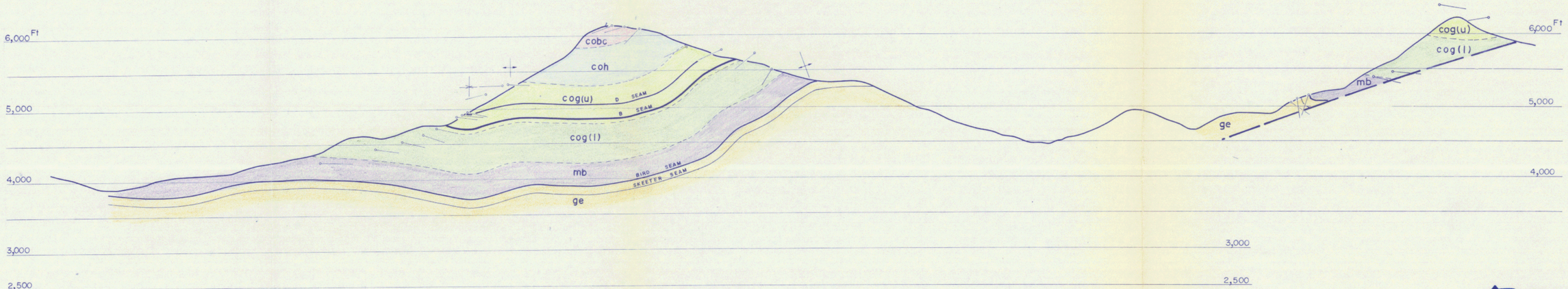
CROSS SECTION B~B'

SCALE 1"= 1000'



LEGEND

COAL SEAM	cobc	COMMOTION F.	BOULDER CREEK M.
MEASURED DIP	coh	COMMOTION F.	HULCROSS M.
GEOLOGICAL BOUNDARY	cog(u)	COMMOTION F.	GATES(UPPER) M.
FAULT	cog(l)	COMMOTION F.	GATES(LOWER) M.
	mb	MOOSEBAR F.	
	ge	GETHING F.	

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A.

CROSS SECTION B~B'

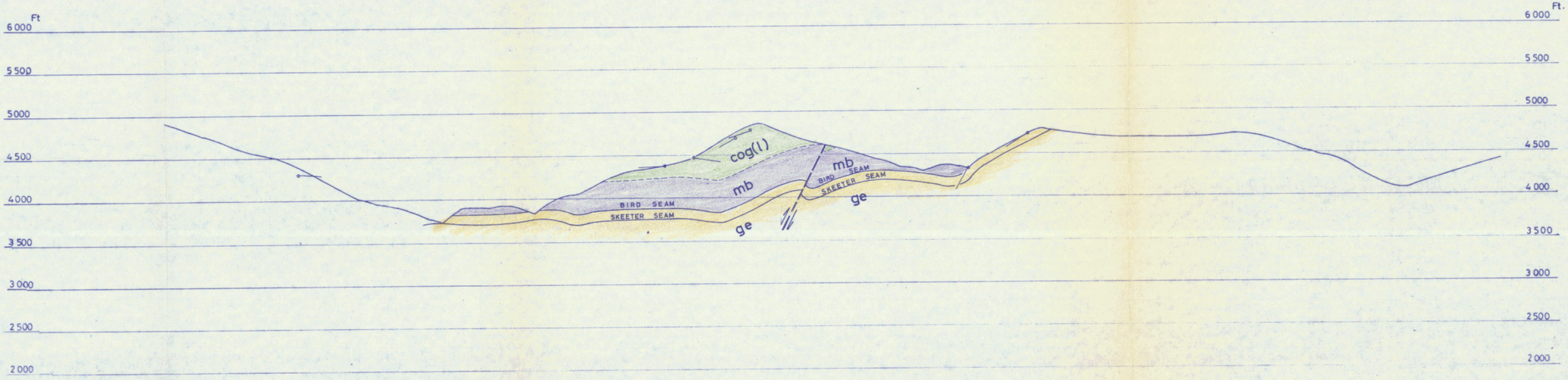
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-04-2

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

CROSS SECTION A~A'

SCALE 1"=1000'



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LEGEND

COAL SEAM	cobc	COMMOTION F.	BOULDER CREEK M.
MEASURED DIP	coh	COMMOTION F.	HULCROSS M.
GEOLOGICAL BOUNDARY	cog(u)	COMMOTION F.	GATES (UPPER) M.
FAULT	cog(l)	COMMOTION F.	GATES (LOWER) M.
	mb	MOOSEBAR F.	
	ge	GETHING F.	

NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A

CROSS SECTION A~A'

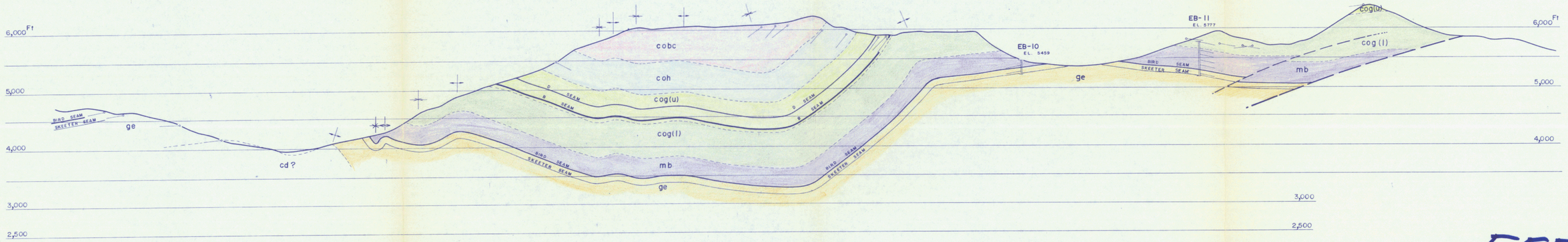
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-04-1

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

CROSS SECTION C~C'

SCALE 1"=1000'



LEGEND

COAL SEAM	cobc	COMMOTION F.	BOULDER CREEK M.
MEASURED DIP	coh	COMMOTION F.	HULCROSS M.
GEOLOGICAL BOUNDARY	cog(u)	COMMOTION F.	GATES(UPPER) M.
FAULT	cog(l)	COMMOTION F.	GATES(LOWER) M.
	mb	MOOSEBAR F.	
	ge	GETHING F.	

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A

CROSS SECTION C~C'

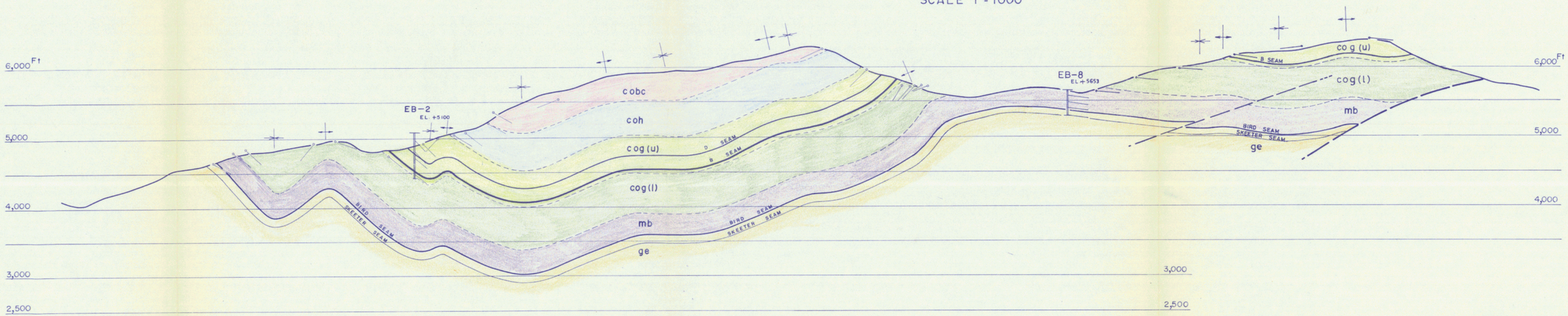
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-04-3

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

CROSS SECTION D~D'

SCALE 1"= 1000'



LEGEND

COAL SEAM	cobc	COMMOTION F.	BOULDER CREEK M.
MEASURED DIP	coh	COMMOTION F.	HULCROSS M.
GEOLOGICAL BOUNDARY	cog(u)	COMMOTION F.	GATES(UPPER) M.
FAULT	cog(l)	COMMOTION F.	GATES(LOWER) M.
	mb	MOOSEBAR F.	
	ge	GETHING F.	

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A

CROSS SECTION D-D'

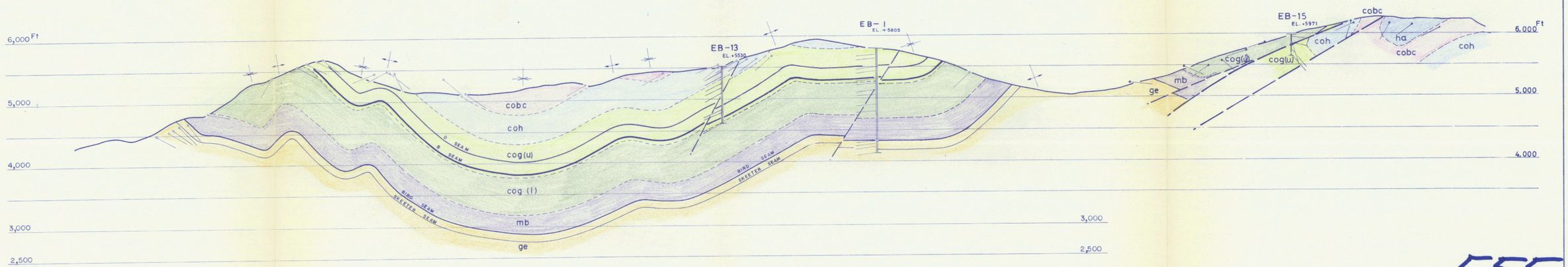
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-04-4

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

CROSS SECTION E~E'

SCALE 1" = 1000'



LEGEND

COAL SEAM	ha	HASLER F.	
MEASURED DIP	cobc	COMMOTION F.	BOULDER CREEK M.
GEOLOGICAL BOUNDARY	coh	COMMOTION F.	HULCROSS M.
FAULT	cog(u)	COMMOTION F.	GATES (UPPER) M.
	cog(l)	COMMOTION F.	GATES (LOWER) M.
	mb	MOOSEBAR F.	
	ge	GETHING F.	

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR. MT. SPIEKER 77 (21A.

CROSS SECTION E~E'

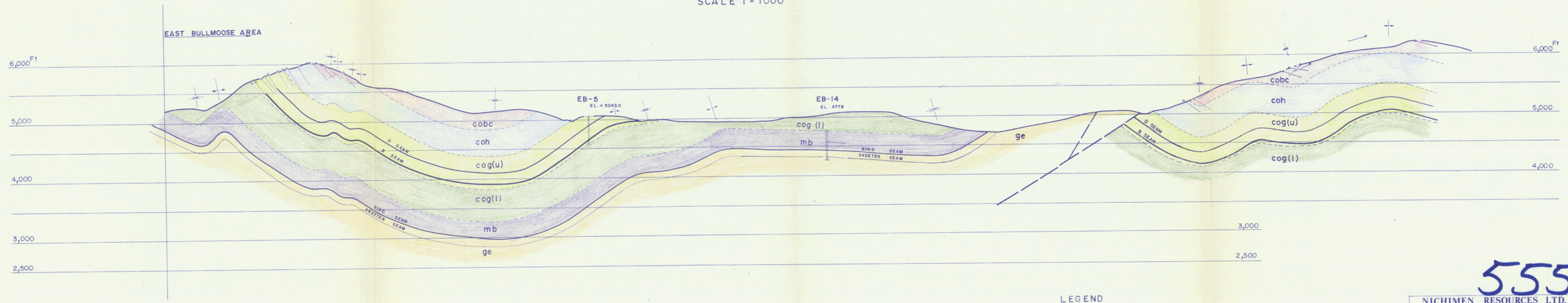
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-04-5

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

CROSS SECTION EB-5

SCALE 1"= 1000'



LEGEND

- COAL SEAM
- MEASURED DIP
- GEOLOGICAL BOUNDARY
- FAULT

cobc	COMMOTION F.	BOULDER CREEK M.
coh	COMMOTION F.	HULCROSS M.
cog(u)	COMMOTION F.	GATES(UPPER) M.
cog(l)	COMMOTION F.	GATES(LOWER) M.
mb	MOOSEBAR F.	
ge	GETHING F.	

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A.

CROSS SECTION EB-5

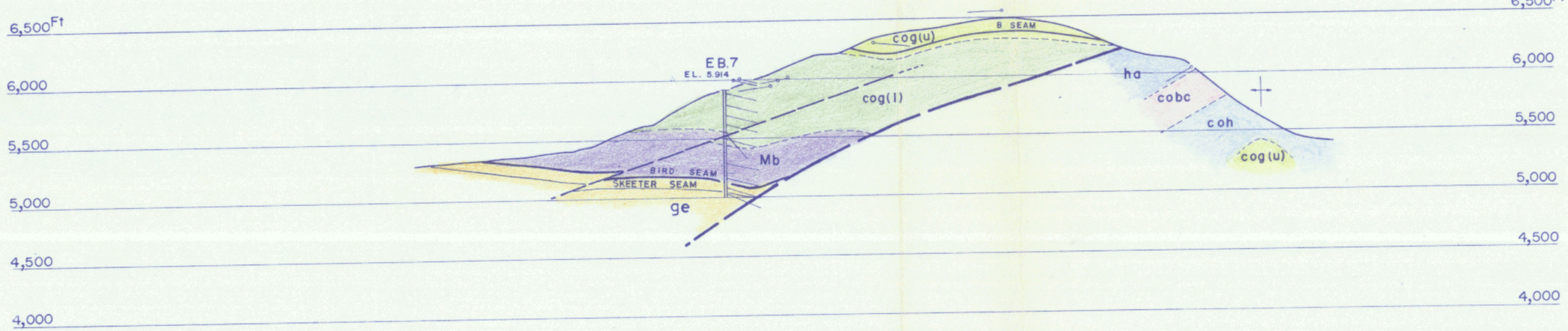
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-04-6

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

CROSS SECTION EB-7

SCALE 1" = 1000'



LEGEND

COAL SEAM	ha	HASLAR F.	
MEASURED DIP	cobc	COMMOTION F.	BOULDER CREEK M.
GEOLOGICAL BOUNDARY	coh	COMMOTION F.	HULCROSS M.
FAULT	cog(u)	COMMOTION F.	GATES (UPPER) M.
	cog(l)	COMMOTION F.	GATES (LOWER) M.
	mb	MOOSEBAR F.	
	ge	GETHING F.	

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77 (2)A.

CROSS SECTION EB-7

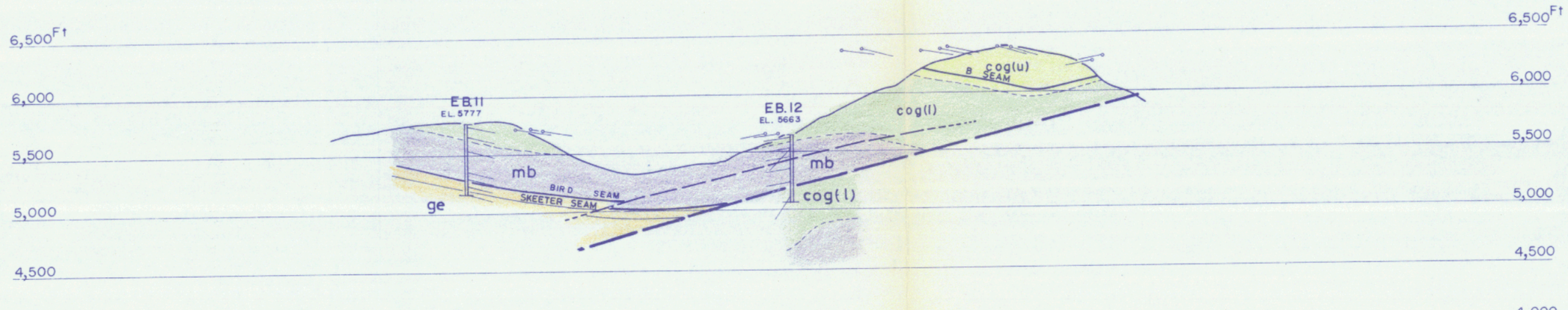
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-04-10

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

CROSS SECTION EB-11 ~ EB-12

SCALE 1"= 1000'



LEGEND

	ha	HASLAR F.	
COAL SEAM	cobc	COMMOTION F.	BOULDER CREEK M.
MEASURED DIP	coh	COMMOTION F.	HULCROSS M.
GEOLOGICAL BOUNDARY	cog(u)	COMMOTION F.	GATES(UPPER) M.
FAULT	cog(l)	COMMOTION F.	GATES(LOWER) M.
	mb	MOOSEBAR F.	
	ge	GETHING F.	

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A.

CROSS SECTION EB-11-EB-12

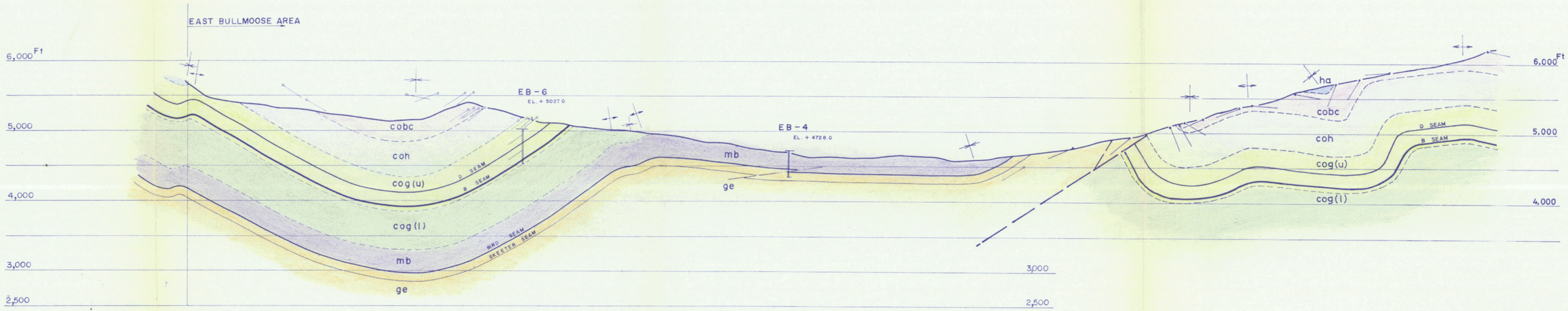
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-04-9

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

CROSS SECTION F~F'

SCALE 1"= 1000'



LEGEND

COAL SEAM	ha	HASLER F.	
MEASURED DIP	cobc	COMMOTION F.	BOULDER CREEK M.
GEOLOGICAL BOUNDARY	coh	COMMOTION F.	HULCROSS M.
FAULT	cog(u)	COMMOTION F.	GATES(UPPER) M.
	cog(l)	COMMOTION F.	GATES(LOWER) M.
	mb	MOOSEBAR F.	
	ge	GETHING F.	

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Mt. SPIEKER AREA

PR. MT. SPIEKER 77(2)A.

CROSS SECTION F~F'

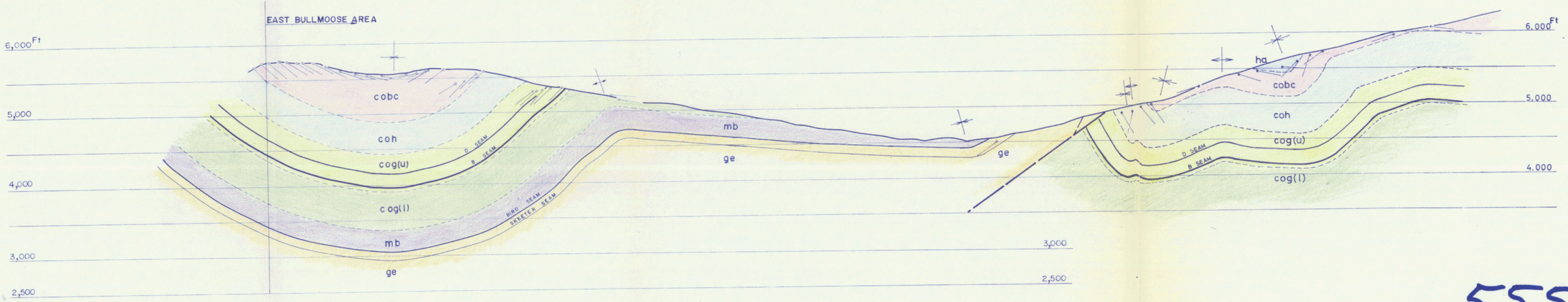
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-04-7

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

CROSS SECTION G~G'

SCALE 1"= 1000'



LEGEND

COAL SEAM	ha	HASLER F.	
MEASURED DIP	cobc	COMMOTION F.	BOULDER CREEK M.
GEOLOGICAL BOUNDARY	coh	COMMOTION F.	HULCROSS M.
FAULT	cog(u)	COMMOTION F.	GATES(UPPER) M.
	cog(l)	COMMOTION F.	GATES(LOWER) M.
	mb	MOOSEBAR F.	
	ge	GETHING F.	

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A

CROSS SECTION G~G'

SCALE 1"= 1000'

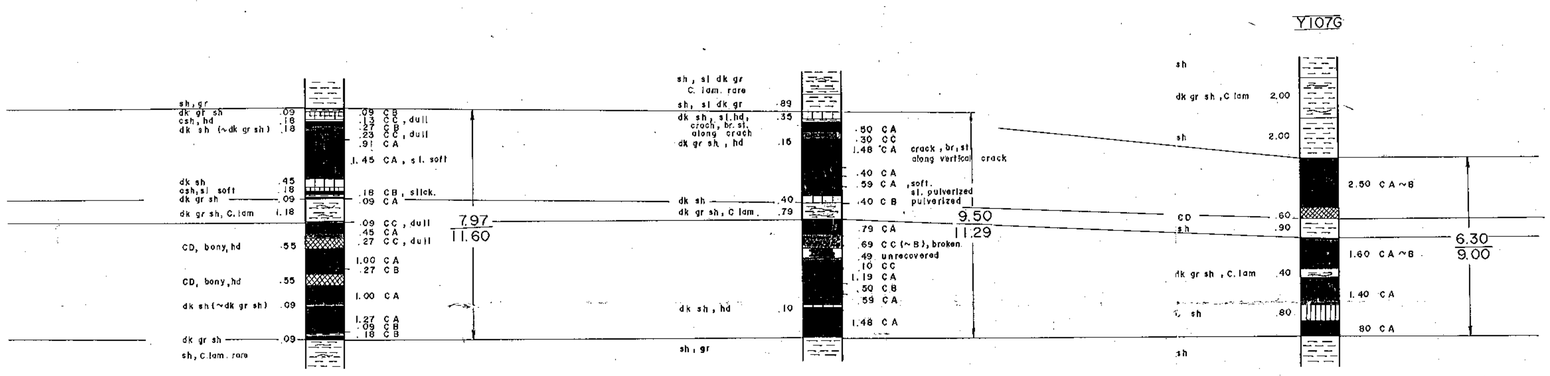
DATE: NOV. 1977 | MAP No. 77-04-8

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

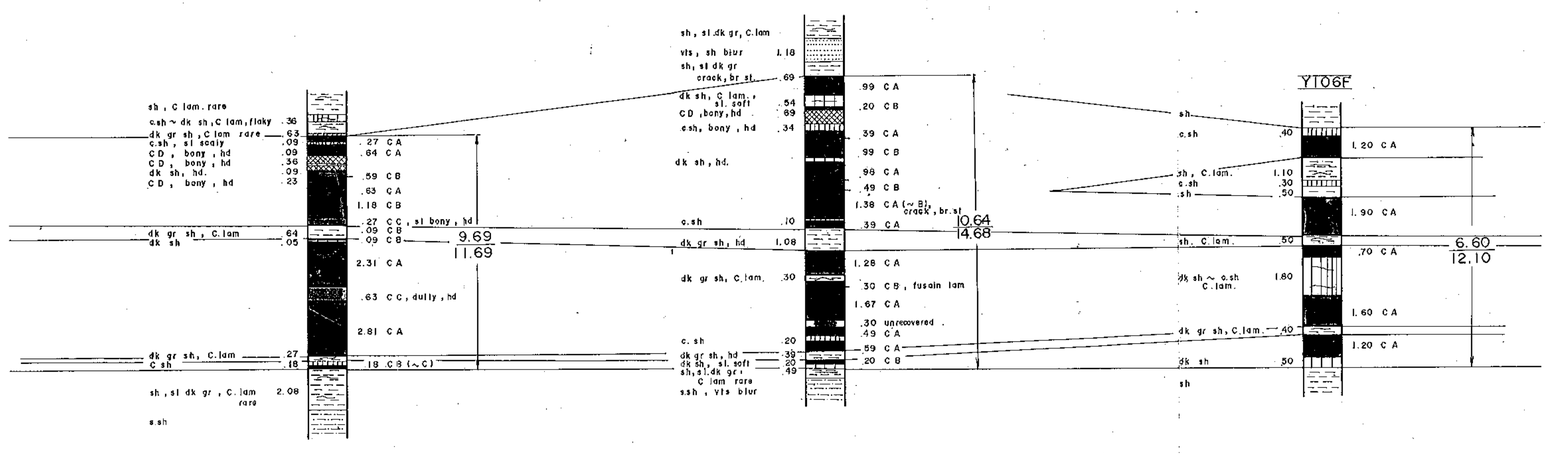
COLUMNAR SECTIONS OF D, C & B SEAMS

SCALE 1" = 5'

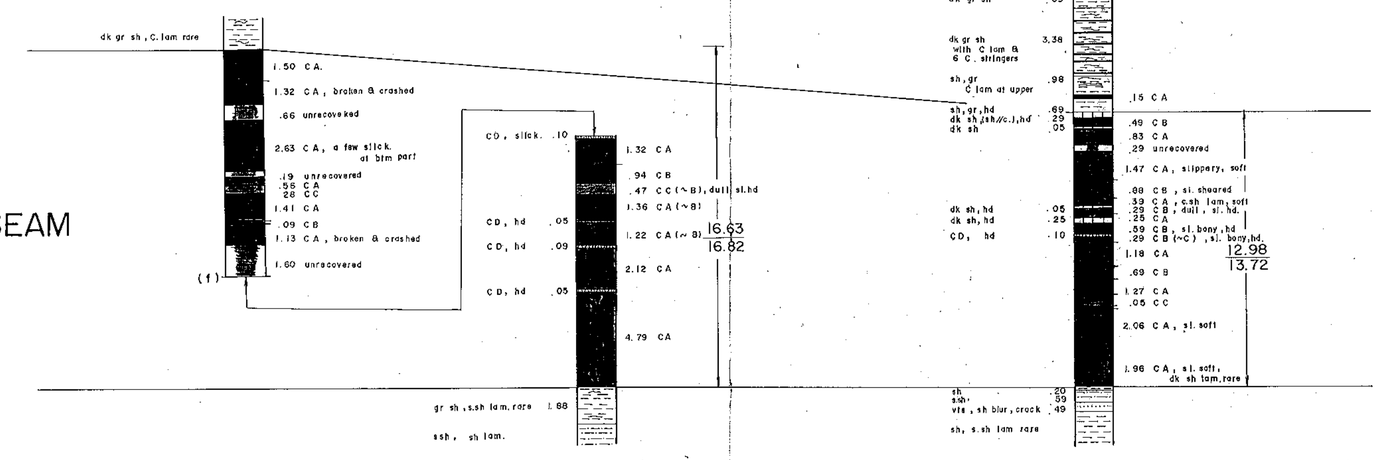
D SEAM



C SEAM



B SEAM



LEGEND

C A	COAL A
C B	COAL B
C C	COAL C
C D	COAL D
c sh	COALY SHALE
dk sh	COALY DARK GRAY SHALE
dk gr sh / sh	DARK GRAY SHALE SHALE
s sh	SANDY SHALE
vfs	VERY FINE SANDSTONE
fs / ms	FINE SANDSTONE / MEDIUM SANDSTONE
	TUFF
	UNRECOVERED
	COAL LAMINA
17.00 / 18.10	COAL / SEAM THICKNESS IN FEET

btm	bottom
br. st	brown stained
c	coal
cal	calcite
glauc	glauconite
hd	hard
lam	lamina (e)
mdy	muddy
mid	middle
py	pyrite
sl	slightly
slick	slickenside
tf	tuff
tfs. sh	tuffaceous shale
//	alternation

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR: MT. SPIEKER 77(2)A

COLUMNAR SECTIONS OF B, C & D SEAMS

SCALE 1"=5'

DATE: NOV. 1977 | MAP NO. 77-06-1

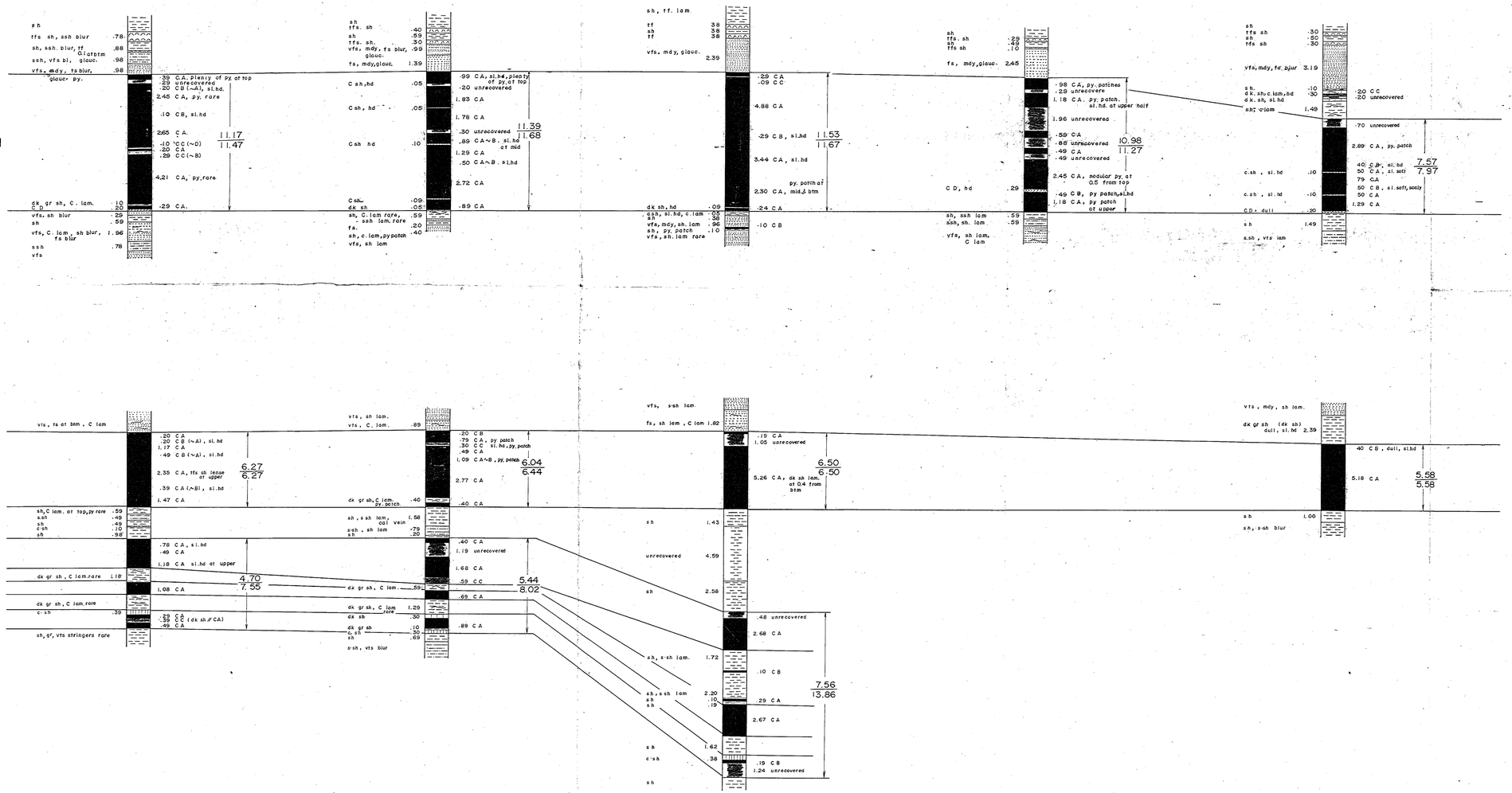
BY MITSUI MINING CO., LTD.
TOKYO JAPAN

COLUMNAR SECTIONS OF BIRD SEAMS

SCALE 1" = 5'

Upper Bird Seam

Lower Bird Seam



LEGEND

C A	COAL A
C B	COAL B
C C	COAL C
C D	COAL D
c sh	COALY SHALE
dk sh	COALY DARK GRAY SHALE
dk gr sh / sh	DARK GRAY SHALE / SHALE
s sh	SANDY SHALE
vfs	VERY FINE SANDSTONE
fs / ms	FINE SANDSTONE / MEDIUM SANDSTONE
	TUFF
	UNRECOVERED
	COAL LAMINA
17.00 / 18.10	COAL SEAM THICKNESS IN FEET

btm	bottom
br. st	brown stained
c	coal
cal	calcite
glauc	glauconite
hd	hard
lam	lamina(e)
mdy	muddy
mid	middle
py	pyrite
sl	slightly
slick	slickenside
tf	tuff
tffs. sh	tuffaceous shale
//	alternation

