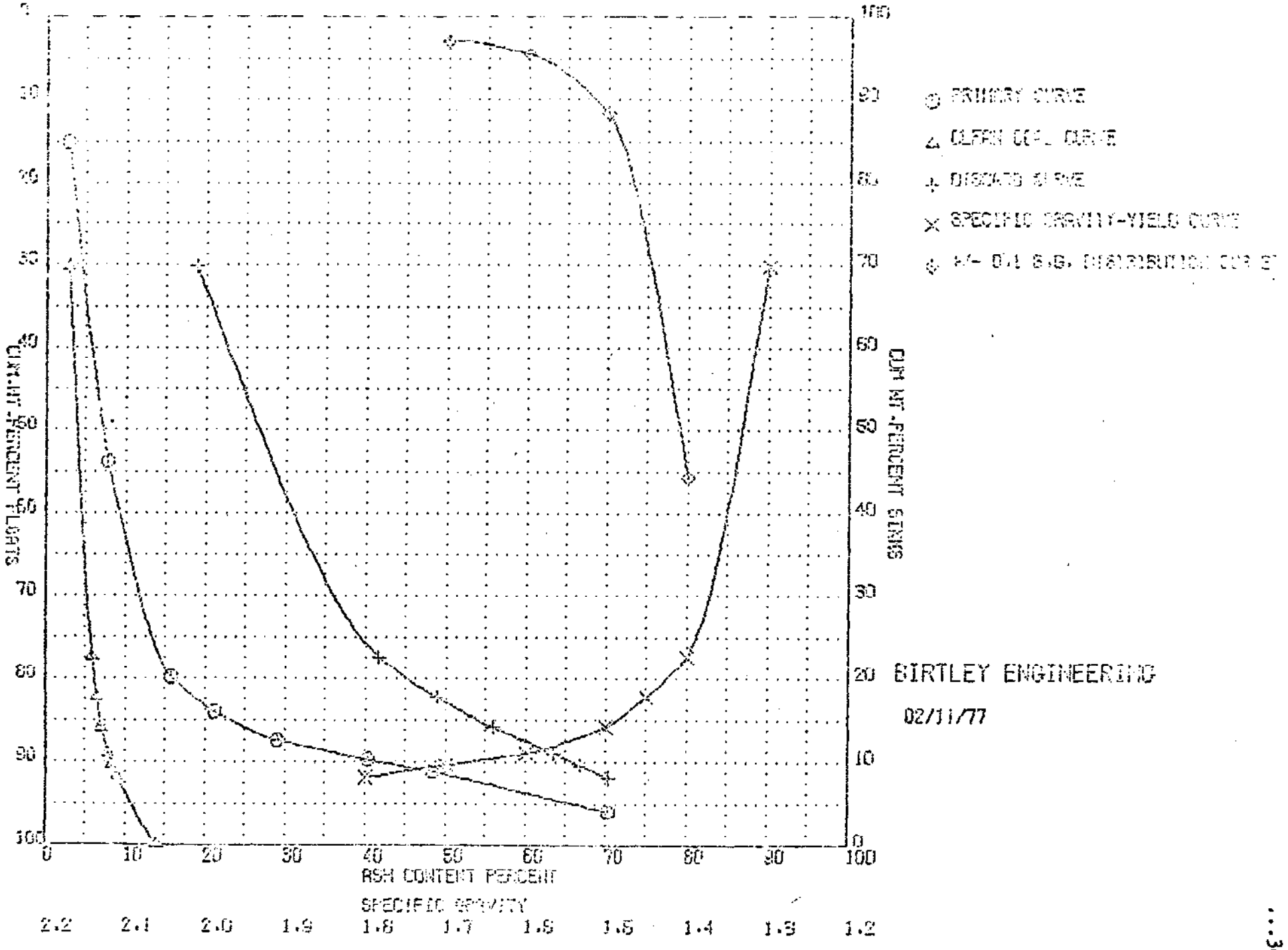

CUM.WT.-PERCENT FLOATS
CUM.WT.-PERCENT SINKS
ASH CONTENT PERCENT
SPECIFIC GRAVITY
2.2 2.1 2.0 1.9 1.8 1.7 1.6 1.5 1.4 1.3 1.2
PRIMARY CURVE
CLEAN COAL CURVE
SPECIFIC GRAVITY-YIELD CURVE
+/- 0.1 S.G. DISTRIBUTION CURVE
BIRTLEY ENGINEERING
02/11/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> CUM WT> ASH TT	ASH TT	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
:	2	3	4	5	6	7	8	9	10	11	12
1.30	2.00	3.40	.07	.07	2.00	3.40	26.11	98.00	26.65	1.30	0.00
1.40	46.40	7.40	3.43	3.50	48.40	7.23	22.68	51.60	43.95	1.40	64.60
1.45	11.60	14.50	1.68	5.18	60.00	8.64	21.00	40.00	52.49	1.50	23.30
1.50	6.60	20.40	1.35	6.53	66.60	9.80	19.65	33.40	58.84	1.60	7.90
1.60	5.10	27.50	1.40	7.93	71.70	11.06	18.25	28.30	64.48	1.70	6.20
1.70	2.80	39.50	1.11	9.04	74.50	12.13	17.14	25.50	67.23	1.80	0.00
1.80	3.40	49.20	1.47	10.71	77.90	13.75	15.47	22.10	70.00	1.90	0.00
9.99	22.10	70.00	15.47	26.18	100.00	26.18	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
02/11/77

.7	19.8	.7	19.6	5.3	19.6	2.0	19.6	4.0	7.1
1.5	15.0	1.4	10.3	8.8	10.3	4.0	10.3	6.0	15.3
2.9	9.2	1.7	8.0	10.5	8.0	5.0	8.0	8.0	18.4
4.1	7.3	2.0	6.7	11.8	6.7	6.0	6.7	10.0	18.8
5.5	6.2	2.2	5.7	12.9	5.7	8.0	5.7	0.0	0.0
7.9	5.4	2.4	5.1	13.4	5.1	10.0	5.1	0.0	0.0
9.8	4.8	2.8	4.4	14.0	4.4	12.0	4.4	0.0	0.0
14.0	2.2	5.2	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8133
PASS 2 8 45
PASS 3 7 86
PASS 4 7100
PASS 5 4 60



BIRTLEY ENGINEERING

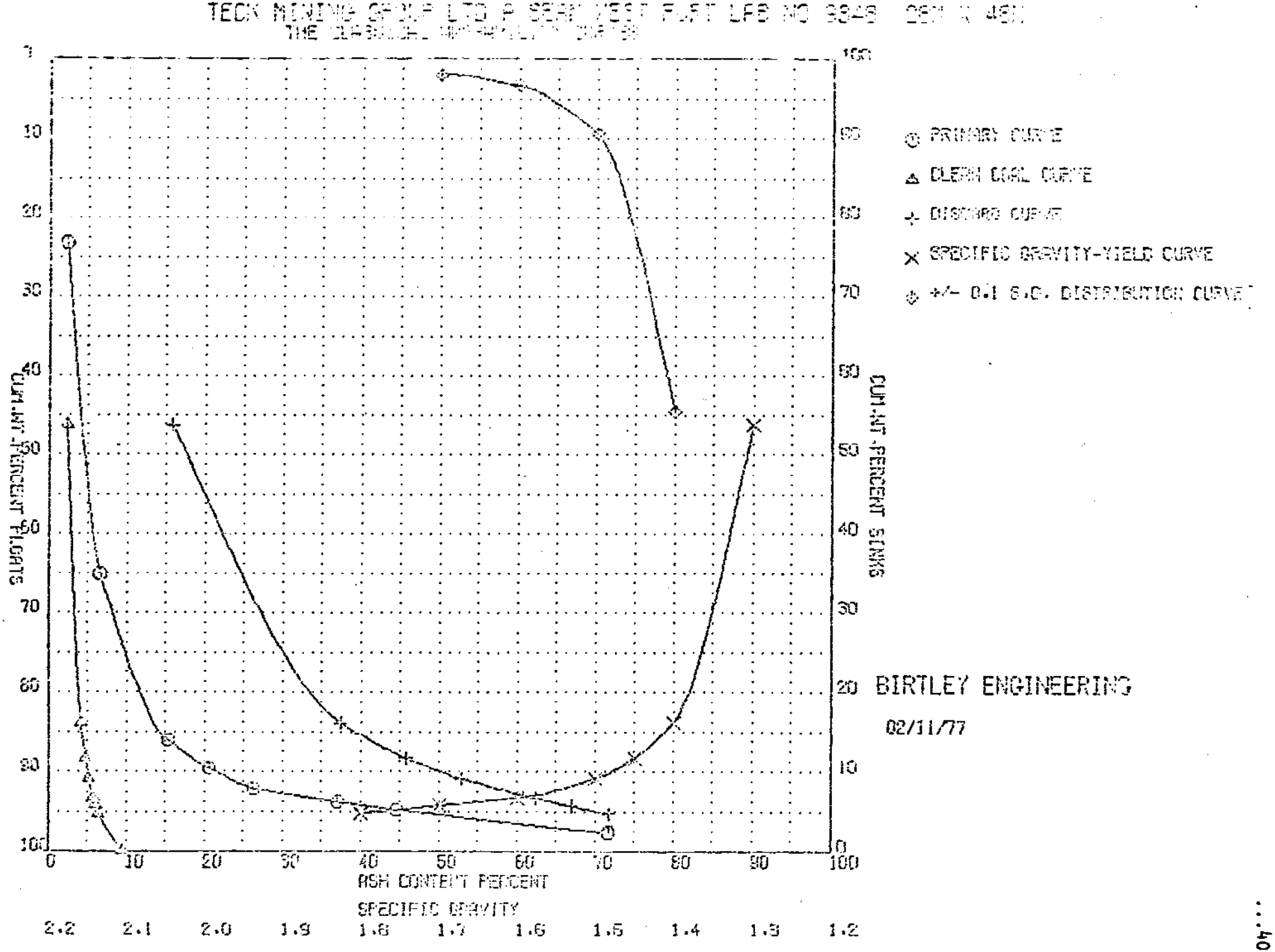
02/11/77

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> ASH	CUM WT> TT ASH	TT	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12	
1.30	30.20	2.80	.85	.85	30.20	2.80	13.10	69.80	18.76	1.30	0.00	
1.40	47.20	7.80	3.68	4.53	77.40	5.85	9.41	22.60	41.66	1.40	55.70	
1.45	4.90	15.70	.77	5.30	82.30	6.44	8.65	17.70	48.84	1.50	11.60	
1.50	3.60	21.20	.76	6.06	85.90	7.05	7.88	14.10	55.90	1.60	4.50	
1.60	3.10	29.00	.90	6.96	89.00	7.82	6.98	11.00	63.48	1.70	2.90	
1.70	1.40	40.30	.56	7.52	90.40	8.32	6.42	9.60	66.86	1.80	0.00	
1.80	1.50	48.30	.72	8.25	91.90	8.97	5.69	8.10	70.30	1.90	0.00	
9.99	8.10	70.30	5.69	13.94	100.00	13.94	0.00	.00	0.00	2.00	0.00	

BIRTLEY ENGINEERING
02/11/77

.6	17.0	.6	14.0	3.8	14.0	2.0	14.0	4.0	8.9	
1.6	9.2	1.2	4.5	8.3	4.5	4.0	4.5	6.0	17.7	
3.1	4.0	1.3	3.5	9.8	3.5	5.0	3.5	8.0	19.1	
4.2	3.2	1.4	2.8	11.2	2.8	6.0	2.8	10.0	19.4	
5.8	2.5	1.6	2.2	12.7	2.2	8.0	2.2	0.0	0.0	
8.1	2.1	1.7	1.9	13.4	1.9	10.0	1.9	0.0	0.0	
9.7	1.8	1.8	1.6	14.1	1.6	12.0	1.6	0.0	0.0	
14.1	.8	2.8	.0	0.0	.0	175.8	.0	0.0	0.0	

PASS 1 8135
PASS 2 8 22
PASS 3 7103
PASS 4 7100
PASS 5 4 60



BIRTLEY ENGINEERING

02/11/77

...40

--DIRECT--			--CUM FLOATS--			--CUM SINKS--			←0.1 DISTR		
S.G.	WT>	ASH>	WT% ASH	CUM WT> ASH	WT>	ASH>	SINK WT ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	46.30	2.20	1.02	1.02	46.30	2.20	8.47	53.70	15.77	1.30	0.00
1.40	37.60	6.50	2.44	3.46	83.90	4.13	6.02	16.10	37.42	1.40	44.60
1.45	4.40	15.30	.27	4.14	88.30	4.68	5.35	11.70	45.74	1.50	9.40
1.50	2.60	20.60	.54	4.67	90.90	5.14	4.82	9.10	52.92	1.60	3.40
1.60	2.40	26.30	.63	5.30	93.30	5.68	4.18	6.70	62.46	1.70	2.00
1.70	1.00	37.00	.37	5.67	94.30	6.02	3.81	5.70	66.93	1.80	0.00
1.80	1.00	44.50	.45	6.12	95.30	6.42	3.37	4.70	71.70	1.90	0.00
9.99	4.70	71.70	3.37	9.49	100.00	9.49	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
02/11/77

.4	15.4	.4	10.7	3.2	10.7	2.0	10.7	4.0	11.1
1.3	7.0	.8	3.2	7.5	3.2	4.0	3.2	6.0	18.1
3.1	2.8	.9	2.3	9.1	2.3	5.0	2.3	8.0	19.3
4.1	2.1	1.0	1.8	10.6	1.8	6.0	1.8	10.0	19.6
5.3	1.6	1.1	1.3	12.5	1.3	8.0	1.3	0.0	0.0
7.4	1.2	1.2	1.1	13.4	1.1	10.0	1.1	0.0	0.0
8.9	1.0	1.3	.9	14.3	.9	12.0	.9	0.0	0.0
14.3	.5	1.9	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8138
PASS 2 8 14
PASS 3 7111
PASS 4 7100
PASS 5 4 60