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A

COLUMNAR SECTIONS OF BIRD SEAMS

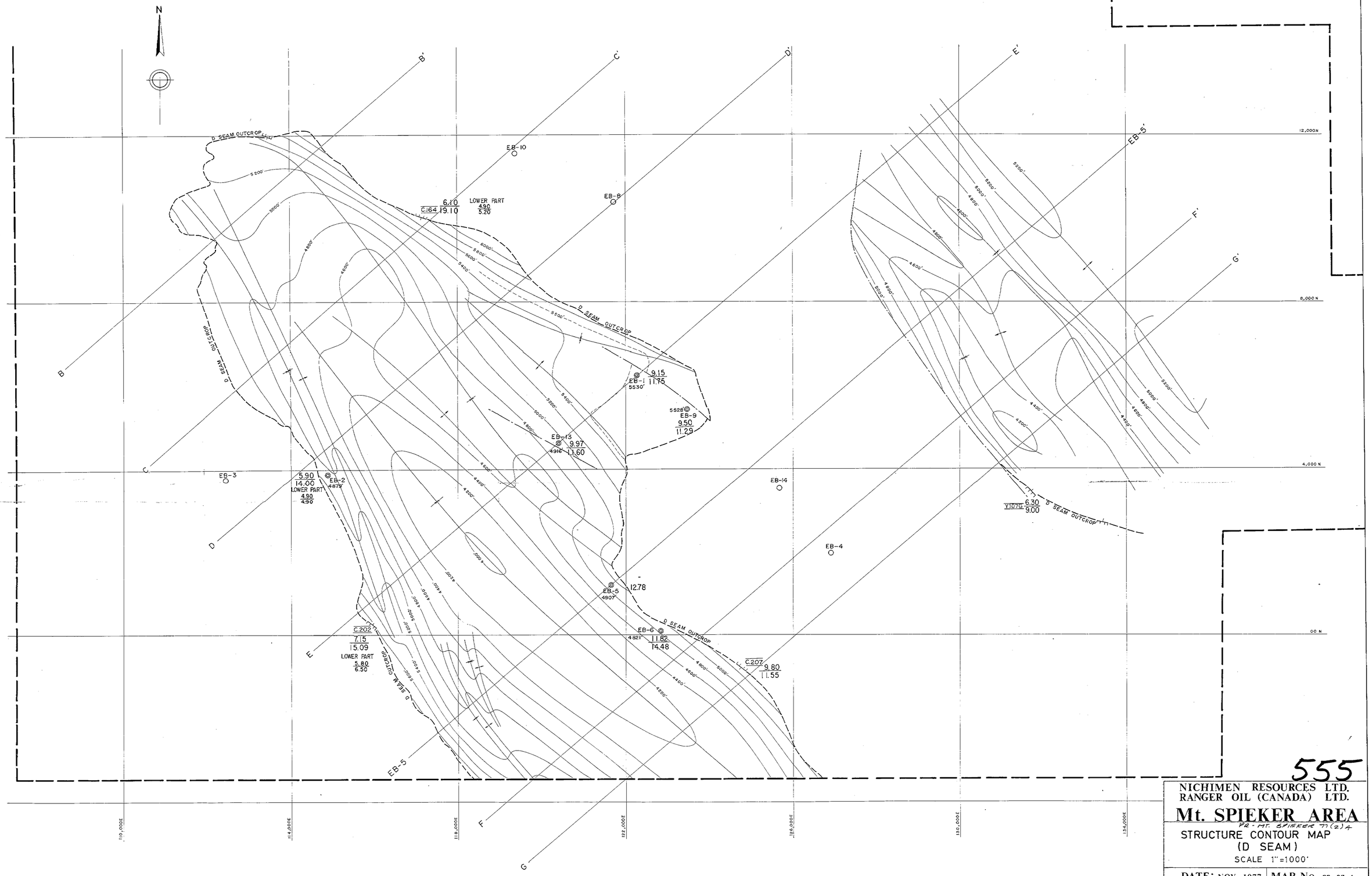
SCALE 1"=5'

DATE: NOV. 1977 | MAP No. 77-06-2

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

STRUCTURE CONTOUR MAP

(D SEAM) SCALE 1"=1,000'



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RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)4

STRUCTURE CONTOUR MAP
(D SEAM)
SCALE 1"=1000'

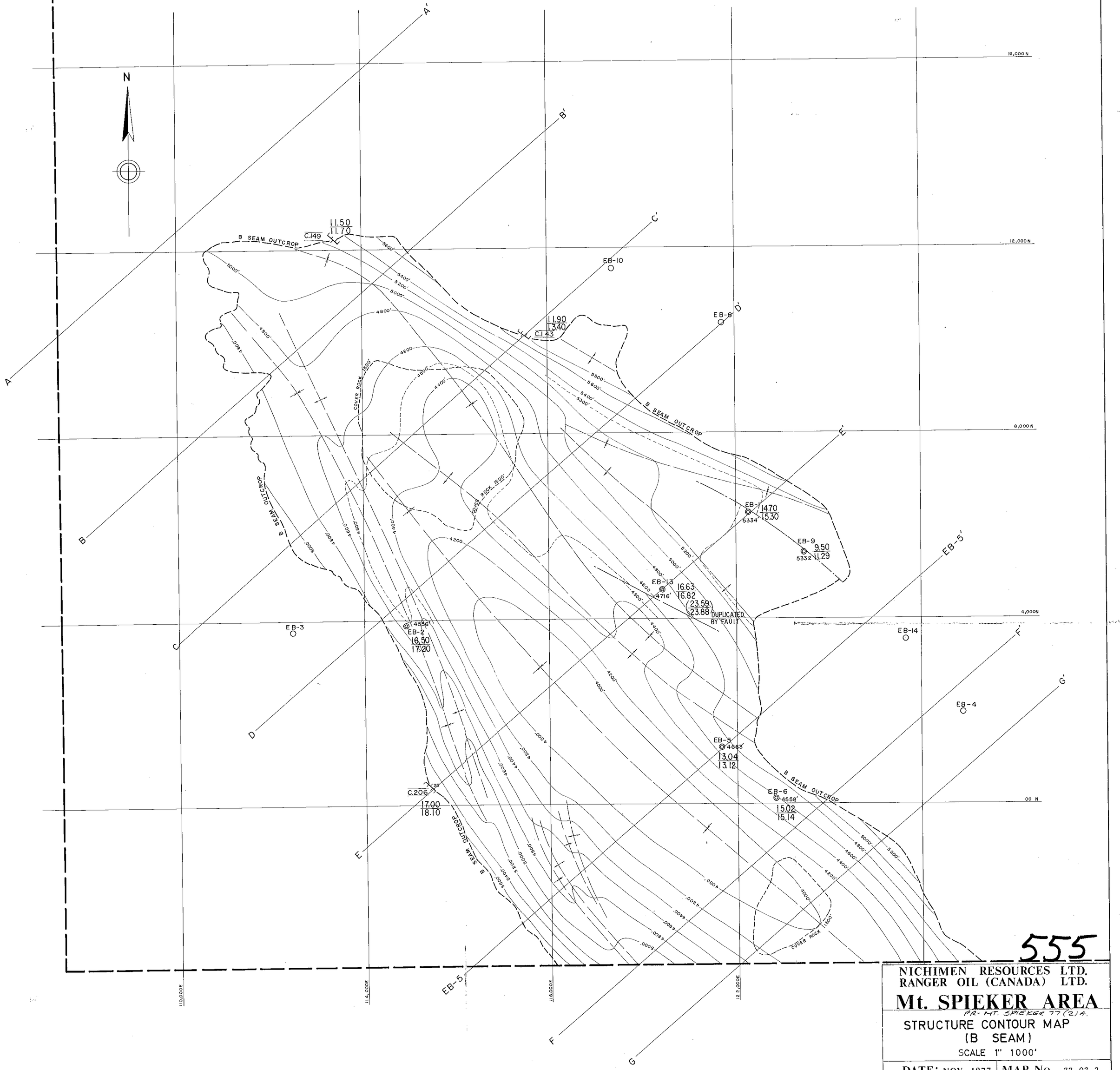
DATE: NOV. 1977 | MAP NO. 77-07-1

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

STRUCTURE CONTOUR MAP

(B SEAM)

SCALE 1" = 1,000'



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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR- MT. SPIEKER 77 (2) A.

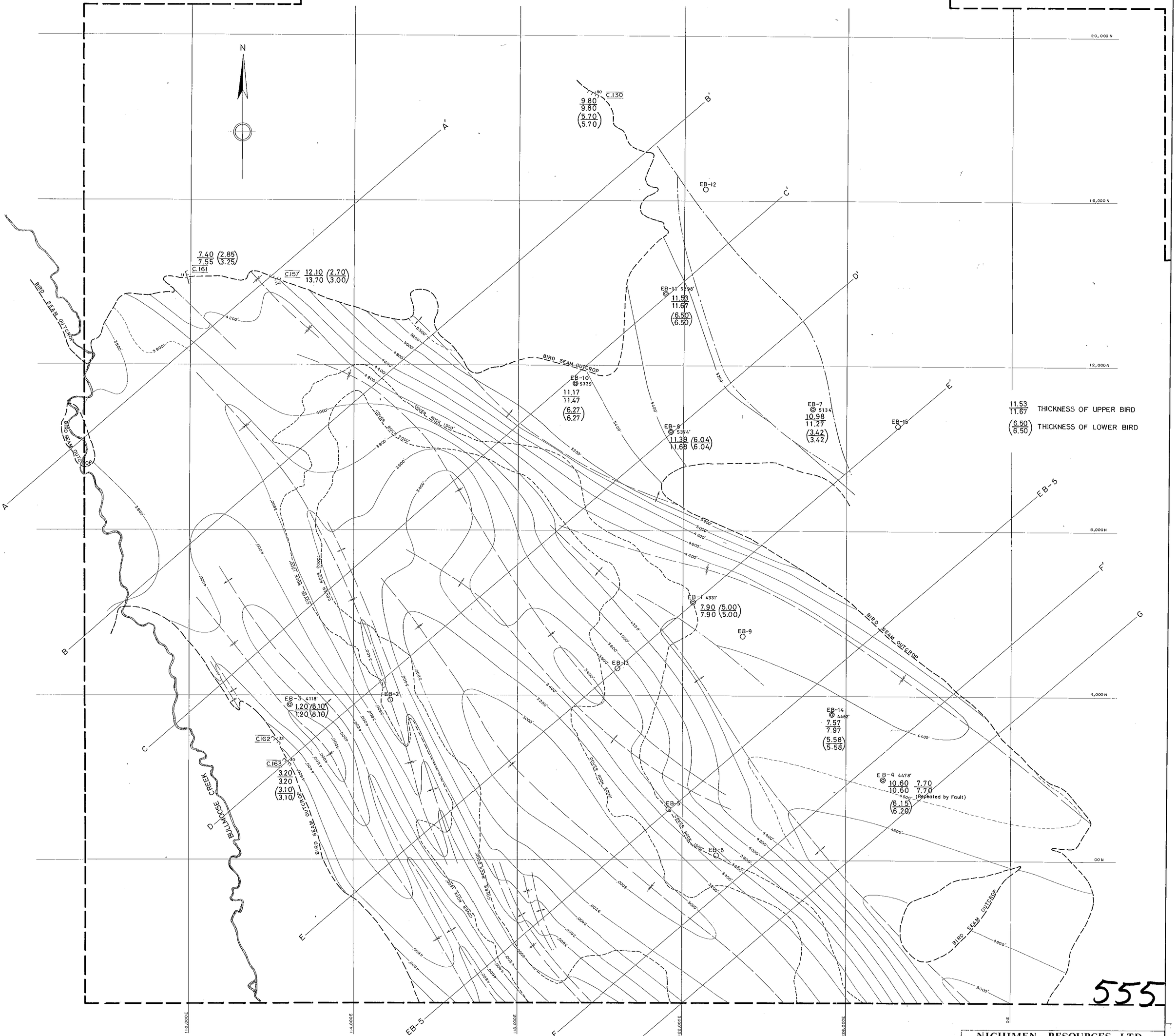
STRUCTURE CONTOUR MAP
(B SEAM)
SCALE 1" 1000'

DATE: NOV. 1977 | MAP No. 77-07-2

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

STRUCTURE CONTOUR MAP
(BIRD SEAM)

SCALE 1"= 1,000'



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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR - MT. SPIEKER 77 (2) A.

STRUCTURE CONTOUR MAP
(BIRD SEAM)

SCALE 1"=1000'

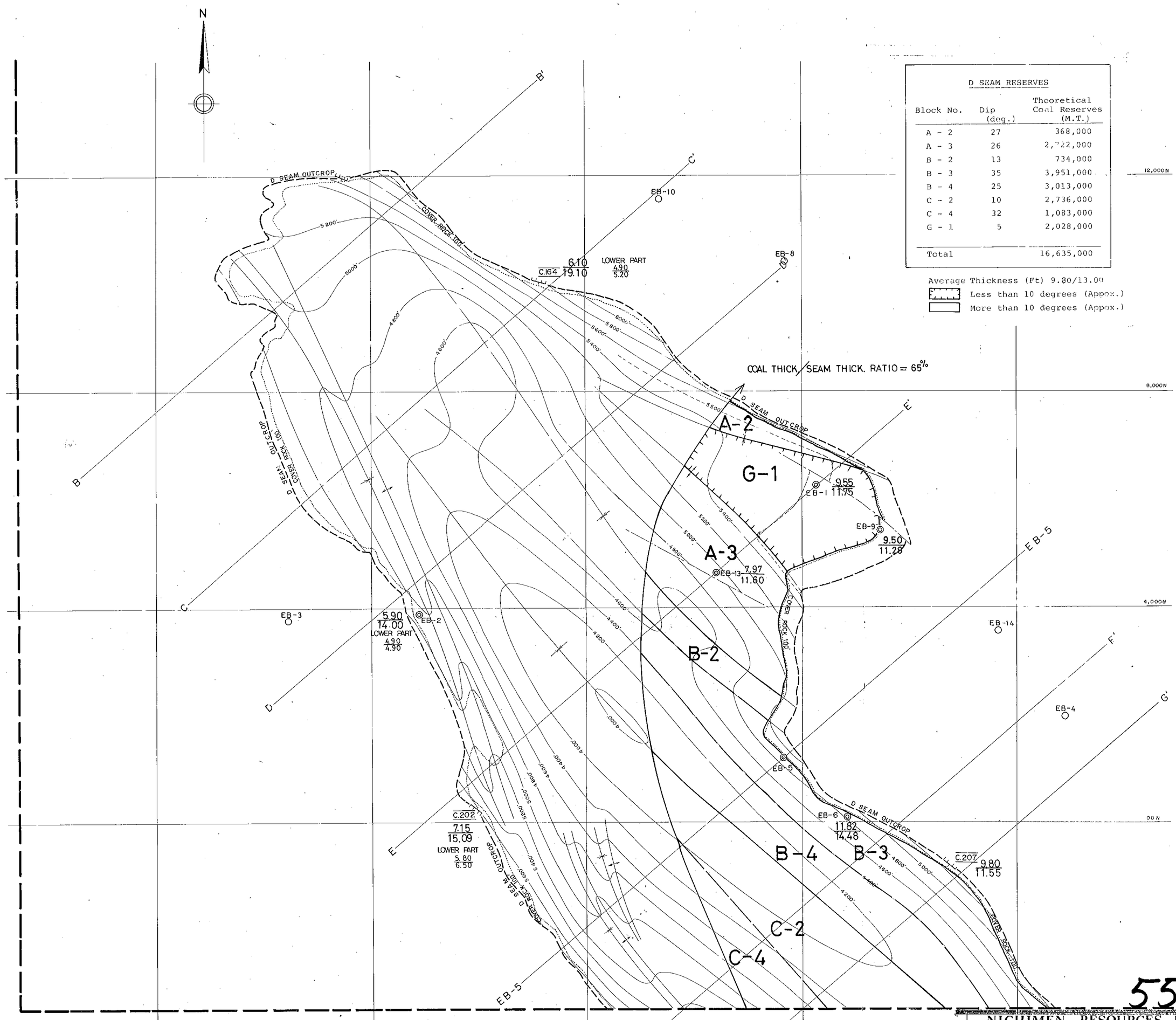
DATE: NOV. 1977 | MAP No. 77-07-3

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

RESERVES MAP

(D SEAM)

SCALE 1"=1,000'



D SEAM RESERVES

Block No.	Dip (deg.)	Theoretical Coal Reserves (M.T.)
A - 2	27	368,000
A - 3	26	2,722,000
B - 2	13	734,000
B - 3	35	3,951,000
B - 4	25	3,013,000
C - 2	10	2,736,000
C - 4	32	1,083,000
G - 1	5	2,028,000
Total		16,635,000

Average Thickness (Ft) 9.80/13.00

Less than 10 degrees (Appox.)

More than 10 degrees (Appox.)

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR- MT. SPIEKER 77(2)A.

RESERVES MAP (D SEAM)

SCALE 1"=1000'

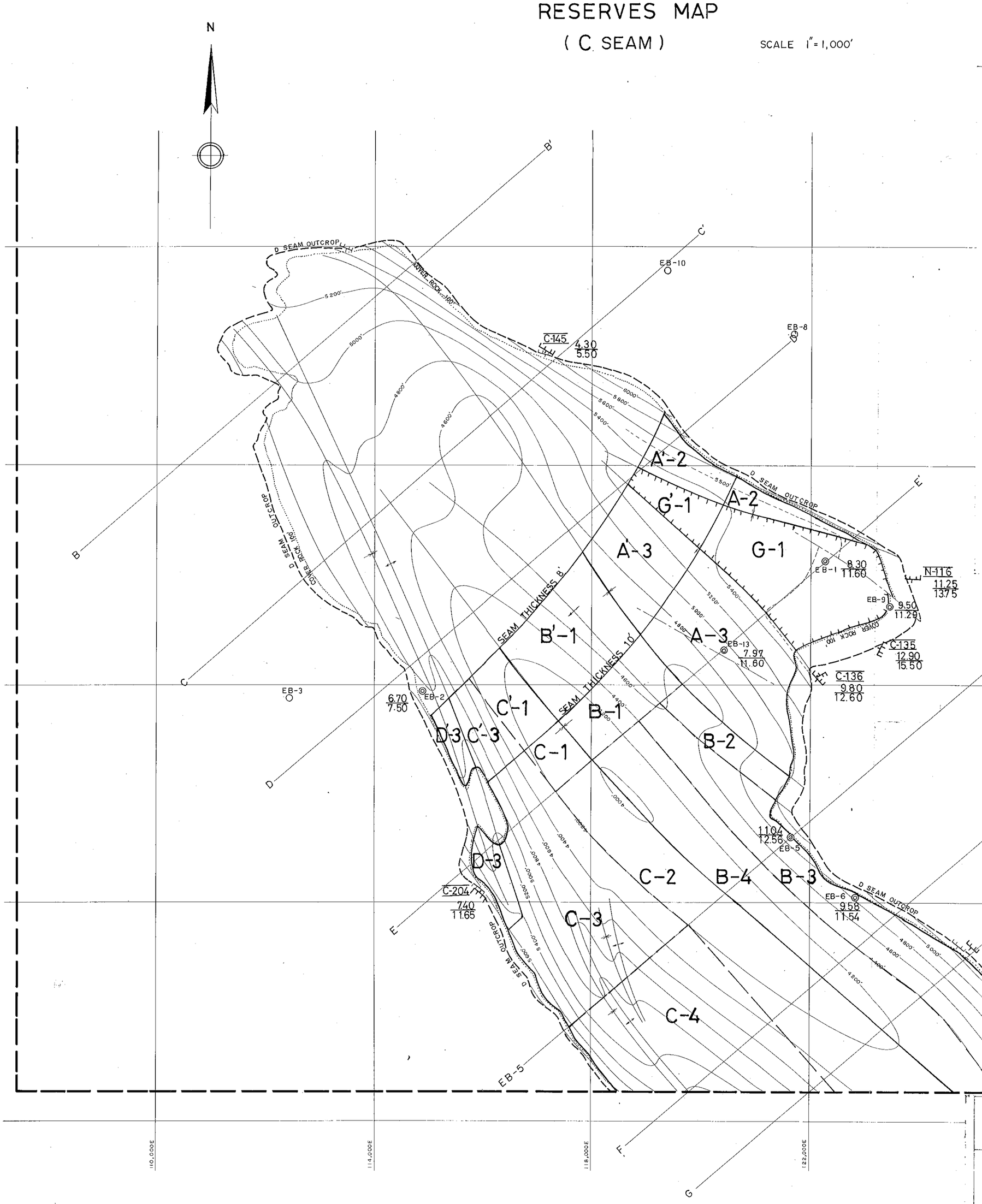
DATE: NOV. 1977 | MAP No. 77-08-1

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

RESERVES MAP

(C SEAM)

SCALE 1"= 1,000'



C SEAM RESERVES

Block No.	Dip (deg.)	Theoretical Coal Reserves (M.T.)
A - 2	27	398,000
A - 3	26	2,741,000
B - 1	20	929,000
B - 2	13	499,000
B - 3	35	4,044,000
B - 4	25	3,491,000
C - 1	15	427,000
C - 2	10	3,565,000
C - 3	35	3,974,000
C - 4	32	3,705,000
D - 3	30	400,000
G - 1	5	2,143,000
Sub-Total		26,316,000
A'- 2	27	356,000*
A'- 3	26	858,000*
B'- 1	20	1,052,000*
C'- 1	15	392,000*
C'- 3	38	382,000*
D'- 3	30	239,000*
G'- 1	5	265,000*
Sub-Total		3,544,000*
Total		29,860,000

Average Thickness (Ft) 10.10/12.90
*(6.69/9.00)

Less than 10 degrees (Appox.)

More than 10 degrees (Appox.)

Note: Outcrop line and seam contour on this map are the same as those of D seam.

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A.

RESERVES MAP (C SEAM)

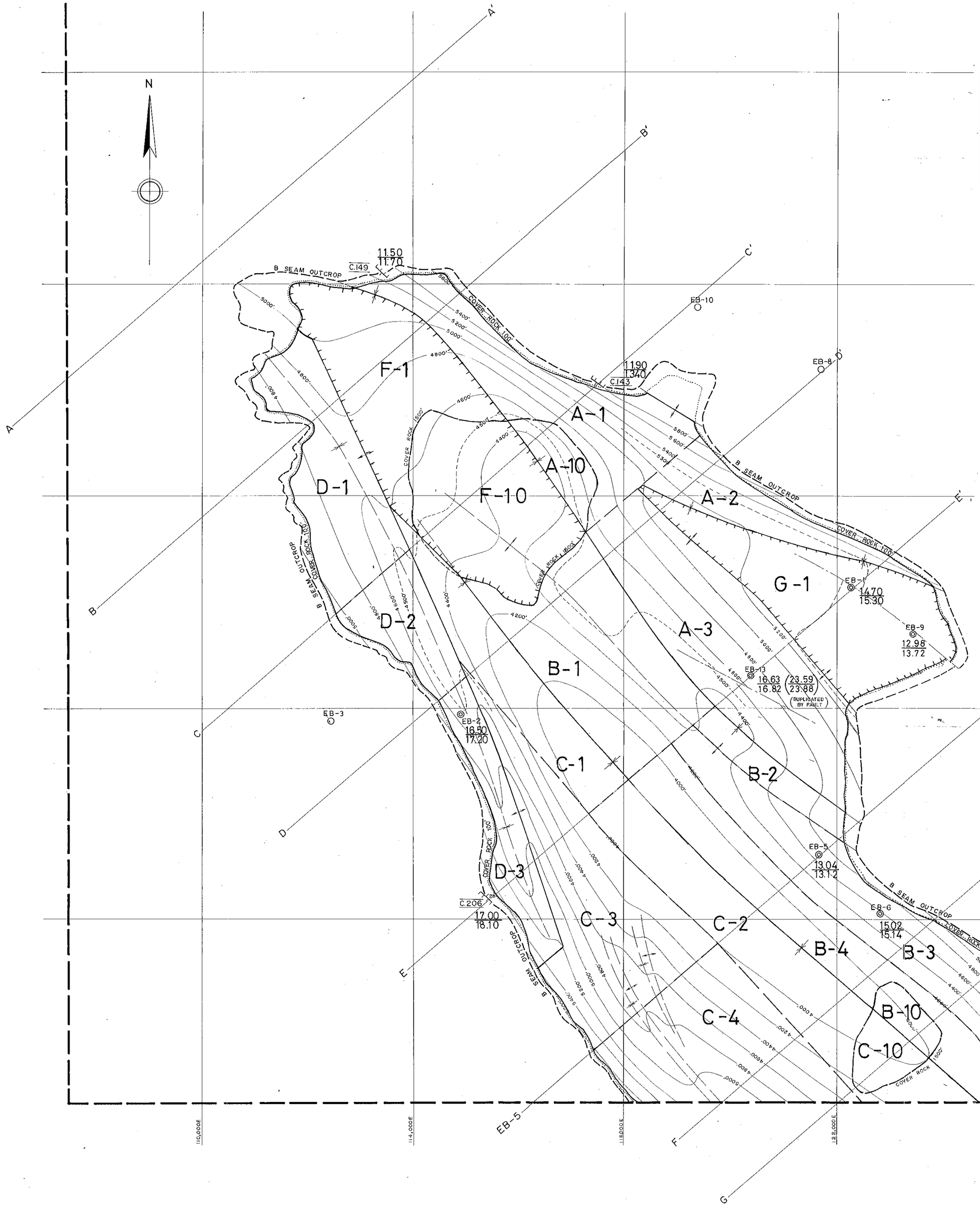
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-08-2

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

RESERVES MAP
(B SEAM)

SCALE 1" = 1,000'



B SEAM RESERVES

Block No.	Dip (deg.)	Theoretical Coal Reserves (M.T.)
A - 1	40	6,375,000
A - 2	27	1,967,000
A - 3	26	6,515,000
A - 10	28	1,249,000*
B - 1	20	5,134,000
B - 2	13	947,000
B - 3	35	6,933,000
B - 4	25	4,558,000
B - 10	15	655,000*
C - 1	15	2,686,000
C - 2	10	4,398,000
C - 3	35	7,874,000
C - 4	32	5,255,000
C - 10	15	744,000*
D - 1	17	4,667,000
D - 2	25	1,903,000
D - 3	30	2,116,000
F - 1	7	4,328,000
F - 10	8	4,033,000*
G - 1	5	5,122,000
Total		77,459,000

Average Thickness (Ft) 14.20/14.80

Less than 10 degrees (Appox.)

More than 10 degrees (Appox.)

* Below 1500' cover

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NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77(2)A

RESERVES MAP (B SEAM)

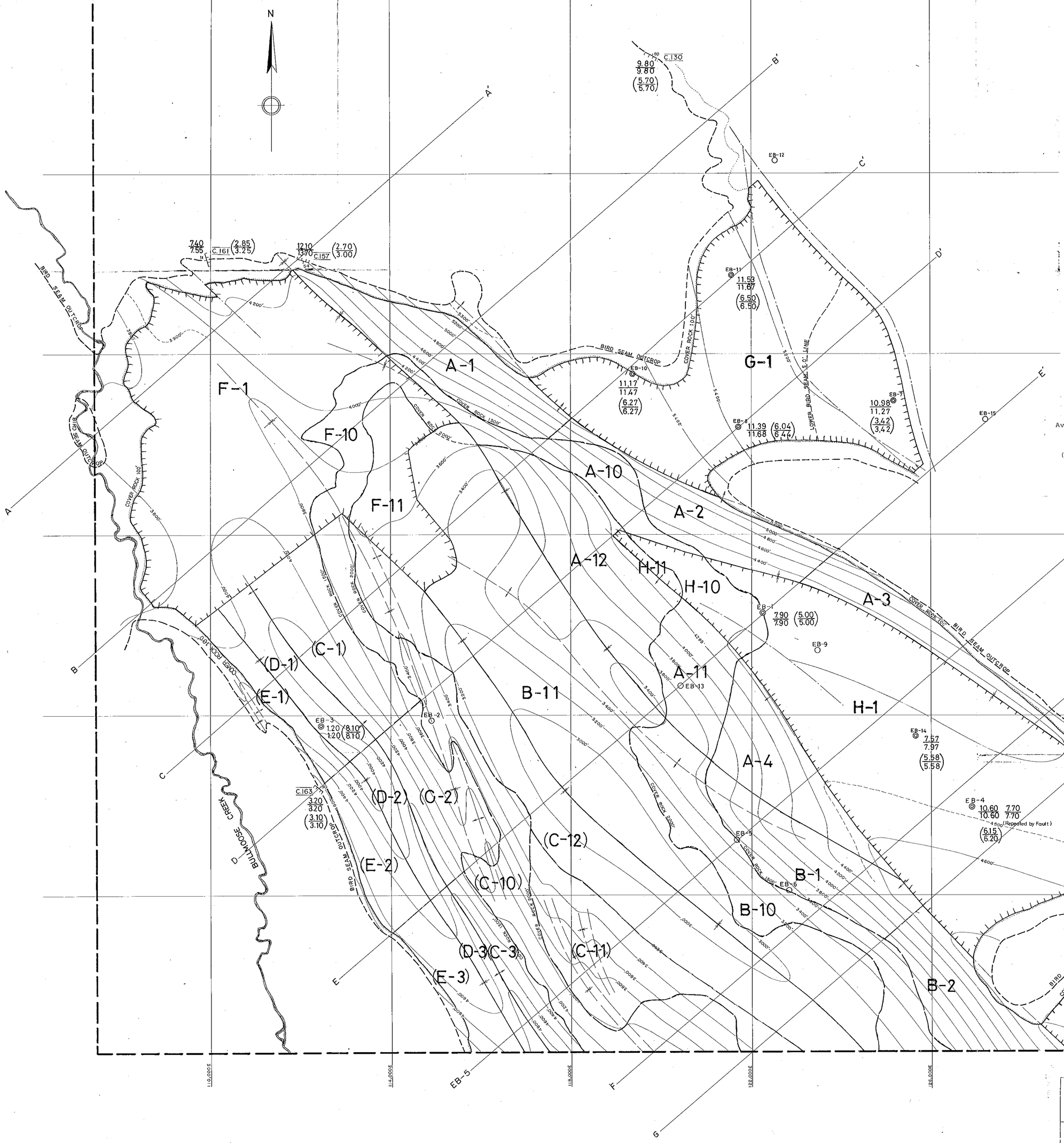
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-08-3

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

RESERVES MAP
(BIRD SEAM)

SCALE 1" = 1,000'



BIRD SEAM RESERVES

Block No.	Dip (deg.)	Theoretical Coal Reserves (M.T)
A - 1	37	2,731,000
A - 2	36	2,048,000
A - 3	35	1,271,000
A - 4	23	1,851,000
A - 10	35	1,480,000*
A - 11	26	1,654,000*
A - 12	24	3,127,000*
B - 1	37	2,407,000
B - 2	40	2,135,000
B - 10	28	3,453,000*
B - 11	19	9,274,000*
F - 1	3	9,154,000
F - 10	7	1,154,000*
F - 11	5	1,803,000*
G - 1	5 Upper Lower	11,147,000 4,656,000
H - 1	5	11,284,000
H - 2	7	1,672,000
H - 10	3	956,000*
H - 11	3	136,000*
Total		73,393,000
Additional Reserves		
(C - 1)	25	2,127,000
(C - 2)	40	2,043,000
(C - 3)	42	1,198,000
(C - 10)	27	4,492,000*
(C - 11)	24	2,774,000*
(C - 12)	13	5,394,000*
(D - 1)	25	1,194,000
(D - 2)	33	789,000
(D - 3)	30	515,000
(E - 1)	17	950,000
(E - 2)	29	1,359,000
(E - 3)	23	1,159,000
Total		23,990,000

Average Thickness (Ft) 8.20/8.50
Less than 10 degrees (Approx.)
More than 10 degrees (Approx.)
* Below 1500' cover
( ) : The Upper Bird Seam is considered to be thin in the C, D & E blocks. Therefore, the reserves of this part is calculated separately.

555

NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

PR-MT. SPIEKER 77 (2) A

RESERVES MAP (BIRD SEAM)

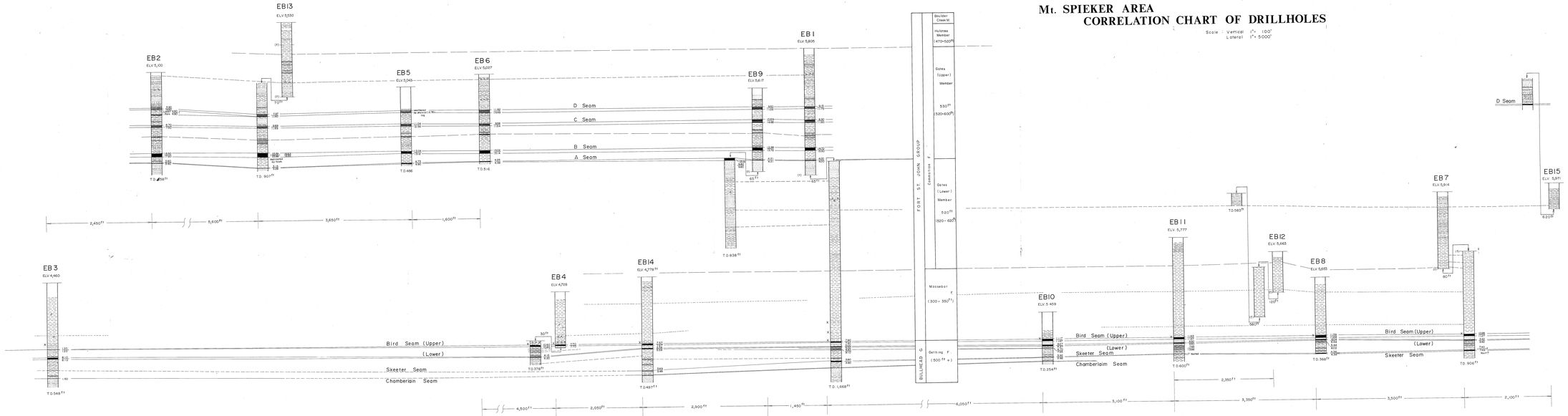
SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-08-4

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

Mt. SPIEKER AREA
CORRELATION CHART OF DRILLHOLES

Scale : Vertical 1"= 100'
Lateral 1"= 5000'



LEGEND

- COAL A & B
- COAL C
- COAL D
- COALY SHALE
- DARK SHALE
- SHALE
- SANDY SHALE
- VERY FINE SANDSTNE
- FINE & MEDIUM SANDSTNE
- COARSE SANDSTONE
- CONGLOMELATE
- TUFF & TUFFACEOUS SHALE
- GLAUCONITE
- 0.00 / 10.00 — COAL SEAM THICKNESS IN FEET
- ELV. 5894ft — ELEVATION OF DRILLHOLES IN FEET
- T.D. 906ft — TOTAL DEPTH OF DRILLHOLES IN FEET

NOTE : THICKNESS OF SECTIONS REPRESENTS TRUE THICKNESS

555

NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

CORRELATION CHART OF DRILLHOLES

SCALE VERTICAL 1"= 100'
LATERAL 1"=5000'

DATE: NOV. 1977 MAP No. 77-05

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

RE. Mt. SPIEKER 77/6/18

GEOLOGICAL MAP

SCALE 1"= 1000'

55° 10'
121° 22.5'
E 603516.5
N 6114328.1

N

LEGEND

	FORMATION	MEMBER
ha	HASLER	
cobc	COMMOTION	BOULDER CREEK
coh	COMMOTION	HULCROSS
cog(u)	COMMOTION	GATES (UPPER)
cog(l)	COMMOTION	GATES (LOWER)
mb	MOOSEBAR	
ge	GETHING	
cd	CADOMIN	

GEOLOGICAL BOUNDARY
COAL SEAM OUTCROP
ANTICLINE AXIS
SYNCLINE AXIS
FAULT
T-1 TRENCH No.
DRILL HOLE

121° 20'
55° 5'
E 595753.5
N 6104877.4

555

NICHIMEN RESOURCES LTD.
RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

FR-MT. SPIEKER 77 (2) A.