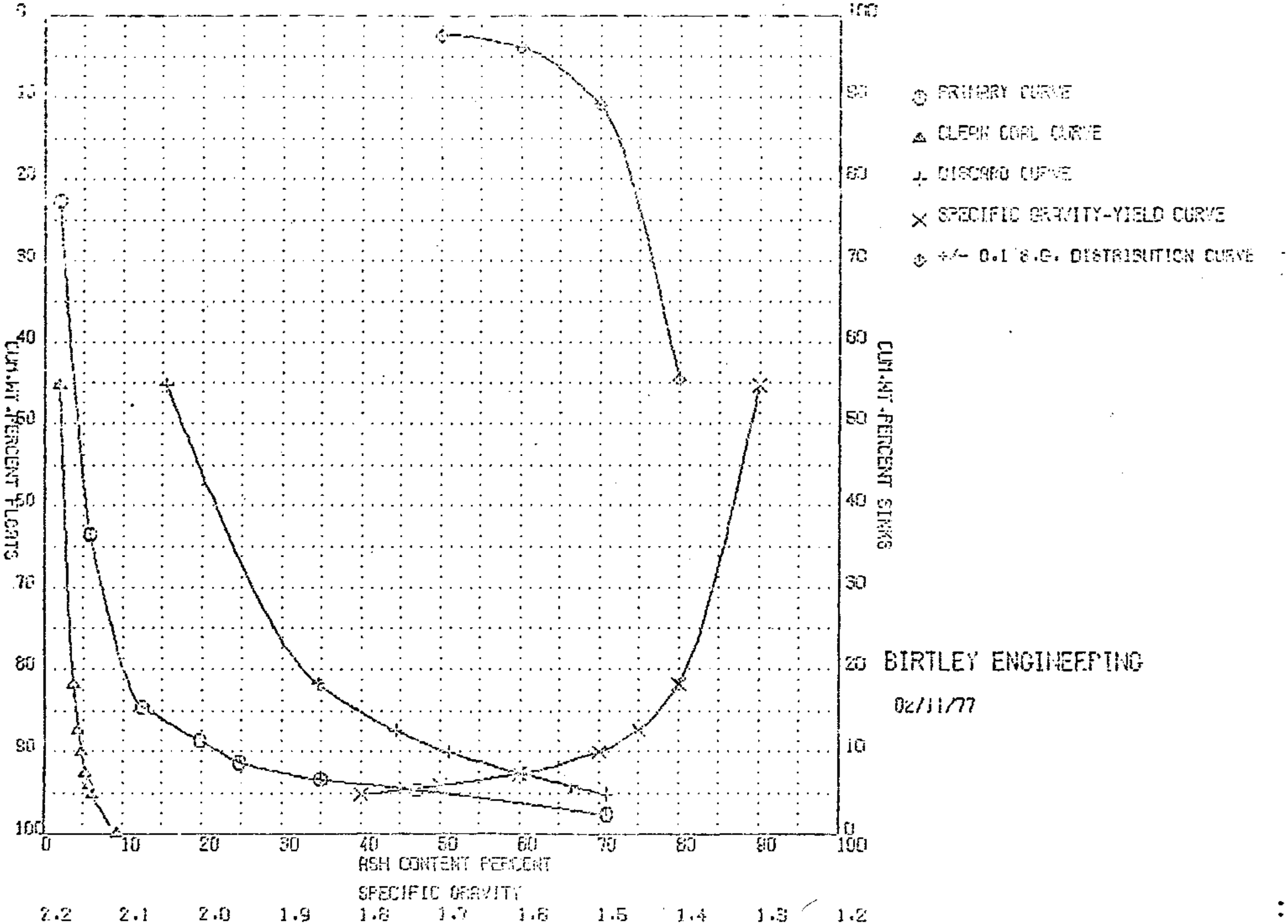
CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 6, "A" SEAM, WEST FORK AREA

LAB. NO. 9248 DATE: September, 1977

SINK FLOAT ANALYSES								
S.G. FRACTION	48M x 100M (WT.% = 7.1)							
	WT.%	ASH%	CUM. WT.%	CUM. ASH%	WT.%	ASH%	CUM. WT.%	CUM. ASH%
-1.30	45.4	1.9	45.4	1.9				
1.30-1.40	36.4	5.8	81.8	3.6				
1.40-1.45	5.6	12.4	87.4	4.2				
1.45-1.50	2.7	19.8	90.1	4.7				
1.50-1.60	2.6	24.7	92.7	5.2				
1.60-1.70	1.4	34.9	94.1	5.7				
1.70-1.80	1.1	47.1	95.2	6.1				
+1.80	4.8	71.0	100.0	9.3				

TECK MINING GROUP LTD A SEAM WEST PORT LAB NO 9848 48M X 100M
THE CUMULATIVE WASHABILITY CURVES



--DIRECT--			--CUM FLOATS--			--CUM SINKS--			+-0.1 DISTR		
S.G.	WT>	ASH>	WT> CUM ASH	WT> CUM ASH	WT>	SINK WT ASH>	ASH>	WT>	ASH>	S.G.	WT>
1	2	3	4	5	6	7	8	9	10	11	12
1.30	45.40	1.90	.86	.86	45.40	1.90	8.40	54.60	15.38	1.30	0.00
1.40	36.40	5.80	2.11	2.97	81.80	3.64	6.29	18.20	34.54	1.40	44.70
1.45	5.60	12.40	.69	3.67	87.40	4.20	5.59	12.60	44.38	1.50	10.90
1.50	2.70	19.80	.53	4.20	90.10	4.66	5.06	9.90	51.08	1.60	4.00
1.60	2.60	24.70	.64	4.85	92.70	5.23	4.41	7.30	60.48	1.70	2.50
1.70	1.40	34.90	.49	5.33	94.10	5.67	3.93	5.90	66.54	1.80	0.00
1.80	1.10	47.10	.52	5.85	95.20	6.15	3.41	4.80	71.00	1.90	0.00
9.99	4.80	71.00	3.41	9.26	100.00	9.26	0.00	.00	0.00	2.00	0.00

BIRTLEY ENGINEERING
02/11/77

.4	15.5	.4	10.9	3.1	10.9	2.0	10.9	4.0	11.1
1.2	7.3	.7	3.6	6.9	3.6	4.0	3.6	6.0	17.8
2.5	3.1	.8	2.5	8.9	2.5	5.0	2.5	8.0	19.2
4.0	2.3	.9	2.0	10.2	2.0	6.0	2.0	10.0	19.5
4.9	1.7	1.0	1.5	12.1	1.5	8.0	1.5	0.0	0.0
7.0	1.3	1.1	1.2	13.3	1.2	10.0	1.2	0.0	0.0
9.4	1.1	1.2	1.0	14.2	1.0	12.0	1.0	0.0	0.0
14.2	.5	1.9	.0	0.0	.0	175.8	.0	0.0	0.0

PASS 1 8138
PASS 2 8 14
PASS 3 7111
PASS 4 7100
PASS 5 4 60

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 6, "A" SEAM, WEST FORK AREA

LAB. NO.: 9348 DATE: September, 1977

FROTH FLOTATION TESTS

Pulp Density = 10% Reagent = 4:1=Kerosene:MIBC Dosage = 0.48 lb/T

Conditioning Time = 1 min. Stage I, II, III, IV, V are froths at 30, 60, 90, 120, 150 sec. respectively.

48 Mesh x 0 (WT.% - 16.2)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	75.2	0.7	5.6	26.4	67.3	0.51		8	75.2	5.6
STAGE II	10.7	0.8	8.1	25.6	65.5	0.49		7	85.9	5.9
STAGE III	5.6	0.8	15.5	23.9	59.8	0.51		4 1/2	91.5	6.5
STAGE IV										
STAGE V										
TAILS	8.5	--	50.9	--	--	0.51	--	--	100.0	10.3

48 Mesh x 100 Mesh (WT.% = 7.1)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	79.3	0.6	6.4	26.5	66.5	0.51		7 1/2	79.3	6.4
STAGE II	11.5	0.7	7.5	25.9	65.9	0.51		7	90.8	6.5
STAGE III	4.1	0.8	12.1	25.0	62.1	0.47		6	94.9	6.8
STAGE IV										
STAGE V										
TAILS	5.1	--	52.3	--	--	0.37	--	--	100.0	9.1

100 Mesh x 0 (WT.%= 9.1)

PRODUCT	WT.%	RM.%	ASH%	VM.%	FC.%	S%	P%	F.S.I.	CUMULATIVE WT.%	CUMULATIVE ASH%
STAGE I	70.2	0.7	5.8	26.7	66.8	0.57		8	70.2	5.8
STAGE II	15.9	0.7	8.6	25.4	65.3	0.59		7	86.1	6.3
STAGE III	6.4	0.8	18.9	23.7	56.6	0.51		5	92.5	7.2
STAGE IV										
STAGE V										
TAILS	7.5	--	58.9	--	--	0.53	--	--	100.0	11.1

CLIENT: TECK MINING GROUP LTD.

SAMPLE: "A" SEAM, WEST FORK AREA

LAB. NO.: 9348 - COMPOSITE CLEAN COAL

SCREEN SIZE	WT.%	S.G. OF COMP. FLOATS	YIELD%	ASH%	F.S.I.
4" x 2"	4.3	---	---	---	---
2" x 3/4"	12.5	1.40	34.5	8.0	4 1/2
3/4" x 1/4"	18.7	1.40	48.4	7.2	6
1/4" x 28M	39.9	1.60	89.0	7.8	7
28M x 48M	8.4	1.80	95.3	6.4	8
48M x 100M	7.1	1.80	95.2	6.1	8 1/2

CLIENT: TECK MINING GROUP LTD.

SAMPLE: ADIT 6, "A" SEAM, WEST FORK AREA

LAB. NO.: 9348 DATE: September, 1977

9369

ANALYSES OF 4" x 100Mesh FLOAT @ [illegible] S.G. (Yield = 77.4%)									
PROXIMATE									
RM.%	ASH%	VM.%	FC.%	S%	P%	BTU/LB	F.S.I.	H.G.I.	
0.5	7.4	25.2	66.9	0.55	0.01	14275	6 1/2	70	a.d.b.
	7.4	25.3	67.3	0.55	0.01	14347	--	--	d.b.

ULTIMATE ANALYSIS							DILATATION TEST				
H_2O%	C%	H%	N%	S%	ASH%	by diff. O%	S.T. °C.	M.D.T. °C	M.C. %	M.D. %	G.No.
0.53	81.68	4.54	1.01	0.55	7.36	4.33	362	459	27	46	1.032

NOTE: Sample of above float product prepared for Petrographic Analysis and Geisler Plastometer Test.

9370

ANALYSES OF 4" x100Mesh SINK @ 1.50 S.G. (WT.% = 22.6)										
PROXIMATE						ASH FUSION TEMPS (°F)				
RM.%	ASH%	VM.%	FC.%	S%		ATMOS.	I.D.T.	S.T.	H.T.	F.T.
0.7	59.0	13.0	27.3	0.37	adb	OXID.	2520	2650+	--	--
	59.4	13.1	27.5	0.37	db	REDUC.	2490	2650	2650+	--

MINERAL ANALYSIS OF ASH, %											
SiO_2	Al_2O_3	TiO_2	CaO	MgO	MnO	Fe_2O_3	Na_2O	K_2O	P_2O_5	SO_3	Undetermined
71.28	18.77	0.85	0.84	1.33	—	1.82	0.28	2.37	0.06	0.38	- 2.02

NOTE: Sample of above reject product also prepared for Clay Analysis

Lab. No. 9348 Date Sept. 15, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: COMP. FLOATS @ 1.50

Starting Temperature °C: 320

Softening Temperature °C: 362

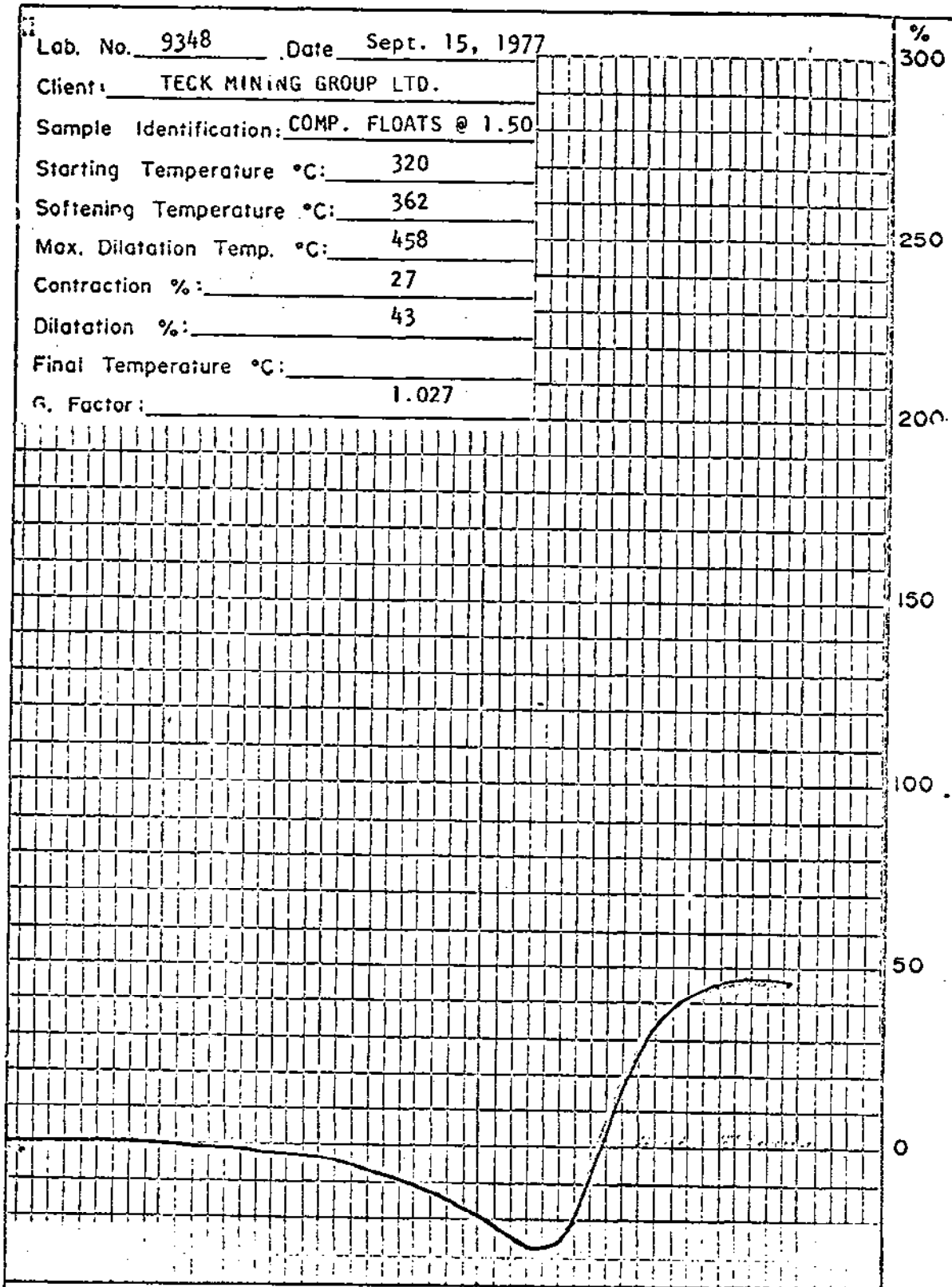
Max. Dilatation Temp. °C: 458

Contraction %: 27

Dilatation %: 43

Final Temperature °C:

G. Factor: 1.027



BIRTLEY ENGINEERING (CANADA) LTD.

Title

RUHR DILATOMETER TEST

Date

Drawn

CLIENT: TECK MINING GROUP LTD.
SAMPLE: "A" SEAM, WEST FORK AREA
LAB. NO.: 9348

ANALYSIS OF 4" x 100 Mesh FLOAT @ 1.50 S.G. (Yield = 77.4%)

LAB. NO. 9369

GIESELER PLASTOMETER TEST

	DDPM	TEMP. (°C)
START	1	420
MAXIMUM	885	645
FINAL	1	507
	RANGE =	87

ANALYSIS OF 4" x 100 MESH SINK @ 1.50 S.G. (WT.% = 22.6)

LAB. NO. 9370

CLAY SEPARATION BY FLOTATION

Material greater than 2 microns	85.5
Material less than 2 microns	14.5

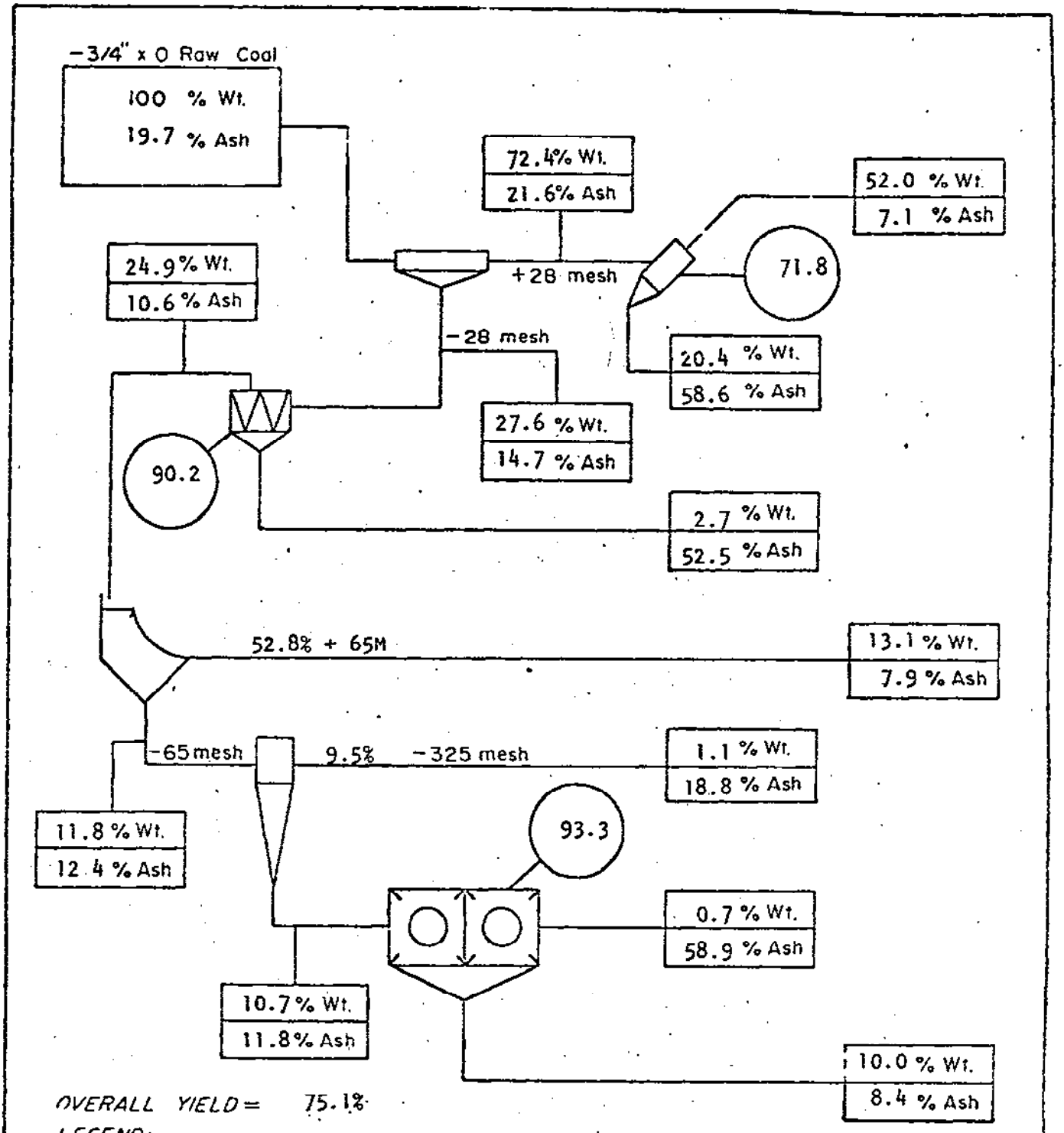
X-RAY DIFFRACTION ANALYSIS OF MATERIAL LESS THAN 2 MICRONS

Quartz	33
Feldspar	Nil
Calcite	Trace
Dolomite	Nil
Siderite	Nil
Kaolinite	24
Illite	41
Chlorite	Trace
Montmorillonite	Nil
Dryrite	2

ADIT 6, "A" SEAM - WEST FORK

LAB. NO.: 9347

PILOT PLANT WASHING RESULTS



OVERALL YIELD = 75.1%

LEGEND:

○ *CIRCUIT YIELD %*

Wt. *WEIGHT %*

Ash *ASH CONTENT (AIR DRIED)*

BIRTLEY ENGINEERING (CANADA) LTD.

Title: PLANT BALANCE FLOWSHEET PLANT WASH - ADIT 6, "A" SEAM BULK TECK MINING GROUP LTD. - WEST FORK PROJECT LAB. NO.: 9347	Date: Sept. 15, 1977 Drawn

BIRTLEY ENGINEERING (CANADA) LTD.

Coal Science & Minerals Testing Div.

TECK MINING GROUP LTD.

BULK WASHING DATA*

ADIT 6 SEAM A - WEST FORK LAB. NO. 9347

DELIVERY DATE September 2, 1977 DATE OF WASH September 13, 1977

Raw Coal Analysis: ADM 1.9 ASH% 19.7 FSI 6

Delivered Bulk Weight 8.333 Metric Tons

Washed Weight ** 6.945 Metric Tons

* All weight and analyses are on Air Dried Basis unless otherwise indicated.

** Does not include 87 KG +2" rock oversize

BULK WASHING DATA

HEAVY MEDIUM CIRCUIT

ADIT/SEAM NO. 6/A WEST FORK LAB. NO. 9347

1. S. G. of Separation 1.43
2. Feed Ash Content 21.6 % F.S.I. 4 1/2
3. Clean Coal Estimated Weight 3.565 M.T.
4. Clean Coal Analysis - Ash 7.1 % F.S.I. 7
5. Reject Estimated Weight 1.462 M.T.
6. Reject Analysis - Ash 58.6 % F.S.I. 1
7. Estimated 3/4" x 28M in Circuit 5.027 M.T. 72.4 Wt.%
8. Yield Clean Coal (Weighted): 70.9 %
9. Yield Clean Coal (Calculated Ash Balance) - 71.8 %

BULK WASHING DATA

WATER-ONLY CYCLONE CIRCUIT

ADIT/SEAM NO. 6/A WEST FORK LAB. NO. 9347

1. Vortex Finder Clearance(VCF) #2 = 3.810 #1 = 0 CM 1 1/2 0 INCHES

2. Feed Pressure #2 = 0.4 #1 = 1.4 KG/CM^2 5 20 P.S.I.

3. Feed Rate #2 = 5.8 #1 = 23.2 M^3/HR. 21.2 85.0 I.G./Min.

4. Feed Pulp Density 100 - 130 g/l. 10 - 13 Solids W/V

5. Sample Analysis

	SCREEN SIZE	WT.%	ASH%	F.S.I.	CUM. WT.%	CUM. ASH%	HEAD ASH%	HEAD FSI
FEED							14.7	7 1/2
O'FLOW	+65 Mesh	52.8	7.1	8	52.8	7.1	10.6	7 1/2
	65M x 0	47.2	14.7	7	100.0	10.7		
U'FLOW							52.5	1
S.B.O.							7.9	8
T.C.O.*							18.8	1/2

6. Yield - Total W.O. Cyclone Circuit = 90.2

7. Estimated Yield of 28 x 65 Mesh Coal = 47.6
(as % of 28 Mesh x 0 Feed)

8. Estimated 28M x 0 in circuit
(Plant Feed - HM Products) 1.918 MT 27.6 %

* Thickener Cyclone Overflow

BULK WASHING DATA

ADIT/SEAM 6/A WEST FORK LAB. NO. 9347 DATE OF WASH Sept. 13, 1977

a) Raw Coal

Delivered Weight	= 8.333	M.T.
Ash %	= 19.7	
F.S.I.	= 6	
Estimated Washed Wt.	= 6.945	M.T.

b) Heavy Media Circuit

Estimated Proportion of +28 Mesh in Feed 72.4

Effective S.G. = 1.43

Raw Feed	21.6 %	Ash	4 1/2	F.S.I.
Clean Coal	7.1 %	Ash	7	F.S.I.
Reject	58.6 %	Ash	1	F.S.I.
Calculated Yield	71.8 %			
Weighed Yield	70.9 %			

c) Water-Only Cyclone Circuit

Raw Feed	14.7 %	Ash	7 1/2	F.S.I.
Overflow	10.6 %	Ash	7 1/2	F.S.I.
Underflow	52.5 %	Ash	1	F.S.I.
Calculated Yield	90.2 %			
% of +65M in O/F	52.8 %			
Sieve Bend Overflow	7.9 %	Ash	8	F.S.I.

d) Froth Flotation Circuit

Raw Feed	11.8 %	Ash	8	F.S.I.
Concentrates	8.4 %	Ash	8	F.S.I.
Tails	58.9 %	Ash	1 1/2	F.S.I.
Calculated Yield	93.3 %			

TECK MINING GROUP LTD.

BULK WASHING DATA

BULK WASHING SUMMARY (Cont.)

ADIT/SEAM 6/A WEST FORK LAB. NO. 9347

e) Clean Coal Mix Analyses a.d.b.

(i) Proximate

ADM% 9.3 RM.% 1.4 ASH% 7.3 VM.% 25.0 FC.% 66.3

(ii) S.% 0.53 FSI 7 1/2 HGI 70 BTU/LB 14169 P% 0.003

(iii) Dilatation Test

S.T. 365 M.D.T. 461 MC% 26 MD% 55 G. NO. 1.043

(iv) Giesler Plastometer Test

	DDPM	TEMP.(%C)
START	1	417
MAXIMUM	660	459
FINAL	1	507
	RANGE =	90

f) Clean Coal Mix Make-Up

H.M. CLEAN COAL	FINES FILTER CAKE	CLEAN COAL MIX		SHIPPED		IN STOCK	
M.T.	M.T.	BBLS.	M.T.	BBLS.	M.T.	BBLS.	M.T.
3.565	1.134	28	4.699				

Lab. No. 9347 Date Sept. 19, 1977

Client: TECK MINING GROUP LTD.