GEOLOGICAL MAP

SCALE 1"=1000'

DATE: NOV. 1977 | MAP No. 77-03

BY MITSUI MINING CO., LTD.
TOKYO JAPAN

RE - MT. SPIEKER 78C-A

FEB-11

ROKE

OIL ENTERPRISES LTD CALGARY ALBERTA

WELL 19 - 11

LOCATION

FIELD MT. SPIEKER

PROV. BRITISH COLUMBIA

GROUND LEVEL

CASING 0.2 M

KB FLOOR

ROU-CAL PPC

METRIC

ONE

25 SEP 1978

372 M

0

372

371.2

182.88

555

WATER

80.5

90

14 HOURS

30

RECEIVED

DRILLER

EQUIPMENT DATA

NEUTRON INSTRUMENT

LOGGING DATA

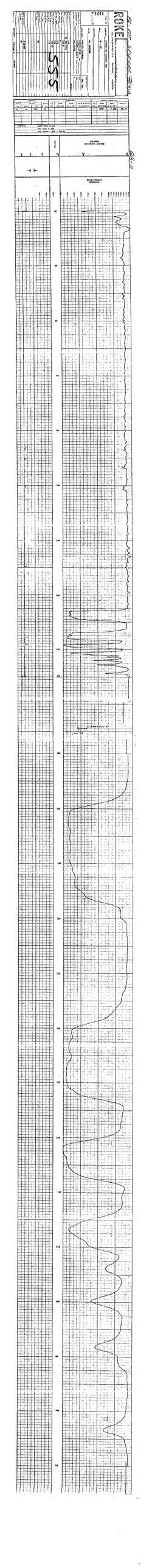
LOGGED THROUGH OIL BASE MUD

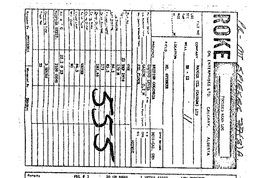
NEUTRON

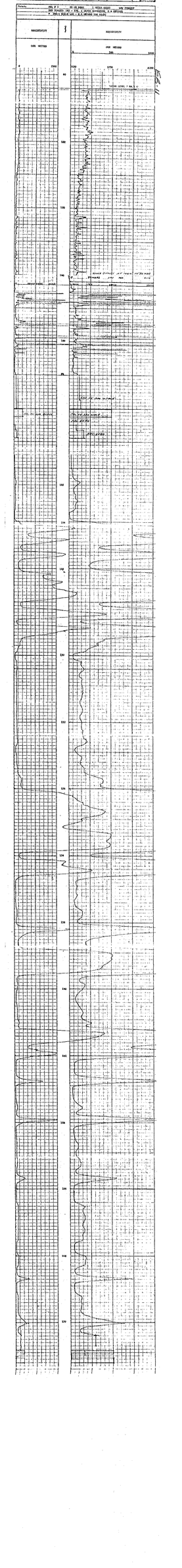
DEPTH

GAMMA RAY

GAMMA RAY NEUTRON


POKE
CALIPER
DIAMETER - INCHES
BULK DENSITY
GRAM/CC


POKE
555



COMPANY RICHMOND ENGINEERING

GENERAL CORE LOG

WELL NAME AND NUMBER Kiddie #1

FIELD OR AREA Kiddie

COUNTY Pike STATE Kentucky

Elevation 1,234' Perm. Datum Ground Level

Log Measured from Ground Level

Drilling Measured from Ground Level

Run No.	Date	Depth Driller	Depth Logger	Bottom Logged Interval	Top Logged Interval	Casing Driller	Casing Logger	Bit Size
1	5-8-78	6000	6000	6000	0	2"	2"	7 7/8"

Permanent Datum: Ground Level — Elev. 1,234 — K.B. — D.F. — G.L.

Date: 5-8-78

Run No.: 1

Depth-Driller: 6000

Depth-Logger: 6000

Bottom Logged Interval: 6000

Top Logged Interval: 0

Casing-Driller: 2" @ 0

Casing-Logger: 2" @ 0

Bit Size: 7 7/8"

Type Fluid in Hole: Air

Dens.: — Visc.: —

pH: — Fluid Loss: —

Source of Sample:

Rm @ Meas Temp: @ °F

Rmf @ Meas Temp: @ °F

Rmc @ Meas Temp: @ °F

Source: Rmf / Rmc

Rm @ BHT: @ °F

Rmf @ BHT: @ °F

Rmc @ BHT: @ °F

Time Since Circ.: —

Max. Rec. Temp.: —

Equip. Location: Pikeville

Recorded By: Jones

Witnessed By: Mr. Kiddie

Run No. 1 — Bore-Hole Record — Casing Record

Bit No.	From	To	Size	Type	Fluid	Density	Visc.	Pipe Size	From	To	Weight	Grade	Top Conn.
1	0	6000	7 7/8"		Air			2"	0	6000			

REMARKS

Charges in Mud Type or Additional Samples:

Rm @ Meas Temp: @ °F

Rmf @ Meas Temp: @ °F

Rmc @ Meas Temp: @ °F

Source: Rmf / Rmc

Rm @ BHT: @ °F

Rmf @ BHT: @ °F

Rmc @ BHT: @ °F

Time Since Circ.: —

Max. Rec. Temp.: —

Equip. Location: Pikeville

Recorded By: Jones

Witnessed By: Mr. Kiddie

Run No. 1 — Bore-Hole Record — Casing Record

Bit No.	From	To	Size	Type	Fluid	Density	Visc.	Pipe Size	From	To	Weight	Grade	Top Conn.
1	0	6000	7 7/8"		Air			2"	0	6000			

Type Log: — Depth: — Scale Changes: — Scale 2in=100ft — Scale 5in=100ft

Logging Data

Log	Depths From	To	Speed ft/min	T.C.	Mach. Scale	Sensitivity	Serial Number
Gamma Ray	Surf	TD	30	2	2.5K		
Neutron	Surf	TD	30	2	80	1000	85557
Caliper	Surf	TD	30	2	4	10in	"

Recorded Data

Run No.	Log Type	Depths From	To	Hole Diameters Bit Size	Casing	Other
1	CDL			7 7/8"	2"	"

Logging Data

Log	Depths From	To	Speed ft/min	T.C.	Mach. Scale	Sensitivity	Serial Number
Gamma Ray	Surf	TD	30	2	2.5K		
Neutron	Surf	TD	30	2	80	1000	85557
Caliper	Surf	TD	30	2	4	10in	"

GAMMA RAY — API — 150

L.S. DENSITY — 2700 — 3200

CALIPER — 0 — 7" — 2"

CALIBRATION DATA

Jig No. 113 — Matrix 2.71 gm/cm³

Jig mark shown at above value API

CALIBRATION DATA

Jig Cal density 2.40 gm/cm³ SOLID 1.40gm/cm³

Jig No. 113 — Spec. Gr. 50 — MOISTURE 2.5%

8000 SQU — 0

GAMMA RAY

HOLE SIZE CORRECTION

COAL BULK DENSITY

gm/cm³

Casing Shoe

Coal Level

BIRD SEAM (UPPER)

BIRD SEAM (LOWER)

SKEETER SEAM

Depths Section on original scale only

0	API	150	6000	SQU	0	7" - - - 2"
	GAMMA RAY			L.S. DENSITY		CALIPER

COMPANY RICHMOND ENGINEERING

BOREHOLE Kiddie #1

FIELD KOONTZ - SPEAKER

COUNTY Pike STATE Ky.

COMPANY: [illegible] Basin Alliance Ltd.
BEAR: Assiniboia COUNTRY: Canada
Permanent Datum: Ground Level
Elev.: K.B. [illegible] Ft.
Log Measured from: K.B. [illegible] Ft. Above P.D.
Drilling Measured from: K.B.

DETAIL LOG E&7
B.S.Density-Caliper

Field Print

REMARKS

Changes in Mud Type or Additional Services
Close | Triangle No. | | | | | |
Depth — Drillr. | | | | | | |
Type Fluid in Hole | | | | | | |
Close | Visc. | | | | | |
pH | Fluid Loss | | ml | | | |
Record of Samples

Gas	Mcfd	Temp.	@	°F	@ °F
Flow	Mcfd	Temp.	@	°F	@ °F
Rec.	Mcfd	Temp.	@	°F	@ °F
Source	Bail	Rec.			
Gas	@	in	@	°F	@ °F
Rec.	@	in	@	°F	@ °F
Gas	@	in	@	°F	@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Positions	Other

Logging Data

Log	Depths @ Top	Depths @ Bottom	Csg.	Tbg.	Mud Type	Source Sample	Rm @ Meas. Temp.	Rmf @ Meas. Temp.	Rmc @ Meas. Temp.
GRAD	2 In Gals	2 2 1		3	-	110	R3567		
Caliper	2 In Gals	2 2 1		3	-	110	-		

CALIPER | BED RESOLUTION DENSITY

680 | .025 | 360

BIRD SEAM (UPPER)

BIRD SEAM (LOWER)

SKEETER SEAM

CALIPER | G.R.S. | DENSITY

COMPANY FIGURE 32 RESOURCES
BOREHOLE E&7
FIELD YOUR OPTION
COUNTY Canada STATE Sask.

COMPANY: CITIES SERVICE OIL COMPANY
BOREHOLE: DUNCAN #1
FIELD: LIGHT SPRINGS
COUNTY: Cavalier STATE: N.D.

DETAIL LOGS #2

Gamma Ray - Sonic

353

MAP NO. 77-09-20

COMPANY Highlines Resources Ltd.

BOREHOLE B.B.9 Mount Spieker

STATE B.C. COUNTRY Canada

GENERAL LOG
Gamma Ray, L.S. Density, Caliper

Permanent Datum _____ Elev. _____ Ft.

Log measured from Top of Casing Ft. above P.D.

Drilling measured from Top of Casing Ft. above P.D.

Run No.	1		
Depth Scale	1:200		
Date	25 AUG. 1977		
First Reading	153m		
Last Reading	153m		
Feet/Inch Measured	0		
Casing Size	153m		
Casing Driller			
Depth Reached	153m		
Bottom Driller	-		
Mud Nature	Bentonite		
Mud Viscosity			
Bit Size	HQ to T.D.		
Casing Size 1	to	to	to
2	to	to	to
3	to	to	to
Rm @ Meas Temp.	@ °F	@ °F	@ °F
Rmf @ Meas Temp.	@ °F	@ °F	@ °F
Rmc @ Meas Temp.	@ °F	@ °F	@ °F
Bht			
Operating Time	3/4 hr.		
Truck No.	V21/15		
Recorded By	R. Bishop		
Witness			

fold here

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.		
Depth — Driller			
Type Fluid in Hole			
Dens.	Visc.		
ph	Fluid Loss		ml
Source of Sample			
Rm @ Meas Temp.	@ °F	@ °F	
Rmf @ Meas Temp.	@ °F	@ °F	
Rmc @ Meas Temp.	@ °F	@ °F	
Source: Rmf Rmc			
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

Scale Changes

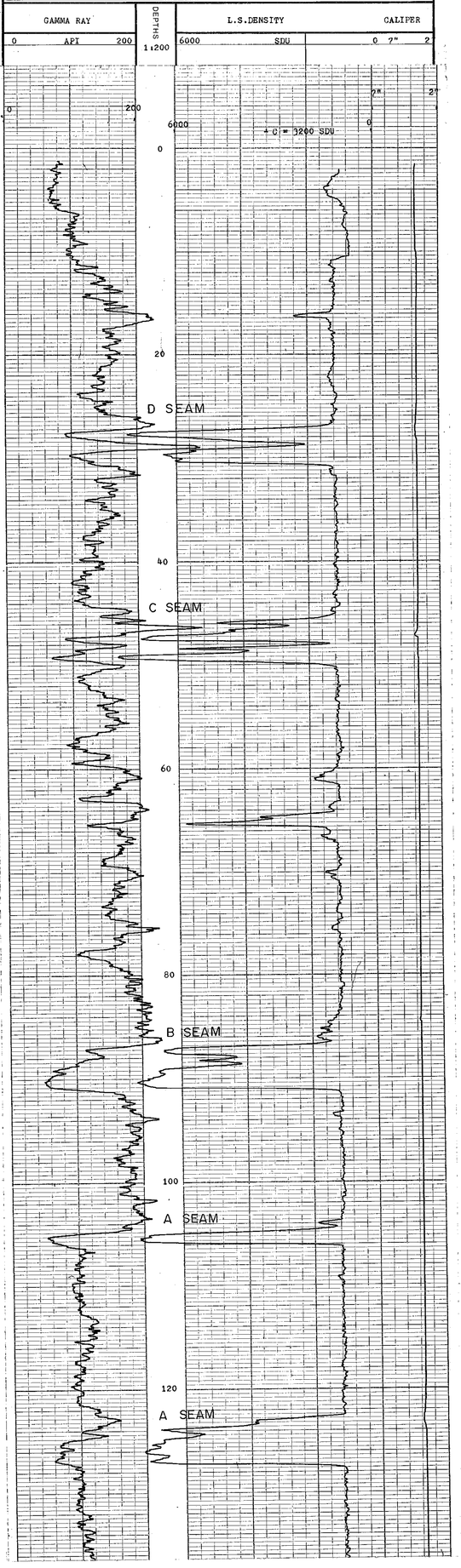
Type Log	Depth	Scale Up Hole	Scale Down

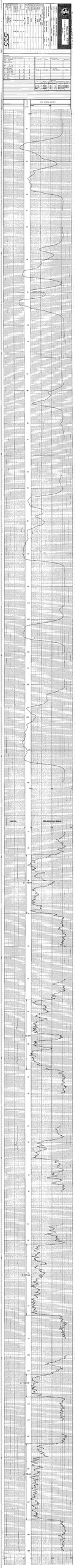
Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed m/min	T.C. sec	Norm.	Sonde No.	Source Number
Gamma	152	0	9	1	out	110	
L.S.D.	153	0	9	0.3	.680	110	M5852
Cal.	153	0	15	0.3	out	110	





PG. MT SPIEKER 77(3)r MAP NO. 77-09-3a

COMPANY Nicholas Resources Ltd.
BOREHOLE E3-10 Mount Spieker
STATE B.C. COUNTRY Canada

GENERAL LOGS E3-10
Gamma Ray, L.S.Density, Caliper

Permanent Datum
Log measured from ____ Elev. ____ Ft.
Drilling measured from floor of Rig Ft. above P.D.
floor of Rig Ft. above P.D.

Run No.	1
Depth Scale	1:1200
Date	26 July 1977
First Reading	7cm
Last Reading	6
Interval Measured	7cm
Casing Size	
Casing Depth	
Depth Reached	227.2m
Bottom Driller	227.4m
Mud Nature	Bentonite
S.G.	Viscosity
Bit Size 1	HQ to T.D. to
2	to to
3	to to
Casing Size 1	to to
2	to to
3	to to
Rm @ Meas Temp	@ @
Rmf @ Meas Temp	@ @
Rmc @ Meas Temp	@ @
Time Since Circ.	
Max Rec. Temp.	
Equip. Location	
Recorded By	
Witness	

Date 26 July 1977
Run No. 1 Depth Scale 1:1200

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.			
Depth — Driller				
Type Fluid in Hole				
Dens	Visc.			
ph	Fluid Loss	ml		
Source of Sample				
Rm @ Meas Temp	@ °F	@ °F		
Rmf @ Meas Temp	@ °F	@ °F		
Rmc @ Meas Temp	@ °F	@ °F		
Source Rmf Rmc				
Rm @ BHT	@ °F	@ °F		
Rmf @ BHT	@ °F	@ °F		
Rmc @ BHT	@ °F	@ °F		

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed m/min	T.C. sec	Norm.	Scale No.	Source Number
Gamma	75	0	9	1	out	110	
L.S.D.	76	0	9	0.3	.670	110	M5852
Cal.	76	0	15	0.3	out	110	

GAMMA RAY | DEPTHS 1:200 | L.S.DENSITY | CALIPER

CALIBRATION DATA
Jig No. Value @ Diam.
Jig mark shown at above value ÷
0 API 160

CALIBRATION DATA
Jig Cal. date 14 June Jig value SDU@ gr/cc
Jig No. Span NORM SDU = .670 GRS
6000 SDU 0

GAMMA RAY
HOLE SIZE CORRECTION

COAL BULK DENSITY
gm/cc

2" 4" 6" 8"
120 125 130 135 14 145 15 155 16 17 18 19 20 22 24 30

0 160 6000 0

1" = 100 SDU

0
20
40
60
76

casing shoe
water level
BIRD SEAM (UPPER)
BIRD SEAM (LOWER)
SKEETER SEAM
CHAMBERLAIN SEAM

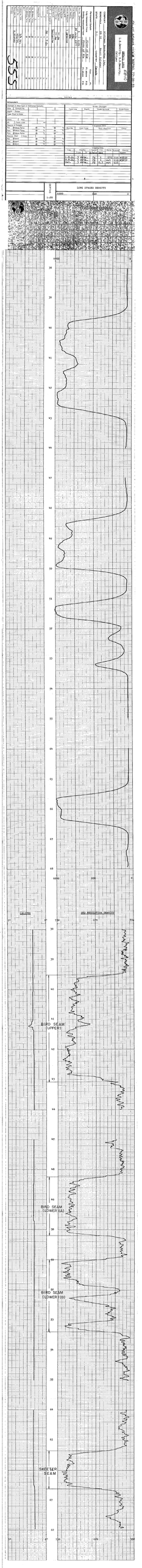
REPEAT SECTION

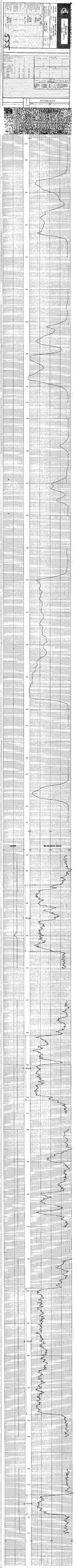
76

0 160 6000 0

1" = 100 SDU

553


555
BIRD SEAM (UPPER)
BIRD SEAM (LOWER) (A)
BIRD SEAM (LOWER) (B)
SKELTER SEAM



COMPANY ASSELBORN-BRABANDER COAL CO.

WELL No. 1

FIELD MONROE

COUNTY MONROE STATE OHIO

Permanent Datum: Ground Elev. 1,000 ft. Above Perm. Datum

Log Measured from: KB 12 ft. Above Perm. Datum

Drilling Measured from: KB

Date: 7-24-57

Run No. ONE

Type Log: GAMMA RAY - L.S. DENSITY - CALIPER

Depth—Driller: 1,700 ft.

Depth—Logger: 1,700 ft.

Bottom Logged Interval: 1,700 ft.

Top Logged Interval: 0 ft.

Type Fluid in Hole: AIR

Salinity, P.P.M.

Density

Level: FULL

Max. Rec. Temp. Deg. F.

Operator Rig Time

Recorded By: J. MOSSER

Witnessed By: MR. ASSELBORN

Schlumberger

REMARKS:

Changes in Mud Type or Additional Remarks:

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths Scale	No.	Speed	Time Constant	Micro.	Normal	Normal Resistor
Gamma	275	0	0	1	mvt	110	
L.S.D.	275	0	0	0.3	250	110	MSE12
Cal.	275	0	15	0.3	mvt	110	

GAMMA RAY | L.S.DENSITY | CALIPER

CALIBRATION DATA

Jig No. Value @ Ohms

Jig mark shown at above value =

0 API 150

GAMMA RAY

HOLE SIZE CORRECTION

CALIBRATION DATA

Jig Cal date: 6 Aug 57 Jig value 100 LD gr/cc

Jig No. Spian NORM 200 = .700

5000 500 0

COAL BULK DENSITY

gr/cc

0 .50 1.00 1.50 2.00 2.50 3.00

6" 12" 18" 24" 30" 36"

CALIPER

1,700

150

6000

0

20

40

60

80

100

120

140

160

180

200

220

240

260

275

6" 12" 18" 24" 30" 36"

6 C = 5000 OHM

casing shoe

water level

D SEAM

C SEAM

B SEAM

A SEAM

REPEAT SECTION

275

150

6000

0

6 C = 5000 OHM

PR-MT. SPIEKER 77(4)B.

NICHIMEN RESOURCES LTD.

RANGER OIL (CANADA) LTD.

Mt. SPIEKER AREA

EXPLORATION REPORT

APPENDIX

1977

CYCLONE ENGINEERING SALES LTD.

SEPARATION OF BULK MATERIALS

Manufacturing, Engineering, Testing Services

9751 - 51 Avenue
Edmonton, Alberta T6E 4Z5
Telephone: (403) 436-1385

Cable Address:
Cyclone, Edmonton
Telex: 037-3793

Ref: S1-243

November 4, 1977

Nichimen Resources Ltd.
Suite 2505 Sun Oil Building
500 - 4th Avenue S. W.
Calgary, Alberta
T2P 2V6

Attention: Mr. John Hirota

Dear Sir:

Enclosed herewith are results of analysis on your samples identified as CES #10 to CES #20 inclusive from the Mt. Spieker Project.

Samples CES #13 - 16 inclusive only contain information required as per instruction from Mr. M. Mitchell.

We are experiencing some difficulties in our Plastometer. These results, together with forms of sulfur determination on clean coal, will be forwarded to you as soon as they become available.

I trust this is satisfactory.

Yours truly,

CYCLONE ENGINEERING SALES LTD.

Per: B. Y. H. Wong

B. Y. H. Wong

BYHW/ejr

Encl.

cc M. Mitchell, Vancouver

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 3, 1977

DRILL HOLE NO. FR 7 INTERCEPT 780.0 - 791.5 ft THICKNESS 11.5 ft

CORE RECOVERY 68 % SEAM Upper Bird

AS RECEIVED WEIGHT 8.45 kg. % MOISTURE 4.34

C. E. S. #: 10

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	84.77 *
Ash %	14.28	7.57
R.M. %	0.27	0.35
V.M. %	19.34	21.29
F.C. %	66.11	70.79
FSI	8 1/2	9
BTU/lb.	13,390	14,580
S. %	4.74	2.06
P_2O_5 %		0.01
H.G.I.		84
Gieseler Plasticity		
Start °C.		
Max. °C.		
Solid °C.		
Range		
Max. Fluid. ddpm		

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	81.35	74.91
28m x 0 Froth up to 3 min.	96.96	25.09
TOTAL	84.77	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project C.E.S. # 10

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	78.06	15.42	78.06	15.42
28m x 100m	15.01	9.07	93.07	14.39
100m x 0	6.93	11.75	100.00	14.21

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional Wt. %	Fractional Ash %	Cumulative Floats Wt. %	Cumulative Floats Ash %	Cumulative Sinks Wt. %	Cumulative Sinks Ash %
- 1.30	35.46	2.35	35.46	2.35	100.00	15.25
1.30 - 1.40	29.80	6.40	65.26	4.20	64.54	22.34
1.40 - 1.50	8.97	16.31	74.23	5.66	34.74	36.01
1.50 - 1.60	6.60	24.01	80.83	7.16	25.77	42.87
1.60 - 1.80	6.40	32.88	87.23	9.05	19.17	49.36
+ 1.80	12.77	57.62	100.00	15.25	12.77	56.62
Total	100.00	15.25				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spicker Project. C.E.S. #10

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	49.51	1.86	49.51	1.86	100.00	8.69
1.30 - 1.40	30.74	5.30	80.25	3.18	50.49	15.39
1.40 - 1.50	6.70	14.09	86.95	4.02	19.75	31.08
1.50 - 1.60	3.40	23.16	90.35	4.74	13.05	39.81
1.60 - 1.80	3.40	31.01	93.75	5.69	9.65	45.67
+ 1.80	6.25	53.65	100.00	8.69	6.25	53.65
Total	100.00	8.69				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	96.78	9.70
Tailings	3.22	72.88
TOTAL	100.00	11.73

CYCLONE ENGINEERING SALES LTD.
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NICHIMEN RESOURCES LTD.

Mt. Spicker Project C.E.S. #10

TABLE 5. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 1/4" x 28 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S%
- 1.30	35.46	1.43	35.46	1.43	100.00	4.78
1.30 - 1.40	29.80	1.77	65.26	1.59	64.54	6.62
1.40 - 1.50	8.97	2.78	74.23	1.73	34.74	10.79
1.50 - 1.60	6.60	4.71	80.83	1.97	25.77	13.57
1.60 - 1.80	6.40	7.38	87.23	2.37	19.17	16.63
+ 1.80	12.77	21.26	100.00	4.78	12.77	21.26
Total	100.00	4.78				

TABLE 6. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 28 MESH x 100 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S %
- 1.30	49.51	1.39	49.51	1.39	100.00	2.84
1.30 - 1.40	30.74	1.62	80.25	1.48	50.49	4.25
1.40 - 1.50	6.70	2.83	86.95	1.58	19.75	8.35
1.50 - 1.60	3.40	4.64	90.35	1.70	13.05	11.18
1.60 - 1.80	3.40	6.07	93.75	1.86	9.65	13.49
+ 1.80	6.25	17.52	100.00	2.84	6.25	17.52
Total	100.00	2.84				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spicker Project

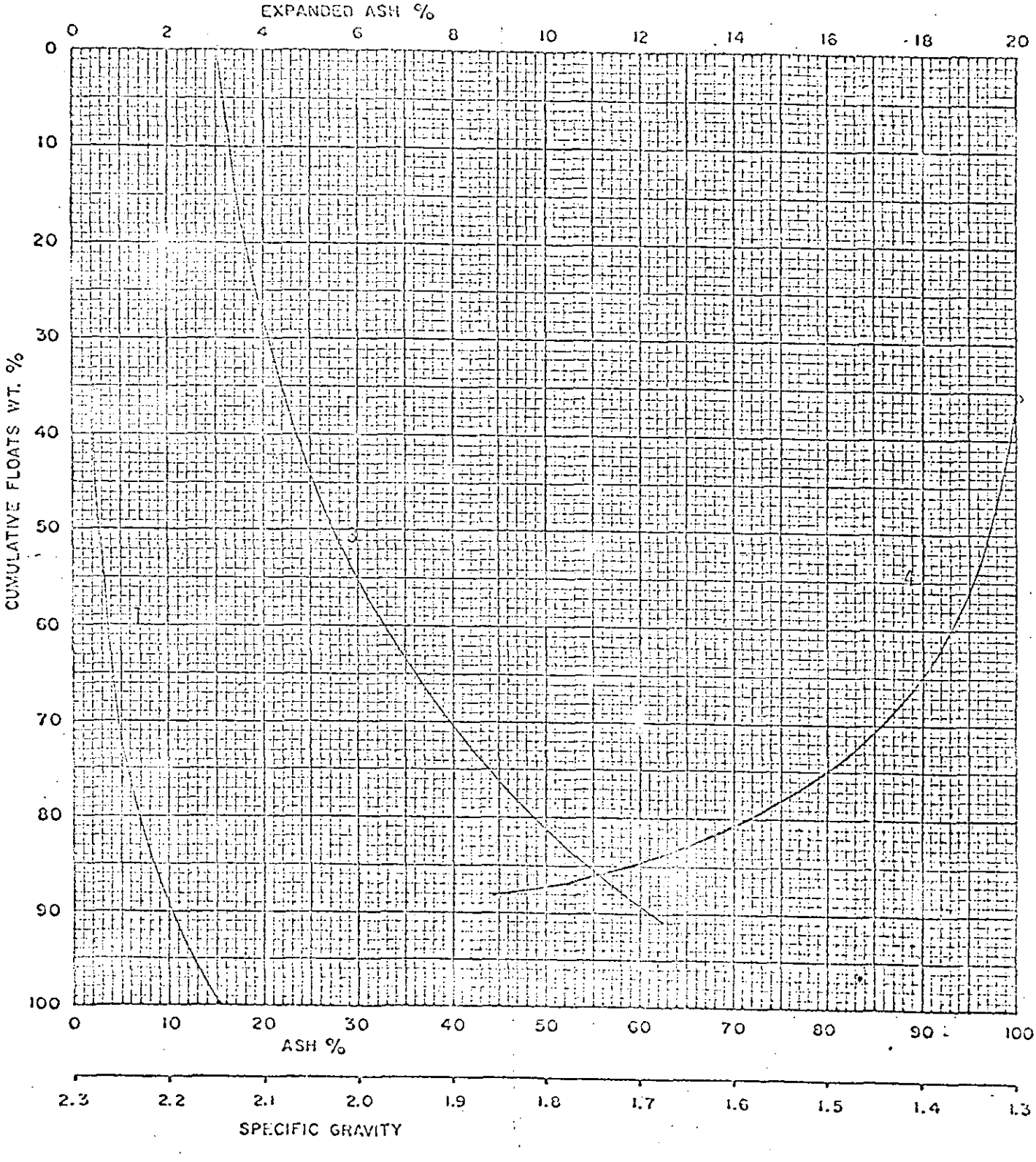
Size 1/4" x 28

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #10



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CYCLONE ENGINEERING SALES LTD

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

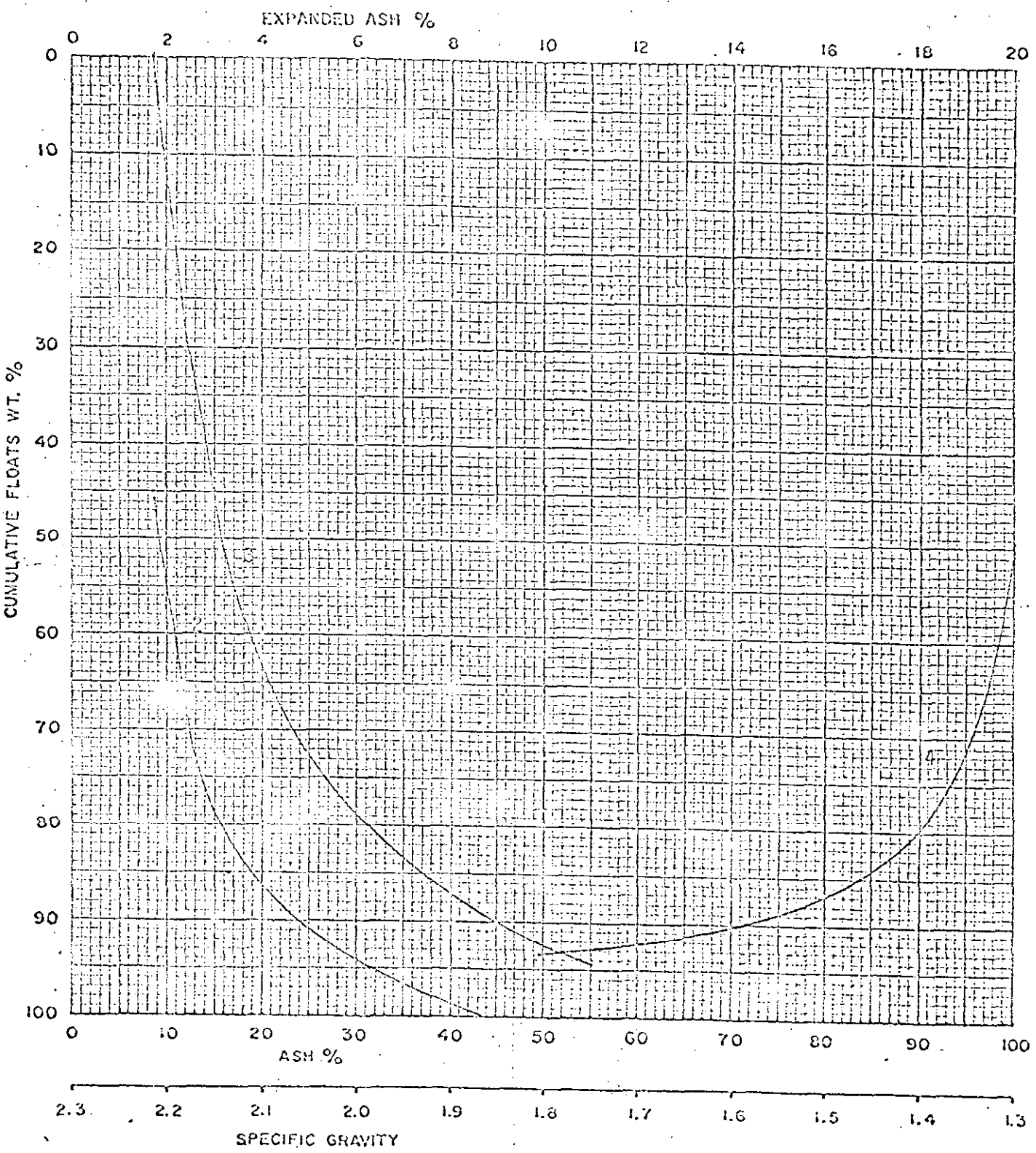
Size 28m x 100

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #10



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CYCLONE ENGINEERING SALES LTD.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 3, 1977

DRILL HOLE NO. EB 8 INTERCEPT 279.4 - 291.2 ft THICKNESS 11.8 ft

CORE RECOVERY 96 % SEAM Upper Bird

AS RECEIVED WEIGHT 12.88 kg. % MOISTURE 2.62

C. E. S. #: 11

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	93.70 *
Ash %	8.89	6.64
R.M. %	0.27	0.35
V.M. %	19.34	19.91
F.C. %	71.50	73.10
FSI	8 1/2	8 1/2
BTU/lb.	14,310	14,780
S. %	2.80	2.15
P_2O_5 %		0.04
H.G.I.		85
Gieseler Plasticity		
Start °C.		
Max. °C.		
Solid °C.		
Range		
Max. Fluid. ddpm		

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	92.55	76.56
28m x 0 Froth up to 3 min.	97.65	23.44
TOTAL	93.70	100.00

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NICHIMEN RESOURCES LTD.