Sample Identification: SEAM A, ADIT 6 CM

Starting Temperature °C: 320

Softening Temperature °C: 362

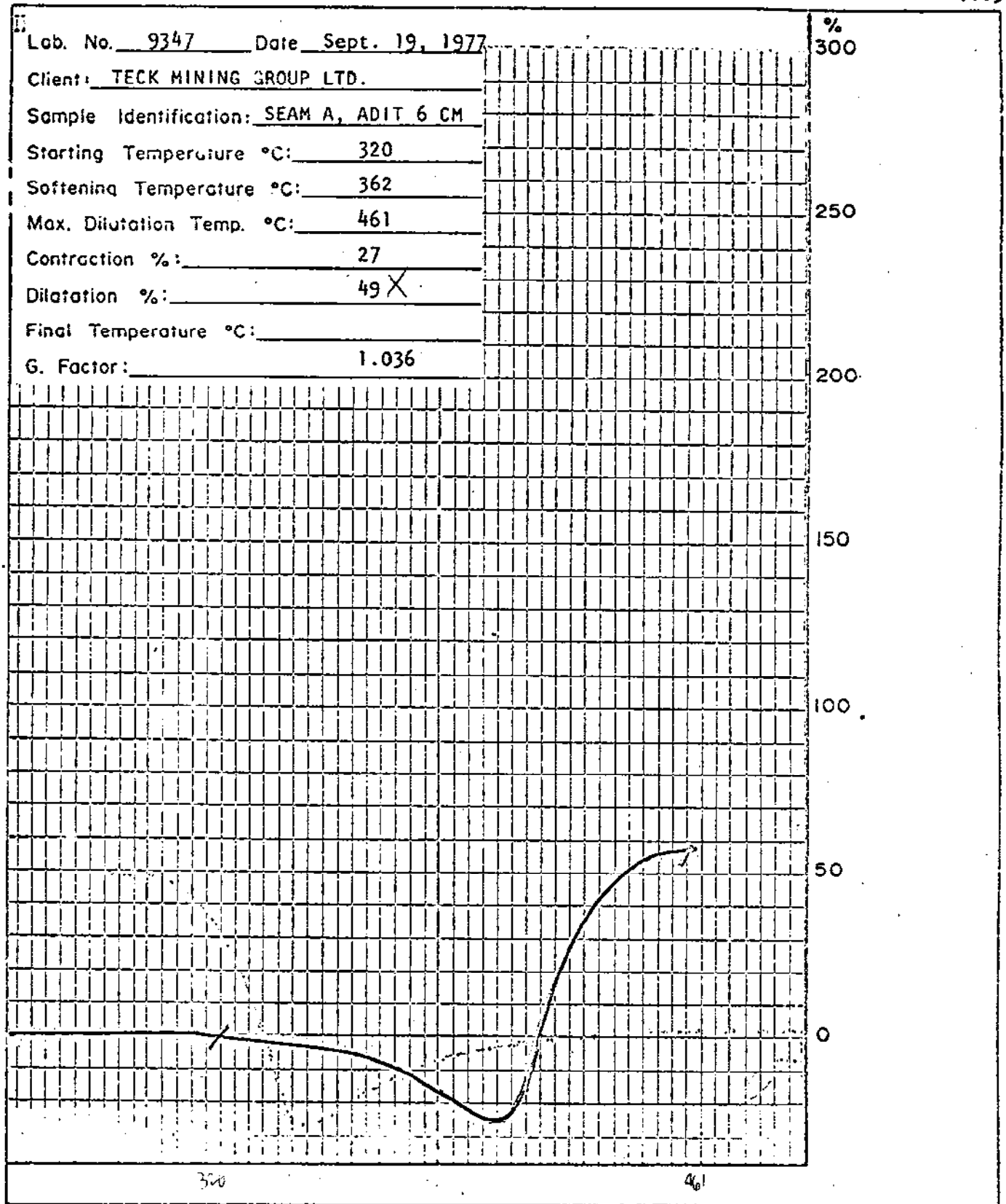
Max. Dilatation Temp. °C: 461

Contraction %: 27

Dilatation %: 49 X

Final Temperature °C:

G. Factor: 1.036



BIRTLEY ENGINEERING (CANADA) LTD.

Title	Date
RUHR DILATOMETER TEST	
	Drawn

CLIENT: TECK MINING GROUP LTD.

SAMPLE: CLEAN COAL ANALYSES OF "A" SEAM, WEST FORK

LAB. NO.: 9347 DATE: October 31, 1977

ADM%	MOISTURE	ASH%	VOL.	FC.%	S%	B.T.U.	F.S.I.	CALC. FACTORS
9.3	1.4	7.3	25.0	66.3	0.53	14169	7 1/2	air dried basis
	10.6	6.6	22.7	60.1	0.48	12851	---	as received basis
		7.4	25.4	67.2	0.54	14370	---	dry basis

SIZE ANALYSIS		
SIZE FRACTION	WT.%	WT.%
3/4" x 1/2"	4.4	4.4
1/2" x 1/4"	13.7	18.1
1/4" x 6M	16.0	34.1
6M x 12M	26.8	60.9
12M x 20M	8.8	69.7
20M x 100M	22.3	92.0
100M x 0	8.0	100.0

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
FEB	1205	SUP			(1) GEL-W BERGEY		225.00			1
MAR	1205	GEO			(2) GEL-R S VERZOSA		320.00			2
MAR	1205	REC			(1) GEL-R S VERZOSA		320.00			3
MAR	1205	TRAN			(18) REDHAWK RENTALS LTD		1100.00			4
MAR	1205	ENV			(4) INTERNATIONAL ENVIRONMENTAL CONSULTA		1714.92			5
MAR	1205	DRF			ALTAIR DRAFTING SERVICES		456.00			6
APR	1205	ENV			(4) INTERNATIONAL ENVIRONMENTAL CONSULTA		18.23			7
APR	1205	ENV			(4) INTERNATIONAL ENVIRONMENTAL CONSULTA		996.33			8
MAY	1205	SUP			(1) GEL - W BERGEY		90.00			9
MAY	1205	GEO			(1) GEL - R VERZOSA		345.00			10
MAY	1205	EXP			(2) GEL - G LOVANG		600.00			11
MAY	1205	ENV			(4) INTERNATIONAL ENVIRONMENTAL CONSULTA		282.17			12
MAY	1205	FILD			(12) DEAKIN EQUIPMENT LTD		103.52			13
MAY	1205	FILD			(12) DEAKIN EQUIPMENT LTD		564.21			14
MAY	1205	LIVE			(8) COASTAL PROPANE LTD		96.14			15
MAY	1205	LIVE			(12) DURAPOUCH		563.96			16
JUN	1205	TRAN			(1) GEOPHYSICAL ENGINEERING LIMITED		20.35			17
JUN	1205	FILD			(1) GEOPHYSICAL ENGINEERING LIMITED		31.87			18
JUL	1205	ENV			(4) INTERNATIONAL ENVIRONMENTAL CONS		2454.97			19
JUL	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		684.72			20
JUL	1205	LIVE			(6) YIPS RESTAURANT		112.43			21
JUL	1205	AIR			(15) HIGHLAND HELICOPTERS		542.40			22
JUL	1205	FILD			(12) CHETWYND CHAIN SAW SALES + SERVICE		331.77			23
JUL	1205	LIVE			(12) TAMSHELL HOLDING LTD		157.28			24
JUL	1205	FILD			(12) CHETWYND HARDWARE 1973 LTD		29.64			25
JUL	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		284.02			26
JUL	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		312.40			27
JUL	1205	FILD			(12) CHETWYND HARDWARE (1973) LTD		210.62			28
JUL	1205	FILD			(12) CHETWYND HARDWARE (1973) LTD		29.64			29
JUL	1205	GEO			(1) GEOPHYSICAL ENGINEERING LIMITED		2250.00			30
AUG	1205	TRAN			(13) CHETWYND MOTORS(1970)LTD		79.25			31
AUG	1205	TRAN			(13) CHETWYND MOTORS 1970 LTD		58.90			32
AUG	1205	TRAN			(13) CHETWYND MOTORS 1970 LTD		20.00			33
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		490.58			34
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		1989.40			35
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		171.18			36
AUG	1205	FILD			(12) HA HANSEN		250.00			37
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		313.50			38
AUG	1205	DDH			(5) PETER + PAUL DEMEULEMEESTER LTD		656.00			39
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		154.92			40
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		766.90			41
AUG	1205	FILD			(12) GEAR-RAMA SUPPLY		50.24			42
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		1937.40			43
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		154.92			44
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		686.70			45
AUG	1205	LIVE			(7) COUNTRY SQUIRE INN LTD		610.70			46
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		129.10			47

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		3509.96			48
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		542.00			49
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		426.30			50
AUG	1205	LIVE			(6) WESTGATES SUPERMARKET LTD		41.92			51
AUG	1205	LIVE			(6) WESTGATES SUPERMARKET LTD		340.72			52
AUG	1205	FILD			(12) NICHOLSON MILLS		42.01			53
AUG	1205	DDH			(3) CONNORS DRILLING LTD		2782.00			54
AUG	1205	ANAL			(11) CASCADE COAL PETROGRAPHY LTD		1070.00			55
AUG	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		154.92			56
AUG	1205	SUP			(1) GEL-W BERGEY		144.00			57
AUG	1205	GEO			(1) GEL-R VERZOSA		3795.00			58
SEP	12	REN			(12) NORTHERN METALIC SALES LTD		64.20			59
SEP	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		400.57			60
SEP	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		1973.17			61
SEP	1205	TELE			BC TEL		14.27			62
SEP	1205	FILD			(4) BEAVER		174.46	1205 FILD		63
SEP	1205	FILD			(9) BEAVER		12.57			64
SEP	1205	TRAN			(13) CHETWYND MOTORS (1970) LTD		5.20			65
SEP	1205	FILD			(9) BEAVER LUMBER CO LTD		174.46			66
SEP	1205	TRAN			(12) THE BUMP SHOP		59.30			67
SEP	1205	DDH			(3) CONNORS DRILLING LTD		20138.38			68
SEP	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		484.55			69
SEP	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		2110.76			70
SEP	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		143.80			71
SEP	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		741.00			72
SEP	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		1884.82			73
SEP	1205	DDH			(3) CONNORS DRILLING LTD		24582.02			74
SEP	1205	LIVE			(7) COUNTRY SQUIRE INN LTD		452.80			75
SEP	1205	SUP			(1) GEL-W.R BERGEY		560.00			76
SEP	1205	GEO			(1) GEL-RS VERZOSA		3515.00			77
SEP	1205	MS			(1) GEL-G LOVANG		95.00			78
SEP	1205	FILD			(1) GEL		229.88			79
SEP	1205	LIVE			(1) GEL		96.91			80
SEP	1205	TRAN			(1) GEL		162.42			81
SEP	1205	TRAN			(13) CHETWYND MOTORS (1970) LTD		23.90			82
SEP	1205	TRAN			(13) CHETWYND MOTORS (1970) LTD		176.46			83
SEP	1205	TRAN			(13) CHETWYND MOTORS (1970) LTD		90.13			84
SEP	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		948.39			85
SEP	1205	HAUL			CANADIAN FREIGHTWAYS LIMITED		10.10			86
SEP	1205	WAGE			(2) PAYROLL		2063.33			87
SEP	1205	AIR			(15) HIGHLAND HELICOPTERS LTD		399.65			88
SEP	1205	FILD			(12) CHETWYND CHAIN SAW SALES + SERVICES		26.11			89
SEP	1205	ANAL			(11) CYCLONE ENGINEERING SALES LTD		346.50			90
OCT	1205	ANA			(11) CYCLONE ENGINEERING SALES LTD		104.50			91
OCT	1205	SUP			(1) GEL-W. BERGEY		305.00			92
OCT	1205	GEO			(1) GEL-R. VELZOSA		3015.00			93
OCT	1205	DDH			(3) CONNORS DRILLING		1613.60			94
OCT	1205	LIVE			(8) YIPS RESTAURANT		481.00			95
OCT	1205	REC			(2) JIM SCHILLING		100.00			96
							104395.32	-104395.32		

WESTERN CANADA PROJECTS 1977 AUG

	ITEM TOTALS					GROUP TOTALS				1
GROUP	ITEM	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE
1205	TRAN		158.15			-158.15					
	AIR		11427.78			-11427.78					
	FILD		342.25			-342.25					
	DDH		3438.00			-3438.00					
	LIVE		993.34			-993.34					
	ANAL		1070.00			-1070.00					
	SUP		144.00			-144.00					
	GEO		3795.00			-3795.00		21368.52			-21368.52
								21368.52			-21368.52

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FORMALINER - MOORE BUSINESS FORMS

		ITEM TOTALS					GROUP TOTALS				
GROUP	ITEM	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE
1205	AIR		9086.71			-9086.71					
	TELE		14.27			-14.27					
	FILD		617.48			-617.48					
	TRAN		517.41			-517.41					
	DDH		44720.40			-44720.40					
	LIVE		549.71			-549.71					
	SUP		560.00			-560.00					
	GEO		3515.00			-3515.00					
	MS		95.00			-95.00					
	HAUL		10.10			-10.10					
	WAGE		2063.33			-2063.33					
	ANAL		346.50			-346.50		62095.91			-62095.91
12	REN		64.20			-64.20		64.20			-64.20
								62160.11			-62160.11

GROUP	ITEM	ITEM TOTALS INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE	GROUP TOTALS INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE
1205	ANA		104.50			-104.50					
	SUP		305.00			-305.00					
	GEO		3015.00			-3015.00					
	DDH		1613.60			-1613.60					
	LIVE		481.00			-481.00					
	REC		100.00			-100.00		5619.10			-5619.10
								5619.10			-5619.10

WESTERN CANADA PROJECTS 1977 — 077 OCT

GROUP	ITEM	ITEM TOTALS INCOME	ITEM TOTALS COSTS	ITEM TOTALS MARKUP	ITEM TOTALS COSTS+MARKUP	ITEM TOTALS BALANCE	GROUP TOTALS INCOME	GROUP TOTALS COSTS	GROUP TOTALS MARKUP	GROUP TOTALS COSTS+MARKUP	GROUP TOTALS BALANCE
1205	SUP		1324.00			-1324.00					
	GEO		13240.00			-13240.00					
	REC		420.00			-420.00					
	TRAN		1795.91			-1795.91					
	ENV		5466.62			-5466.62					
	DRF		456.00			-456.00					
	EXP		600.00			-600.00					
	FILD		2261.00			-2261.00					
	LIVE		2953.86			-2953.86					
	AIR		22338.03			-22338.03					
	DDH		49772.00			-49772.00					
	ANAL		1416.50			-1416.50					
	TELE		14.27			-14.27					
	MS		95.00			-95.00					
	HAUL		10.10			-10.10					
	WAGE		2063.33			-2063.33					
	ANA		104.50			-104.50		104331.12			-104331.12
12	REN		64.20			-64.20		64.20			-64.20
								104395.32			-104395.32

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MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
JAN	1000	LIVE			LOGAN MAYHEW LIMITED		399.46			1
JAN	1000	TRAN			RS VERZOSA - EXP ACC		9.00			2
JAN	1000	TELE			RS VERZOSA - EXP ACC		3.40			3
JAN	1000	MIS			RS VERZOSA - EXP ACC		82.32			4
JAN	1000	LIVE			RS VERZOSA - EXP ACC		152.11			5
JAN	1000	TRAN			RS VERZOSA - EXP ACC		301.22			6
JAN	1000	LIVE			RS VERZOSA - EXP ACC		26.00			7
JAN	1000	FILD			RB BARNES - EXP ACC		6.52			8
JAN	1000	TELE			RB BARNES - EXP ACC		8.10			9
JAN	1000	LIVE			RB BARNES - EXP ACC		133.80			10
JAN	1000	FILD			RB BARNES - EXP ACC		108.00			11
JAN	1000	TELE			RB BARNES - EXP ACC		47.35			12
JAN	1000	TRAN			RB BARNES - EXP ACC		408.00			13
JAN	1000	LIVE			RB BARNES - EXP ACC		229.31			14
JAN	1000	TRAN			SURFWOOD SUPPLY LTD		481.39			15
JAN	1000	TELE			BC TEL		47.57			16
JAN	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONSULTA		1040.55			17
JAN	1000	REC			GEL		135.00			18
JAN	1000	FILD			GEL		451.00			19
JAN	1000	LIVE			GEL		231.80			20
JAN	1000	TELE			GEL		80.11			21
JAN	1000	TRAN			GEL		687.65			22
JAN	1000	MIS			GEL		335.00			23
JAN	1000	DRF			GEL-G LOVANG		400.00			24
JAN	1000	ADMN			GEL-RE HINDSON		295.00			25
JAN	1000	GEO			GEL-VERZOSA + MC CLYMONT		6110.00			26
JAN	1000	SUP			GEL-WR BERGEY		655.00			27
JAN	1000	DDH			SALISBURY + DIETZ		600.00			28
JAN	1000	DDH			SALISBURY + DIETZ		600.00			29
JAN	1000	TRAN			RB BARNES - EXP ACC		178.32			30
JAN	1000	TELE			SF-ADIT BC TEL		204.59			31
JAN	1000	TRAN			SF-GEL		192.91			32
JAN	1000	TRAN			SF-GEL-		192.92			33
JAN	1000	FILD			SF-ADIT-ADVANCE PLASTICS		20.57			34
JAN	1000	FILD			SF-ADIT-THE GEO H HEWITT CO		46.29			35
JAN	1000	TRAN			SF-ADIT-RE SHILDS - EXP ACC		300.00			36
JAN	1000	LIVE			SF-ADIT-RE SHILDS - EXP ACC		121.90			37
JAN	1000	TRAN			SF-ADIT-RE SHILDS - EXP ACC		48.73			38
JAN	1000	LIVE			SF-ADIT-RE SHILDS - EXP ACC		600.00			39
JAN	1000	TELE			SF-ADIT-RB BARNES EXP ACC		60.90			40
JAN	1000	FILD			SF-ADIT-RB BARNES EXP ACC		130.00			41
JAN	1000	TRAN			SF-ADIT-RB BARNES EXP ACC		148.17			42
JAN	1000	LIVE			SF-ADIT-RB BARNES EXP ACC		104.96			43
JAN	1000	FILD			SF-ADIT-RB BARNES EXP ACC		4036.00			44
JAN	1000	TELE			SF-ADIT-RB BARNES EXP ACC		17.05			45
JAN	1000	FILD			SF-ADIT-RB BARNES EXP ACC		46.29			46
JAN	1000	TRAN			SF-ADIT-RB BARNES EXP ACC		46.93			47
JAN	1000	TELE			SF-ADIT-RB BARNES EXP ACC		12.75			48
JAN	1000	FILD			SF-ADIT-RB BARNES EXP ACC		23.24			49
JAN	1000	TRAN			SF-ADIT-RB BARNES EXP ACC		6.60			50
JAN	1000	LIVE			SF-ADIT-RB BARNES EXP ACC		20.50			51
JAN	1000	FILD			SF-ADIT-RB BARNES EXP ACC		8.43			52
JAN	1000	TRAN			SF-ADIT-RB BARNES EXP ACC		198.60			53

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
JAN	1000	LIVE			SF-ADIT-RB BARNES EXP ACC		155.35			54
JAN	1000	UDG			SF-ADIT-BEAVER LUMBER CO		21.44			55
JAN	1000	RUE			SF-ADIT PETER + PAUL DEMEULEMEESTER		2425.50			56
JAN	1000	UDG			SF-ADIT-TECK CORPORATION LTD		3000.00			57
JAN	1000	UDG			SF-ADIT-EXPLOSIVES LIMITED		196.27			58
JAN	1000	HAUL			SF-ADIT-EVANS TRANSPORT LTD		200.00			59
FEB	1000	FILD			BEAVER LUMBER CO LTD		234.39			60
FEB	1000	TELE			BC TEL		19.52			61
FEB	1000	DRF			A ABELLO		605.00			62
FEB	1000	EXP			CANADIAN FREIGHTWAYS		38.45			63
FEB	1000	EXP			CANADIAN FREIGHTWAYS LTD		198.00			64
FEB	1000	TELE			BC TEL		32.92			65
FEB	1000	MISC			GEL-LOVANG + SCHILLING		235.00			66
FEB	1000	FILD			GEL		62.81			67
FEB	1000	LIVE			GEL		76.53			68
FEB	1000	TRAN			GEL		3.30			69
FEB	1000	ADMN			GEL-R HINDSON		222.50			70
FEB	1000	GEO			GEL-MC CLYMONT + VERZOSA		3015.00			71
FEB	1000	SUP			GEL-WR BERGEY		1485.00			72
FEB	1000	TRAN			GEL		3.30			73
FEB	1000	LIVE			GEL		76.53			74
FEB	1000	FILD			GEL		62.81			75
FEB	1000	MIS			GEL-LOVANG + SCHILLING		235.00			76
FEB	1000	HAUL			CANADIAN NORTHWEST CARRIERS INC		480.00			77
FEB	1000	ADMN			GEL-HINDSON		222.50			78
FEB	1000	GEO			GEL-VERZOSA + MC CLYMONT		3015.00			79
FEB	1000	SUP			GEL-W BERGEY		1485.00			80
FEB	1000	TRAN			SF-GEL	75.00				81
FEB	1000	TRAN			SF-GEL	75.00				82
FEB	1000	TRAN			SF-TMG-AIR CANADA		76.70			83
MAR	1000	TRAN			TMG - AIR CANADA		38.35			84
MAR	1000	ADMN			TMG - MARCH PAYROLL		2003.48			85
MAR	1000	GOVT			GEL		55.00			86
MAR	1000	CONV			GEL		335.06			87
MAR	1000	TRAN			GEL		34.65			88
MAR	1000	TELE			GEL		9.96			89
MAR	1000	LIVE			GEL		465.77			90
MAR	1000	REC			GEL-R VERZOSA		635.00			91
MAR	1000	ADMN			GEL-R HINDSON		268.00			92
MAR	1000	GEO			GEL-R VERZOSA		1110.00			93
MAR	1000	SUP			GEL-W BERGEY		965.00			94
MAR	1000	TELE			BRITISH COLUMBIA TELEPHONE		12.51			95
MAR	1000	ASS			CYCLONE ENGINEERING		264.00			96
MAR	1000	TELE			BRITISH COLUMBIA TELEPHONE		52.01			97
MAR	1000	TRAN			CANUCK TRUCK RENTAL		435.52			98
MAR	1000	LIVE			EXPENSE ACCOUNT - ROGER SHIELDS		33.40			99
MAR	1000	HAUL			ATCO STRUCTURES LTD		750.00			100
MAR	1000	ASS			SF-CYCLONE ENGINEERING		7015.50			101
MAR	1000	UDG			SF- ADIT - NORTHERN METALIC SALES		133.11			102
MAR	1000	ANAL			SF-ADIT-CYCLONE ENGINEERING		2380.00			103
APR	1000	UDG			SF-ADIT NORTHERN METALIC SALES LTD		241.84			104

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
APR	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONSULTA		131.32			105
APR	1000	FILD			NORTHERN METALIC SALES LTD		93.42			106
APR	1000	CONS			TG PHILLIPS - TMG		1000.00			107
APR	1000	GOVT			RECEIVER GENERAL - TMG		26.00			108
APR	1000	DRF			P VLASVELD-EXP REPT-TMG		12.00			109
APR	1000	MIS			PMG PAYROLL		1103.67			110
APR	1000	MIS			TMG PAYROLL		284.21			111
APR	1000	GEO			GEL - R VERZOSA		700.00			112
APR	1000	GEO			GEL - RS VERZOSA		700.00			113
APR	1000	HAUL			CANADIAN FREIGHTWAYS		94.69			114
APR	1000	TELE			BRITISH COLUMBIA CO		6.42			115
MAY	1000	MIS			TMG - PAYROLL (SF-ADIT)		1285.71			116
MAY	1000	CONS			TMG - TG PHILLIPS		5100.00			117
MAY	1000	TRAN			TMG - R HINDSON - EXP REPT		51.09			118
MAY	1000	MIS			TMG - PAYROLL		2254.78			119
MAY	1000	ANAL			CYCLONE ENGINEERING		1987.21			120
MAY	1000	SUP			GEL - W BERGEY		2275.00			121
MAY	1000	ADMN			GEL - R HINDSON		2105.00			122
MAY	1000	EXP			GEL - LOVANG VERZOSA MCCLYMONT		2070.00			123
MAY	1000	GEO			GEL - VERZOSA MCCLYMONT		4550.00			124
MAY	1000	TRAN			CHETWYND MOTORS (1970) LTD		29.27			125
MAY	1000	LIVE			PROJECT MACHINERY LTD.		865.76			126
MAY	1000	TRAN			REDHAWK RENTALS LTD		125.51			127
MAY	1000	MAPS			BURNETT RESOURCE SURVEYS		2870.38			128
MAY	1000	FILD			VANCAL REPRODUCTIONS LTD		56.18			129
MAY	1000	FILD			VANCAL REPRODUCTIONS LTD		68.48			130
MAY	1000	FILD			DEAKIN EQUIPMENT LTD		90.95			131
MAY	1000	FILD			BRITISH COLUMBIA INDUSTRIES		7.81			132
MAY	1000	TELE			BRITISH COLUMBIA TELEPHONE		6.42			133
MAY	1000	TELE			BRITISH COLUMBIA TELEPHONE	20.08				134
MAY	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONSULTA		85.80			135
MAY	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONSULT		264.25			136
MAY	1000	HAUL			CANADIAN FREIGHTWAYS LTD		111.40			137
MAY	1000	LIVE			TERRITORIAL LEASING LTD		3825.25			138
MAY	1000	FILD			NEVILLE CROSBY INC		53.55			139
MAY	1000	FILD			NEVILLE CROSBY INC		646.79			140
MAY	1000	FILD			CHAIN-SAW RENTALS + EQUIP		46.89			141
MAY	1000	FILD			VANCAL REPRODUCTIONS LTD		16.85			142
MAY	1000	FILD			VANCAL REPRODUCTIONS LTD		75.01			143
MAY	1000	FILD			NEVILLE CROSBY INC		254.80			144
MAY	1000	FILD			NEVILLE CROSBY INC		33.17			145
MAY	1000	FILD			NEVILLE CROSBY INC		6.95			146
MAY	1000	HAUL			EVANS TRANSPORT LTD		467.50			147
JUN	1000	SUP			GEL-W BERGER R HINDSON		6100.00			148
JUN	1000	ADMN			GEL-R HINDSON		2185.00			149
JUN	1000	GEO			GEL-CARR MCCLYMONT VERZOSA		7040.00			150
JUN	1000	EXP			GEL-R HINDSON		260.00			151
JUN	1000	FILD			NEVILLE CROSBY INC		26.26			152
JUN	1000	FILD			NORTHERN GLASS (1969) LTD		8.23			153
JUN	1000	DRF			CHRIS BAILON		80.00			154
JUN	1000	HAUL			CANADIAN FREIGHTWAYS		190.79			155
JUN	1000	REC			CARGILL GRAIN COMPANY		815.00			156

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
JUN	1000	TELE			BC TEL		7.42			157
JUN	1000	TELE			BC TEL	20.08				158
JUN	1000	HAUL			EVANS TRANSPORT LTD		225.00			159
JUN	1000	TRAN			BIG COUNTRY SPORTSLAND		54.53			160
JUN	1000	TRAN			TMG-AIR CANADA		372.50			161
JUN	1000	MIS			TMG-PAYROLL		19270.12			162
JUN	1000	DRF			CHRIS BAILON		80.00			163
JUN	1000	HAUL			ARROW TRANSPORTATION SYSTEMS		45.88			164
JUN	1000	FILD			WESTERN DRUM RECYCLERS		358.40			165
JUN	1000	FILD			CADILLAC PLASTIC		103.58			166
JUN	1000	HAUL			ARROW TRANSPORTATION SYSTEMS		41.29			167
JUN	1000	TRAN			REDHAWK RENTALS LTD		648.50			168
JUN	1000	TRAN			REDHAWK RENTALS LTD		648.50			169
JUN	1000	HAUL			CANADIAN FREIGHTWAYS LIMITED		111.40			170
JUN	1000	ADMN			WESTERN REPRODUCERS LTD		789.18			171
JUN	1000	FILD			ADVANCE PLASTICS LTD		84.61			172
JUN	1000	FILD			SIGNODE CANADA LIMITED		632.39			173
JUN	1000	FILD			PROJECT MACHINERY LTD		588.50			174
JUN	1000	TRAN			CHETWYND MOTORS (1970)LTD		1.82			175
JUN	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		3210.00			176
JUN	1000	TRAN			CHETWYND PETROLEUMS LTD		2087.12			177
JUN	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		7771.42			178
JUN	1000	DDH			PETER + PAUL DEMEULEMEESTER LTD		948.00			179
JUN	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		2628.55			180
JUN	1000	FILD			PETER + PAUL DEMEULEMEESTER LTD		124.00			181
JUN	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		2791.25			182
JUN	1000	DDH			PETER + PAUL DEMEULEMEESTER LTD		1655.50			183
JUN	1000	FILD			PETER + PAUL DEMEULEMEESTER LTD		211.75			184
JUN	1000	DDH			CONNORS DRILLING LTD		775.16			185
JUN	1000	TRAN			HERTZ SYSTEM LICENSEE		33.30			186
JUN	1000	FILD			TAMSHELL HOLDING LTD		1065.37			187
JUN	1000	HAUL			TOR TOR TRUCKING LTD		180.00			188
JUN	1000	FILD			VANCAL REPRODUCTIONS LTD		42.16			189
JUN	1000	LIVE			COUNTRY SQUIRE INN		379.00			190
JUN	1000	TRAN			IMPERIAL OIL LIMITED		52.02			191
JUN	1000	HAUL			NICKELS CARTAGE CO LTD		3.70			192
JUN	1000	LIVE			TERRITORIAL LEASING LTD		3825.25			193
JUN	1000	TELE			BC TEL		6.90			194
JUN	1000	TELE			BC TEL		6.90			195
JUN	1000	HAUL			CANADIAN FREIGHTWAYS		50.40			196
JUN	1000	BLDG			BPB INSTRUMENTS		4741.50			197
JUN	1000	RUE			PETER + PAUL DEMEULEMEESTER		4899.35			198
JUN	1000	HAUL			PETER + PAUL DEMEULEMEESTER		408.00			199
JUN	1000	RUE			P. + P. DEMEULEMEESTER.		2176.85			200
JUN	1000	DDH			P. + P. DEMEULEMEESTER.		286.80			201
JUN	1000	LIVE			P. + P. DEMEULEMEESTER.		71.70			202
JUN	1000	RUE			P. + P. DEMEULEMEESTER.		4154.00			203
JUN	1000	RUE			P. + P. DEMEULEMEESTER.		54.50			204
JUN	1000	RUE			P. + P. DEMEULEMEESTER.		1799.50			205
JUN	1000	DDH			P. + P. DEMEULEMEESTER.		962.50			206
JUN	1000	RUE			P. + P. DEMEULEMEESTER.		2829.75			207
JUN	1000	RUE			P. + P. DEMEULEMEESTER.		4171.20			208
JUN	1000	DDH			P. + P. DEMEULEMEESTER.		2986.20			209
JUN	1000	TELE			SPILSBURY + TINDALL		29.23			210