Mt. Spieker Project C.E.S. #11

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	77.51	9.35	77.51	9.35
28m x 100m	15.47	6.47	92.98	8.87
100m x 0	7.02	10.83	100.00	9.01

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional Wt. %	Fractional Ash %	Cumulative Floats Wt. %	Cumulative Floats Ash %	Cumulative Sinks Wt. %	Cumulative Sinks Ash %
- 1.30	35.32	2.08	35.32	2.08	100.00	9.58
1.30 - 1.40	42.79	5.73	78.11	4.08	64.68	13.67
1.40 - 1.50	9.35	16.58	87.46	5.42	21.89	29.19
1.50 - 1.60	3.93	25.03	91.39	6.26	12.54	38.58
1.60 - 1.80	3.65	30.61	95.04	7.19	8.61	44.77
+ 1.80	4.96	55.19	100.00	9.58	4.96	55.19
Total	100.00	9.58				

CYCLONE ENGINEERING SALES LTD.
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NICHIMEN RESOURCES LTD.

Mt. Spieker Project. C.E.S. #11

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	50.92	1.78	50.92	1.78	100.00	6.18
1.30 - 1.40	36.09	5.06	87.01	3.14	49.08	10.74
1.40 - 1.50	6.37	14.15	93.38	3.89	12.99	26.51
1.50 - 1.60	2.11	22.24	95.49	4.30	6.62	38.40
1.60 - 1.80	1.70	31.83	97.19	4.78	4.51	45.95
+ 1.80	2.81	54.50	100.00	6.18	2.81	54.50
Total	100.00	6.18				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth		10.80
Tailings		Too small for Ash Determination
TOTAL		

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project C.E.S. #11

TABLE 5. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 1/4" x 28 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S%
- 1.30	35.32	1.81	35.32	1.81	100.00	3.02
1.30 - 1.40	42.79	1.90	78.11	1.86	64.68	3.68
1.40 - 1.50	9.35	2.89	87.46	1.97	21.89	7.17
1.50 - 1.60	3.93	4.58	91.39	2.08	12.54	10.36
1.60 - 1.80	3.65	8.24	95.04	2.32	8.61	13.00
+ 1.80	4.96	16.50	100.00	3.02	4.96	16.50
Total	100.00	3.02				

TABLE 6. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 28 MESH x 100 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S %
- 1.30	50.92	1.72	50.92	1.72	100.00	2.27
1.30 - 1.40	36.09	1.82	87.01	1.76	49.08	2.84
1.40 - 1.50	6.37	2.26	93.38	1.80	12.99	5.67
1.50 - 1.60	2.11	3.71	95.49	1.84	6.62	8.95
1.60 - 1.80	1.70	4.94	97.19	1.89	4.51	11.41
+ 1.80	2.81	15.32	100.00	2.27	2.81	15.32
Total	100.00	2.27				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

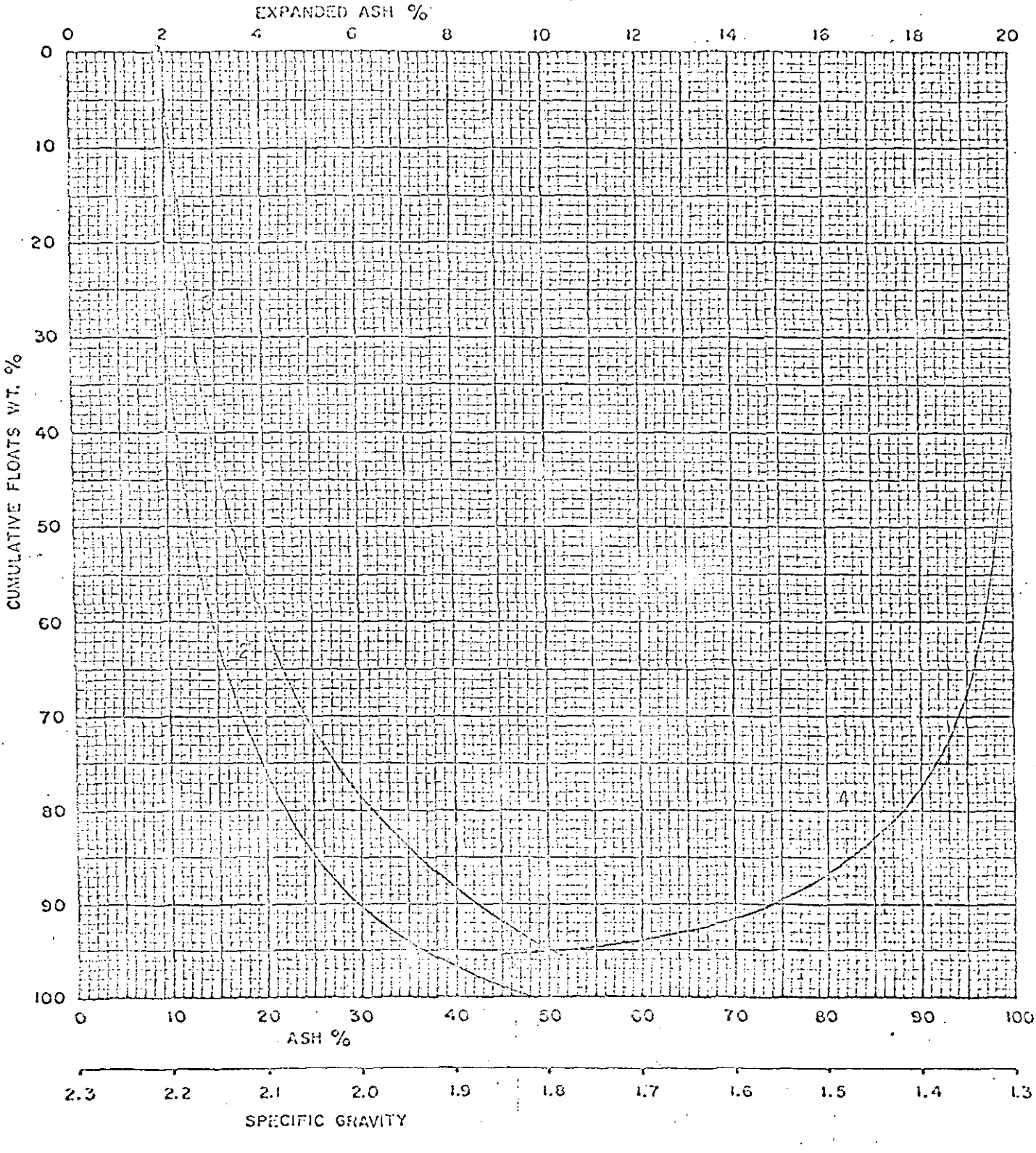
Size 1/4" x 28

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #11



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CYCLONE ENGINEERING SALES LTD.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

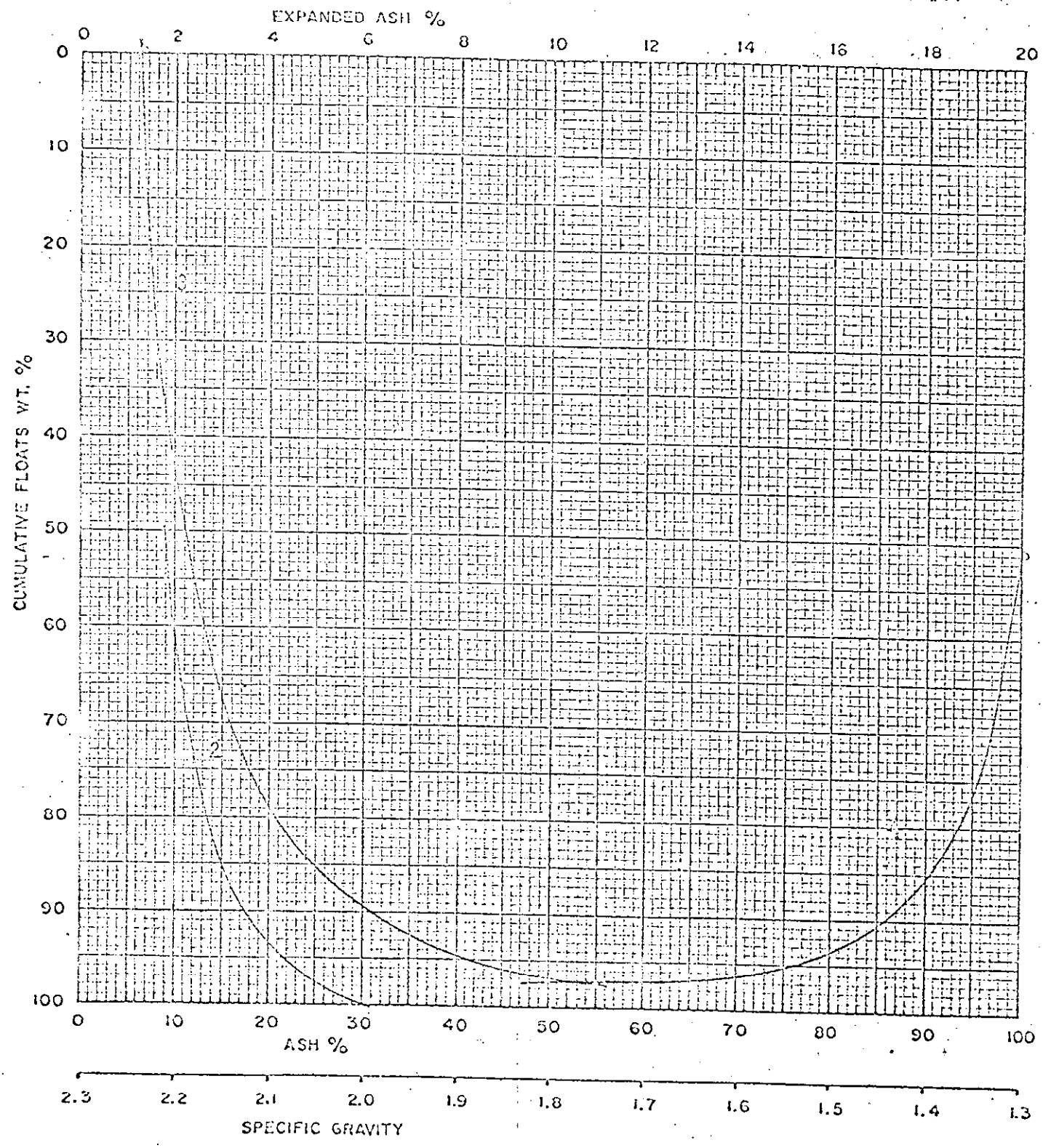
Size 28m x 100

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #11



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CYCLONE ENGINEERING SALES LTD.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 3, 1977

DRILL HOLE NO. EB 8 INTERCEPT 297.6 - 304.1 ft THICKNESS 6.5 ft

CORE RECOVERY 100 % SEAM Lower Bird

AS RECEIVED WEIGHT 7.64 kg. % MOISTURE 6.64

C. E. S. #: 12

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	83.60 *
Ash %	17.93	7.43
R.M. %	0.38	0.45
V.M. %	18.48	19.22
F.C. %	63.21	72.90
FSI	7 1/2	8
BTU/lb.	12,810	14,900
S. %	1.52	1.12
P_2O_5 %		0.02
H.G.I.		81
Gieseler Plasticity		
Start °C.		
Max. °C.		
Solid °C.		
Range		
Max. Fluid. ddpm		

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	80.49	74.40
28m x 0 Froth up to 3 min.	94.17	25.60
TOTAL	83.60	100.00

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NICHIMEN RESOURCES LTD.

Mt. Spieker Project C.E.S. #12

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	77.27	20.31	77.27	20.31
28m x 100m	15.24	9.85	92.51	18.59
100m x 0	7.49	12.30	100.00	18.16

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional Wt. %	Fractional Ash %	Cumulative Floats Wt. %	Cumulative Floats Ash %	Cumulative Sinks Wt. %	Cumulative Sinks Ash %
- 1.30	42.25	2.11	42.25	2.11	100.00	20.17
1.30 - 1.40	30.41	7.30	72.66	4.28	57.75	33.39
1.40 - 1.50	5.23	17.79	77.89	5.19	27.34	62.40
1.50 - 1.60	3.59	28.61	81.84	6.19	22.11	72.95
1.60 - 1.80	1.83	39.78	83.31	6.96	18.52	81.55
+ 1.80	16.69	86.13	100.00	20.17	16.69	86.13
Total	100.00	20.17				

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NICHIMEN RESOURCES LTD.

Mt. Spicker Project. C.E.S. #12

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	56.95	1.54	56.95	1.54	100.00	9.77
1.30 - 1.40	27.77	5.97	84.72	2.99	43.05	20.66
1.40 - 1.50	5.00	14.28	89.72	3.62	15.28	47.36
1.50 - 1.60	2.13	24.22	91.85	4.10	10.28	63.46
1.60 - 1.80	1.42	35.91	93.27	4.58	8.15	73.71
+ 1.80	6.73	81.69	100.00	9.77	6.73	81.69
Total	100.00	9.77				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	94.61	8.89
Tailings	5.39	71.63
TOTAL	100.00	12.27

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spicker Project C.E.S. #12

TABLE 5. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	S %	Wt. %	S %	Wt. %	S%
- 1.30	42.25	1.02	42.25	1.02	100.00	1.51
1.30 - 1.40	30.41	1.12	72.66	1.06	57.75	1.87
1.40 - 1.50	5.23	1.27	77.89	1.08	27.34	2.71
1.50 - 1.60	3.59	1.36	81.84	1.08	22.11	3.05
1.60 - 1.80	1.83	1.85	83.31	1.10	18.52	3.38
+ 1.80	16.69	3.55	100.00	1.51	16.69	3.55
Total	100.00	1.51				

TABLE 6. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 28 MESH x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	S %	Wt. %	S %	Wt. %	S %
- 1.30	56.95	0.84	56.95	0.84	100.00	1.09
1.30 - 1.40	27.77	0.94	84.72	0.87	43.05	1.42
1.40 - 1.50	5.00	1.23	89.72	0.89	15.28	2.28
1.50 - 1.60	2.13	1.44	91.85	0.91	10.28	2.80
1.60 - 1.80	1.42	1.92	93.27	0.92	8.15	3.15
+ 1.80	6.73	3.41	100.00	1.09	6.73	3.41
Total	100.00	1.09				

URE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

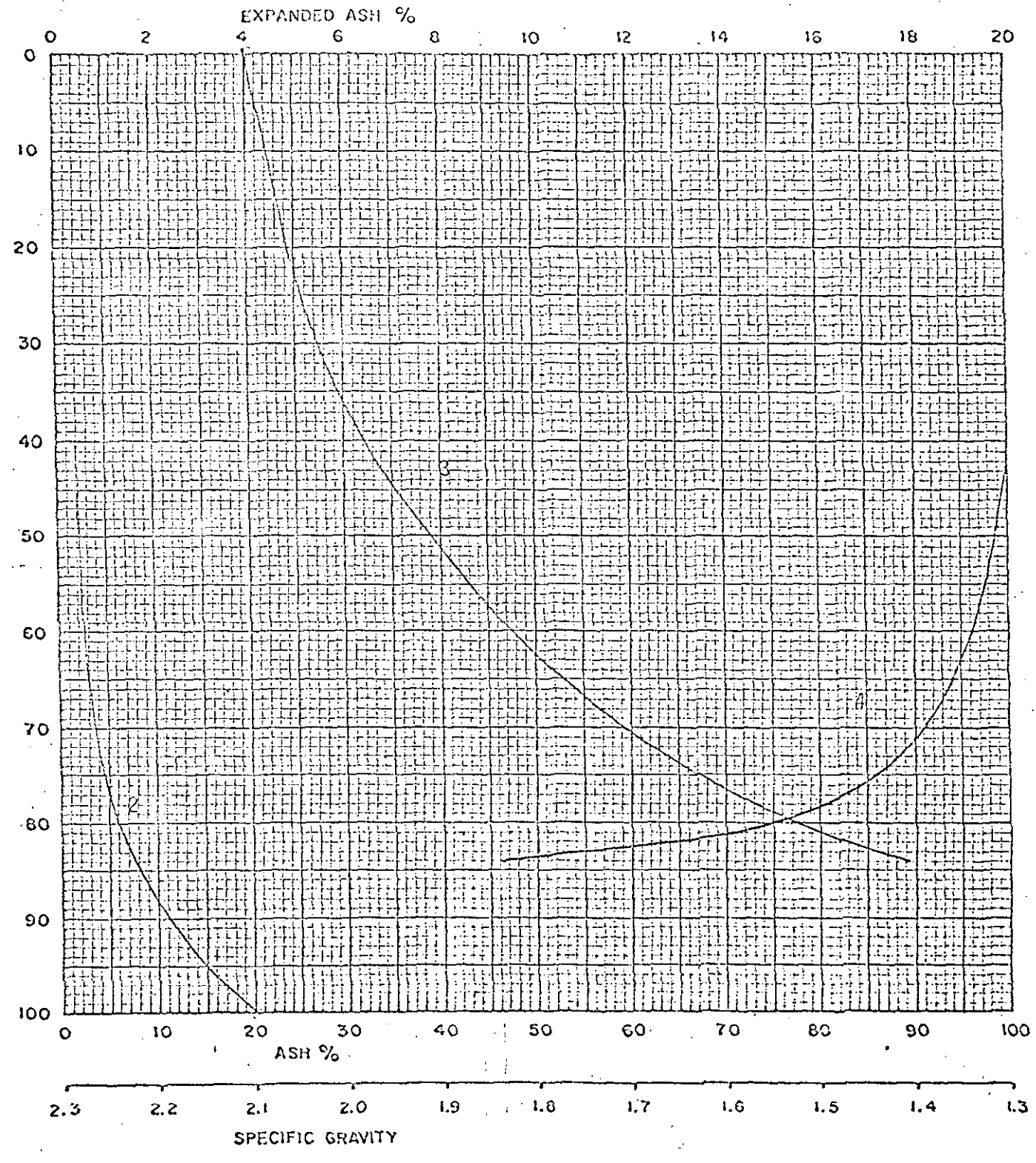
Size 1/4" x 28

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. # 12



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CYCLONE ENGINEERING SALES LTD.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

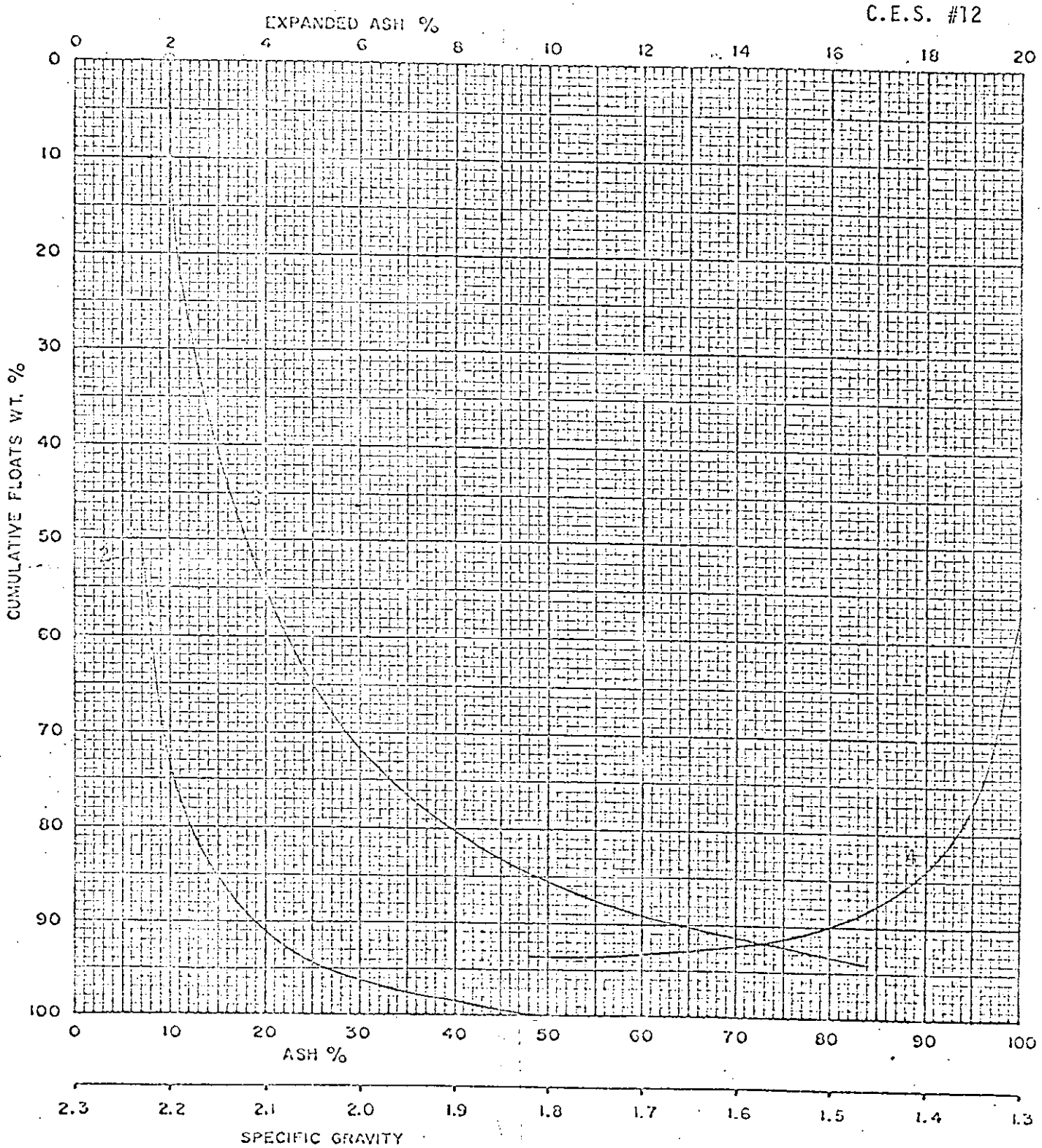
Size 28m x 100

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #12



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CYCLONE ENGINEERING SALES LTD.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 2, 1977

DRILL HOLE NO. EB 8 INTERCEPT 306.7 - 314.8 ft THICKNESS 8.1 ft

CORE RECOVERY 85 % SEAM Lower Bird (B)

AS RECEIVED WEIGHT 9.31 kg. % MOISTURE 3.52

C. E. S. #: 13

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	46.54 *
Ash %	48.66	10.06
R.M. %		0.42
V.M. %		17.57
F.C. %		71.95
FSI		4
BTU/lb.		--
S. %		0.62
P_2O_5 %		
H.G.I.		
Gieseler Plasticity		
Start °C.		
Max. °C.		
Solid °C.		
Range		
Max. Fluid. ddpm		

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	39.11	66.34
28m x 0 Froth up to 3 min.	74.43	33.66
TOTAL	46.54	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: October 13, 1977

DRILL HOLE NO. EB9 INTERCEPT 88.9 - 94.3 ft THICKNESS 5.4 ft

CORE RECOVERY 100 % SEAM D Upper

AS RECEIVED WEIGHT 7.80 kg. % MOISTURE 7.88

C. E. S. #: 6

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	44.52 *
Ash %	39.76	11.31
R.M. %	0.94	0.84
V.M. %	17.04	21.90
F.C. %	42.26	65.95
FSI	2 1/2	7
BTU/lb.	8,810	13,750
S. %	0.17	0.48
P_2O_5 %		0.27
H.G.I.		70
Gieseler Plasticity		
Start °C.		424
Max. °C.		460
Solid °C.		483
Range		59
Max. Fluid. ddpm		115

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.50 Sp.Gr.	38.56	64.95
28m x 0 Froth up to 3 min.	62.37	35.05
TOTAL	44.52	100.00

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NICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB9, D Upper, #6.

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	74.98	44.03	74.98	44.03
28m x 100m	14.60	31.61	89.58	42.01
100m x 0	10.42	33.86	100.00	41.16

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	17.54	3.54	17.54	3.54	100.00	44.23
1.30 - 1.40	16.24	8.03	32.78	5.63	82.46	52.89
1.40 - 1.50	6.01	20.59	38.79	7.95	67.22	63.05
1.50 - 1.60	4.91	30.32	43.70	10.46	61.21	67.22
1.60 - 1.80	7.06	40.26	50.76	14.60	56.30	70.44
+ 1.80	49.24	74.77	100.00	44.23	49.24	74.77
Total	100.00	44.23				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. EB9, D Upper, #6.

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	24.23	4.18	24.23	4.18	100.00	31.96
1.30 - 1.40	20.16	8.06	44.39	5.94	75.77	40.84
1.40 - 1.50	10.61	17.17	55.00	8.11	55.61	52.73
1.50 - 1.60	5.92	27.10	60.92	9.95	45.00	61.11
1.60 - 1.80	8.68	39.43	69.60	13.63	39.08	66.27
+ 1.80	30.40	73.93	100.00	31.96	30.40	73.93
Total	100.00	31.96				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	79.81	23.59
Tailings	20.19	79.86
TOTAL	100.00	34.95

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

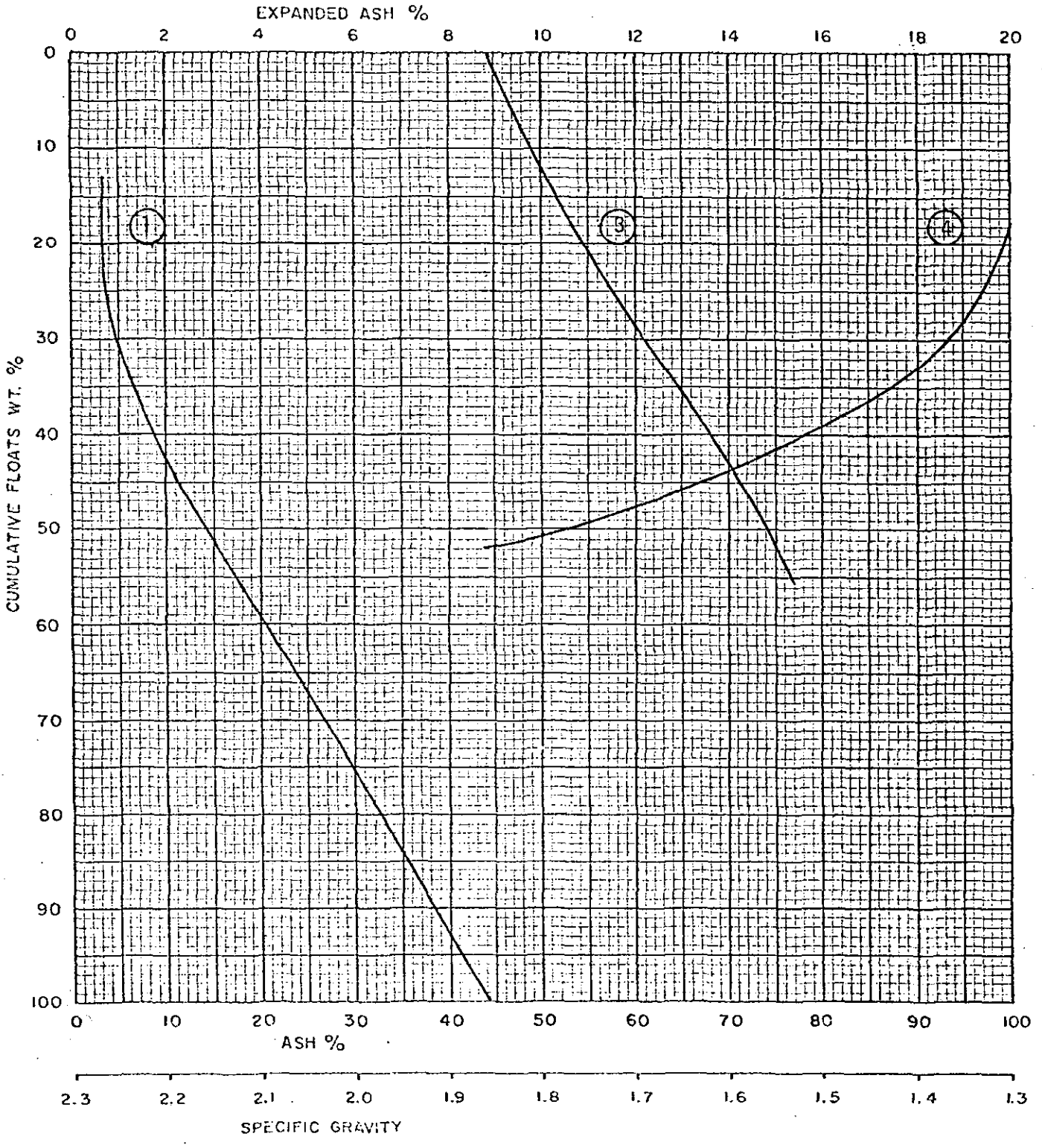
SAMPLE Mt. Spieker Project #6

Size 1/4" x 28 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



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CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

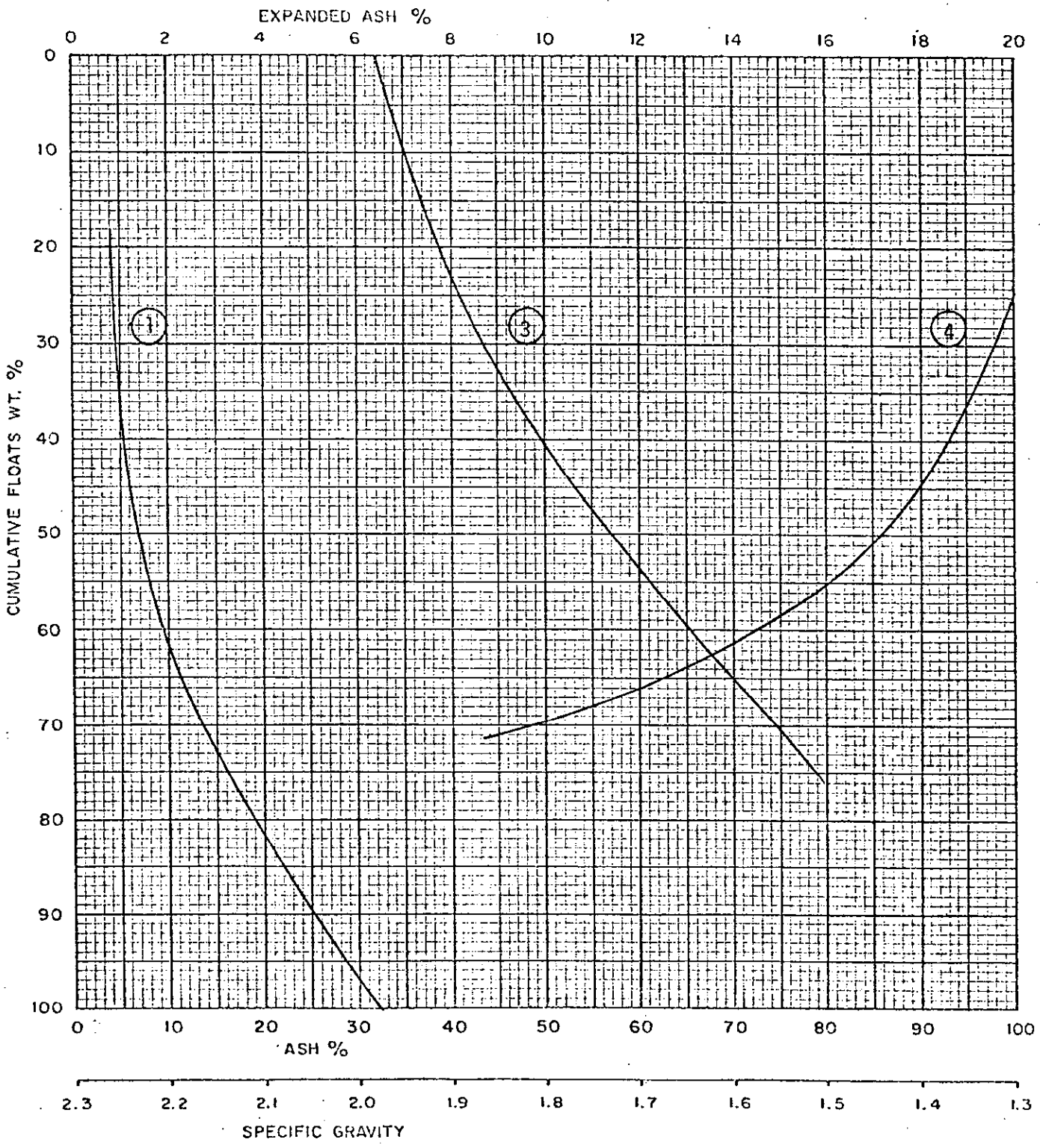
SAMPLE Mt. Spieker Project #6

Size 28 Mesh x 100 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



DATE

CYCLONE ENGINEERING SALES LTD.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: October 13, 1977

DRILL HOLE NO. EB9 INTERCEPT 94.3 - 100.3 ft THICKNESS 6.0 ft

CORE RECOVERY 92 % SEAM D Lower

AS RECEIVED WEIGHT 6.4 kg. % MOISTURE 5.82

C. E. S. #: 7

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	78.58 *
Ash %	17.12	10.12
R.M. %	0.75	0.90
V.M. %	22.30	22.84
F.C. %	59.83	66.14
FSI	5	7 1/2
BTU/lb.	12,590	13,770
S. %	0.49	0.42
P_2O_5 %		0.11
H.G.I.		70
Gieseler Plasticity		
Start °C.		422
Max. °C.		461
Solid °C.		491
Range		69
Max. Fluid. ddpm		152

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.50 Sp.Gr.	73.29	69.90
28m x 0 Froth up to 3 min.	94.39	30.10
TOTAL	78.58	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB9, D Lower Seam, #7.