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
JUN	1000	TELE			PHOENIX COMMUNICATIONS LTD		243.12			211
JUN	1000	LIVE			PROJECT MACHINERY		588.50			212
JUN	1000	FILD			GEAR-O-RAMA		10.12			213
JUN	1000	LIVE			CANADIAN PROPANE GAS + OIL LTD.		694.07			214
JUN	1000	FILD			SIGNODE CANADA LIMITED		632.39			215
JUN	1000	FILD			CHETWYND CHAIN SAW SALES + SERVICE		220.21			216
JUN	1000	TELE			CANADIAN MARCONI CO		206.27			217
JUN	1000	ANAL			CYCLONE ENGINEERING		5404.00			218
JUN	1000	FILD			DEAKIN EQUIPMENT LTD.		23.44			219
JUN	1000	FILD			ADVANCE PLASTICS LTD.		82.04			220
JUN	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONS.		3666.19			221
JUN	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONS.		78.18			222
JUN	1000	LIVE			CAL-VAN CANUS CATERING		4897.27			223
JUN	1000	LIVE			CAL-VAN CANUS CATERING		72.23			224
JUN	1000	DDH			CONNORS DRILLING LTD		18689.19			225
JUN	1232	VEH			TMG-MIN OF FINANCE		32.10			226
JUN	1232	WAGE			TMG-PAYROLL		532.50			227
JUN	1232	PUR			MSA CANADA		70.62			228
JUN	1232	VEH			WESTMINSTER AUTO LEASING LTD		297.50			229
JUN	1232	WAGE			ATLIN INDUSTRIES		4498.71			230
JUN	1232	PUP			NATIONAL MINE SERVICE		71.50			231
JUN	1232	ADIT			EXPLOSIVES LIMITED		206.44			232
JUN	1232	POW			EXPLOSIVES LIMITED		578.02			233
JUN	1232	PUR			FISHER SCIENTIFIC CO		191.56			234
JUN	1232	HAUL			EVANS TRANSPORT LTD		182.00			235
JUN	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		2951.95			236
JUN	1232	HAUL			TOR TOR TRUCKING LTD		180.00			237
JUN	1232	FILD			ECHO WOOD PRODUCTS		27.61			238
JUN	1232	HAUL			CANADIAN FREIGHTWAYS		639.88			239
JUN	1232	FILD			WESTERN DRUM RECYCLERS LTD		201.60			240
JUN	1232	FILD			FLECK BROS. LIMITED		9.80			241
JUN	1232	REN			BROWNING-FERRIS INDUSTRIES		400.00			242
JUN	1232	HAUL			LOISELLE TRANSPORT LIMITED		18.35			243
JUN	1232	POW			EXPLOSIVES LIMITED		578.02			244
JUN	1232	POW			EXPLOSIVES LIMITED		42.80			245
JUL	1000	DDH			CONNORS DRILLING		42231.91			246
JUL	1000	LIVE			CANADIAN PROPANE GAS + OIL LTD		394.70			247
JUL	1000	BLK			BIRTLEY ENGINEERING CANADA LTD		21302.50			248
JUL	1000	TRAN			ALPINE DISTRIBUTORS LTD		1605.00			249
JUL	1000	FILD			TAMSHELL HOLDING LTD		55.69			250
JUL	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		7771.42			251
JUL	1000	DDH			PETER + PAUL DEMEULEMEESTER LTD		981.28			252
JUL	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		515.00			253
JUL	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		2628.55			254
JUL	1000	FILD			PETER + PAUL DEMEULEMEESTER LTD		124.00			255
JUL	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		192.00			256
JUL	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		3456.32			257
JUL	1000	DDH			PETER + PAUL DEMEULEMEESTER LTD		2059.75			258
JUL	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		1155.00			259
JUL	1000	REC			PETER + PAUL DEMEULEMEESTER LTD		154.00			260
JUL	1000	DDH			CONNORS DRILLING LTD		52084.97			261
JUL	1000	FILD			CHETWYND HARDWARE 1973 LTD		234.03			262
JUL	1000	TRAN			CHETWYND MOTORS 1970 LTD		38.81			263

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
JUL	1000	FILD			TAMSHELL HOLDING LTD		98.77			264
JUL	1000	FILD			CHETWYND PETROLEUMS LTD		1229.91			265
JUL	1000	TRAN			CANADIAN PROPANE GAS + OIL LTD		473.84			266
JUL	1000	TRAN			IMPERIAL OIL LTD		117.39			267
JUL	1000	TRAN			REDHAWK		12.01			268
JUL	1000	HAUL			TOR TOR TRUCKING LTD		480.00			269
JUL	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		3839.40			270
JUL	1000	STR			PETER + PAUL DEMEULEMEESTER LTD		1279.80			271
JUL	1000	DDH			PETER + PAUL DEMEULEMEESTER LTD		1469.40			272
JUL	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		142.20			273
JUL	1000	LIN			PETER + PAUL DEMEULEMEESTER LTD		142.20			274
JUL	1000	LIN			PETER + PAUL DEMEULEMEESTER LTD		192.60			275
JUL	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		1771.25			276
JUL	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		224.70			277
JUL	1000	FILD			PETER + PAUL DEMEULEMEESTER LTD		310.50			278
JUL	1000	HAUL			CANADIAN FREIGHTWAYS LTD		66.25			279
JUL	1000	SRV			BURNETT RESOURCE SURVEYS LTD		15255.60			280
JUL	1000	HAUL			CANADIAN FREIGHTWAYS LTD		687.20			281
JUL	1000	TRAN			REDHAWK RENTALS LTD		225.51			282
JUL	1000	LIVE			CAL-VAN CANUS CATERING		80.25			283
JUL	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONS		3635.70			284
JUL	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONS		770.60			285
JUL	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONS		1032.10			286
JUL	1000	LIVE			CAL-VAN CANUS CATERING		9362.60			287
JUL	1000	TELE			CANADIAN MARCONI COMPANY		206.27			288
JUL	1000	TELE			BC TEL		38.62			289
JUL	1000	TELE			BC TEL		111.56			290
JUL	1000	TELE			BC TEL		241.76			291
JUL	1000	EXP			CANADIAN FREIGHTWAYS LIMITED		111.40			292
JUL	1000	FILD			NEVILLE CROSBY INC		113.50			293
JUL	1000	LIVE			YIPS RESTAURANT		379.40			294
JUL	1000	FILD			CHETWYND PHARMACY		24.50			295
JUL	1000	LIVE			ROBERT B BARNES EXP. REPT.		87.15			296
JUL	1000	TRAN			ROBERT B BARNES EXP. REPT.		151.28			297
JUL	1000	FILD			ROBERT B BARNES EXP. REPT.		1.50			298
JUL	1000	LIVE			CAL-VAN CANUS CATERING		6390.27			299
JUL	1000	LIVE			TERRITORIAL LEASING LTD.		3825.25			300
JUL	1000	HAUL			CANADIAN FREIGHTWAYS LTD		70.56			301
JUL	1000	HAUL			ADVANCE PLASTICS		4.35			302
JUL	1000	LIVE			CAL-VAN CANUS CATERING		1366.45			303
JUL	1000	RUE			PETER + PAUL DEMEULEMEESTER		1546.65			304
JUL	1000	HAUL			PETER + PAUL DEMEULEMEESTER		1065.20			305
JUL	1000	REC			PETER + PAUL DEMEULEMEESTER		154.00			306
JUL	1000	DDH			PETER + PAUL DEMEULEMEESTER		1328.25			307
JUL	1000	TRE			PETER + PAUL DEMEULEMEESTER		642.00			308
JUL	1000	RUE			PETER + PAUL DEMEULEMEESTER		5367.20			309
JUL	1000	HAUL			PETER + PAUL DEMEULEMEESTER		711.00			310
JUL	1000	REC			PETER + PAUL DEMEULEMEESTER		237.00			311
JUL	1000	LIVE			PETER + PAUL DEMEULEMEESTER		94.80			312
JUL	1000	DDH			PETER + PAUL DEMEULEMEESTER		663.60			313
JUL	1000	STR			PETER + PAUL DEMEULEMEESTER		426.60			314
JUL	1000	LIVE			CAL-VAN CANUS CATERING		6009.24			315
JUL	1000	LIVE			TERRITORIAL LEASING LTD.		3825.25			316
JUL	1000	FILD			BEAVER LUMBER COMPANY LIMITED		874.10			317

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
JUL	1000	BLOG			BPB INSTRUMENTS		11030.00			318
JUL	1000	LIVE			PROJECT MACHINERY LTD.		588.50			319
JUL	1000	TRAN			REDHAWK RENTALS LTD		605.06			320
JUL	1000	HAUL			TERRITORIAL LEASING LTD		2100.00			321
JUL	1000	DRF			CHRIS BAILON		560.00			322
JUL	1000	REC			INTERNATIONAL ENVIRONMENTAL CONSULTA		4434.18			323
JUL	1000	FILD			NICHOLSON MILLS		20.00			324
JUL	1000	SRV			BURNETT RESOURCE SURVEYS LTD		149.13			325
JUL	1000	LIVE			TMG-REH EXP ACC		112.75			326
JUL	1000	LIVE			TMG-JST EXP ACC		15.00			327
JUL	1000	LIVE			TMG-RBB EXP ACC		239.93			328
JUL	1000	TRAN			TMG-AIR CANADA		1302.30			329
JUL	1000	WAGE			TMG-PAYROLL		2062.93			330
JUL	1000	TRAN			REDHAWK RENTALS LTD		648.50			331
JUL	1000	SUP			GEL-BERGEY HINDSON		4748.00			332
JUL	1000	ADMN			GEL-HINDSON		1080.00			333
JUL	1000	GEO			GEL-MCCLYMONT VERZOSA		4500.00			334
JUL	1000	FILD			GEL		725.47			335
JUL	1000	FILD			ACKLANDS LTD		61.11			336
JUL	1000	LIVE			GEL		1386.42			337
JUL	1000	TELE			GEL		43.41			338
JUL	1000	TRAN			GEL		932.47			339
JUL	1232	PUR			SOUTH PEACE PETROLEUMS LTD		32.10			340
JUL	1232	PUR			GEAR-RAMA SUPPLY		13.27			341
JUL	1232	LIVE			CAL-VAN CANUS CATERING		237.30			342
JUL	1232	AIR			HIGHLAND HELICOPTERS LTD		283.80			343
JUL	1232	TELE			BC TEL		39.28			344
JUL	1232	TELE			BC TEL		100.70			345
JUL	1232	AIR			OKANAGAN HELICOPTERS LTD		615.98			346
JUL	1232	PUR			FISHER SCIENTIFIC CO		10.02			347
JUL	1232	POW			EXPLOSIVES LIMITED		5.49			348
JUL	1232	POW			EXPLOSIVES LIMITED		471.33			349
JUL	1232	PUR			FISHER SCIENTIFIC		37.89			350
JUL	1232	PUR			NICHOLSON MILLS		41.75			351
JUL	1232	PUR			NICHOLSON MILLS		220.55			352
JUL	1232	LIVE			YIPS RESTAURANT		68.32			353
JUL	1232	HAUL			ROBERT B BARNES EXP. REPT.		45.00			354
JUL	1232	LIVE			ROBERT B BARNES EXP. REPT.		135.25			355
JUL	1232	FUEL			ROBERT B BARNES EXP. REPT.		146.57			356
JUL	1232	VEH			ROBERT B BARNES EXP. REPT.		60.00			357
JUL	1232	TRAN			ROBERT B BARNES EXP. REPT.		246.95			358
JUL	1232	PUR			ROBERT B BARNES EXP. REPT.		70.59			359
JUL	1232	LIVE			CAL-VAN CANUS CATERING		1800.00			360
JUL	1232	REN			PURVES RITCHIE LTD		1444.50			361
JUL	1232	HAUL			CANADIAN FREIGHTWAYS LIMITED		1209.20			362
JUL	1232	POW			EXPLOSIVES LIMITED		923.04			363
JUL	1232	HAUL			CANADIAN FREIGHTWAYS LTD		748.13			364
JUL	1232	REN			NORMAG EQUIPMENT		63.45			365
JUL	1232	CAT			PETER + PAUL DEMEULEMEESTER		3298.20			366
JUL	1232	CAT			PETER + PAUL DEMEULEMEESTER		956.70			367
JUL	1232	POW			EXPLOSIVES LIMITED		923.04			368
JUL	1232	LIVE			CAL-VAN CANUS CATERING		1800.00			369
JUL	1232	HAUL			TOR TOR TRUCKING LTD.		645.00			370
JUL	1232	POW			EXPLOSIVES LIMITED		27.49			371