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	74.94	18.26	74.94	18.26
28m x 100m	15.14	12.43	90.08	17.28
100m x 0	9.92	16.82	100.00	17.23

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional Wt. %	Fractional Ash %	Cumulative Floats Wt. %	Cumulative Floats Ash %	Cumulative Sinks Wt. %	Cumulative Sinks Ash %
- 1.30	24.52	3.45	24.52	3.45	100.00	18.32
1.30 - 1.40	30.50	8.92	55.02	6.48	75.48	23.15
1.40 - 1.50	17.25	18.97	72.27	9.46	44.98	32.80
1.50 - 1.60	13.77	28.42	86.04	12.50	27.73	41.40
1.60 - 1.80	7.53	38.20	93.57	14.57	13.96	54.21
+ 1.80	6.43	72.95	100.00	18.32	6.43	72.95
Total	100.00	18.32				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. EB9, D Lower Seam, #7.

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	37.87	3.03	37.87	3.03	100.00	12.11
1.30 - 1.40	34.80	7.46	72.67	5.15	62.13	17.65
1.40 - 1.50	11.26	17.46	83.93	6.80	27.33	30.63
1.50 - 1.60	6.75	25.98	90.68	8.23	16.07	39.86
1.60 - 1.80	4.82	35.59	95.50	9.61	9.32	49.91
+ 1.80	4.50	65.25	100.00	12.11	4.50	65.25
Total	100.00	12.11				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	93.07	12.60
Tailings	6.93	65.76
TOTAL	100.00	16.28

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

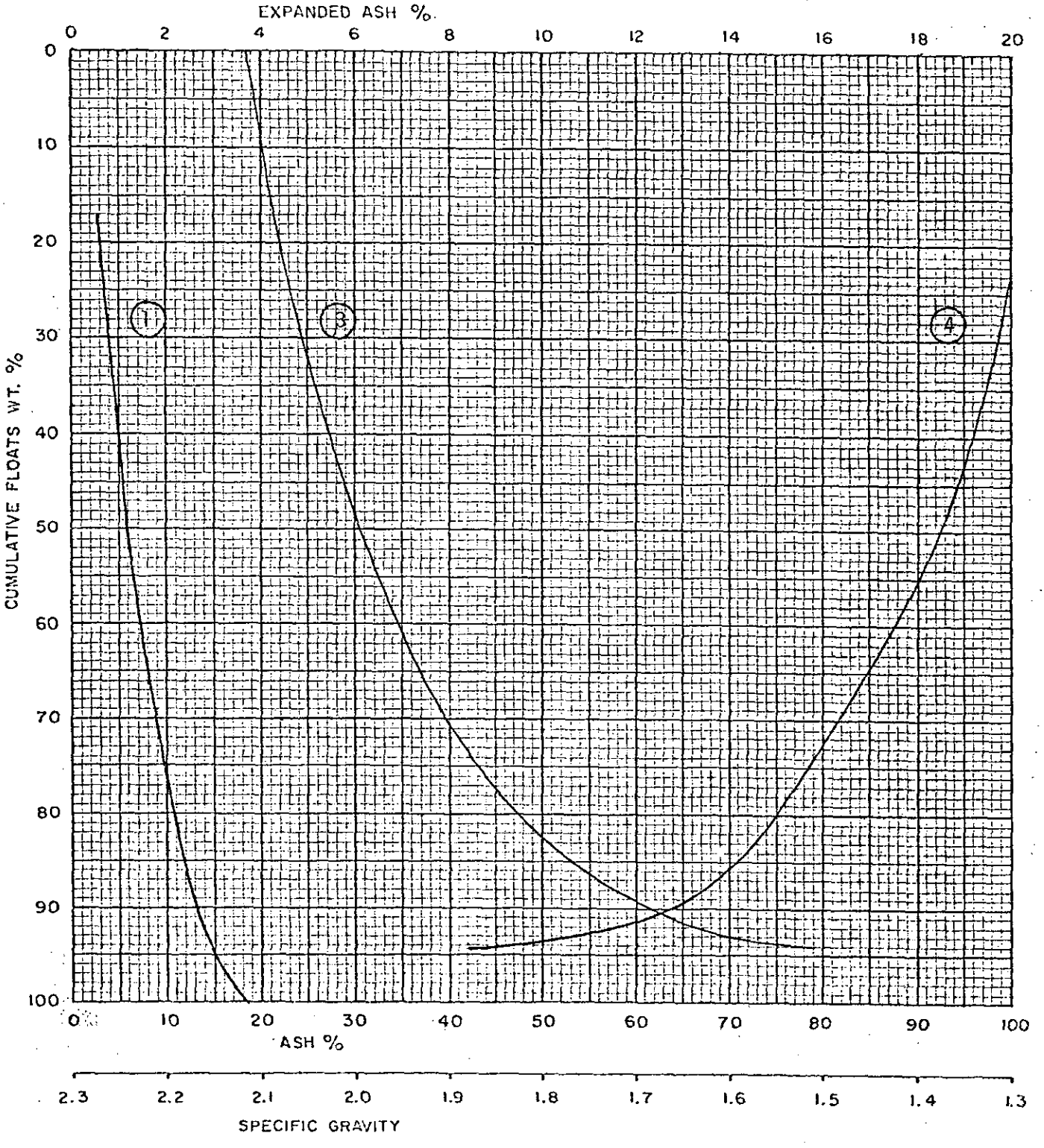
SAMPLE Mt. Spieker Project #7

Size 1/4" x 28 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



DATE

CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

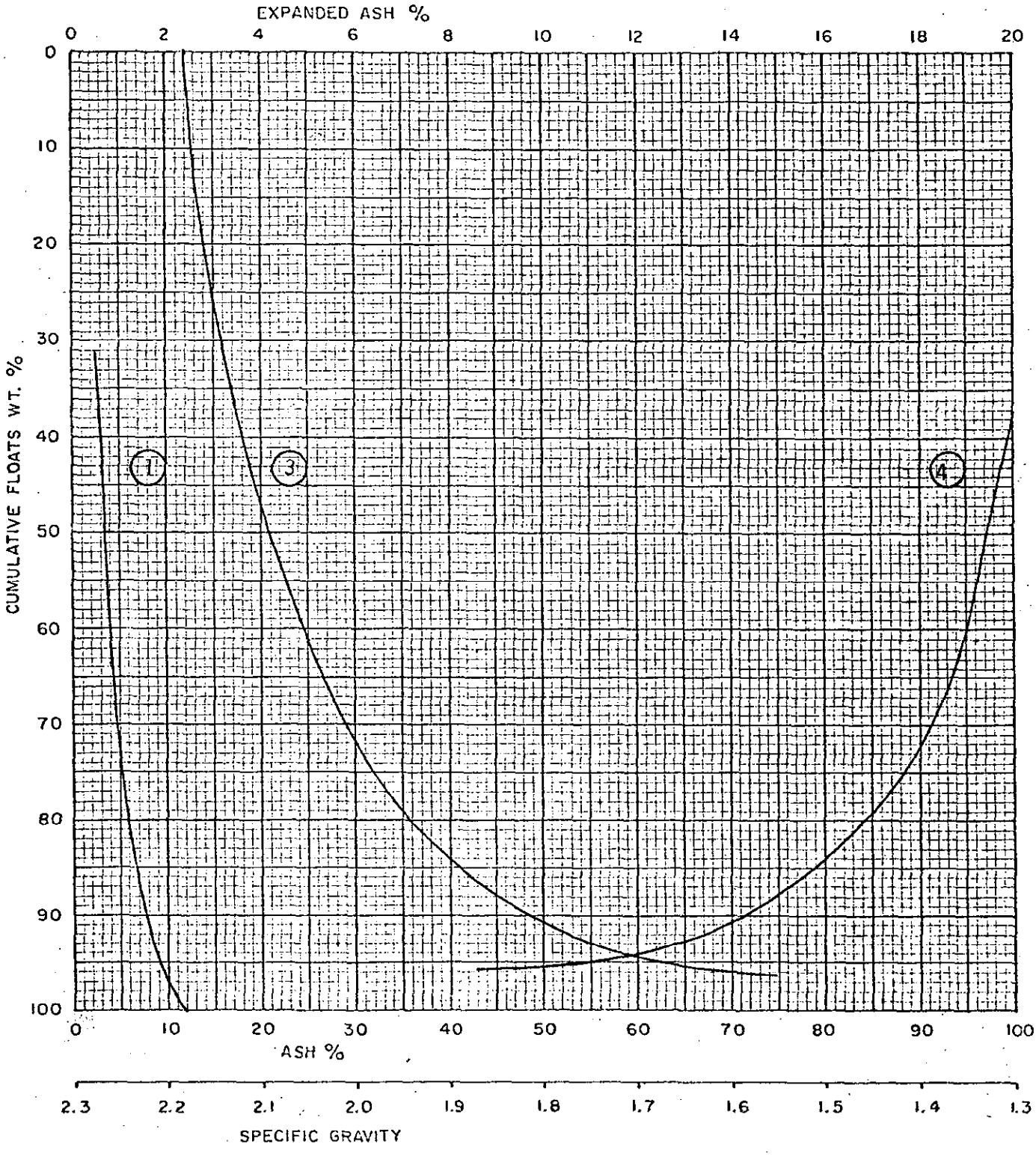
SAMPLE Mt. Spieker Project #7

Size 28 Mesh x 100 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



DATE

CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: October 13, 1977

DRILL HOLE NO. EB9 INTERCEPT 150.2 - 165.1 ft THICKNESS 14.9 ft

CORE RECOVERY 98 % SEAM C

AS RECEIVED WEIGHT 18.41 kg. % MOISTURE 3.41

C. E. S. #: 8

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	54.99 *
Ash %	37.08	10.30
R.M. %	0.69	0.78
V.M. %	17.39	22.41
F.C. %	44.84	66.51
FSI	3 1/2	7
BTU/lb.	9,220	13,910
S. %	0.24	0.43
P_2O_5 %		0.21
H.G.I.		72
Gieseler Plasticity		
Start °C.		428
Max. °C.		465
Solid °C.		489
Range		61
Max. Fluid. ddpm		82

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.50 Sp.Gr.	49.80	71.25
28m x 0 Froth up to 3 min.	74.14	28.75
TOTAL	54.99	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project EB9, C Seam, #8,

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	78.68	40.50	78.68	40.50
28m x 100m	13.11	29.28	91.79	38.90
100m x 0	8.21	30.78	100.00	38.23

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	22.53	3.26	22.53	3.26	100.00	40.08
1.30 - 1.40	18.43	9.64	40.96	6.13	77.47	50.78
1.40 - 1.50	7.77	17.48	48.73	7.94	59.04	63.63
1.50 - 1.60	4.39	26.70	53.12	9.49	51.27	70.62
1.60 - 1.80	5.70	40.86	58.82	12.53	46.88	74.73
+ 1.80	41.18	79.42	100.00	40.08	41.18	79.42
Total	100.00	40.08				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. EB9, C Seam, #8.

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	31.02	3.11	31.02	3.11	100.00	29.06
1.30 - 1.40	20.01	7.82	51.03	4.96	68.96	40.74
1.40 - 1.50	11.01	15.53	62.04	6.83	48.95	54.20
1.50 - 1.60	3.94	26.48	65.98	8.01	37.94	65.42
1.60 - 1.80	5.82	38.48	71.80	10.48	34.00	69.93
+ 1.80	28.20	76.37	100.00	29.06	28.20	76.37
Total	100.00	29.06				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	78.03	18.44
Tailings	21.97	78.27
TOTAL	100.00	31.58

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

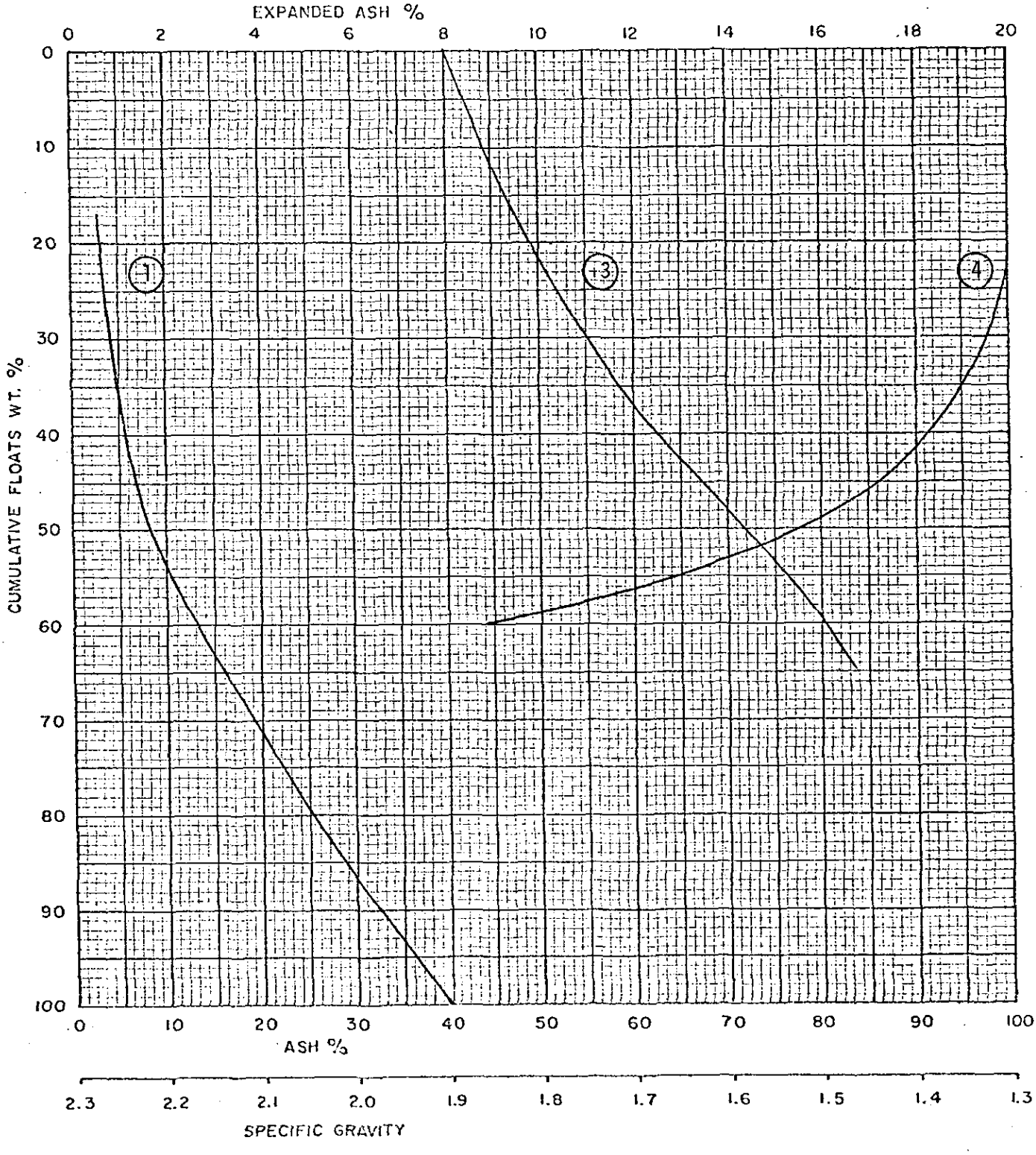
SAMPLE Mt. Spieker Project #8

Size 1/4" x 28 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



DATE

CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

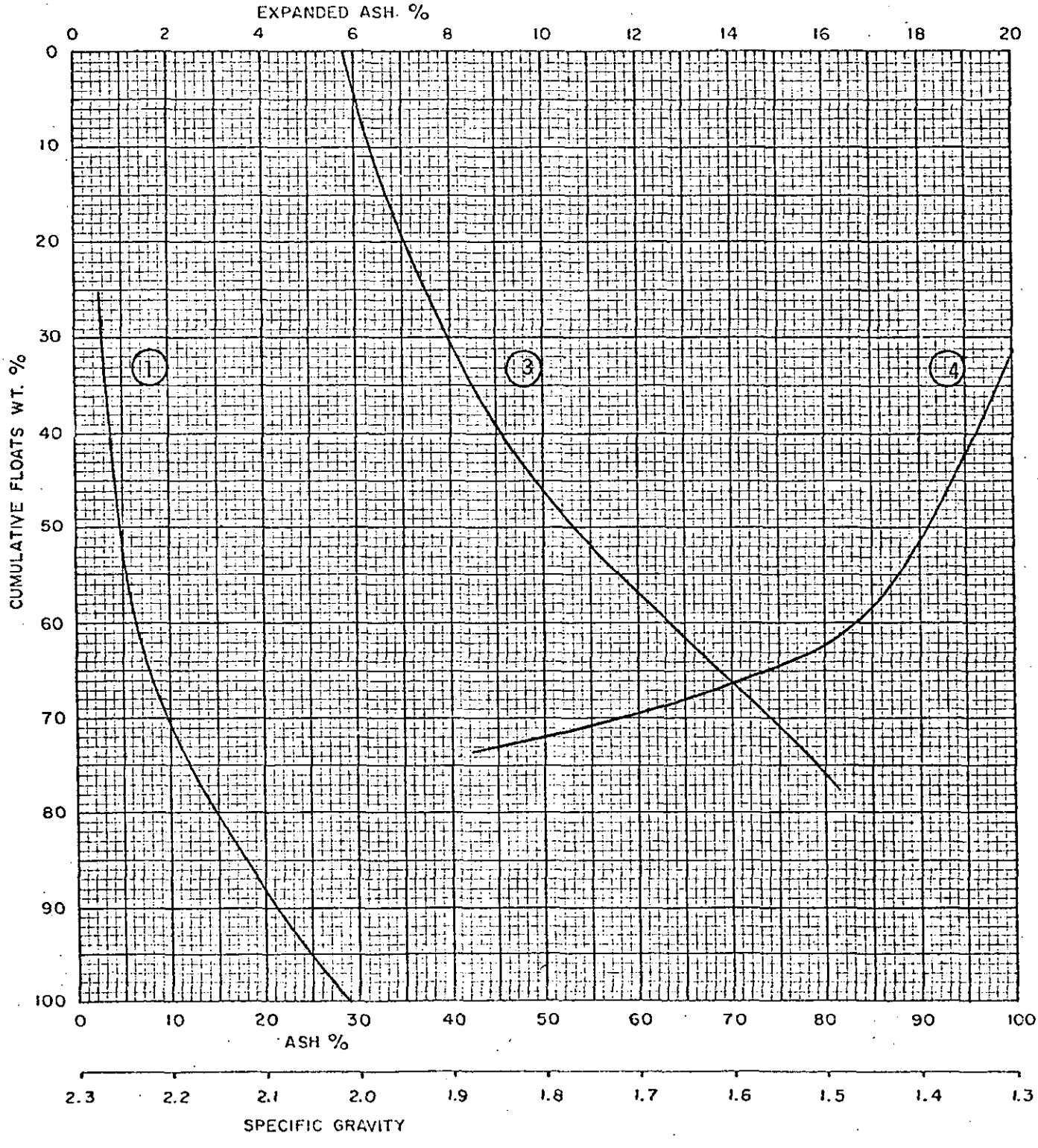
SAMPLE Mt. Spieker Project #8

Size 28 Mesh x 100 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



DATE

CYCLONE ENGINEERING SALES LTD.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: October 13, 1977

DRILL HOLE NO. EB9 INTERCEPT 285.0 - 299.0 ft THICKNESS 14.0 ft

CORE RECOVERY 98 % SEAM B

AS RECEIVED WEIGHT 17.00 kg. % MOISTURE 3.27

C. E. S. #: 9

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	79.08 *
Ash %	17.79	9.29
R.M. %	0.58	0.81
V.M. %	20.88	21.32
F.C. %	60.75	68.58
FSI	4	5
BTU/lb.	12,520	13,990
S. %	0.44	0.35
P_2O_5 %		0.28
H.G.I.		80
Gieseler Plasticity.		
Start °C.		434
Max. °C.		468
Solid °C.		488
Range		54
Max. Fluid. ddpm		15.3

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.50 Sp.Gr.	74.61	66.42
28m x 0 Froth up to 3 min.	89.72	33.58
TOTAL	79.08	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. EB9, B Seam, #9.

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	31.61	2.96	31.61	2.96	100.00	16.72
1.30 - 1.40	32.17	6.02	63.78	4.50	68.39	23.08
1.40 - 1.50	15.10	14.46	78.88	6.41	36.22	38.23
1.50 - 1.60	4.93	25.85	83.81	7.55	21.12	55.22
1.60 - 1.80	3.81	37.94	87.62	8.87	16.19	64.17
+ 1.80	12.38	72.24	100.00	16.72	12.38	72.24
Total	100.00	16.72				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	88.34	13.13
Tailings	11.66	75.32
TOTAL	100.00	20.38

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB9, B Seam, #9.

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	70.40	16.96	70.40	16.96
28m x 100m	18.49	17.20	88.89	17.01
100m x 0	11.11	21.27	100.00	17.48

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	25.45	2.88	25.45	2.88	100.00	17.43
1.30 - 1.40	36.32	7.10	61.77	5.36	74.55	22.39
1.40 - 1.50	13.39	18.57	75.16	7.71	38.23	36.92
1.50 - 1.60	8.46	26.36	83.62	9.60	24.84	46.82
1.60 - 1.80	5.22	35.44	88.84	11.12	16.38	57.39
+ 1.80	11.16	67.65	100.00	17.43	11.16	67.65
Total	100.00	17.43				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

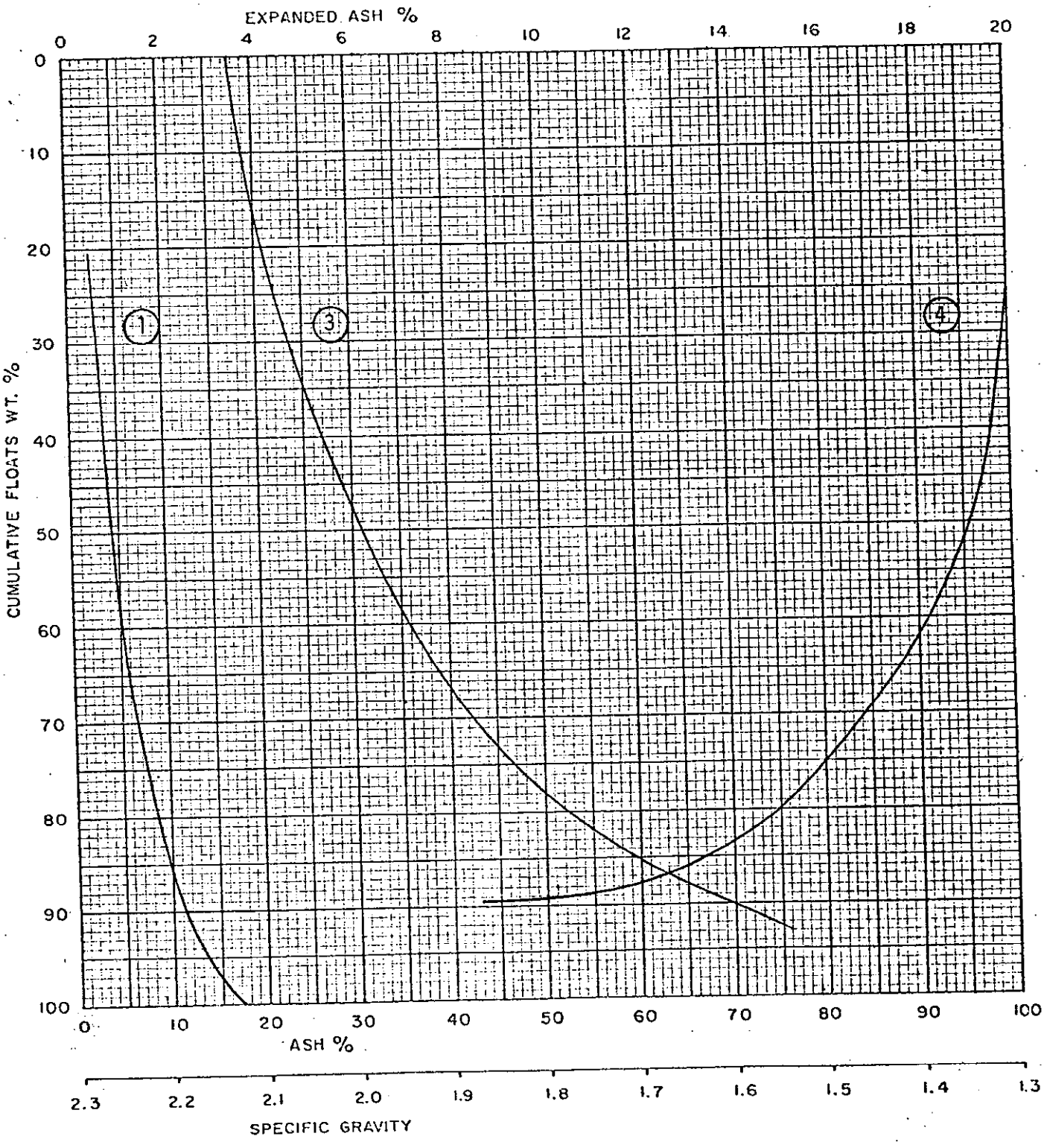
SAMPLE Mt. Spieker Project #9

Size 1/4" x 28 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



DATE

CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

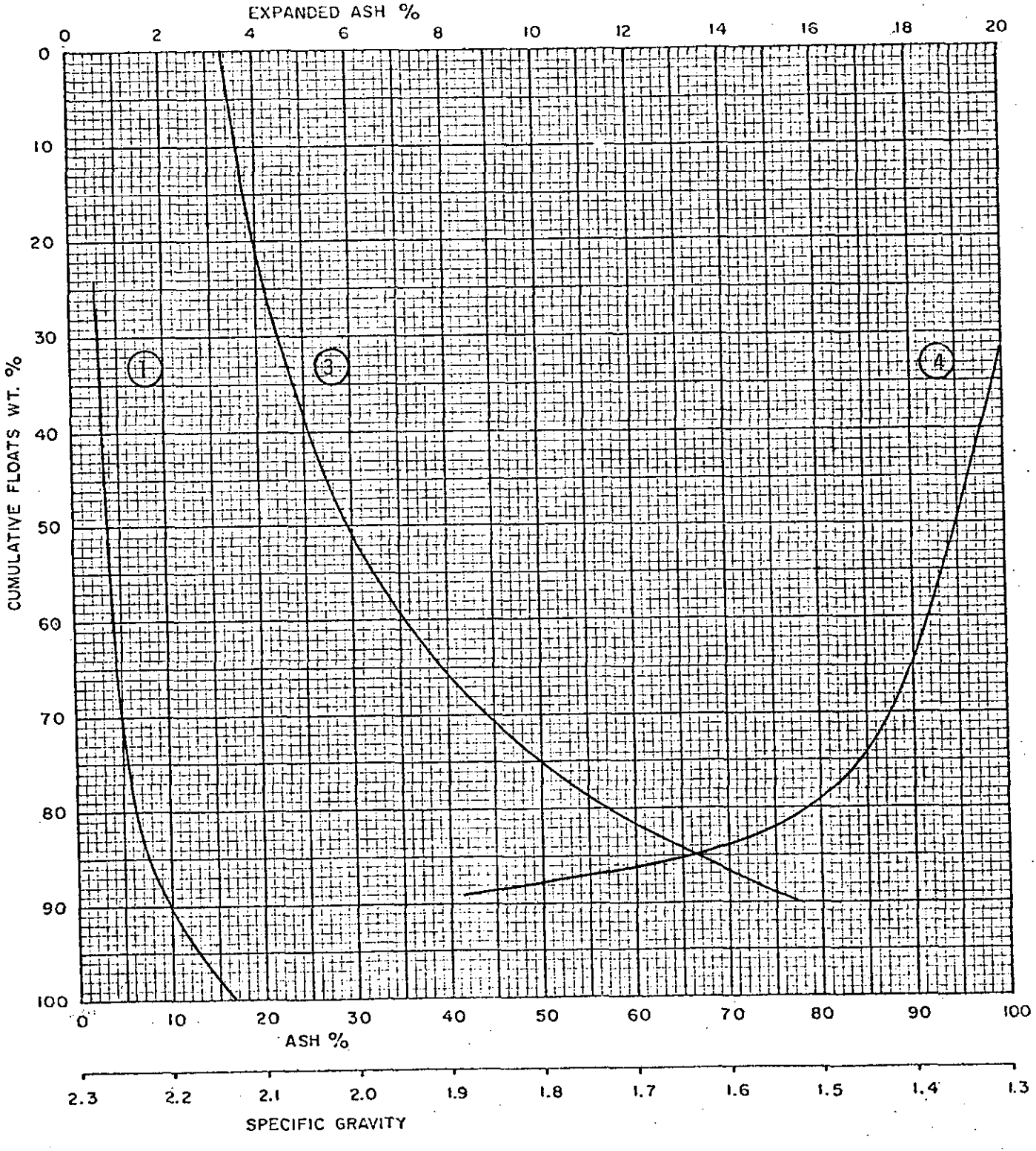
SAMPLE Mt. Spieker Project #9

Size 28 Mesh x 100 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



DATE

CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 3, 1977

DRILL HOLE NO. EB 9 INTERCEPT 403.3 -417.5 ft THICKNESS 14.2 ft

CORE RECOVERY 82 % SEAM A

AS RECEIVED WEIGHT 13.42 kg. % MOISTURE 8.92

C. E. S. #: 14

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	87.14 *
Ash %	16.18	9.69
R.M. %		0.56
V.M. %		21.07
F.C. %		68.68
FSI		5
BTU/lb.		--
S. %		0.42
P_2O_5 %		
H.G.I.		

Gieseler Plasticity

Start °C.

Max. °C.

Solid °C.

Range

Max. Fluid. ddpm

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	88.43	67.71
28m x 0 Froth up to 3 min.	84.55	32.29
TOTAL	87.14	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: October 13, 1977

DRILL HOLE NO. EB10 INTERCEPT 130.3 - 142.0 ft THICKNESS 11.70 ft

CORE RECOVERY 97 % SEAM Upper Bird

AS RECEIVED WEIGHT 12.35 kg. % MOISTURE 2.49

C. E. S. #: 1

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	86.21 *
Ash %	12.44	7.45
R.M. %	0.46	0.72
V.M. %	20.05	22.53
F.C. %	67.05	69.30
FSI	7 1/2	8
BTU/lb.	13,830	14,630
S. %	3.30	2.20 ǂ
P_2O_5 %		0.03
H.G.I.		98
Gieseler Plasticity		
Start °C.		443
Max. °C.		480
Solid °C.		500
Range		57
Max. Fluid. ddpm		42

* Recovery and Composition of Clean Coal Product
ǂ Inorganic Sulfur Less than 0.01 %

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	83.26	71.30
28m x 0 Froth up to 3 min.	94.53	28.70
TOTAL	86.21	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB10, Upper Bird Seam, #1.

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	73.83	14.31	73.83	14.31
28m x 100m	16.53	8.78	90.36	13.30
100m x 0	9.64	10.29	100.00	13.01

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	25.88	2.51	25.88	2.51	100.00	14.33
1.30 - 1.40	43.64	6.02	69.52	4.71	74.12	18.45
1.40 - 1.50	8.42	17.64	77.94	6.11	30.48	36.25
1.50 - 1.60	5.86	25.43	83.80	7.46	22.06	43.35
1.60 - 1.80	5.68	32.68	89.48	9.06	16.20	49.84
+ 1.80	10.52	59.10	100.00	14.33	10.52	59.10
Total	100.00	14.33				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. EB10, Upper Bird Seam, #1.

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	44.58	1.85	44.58	1.85	100.00	8.44
1.30 - 1.40	36.93	4.94	81.51	3.25	55.42	13.73
1.40 - 1.50	7.44	13.46	88.95	4.10	18.49	31.30
1.50 - 1.60	2.93	23.05	91.88	4.71	11.05	43.31
1.60 - 1.80	2.97	35.27	94.85	5.57	8.12	50.62
+ 1.80	5.15	59.48	100.00	8.44	5.15	59.48
Total	100.00	8.44				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	97.63	8.28
Tailings	2.37	66.74
TOTAL	100.00	9.67

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB10, Upper Bird Seam, #1.