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
JUL	1232	PUR			ACKLANDS LTD		61.12			372
JUL	1232	PUR			TAMSHELL HOLDING LTD		26.82			373
JUL	1232	POW			EXPLOSIVES LTD		42.80			374
JUL	1232	WAGE			ATLIN INDUSTRIES		8090.26			375
JUL	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		1677.26			376
JUL	1232	FUEL			CHETWYND PETROLEUMS LTD		876.80			377
JUL	1232	PUR			NORTHERN METALIC SALES LTD		56.18			378
JUL	1232	HAUL			TOR TOR TRUCKING LTD		300.00			379
JUL	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		948.00			380
JUL	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		1397.58			381
JUL	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		642.00			382
JUL	1232	PUR			NORTHERN METALIC SALES LTD		151.78			383
JUL	1232	HAUL			SILVER STANDARD MINES LTD		59.64			384
JUL	1232	PUR			NICHOLSON MILLS		47.56			385
JUL	1232	VEH			WESTMINSTER AUTO LEASING LTD		595.00			386
JUL	1232	VEH			WESTMINSTER AUTO LEASING LTD		595.00			387
JUL	1232	LIVE			TMG-RBB EXP ACC		704.36			388
JUL	1232	WAGE			TMG-PAYROLL		871.50			389
AUG	1000	TRAN			CHETWYND MOTORS(1970)LTD		182.10			390
AUG	1000	TRAN			CHETWYND MOTORS(1970)LTD		78.05			391
AUG	1000	TRAN			CHETWYND MOTORS 1970 LTD		48.50			392
AUG	1000	TRAN			CHETWYND MOTORS 1970 LTD		950.63			393
AUG	1000	DDH			CONNORS DRILLING LTD		41438.31			394
AUG	1000	DDH			CONNORS DRILLING		38809.29			395
AUG	1000	FILD			TAMSHELL HOLDING LTD		65.04			396
AUG	1000	TRAN			ALPINE DISTRIBUTORS LTD		6.05			397
AUG	1000	REC			CHETWYND CHAIN SAW SALES + SERVICE		113.66			398
AUG	1000	FILD			NORTHERN METALIC SALES LTD		55.02			399
AUG	1000	FILD			ADVANCE PLASTICS LTD		18.75			400
AUG	1000	FILD			HA HANSEN		263.60			401
AUG	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		6589.60			402
AUG	1000	DDH			PETER + PAUL DEMEULEMEESTER LTD		800.65			403
AUG	1000	FILD			PETER + PAUL DEMEULEMEESTER LTD		47.40			404
AUG	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		47.40			405
AUG	1000	REC			PETER + PAUL DEMEULEMEESTER LTD		1604.25			406
AUG	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		2637.25			407
AUG	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		1155.00			408
AUG	1000	STR			PETER + PAUL DEMEULEMEESTER LTD		77.00			409
AUG	1000	FILD			PETER + PAUL DEMEULEMEESTER LTD		38.50			410
AUG	1000	DDH			PETER + PAUL DEMEULEMEESTER LTD		269.50			411
AUG	1000	TRE			PETER + PAUL DEMEULEMEESTER LTD		1482.40			412
AUG	1000	REC			PETER + PAUL DEMEULEMEESTER LTD		550.25			413
AUG	1000	TRAN			PETER + PAUL DEMEULEMEESTER LTD		96.00			414
AUG	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		208.00			415
AUG	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		384.00			416
AUG	1000	HAUL			BOB LASSER TRUCKING		1035.00			417
AUG	1000	FILD			TAMSHELL HOLDING LTD	2.56				418
AUG	1000	HAUL			TOR TOR TRUCKING LTD		165.00			419
AUG	1000	LIVE			CAL-VAN CANUS CATERING SERVICES LTD		6129.00			420
AUG	1000	LIVE			TERRITORIAL LEASING LTD		3825.25			421
AUG	1000	FILD			DEAKIN EQUIPMENT LTD		30.00			422
AUG	1000	LIVE			COUNTRY SQUIRE INN LTD		50.60			423
AUG	1000	LIVE			PROJECT MACHINERY LTD		588.50			424

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
AUG	1000	REC			CARGILL GRAIN CO LTD		1234.00			425
AUG	1000	FILD			VANCAL REPRODUCTIONS LTD		30.44			426
AUG	1000	TELE			BC TEL		24.70			427
AUG	1000	TELE			BC TEL		107.13			428
AUG	1000	FILD			ACKLANDS		122.23			429
AUG	1000	FILD			NORTHERN METALIC SALES LTD		33.88			430
AUG	1000	TRAN			CHETWYND MOTORS 1970 LTD		775.40			431
AUG	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		450.00			432
AUG	1000	LIVE			PETER + PAUL DEMEULEMEESTER LTD		200.00			433
AUG	1000	FILD			PETER + PAUL DEMEULEMEESTER LTD		345.00			434
AUG	1000	REC			PETER + PAUL DEMEULEMEESTER LTD		3638.25			435
AUG	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		1751.75			436
AUG	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		442.75			437
AUG	1000	DDH			PETER + PAUL DEMEULEMEESTER LTD		577.50			438
AUG	1000	DDH			PETER + PAUL DEMEULEMEESTER LTD		2715.75			439
AUG	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		378.75			440
AUG	1000	RUE			PETER + PAUL DEMEULEMEESTER LTD		1035.00			441
AUG	1000	REC			PETER + PAUL DEMEULEMEESTER LTD		3200.50			442
AUG	1000	TRE			PETER + PAUL DEMEULEMEESTER LTD		1086.75			443
AUG	1000	SRV			UNDERHILL + UNDERHILL		26.81			444
AUG	1000	DRF			CHRIS BAILON		200.00			445
AUG	1000	DRF			CHRIS BAILON		400.00			446
AUG	1000	REC			INTERNATIONAL ENVIRONMENTAL CONSULTA		7.68			447
AUG	1000	REC			INTERNATIONAL ENVIRONMENTAL CONSULTA		4327.48			448
AUG	1000	REC			INTERNATIONAL ENVIRONMENTAL CONSULTA		1190.00			449
AUG	1000	TRAN			REDHAWK RENTALS LTD		669.90			450
AUG	1000	TRAN			REDHAWK RENTALS LTD		461.31			451
AUG	1000	TRAN			REDHAWK RENTALS LTD		648.50			452
AUG	1000	LIVE			CHETWYND PETROLEUMS LTD		1467.82			453
AUG	1000	SUP			GEL-BERGEY HINDSON		2070.00			454
AUG	1000	ADMN			GEL-HINDSON		685.00			455
AUG	1000	GEO			GEL,HINDSON MCCLYMONT		3780.00			456
AUG	1000	REC			GEL, LOVANG		575.00			457
AUG	1000	UDG			GEL, LOVANG		335.00			458
AUG	1000	FILD			GEL		503.97			459
AUG	1000	LIVE			GEL		87.01			460
AUG	1000	TELE			GEL		5.22			461
AUG	1000	TRAN			GEL		334.89			462
AUG	1000	ANAL			BIRTLEY ENGINEERING (CANADA) LTD		32923.78			463
AUG	1000	TRAN			ALPINE DISTRIBUTORS LTD		1605.00			464
AUG	1000	BLOG			BPB INSTRUMENTS		10250.00			465
AUG	1000	LIVE			CAL-VAN CANUS CATERING		80.25			466
AUG	1000	LIVE			TMG-REHINDSON EXP ACC		208.74			467
AUG	1000	TRAN			TMG-TG PHILLIPS		2780.00			468
AUG	1000	LIVE			TMG-JST EXP ACC		8.70			469
AUG	1000	TRAN			TMG-AIR CANADA		4.00			470
AUG	1000	WAGE			TMG-PAYROLL		17077.52			471
AUG	1232	TRAN			CHETWYND MOTORS(1970)LTD		149.50			472
AUG	1232	TRAN			CHETWYND MOTORS(1970)LTD		45.84			473
AUG	1232	TRAN			CHETWYND MOTORS 1970 LTD		1036.34			474
AUG	1232	TRAN			CHETWYND MOTORS 1970 LTD		366.93			475
AUG	1232	REN			SUPERIOR EQUIPMENT + RENTALS LTD		187.00			476
AUG	1232	HAUL			CANADIAN FREIGHTWAYS LTD		700.16			477
AUG	1232	HAUL			CANADIAN FREIGHTWAYS LTD		324.02			478

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
AUG	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		732.05			479
AUG	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		705.90			480
AUG	1232	HAUL			TOR TOR TRUCKING LTD		1065.00			481
AUG	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		1024.75			482
AUG	1232	WAGE			ATLIN INDUSTRIES		7161.82			483
AUG	1232	HAUL			CANADIAN FREIGHTWAYS LTD		85.90			484
AUG	1232	POW			EXPLOSIVES LTD		339.71			485
AUG	1232	POW			EXPLOSIVES LTD		42.80			486
AUG	1232	LIVE			CAL-VAN CANUS CATERING SERVICES LTD		1800.00			487
AUG	1232	FILD			DEAKIN EQUIPMENT LTD		12.95			488
AUG	1232	REN			PURVES RITCHIE LTD		1444.50			489
AUG	1232	LIVE			COUNTRY SQUIRE INN LTD		23.10			490
AUG	1232	PUR			NORTHERN METALIC SALES LTD		17.97			491
AUG	1232	PUR			PETERS HOME + AUTO SUPPLY LTD		51.04			492
AUG	1232	TRAN			CHETWYND MOTORS 1970 LTD		178.42			493
AUG	1232	HAUL			CANADIAN FREIGHTWAYS LTD		1031.10			494
AUG	1232	LIVE			CAL-VAN CANUS CATERING SERVICES LTD		1800.00			495
AUG	1232	PUR			WESTERN DRUM RECYCLERS LTD		191.74			496
AUG	1232	HAUL			LOISELLE TRANSPORT LTD		27.68			497
AUG	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		269.50			498
AUG	1232	CAT			PETER + PAUL DEMEULEMEESTER LTD		672.75			499
AUG	1232	PUR			THIESSEN EQUIPMENT LTD		156.87			500
AUG	1232	VEH			WESTMINSTER AUTO LEASING LTD		595.00			501
AUG	1232	VEH			WESTMINSTER AUTO LEASING LTD		595.00			502
AUG	1232	POW			EXPLOSIVES LTD		392.77			503
AUG	1232	POW			EXPLOSIVES LTD		408.82			504
AUG	1232	REN			NORMAG EQUIPMENT + RENTALS LTD		1177.00			505
AUG	1232	TELE			TMG-B C TELE		312.89			506
AUG	1232	WAGE			TMG-PAYROLL		1209.03			507
SEP	1000	HAUL			WAYNE ASLESON TRUCKING		618.00			508
SEP	1000	FILD			BEAVER		662.65			509
SEP	1000	FILD			BEAVER	10.43				510
SEP	1000	FILD			TAMSHELL HOLDING LTD		160.40			511
SEP	1000	LIVE			GEL		1146.10			512
SEP	1000	TRAN			CHETWYND MOTORS (1970) LTD		492.53			513
SEP	1000	SRV			MCWILLIAM WHYTE GOBLE + ASSOCIATES		12163.00			514
SEP	1000	SRV			MCWILLIAM WHYTE GOBLE + ASSOCIATES		8700.00			515
SEP	1000	TRAN			REDHAWK		1957.12			516
SEP	1000	WAGE			PAYROLL		31076.99			517
SEP	1000	LIVE			CAL-VAN CANUS CATERING SERVICES LTD		7440.80			518
SEP	1000	DDH			CONNORS DRILLING LTD		21082.97			519
SEP	1000	AIR			NORTH CARIBOO FLYING SERVICE		160.00			520
SEP	1000	TELE			BC TEL		33.51			521
SEP	1000	TELE			BC TEL		158.86			522
SEP	1000	TELE			BC TEL		535.36			523
SEP	1000	AIR			OKANAGAN HELICOPTERS LTD		201.15			524
SEP	1000	FILD			BEAVER LUMBER CO LTD		614.01			525
SEP	1000	TRAN			THE BUMP SHOP		59.30			526
SEP	1000	DDH			CONNORS DRILLING		3500.00			527
SEP	1000	AIR			NORTH CARIBOO FLYING SERVICE		90.00			528
SEP	1000	LIVE			CAL-VAN CANUS CATERING SERVICES LTD		6716.45			529
SEP	1000	LIVE			CAL-VAN CANUS CATERING SERVICES LTD		80.25	1232 PUR		530
SEP	1000	ANAL			BIRTLEY ENGINEERING (CANADA) LTD		27603.23			531