TABLE 5. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	S %	Wt. %	S %	Wt. %	S%
- 1.30	25.88	1.84	25.88	1.84	100.00	4.01
1.30 - 1.40	43.64	1.98	69.52	1.93	74.12	4.76
1.40 - 1.50	8.42	3.27	77.94	2.07	30.48	8.75
1.50 - 1.60	5.86	4.28	83.80	2.23	22.06	10.84
1.60 - 1.80	5.68	6.16	89.48	2.48	16.20	13.22
+ 1.80	10.52	17.03	100.00	4.01	10.52	17.03
Total	100.00	4.01				

TABLE 6. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 28 MESH x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	S %	Wt. %	S %	Wt. %	S %
- 1.30	44.58	1.92	44.58	1.92	100.00	2.85
1.30 - 1.40	36.93	1.89	81.51	1.91	55.42	3.59
1.40 - 1.50	7.44	2.60	88.95	1.96	18.49	6.99
1.50 - 1.60	2.93	3.70	91.88	2.02	11.05	9.94
1.60 - 1.80	2.97	4.69	94.85	2.10	8.12	12.19
+ 1.80	5.15	16.52	100.00	2.85	5.15	16.52
Total	100.00	2.85				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

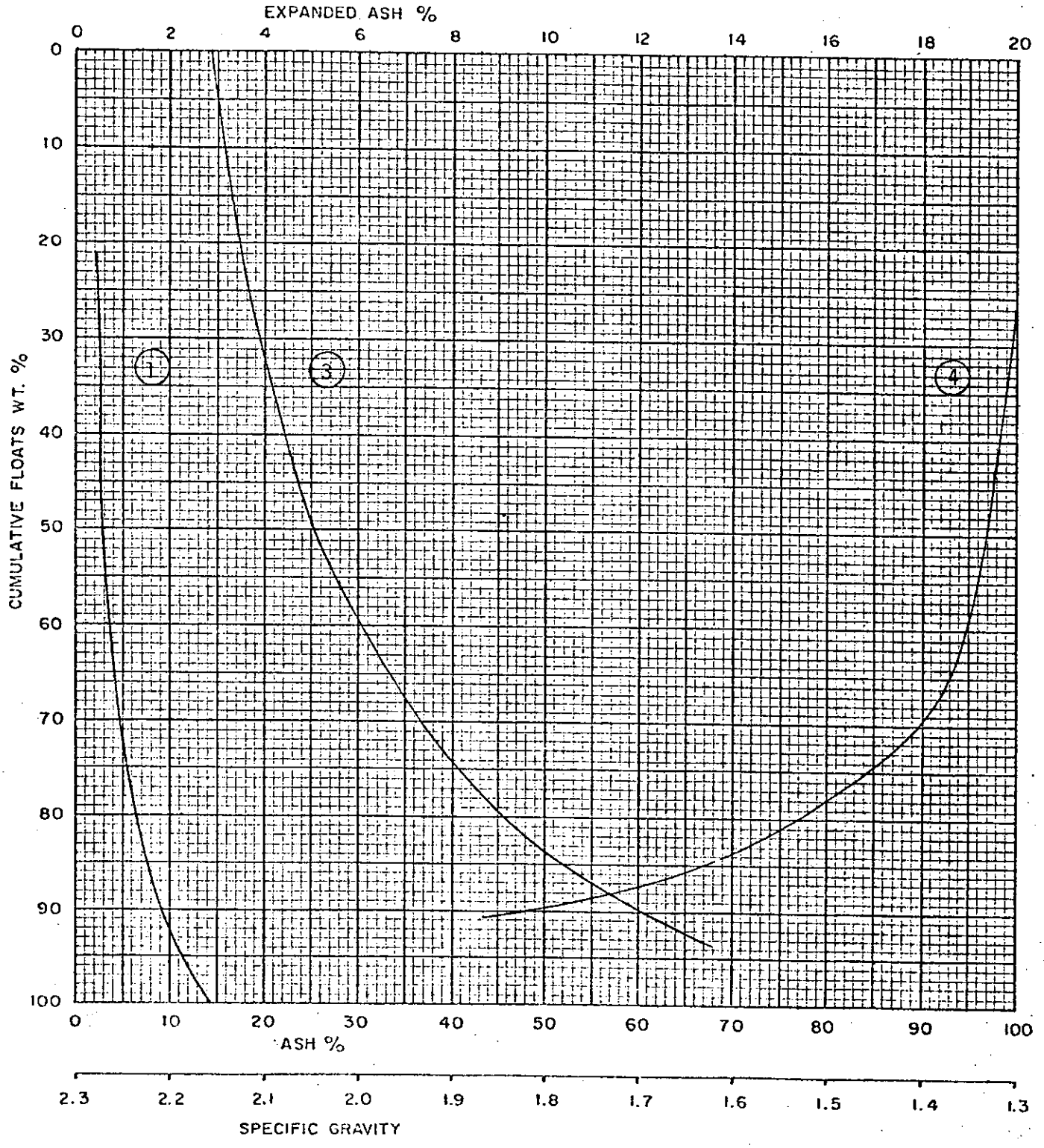
SAMPLE Mt. Spieker Project. #1

Size 1/4" x 28 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



DATE

CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

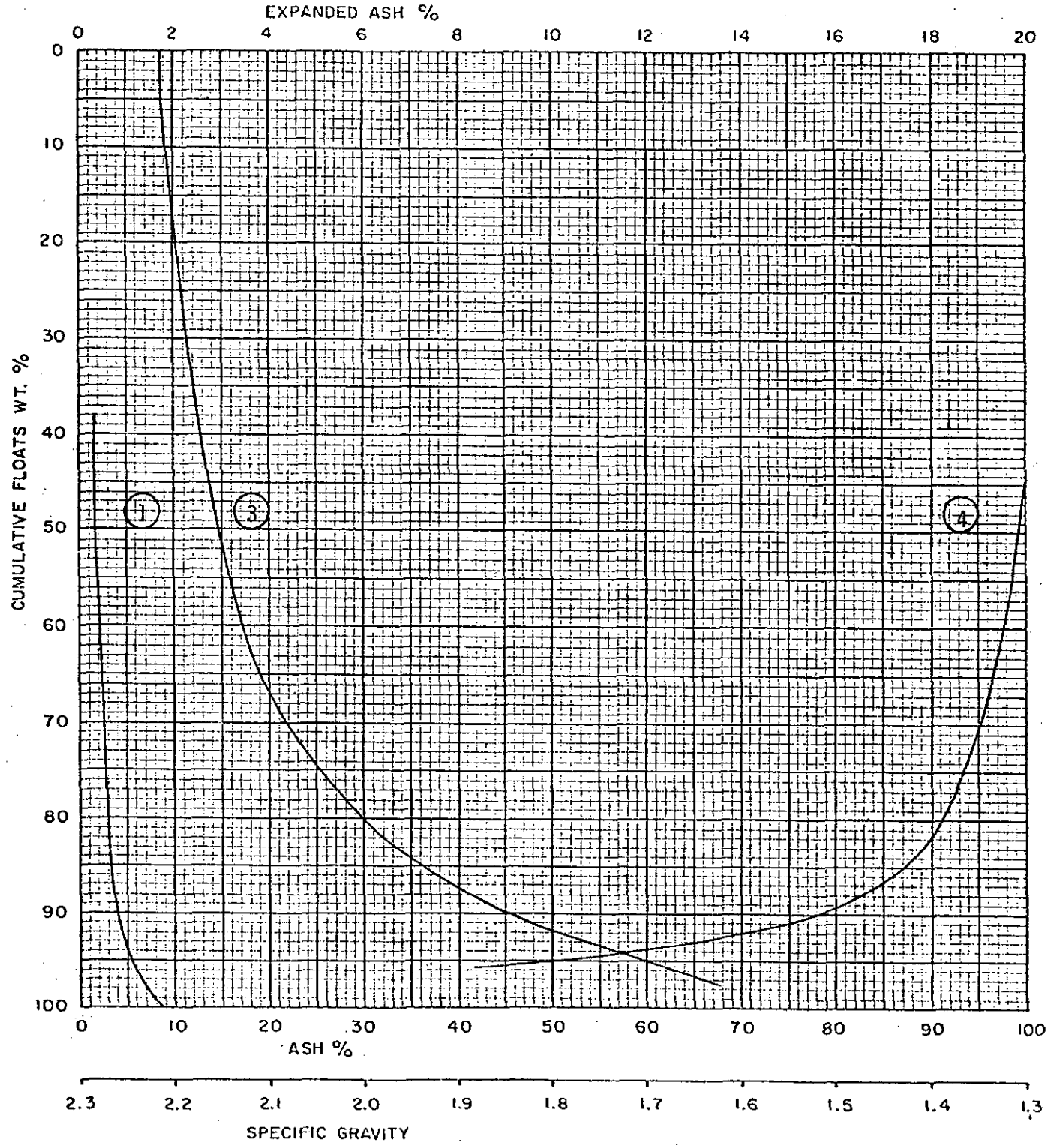
SAMPLE Mt. Spieker Project #1

Size 28 Mesh x 100 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



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CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: October 13, 1977

DRILL HOLE NO. EB10 INTERCEPT 159.1 - 165.5 ft THICKNESS 6.4 ft

CORE RECOVERY 100 % SEAM Lower Bird (A)

AS RECEIVED WEIGHT 7.10 kg. % MOISTURE 3.75

C. E. S. #: 2

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	95.87 *
Ash %	8.84	6.83
R.M. %	0.49	0.73
V.M. %	20.75	22.23
F.C. %	69.92	70.21
FSI	8 1/2	8 1/2
BTU/lb.	14,240	14,570
S. %	2.18	1.28 ⌋
P_2O_5 %		0.02
H.G.I.		78
Gieseler Plasticity		
Start °C.		436
Max. °C.		478
Solid °C.		498
Range		62
Max. Fluid. ddpm		64

* Recovery and Composition of Clean Coal Product

⌋ Inorganic Sulfur less than 0.01 %

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	95.66	77.84
28m x 0 Froth up to 3 min.	96.63	22.16
TOTAL	95.87	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

MICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB10, Lower Bird(A) Seam, #2.

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	78.01	8.02	78.01	8.02
28m x 100m	15.49	8.04	93.50	8.02
100m x 0	6.50	12.26	100.00	8.30

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	52.31	1.90	52.31	1.90	100.00	7.58
1.30 - 1.40	24.17	6.54	76.48	3.37	47.69	13.81
1.40 - 1.50	13.85	8.36	90.33	4.13	23.52	21.28
1.50 - 1.60	5.31	26.36	95.64	5.37	9.67	39.79
1.60 - 1.80	0.82	32.12	96.46	5.59	4.36	56.14
+ 1.80	3.54	61.70	100.00	7.58	3.54	61.70
Total	100.00	7.58				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. EB10, Lower Bird(A) Seam, #2.

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	58.41	1.63	58.41	1.63	100.00	7.75
1.30 - 1.40	24.11	5.89	82.52	2.87	41.59	16.35
1.40 - 1.50	7.59	16.79	90.11	4.05	17.48	30.77
1.50 - 1.60	2.04	24.81	92.15	4.51	9.89	41.50
1.60 - 1.80	4.72	35.50	96.87	6.02	7.85	45.83
+ 1.80	3.13	61.41	100.00	7.75	3.13	61.41
Total	100.00	7.75				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	95.77	8.92
Tailings	4.23	69.50
TOTAL	100.00	11.48

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB10, Lower Bird(A) Seam, #2.

TABLE 5. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 1/4" x 28 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S%
- 1.30	52.31	1.09	52.31	1.09	100.00	1.93
1.30 - 1.40	24.17	1.45	76.48	1.20	47.69	2.86
1.40 - 1.50	13.85	1.65	90.33	1.27	23.52	4.31
1.50 - 1.60	5.31	2.61	95.64	1.35	9.67	8.11
1.60 - 1.80	0.82	5.46	96.46	1.38	4.36	14.81
+ 1.80	3.54	16.97	100.00	1.93	3.54	16.97
Total	100.00	1.93				

TABLE 6. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 28 MESH x 100 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S %
- 1.30	58.41	0.87	58.41	0.87	100.00	1.62
1.30 - 1.40	24.11	1.49	82.52	1.05	41.59	2.67
1.40 - 1.50	7.59	1.50	90.11	1.09	17.48	4.30
1.50 - 1.60	2.04	1.97	92.15	1.11	9.89	6.45
1.60 - 1.80	4.72	2.95	96.87	1.20	7.85	7.62
+ 1.80	3.13	14.65	100.00	1.62	3.13	14.65
Total	100.00	1.62				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

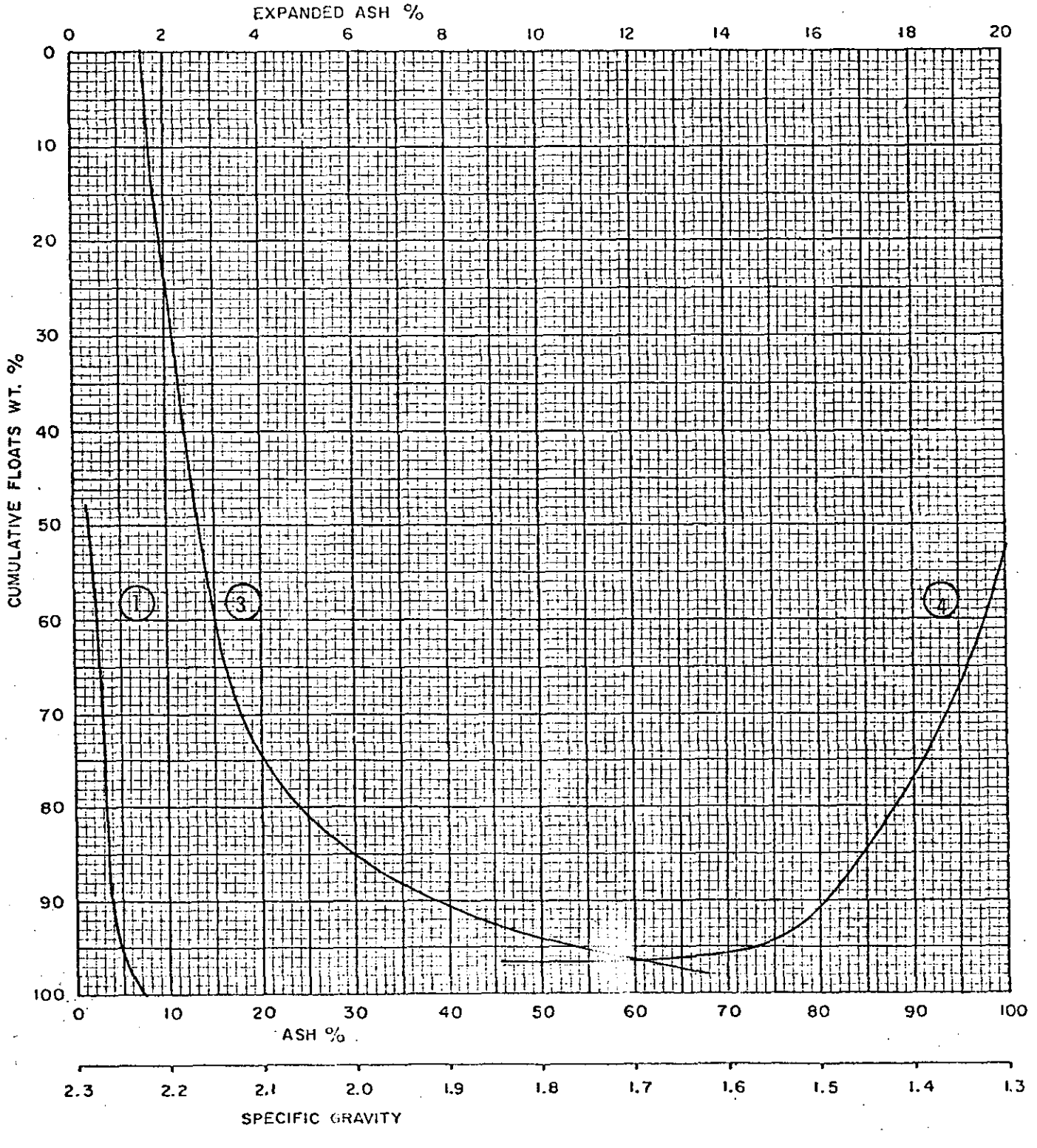
SAMPLE Mt. Spieker Project #2

Size 1/4" x 28 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



DATE

CYCLONE ENGINEERING SALES LTD.

EDMONTON ALBERTA CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

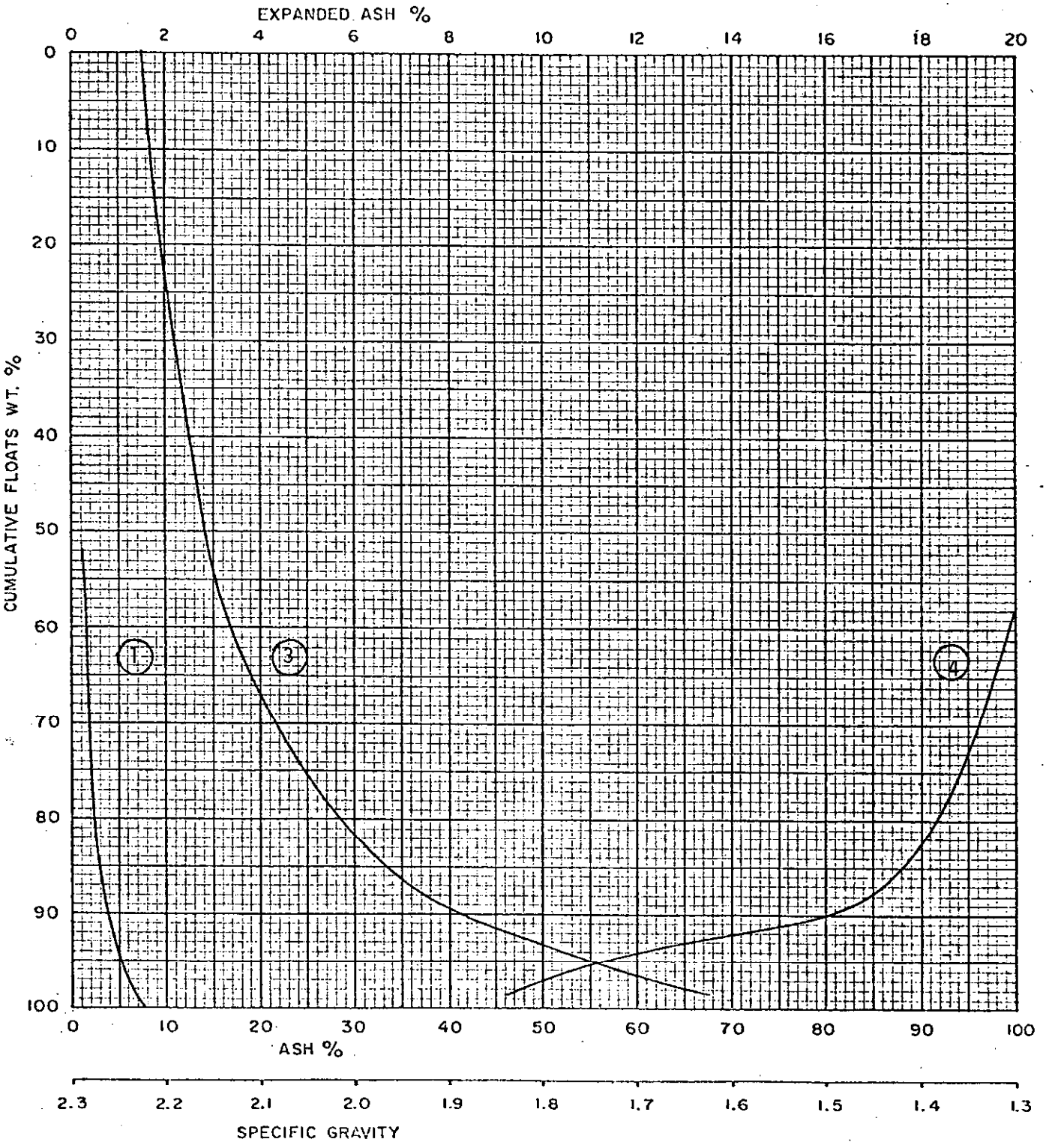
SAMPLE Mt. Spieker Project #2

Size 28 Mesh x 100 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



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CYCLONE ENGINEERING SALES LTD.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 2, 1977

DRILL HOLE NO. EB 10 INTERCEPT 168.2 - 175.9 ft THICKNESS 7.7 ft

CORE RECOVERY 100 % SEAM Lower Bird (B)

AS RECEIVED WEIGHT 11.06 kg. % MOISTURE 1.32

C. E. S. #: 16

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	52.33 *
Ash %	49.84	7.32
R.M. %		0.33
V.M. %		18.52
F.C. %		73.83
FSI		4
BTU/lb.		--
S. %		0.49
P_2O_5 %		
H.G.I.		

Gieseler Plasticity

Start °C.

Max. °C.

Solid °C.

Range

Max. Fluid. ddpm

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	47.53	75.48
28m x 0 Froth up to 3 min.	76.61	24.16
TOTAL	52.33	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 2, 1977

DRILL HOLE NO. EB10 INTERCEPT 215.5 -219.5 ft THICKNESS 4.0 ft

CORE RECOVERY 100 % SEAM Skeeter

AS RECEIVED WEIGHT 4.30 kg. % MOISTURE 0.51

C. E. S. #: 15

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	98.43 *
Ash %	4.66	3.82
R.M. %		0.40
V.M. %		19.60
F.C. %		76.18
FSI		5 1/2
BTU/lb.		- -
S. %		0.48
P_2O_5 %		
H.G.I.		

Gieseler Plasticity

Start °C.

Max. °C.

Solid °C.

Range

Max. Fluid. ddpm

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	98.93	83.34
28m x 0 Froth up to 3 min.	96.02	16.66
TOTAL	98.43	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 3, 1977

DRILL HOLE NO. EB 11 INTERCEPT 478.6 -490.8 ft THICKNESS 12.2 ft

CORE RECOVERY 100 % SEAM Upper Bird

AS RECEIVED WEIGHT 13.32 kg. % MOISTURE 4.02

C. E. S. #: 17

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	91.98 *
Ash %	9.62	6.16
R.M. %	0.32	0.31
V.M. %	19.53	20.11
F.C. %	70.53	73.42
FSI	8	8
BTU/lb.	14,200	14,940
S. %	3.19	1.59
P_2O_5 %		0.06
H.G.I.		80
Gieseler Plasticity		
Start °C.		
Max. °C.		
Solid °C.		
Range		
Max. Fluid. ddpm		

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	90.46	77.26
28m x 0 Froth up to 3 min.	97.57	22.74
TOTAL	91.98	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spicker Project C.E.S. #17

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	78.56	10.27	78.56	10.27
28m x 100m	15.05	6.80	93.61	9.71
100m x 0	6.39	8.29	100.00	9.62

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	33.22	2.38	33.22	2.38	100.00	10.19
1.30 - 1.40	47.24	6.05	80.46	4.53	66.78	14.07
1.40 - 1.50	7.33	15.61	87.79	5.46	19.54	33.46
1.50 - 1.60	2.44	22.32	90.23	5.92	12.21	44.17
1.60 - 1.80	2.10	29.86	92.33	6.46	9.77	49.63
+ 1.80	7.67	55.04	100.00	10.19	7.67	55.04
Total	100.00	10.19				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. C.E.S. #17

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	53.42	1.78	53.42	1.78	100.00	6.33
1.30 - 1.40	34.20	5.08	87.62	3.07	46.58	11.54
1.40 - 1.50	6.06	14.42	93.68	3.80	12.38	29.38
1.50 - 1.60	1.66	22.75	95.34	4.13	6.32	43.72
1.60 - 1.80	1.26	33.32	96.60	4.51	4.66	51.19
+ 1.80	3.40	57.81	100.00	6.33	3.40	57.81
Total	100.00	6.33				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	95.57	7.47
Tailings	4.43	30.93
TOTAL	100.00	8.51

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spicker Project C.E.S. #17

TABLE 5. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 1/4" x 28 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S%
- 1.30	33.22	1.35	33.22	1.35	100.00	3.19
1.30 - 1.40	47.24	1.38	80.46	1.37	66.78	4.10
1.40 - 1.50	7.33	2.51	87.79	1.46	19.54	10.69
1.50 - 1.60	2.44	5.54	90.23	1.57	12.21	15.60
1.60 - 1.80	2.10	9.24	92.33	1.75	9.77	18.11
+ 1.80	7.67	20.54	100.00	3.19	7.67	20.54
Total	100.00	3.19				

TABLE 6. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 28 MESH x 100 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S %
- 1.30	53.42	1.24	53.42	1.24	100.00	1.84
1.30 - 1.40	34.20	1.35	87.62	1.28	46.58	2.53
1.40 - 1.50	6.06	1.90	93.68	1.32	12.38	5.77
1.50 - 1.60	1.66	3.38	95.34	1.36	6.32	9.49
1.60 - 1.80	1.26	6.41	96.60	1.42	4.66	11.66
+ 1.80	3.40	13.61	100.00	1.84	3.40	13.61
Total	100.00	1.84				

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

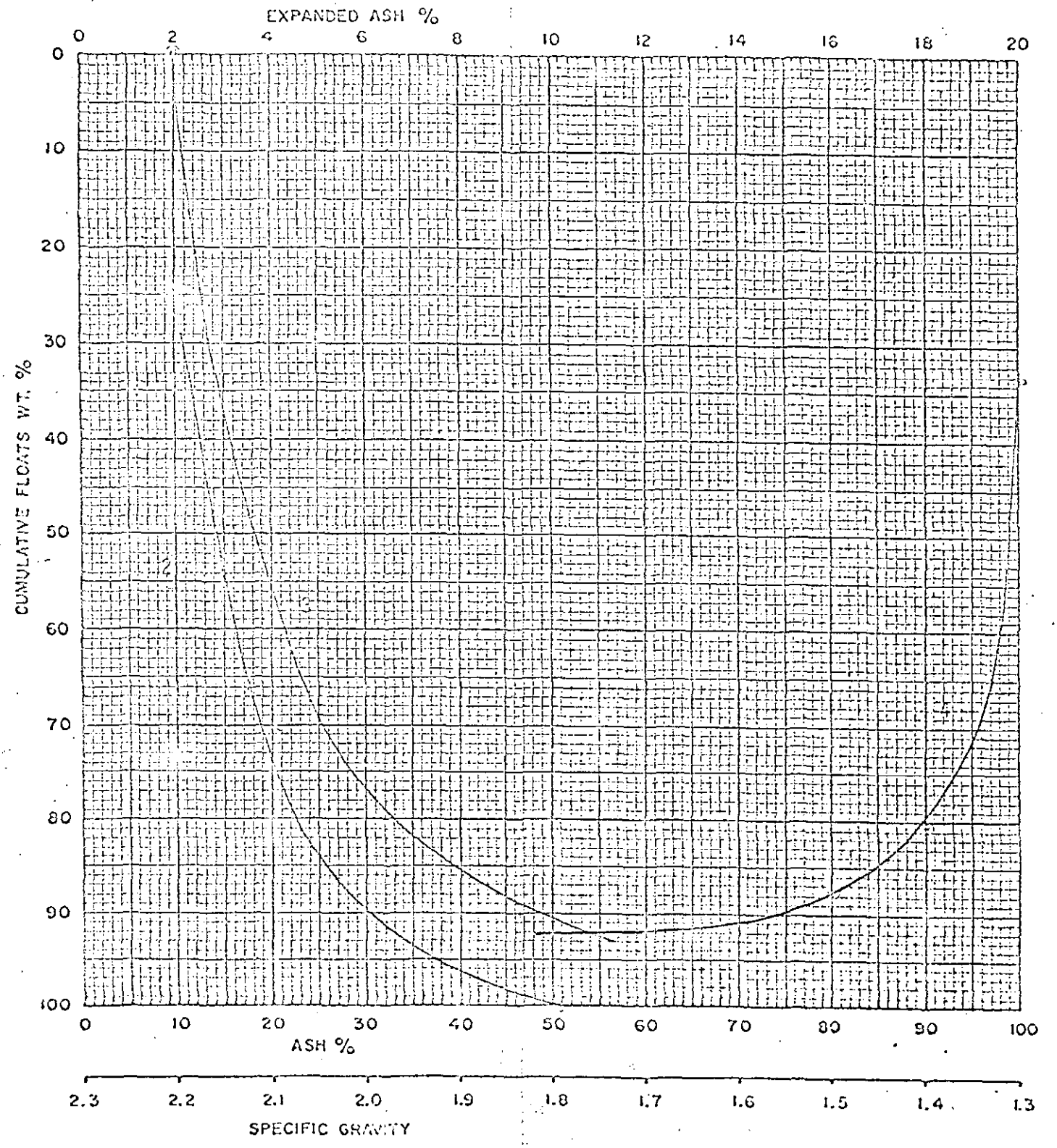
Size 1/4" x 28m

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #17



DATE

CYCLONE ENGINEERING SALES LTD.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

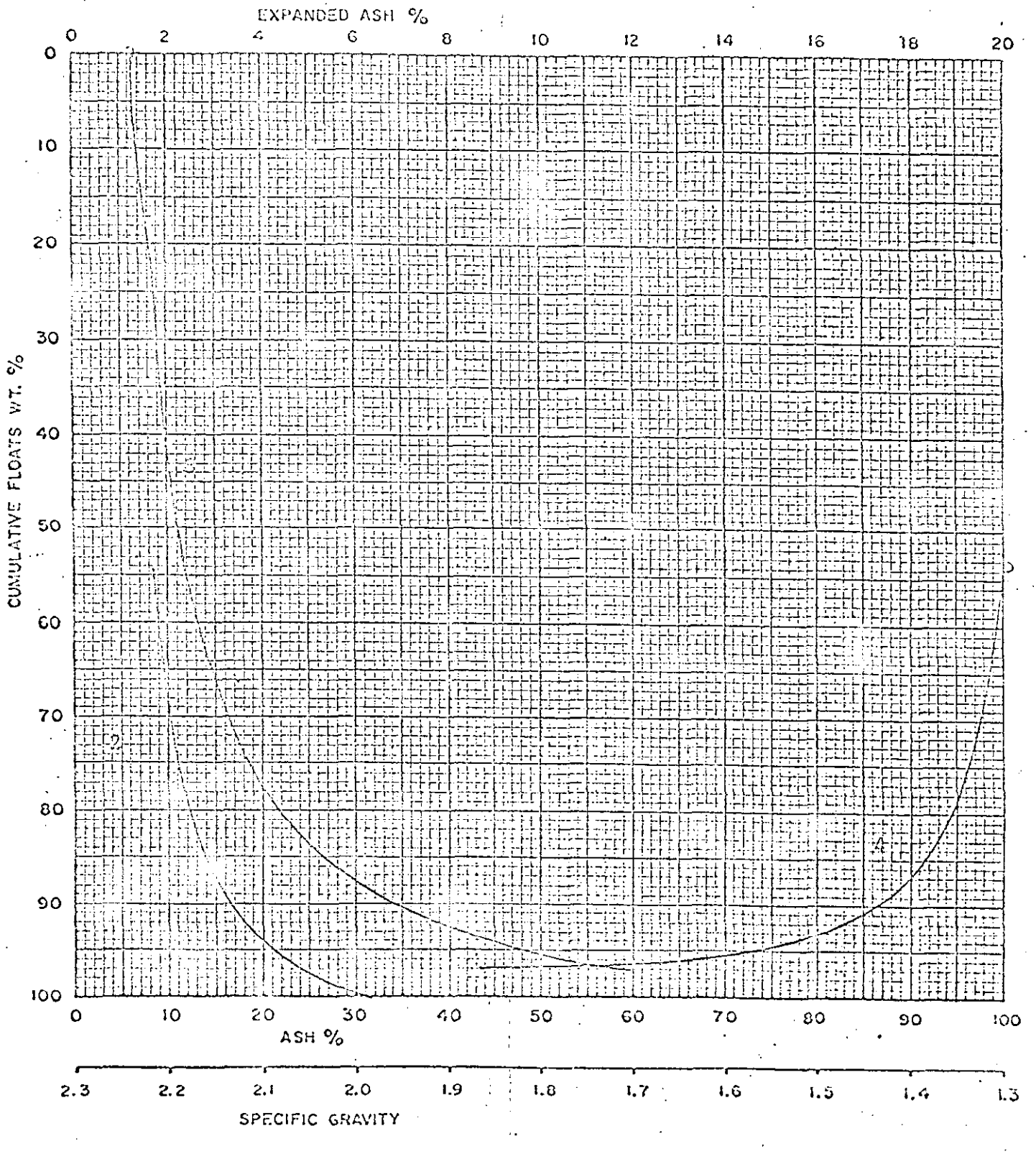
Size 28 mesh x 0

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #17



DATE

CYCLONE ENGINEERING SALES LTD.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 3, 1977

DRILL HOLE NO. EB 11 INTERCEPT 504.7- 511.5 ft THICKNESS 6.8 ft

CORE RECOVERY 75 % SEAM Lower Bird

AS RECEIVED WEIGHT 6.61 kg. % MOISTURE 6.16

C. E. S. #: 18

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	95.62 *
Ash %	10.49	8.83
R.M. %	0.36	0.48
V.M. %	17.43	17.83
F.C. %	71.72	72.86
FSI	4 1/2	4 1/2
BTU/lb.	13,650	14,160
S. %	0.53	0.53
P_2O_5 %		0.05
H.G.I.		83
Gieseler Plasticity		
Start °C.		
Max. °C.		
Solid °C.		
Range		
Max. Fluid. ddpm		

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	95.57	77.74
28m x 0 Froth up to 3 min.	95.83	22.26
TOTAL	95.62	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project C.E.S. #18

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	77.78	10.58	77.78	10.58
28m x 100m	14.77	8.13	92.55	10.19
100m x 0	7.45	11.05	100.00	10.25

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	37.25	2.23	37.25	2.23	100.00	10.28
1.30 - 1.40	32.71	7.03	69.96	4.47	62.75	15.06
1.40 - 1.50	19.12	17.49	89.08	7.27	30.04	23.81
1.50 - 1.60	6.75	26.75	95.83	8.64	10.92	34.86
1.60 - 1.80	2.34	34.19	98.17	9.25	4.17	48.00
+ 1.80	1.83	65.66	100.00	10.28	1.83	65.66
Total	100.00	10.28				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spicker Project. C.E.S. #18

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	41.53	1.60	41.53	1.60	100.00	8.19
1.30 - 1.40	36.99	5.36	78.52	3.37	58.47	12.88
1.40 - 1.50	12.28	15.52	90.80	5.01	21.49	25.83
1.50 - 1.60	4.30	24.86	95.10	5.91	9.20	39.58
1.60 - 1.80	2.47	42.02	97.57	6.83	4.90	52.50
+ 1.80	2.43	63.15	100.00	8.19	2.43	63.15
Total	100.00	8.19				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	94.96	8.50
Tailings	5.04	58.76
TOTAL	100.00	11.03