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
SEP	1000	FILD			IMPERIAL OIL LIMITED		304.67			532
SEP	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		532.00			533
SEP	1000	REC			PETER + PAUL DEMEULEMEESTER LTD		2406.13			534
SEP	1000	LIVE			PETER + PAUL DEMEULEMEESTER LTD		683.50			535
SEP	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		385.00			536
SEP	1000	SUP			GEL-W BERGEY		2875.00			537
SEP	1000	ADMN			GEL-R HINDSON		1210.00			538
SEP	1000	ENV			GEL-R HINDSON		135.00			539
SEP	1000	GEO			GEL-MCCLYMONT VERZOSA HINDSON		4185.00			540
SEP	1000	REC			GEL-G LOVANG		2140.00			541
SEP	1000	CHM			GEL-G LOVANG		95.00			542
SEP	1000	FILD			GEL		473.70			543
SEP	1000	TELE			GEL		64.65			544
SEP	1000	TRAN			GEL		1055.37			545
SEP	1000	TRAN			CHETWYND MOTORS (1970) LTD		131.67			546
SEP	1000	TRAN			CHETWYND MOTORS (1970) LTD		885.74			547
SEP	1000	TRAN			CHETWYND MOTORS (1970) LTD		257.71			548
SEP	1000	BLOG			BPB INSTRUMENTS		3738.26			549
SEP	1000	REC			JIM GAUTHIER		640.00			550
SEP	1000	AIR			CENTRAL B C AIR SERVICES		662.40			551
SEP	1000	FILD			GEAR-RAMA		19.26			552
SEP	1000	TRAN			THE BUMP SHOP		173.60			553
SEP	1000	FILD			NORTHERN METALIC SALES		28.57			554
SEP	1000	FILD			TAMSHELL HOLDING LTD		117.88			555
SEP	1000	FILD			NORTHERN METALIC SALES LTD		95.98			556
SEP	1000	HAUL			FERBEY"S FREIGHTING		19.60			557
SEP	1000	TRAN			CHETWYND 66		48.55			558
SEP	1000	HAUL			MILLAR + BROWN LTD		330.92			559
SEP	1000	REN			BILLED BY BEAVERDELL TO TECK		3000.00			560
SEP	1000	LIVE			TERRITORIAL		2488.00			561
SEP	1000	HAUL			CANADIAN FREIGHTWAYS		705.11			562
SEP	1000	ENV			INTERNATIONALENVIRONMENTAL CONSULTA-		847.88			563
SEP	1000	ENV			INTERNATIONALENVIRONMENTAL CONSULTAN		144.33			564
SEP	1000	LIVE			PROJECT MACHINERY LTD		58.85			565
SEP	1000	RUE			PETER + PAUL DEMEULEMEESTER		2363.50			566
SEP	1000	REC			PETER + PAUL DEMEULEMEESTER		6728.00			567
SEP	1000	DDH			PETER + PAUL DEMEULEMEESTER		482.50			568
SEP	1000	ADIT			PETER + PAUL DEMEULEMEESTER		596.75			569
SEP	1000	TRE			PETER + PAUL DEMEULEMEESTER		155.25			570
SEP	1000	FILD			NORTHERN METALIC SALES		91.02			571
SEP	1000	FILD			NORTHERN METALIC SALES		28.73			572
SEP	1000	REC			CARGILL GRAIN COMPANY LIMITED		1420.02			573
SEP	1000	FILD			CHETWYND CHAIN SAW SALES + SERVICES		231.48			574
SEP	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONSULTA		108.91			575
SEP	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONSULTA		837.12			576
SEP	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONSULTA		3170.50			577
SEP	1000	GEO			TMG-ROBERT P KOENIG		1727.12			578
SEP	1000	TRAN			TMG-TG PHILLIPS		2780.00			579
SEP	1000	DDH			TMG-BP DRILLING COSTS	56815.10				580
SEP	1000	LIVE			TMG-JST EXP ACC		25.00			581
SEP	1000	WAGE			TMG-PAYROLL		9060.31			582
SEP	1232	PUR			ATLAS COPCO CANADA LTD		63.16			583
SEP	1232	WAGE			PAYROLL		8054.36			584
SEP	1232	TRAN			CHETWYND 66		135.05			585

MONTH	GROUP	ITEM	SUBGROUP	SUBITEM	REMARKS	INCOME	COSTS	BALANCE	MARKUP	CARD
SEP	1232	PUR			NORTHERN METALIC SALES LTD		80.25			586
SEP	1232	PUR			NORTHERN METALIC SALES LTD		305.54			587
SEP	1232	LIVE			YIPS RESTAURANT		62.80			588
SEP	1232	FILD			BEAVER		4.13	1232 FILD		589
SEP	1232	TRAN			CHETWYND MOTORS (1970) LTD		15.94			590
SEP	1232	FILD			BEAVER LUMBER CO LTD		4.13			591
SEP	1232	TRAN			WESTMINSTER AUTO LEASING		595.00			592
SEP	1232	TRAN			WESTMINSTER AUTO LEASING		395.00			593
SEP	1232	HAUL			CANADIAN FREIGHTWAYS LTD		1291.51			594
SEP	1232	POW			EXPLOSIVES LTD		370.13			595
SEP	1232	LIVE			CAL-VAN CANUS CATERING SERVICES LTD		500.00			596
SEP	1232	VDG			GEL-G LOVANG		470.00			597
SEP	1232	TRAN			CHETWYND MOTORS (1970) LTD		49.50			598
SEP	1232	TRAN			CHETWYND MOTORS (1970) LTD		1002.68			599
SEP	1232	PUR			FINNING TRACTOR		1910.04			600
SEP	1232	REN			PURVES RITCHIE		1495.26			601
SEP	1232	PUR			BROWNING-FERRIS INDUSTRIES		1779.50			602
SEP	1232	HAUL			LOISELLE TRANSPORT LIMITED		6.45			603
SEP	1232	FILD			CHETWYND CHAIN SAW SALES + SERVICES		157.95			604
SEP	1232	TRAN			WESTMINSTER AUTO LEASING		2208.90			605
SEP	1232	WAGE			TMG-PAYROLL		3026.10			606
OCT	1000	ANA			BIRTLEY ENGINEERING (CANADA) LTD		11383.67			607
OCT	1000	ENV			CAN TEST LTD		654.00			608
OCT	1000	LIVE			CANADIAN PROPANE GAS		183.76			609
OCT	1000	HAUL			CANADIAN FREIGHTWAYS LIMITED		21.80			610
OCT	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONSULTA		281.84			611
OCT	1000	HAUL			PETER + PAUL DEMEULEMEESTER LTD		256.00			612
OCT	1000	SUP			GEL-W BERGEY		2265.00			613
OCT	1000	ADMN			GEL-R HINDSON		335.00			614
OCT	1000	GEO			GEL-RSV,BIM,REHI		3270.00			615
OCT	1000	MIS			GEL-G LOVANG		865.00			616
OCT	1000	FILD			GEL		5.64			617
OCT	1000	LIVE			GEL		187.66			618
OCT	1000	TELE			GEL		29.57			619
OCT	1000	TRAN			GEL		289.96			620
OCT	1000	LIVE			COUNTRY SQUIRE INN LTD		31.70			621
OCT	1000	LIVE			CAL-VAN CANUS CATERING SERVICES LTD		2509.01			622
OCT	1000	DDH			TECK MINING GROUP	4706.10				623
OCT	1000	DDH			CONNORS DRILLING		1436.31			624
OCT	1000	REC			JIM SCHILLINH		300.00			625
OCT	1000	TELE			B C TEL		13.20			626
OCT	1000	TELE			B C TEL		110.36			627
OCT	1000	TELE			B C TEL		243.98			628
OCT	1000	FILD			TOR TOR TRUCKING LTD		800.00			629
OCT	1000	ENV			INTERNATIONAL ENVIRONMENTAL CONSULTA		227.04			630
OCT	1232	HAUL			CANADIAN FREIGHTWAYS LTD		405.60			631
OCT	1232	FILD			NORTHERN METALIC SALES LTD		19.19			632
OCT	1232	ADIT			PETER + PAUL DEMEULEMEESTER LTD		577.50			633
OCT	1232	HAUL			TOR TOR TRUCKING LTD		480.00			634
						61724.35	998564.97	-936840.62		

		ITEM TOTALS				GROUP TOTALS				1
GROUP	ITEM	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE
1000	TRAN		8640.33			-8640.33					
	DDH		84611.00			-84611.00					
	FILD	2.56	1553.83			-1551.27					
	REC		16441.07			-16441.07					
	RUE		10912.60			-10912.60					
	HAUL		5366.90			-5366.90					
	STR		77.00			-77.00					
	TRE		2569.15			-2569.15					
	LIVE		12645.87			-12645.87					
	TELE		137.05			-137.05					
	SRV		26.81			-26.81					
	DRF		600.00			-600.00					
	SUP		2070.00			-2070.00					
	ADMN		685.00			-685.00					
	GEO		3780.00			-3780.00					
	UDG		335.00			-335.00					
	ANAL		32923.78			-32923.78					
	BLOG		10250.00			-10250.00					
	WAGE		17077.52			-17077.52	2.56	210702.91			-210700.35
1232	TRAN		1777.03			-1777.03					
	REN		2808.50			-2808.50					
	HAUL		3233.86			-3233.86					
	CAT		3404.95			-3404.95					
	WAGE		8370.85			-8370.85					
	POW		1184.10			-1184.10					
	LIVE		3623.10			-3623.10					
	FILD		12.95			-12.95					
	PUR		417.62			-417.62					
	VEH		1190.00			-1190.00					
	TELE		312.89			-312.89		26335.85			-26335.85
							2.56	237038.76			-237036.20

WESTERN CANADA PROJECTS 1977 SEP

		ITEM TOTALS					GROUP TOTALS				1
GROUP	ITEM	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE
ł000	HAUL		2590.63			-2590.63					
	FILD	10.43	2828.35			-2817.92					
	LIVE		18638.95			-18638.95					
	TRAN		7841.59			-7841.59					
	SRV		20863.00			-20863.00					
	WAGE		40137.30			-40137.30					
	DDH	56815.10	25065.47			31749.63					
	AIR		1113.55			-1113.55					
	TELE		792.38			-792.38					
	ANAL		27603.23			-27603.23					
	REC		13334.15			-13334.15					
	SUP		2875.00			-2875.00					
	ADMN		1210.00			-1210.00					
	ENV		5243.74			-5243.74					
	GEO		5912.12			-5912.12					
	CHM		95.00			-95.00					
	BLOG		3738.26			-3738.26					
	REN		3000.00			-3000.00					
	RUE		2363.50			-2363.50					
	ADIT		596.75			-596.75					
	TRE		155.25			-155.25	56825.53	185998.22			-129172.69
ł232	PUR		4138.49			-4138.49					
	WAGE		11080.46			-11080.46					
	TRAN		4402.07			-4402.07					
	LIVE		562.80			-562.80					
	FILD		166.21			-166.21					
	HAUL		1297.96			-1297.96					
	POW		370.13			-370.13					
	VDG		470.00			-470.00					
	REN		1495.26			-1495.26		23983.38			-23983.38
							56825.53	209981.60			-153156.07

WESTERN CANADA PROJECTS 1977 OCT

GROUP	ITEM	ITEM TOTALS INCOME	ITEM TOTALS COSTS	ITEM TOTALS MARKUP	ITEM TOTALS COSTS+MARKUP	ITEM TOTALS BALANCE	GROUP TOTALS INCOME	GROUP TOTALS COSTS	GROUP TOTALS MARKUP	GROUP TOTALS COSTS+MARKUP	GROUP TOTALS BALANCE
1000	ANA		11383.67			-11383.67					
	ENV		1162.88			-1162.88					
	LIVE		2912.13			-2912.13					
	HAUL		277.80			-277.80					
	SUP		2265.00			-2265.00					
	ADMN		335.00			-335.00					
	GEO		3270.00			-3270.00					
	MIS		865.00			-865.00					
	FILD		805.64			-805.64					
	TELE		397.11			-397.11					
	TRAN		289.96			-289.96					
	ODH	4706.10	1436.31			3269.79					
	REC		300.00			-300.00	4706.10	25700.50			-20994.40
1232	HAUL		885.60			-885.60					
	FILD		19.19			-19.19					
	ADIT		577.50			-577.50		1482.29			-1482.29
							4706.10	27182.79			-22476.69

GROUP	ITEM	ITEM TOTALS INCOME	ITEM TOTALS COSTS	ITEM TOTALS MARKUP	ITEM TOTALS COSTS+MARKUP	ITEM TOTALS BALANCE	GROUP TOTALS INCOME	GROUP TOTALS COSTS	GROUP TOTALS MARKUP	GROUP TOTALS COSTS+MARKUP	GROUP TOTALS BALANCE
1000	LIVE		86401.36			-86401.36					
	TRAN	150.00	30780.47			-30630.47					
	TELE	40.16	3089.58			-3049.42					
	MIS		25715.81			-25715.81					
	FILD	12.99	19961.55			-19948.56					
	ENV		17111.31			-17111.31					
	REC		36639.40			-36639.40					
	DRF		2337.00			-2337.00					
	ADMN		11400.66			-11400.66					
	GEO		43702.12			-43702.12					
	SUP		24923.00			-24923.00					
	DDH	61521.20	239435.29			-177914.09					
	UDG		3927.66			-3927.66					
	RUE		77022.21			-77022.21					
	HAUL		20555.39			-20555.39					
	EXP		2677.85			-2677.85					
	MISC		235.00			-235.00					
	GOVT		81.00			-81.00					
	CONV		335.06			-335.06					
	ASS		7279.50			-7279.50					
	ANAL		70298.22			-70298.22					
	CONS		6100.00			-6100.00					
	MAPS		2870.38			-2870.38					
	BLDG		4741.50			-4741.50					
	BLK		21302.50			-21302.50					
	STR		1783.40			-1783.40					
	LIN		334.80			-334.80					
	SRV		36294.54			-36294.54					
	TRE		3366.40			-3366.40					
	BLOG		25018.26			-25018.26					
	WAGE		59277.75			-59277.75					
	AIR		1113.55			-1113.55					
	CHM		95.00			-95.00					
	REN		3000.00			-3000.00					
	ADIT		596.75			-596.75					
	ANA		11383.67			-11383.67	61724.35	901187.94			-839463.59
1232	VEH		2769.60			-2769.60					
	WAGE		33444.28			-33444.28					
	PUR		5587.92			-5587.92					
	PUP		71.50			-71.50					
	ADIT		783.94			-783.94					
	POW		5146.26			-5146.26					
	HAUL		9444.62			-9444.62					
	CAT		15276.64			-15276.64					
	FILD		437.36			-437.36					
	REN		6211.71			-6211.71					
	LIVE		8931.13			-8931.13					
	AIR		899.78			-899.78					
	TELE		452.87			-452.87					

	ITEM TOTALS					GROUP TOTALS				2
GROUP	ITEM	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE	INCOME	COSTS	MARKUP	COSTS+MARKUP	BALANCE
	FUEL		1023.37			-1023.37					
	TRAN		6426.05			-6426.05					
	VDG		470.00			-470.00		97377.03			-97377.03
							61724.35	998564.97			-936840.62