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project C.E.S. #18

TABLE 5. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 1/4" x 28 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S%
- 1.30	37.25	0.60	37.25	0.60	100.00	0.57
1.30 - 1.40	32.71	0.54	69.96	0.57	62.75	0.55
1.40 - 1.50	19.12	0.49	89.08	0.55	30.04	0.57
1.50 - 1.60	6.75	0.48	95.83	0.55	10.92	0.70
1.60 - 1.80	2.34	0.64	98.17	0.55	4.17	1.06
+ 1.80	1.83	1.60	100.00	0.57	1.83	1.60
Total	100.00	0.57				

TABLE 6. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 28 MESH x 100 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S %
- 1.30	41.53	0.48	41.53	0.48	100.00	0.44
1.30 - 1.40	36.99	0.40	78.52	0.44	58.47	0.42
1.40 - 1.50	12.28	0.36	90.80	0.43	21.48	0.45
1.50 - 1.60	4.30	0.44	95.10	0.43	9.20	0.56
1.60 - 1.80	2.47	0.55	97.57	0.43	4.90	0.66
+ 1.80	2.43	0.78	100.00	0.44	2.43	0.78
Total	100.00	0.44				

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

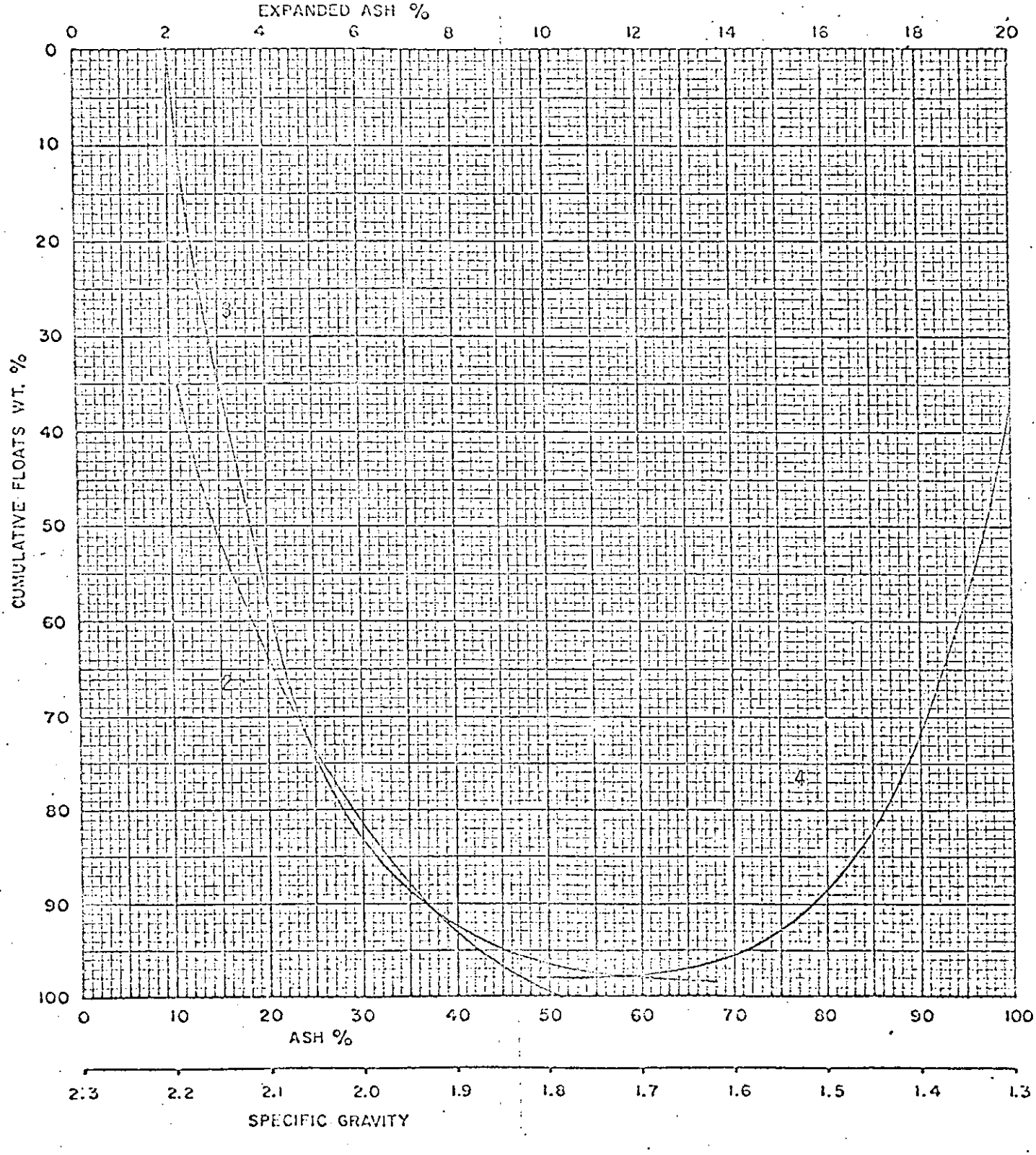
Size 1/4" x 28m

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #18



DATE

CYCLONE ENGINEERING SALES LTD.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

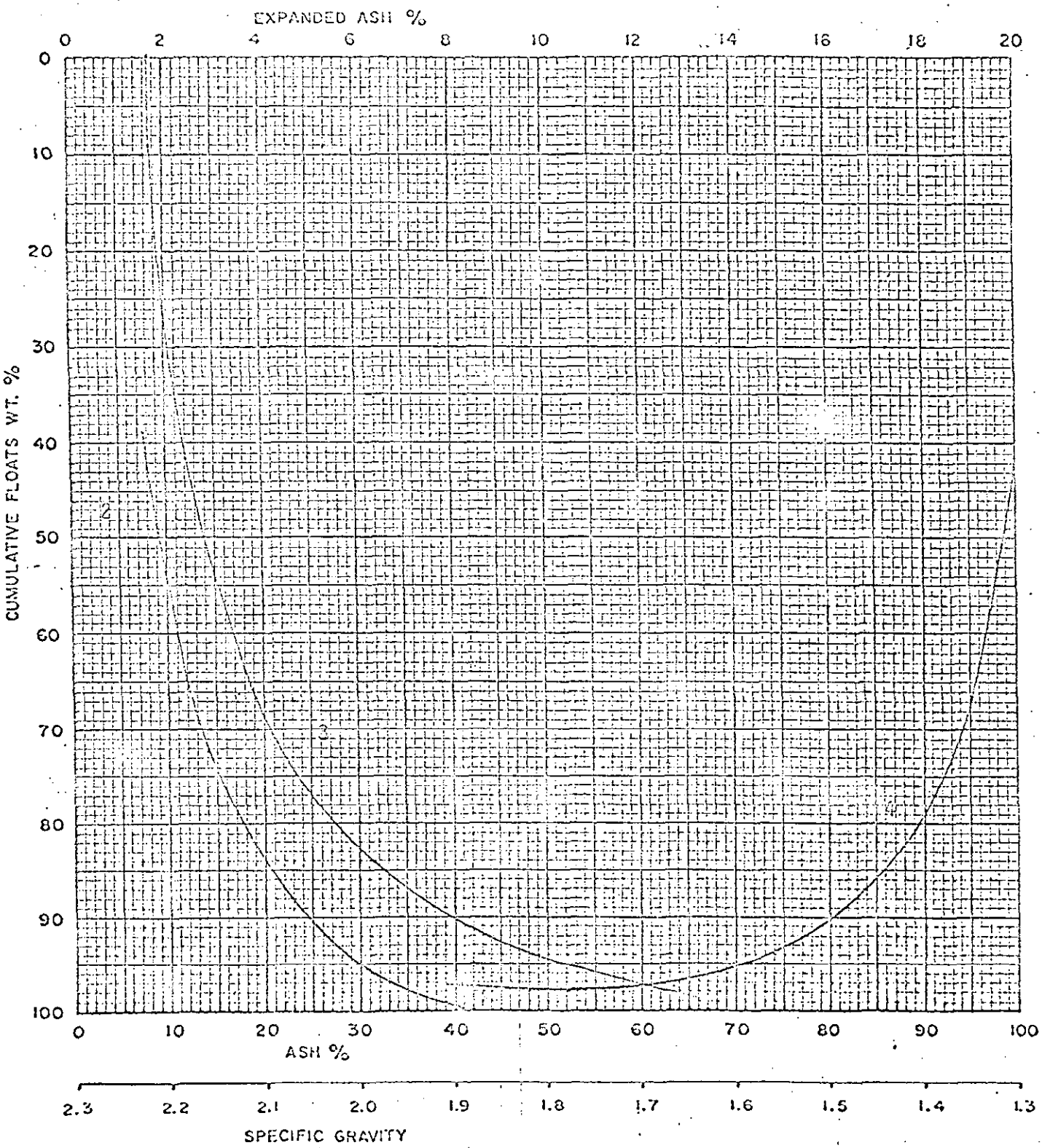
Size 28m x 100

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #18



DATE

CYCLONE ENGINEERING SALES LTD.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: October 13, 1977

DRILL HOLE NO. EB13 INTERCEPT 614.1 - 626.9 ft THICKNESS 12.8 ft

CORE RECOVERY 100 % SEAM D

AS RECEIVED WEIGHT 16.66 kg. % MOISTURE 4.08

C. E. S. #: 3

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	51.24 *
Ash %	34.94	11.96
R.M. %	0.80	0.87
V.M. %	19.73	22.28
F.C. %	44.53	64.89
FSI	3 1/2	8
BTU/lb.	9,530	13,410
S. %	0.36	0.45
P_2O_5 %		0.39
H.G.I.		72
Gieseler Plasticity		
Start °C.		412
Max. °C.		454
Solid °C.		482
Range		70
Max. Fluid. ddpm		595

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.50 Sp.Gr.	42.67	63.09
28m x 0 Froth up to 3 min.	78.00	36.91
TOTAL	51.24	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB13, D Seam. CES #3

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	75.75	38.88	75.75	38.88
28m x 100m	14.39	26.39	90.14	36.89
100m x 0	9.86	26.92	100.00	35.90

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	13.02	3.46	13.02	3.46	100.00	39.36
1.30 - 1.40	20.79	8.94	33.81	6.83	86.46	45.01
1.40 - 1.50	9.10	21.05	42.91	9.85	66.19	55.98
1.50 - 1.60	6.22	27.81	49.31	12.12	57.09	61.55
1.60 - 1.80	15.93	38.40	65.06	18.55	50.87	65.67
+ 1.80	34.94	78.11	100.00	39.36	34.94	78.11
Total	100.00	39.36				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. EB13, D Seam, #3,

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	24.26	3.16	24.26	3.16	100.00	26.69
1.30 - 1.40	26.91	7.71	51.17	5.55	75.74	34.23
1.40 - 1.50	7.79	17.68	58.96	7.16	48.83	48.84
1.50 - 1.60	7.18	25.99	66.14	9.20	41.04	54.76
1.60 - 1.80	12.02	37.12	78.16	13.49	33.86	60.86
+ 1.80	21.84	73.93	100.00	26.69	21.84	73.93
Total	100.00	26.69				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	87.39	20.87
Tailings	12.61	77.50
TOTAL	100.00	28.01

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

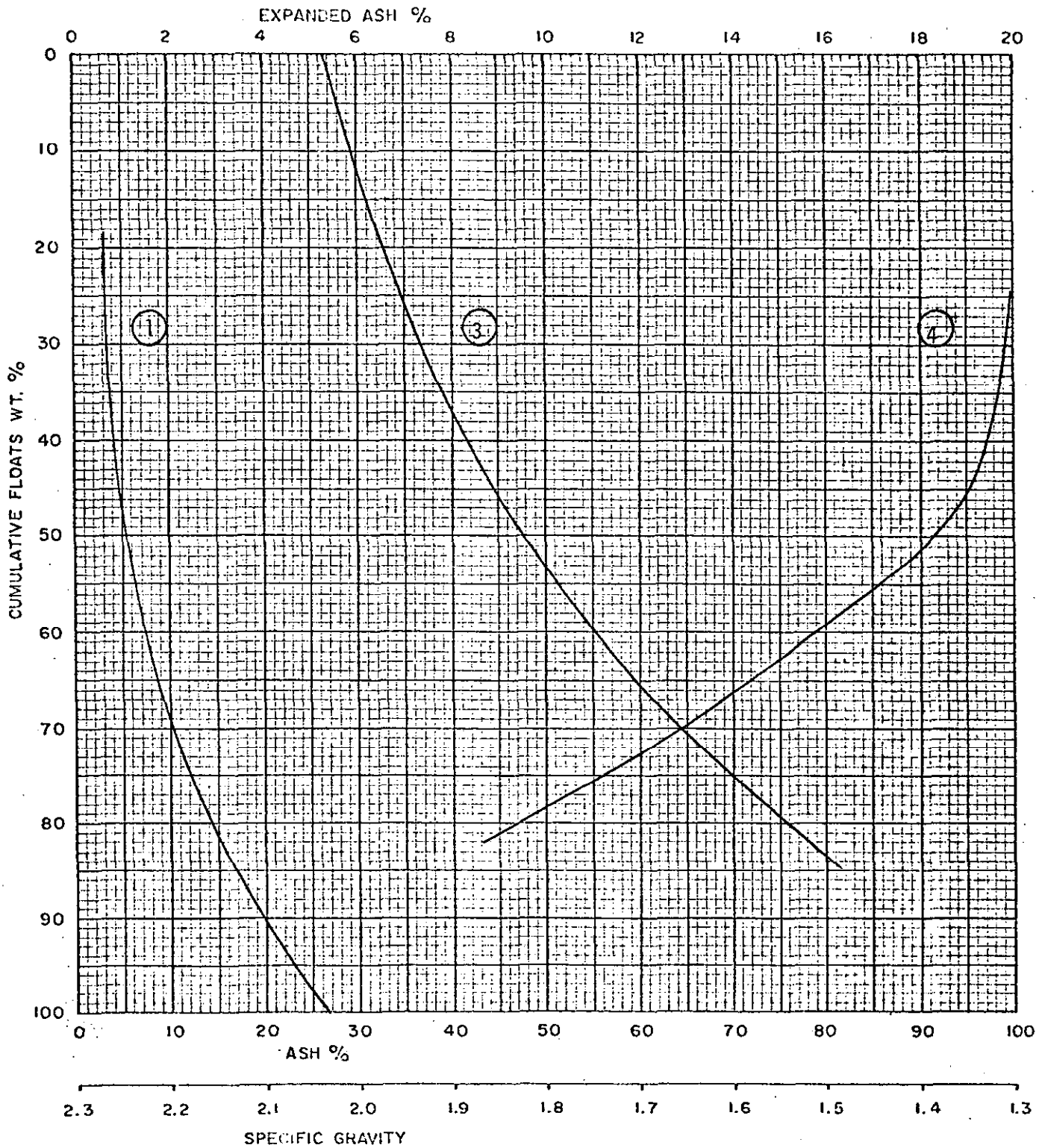
SAMPLE Mt. Spieker Project #3

Size 28 Mesh x 100 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



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CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

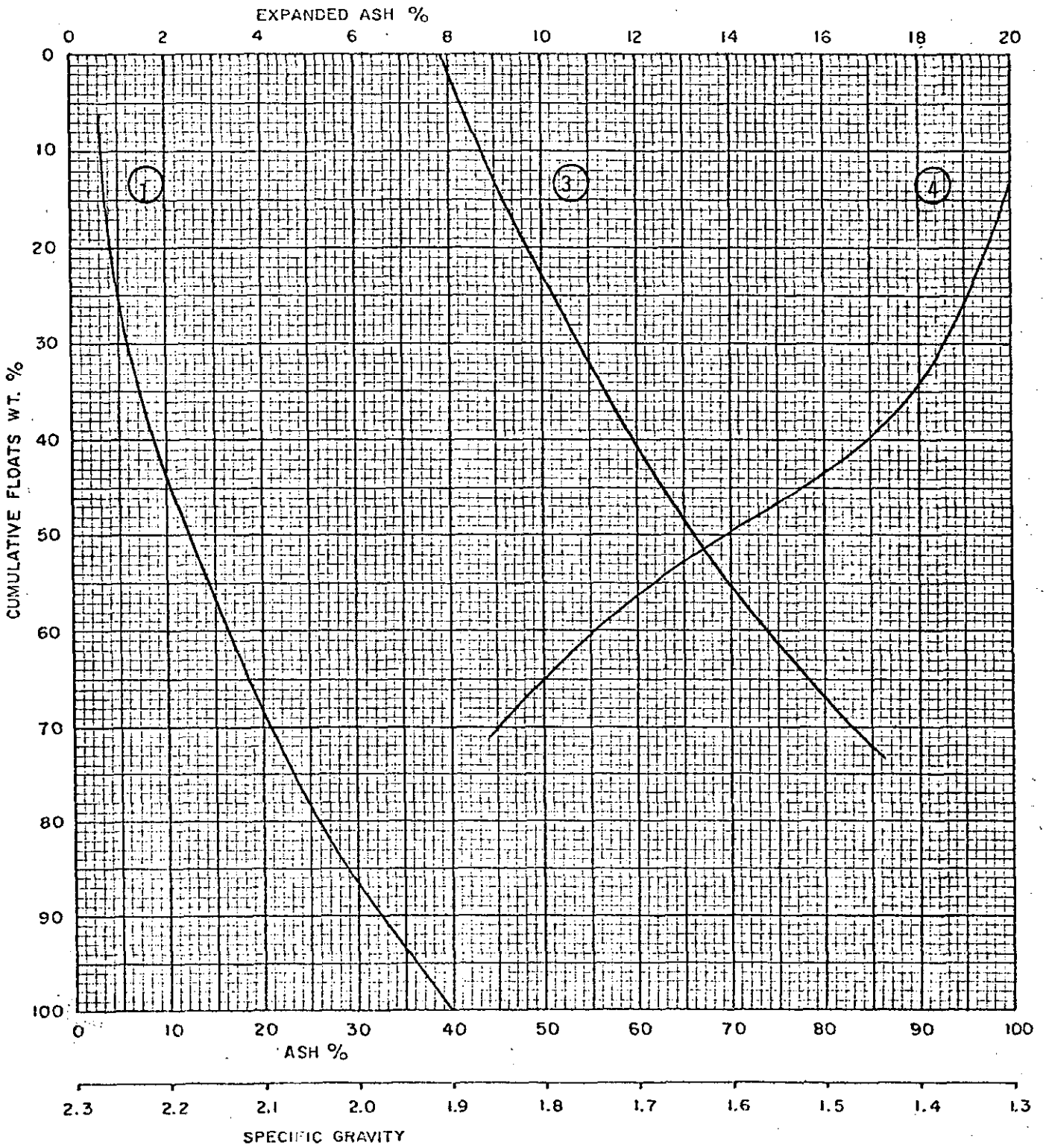
SAMPLE Mt. Spieker Project #3

Size 1/4" x 28 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



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CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: October 13, 1977

DRILL HOLE NO. EB13 INTERCEPT 677.1 -698.3 ft THICKNESS 12.9 ft

CORE RECOVERY 100 % SEAM C

AS RECEIVED WEIGHT 16.81 kg. % MOISTURE 4.08

C. E. S. #: 4

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	66.31 *
Ash %	28.02	9.81
R.M. %	0.57	0.79
V.M. %	20.67	22.22
F.C. %	50.74	67.18
FSI	3 1/2	7
BTU/lb.	10,790	13,950
S. %	0.29	0.49
P_2O_5 %		0.15
H.G.I.		76
Gieseler Plasticity		
Start °C.		417
Max. °C.		459
Solid °C.		490
Range		73
Max. Fluid. ddpm		466

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.50 Sp.Gr.	59.92	67.84
28m x 0 Froth up to 3 min.	85.55	32.16
TOTAL	66.31	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB13, C Seam, #4.

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	75.07	30.19	75.07	30.19
28m x 100m	15.39	20.38	90.46	28.52
100m x 0	9.54	22.04	100.00	27.90

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	27.93	3.27	27.93	3.27	100.00	29.94
1.30 - 1.40	18.11	9.63	46.04	5.77	72.07	40.27
1.40 - 1.50	13.34	19.09	59.38	8.76	53.96	50.56
1.50 - 1.60	9.20	31.48	68.58	11.81	40.62	60.89
1.60 - 1.80	6.75	41.26	75.33	14.45	31.42	69.50
+ 1.80	24.67	77.23	100.00	29.94	24.67	77.23
Total	100.00	29.94				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. EB13, C Seam, #4.

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	36.26	2.83	36.26	2.83	100.00	20.63
1.30 - 1.40	23.84	7.03	60.10	4.50	63.74	30.76
1.40 - 1.50	11.86	16.36	71.96	6.45	39.90	44.94
1.50 - 1.60	6.25	27.96	78.21	8.17	28.04	57.03
1.60 - 1.80	5.37	40.28	83.58	10.23	21.79	65.37
+ 1.80	16.42	73.58	100.00	20.63	16.42	73.58
Total	100.00	20.63				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	89.42	15.64
Tailings	10.58	72.57
TOTAL	100.00	21.66

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

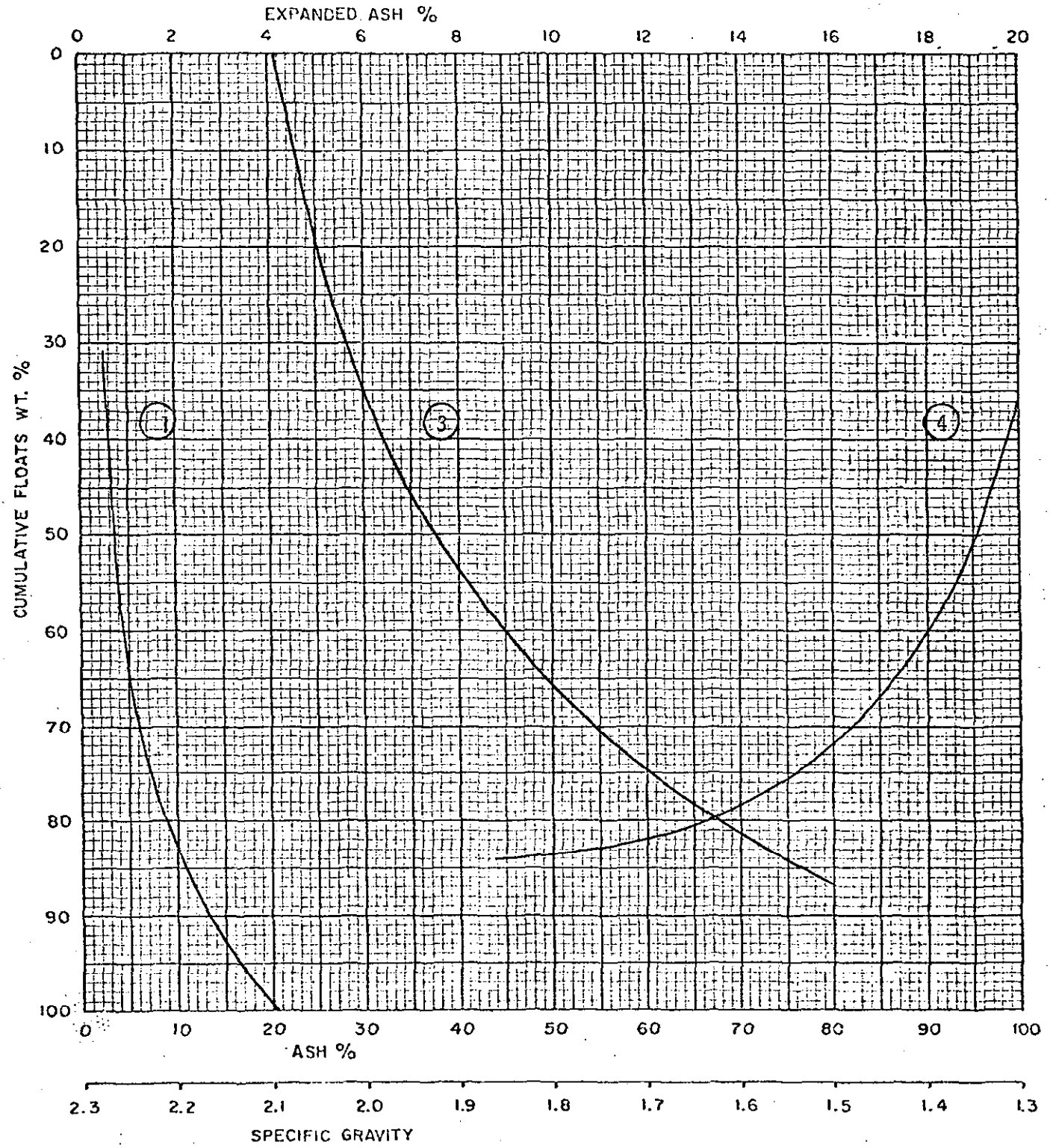
SAMPLE Mt. Spieker Project #4

Size 28 Mesh x 100 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



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CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

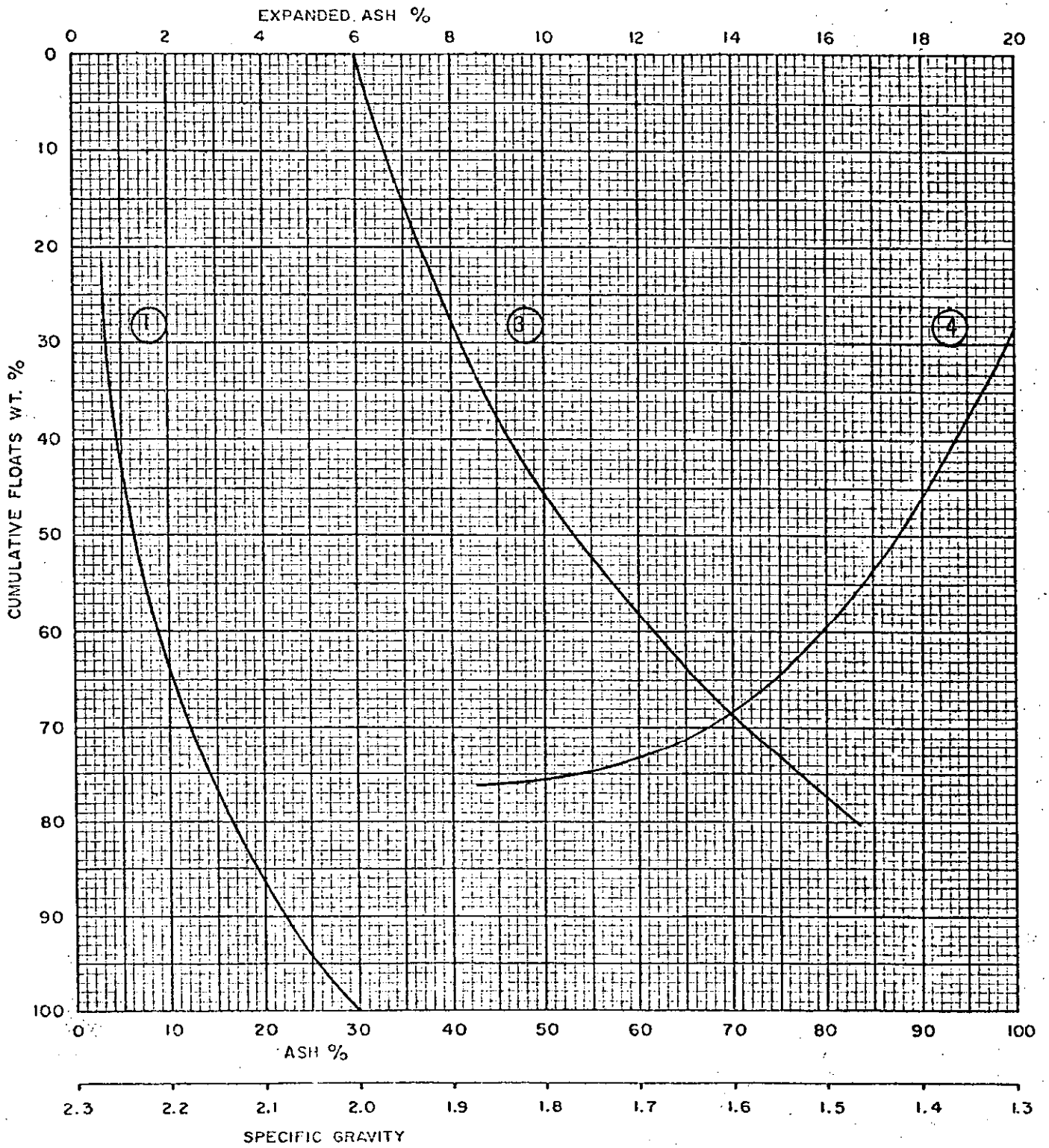
SAMPLE Mt. Spieker Project #4

Size 1/4" x 28 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



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CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: October 13, 1977

DRILL HOLE NO. EB13 INTERCEPT 814.3 - 839.7 ft THICKNESS 25.4 ft

CORE RECOVERY 90 % SEAM B

AS RECEIVED WEIGHT 25.29 kg. % MOISTURE 5.94

C. E. S. #: 5

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	83.22 *
Ash %	14.02	9.35
R.M. %	0.39	0.90
V.M. %	21.89	22.92
F.C. %	63.70	66.83
FSI	5	7
BTU/lb.	13,170	13,890
S. %	0.44	0.27
P_2O_5 %		0.21
H.G.I.		95
Gieseler Plasticity		
Start °C.		423
Max. °C.		465
Solid °C.		491
Range		68
Max. Fluid. ddpm		128

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.50 Sp.Gr.	80.22	73.54
28m x 0 Froth up to 3 min.	92.86	26.46
TOTAL	83.22	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project, EB13, B Seam, # 5.

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	76.29	14.60	76.29	14.60
28m x 100m	16.14	11.16	92.43	14.00
100m x 0	7.57	14.41	100.00	14.03

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	26.97	3.39	26.97	3.39	100.00	14.30
1.30 - 1.40	33.61	8.21	60.58	6.06	73.03	18.32
1.40 - 1.50	17.27	18.11	77.85	8.74	39.42	26.94
1.50 - 1.60	10.74	24.82	88.59	10.69	22.15	33.83
1.60 - 1.80	6.84	34.13	95.43	12.37	11.41	42.31
+ 1.80	4.57	54.55	100.00	14.30	4.57	54.55
Total	100.00	14.30				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project. EB13, B Seam, #5.

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	39.07	3.04	39.07	3.04	100.00	11.22
1.30 - 1.40	31.74	7.03	70.81	4.83	60.93	16.46
1.40 - 1.50	15.40	16.10	86.21	6.84	29.19	26.72
1.50 - 1.60	5.59	25.49	91.80	7.98	13.79	38.59
1.60 - 1.80	3.82	34.84	95.62	9.05	8.20	47.52
+ 1.80	4.38	58.57	100.00	11.22	4.38	58.57
Total	100.00	11.22				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	93.33	10.38
Tailings	6.67	58.91
TOTAL	100.00	13.62

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

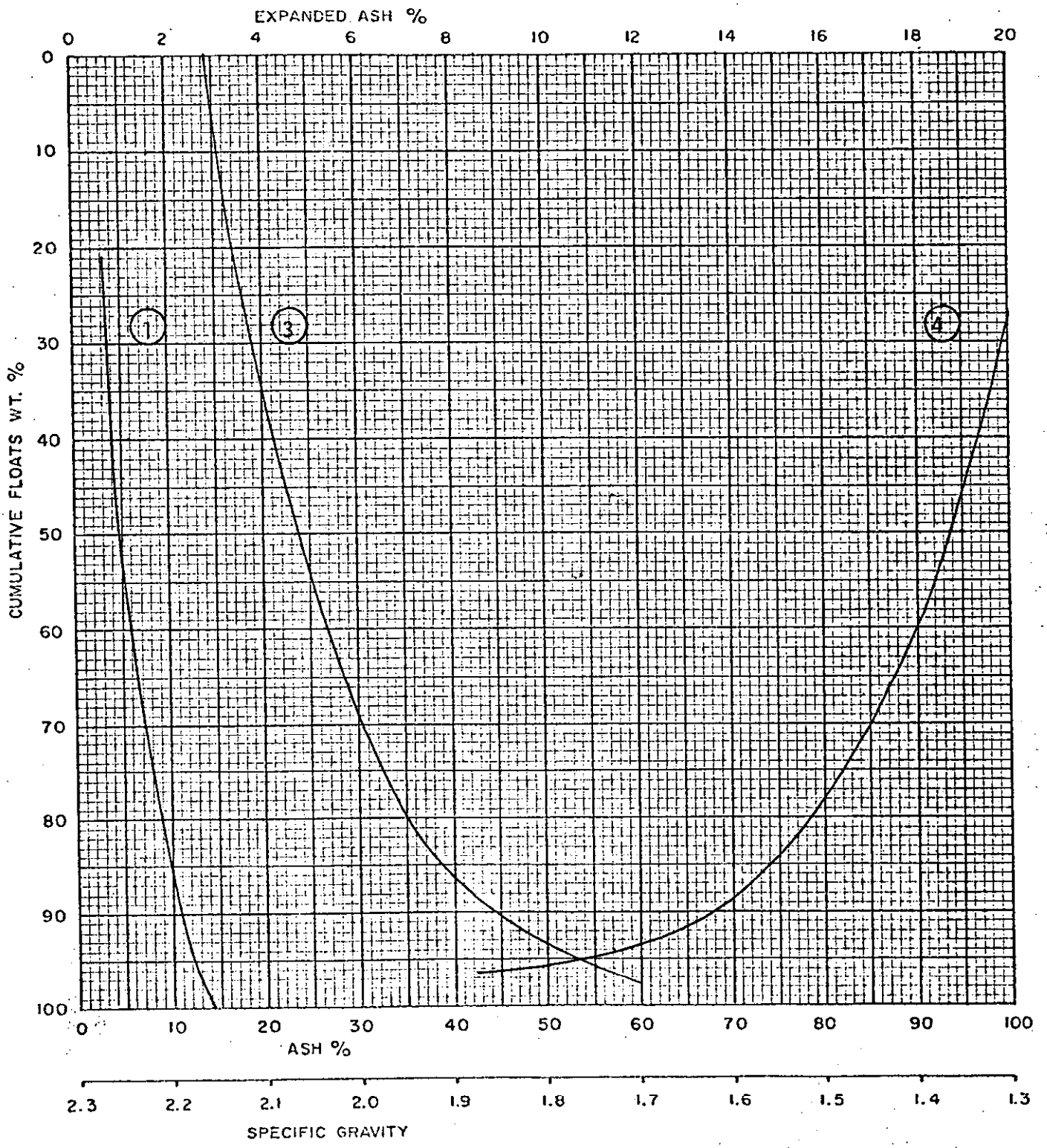
SAMPLE Mt. Spieker Project #5

Size 1/4" x 28 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



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CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

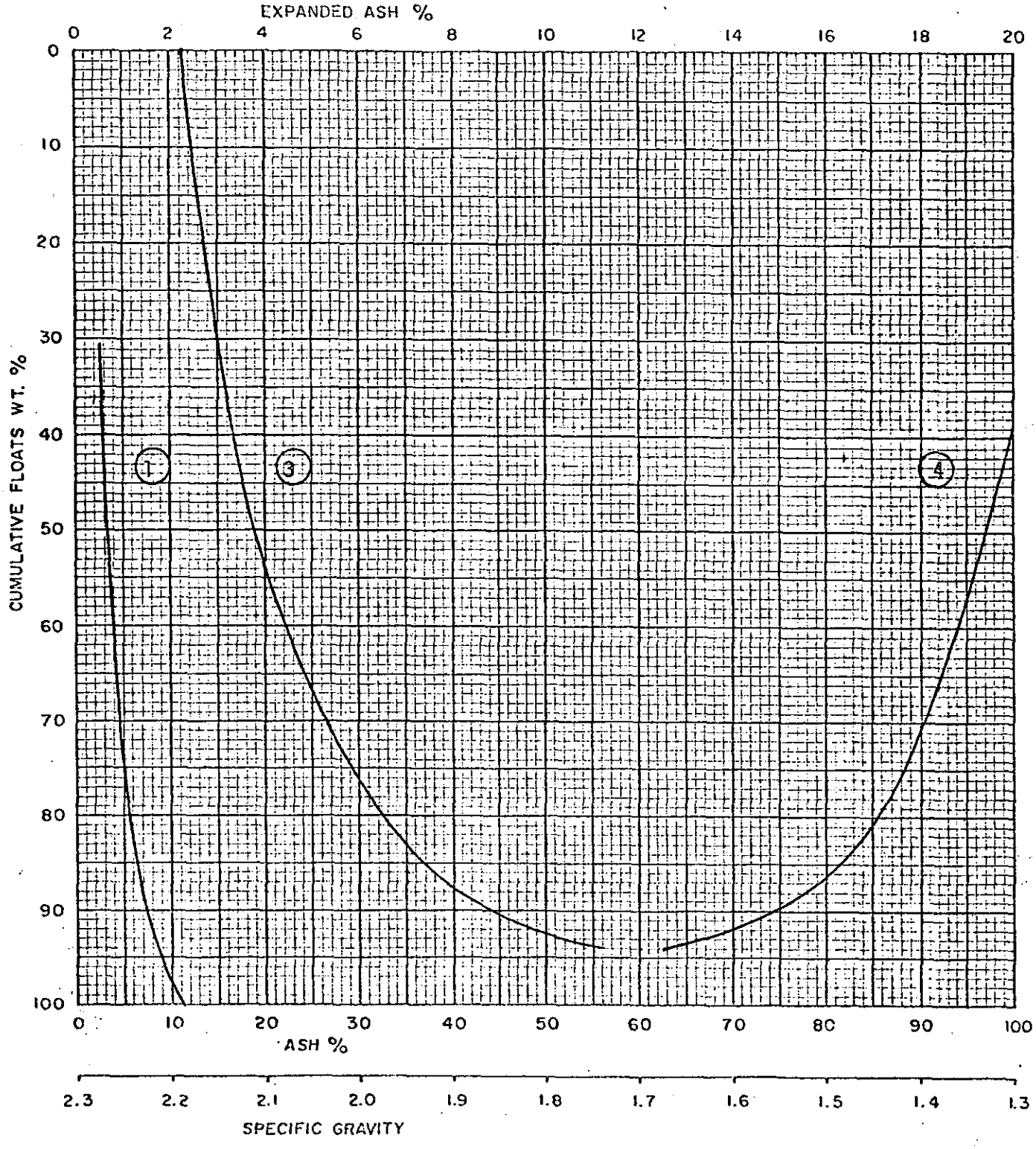
SAMPLE Mt.. Spieker Project #5

Size 28 Mesh x 100 Mesh

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL



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CYCLONE ENGINEERING SALES LTD.
EDMONTON ALBERTA CANADA

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 3, 1977

DRILL HOLE NO. EB 14 INTERCEPT 316.0 -324.0 ft THICKNESS 8.0 ft

CORE RECOVERY 91 % SEAM Upper Bird

AS RECEIVED WEIGHT 8.27 kg. % MOISTURE 5.53

C. E. S. #: 19

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	87.81 *
Ash %	13.12	7.49
R.M. %	0.36	0.47
V.M. %	18.68	19.43
F.C. %	67.84	72.61
FSI	8 1/2	9
BTU/lb.	13,630	14,590
S. %	2.28	1.24
P_2O_5 %		0.14
H.G.I.		91
Gieseler Plasticity		
Start °C.		
Max. °C.		
Solid °C.		
Range		
Max. Fluid. ddpm		

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	87.38	73.25
28m x 0 Froth up to 3 min.	89.00	26.75
TOTAL	87.81	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spicker Project C.E.S. #19

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	73.61	13.14	73.61	13.14
28m x 100m	16.95	10.66	90.56	12.68
100m x 0	9.44	14.40	100.00	12.84

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	35.73	2.29	35.73	2.29	100.00	13.37
1.30 - 1.40	37.13	7.03	72.86	4.71	64.27	19.53
1.40 - 1.50	8.40	17.09	81.26	5.99	27.14	36.64
1.50 - 1.60	4.83	24.40	86.09	7.02	18.74	45.40
1.60 - 1.80	4.29	36.55	90.38	8.42	13.91	52.70
+ 1.80	9.62	59.90	100.00	13.37	9.62	59.90
Total	100.00	13.37				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project.

C.E.S. #19

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	40.69	2.30	40.69	2.30	100.00	11.06
1.30 - 1.40	32.42	5.04	73.11	3.52	59.31	17.07
1.40 - 1.50	10.52	11.89	83.63	4.57	26.89	31.57
1.50 - 1.60	4.90	23.42	88.53	5.61	16.37	44.21
1.60 - 1.80	4.65	39.56	93.18	7.31	11.47	53.09
+ 1.80	6.82	62.32	100.00	11.06	6.82	62.32
Total	100.00	11.06				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	95.13	12.02
Tailings	4.87	66.08
TOTAL	100.00	14.65

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project C.E.S. #19

TABLE 5. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 1/4" x 28 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S%
- 1.30	35.73	0.87	35.73	0.87	100.00	2.38
1.30 - 1.40	37.13	1.14	72.86	1.01	64.27	3.22
1.40 - 1.50	8.40	2.15	81.26	1.13	27.14	6.06
1.50 - 1.60	4.83	2.74	86.09	1.22	18.74	7.81
1.60 - 1.80	4.29	4.35	90.38	1.36	13.91	9.58
+ 1.80	9.62	11.91	100.00	2.38	9.62	11.91
Total	100.00	2.38				

TABLE 6. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 28 MESH x 100 MESH

	Fractional		Cumulative			
			Floats		Sinks	
S.G.	Wt. %	S %	Wt. %	S %	Wt. %	S %
- 1.30	40.69	0.86	40.69	0.86	100.00	1.27
1.30 - 1.40	32.42	0.88	73.11	0.87	59.31	1.54
1.40 - 1.50	10.52	0.89	83.63	0.87	26.89	2.34
1.50 - 1.60	4.90	1.46	88.53	0.90	16.37	3.28
1.60 - 1.80	4.65	1.99	93.18	0.96	11.47	4.06
+ 1.80	6.82	5.47	100.00	1.27	6.82	5.47
Total	100.00	1.27				

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

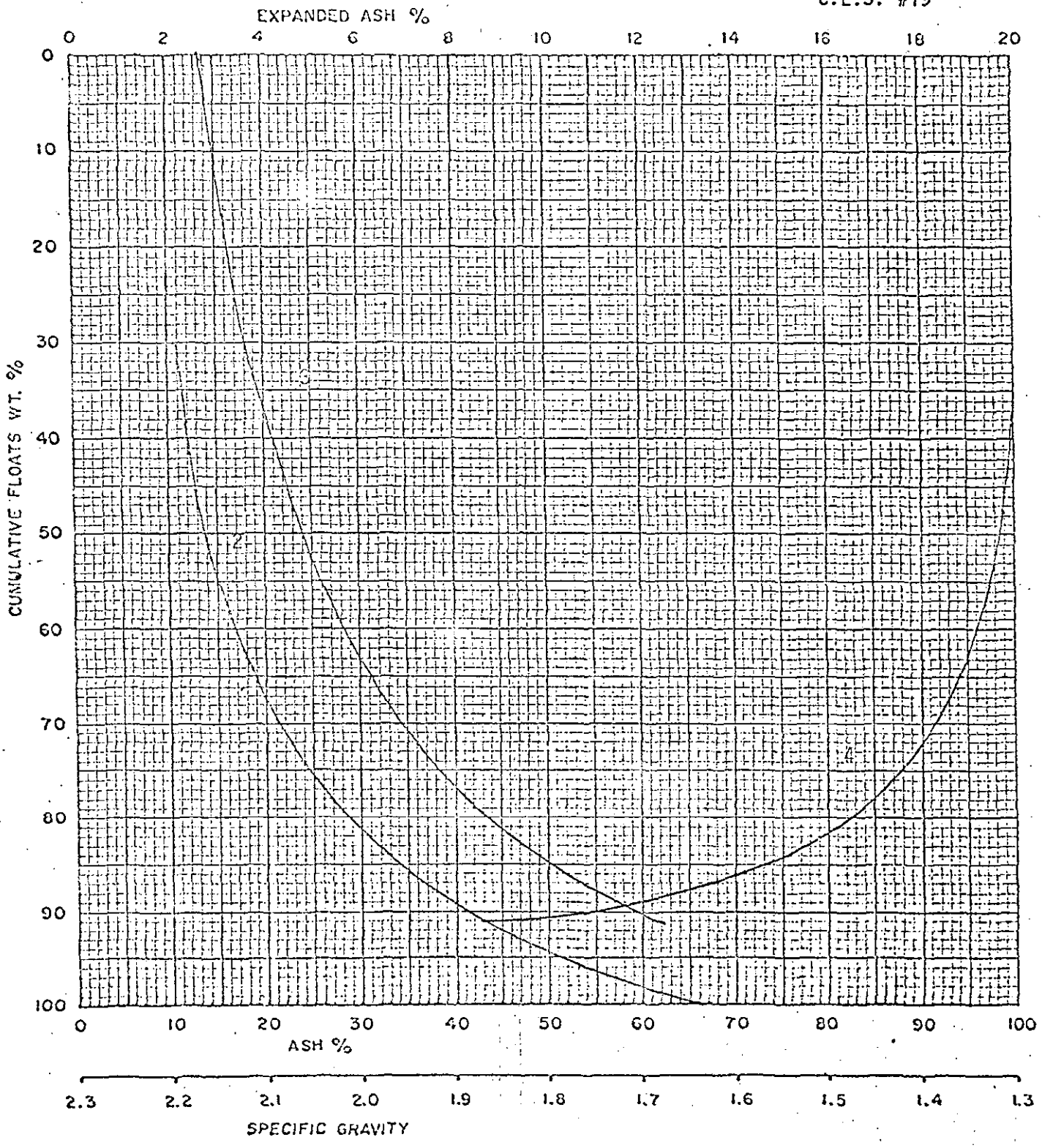
Size 1/4" x 28m

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
4 - SPECIFIC GRAVITY
5 - ELEMENTARY ASH
6 - NEAR GRAVITY MATERIAL

C.E.S. #19



DATE

CYCLONE ENGINEERING SALES LTD.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

Size 28m x 100

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
3 - SINKS
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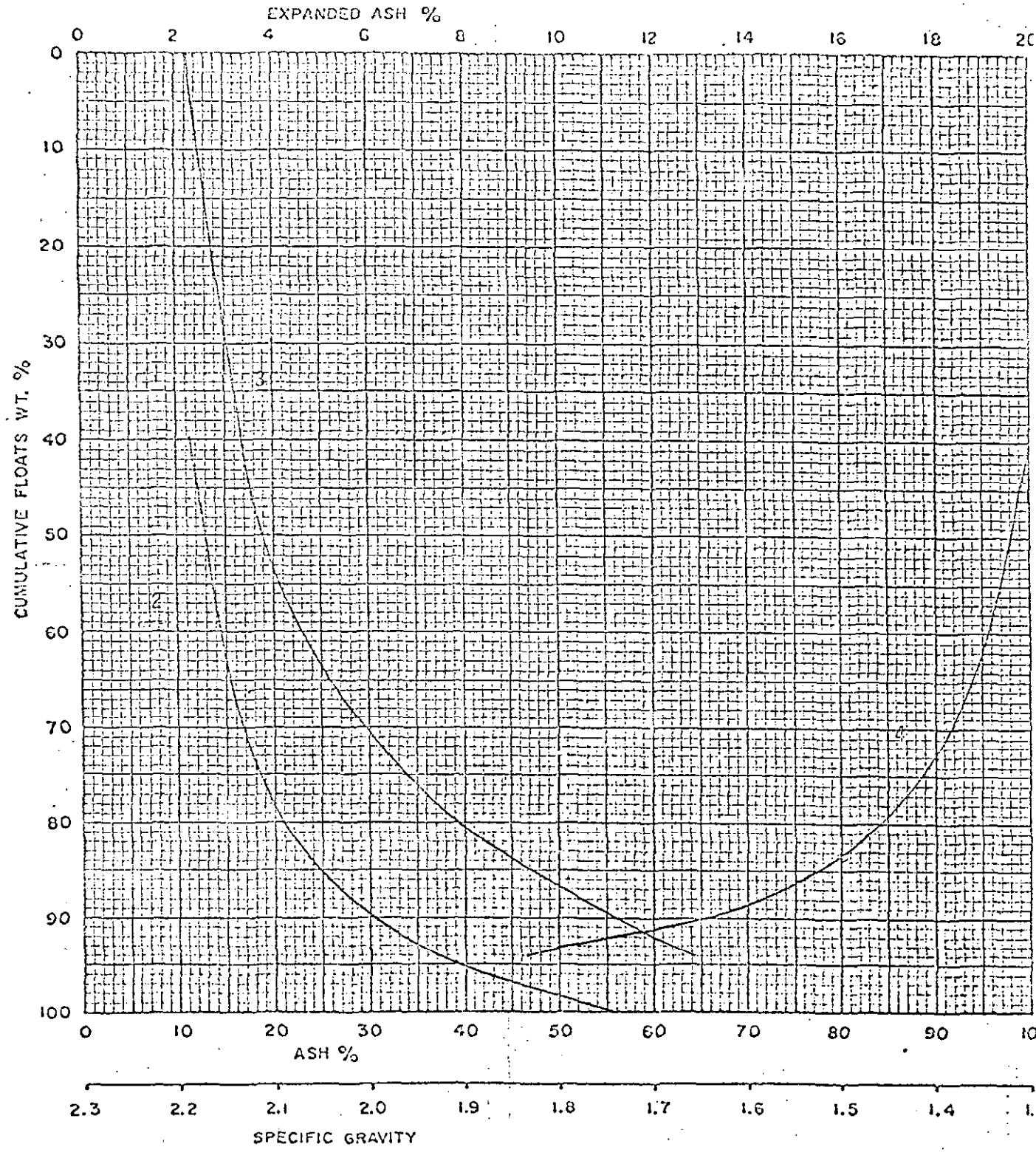
C.E.S. #19



DATE

CYCLONE ENGINEERING SALES LTD.

NICHIMEN RESOURCES LTD., RANGER OIL (CANADA) LTD.

Mt. Spieker Project

Date: November 3, 1977

DRILL HOLE NO. EB 14 INTERCEPT 337.3 - 342.9 ft THICKNESS 5.6 ft

CORE RECOVERY 100 % SEAM Lower Bird

AS RECEIVED WEIGHT 6.36 kg. % MOISTURE 1.46

C. E. S. #: 20

SUMMARY OF ANALYTICAL DATA

	Raw	Clean Coal
% Recovery	100.00	97.21 *
Ash %	6.13	5.27
R.M. %	0.34	0.36
V.M. %	20.53	20.74
F.C. %	73.00	73.63
FSI	8 1/2	9
BTU/lb.	14,690	14,830
S. %	0.49	0.47
P_2O_5 %		0.04
H.G.I.		81

Gieseler Plasticity

Start	°C.	
Max.	°C.	
Solid	°C.	
Range		
Max. Fluid.	ddpm	

* Recovery and Composition of Clean Coal Product

	% Recovery	% Composition
1/4" x 28m Floats at 1.60 Sp.Gr.	96.95	78.82
28m x 0 Froth up to 3 min.	98.17	21.18
TOTAL	97.21	100.00

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project C.E.S. #20

TABLE 1. SIZE CONSIST AND ANALYSIS

Size	Wt. %	Ash %	Cumulative Wt. %	Cumulative Ash %
1/4" x 28m	79.03	6.43	79.03	6.43
28m x 100m	15.23	4.77	94.26	6.16
100m x 0	5.74	5.46	100.00	6.12

TABLE 2. WASHABILITY DATA FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	60.28	1.81	60.28	1.81	100.00	6.97
1.30 - 1.40	27.19	8.28	87.47	3.82	39.72	14.80
1.40 - 1.50	7.96	17.85	95.43	4.99	12.53	28.95
1.50 - 1.60	1.61	26.38	97.04	5.35	4.57	48.29
1.60 - 1.80	1.11	35.31	98.15	5.69	2.96	60.20
+ 1.80	1.85	75.14	100.00	6.97	1.85	75.14
Total	100.00	6.97				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spicker Project. C.E.S. #20

TABLE 3. WASHABILITY DATA FOR 28M x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	Ash %	Wt. %	Ash %	Wt. %	Ash %
- 1.30	70.76	1.37	70.76	1.37	100.00	4.32
1.30 - 1.40	20.88	6.69	91.64	2.58	29.24	11.44
1.40 - 1.50	5.03	17.29	96.67	3.35	8.36	23.29
1.50 - 1.60	1.34	24.51	98.01	3.64	3.33	32.35
1.60 - 1.80	0.96	32.56	98.97	3.92	1.99	37.63
+ 1.80	1.03	42.35	100.00	4.32	1.03	42.35
Total	100.00	4.32				

TABLE 4. FROTH-FLOTATION TEST AND ANALYSIS OF 100 MESH x 0

Test Conditions:

Pulp Density	10%
Reagent	MIBC + Kerosene
Reagent Composition	1:4
Reagent Consumption	1.13 lb./ton

Product	Weight %	Ash %
Froth	97.54	5.31
Tailings	2.46	19.01
TOTAL	100.00	5.66

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA.

NICHIMEN RESOURCES LTD.

Mt. Spieker Project

C.E.S. #20

TABLE 5. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 1/4" x 28 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	S %	Wt. %	S %	Wt. %	S%
- 1.30	60.28	0.55	60.28	0.55	100.00	0.48
1.30 - 1.40	27.19	0.39	87.47	0.50	39.72	0.37
1.40 - 1.50	7.96	0.25	95.43	0.48	12.53	0.32
1.50 - 1.60	1.61	0.29	97.04	0.48	4.57	0.44
1.60 - 1.80	1.11	0.34	98.15	0.47	2.96	0.52
+ 1.80	1.85	0.62	100.00	0.48	1.85	0.62
Total	100.00	0.48				

TABLE 6. FLOAT-SINK AND ANALYSIS OF SULFUR FOR 28 MESH x 100 MESH

S.G.	Fractional		Cumulative			
			Floats		Sinks	
	Wt. %	S %	Wt. %	S %	Wt. %	S %
- 1.30	70.76	0.39	70.76	0.39	100.00	0.38
1.30 - 1.40	20.88	0.40	91.64	0.39	29.24	0.37
1.40 - 1.50	5.03	0.23	96.67	0.38	8.36	0.29
1.50 - 1.60	1.34	0.23	98.01	0.38	3.33	0.39
1.60 - 1.80	0.96	0.49	98.97	0.38	1.99	0.49
+ 1.80	1.03	0.49	100.00	0.38	1.03	0.49
Total	100.00	0.38				

CYCLONE ENGINEERING SALES LTD.
EDMONTON, ALBERTA, CANADA

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

Size 1/4" x 28m

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
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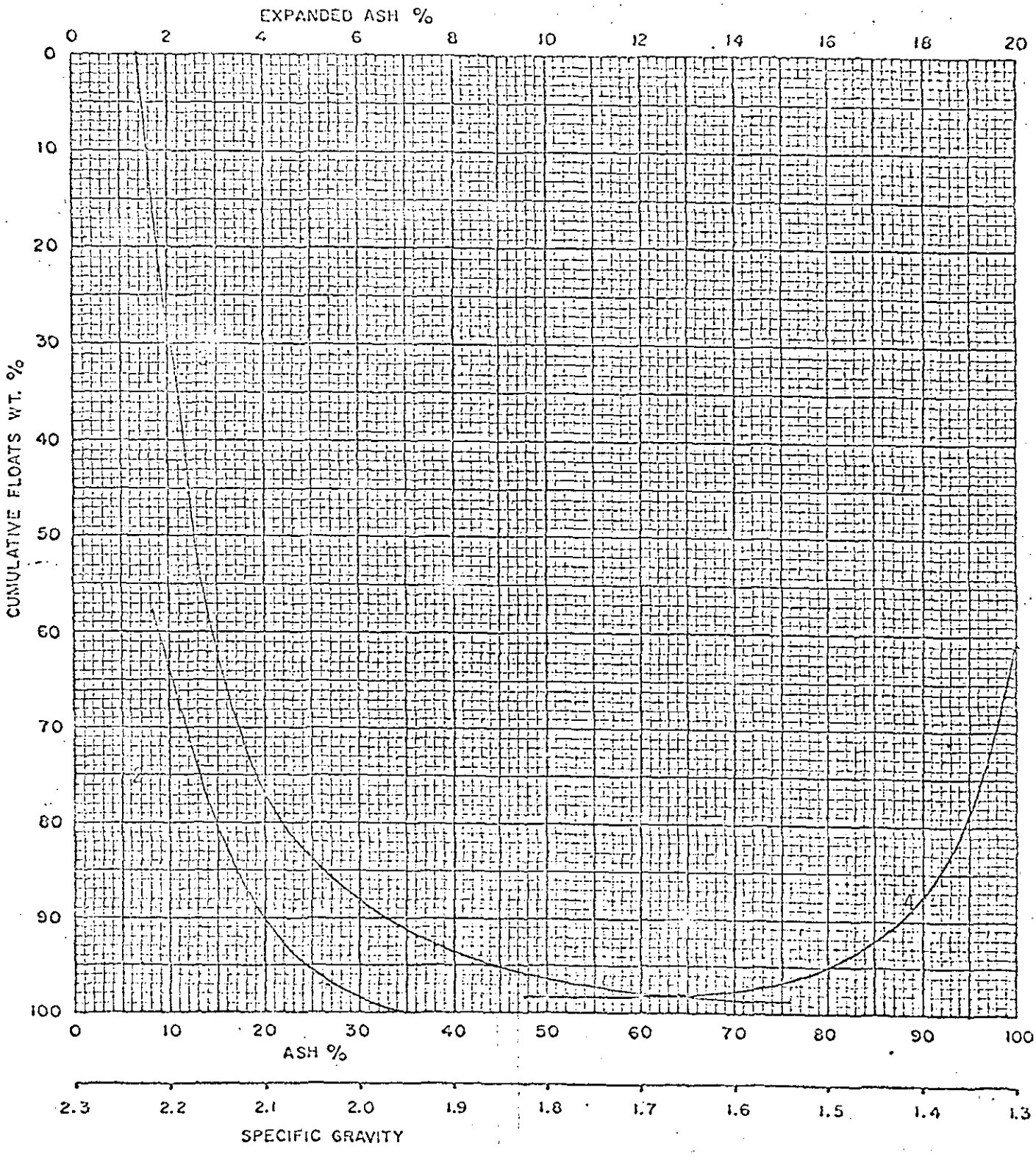
C. E. S. #20



DATE

CYCLONE ENGINEERING SALES LTD.

FIGURE

COMPANY NICHIMEN RESOURCES LTD.

SAMPLE Mt. Spieker Project

Size 28m x 100

WASHABILITY CURVES

CURVE LEGEND

1 - FLOATS
2 - EXPANDED FLOATS
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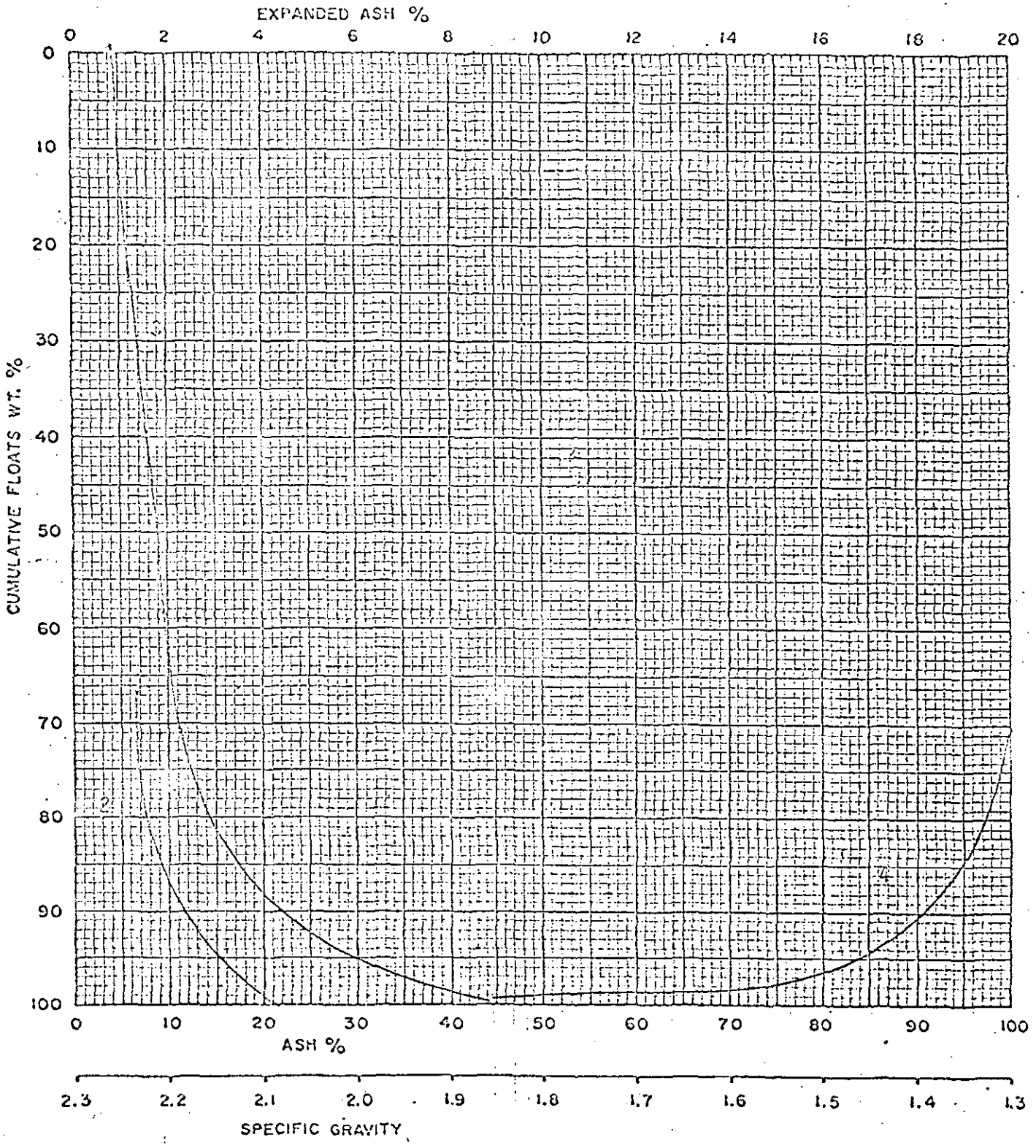

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CYCLONE ENGINEERING SALES LTD.

SUMMARY OF TEST RESULTS OF DRILL CORE SAMPLES

Table 7

SEAM	DH No.	THICK (appar.) ft.	CORE REC. %	THICK. (true) COAL / SEAM. ft.	RAW COAL (dry basis) ASH %	CLEAN COAL (dry basis) S.G.	YIELD %	ASH %	V.M. %	F.C. %	CAL. VALUE B.T.U.	T.S. %	P %	F.S.I.	MAX. FLUID. ddpm	H.G.I.
D	EB-1	(4.75) 11.75 (5.40)	92	9.15 / 11.75	15.38 ✓ 17.20 ✓	1.5	58.8	8.31	25.21	66.48	14,018	0.46	0.06	7 1/2	136	83
	EB-2	7.2	89	4.90 / 4.90	18.23 ✓	1.5	68.2	8.18	27.61	64.21	14,159	0.44	0.08	8	1,230	79
	EB-9	11.4	96	9.50 / 11.29	28.75	1.5	58.4	8.55	23.15	68.32	14,053	0.45	0.09	7	133	70
	EB-13	12.8	100	7.97 / 11.60	35.22	1.5	46.7	9.03	23.25	67.72	14,012	0.45	0.17	8	595	72
	Average				27.40			8.52	24.80	66.68	14,061	0.45	0.10	7 ∿ 8	133 ∿ 595	70 ∿ 83
C	EB-1	(6.70) 11.6 (3.60)	100	8.30 / 11.60	7.77 ✓ 6.79	1.5	48.8	7.45	24.37	68.18	14,315	0.47	0.05	7 1/2	110	85
	EB-2	10.3 ✓	85	6.70 / 7.50	26.65 ✓	1.5	62.3	9.98	25.26	64.76	13,809	0.47	0.05	7	275	83
	EB-6	14.2 ✓	76	9.58 / 11.54	35.14	1.6	61.3	9.84	24.74	65.42	13,802	0.43	0.16	4 1/2	351	76
	EB-9	14.9	98	10.64 / 14.68	37.34	1.5	51.6	7.85	23.23	68.92	14,210	0.43	0.09	7	82	72
	EB-13	12.9	100	9.69 / 11.69	28.18	1.5	62.5	8.21	22.82	68.97	14,160	0.49	0.07	7	466	76
	Average				31.83			8.67	24.08	67.25	14,059	0.46	0.08	4 1/2 ∿ 7 1/2	82 ∿ 466	72 ∿ 85
B ✓	EB-1	15.3	92	14.70 / 15.30	15.80 ✓	1.5	76.8	7.17	23.89	68.94	14,339	0.23	0.09	6 1/2	119	88
	EB-2	21.2	93	16.50 / 17.20	10.92 ✓	1.6	90.5	7.92	25.04	67.04	14,136	0.25	0.01	6 1/2	291	82
	EB-9	14.0	98	12.98 / 13.72	17.89	1.5	76.3	7.61	21.91	70.48	14,230	0.35	0.12	.5	15	80
	EB-13	25.4	90	16.63 / 16.82	14.07	1.5	79.2	8.41	23.39	68.20	14,152	0.27	0.09	7	128	95
	Average				14.67			7.78	23.56	68.66	14,214	0.28	0.08	5 ∿ 7	15 ∿ 291	80 ∿ 95
BIRD (Upper)	EB-4	7.7	66	7.70 / 7.70	9.08 ✓	1.6	91.7	6.24	19.92	73.84	14,675	1.68	0.08	8	130	94
	EB-7	11.5	68	10.98 / 11.27	14.82	1.6	84.8	7.60	21.36	71.04	14,631	2.06	0.00	9		84
	EB-8	11.8	96	11.39 / 11.68	8.92	1.6	93.7	6.66	19.98	73.36	14,832	2.15	0.02	8 1/2		85
	EB-10	11.7	97	11.17 / 11.47	12.50	1.6	86.2	7.51	22.69	69.80	14,736	2.20	0.01	8	42	98
	EB-11	12.2	100	11.53 / 11.67	9.65	1.6	92.0	6.18	20.17	73.65	14,986	1.59	0.03	8		80
	EB-14	8.0	91	7.57 / 7.97	13.17	1.6	87.8	7.53	19.52	72.95	14,659	1.24	0.06	9		91
	Average				11.36			6.95	20.61	72.44	14,753	1.82	0.03	8 ∿ 9		80 ∿ 98
BIRD (Lower)	EB-8	6.5	100	6.04 / 6.44	18.00	1.6	83.6	7.46	19.31	73.23	14,967	1.12	0.01	8		81
	EB-10	6.4	100	6.27 / 6.27	8.88	1.6	95.9	6.88	22.39	70.73	15,717	1.28	0.00	8 1/2	64	78
	EB-11	6.8	75	6.50 / 6.50	10.53	1.6	95.6	8.87	17.92	73.21	14,228	0.53	0.02	4 1/2		83
	EB-14	5.6	100	5.58 / 5.58	6.15	1.6	97.2	5.29	20.81	73.90	14,884	0.47	0.02	9		81
	Average				10.89			7.12	20.11	72.77	14,949	0.85	0.01	4 1/2 ∿ 9		78 ∿ 83